

Blackmagic Streaming Processors



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder

Languages

To go directly to your preferred language, simply click on the hyperlinks listed in the contents below.

English	3
日本語	72
Français	142
Deutsch	212
Español	282
中文	352
한국어	422
Русский	492
Italiano	562
Português	632
Türkçe	702
Polski	772
Українська	842



Welcome

Thank you for purchasing your Blackmagic Streaming Processor!

Blackmagic Streaming Encoder plugs directly into any SDI equipment, converts the signal into H.264 or H.265 and lets you stream it on popular streaming services such as YouTube Live, Facebook Live and Twitch. You can also transmit broadcast quality video point to point using Blackmagic Streaming Decoder. This makes transmission of professional video to remote locations easy using the internet!

Blackmagic Streaming Decoder lets you receive a stream from Streaming Encoder, and convert it back to SDI and HDMI video. You even get features like tally, talkback and camera control making it ideal for live productions! Plus Streaming Decoder will also decode streams from Blackmagic cameras and ATEM switchers that include built in streaming.

This instruction manual should contain all the information you'll need for installing your Blackmagic Streaming Processor and getting started.

Check the support page on our website at www.blackmagicdesign.com for the latest version of this manual and for updates to your Blackmagic Streaming Processor's internal software. When downloading the software, be sure to register with your information so we can keep you updated when new software is released.

We are continually working on new features and improvements, so we are keen to hear from you!

A stylized, handwritten signature in black ink that reads "Grant Petty". The signature is fluid and cursive, with a long, sweeping underline.

Grant Petty

CEO Blackmagic Design

Contents

Getting Started	5	Using the Webcam Output	33
Connecting Power	5	Blackmagic Universal Rack Shelf	33
Connecting to a Network	6	Contents	34
Connecting a Video Source	6	Mounting a Unit to the Rack Shelf	34
Connecting a Monitor to Streaming Encoder	7	Attaching the 1/6 Blanking Panel	35
Connecting Video Destinations	7	Attaching the Side 1/3 Width Blanking Panel	35
Simple Streaming Over a Network	7	Developer Information	36
LCD Display	10	Blackmagic Streaming Encoder Ethernet Protocol	36
Connection Icons	11	Protocol Blocks	38
Streaming Encoder's Monitor Output	11	Streaming Encoder Control REST API	48
Blackmagic Streaming Setup	16	Event Control API	50
Live Stream	17	Livestream Control API	50
Audio	21	Monitor Output Control API	55
Setup	22	System Control API	56
Stream Source Settings	25	Notification websocket - 1.0.0	58
Creating Broadcast Links	26	messages	58
Creating the XML File	27	Device Properties	59
Exporting the XML File	27	Blackmagic Streaming XML Format	61
Loading the XML File	29	Help	68
Talkback, Tally and Camera Control	29	Regulatory Notices	69
Streaming Using Your Smartphone	31	Safety Information	70
Live Streaming to the Internet	32	Warranty	71

Getting Started

Getting started with your Blackmagic Streaming Processor is as easy as connecting power, plugging in a network cable and connecting your video source and destinations.



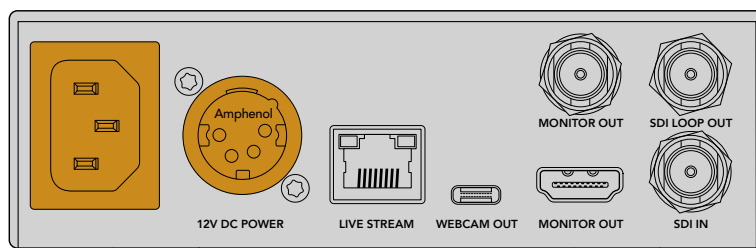
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

Connecting Power

To connect power, plug a standard IEC power cable into the power input on your streaming processor's rear panel.



Blackmagic Streaming Encoder and Streaming Decoder both feature an additional 12V DC power input. You can use this input if you want to connect external power or redundancy via an external power supply, for example a UPS or 12V battery.

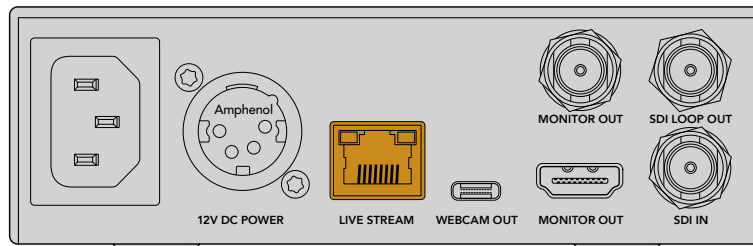
Once powered, the LCD display on the front panel will prompt you to select your language. Using the knob, scroll to the language you want to use and press the flashing 'set' button.



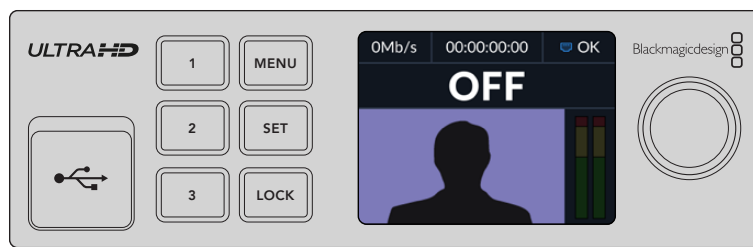
Press the 'set' button to confirm your language

Connecting to a Network

Connect your Blackmagic Streaming Processor to your network or the internet by plugging a network cable from the 'live stream' Ethernet port to an internet router or a network switch.



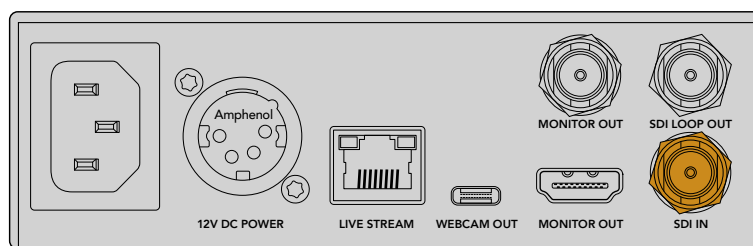
Your Blackmagic Streaming Processor is set to DHCP by default and should find an IP address straight away. Once successfully connected, you'll see a blue Ethernet icon displayed in the top right corner of the LCD home screen. If you need to connect via a static IP address, refer to the 'Blackmagic Streaming Setup' section later in this manual.



Connecting a Video Source

Connect the SDI video source you want to stream, for example Blackmagic URSA Mini Pro 12K or an SDI ATEM switcher into Blackmagic Streaming Encoder's SDI input. Blackmagic Streaming Encoder supports 12G-SDI and will automatically switch between HD and Ultra HD all the way up to 2160p60 when the video input changes.

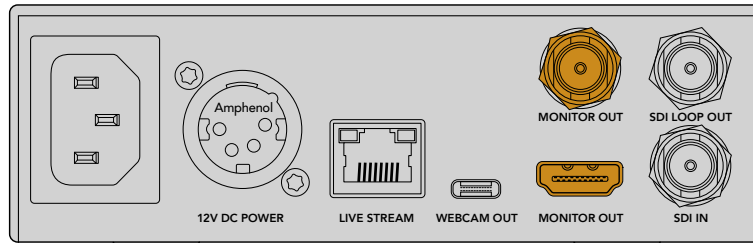
When video is connected, it will be displayed on your Streaming Encoder's LCD display. Audio is embedded with the video on the SDI video signal and you can confirm it by observing the audio meters on the LCD.



Connect your SDI video source to Blackmagic Streaming Encoder's SDI input

Connecting a Monitor to Streaming Encoder

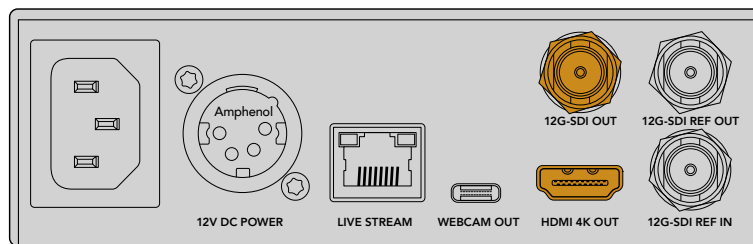
Plug an HDMI TV or SDI monitor into one of the monitor outputs on Blackmagic Streaming Encoder's rear panel. The monitor outputs lets you monitor your broadcast and view important information about your video stream, such as on air status, data rate and audio levels. You can learn more about the monitor output in the 'Streaming Encoder's monitor output' section of this manual.



Connect a TV or monitor to Blackmagic Streaming Encoder to see important information about your stream

Connecting Video Destinations

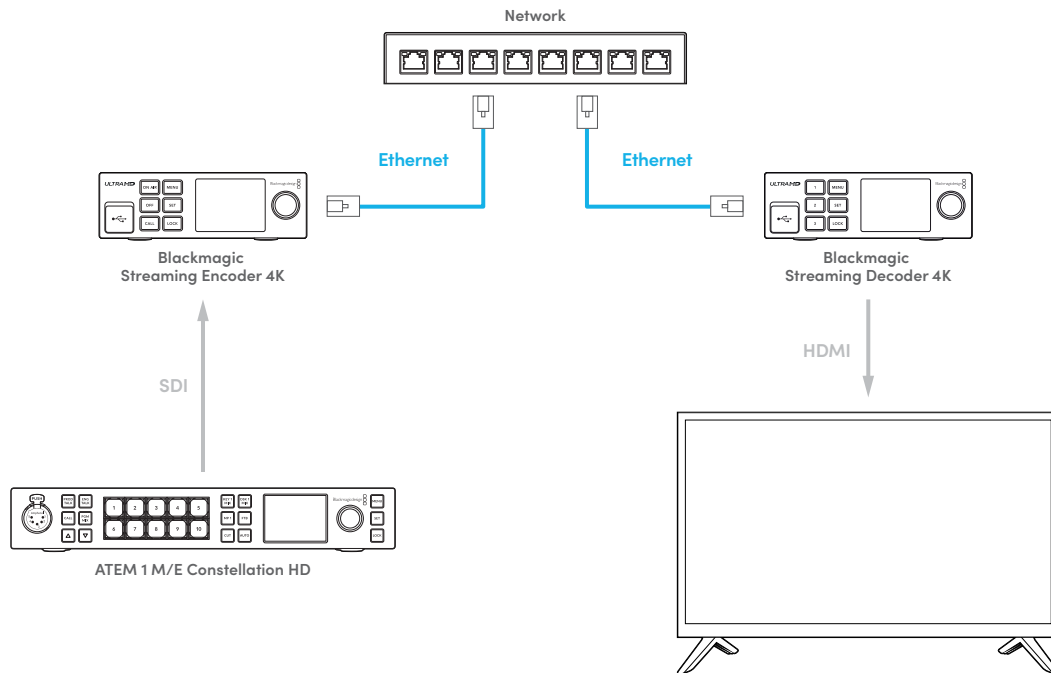
With Blackmagic Streaming Decoder, you will likely want to send the decoded stream to a destination, for example an SDI ATEM switcher and an HDMI television. Simply plug the ATEM switcher into the 12G-SDI output and the television into the HDMI connector.



Connect video destinations to Streaming Decoder's SDI and HDMI outputs

Simple Streaming Over a Network

Once connected, a good way to test that everything is working correctly is to set up a simple stream between Blackmagic Streaming Encoder and Blackmagic Streaming Decoder over a local network. This setup can be useful if you want to live stream to a conference room, or a video projector in a large building. The example below shows a simple streaming setup from an ATEM switcher to an HDMI television.



The front panel of your streaming processor features an LCD that displays important information and lets you monitor video and audio. The knob and menu buttons allow quick access to your streaming processor's menu settings, so you can setup, start and end a stream directly from the front panel.

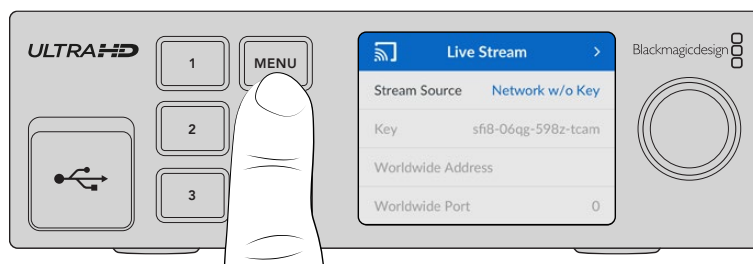
All the settings available in the front panel LCD menu can also be changed using the Blackmagic Streaming Setup software. For detailed information on each setting, refer to the 'Blackmagic Streaming Setup' section later in this manual.

To set up a simple stream:

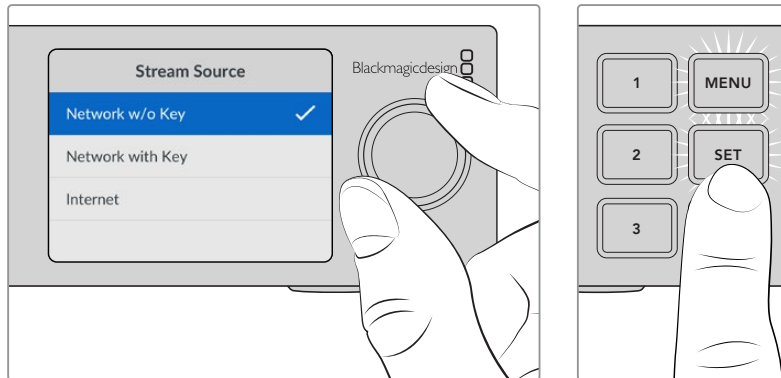
- 1 Connect Blackmagic Streaming Encoder and Blackmagic Streaming Decoder to the same network switch.

TIP For an even simpler point to point setup without using a network switch, connect Blackmagic Streaming Encoder and Blackmagic Streaming Decoder together using a single Ethernet cable.

- 2 On Blackmagic Streaming Decoder, press the 'menu' button to open the front panel LCD menu, then press 'set' to open the 'live stream' sub menu.

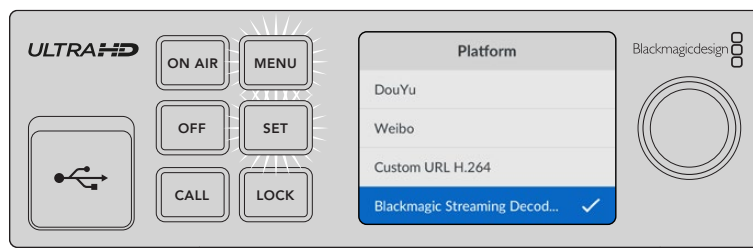


Rotate the knob to select 'stream source', press 'set' and select 'network w/o key' from the list. Press 'set' to confirm your choice.



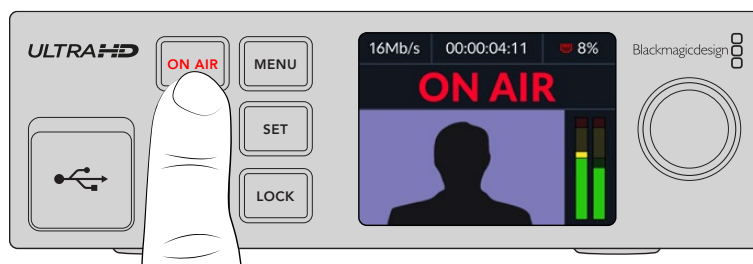
Press the 'menu' button to return to the home screen.

- 3 On Blackmagic Streaming Encoder, press the 'menu' button to open the 'live stream' menu, press 'set' and rotate the knob to scroll down to the 'platform' settings. Press 'set' to select the 'platform' sub menu.

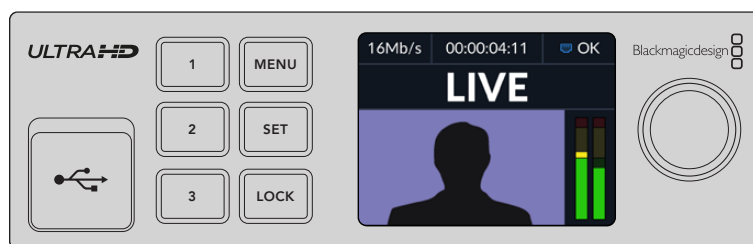


Select your Blackmagic Streaming Decoder from the 'platform' list and press 'set'. Return to the home screen by pressing 'menu'.

- 4 Press Blackmagic Streaming Encoder's front panel "on air" button. The button will illuminate red during streaming and 'on air' will be displayed on the LCD home screen.



You'll see your stream on Blackmagic Streaming Decoder's LCD display.



A 'live' indicator is displayed on Streaming Decoder's LCD

To stop streaming, press the 'off' button on Streaming Encoder's front panel.

TIP If the 'on air' button flashes on Blackmagic Streaming Encoder, it means a live stream has failed to start, or has stopped unexpectedly. This might be due to a problem with your network connection or streaming settings. Check that your streaming settings are correct and your network cables are connected.

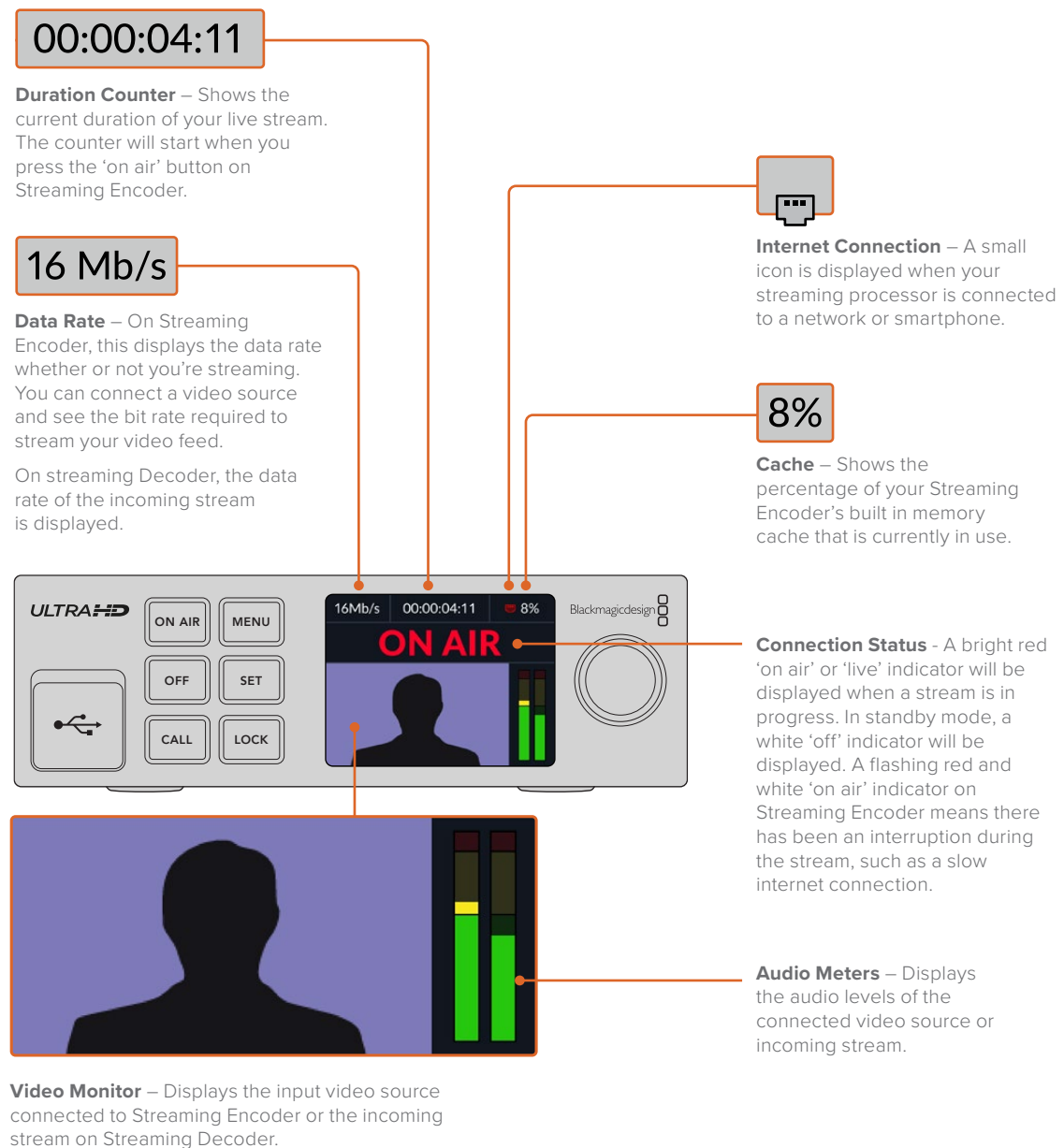
Lock Button

To lock the front panel controls of your streaming processor, press and hold the 'lock' button for 1 second. This disables the buttons and knob, preventing anyone from accidentally changing menu settings or interrupting a stream

Press and hold for 2 seconds to unlock the panel.

LCD Display

The LCD home screen on your Blackmagic Streaming Processor provides video and audio monitoring, plus important information about your stream.



Connection Icons

The connection icon in the top right corner of the LCD display shows the current connection status of your Blackmagic Streaming Processor.



A blue Ethernet icon is displayed when an Ethernet cable is connected and the Ethernet connection will be used for streaming.



On Blackmagic Streaming Encoder, a red Ethernet icon is displayed when on air and streaming via Ethernet.



A blue smartphone icon is displayed when a tethered smartphone's internet connection will be used for streaming.



On Blackmagic Streaming Encoder, a red smartphone icon is displayed when on air and streaming via a tethered smartphone.

TIP If a connection icon is not displayed, then your Blackmagic Streaming Processor is not connected to a network or smartphone. Ensure your cables are connected correctly.

Streaming Encoder's Monitor Output

The monitor output on your Blackmagic Streaming Encoder lets you monitor the video input, audio levels, on air status, data rate and cache levels, plus technical information about the SDI input.



The monitor output provides comprehensive information including data rate and cache status

The monitor output display is made up of 8 panels. Below is a description of each panel and the information it displays.

Input View

The main panel displays your current video input from the connected SDI video source.



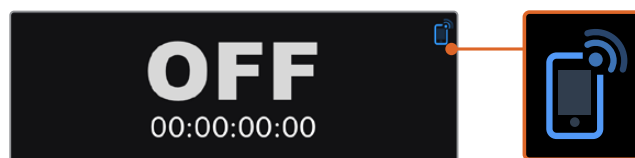
On Air Status

Prior to streaming, the on air status indicator will display 'off' to let you know your Streaming Encoder is standing by and ready to broadcast. When streaming begins, the indicator will display a bright red 'on air' status until streaming is stopped.



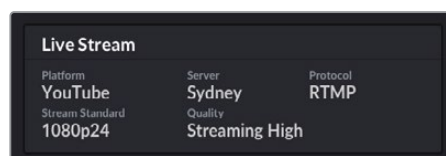
Underneath the on air indicator is the duration counter. When you press the on air button on your streaming encoder, the duration counter will start running.

If your Blackmagic Streaming Encoder is off air but will stream via a tethered smartphone, the 'off' indicator includes a blue smartphone icon in the corner. When on air, the smartphone icon will illuminate red.



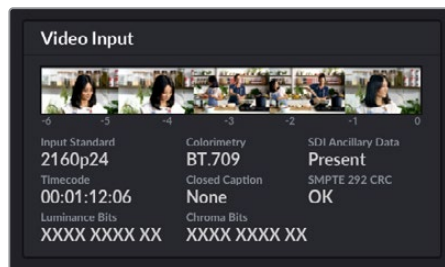
Live Stream

The live stream panel displays information about your live stream settings. This includes the streaming platform, server and protocol. It also displays the stream resolution and quality settings.



Video Input

The 5 mini viewers at the top of the video input panel show the previous 6 seconds of your live stream, each mini viewer represents 1.2 seconds of streaming time.

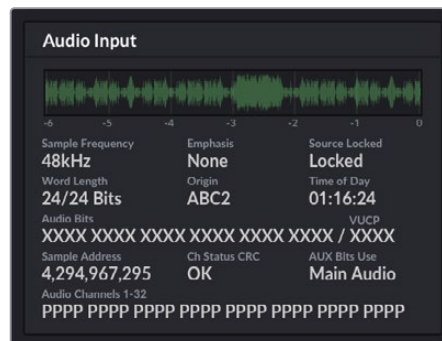


Below the mini viewers you can view detailed technical information about the video input source connected to your Streaming Encoder's SDI input.

Input Standard	Displays the resolution and frame rate of the SDI video input. Streaming Encoder supports up to 2160p60.
Colorimetry	Shows the color space of the SDI video input. Streaming Encoder supports Rec.601, Rec.709 and Rec.2020 color spaces.
SDI Ancillary Data	Ancillary data is data carried in the SDI video input that is in addition to video. This includes embedded audio, timecode and closed captions. If your SDI input includes ancillary data then 'Present' will be displayed.
Timecode	Displays the timecode from the SDI video input source.
Closed Captions	If your SDI video input includes Closed Captions the format will be displayed here. CEA-608 and CEA-708 formats are supported.
SMPTE 292 CRC	This is an error checking function for SDI video. If your Streaming Encoder supports a problem in the SDI video input it will display an error. CRC errors are usually caused by a faulty SDI cable or a cable that is too long.
Luminance Y Bits and Chroma Bits	The indicators for 'luminance y bits' and 'chroma bits' show you the activity of the SDI video input signal. Each letter represents the state of one bit of the video signal. X - An 'X' indicates a constantly changing bit. L - A low bit. H - A high bit. SDI offsets are subtracted to make it easy to understand. For example, all bits are low when video is black. Generally, all 10 bits for your SDI video input will show 'X' to mean all the bits on your video stream are changing constantly. If your SDI input is 8 bit video, the two rightmost bits will always be 'L' as they don't have any data. If a bit stays 'L' or 'H' when you expect it to be 'X', this indicates a 'stuck bit' and could be the result of a fault in the upstream video.

Audio Input

The audio waveform display at the top of the audio input panel shows the audio information for the past 6 seconds of your live stream. This is continually updated and scrolls from right to left.

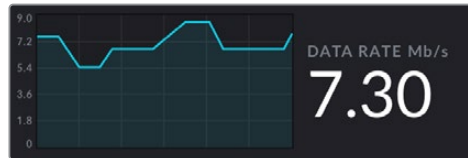


Below the audio waveform display you can view detailed technical information about the audio input.

Sample Frequency	Displays the sample frequency rate of the audio embedded in the SDI input.
Emphasis	Indicates if your audio source has its emphasis option enabled.
Audio Source Lock	Indicates whether the audio source frequency is locked to an external reference source.
Word Length	Shows the bit depth of the audio embedded in the SDI input.
Origin	These four characters indicate the channel origin.
Time of Day	Free run timecode.
Audio Bits	Shows the bit activity in the audio samples embedded in the SDI connection. Even if the audio channel status says you have 16, 20 or 24 bit audio, the audio bit activity will confirm it.
VUCP	Reading VUCP bits from left to right: the 'V' bit indicates 'valid', 'U' is the 'user' bit, 'C' is the 'channel status' bit, and 'P' is for 'parity'. This field is like 'audio bits'.
Sample Address	Audio sample counter.
AUX Bits Use	Indicates whether AUX bits are used for main audio.
Audio Channels 1-32	Each digit represents an embedded audio channel on the SDI input. A 'P' shows that an audio channel is in use and a '-' means that there is no audio on that channel.

Data Rate Display

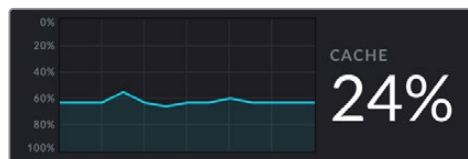
The data rate display shows the current data rate of the encoder over the past 60 seconds. The data rate is measured in megabits per second. This indicator runs consistently, even when off air, so you can accurately gauge your bandwidth before going on air.



Cache Display

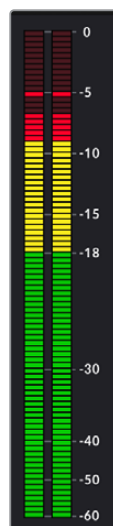
The cache display shows the percentage of your Blackmagic Streaming Encoder's built in memory buffer that is currently in use and the graph shows the amount used over the past 60 seconds. The cache is a small amount of internal memory that continuously records and plays the program output. It acts as a safety measure if the streaming data rate decreases below a level able to sustain video.

The variable nature of the internet is mostly due to network activity or wireless signal strength, so if the broadcast data rate decreases, the buffer data will increase accordingly. If the connection speed becomes slow enough that it cannot support the video stream, the cache will fill with video frames to compensate. However, once the cache is 100% full, the video stream will be compromised, so you will want to avoid a full cache where possible. You can run a test by connecting a video feed and watching the cache display in the monitor output without having to start the stream. If the cache frequently approaches 100%, choose a lower quality in the live stream settings.



Audio Meters

You can monitor the levels of your audio source using the audio meters. These can be set to display either PPM or VU levels in your Blackmagic Streaming Encoder's menu settings. If your audio levels are too high the meters will illuminate red and may mean that the audio in your live stream could become distorted or clipped. Ideally try to keep your audio towards the top of the green section and occasionally in to the yellow section.



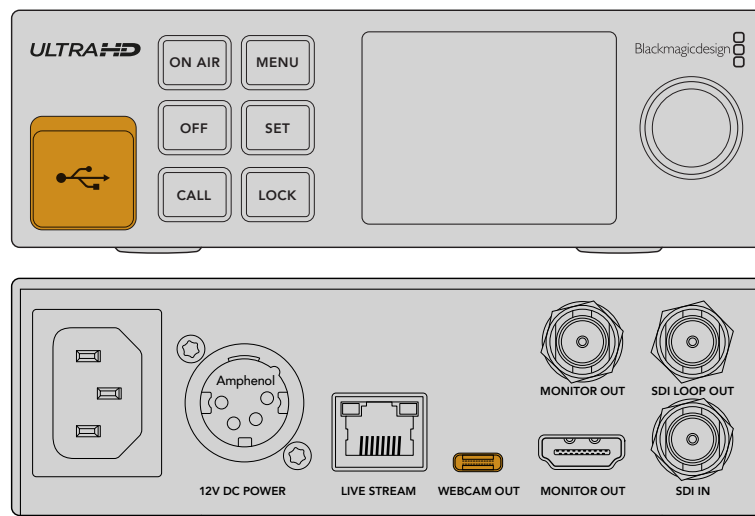
Blackmagic Streaming Setup

Blackmagic Streaming Setup is a software utility used to change settings, configure networks, update your Blackmagic Streaming Processor's internal software, plus save and load streaming settings files.

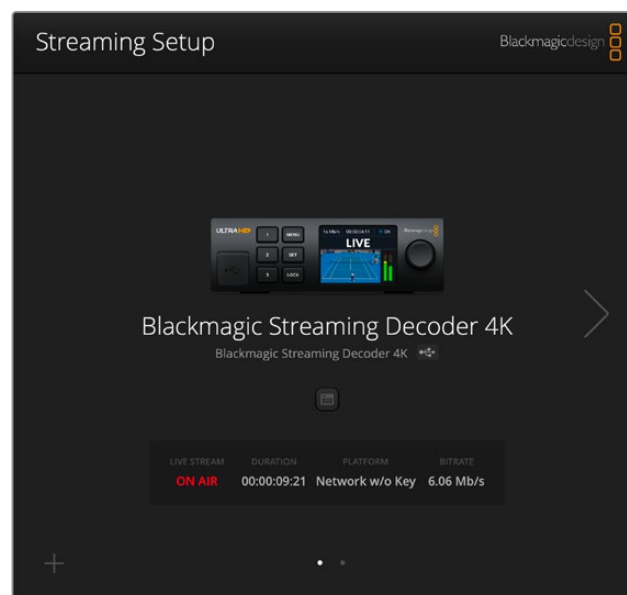
You can download and install the latest Blackmagic Streaming Setup software from the Blackmagic Design support center at www.blackmagicdesign.com/support

To use Blackmagic Streaming Setup:

- 1 Connect your streaming processor to your computer via the USB-C port on the front or rear panel.



- 2 Launch Blackmagic Streaming Setup. Your streaming processor model will be named in the utility home page.
- 3 Click on the square 'setup' icon or the image of your Blackmagic Streaming Processor to open the settings. If you have more than one streaming processor connected to the network, click on the arrows on the sides of the setup window to navigate to the unit you want to access.



Live Stream

The 'live stream' tab contains all the settings to configure your Streaming Processor's live stream connection.

Streaming Encoder

On Blackmagic Streaming Encoder, the 'live stream' tab contains settings to set the stream quality, choose and configure a streaming platform, plus load an XML streaming settings file.

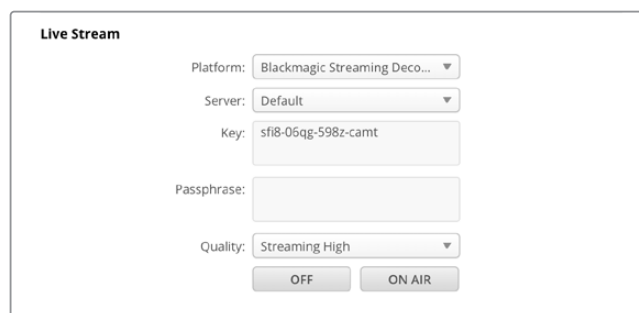
Video Output



Click on the 'stream standard' menu to select the video resolution setting for your stream. You can choose from 720p25 up to 2160p60.

Live Stream

The 'live stream' settings let you select a streaming platform, configure settings and set the streaming quality.



Platform

Click the 'Platform' menu to select the streaming platform for your broadcast. Options include YouTube, Facebook and Twitch. If you have imported custom streaming settings they will also appear in the platform list.

To stream to a custom URL, select a custom URL option from the 'platform' menu. You can choose to stream to a custom URL using H.264 or H.265.

Server

Select the server that is closest to your location by selecting it from the list. The server list will vary depending on your chosen streaming platform.

If you are streaming to Instagram, Microsoft Teams, or to a custom URL, the server list will be an editable field. Enter the URL assigned from your streaming platform account or custom URL details.

Key

Enter the streaming key that has been assigned to your broadcast from the streaming platform.

Passphrase

If you are using a streaming service with the SRT streaming protocol, enter the passphrase assigned from your streaming platform account.

Quality

Select the streaming quality for your stream, the tables below display the data rates for H.264 and H.265 codecs.

H.264	
HD	4K
HyperDeck High 45 to 70 Mb/s	HyperDeck High 95 to 220 Mb/s
HyperDeck Medium 25 to 45 Mb/s	HyperDeck Medium 66 to 150 Mb/s
HyperDeck Low 12 to 20 Mb/s	HyperDeck Low 38 to 80 Mb/s
Streaming High 6 to 9 Mb/s	Streaming High 34 to 51 Mb/s
Streaming Medium 4.5 to 7 Mb/s	Streaming Medium 23 to 35 Mb/s
Streaming Low 3 to 4.5 Mb/s	Streaming Low 13 to 20 Mb/s

H.265	
HD	4K
Streaming High 2.3 to 4.5 Mb/s	Streaming High 22.5 to 30 Mb/s
Streaming Medium 1.5 to 3 Mb/s	Streaming Medium 14 to 20 Mb/s
Streaming Low 0.8 to 2 Mb/s	Streaming Low 8 to 10 Mb/s

The data rate used by the quality setting will change depending on the video standard Streaming Encoder is using. For example, if you select 'streaming high' quality and are running at 1080p24 then it would use the 6 Mb/s data rate.

As you can see in the table, the streaming data rates are lower compared to the HyperDeck rates. This allows for transmitting data over the internet which typically uses a lower bandwidth compared to recording data on a disk.

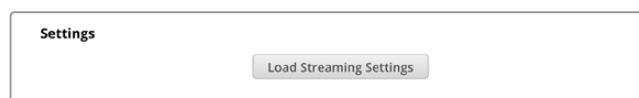
You will notice that each setting has 2 data rates mentioned. The lower number is used for the lower frame rates of 24p, 25p and 30p, while the higher data rates are used when you are running higher frame rates of 50p and 60p. It's also worth noting that the default setting for the streaming quality is Streaming High, as this gives a very high quality streaming channel.

Off and On Air buttons

You can start or stop a live stream by using the 'off' and 'on air' buttons. The 'on air' button illuminates red when a live stream is in progress.

Settings

Click the 'load streaming settings' button and follow the prompts to load an XML streaming settings file from a Blackmagic Streaming Decoder.

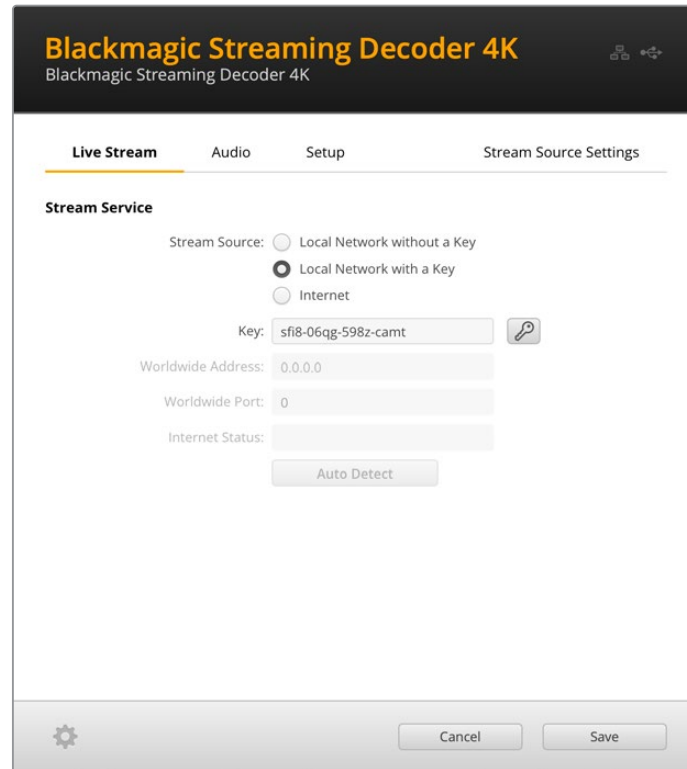


Remove Imported Settings

To remove all imported streaming settings from your Blackmagic Streaming Encoder, click the cog icon at the bottom left of the 'live stream' tab. To confirm your choice click 'remove'.

Streaming Decoder

On Blackmagic Streaming Decoder, the 'live stream' tab allows you to select a streaming source and configure your decoder's internet settings.



Stream Service

The 'stream service' options let you configure settings for connecting your Streaming Decoder to a remote Streaming Encoder or a Blackmagic camera or ATEM switcher that supports built in streaming.

Stream Source

Use the 'stream source' menu to select a source for your incoming stream. Options include 'local network without a key', 'local network with a key' and 'internet'.

Key

Because anyone can stream to any Blackmagic Streaming Decoder in the menu, it might be a good idea to set a streaming key to stop anyone crashing into your video link! It's so easy to select any Streaming Decoder on your network, that it could become chaos of everyone streaming over the top of everyone else.

This is not an issue as you can set a streaming key. This is a password that stops anyone from accessing your Blackmagic Streaming Decoder. While running the Streaming Setup, you can see the streaming key text entry field. Simply type in a password here, and then only users that have the same streaming key in their streaming settings will be allowed to connect to your Blackmagic Streaming Decoder.

You can set a password of your choice, but there is also a password generator button in Streaming Setup so you can ask the computer to generate a good secure password. You can just copy and paste this password to who you want to connect to you. Once they enter it into their Blackmagic Streaming Encoder, Blackmagic camera or ATEM switcher, only they will have permission to connect to your Streaming Decoder.

Internet Connection

The most exciting way to connect Blackmagic Streaming Decoder is via the Internet. This is a little more tricky, because you have to make sure a Streaming Encoder, Blackmagic camera or ATEM switcher can find the Streaming Decoder, from anywhere in the world. It's a big world, so there is a few more settings you will need to update to make this work.

What you need

To connect to the Internet, you will need a connection to the Internet from both your Blackmagic Streaming Decoder and the Streaming Encoder, camera or ATEM that will stream to it. You will also need to have a public IP address for your Streaming Decoder, and you need a fixed address that won't change over time.

The problem is your Blackmagic Streaming Decoder is on your local Ethernet network, however you need it to be visible on the Internet. Your Streaming Decoder uses port forwarding in your internet firewall to allow the Streaming Encoder, camera or ATEM switcher on the Internet to connect via your Internet connection to the Streaming Decoder. If this is not set up, then the Streaming Encoder, camera or ATEM won't be able to find the Streaming Decoder.

What this means is you need to ask an Internet provider, or your network administrator to set up port forwarding on your Internet connection to "TCP port 1935". They will know what that means! The good news is the Blackmagic Streaming Decoder will also attempt to set up this port forwarding feature for you, as most Internet connections and firewalls have a protocol for setting up the port forwarding automatically. This means it's possible the Streaming Decoder will communicate with your network gear and try and set this up for you as you set up using the Streaming Setup utility.

Confirming access to the Internet

You will notice lower down there is a internet status field. Blackmagic Streaming Decoder will attempt to connect to the Internet and let you know if everything looks like it's functioning correctly. If it changes to connected, then this is a good sign, as it means the Streaming Decoder has been able to set up your network equipment with the port forwarding settings and connect to the Internet ok.

NOTE Opening up ports in your network for outside traffic could reduce your network security so it is best to check with your Internet provider or network administrator if you have any security concerns.

If the internet status does not say visible worldwide you might need to configure the port forwarding on your Internet firewall manually. Not all firewalls support the protocol for automatically setting up this kind of information, but they do all support setting it up manually.

You may need to contact your Internet service provider if you cannot access the router controls or do not know how to configure port forwarding. On larger networks it is best to speak to your network administrator for setting up port forwarding as this will make sure there are no conflicts on your network.

Internet Status

While setting up the internet connection, the internet status feature can help you sort out any problems. Some of the information it can show and the cause of the problem are listed below.

Visible Worldwide	This is a good sign, and it means everything looks to be working correctly. It means port forwarding is set up and working and Blackmagic Streaming Decoder is ready to receive a video stream from the Internet.
No Internet Access	This indicates your Streaming Decoder cannot connect to the Internet. You will need to check your network settings and Internet connection.
Port Forwarding Error	This indicates that you could be connected to the internet, but the port forwarding in your Internet firewall was not able to be set up via the Streaming Decoder so it's not reachable from the Internet. You will need to ask your network administrator to set this up for you.
UPnP error	This weird error message also means Streaming Decoder is unable to set up port forwarding on the Internet router. You will need to ask your network administrator to set this up for you or you will need to consult the router's documentation to set up port forwarding.

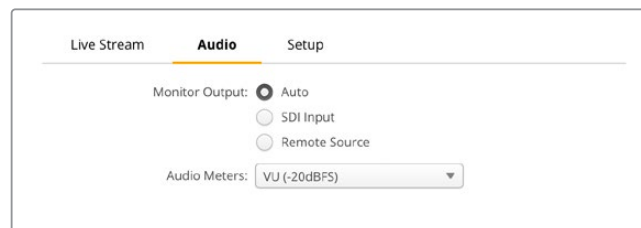
Auto Detect

Click the 'auto detect' button to automatically detect your internet connection settings.

Audio

The 'audio' tab contains settings to configure your Streaming Processor's audio monitoring output, plus talkback and audio meter options.

Streaming Encoder



Monitor Output

Use the monitor output options to choose the audio source used for your Streaming Encoder's SDI and HDMI monitoring outputs.

Auto

When the monitor output is set to 'auto', your Streaming Encoder will automatically detect and monitor talkback audio being sent from an ATEM Switcher via a Blackmagic Streaming Decoder. If no talkback is detected, audio from the SDI input will be used.

SDI Input

Select 'SDI input' to monitor the audio from your Streaming Encoder's SDI input source, for example a connected Blackmagic Studio Camera.

Remote Source

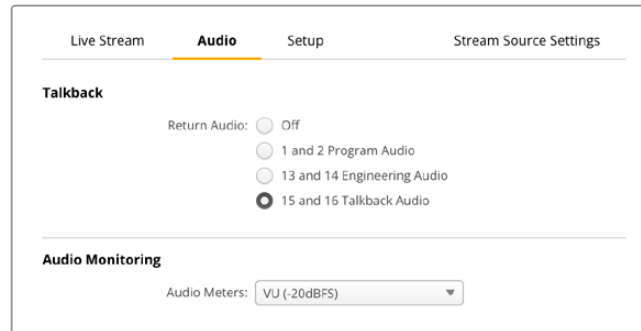
Use this option to monitor talkback audio sent from a remote ATEM switcher or a Streaming Decoder.

Audio Meters

Choose the type of audio meter to display using the audio meters menu. The options available are VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

Streaming Decoder

On Streaming Decoder, the 'audio' tab lets you select the talkback channels and configure audio meters for the front panel LCD.



The screenshot shows the 'Audio' tab selected in the settings menu. It features two sections: 'Talkback' and 'Audio Monitoring'. In the 'Talkback' section, there are four radio button options: 'Off', '1 and 2 Program Audio', '13 and 14 Engineering Audio', and '15 and 16 Talkback Audio', with the last one being selected. In the 'Audio Monitoring' section, there is a dropdown menu for 'Audio Meters' currently set to 'VU (-20dBFS)'.

Talkback

Use this setting to choose the audio channels that are returned to the remote Blackmagic Streaming Encoder, the options are 'off', '1 and 2 program audio', '13 and 14 engineering audio' and '15 and 16 talkback audio'.

Audio Monitoring

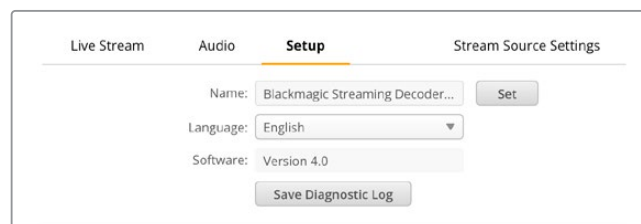
Choose the type of audio meter to display on the front panel LCD using the audio meters menu. The options available are VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

Setup

The settings in the 'setup' tab let you set the name of your streaming processor, change the network settings and restore your unit to factory settings. On Blackmagic Streaming Decoder the 'setup' tab also contains options to set the reference timing and SDI output.

Identification Settings

Use the identification settings to enter the name and language for your streaming processor.



The screenshot shows the 'Setup' tab selected in the settings menu. It contains fields for 'Name' (set to 'Blackmagic Streaming Decoder...'), 'Language' (set to 'English'), and 'Software' (set to 'Version 4.0'). There is a 'Set' button next to the Name field and a 'Save Diagnostic Log' button at the bottom.

Entering a custom name is helpful to identify the right Blackmagic Streaming Processor when more than one is connected to your network. It also provides the name for network location.

You can also identify the current software version.

Network Settings

Network Settings

Network Location: Blackmagic-Streaming-Decode...

MAC Address: 7C-2E-0D-06-CC-80

Protocol: ☒ DHCP ☐ Static IP

IP Address: 10.1.1.15

Subnet Mask: 255.255.255.0

Gateway: 10.1.1.1

Primary DNS: 10.1.1.1

Secondary DNS: 8.8.8.8

Connection Priority: ☒ Ethernet ☐ Mobile

Allow Utility Administration: ☐ via USB ☒ via USB and Ethernet

Network Location

The network location is the name for your Blackmagic Streaming Processor that will appear in the registry. This is based on the identification name at the top of the setup utility. It's worth noting that numeric prefixes will be ignored.

MAC Address

Displays the MAC address for the streaming processor. The MAC address is a hardware identifier that is unique to each Ethernet port. It is important when setting up network security systems that restrict access to devices based on their MAC address.

Protocol

DHCP and static IP settings let you determine how your streaming processor is connected to your network.

DHCP	Blackmagic Streaming Processors are set to DHCP by default. The dynamic host configuration protocol, or DHCP, is a service on network servers that automatically finds your streaming processor and assigns an IP address. DHCP is a great service that makes it easy to connect equipment via Ethernet and ensure their IP addresses do not conflict with each other. Most computers and network switchers support DHCP.
Static IP	When 'static IP' is selected, you can enter your network details manually. When setting IP addresses manually so all units can communicate, they must share the same subnet mask and gateway settings.

When using static IP and there are other devices on the network that have the same identifying number in their IP address there will be a conflict and the units won't connect. If you encounter a conflict, simply change the identifying number in the unit's IP address.

For example, if the conflicting address is 192.100.40.30 change the last number field to anything other than 30. If the new number is also being used, keep changing it until you find a unique number that isn't being used by other equipment.

Connection Priority

When Ethernet and a mobile phone are both connected to your Blackmagic Streaming Processor, this setting lets you choose which connection will be used for streaming. For more information on mobile tethering, refer to the 'streaming using your smartphone' section.

Allow utility administration

Enabling the 'via USB' setting limits setting changes to only the computer connected via USB. This removes the risk of anyone on the network making accidental settings changes.

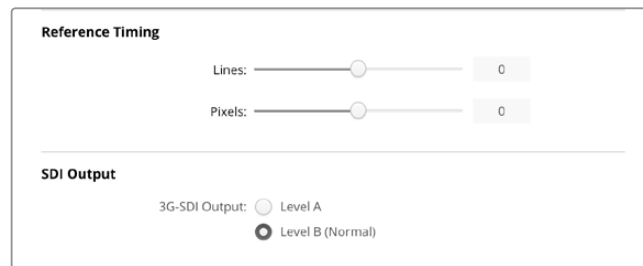
Reset

Click 'factory reset' to restore your Blackmagic Streaming Processor to factory settings. Once you press 'set', you will be prompted to confirm your selection. To proceed, click 'reset'.



Streaming Decoder

In addition to the identification and network settings, the 'setup' tab on Blackmagic Streaming Decoder includes the following settings.



Reference Timing

These settings allow you to manually adjust the reference timing on a line or pixel basis. Blackmagic Streaming Decoder has both an analog tri-sync and black burst video reference input as well as an SDI input that can be used for reference. Reference is used by large broadcasters who need all the video connections in their facility to be aligned so they can be switched around a large system.

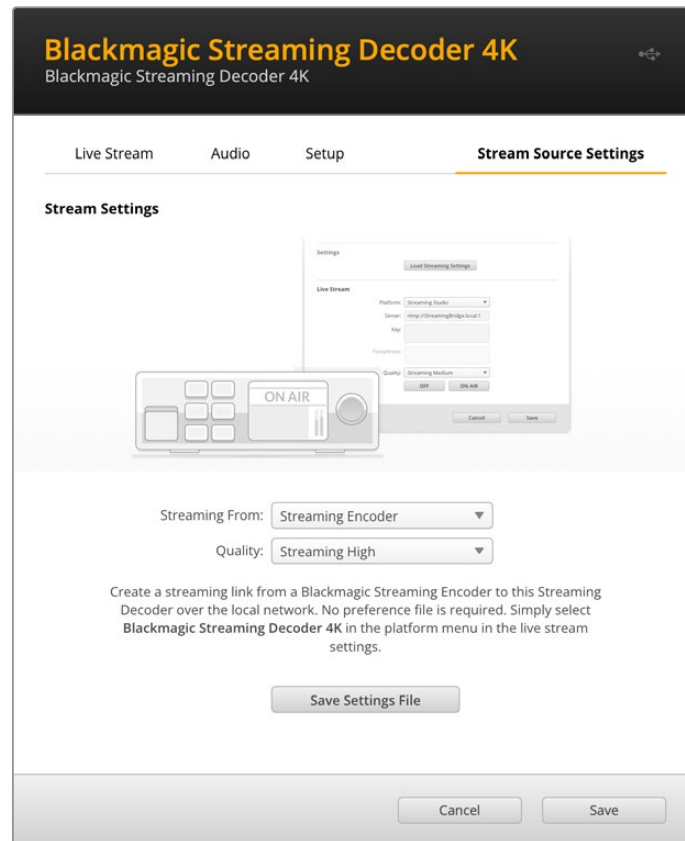
SDI Output

Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type. The default setting is level B.

Stream Source Settings

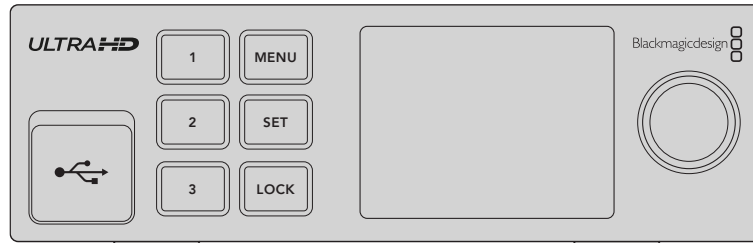
The stream source settings tab for your Blackmagic Streaming Decoder lets you create streaming settings XML files that can be loaded into a remote streaming encoder or a Blackmagic camera or ATEM switcher that supports built in streaming.

For more information on creating streaming settings XML files, refer to the 'creating broadcast links' section in the next section of this manual.



Creating Broadcast Links

With Blackmagic Streaming Processors, you can stream video over a local network or to anywhere in the world via the Internet.



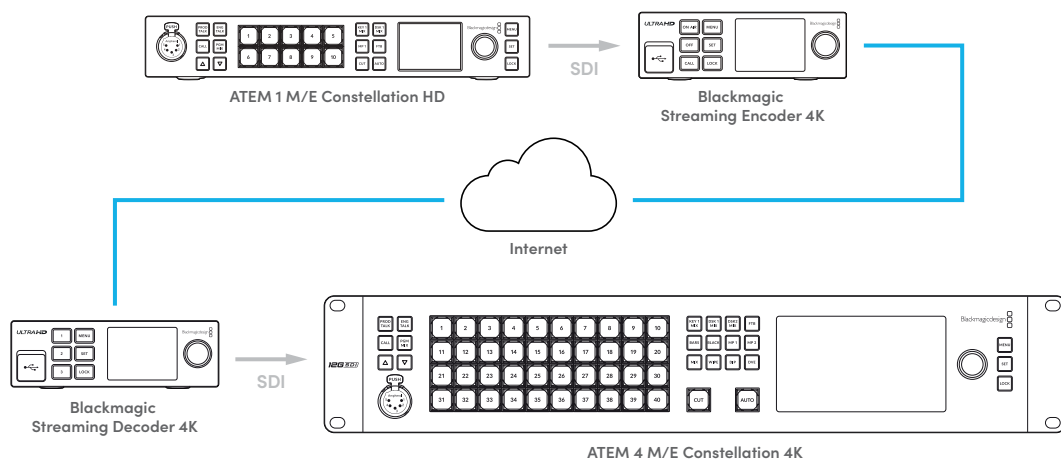
If your Blackmagic Streaming Decoder is on the same local network as your Streaming Encoder, it will be listed in the 'platform' menu in the 'live stream' tab of Blackmagic Streaming Setup. For more information about setting up a stream over a local network, refer to the 'getting started' section.

If you want to stream via the internet, or over a local network using a streaming key for added security, you can create a streaming settings XML file from your streaming decoder. This file can be loaded into Blackmagic Streaming Encoder using Blackmagic Streaming Setup.

TIP You can also export streaming setting XML files for Blackmagic cameras and ATEM switchers that support built in streaming. For more information on importing settings files, refer to your Blackmagic camera or ATEM switcher manual.

A good example of how Blackmagic Streaming Processors can work together is transmitting a weather report to a studio from a remote location. All you need for transmission from location is a streaming encoder and an internet connection, which could be your smartphone or by connecting to a network.

Back at the studio, the Blackmagic Streaming Decoder takes the internet feed and converts it to SDI so it can be connected to the main switcher at the studio.



The workflow setup for this example would be:

- 1 On location, the Blackmagic Streaming Encoder is connected to the Program SDI output on the ATEM switcher. For example ATEM 1 M/E Constellation HD.
- 2 Blackmagic Streaming Encoder is then connected to a Smartphone.
- 3 Back at the studio, Blackmagic Streaming Decoder is also connected to the internet via Ethernet.
- 4 Streaming Decoder 4K then sends the converted SDI video feed from the internet to the studio switcher's SDI input for the main news broadcast.

For your studio to connect the streaming decoder to the streaming encoder's internet feed, you will need to launch Blackmagic Streaming Setup and configure the internet settings. This includes generating an XML file containing all the streaming settings which are then loaded into the streaming encoder on location.

Creating the XML File

To create an XML settings file connect Blackmagic Streaming Decoder to the internet by plugging a network cable from the 'live stream' port to an internet router or network switch.

Connect the streaming decoder to your computer using a USB-C cable and launch Blackmagic Streaming Setup. In the 'live stream' tab, confirm the network settings are correct and select 'internet' from the 'stream service' options. You should see a 'visible worldwide' message in the 'internet status' box. This means everything is working correctly. For more information about configuring your streaming decoder, refer to 'stream service' in the 'Blackmagic Streaming Setup' section.

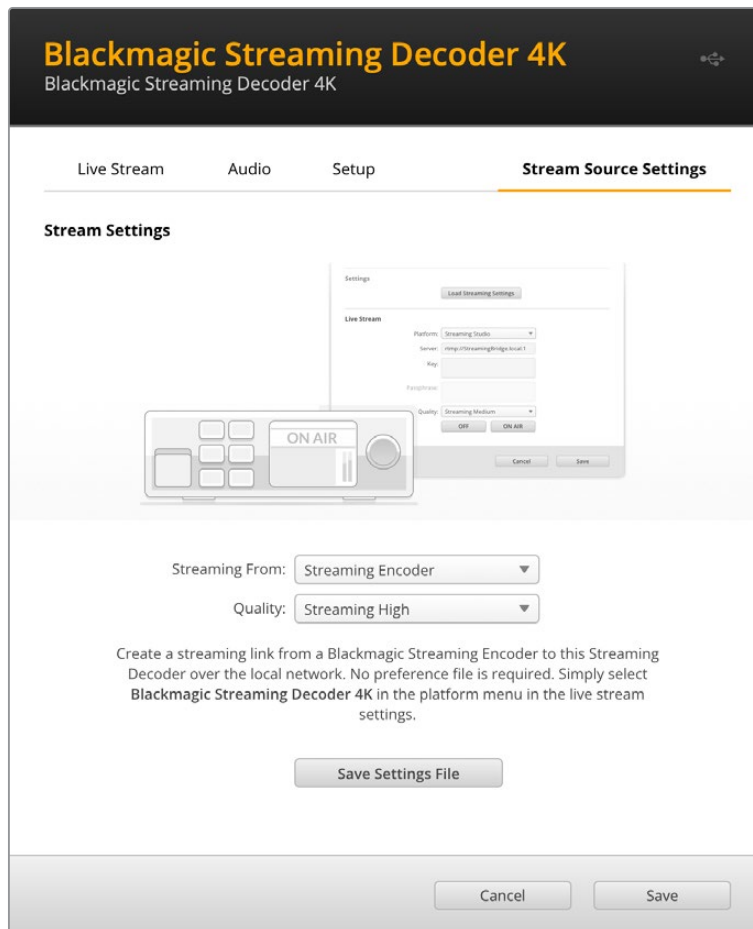
A Note About Port Forwarding

If you see a port forwarding or UPnP error in the 'internet status' box you will need to ask your internet provider or network administrator to set up port forwarding on your internet connection to 'TCP port 1935'.

Exporting the XML File

Once you have confirmed your settings in the 'setup' tab of Blackmagic Streaming Setup and have successfully connected your streaming decoder to your network or the internet, you can export the XML setup file.

- 1 Click the 'stream source settings' tab in the top right of the window.



- 2 In the 'streaming from' menu, select 'streaming encoder'.

If you are creating a streaming settings XML file for a Blackmagic camera or ATEM switcher that supports built in streaming, select 'ATEM switcher' or 'Blackmagic camera' from the 'streaming from' menu.

- 3 Select the quality you want to stream. This will set the quality setting of the remote Blackmagic Streaming Encoder.
- 4 Click the 'save settings file' button and choose a location to save the file on your computer.

Once you've saved the settings file, email it to the remote operator of the Blackmagic Streaming Encoder.

TIP You can use the talkback settings in the 'audio' tab to select which audio channels you want to send back to the remote streaming encoder.

Loading the XML File

With the settings file emailed to the location, the location crew simply loads the XML into the Blackmagic Streaming Encoder using Blackmagic Streaming Setup, then presses the 'on air' button to start streaming the weather report to the studio!

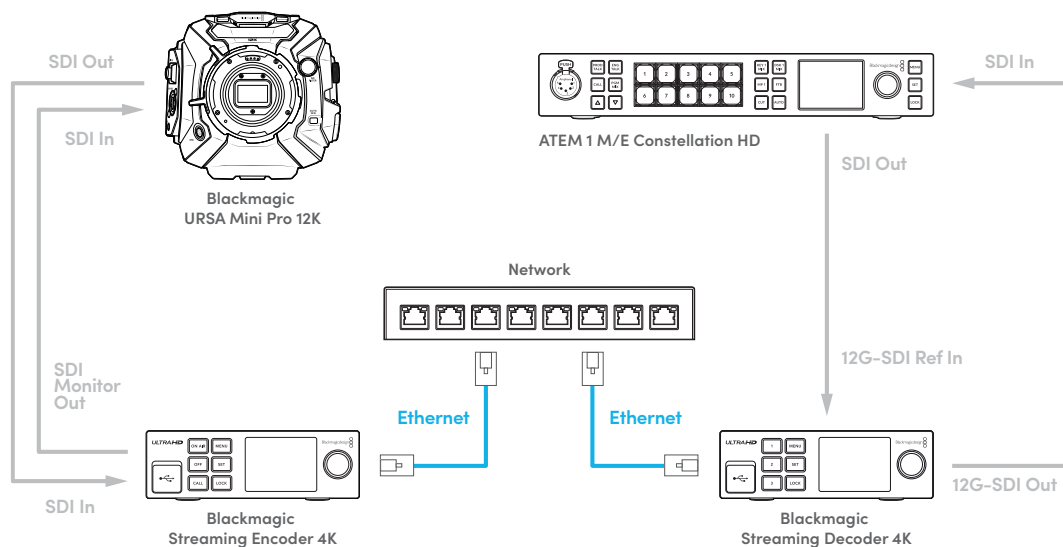
It's important to mention that once you have loaded the streaming XML file, you can then start and stop streaming without ever having to load it again. This makes it easy to set up a constant video link between the streaming encoder and streaming decoder.

As long as the streaming decoder at the studio hasn't changed the streaming and network settings and is still looking for that streaming encoder, it will always find it no matter where it is on the internet. At any location, you can simply plug your streaming encoder into the Internet, press 'on air', and it will immediately be streaming to the streaming decoder back at the studio.

Talkback, Tally and Camera Control

Blackmagic Streaming Processors allow ATEM switchers to send tally, talkback and camera control information. This means any SDI based Blackmagic Design camera can be positioned at any location within your local network, or anywhere in the world via the Internet and still have tally, talkback and camera control functionality.

It is very simple to set up. The illustration below shows how to connect an URSA Mini Pro 12K to an ATEM 1 M/E Constellation HD over a local network with tally, talkback and camera control.



When everything is connected:

- 1 Press the 'menu' button on Blackmagic Streaming Encoder to open the LCD menu and navigate to the 'live stream' menu.
- 2 Select the Blackmagic Streaming Decoder in the 'platform' menu.
- 3 Press 'set' to confirm.

For tally to work, you need to make sure the camera has the ATEM camera ID set to match the input on the switcher. For information on how to set the ATEM Camera ID, refer to the URSA Mini manual.

You can test that tally is working by switching the camera to the program output on the ATEM switcher. If the ATEM camera ID is set correctly on your camera, you will see the tally light illuminate including a red tally border around the camera's LCD. Now switch the camera to the preview output and the tally will illuminate green.

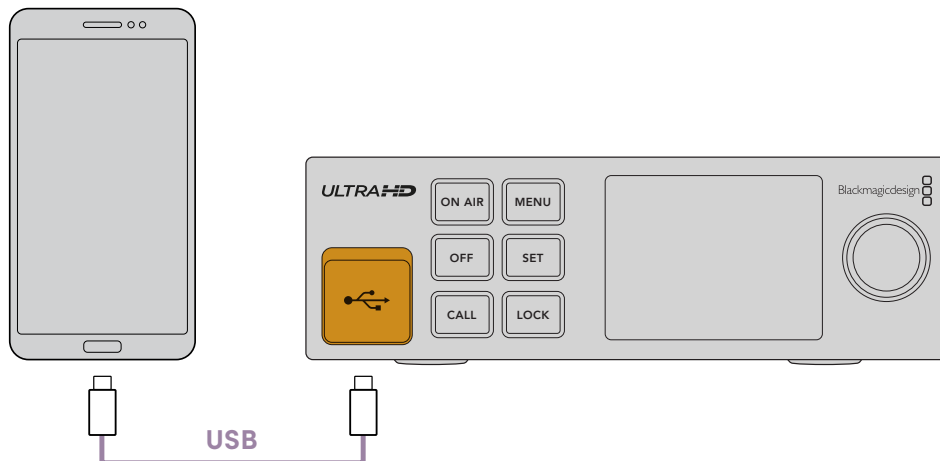
Try adjusting the iris and pedestal in ATEM Software Control's camera page to test camera control.

Embedded SDI audio channels 15 and 16 are set as the default talkback channels but you can change them to engineering channels 13 and 14, or the program output using the Blackmagic Streaming Setup.

When transmitting over the Internet, an XML setup file is created using Blackmagic Streaming Setup. This XML file is then loaded into Blackmagic Streaming Encoder so it can find the Blackmagic Streaming Decoder on the Internet. For more information on how to create and load the setup XML file, refer to the previous section in this manual.

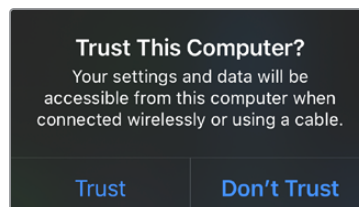
Streaming Using Your Smartphone

Blackmagic Streaming Processors can connect to the internet by tethering from your smartphone. To begin, simply connect your smartphone to the front or rear USB-C port on your streaming processor. This connection lets you set up quickly and send or receive a stream in any location where your smartphone has a 4G or 5G cellular connection.



To set up mobile tethering:

- 1 On your iOS device open settings>personal hotspot and make sure the 'allow others to join' option is on.
- 2 You will see a message appear asking whether to trust the connected computer. Select 'trust' and a green tethering icon will be visible on the screen. This is how you can verify the connection is working.



Your smartphone's clock will always appear within a green background icon while tethering is enabled.

For Android devices, swipe the screen to display the quick menu. Press and hold the hotspot icon and then turn on USB tethering.

TIP Once you've finished streaming, we recommend you switch off tethering connections to save your smartphone's battery life.

Live Streaming to the Internet

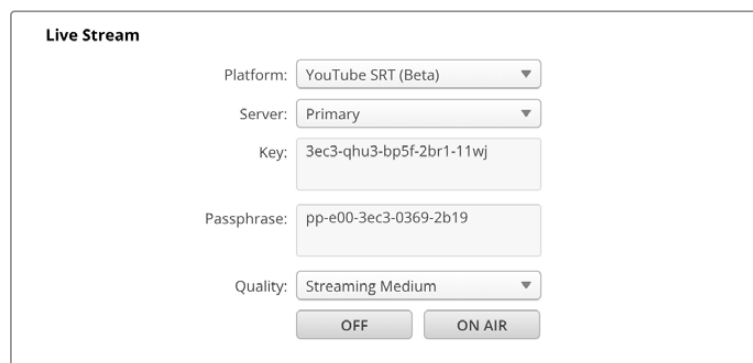
Blackmagic Streaming Encoder lets you stream directly to Internet streaming platforms such as YouTube, Facebook, Twitch and more. For this example, we will set up for a YouTube Live stream.

- 1 Copy your stream key from your YouTube Studio account.
- 2 Launch the Blackmagic Streaming Setup and go to the 'live stream' tab.
- 3 Set the platform to YouTube and the server to 'primary'. Paste your YouTube stream key into the 'key' field and select a streaming quality. Click 'save'.
- 4 You're now ready to start streaming to the world! Click the 'on air' button or press the 'on air' button on the unit's front panel. When your production has finished, press the 'off' button to stop your broadcast.

Using the SRT Streaming Protocol

The secure reliable transport protocol, or SRT, provides lower latency streaming when compared to RTMP. SRT also improves security by using a passphrase, which is like an encryption key.

When selecting the SRT protocol version of your streaming service, copy the passphrase and stream key from your streaming account and paste them into the 'key' and 'passphrase' fields of Blackmagic Streaming Setup.



The screenshot shows the 'Live Stream' configuration window. It contains the following fields and controls:

- Platform:** A dropdown menu set to 'YouTube SRT (Beta)'.
- Server:** A dropdown menu set to 'Primary'.
- Key:** A text input field containing '3ec3-qhu3-bp5f-2br1-11wj'.
- Passphrase:** A text input field containing 'pp-e00-3ec3-0369-2b19'.
- Quality:** A dropdown menu set to 'Streaming Medium'.
- Buttons:** Two buttons at the bottom, 'OFF' and 'ON AIR'.

Paste your passphrase into the 'passphrase' field of setup utility

Both the protocol RTMP or SRT as well as the codec H.264 or H.265 can be changed in the XML file if technically experienced broadcasters want to customize streaming settings. For more information, refer to the 'Blackmagic Streaming XML Format' in the 'developer information' section.

Using the Webcam Output

Software such as Zoom or Microsoft Teams should automatically set your Blackmagic Streaming Processor as the Webcam, so when you launch the application you will see your video stream immediately. If the application doesn't select your streaming encoder or decoder automatically, you can manually set it as the webcam and microphone.

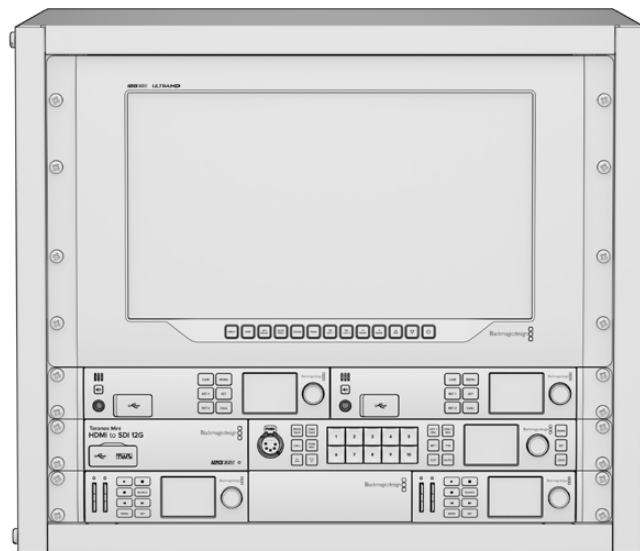
Below is an example of how to set the webcam on Microsoft Teams.

- 1 Using a USB-C cable, connect your Blackmagic Streaming Processor to your computer via the 'webcam out' port on the rear panel.
- 2 In the Teams menu bar, open 'settings' and select 'devices'.
- 3 In the 'audio' panel, click on the 'microphone' menu and select 'Blackmagic Design' as your audio source.
- 4 Go to the 'video' settings and select your Blackmagic Streaming Processor from the 'camera' menu.

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelf is a 1RU shelf that lets you install a broad range of Blackmagic Design equipment into a broadcast rack or road case. The modular design means you can build portable and practical equipment setups using products that share a single rack unit form factor.

The illustration below shows 3 Universal Rack Shelves installed in a small rack with a combination of compatible units mounted. The bottom shelf includes a 1/3 rack width blanking panel to fill unused space between units.



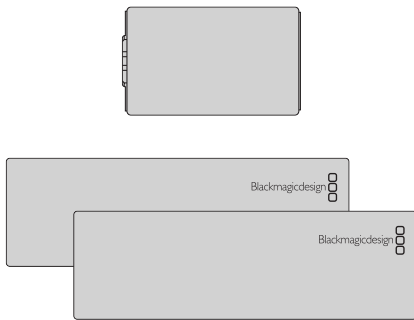
Contents

The Universal Rack Shelf Kit contains the following items.



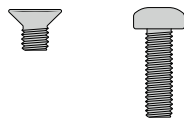
1 x Blackmagic Universal Rack Shelf

A single rack unit, full width shelf for installing Blackmagic Design equipment.



Blanking Panels

1 x 1/6 rack width and 2 x 1/3 rack width blanking panels to cover unused shelf space.



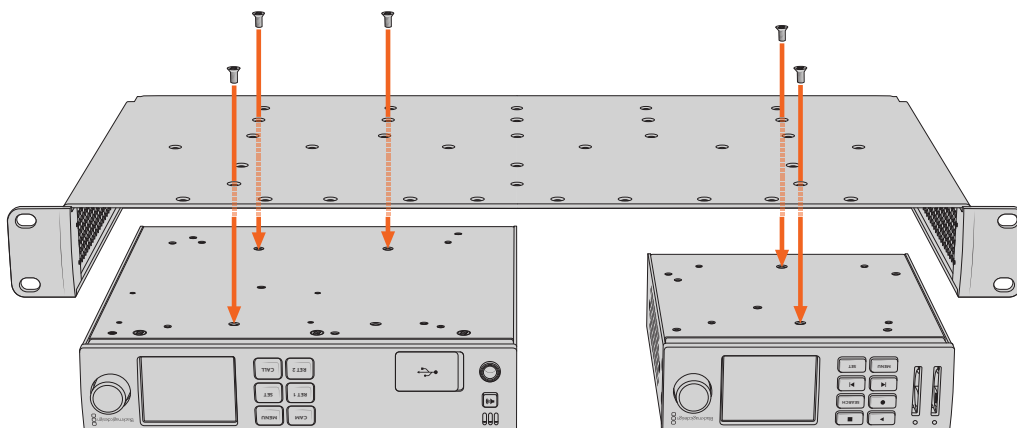
Screws

12 x M3 5mm
countersunk mounting
screws.

2 x M3 9mm flat screws
for 1/6 blanking panels.

Mounting a Unit to the Rack Shelf

- 1 If rubber feet are attached, remove the feet from the base of the unit using a plastic edged scraping tool.
- 2 With both the rack shelf and the unit upside down, line up the rack shelf's pre drilled holes with the threaded mounting holes on the base of the Blackmagic Design unit. There are two central mounting points on 1/3 width units and up to three mounting points on larger, 1/2 rack width units.

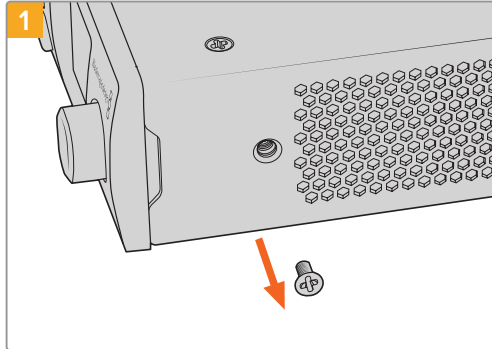


- 3 Using the supplied M3 5mm countersunk screws, fasten the unit to the rack shelf.
- 4 Once fastened, turn the rack shelf right side up and install into the rack via the built in rack ears.

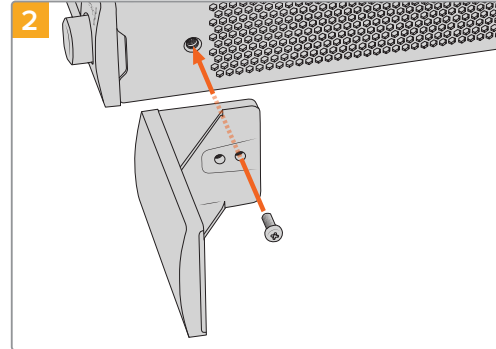
The supplied blanking panels can be used to cover unused shelf space.

Attaching the 1/6 Blanking Panel

The small 1/6 blanking panel can be used to fill unused shelf space when mounting 1/2 and 1/3 rack width units. The panel can be attached to the sides of either unit. To improve airflow it's a good idea to mount the panel between units.



Remove the 5mm M3 screw near the front of the unit



Line up the blanking panel and attach using the supplied M3 9mm nylon screw

Attaching the Side 1/3 Width Blanking Panel

The large 1/3 width blanking panels can be attached directly to either side of the rack shelf when mounting single units. To install a blanking panel, align the screw holes and anchor point at the base of the panel with the shelf and secure in place using two of the supplied M3 5mm countersunk screws.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```



```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```


Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path `/control/api/v1/` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path `/control/documentation.html` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```


Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Help

Getting Help

The fastest way to obtain help is to go to the Blackmagic Design online support pages and check the latest support material available for your Blackmagic Streaming Processor.

Blackmagic Design Online Support Pages

The latest manual can be found at the Blackmagic Design support center at www.blackmagicdesign.com/support

Blackmagic Design Forum

The Blackmagic Design forum on our website is a helpful resource you can visit for more information and creative ideas. This can also be a faster way of getting help as there may already be answers you can find from other experienced users and Blackmagic Design staff which will keep you moving forward. You can visit the forum at <https://forum.blackmagicdesign.com>

Contacting Blackmagic Design Support

If you can't find the help you need in our support material or on the forum, please use the 'send us an email' button on the support page to email a support request. Alternatively, click on the 'find your local support team' button on the support page and call your nearest Blackmagic Design support office.

Regulatory Notices



Disposal of waste of electrical and electronic equipment within the European union.

The symbol on the product indicates that this equipment must not be disposed of with other waste materials. In order to dispose of your waste equipment, it must be handed over to a designated collection point for recycling. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.



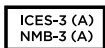
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this product in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Operation is subject to the following two conditions:

- 1 This device may not cause harmful interference.
- 2 This device must accept any interference received, including interference that may cause undesired operation.



R-R-BMD-20201201001
R-R-BMD-20201201002



ISED Canada Statement

This device complies with Canadian standards for Class A digital apparatus.

Any modifications or use of this product outside its intended use could void compliance to these standards.

Connection to HDMI interfaces must be made with high quality shielded HDMI cables.

This equipment has been tested for compliance with the intended use in a commercial environment. If the equipment is used in a domestic environment, it may cause radio interference.

Safety Information

This equipment must be connected to a mains socket outlet with a protective earth connection.

To reduce the risk of electric shock, do not expose this equipment to dripping or splashing.

This equipment is suitable for use in tropical locations with an ambient temperature of up to 40°C.

Storage temperature range is -20°C to 60°C and relative humidity 0% to 90% non-condensing.

Ensure that adequate ventilation is provided around the product and is not restricted.

When rack mounting, ensure the ventilation is not restricted by adjacent equipment.

No operator serviceable parts inside. Refer servicing to your local Blackmagic Design service centre.



Use only at altitudes not more than 2000m above sea level.

State of California statement

This product can expose you to chemicals such as trace amounts of polybrominated biphenyls within plastic parts, which is known to the state of California to cause cancer and birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov.

Warranty

36 Month Limited Warranty

Blackmagic Design warrants that Blackmagic Streaming Processor will be free from defects in materials and workmanship for a period of 36 months from the date of purchase excluding connectors, cables, fiber optic modules, fuses and batteries which will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. If the product proves to be defective during this warranty period, Blackmagic Design, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, you the Customer, must notify Blackmagic Design of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by Blackmagic Design, with shipping charges pre paid. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to us for any reason.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Blackmagic Design shall not be obligated to furnish service under this warranty: a) to repair damage resulting from attempts by personnel other than Blackmagic Design representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction caused by the use of non Blackmagic Design parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product.

THIS WARRANTY IS GIVEN BY BLACKMAGIC DESIGN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. BLACKMAGIC DESIGN AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BLACKMAGIC DESIGN'S RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER BLACKMAGIC DESIGN OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. BLACKMAGIC DESIGN IS NOT LIABLE FOR ANY ILLEGAL USE OF EQUIPMENT BY CUSTOMER. BLACKMAGIC IS NOT LIABLE FOR ANY DAMAGES RESULTING FROM USE OF THIS PRODUCT. USER OPERATES THIS PRODUCT AT OWN RISK.

© Copyright 2025 Blackmagic Design. All rights reserved. 'Blackmagic Design', 'DeckLink', 'HDLink', 'Workgroup Videohub', 'Multibridge Pro', 'Multibridge Extreme', 'Intensity' and 'Leading the creative video revolution' are registered trademarks in the US and other countries. All other company and product names may be trade marks of their respective companies with which they are associated.

Thunderbolt and the Thunderbolt logo are trademarks of Intel Corporation in the U.S. and/or other countries.

Blackmagic Streaming Processors



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



ようこそ

このたびはBlackmagic Streaming Processorをお買い求めいただき誠にありがとうございました。

Blackmagic Streaming Encoderは、あらゆるSDI機器に直接接続でき、信号をH.264またはH.265に変換し、YouTube Live、Facebook Live、Twitchなどの人気の配信サービスでビデオを配信できます。また、Blackmagic Streaming Decoderを使用することで、放送品質のビデオを2地点間で発信できます。これにより、インターネットを使用して、プロフェッショナルなビデオを離れた場所に簡単に送信できます。

Blackmagic Streaming Decoderは、Blackmagic Streaming Encoderからストリームを受信し、それをSDIおよびHDMIビデオに変換します。タリー、トークバック、カメラコントロールなどの機能も搭載しているので、ライブプロダクションに最適です！Streaming Decoderは、配信機能を内蔵しているBlackmagicカメラやATEMスイッチャーからのストリームもデコードできます。

このマニュアルには、Blackmagic Streaming Processorをインストールして使用開始する際に必要な情報がすべて記載されています。

弊社ウェブサイト www.blackmagicdesign.com/jp のサポートページで、このマニュアルの最新バージョンおよびBlackmagic Streaming Processorの内部ソフトウェアの最新アップデートを確認してください。ソフトウェアをダウンロードする際にユーザー登録していただければ、新しいソフトウェアのリリース時にお知らせいたします。

常に新機能の開発および製品の改善に努めていますので、ユーザーの皆様からご意見をいただければ幸いです。

Blackmagic Design CEO

グラント・ペティ

目次

はじめに	75	ウェブカム出力の使用	103
電源の接続	75	Blackmagic Universal Rack Shelf	103
ネットワークに接続	76	内容品	104
ビデオソースの接続	76	Universal Rack Shelfにユニットをマウントする	104
モニターをStreaming Encoderに接続	77	1/6ラック幅ブランクパネルの取り付け	105
ビデオの送信先に接続	77	1/3ラック幅ブランクパネルの取り付け	105
ネットワークを介したシンプルな配信	77	Developer Information	106
LCDディスプレイ	80	Blackmagic Streaming Encoder Ethernet Protocol	106
接続アイコン	81	Protocol Blocks	108
Streaming Encoderのモニター出力	81	Streaming Encoder Control REST API	118
Blackmagic Streaming Setup	86	Event Control API	120
Live Stream (ライブ配信)	87	Livestream Control API	120
Audio (オーディオ)	91	Monitor Output Control API	125
Setup (セットアップ)	92	System Control API	126
Stream Source Settings (配信ソース設定)	95	Notification websocket - 1.0.0 messages	128
放送リンクの作成	96	Device Properties	129
XMLファイルの作成	97	Blackmagic Streaming XML Format	131
XMLファイルの書き出し	97	ヘルプ	138
XMLファイルのローディング	99	規制に関する警告	139
トークバック、タリー、カメラコントロール	99	安全情報	140
スマートフォンを使用した配信	101	保証	141
インターネットへのライブ配信	102		

はじめに

Blackmagic Streaming Processorは、電源に接続し、ネットワークケーブルを接続して、ビデオソースと送信先につなげるだけで簡単に使い始められます。



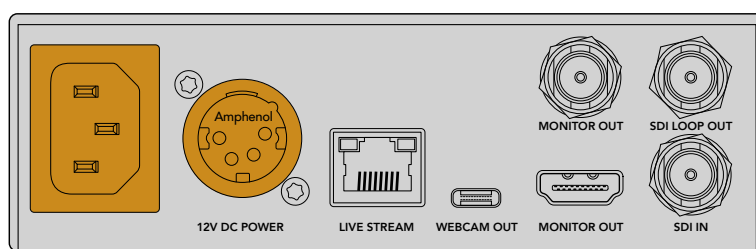
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

電源の接続

電源に接続するには、Streaming Processorのリアパネルにある電源入力に標準のIEC電源ケーブルを接続します。



Blackmagic Streaming EncoderおよびStreaming Decoderは、追加の12V DC電源入力を搭載しています。外部電源を接続したい場合、あるいは外部電源（連続電力供給可能なUPSや12Vバッテリーなど）からのリダンダント電源を接続したい場合は、この12V DC入力を使用できます。

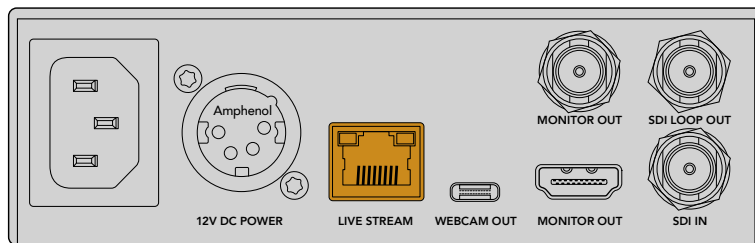
電源を入れると、フロントパネルのLCDディスプレイに言語選択の画面が表示されます。ノブで表示言語を選択し、点滅している「SET」ボタンを押します。



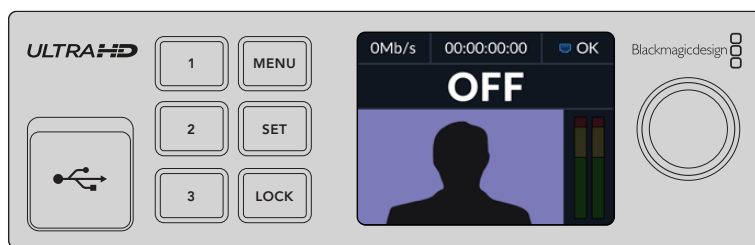
「SET」ボタンを押して言語を確定

ネットワークに接続

Blackmagic Streaming Processorの「LIVE STREAM」というラベルが付いたイーサネットポートに繋いだネットワークケーブルを、インターネットルーターまたはネットワークスイッチと接続し、ネットワークまたはインターネットに接続します。



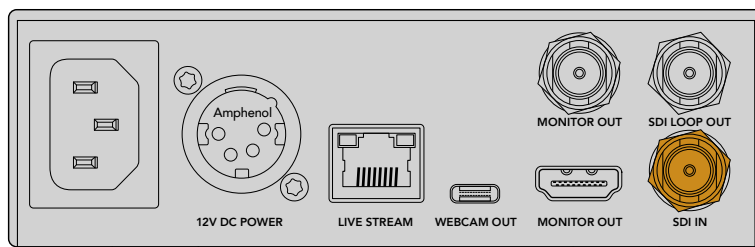
Blackmagic Streaming Processorは、デフォルトでDHCPに設定されており、即座にIPアドレスを見つけてます。適切に接続されたら、青のイーサネットアイコンがLCDホームスクリーンの右上に表示されます。静的IPアドレスで接続する必要がある場合は、後述の「Blackmagic Streaming Setup」セクションを参照してください。



ビデオソースの接続

配信したいSDIビデオソースを接続します。例えば、Blackmagic URSA Mini Pro 12KやSDI対応のATEMスイッチャーをBlackmagic Streaming EncoderのSDI入力に接続します。Blackmagic Streaming Encoderは12G-SDIに対応しており、ビデオ入力の変更されると、HDとUltra HD（最大2160p60まで）を自動的に切り替えます。

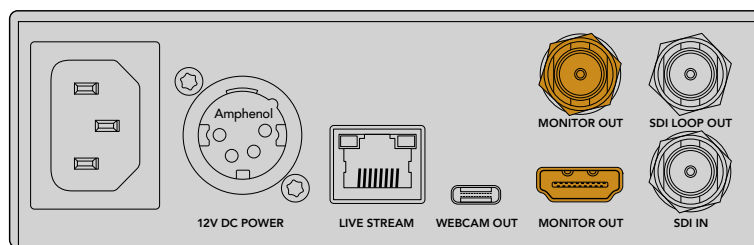
ビデオが接続されると、Streaming EncoderのLCDディスプレイに表示されます。オーディオは、SDIビデオ信号でビデオにエンベッドされます。これは、LCDのオーディオメーターで確認できます。



SDIビデオソースをBlackmagic Streaming EncoderのSDI入力に接続

モニターをStreaming Encoderに接続

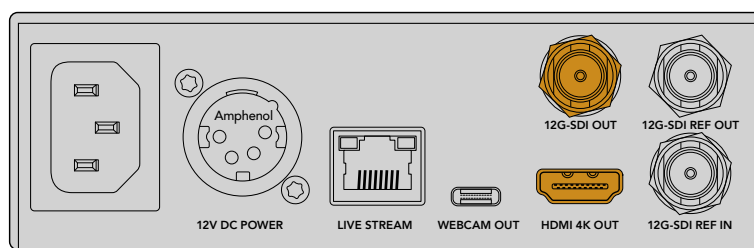
HDMIテレビやSDIモニターをBlackmagic Streaming Encoderのリアパネルにあるモニター出力に接続します。モニター出力では、配信している映像をモニタリングでき、オンエア・ステータス、データレート、オーディオレベルなどのビデオストリームの重要な情報を確認できます。モニター出力の詳細に関しては、「Streaming Encoderのモニター出力」セクションを参照してください。



テレビやモニターをBlackmagic Streaming Encoderに接続して、ストリームの重要な情報を確認

ビデオの送信先に接続

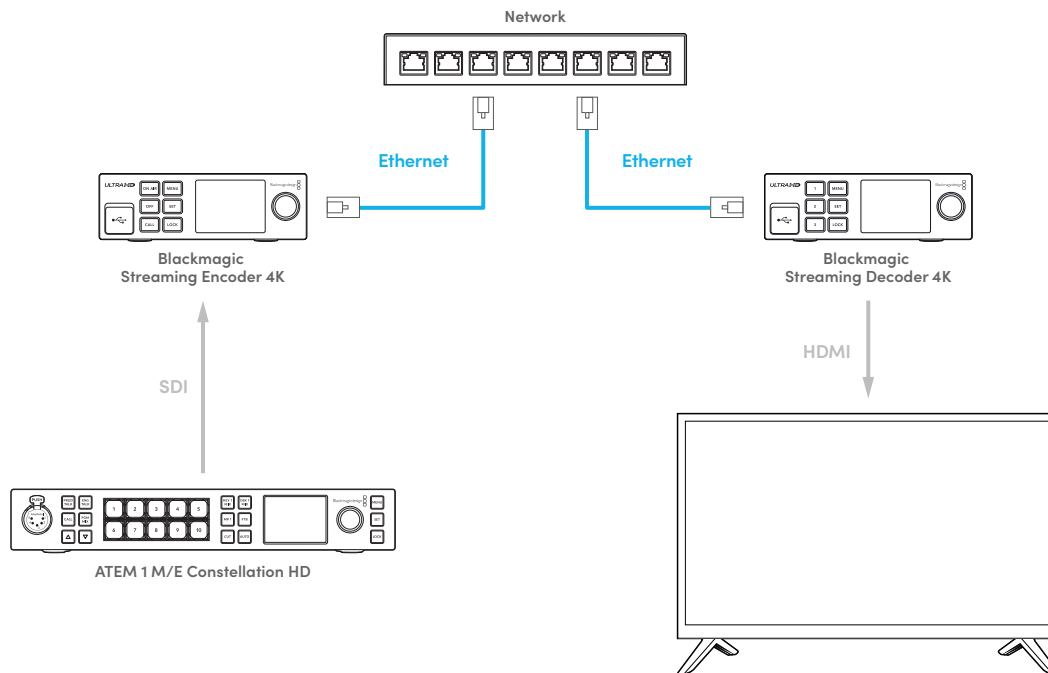
Blackmagic Streaming Decoderでは、SDI対応のATEMスイッチャーやHDMIテレビなどの送信先に、デコードしたストリームを送信できます。これを実行するには、ATEMスイッチャーを12G-SDI出力に接続し、テレビをHDMIコネクタに接続します。



ビデオの送信先をStreaming DecoderのSDIおよびHDMI出力に接続

ネットワークを介したシンプルな配信

接続後、全てが問題なく機能しているか確認するには、ローカルネットワークでBlackmagic Streaming EncoderとBlackmagic Streaming Decoder間におけるシンプルな配信をセットアップします。このセットアップは、会議室や大きな建物でビデオプロジェクターにライブ配信したい場合に便利です。以下は、ATEMスイッチャーからHDMIテレビへのシンプルな配信セットアップの例です。



Streaming ProcessorのフロントパネルにはLCDが搭載されており、重要な情報の確認や、ビデオとオーディオのモニタリングを実行できます。ノブとメニューボタンでは、Streaming Processorのメニュー設定にすばやくアクセスできるので、フロントパネルから配信のセットアップ、開始、停止を直接実行できます。

フロントパネルのLCDメニューで使用できる設定はすべて、Blackmagic Streaming Setupソフトウェアからも変更できます。各設定の詳細に関しては、後述の「Blackmagic Streaming Setup」セクションを参照してください。

シンプルな配信をセットアップする：

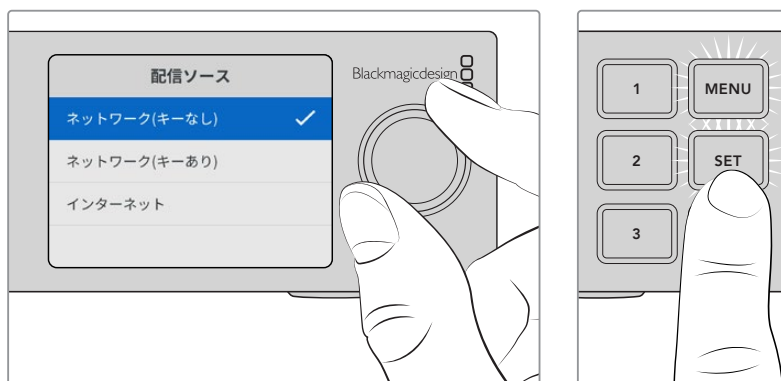
- 1 Blackmagic Streaming EncoderとBlackmagic Streaming Decoderを同じネットワークスイッチに接続します。

作業のこつ ネットワークスイッチを使用しない、さらにシンプルな2地点間のセットアップには、Blackmagic Streaming EncoderとBlackmagic Streaming Decoderを一本のイーサネットケーブルで接続します。

- 2 Blackmagic Streaming Decoderで、「MENU」ボタンを押してフロントパネルのLCDメニューを開き、「SET」を押して、「ライブ配信」サブメニューを開きます。

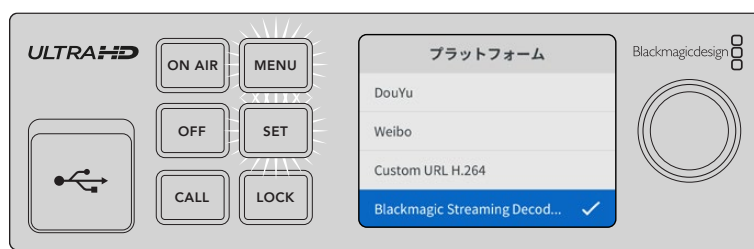


ノブを回して「配信ソース」を選択し、「SET」を押して、リストから「ネットワーク(キーなし)」を選択します。「SET」ボタンを押して選択を確定します。



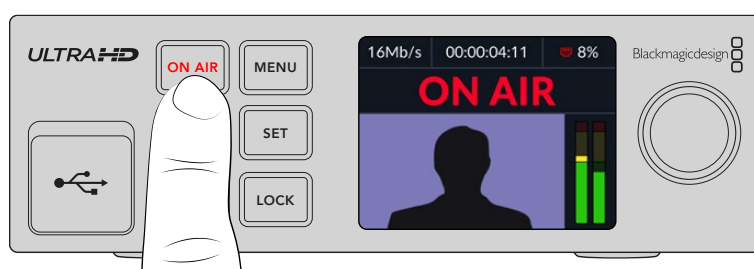
「MENU」ボタンを押すとホームスクリーンに戻ります。

- 3 Blackmagic Streaming Encoderで、「MENU」ボタンを押して「ライブ配信」メニューを開き、「SET」を押して、ノブを回転させて「プラットフォーム」設定までスクロールします。「SET」を押して「プラットフォーム」サブメニューを選択します。

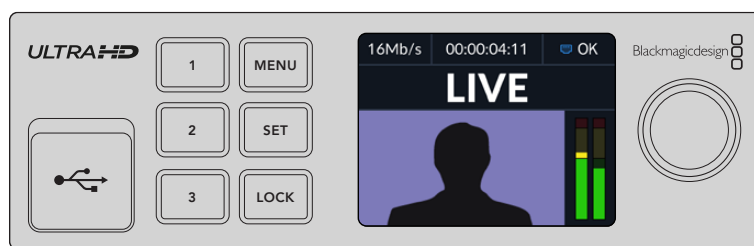


「プラットフォーム」のリストからBlackmagic Streaming Decoderを選択して、「SET」を押します。「MENU」ボタンを押すとホームスクリーンに戻ります。

- 4 Blackmagic Streaming Encoderのフロントパネルで「ON AIR」ボタンを押します。配信中はボタンが赤に点灯し、「ON AIR」という文字がLCDホームスクリーンに表示されます。



配信中の映像がBlackmagic Streaming DecoderのLCDディスプレイに表示されます。



Streaming DecoderのLCDに表示される「LIVE」インジケータ

配信を止めるには、Streaming Encoderのフロントパネルにある「OFF」ボタンを押します。

作業のこつ Blackmagic Streaming Encoderの「ON AIR」ボタンが点滅している場合、ライブ配信の開始に失敗したか、予期せずライブ配信が停止したことを意味します。これは、ネットワーク接続または配信設定が原因となっている可能性があります。配信設定およびネットワークケーブルの接続が適切かどうか確認してください。

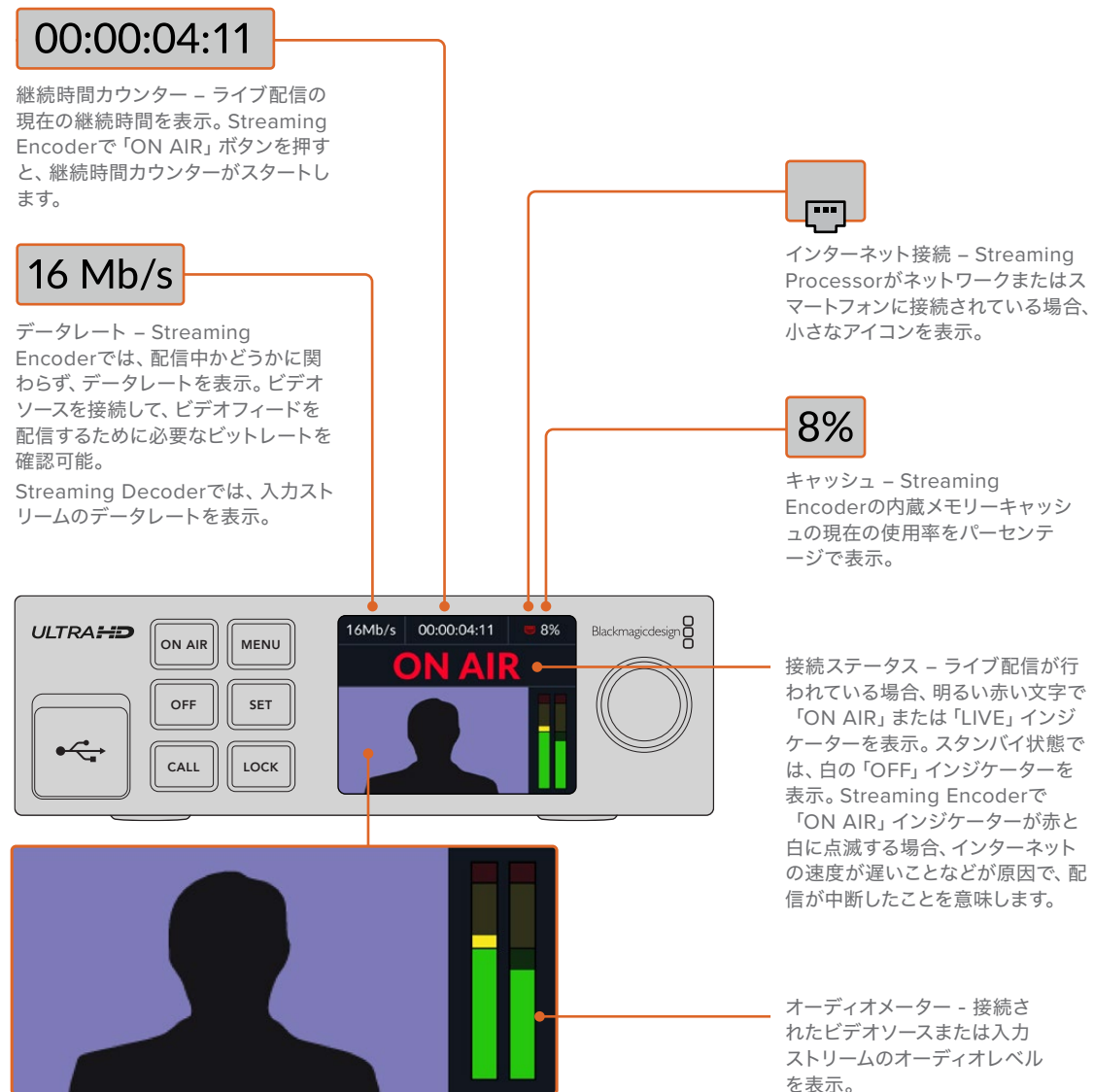
LOCKボタン

Streaming Processorのフロントパネルからのコントロールをロックするには、「LOCK」ボタンを1秒間長押しします。これにより、ボタンとノブが無効になるため、誤ってメニュー設定を変更したり、配信を停止してしまうことを防ぎます。

パネルのロックを解除するには、2秒間長押しします。

LCDディスプレイ

Blackmagic Streaming ProcessorのLCDホームスクリーンではビデオとオーディオのモニタリングが可能で、配信に関する重要な情報も確認できます。



接続アイコン

LCDディスプレイの右上に表示される接続アイコンは、Blackmagic Streaming Processorの現在の接続状況を表示します。



青のイーサネットアイコンは、イーサネットケーブルが接続されており、イーサネット接続での配信準備ができていない場合にのみ表示されます。



Blackmagic Streaming Encoderに表示される赤のイーサネットアイコンは、オンエア中で、イーサネット経由で配信されている場合にのみ表示されます。



青のスマートフォンアイコンは、テザリングしているスマートフォンのインターネット接続が配信に使用される準備ができていない場合にのみ表示されます。



Blackmagic Streaming Encoderに表示される赤のスマートフォンアイコンは、オンエア中で、テザリングしているスマートフォンを介して配信されている場合にのみ表示されます。

作業のこつ 接続アイコンが表示されない場合、Blackmagic Streaming Processorがネットワークやスマートフォンに接続されていません。ケーブルが適切に接続されているか確認してください。

Streaming Encoderのモニター出力

Blackmagic Streaming Encoderのモニター出力では、ビデオ入力、オーディオレベル、オンエア・ステータス、データレートおよびキャッシュレベル、SDI入力の技術情報などをモニタリングできます。



モニター出力は、データレートおよびキャッシュステータスなどの総合的な情報を表示

モニター出力の表示画面は8つのパネルで構成されています。以下は各パネルの説明とそれぞれに表示される情報です。

入力ビュー

メインパネルは、接続されているSDIビデオソースからの現在のビデオ入力を表示します。



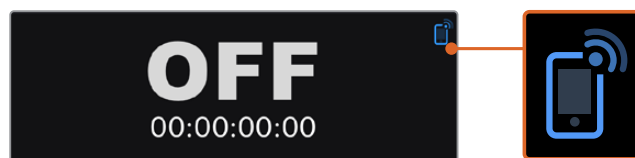
オンエア・ステータス

配信が行われていない状態では、インジケータは「OFF」と表示し、Streaming Encoderで放送の準備が整い、スタンバイ状態であることを示します。配信が始まると、インジケータは明るい赤で「ON AIR」と表示し、配信が停止されると表示が変わります。



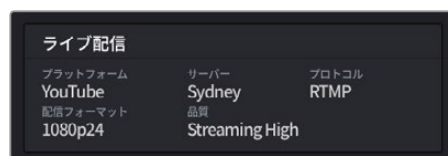
ON AIRインジケータの下は、継続時間カウンターです。Streaming Encoderで「ON AIR」ボタンを押すと、継続時間カウンターがスタートします。

Blackmagic Streaming Encoderがオフエアで、携帯電話でテザリングして配信される予定の場合、「OFF」の文字の横に青のスマートフォンアイコンが表示されます。オンエア中は、スマートフォンのアイコンは赤に点灯します。



ライブ配信

ライブ配信パネルには、ライブ配信の設定に関する情報が表示されます。これには、配信プラットフォーム、サーバー、プロトコルが含まれます。また、配信の解像度および品質設定も表示します。



ビデオ入力

ビデオ入力パネル上部に表示される5つのミニビューアは、ライブ配信の過去6秒を表示します。各ミニビューアは1.2秒の配信時間を表します。



ミニビューアの下では、Streaming EncoderのSDI入力に接続されたビデオ入力ソースに関する技術情報の詳細が確認できます。

入力フォーマット	SDIビデオ入力の解像度とフレームレートを表示します。Streaming Encoderは、2160p60までに対応しています。
カラリメトリ	SDIビデオ入力のカラースペースを表示します。Streaming Encoderは、Rec.601、Rec.709、Rec.2020カラースペースに対応しています。
SDI補助データ	補助データは、SDIビデオ入力にビデオに加えて送信されるデータです。これには、エンベデッドオーディオ、タイムコード、クローズドキャプションが含まれます。SDI入力に補助データが含まれている場合、「あり」と表示されます。
タイムコード	SDIビデオ入力ソースからのタイムコードを表示します。
クローズドキャプション	SDIビデオ入力にクローズドキャプションが含まれる場合、フォーマットが表示されます。CEA-608およびCEA-708フォーマットがサポートされています。
SMPTE 292 CRC	SDIビデオに対するエラーチェック機能です。Streaming EncoderがSDIビデオ入力の問題を検出すると、エラーを表示します。CRCエラーは、通常、SDIケーブルに問題がある場合やケーブルが長過ぎる場合に生じます。
輝度Yビットおよびクロマビット	「輝度Yビット」および「クロマビット」のインジケータは、SDIビデオ入力信号のアクティビティを表示します。各文字は、ビデオ信号の1ビットの状態を表します。 X - 「X」は、絶えず変化するビットを意味します。 L - 低ビット H - 高ビット 理解しやすいように、SDIオフセットは取り除かれています。例えば、ビデオがブラックの場合、すべてのビットが低くなります。 通常、SDIビデオ入力の全10ビットはXで表示されます。これは、ビデオストリームのすべてのビットが常に変化していることを意味します。SDI入力が8ビットのビデオである場合、右端2桁のビットにはデータが存在しないため、常に「L」と表示されます。ビットが「X」であるべきなのに、「L」や「H」として表示され続ける場合、「変化のないビット」であることを意味し、アップストリームビデオに問題がある可能性があります。

オーディオ入力

オーディオ入力パネルの上部のオーディオ波形は、ライブ配信の過去6秒間のオーディオ情報を表示します。波形は継続的に更新され、右から左にスクロールします。

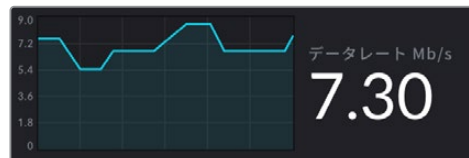


オーディオ波形表示の下では、オーディオ入力に関する技術情報の詳細を確認できます。

サンプリング周波数	SDI入力にエンベッドされているオーディオのサンプリング周波数レートを表示します。
エンファシス	オーディオソースのエンファシスオプションが有効になっているか表示します。
ソースのロック	オーディオソース周波数が外部リファレンスソースにロックされているか確認できます。
ワード長	SDI入力にエンベッドされているオーディオのビット深度を表示します。
オリジン	4文字でチャンネルの起点を表します。
時刻	フリーランタイムコード。
オーディオビット	SDI接続にエンベッドされたオーディオサンプルのビットアクティビティを表示します。オーディオチャンネルのステータスでオーディオが16、20、24ビットのいずれかで表示されていても、オーディオビットアクティビティで、実際のビット数を確認できます。
VUCP	VUCPビットは左から右に読みます。「V」は「Valid (有効性)」、「U」は「User (ユーザー)」、「C」は「Channel Status (チャンネルステータス)」、「P」は「Parity (パリティ)」を意味します。このフィールドはオーディオビットと同様に機能します。
サンプルアドレス	オーディオサンプルカウンター。
使用Auxビット	メインオーディオにAuxビットが使用されているかどうかを表示します。
オーディオチャンネル1~32	各文字は、SDI入力にエンベッドされたオーディオチャンネルを意味します。「P」は、オーディオチャンネルが使用されていることを示し、「-」は該当のチャンネルにオーディオがないことを意味します。

データレート

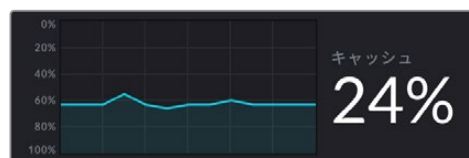
過去60秒間のエンコーダーの現在のデータレートを表示します。データレートは、メガビット/秒 (Mb/s) で測定されます。このインジケータは、オフエアでも常に表示されます。これにより、オンエア前に帯域幅を正確に確認できます。



キャッシュ

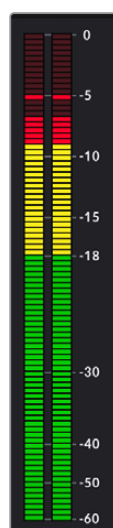
Blackmagic Streaming Encoderに内蔵されたメモリーバッファの現在の使用率を表示します。グラフは過去60秒間の使用量を示します。キャッシュは、小容量の内蔵メモリーで、プログラム出力を継続的に保存および再生します。これは、配信データレートがビデオを持続できるレベルを下回った場合に、安全対策として機能します。

インターネットの不安定さは、多くの場合、ネットワークの使用状況やワイヤレス信号の弱さが原因です。そのため、データレートが下がった場合、それに応じてバッファデータが増加します。接続速度がビデオ配信をサポートできなくなるまで遅くなった場合、キャッシュがビデオフレームを埋め合わせます。しかし、キャッシュが100%フルに達すると、ビデオ配信に影響が出るため、キャッシュがフルになることは可能な限り回避する必要があります。ビデオフィードを接続し、配信を始めない状態で、モニター出力のキャッシュ表示を確認することでテストできます。キャッシュが頻繁に100%に近づくようであれば、ライブ配信設定で低品質を選択します。



オーディオメーター

オーディオソースのレベルは、オーディオメーターでモニタリングできます。メーターは、Blackmagic Streaming Encoderのメニュー設定でPPMまたはVUレベルで表示するように設定できます。オーディオレベルが高過ぎる場合、メーターが赤くなります。これは、ライブ配信のオーディオが歪んだり、クリッピングが生じている可能性があることを意味します。オーディオが緑のセクションの上部付近に留まり、たまに黄色のセクションに達するように保つことが理想的です。



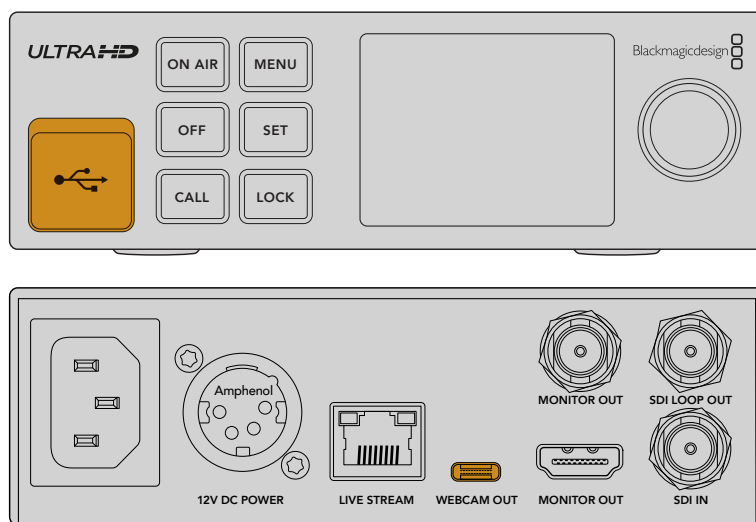
Blackmagic Streaming Setup

Blackmagic Streaming Setupは、設定の変更、ネットワークの設定、Blackmagic Streaming Processorの内部ソフトウェアのアップデート、配信設定ファイルの保存およびロードに使用するソフトウェアユーティリティです

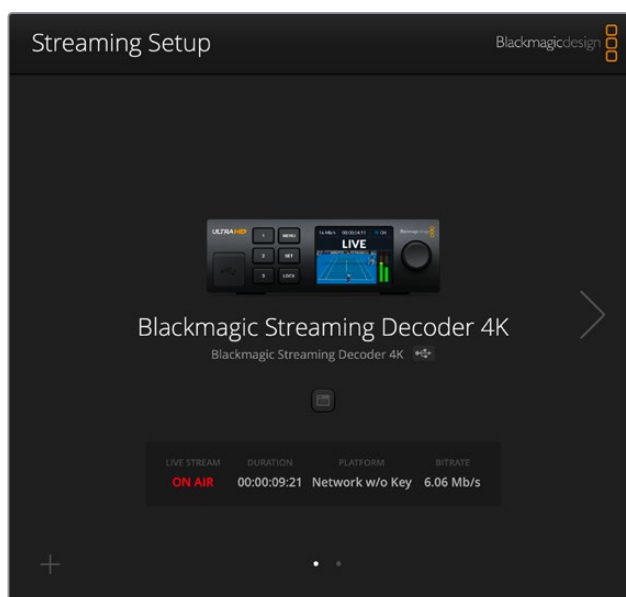
最新のBlackmagic Streaming Setupソフトウェアは、Blackmagic Designのサポートセンター (www.blackmagicdesign.com/jp/support) からダウンロードできます。

Blackmagic Streaming Setupを使用する：

- 1 Streaming ProcessorのフロントパネルまたはリアパネルのUSBポート経由でコンピューターに接続します。



- 2 Blackmagic Streaming Setupを起動します。Streaming Processorのモデル名が、ユーティリティのホーム画面に表示されます。
- 3 四角のセットアップアイコンか、Blackmagic Streaming Processorの画像をクリックして、設定を開きます。ネットワークに複数のStreaming Processorを接続している場合、セットアップウィンドウの左右の矢印をクリックして、アクセスしたいユニットまで進みます。



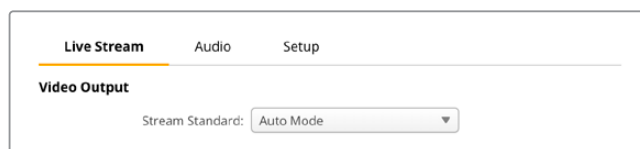
Live Stream (ライブ配信)

「Live Stream」タブには、Streaming Processorのライブ配信接続のコンフィギュレーションに必要な設定すべてが含まれています。

Streaming Encoder

Blackmagic Streaming Encoderの「Live Stream」タブには、配信品質、配信プラットフォームの選択およびコンフィギュレーション、XML配信設定ファイルのロードを設定できるメニューが含まれています。

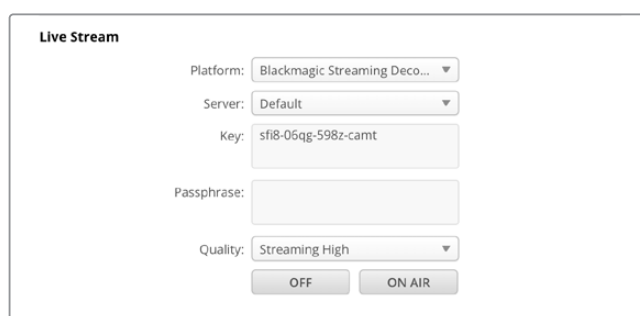
Video Output (ビデオ出力)



「Stream Standard」メニューをクリックして、配信に使用するビデオ解像度を選択します。720p25から2160p60までの範囲で選択できます。

Live Stream (ライブ配信)

「Live Stream」設定では、配信プラットフォームの選択、設定のコンフィギュレーション、配信品質の設定が可能です。



Platform (プラットフォーム)

「Platform」メニューをクリックして、放送に使用する配信プラットフォームを選択します。YouTube、Facebook、Twitchなどのオプションがあります。カスタム配信設定を読み込んでいる場合、ここにリストアップされます。

カスタムURLに配信するには、「Platform」メニューからカスタムURLのオプションを選択します。カスタムURLへの配信には、H.264またはH.265が選択できます。

Server (サーバー)

最寄りのサーバーをリストから選択します。サーバーのリストは、選択した配信プラットフォームにより異なります。

Instagram、Microsoft Teams、あるいはカスタムURLに配信している場合、サーバーのリストは編集可能なフィールドに変わります。配信プラットフォームのアカウントから割り当てられたURLまたはカスタムURLの詳細を入力します。

Key (キー)

配信プラットフォームから配信用に割り当てられたストリームキーを入力します。

Passphrase (パスフレーズ)

SRT配信プロトコルを用いた配信サービスを使用している場合は、配信プラットフォームのアカウントから割り当てられたパスフレーズを入力します。

Quality (品質)

配信の品質を選択します。以下の表は、H.264およびH.265コーデックのデータレートを示しています。

H.264	
HD	4K
HyperDeck High 45~70Mb/s	HyperDeck High 95~220Mb/s
HyperDeck Medium 25~45Mb/s	HyperDeck Medium 66~150Mb/s
HyperDeck Low 12~20Mb/s	HyperDeck Low 38~80Mb/s
Streaming High 6~9Mb/s	Streaming High 34~51Mb/s
Streaming Medium 4.5~7Mb/s	Streaming Medium 23~35Mb/s
Streaming Low 3~4.5Mb/s	Streaming Low 13~20Mb/s

H.265	
HD	4K
Streaming High 2.3~4.5Mb/s	Streaming High 22.5~30Mb/s
Streaming Medium 1.5~3Mb/s	Streaming Medium 14~20Mb/s
Streaming Low 0.8~2Mb/s	Streaming Low 8~10Mb/s

品質設定に使用されるデータレートは、Streaming Encoderが使用しているビデオフォーマットによって変わります。例えば「Streaming High」の品質を選択し、1080p24を使用している場合は、6 Mb/sのデータレートが使用されます。

表を見て分かる通り、配信データレートはHyperDeckレートより低くなっています。これにより、ディスクにデータを記録するのと比較して、概して低い帯域幅を使用するインターネットを介してデータを送信できます。

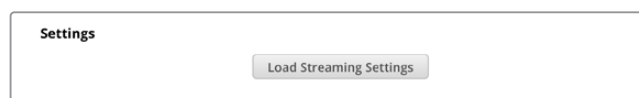
各設定で、2つの数値がデータレートとして記載されていますが、低い方の数値は低いフレームレート（24p、25p、30p）に使用され、高い方の数値は高いフレームレート（50p、60p）に使用されます。配信品質のデフォルト設定は、「Streaming High」です。この設定は、非常に高品質のチャンネル配信が可能です。

OFFおよびON AIRボタン

ライブ配信の開始と停止は「OFF」および「ON AIR」ボタンで操作できます。ライブ配信中、「ON AIR」ボタンは赤く点灯します。

Settings (設定)

「Load Streaming Settings (配信設定をロード)」ボタンをクリックし、表示に従うと、Blackmagic Streaming DecoderからXML配信設定ファイルをロードできます。

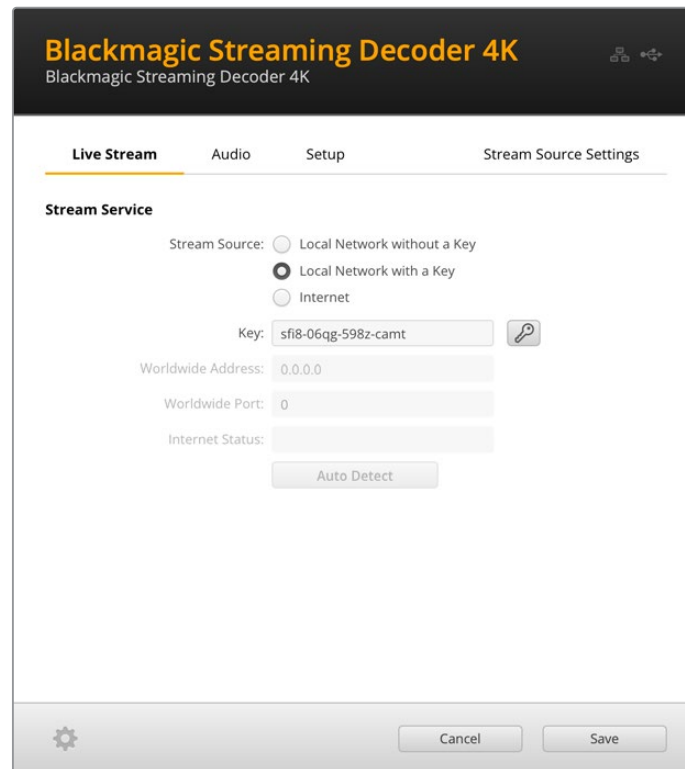


Remove Imported Settings (読み込んだ設定の削除)

読み込んだ配信設定すべてをBlackmagic Streaming Encoderから削除したい場合は、「Live Stream」タブの左下にある歯車アイコンをクリックします。「Remove (削除)」をクリックして、確定します。

Streaming Decoder

Blackmagic Streaming Decoderの「Live Stream (ライブ配信)」タブでは、配信ソースの選択やデコーダーのインターネット設定を実行できます。



Stream Service (配信サービス)

「Stream Service」では、遠隔にあるStreaming Encoderや、配信機能を内蔵しているBlackmagicカメラやATEMスイッチャーに、Streaming Decoderを接続する際の設定を行えます。

Stream Source (配信ソース)

「Stream Source」メニューでは、入力ソースを選択できます。オプションには、「Local Network without a Key (キーなしのローカルネットワーク)」、「Local Network with a Key (キーありのローカルネットワーク)」、「Internet (インターネット)」があります。

Key (キー)

メニュー内のBlackmagic Streaming Decoderには誰でも配信可能なため、ビデオリンクに侵入されることを防ぐために、ストリームキーを設定することをお勧めします。ネットワーク上の任意のStreaming Decoderを選択することは非常に簡単なので、複数のユーザーが配信を試みて、大きな混乱を招く可能性があります。

ストリームキーを設定することにより、それを防げます。これは、使用しているBlackmagic Streaming Decoderへのアクセスを制限するためのパスワードです。Streaming Setupウィンドウには、ストリームキーの入力フィールドが表示されるので、ここにパスワードを入力します。これにより、配信設定で同じストリームキーを入力したユーザーだけが、Blackmagic Streaming Decoderに接続できます。

任意のパスワードを設定することもできますが、Streaming Setupにはパスワード生成ボタンもあるので、安全性の高いパスワードをコンピューターが生成することも可能です。接続を許可したいユーザーに、このパスワードをコピー&ペーストして送信できます。接続を許可したいユーザーが、Blackmagic Streaming EncoderやBlackmagicカメラ、ATEMスイッチャーにパスワードを入力したら、該当のStreaming Decoderに接続する許可が与えられます。

インターネット接続

Blackmagic Streaming Decoderを接続する上で最も興味深い方法がインターネットを介した接続です。この方法は、Blackmagic Streaming EncoderやBlackmagicカメラ、ATEMスイッチャーが世界中どこからでもStreaming Decoderを見つけられるようにするため、少々複雑です。世界は広いので、これを機能させるには更にいくつかの設定を更新する必要があります。

必要な作業

インターネットで接続するには、Blackmagic Streaming Decoderと、Streaming Encoderやカメラ、ATEMスイッチャーの両方が、インターネットに接続されている必要があります。また、Streaming DecoderのパブリックIPアドレスが必要となり、時間の経過と共に変化しない固定アドレスが必要です。

そこで問題になるのが、Blackmagic Streaming Decoderがローカルのイーサネットネットワークに接続されていることです。インターネット接続を行うには、インターネットで見つけられるようにする必要があります。Streaming Decoderは、インターネットファイアウォールでポートフォワーディングを使用し、インターネット上のStreaming Encoderやカメラ、ATEMスイッチャーが、インターネット経由でStreaming Decoderに接続することを許可します。これをセットアップしていない場合、Streaming Encoderやカメラ、ATEMスイッチャーはStreaming Decoderを見つけることができません。

つまり、インターネットプロバイダーまたはネットワーク管理者に、インターネット接続のポートフォワーディングを「TCPポート1935」に設定するよう、依頼する必要があります。多くのインターネット接続およびファイアウォールは、ポートフォワーディングを自動的に設定するプロトコルを有するため、Blackmagic Streaming Decoderも、このポートフォワーディング機能を設定しようと試みます。つまり、Streaming Setup Utilityを使用して設定すると、Streaming Decoderがネットワーク機器と通信し、ユーザーに代わってポートフォワーディングをできる可能性があります。

インターネットへのアクセスを確認

さらに下には、インターネットステータスのフィールドがあります。Blackmagic Streaming Decoderは、インターネットへの接続を試み、すべてが適切に機能しているかユーザーに知らせます。このステータスが、接続されている状態を示すと良いサインです。これは、Streaming Decoderが、ポートフォワーディング設定を含むネットワーク機器を設定し、インターネットに適切に接続したことを示しています。

メモ 外部からのトラフィックのためにネットワークのポートを開くことで、ネットワークの安全性が下がることがあるので、心配な場合はインターネットプロバイダーまたはネットワーク管理者に確認してください。

このインターネットステータスに「Visible worldwide」と表示されない場合は、インターネットファイアウォールでポートフォワーディングをマニュアルで設定する必要があります。すべてのファイアウォールが、これらの情報を自動設定するプロトコルに対応しているわけではありませんが、マニュアルでの設定には対応しています。

ルーターコントロールにアクセスできない場合や、ポートフォワーディングの設定方法が分からない場合は、インターネットプロバイダーへの連絡が必要なことがあります。大規模なネットワークでは、ネットワークでの競合を避けるために、ポートフォワーディングについてネットワーク管理者に相談することを推奨します。

Internet Status (インターネットステータス)

インターネット接続を設定する際、インターネットステータス機能は、あらゆる問題の解決に役立ちます。表示される情報および問題の原因は以下の通りです。

Visible Worldwide (世界中から検出可能)	良いサインです。すべてが適切に動作しています。ポートフォワーディングが設定され適切に機能しており、Blackmagic Streaming Decoderはインターネットからビデオストリームを受信する準備ができています。
No Internet Access (インターネットへのアクセスなし)	Streaming Decoderが、インターネットに接続できません。ネットワーク設定とインターネット接続を確認してください。
Port Forwarding Error (ポートフォワーディングエラー)	インターネットに接続できますが、インターネットファイアウォールのポートフォワーディングをStreaming Decoder経由で設定できていないため、インターネットから受信できません。この設定は、ネットワーク管理者に依頼してください。
UPnP error (UPnPエラー)	このエラーメッセージは、Streaming Decoderがインターネットルーターでポートフォワーディングを設定できないことを示します。ネットワーク管理者に設定を依頼するか、ルーターのドキュメンテーションを参照してポートフォワーディングを設定してください。

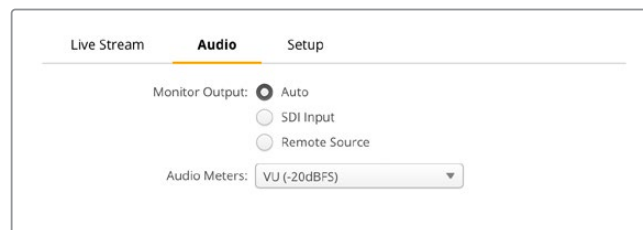
Auto Detect (自動検出)

「Auto Detect」ボタンをクリックすると、インターネット接続設定を自動的に検出します。

Audio (オーディオ)

「Audio」タブには、Streaming Processorのオーディオモニタリング出力用の設定に加え、トークバックおよびオーディオメーターのオプションが含まれます。

Streaming Encoder



Monitor Output (モニター出力)

「Monitor Output」オプションでは、Streaming EncoderのSDIおよびHDMIモニタリング出力に使用するオーディオソースを選択できます。

Auto (自動)

「Monitor Output」を「Auto」に設定すると、Streaming Encoderは、Blackmagic Streaming Decoderを介してATEMスイッチャーから送信されるトークバックオーディオを自動的に検出し、モニタリングできます。トークバックが検出されない場合、SDI入力からのオーディオが使用されます。

SDI Input (SDI入力)

「SDI Input」を選択すると、Streaming EncoderのSDI入力ソース（例えば、接続されているBlackmagic Studio Cameraなど）からのオーディオをモニタリングできます。

Remote Source (リモートソース)

このオプションは、遠隔のATEMスイッチャーまたはStreaming Decoderから送られるトークバックを使用する際に選択します。

Audio Meters (オーディオメーター)

「Audio Meters」メニューを使用して、表示するオーディオメーターの種類を選択します。選択できるリファレンスレベルのオプションは、VU -18dBFS、VU -20dBFS、PPM -18dBFS、PPM -20dBFSです。

Streaming Decoder

Streaming Decoderの「Audio」タブでは、トークバックチャンネルの選択、フロントパネルのLCDで表示するオーディオメーターのコンフィギュレーションが可能です。

The screenshot shows the 'Audio' tab of the Streaming Decoder interface. It has four sub-tabs: 'Live Stream', 'Audio' (selected), 'Setup', and 'Stream Source Settings'. Under the 'Audio' tab, there are two main sections: 'Talkback' and 'Audio Monitoring'. In the 'Talkback' section, there is a 'Return Audio:' label followed by four radio button options: 'Off', '1 and 2 Program Audio', '13 and 14 Engineering Audio', and '15 and 16 Talkback Audio'. The '15 and 16 Talkback Audio' option is selected. In the 'Audio Monitoring' section, there is a label 'Audio Meters:' followed by a dropdown menu currently showing 'VU (-20dBFS)'.

Talkback (トークバック)

この設定では、遠隔のBlackmagic Streaming Encoderに返信されるオーディオチャンネルを選択できます。オプションは、「Off」、「1 and 2 Program Audio (1 & 2 プログラムオーディオ)」、「13 and 14 Engineering Audio (13 & 14 エンジニアリングオーディオ)」、「15 and 16 Talkback Audio (15 & 16 トークバックオーディオ)」です。

Audio Monitoring (オーディオモニタリング)

「Audio Meters」メニューを使用して、フロントパネルのLCDに表示するオーディオメーターの種類を選択します。選択できるリファレンスレベルのオプションは、VU -18dBFS、VU -20dBFS、PPM -18dBFS、PPM -20dBFSです。

Setup (セットアップ)

「Setup」タブの設定では、Streaming Processorの名前の設定、ネットワーク設定の変更、出荷時設定へのリセットが実行できます。Blackmagic Streaming Decoderの「Setup」タブには、リファレンスタイミングとSDI出力を設定できるオプションが含まれています。

識別設定

識別設定を使用して、Streaming Processorの名前や言語を入力できます。

The screenshot shows the 'Setup' tab of the Streaming Decoder interface. It has four sub-tabs: 'Live Stream', 'Audio', 'Setup' (selected), and 'Stream Source Settings'. Under the 'Setup' tab, there are three input fields: 'Name:' with the text 'Blackmagic Streaming Decoder...', 'Language:' with a dropdown menu showing 'English', and 'Software:' with the text 'Version 4.0'. To the right of the 'Name' field is a 'Set' button. Below these fields is a 'Save Diagnostic Log' button.

カスタム名を設定すると、ネットワークに複数のBlackmagic Streaming Processorが接続されている場合に、適切なユニットを簡単に識別できます。また、ネットワークの場所の名前にもなります。

現在のソフトウェアバージョンも確認できます。

Network Settings (ネットワーク設定)

Network Location (ネットワークの場所)

「Network Location」は、レジストリに表示されるBlackmagic Streaming Processorの名前です。これは、Setup Utility上部の識別名に基づきます。数値のプレフィックスは無視されることに注意してください。

MAC Address (MACアドレス)

Streaming ProcessorのMACアドレスを表示します。MACアドレスは、各イーサネットポート固有のハードウェア識別子です。これは、MACアドレスに基づいてデバイスへのアクセスを制限するネットワーク・セキュリティシステムを設定する際に重要です。

Protocol (プロトコル)

「DHCP」および「Static IP (静的IPアドレス)」では、Streaming Processorをネットワークに接続する方法を設定できます。

DHCP	Blackmagic Streaming Processorシリーズは、デフォルトでDHCPに設定されています。DHCP (ダイナミック・ホスト・コンフィギュレーション・プロトコル) は、ネットワークサーバー上のサービスで、Streaming Processorを自動的に検出してIPアドレスを割り当てます。DHCPは、イーサネット経由で機材を簡単に接続でき、IPアドレスの競合が生じない非常に優れたサービスです。コンピューターやネットワークスイッチの多くは、DHCPをサポートしています。
Static IP (静的IPアドレス)	ネットワークの詳細をマニュアルで入力する場合は「Static IP」を選択します。すべてのユニットの通信を可能にするためにIPアドレスをマニュアルで設定する際、全ユニットが同一のサブネットマスクとゲートウェイ設定を共有している必要があります。

静的IPアドレスを使用していて、ネットワーク上にIPアドレスの識別番号が同じデバイスが存在する場合、競合が生じるためユニットは接続されません。競合が生じた場合は、ユニットのIPアドレスの識別番号を変更してください。

例えば、競合するアドレスが192.100.40.30の場合、最後の数値フィールドを30以外の値に変更します。新しい番号も既に使用されている場合は、他の機器で使用されていない番号が見つかるまで番号を変更し続けてください。

Connection Priority (優先接続)

Blackmagic Streaming Processorにイーサネットと携帯電話の両方が接続されている場合、配信に使用する接続をこの設定で選択できます。携帯電話でのテザリングに関しては「スマートフォンを使用した配信」セクションを参照してください。

Allow utility administration (ユーティリティ管理を可能にする)

この設定で「via USB (USB経由)」を選択すると、設定変更は、USBで接続しているコンピューターのみに制限されます。これにより、ネットワーク上の誰かが誤って設定を変更することを防ぎます。

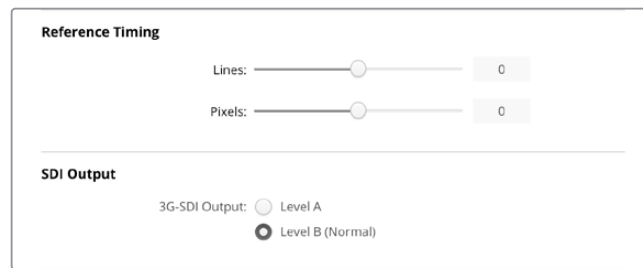
Reset (リセット)

「Factory Reset (出荷時設定にリセット)」をクリックすると、Blackmagic Streaming Processorが出荷時の設定に戻ります。「SET」ボタンを押すと、操作を実行するか確認する画面が表示されます。「Reset (リセット)」をクリックして、操作を確定します。



Streaming Decoder

Blackmagic Streaming Decoderの「Setup」タブには、識別設定とネットワーク設定以外に、以下の設定が含まれています。



Reference Timing (リファレンスタイミング)

リファレンスタイミングをラインまたはピクセルベースでマニュアル調整できます。Blackmagic Streaming Decoderは、アナログの3値シンクとブラックバーストの両方のビデオリファレンス入力に対応しています。また、SDI入力もリファレンスとして使用できます。リファレンスは、大規模な放送局で使用されます。施設内のすべてのビデオが同期していることで、大規模なシステムでのスイッチングが可能です。

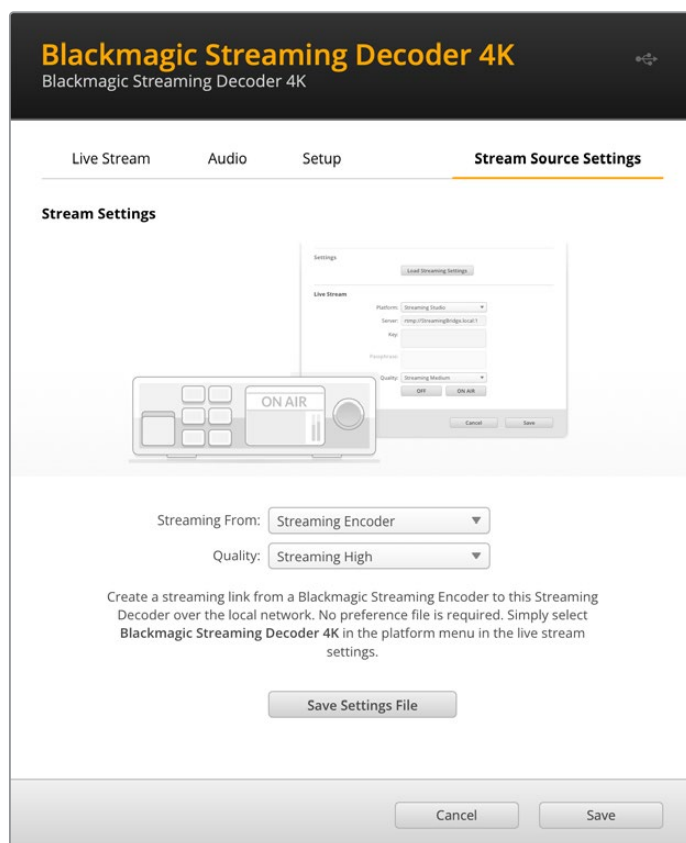
SDI Output (SDI出力)

一部の放送機器は、Level AあるいはLevel Bの3G-SDIビデオのみに対応しています。他の放送機器との互換性を保つには、対応する3G-SDIのタイプを選択してください。デフォルト設定はLevel Bです。

Stream Source Settings (配信ソース設定)

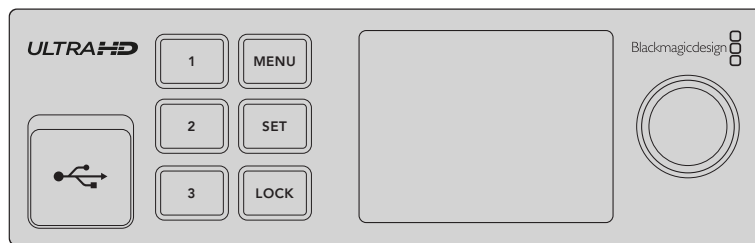
Blackmagic Streaming Decoderの「Stream Source Settings」タブでは、配信設定のXMLファイルを作成できます。これは、遠隔のStreaming Encoder、または配信機能を内蔵しているBlackmagicカメラやATEMスイッチャーにロードして使用できます。

配信設定のXMLファイルの作成方法は、次のセクションの「放送リンクの作成」を参照してください。



放送リンクの作成

Blackmagic Streaming Processorシリーズでは、インターネットで世界各地に、あるいはローカルネットワークを介してビデオを配信できます。



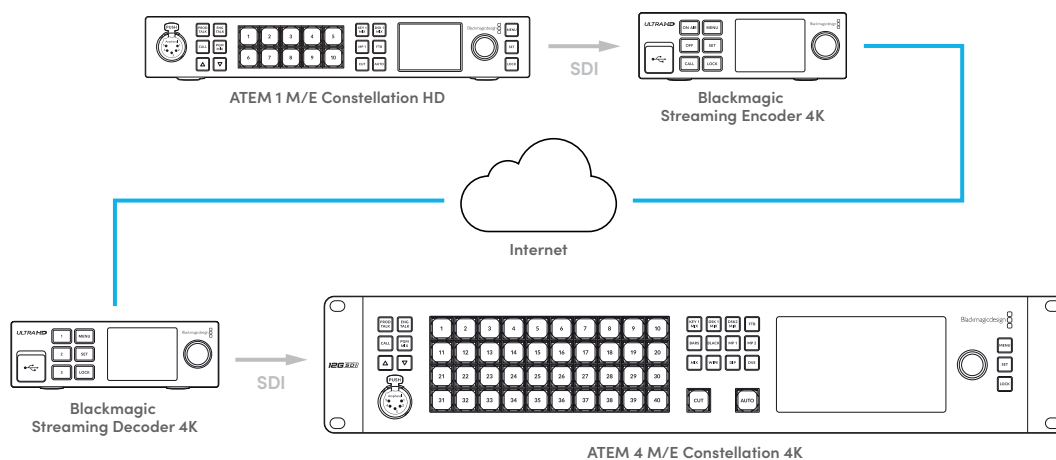
Blackmagic Streaming DecoderがStreaming Encoderと同じネットワーク上にある場合、Blackmagic Streaming Setupの「Live Stream」タブの「Platform」メニューにリスト表示されます。ローカルネットワークでの配信設定に関しては「はじめに」セクションを参照してください。

インターネットを介して配信したい場合、あるいはローカルネットで配信するにあたって、セキュリティのためにストリームキーを使用する場合、Streaming Decoderから配信設定のXMLファイルを作成できます。このファイルは、Blackmagic Streaming Setupを使用して、Blackmagic Streaming Encoderにロードできます。

作業のこつ 配信機能を内蔵しているBlackmagicカメラやATEMスイッチャー用に配信設定のXMLファイルを書き出すことも可能です。設定ファイルの読み込みに関しては、BlackmagicカメラまたはATEMスイッチャーのマニュアルを参照してください。

Blackmagic Streaming Processorシリーズを共に使用する良い例としては、天気予報のレポート映像を遠隔地からスタジオに送信することが挙げられます。ロケ先から送信するために必要なものは、Streaming Encoderとインターネット接続だけです。スマートフォンでのテザリング、またはネットワークへの接続のいずれかでインターネットに接続します。

スタジオでは、Blackmagic Streaming Decoderがインターネットフィードを受信してSDIに変換するので、スタジオにあるメインのスイッチャーに接続できます。



この例のワークフローをセットアップする：

- 1 ロケ地で、Blackmagic Streaming EncoderをATEMスイッチャーのSDIプログラム出力に接続します。例えば、ATEM 1 M/E Constellation HDです。
- 2 Blackmagic Streaming Encoderをスマートフォンに接続します。
- 3 スタジオでは、イーサネットを介してBlackmagic Streaming Decoderをインターネットに接続します。
- 4 Streaming Decoder 4Kは、インターネットからSDIに変換されたビデオフィードをニュース放送用にスタジオのスイッチャーのSDI入力に送信します。

スタジオでStreaming DecoderをStreaming Encoderのインターネットフィードに接続するには、Blackmagic Streaming Setupを起動し、インターネット設定をコンフィギュレーションする必要があります。これには、配信の全設定を含むXMLファイルの生成も含まれます。このXMLファイルは、ロケ地にあるStreaming Encoderにロードできます。

XMLファイルの作成

XML設定ファイルを作成するには、ネットワークケーブルをBlackmagic Streaming Decoderの「LIVE STREAM (ライブ配信)」ポートから、インターネットルーターまたはネットワークスイッチにつなげて、インターネットに接続します。

Streaming DecoderをUSB-Cケーブルでコンピューターに接続し、Blackmagic Streaming Setupを起動します。「Live Stream (ライブ配信)」タブをで、ネットワーク設定が正しいか確認し、「Stream Service (配信サービス)」で「Internet (インターネット)」を選択します。「Internet Status (インターネットステータス)」に「Visible Worldwide (世界中から検出可能)」と表示されます。これは、すべてが正常に機能していることを意味します。Streaming Decoderのコンフィギュレーションに関する詳細は「Blackmagic Streaming Setup」セクションの「Stream Service (配信サービス)」を参照してください。

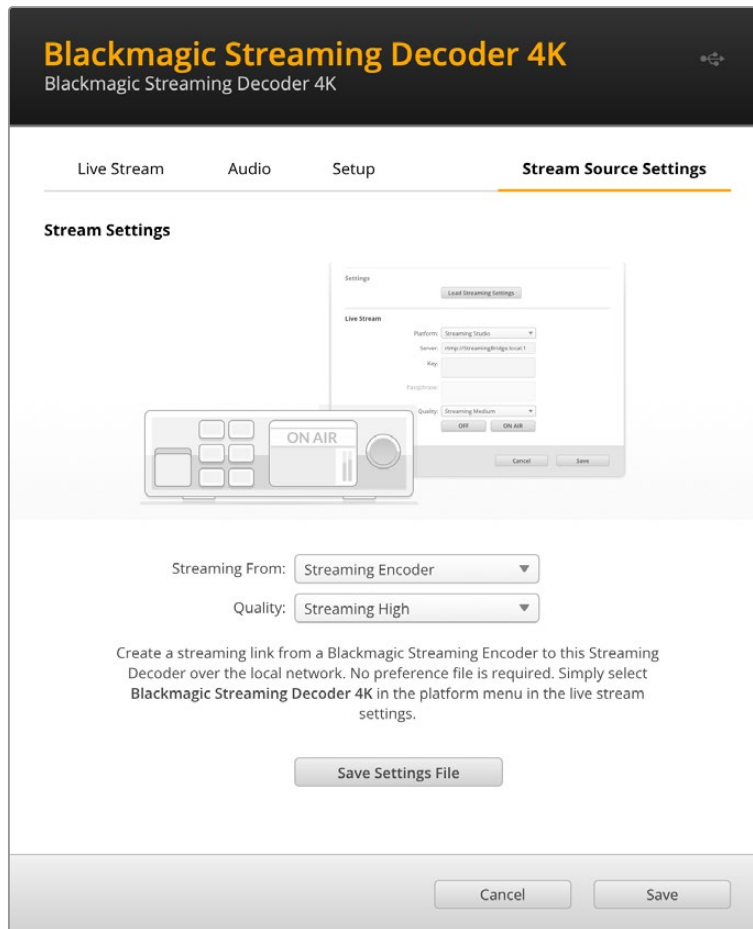
ポートフォワーディングに関して

「Internet Status (インターネットステータス)」に、ポートフォワーディングやUPnPに関するエラーが表示されている場合、インターネットプロバイダーまたはネットワーク管理者に、使用しているインターネット接続でポートフォワーディングを「TCP port 1935」に設定するように依頼する必要があります。

XMLファイルの書き出し

Blackmagic Streaming Setupの「Setup」タブで設定を確認し、Streaming Decoderをネットワークまたはインターネットに接続したら、XML設定ファイルを書き出せます。

- 1 ウィンドウ右上の「Stream Source Settings (配信ソース設定)」タブをクリックします。



- 2 「Streaming From (配信元)」メニューで「Streaming Encoder」を選択します。
配信機能を内蔵しているBlackmagicカメラやATEMスイッチャー用に配信設定のXMLファイルを作成する場合、「Streaming From」メニューで「ATEM Switcher」か「Blackmagic Camera」を選択します。
- 3 配信の品質を選択します。これにより、リモートのBlackmagic Streaming Encoderの品質が設定されます。
- 4 「Save Settings File (設定ファイルを保存)」ボタンをクリックし、コンピューター上でファイルを保存する場所を選択します。

設定ファイルを保存したら、Blackmagic Streaming Encoderを離れた場所で操作している担当者にメールで送信します。

作業のこつ 「Audio」タブのトークバック設定では、リモートのStreaming Encoderに送り返すオーディオチャンネルを選択できます。

XMLファイルのローディング

ロケ先に設定ファイルを電子メールで送信すると、ロケ地のスタッフはBlackmagic Streaming Setupを使用して、XMLをBlackmagic Streaming Encoderにロードできます。その後は「ON AIR」ボタンを押すだけで、スタジオへの天気予報の配信を開始できます！

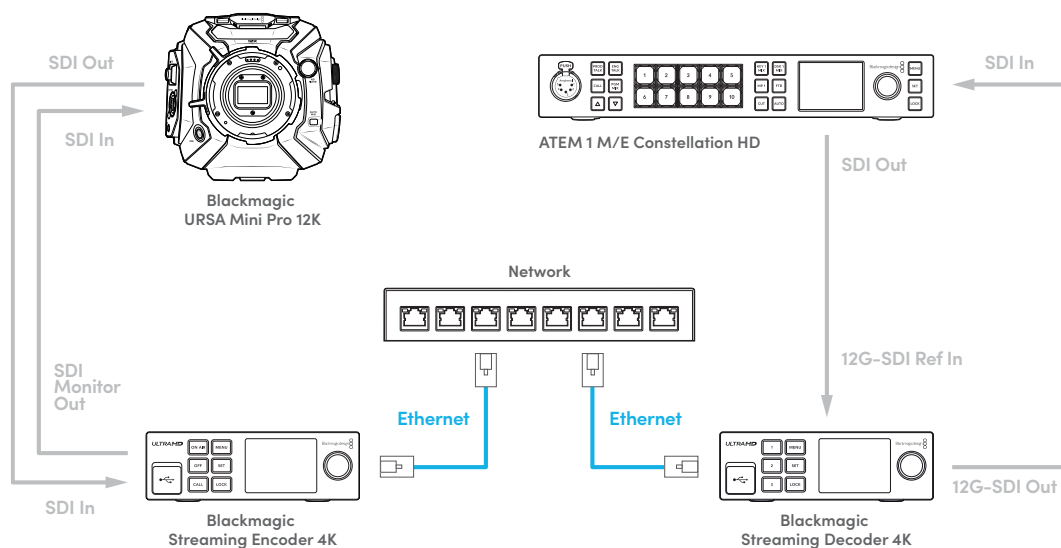
配信用のXMLファイルを一度ロードしたら、その後ロードを繰り返すことなく配信を開始・停止できます。これにより、Streaming EncoderとStreaming Decoderを繋ぐ、継続的なビデオリンクを簡単にセットアップできます。

スタジオにあるStreaming Decoderの配信およびネットワーク設定が変更されず、またStreaming DecoderがStreaming Encoderを探し続ける限り、インターネット上の場所に関わらず、必ずStreaming Encoderを見つけることができます。ロケ先など、場所を問わず、Streaming Encoderをインターネットに接続し、「ON AIR」を押すと、スタジオのStreaming Decoderに即座に配信を開始します。

トークバック、タリー、カメラコントロール

Blackmagic Streaming Processorシリーズは、ATEMスイッチャーからのタリー、トークバック、カメラコントロールの情報を送信できます。つまり、SDIベースのBlackmagic Designカメラをローカルネットワーク内や、インターネットを介して世界各地のあらゆる場所にセットアップして、タリー、トークバック、カメラコントロール機能を使用できます。

設定は極めてシンプルです。以下の図は、URSA Mini Pro 12Kをローカルネットワークを介して、ATEM 1 M/E Constellation HDに接続し、タリー、トークバック、カメラコントロールを使用する方法です。



すべての機器が接続されたら以下を実行します：

- 1 Blackmagic Streaming Encoderの「MENU」ボタンを押してLCDメニューを開き、「ライブ配信」メニューに進みます。
- 2 「プラットフォーム」メニューでBlackmagic Streaming Decoderを選択します。
- 3 「SET」を押して確定します。

タリーを機能させるためには、カメラのATEMカメラIDをスイッチャーの入力にマッチさせる必要があります。ATEMカメラIDの設定方法に関しては、URSA Miniマニュアルを参照してください。

カメラをATEMスイッチャーのプログラム出力に切り替えることで、タリーが機能しているかテストできます。カメラでATEMカメラIDが適切に設定されている場合、タリーライトが点灯し、カメラのLCDの周囲にタリーの赤い枠が表示されます。カメラをプレビュー出力に切り替えると、タリーが緑に点灯します。

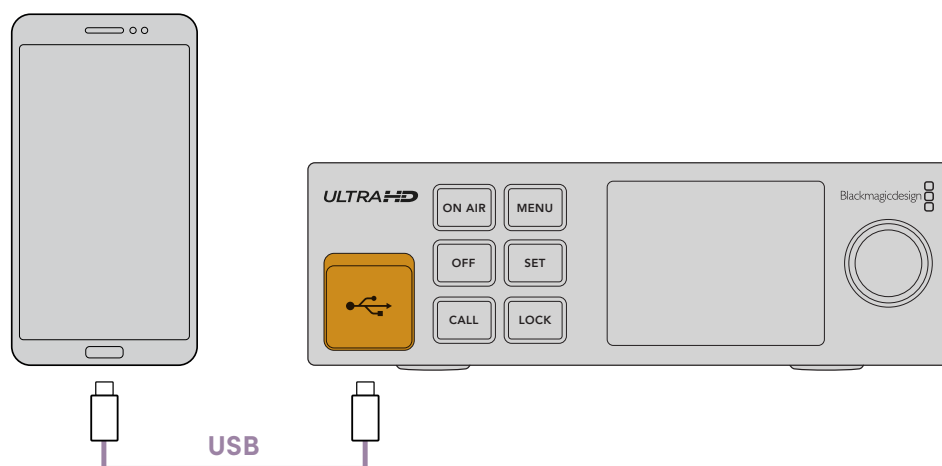
ATEM Software Controlのカメラページで、アイリスとペDESTALを調整し、カメラコントロールが機能しているかテストします。

エンベッドされたSDIオーディオチャンネルの15と16が、デフォルトのトークバックチャンネルとして設定されていますが、Blackmagic Streaming Setupで、エンジニアチャンネルの13と14またはプログラム出力に変更することが可能です。

インターネット経由で送信している場合、Blackmagic Streaming SetupでXML設定ファイルが作成されます。このXMLファイルは、Blackmagic Streaming Encoderにロードされるので、インターネット上でBlackmagic Streaming Decoderを検出することが可能です。XML設定ファイルの作成およびローディング方法に関しては、前のセクションを参照してください。

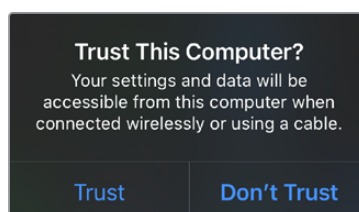
スマートフォンを使用した配信

Blackmagic Streaming Processorシリーズは、スマートフォンをテザリングしてインターネットに接続できます。まず、スマートフォンをStreaming Processorの前面または背面にあるUSB-Cポートに接続します。この接続により、セットアップがすばやく行え、スマートフォンが4Gまたは5G接続を得られるサービスエリア内であれば、あらゆる場所からストリームを送受信できます。



携帯電話のテザリングをセットアップする：

- 1 iOSデバイスでは「Settings」に進み、「Personal Hotspot」を開きます。「Allow Others to Join」を有効にします。
- 2 接続したコンピューターが信頼できるものかを確認するメッセージが表示されます。「Trust」を選択すると、緑のテザリングアイコンが画面に表示されます。この手順により、接続が適切に機能しているか確認できます。



テザリングが有効の状態では、スマートフォンの時計が緑のバックグラウンドアイコン内に常に表示されます。

Androidデバイスでは、スクリーンをスワイプして、クイック設定パネルを表示します。ホットスポットアイコンを長押しして、USBテザリングを有効にします。

作業のこつ 配信が終了したら、スマートフォンのバッテリーを節約するためにテザリング接続をオフにすることをお勧めします。

インターネットへのライブ配信

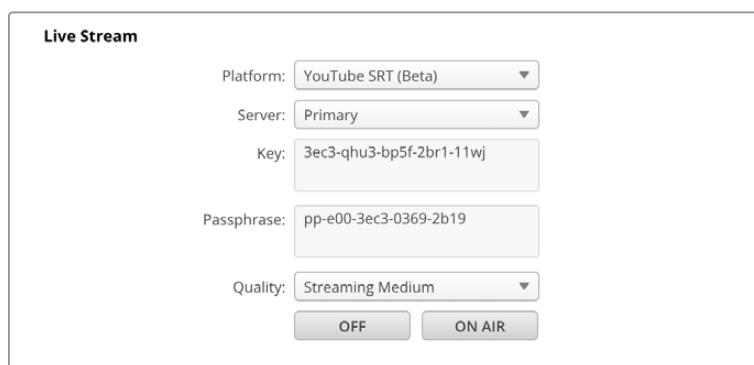
Blackmagic Streaming Encoderでは、YouTube、Facebook、Twitchなどのインターネット配信プラットフォームへ直接配信できます。この例では、YouTube Liveでの配信用のセットアップを行います。

- 1 YouTube Studioのアカウントからストリームキーをコピーします。
- 2 Blackmagic Streaming Setupを立ち上げ、「Live Stream (ライブ配信)」タブに進みます。
- 3 プラットフォームをYouTube、サーバーを「Primary (プライマリー)」に設定します。YouTubeのストリームキーをコピーし、「Key (キー)」フィールドにペーストして、配信品質を選択します。「Save」をクリックします。
- 4 これで、世界に向けて配信する準備が整いました！「ON AIR」ボタンをクリックするか、フロントパネルの「ON AIR」ボタンを押します。放送が終了したら、「OFF」ボタンを押すと配信を停止できます。

SRT配信プロトコルの使用

SRT (Secure Reliable Transport) では、RTMPと比較して、低遅延の配信が可能です。また、SRTは、暗号化キーのように機能するパスフレーズを使用することでセキュリティを向上できます。

配信サービスでSRTプロトコルを使用する場合は、配信サービスのアカウントからパスフレーズとストリームキーをコピーし、Blackmagic Streaming Setupの「Key (キー)」と「Passphrase (パスフレーズ)」フィールドにペーストします。



Setup Utilityの「Passphrase」フィールドにパスフレーズをペースト

技術的に経験豊富な放送局が配信設定をカスタマイズしたい場合は、RTMPまたはSRTプロトコルとH.264またはH.265コーデックの両方をXMLファイルで変更できます。詳細は「Developer Information」セクションの「Blackmagic Streaming XML Format」を参照してください。

ウェブカム出力の使用

ZoomやMicrosoft Teamsなどのソフトウェアは、Blackmagic Streaming Processorをウェブカムとして自動的に設定するので、アプリケーションを起動すると、ビデオストリームが即座に表示されます。アプリケーションがカメラを自動的に選択しない場合は、Streaming EncoderまたはStreaming Decoderをウェブカムおよびマイクとして使用するようマニュアルで設定します。

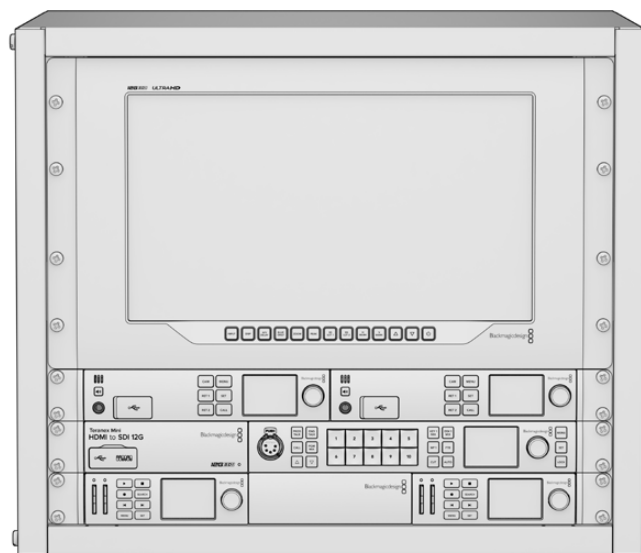
以下は、Microsoft Teamsでウェブカメラを設定する方法です。

- 1 Blackmagic Streaming Processorのリアパネルにある「WEBCAM OUT (ウェブカム出力)」に、USB-Cケーブルでコンピューターを接続します。
- 2 Teamsのメニューバーで、「設定」を開き、「デバイス」を選択します。
- 3 オーディオパネルで、「マイク」メニューをクリックし、オーディオソースとして「Blackmagic Design」を選択します。
- 4 ビデオ設定に進み、「カメラ」メニューからBlackmagic Streaming Processorを選択します。

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelfは1Uラックの棚で、様々なBlackmagic Design機器を放送用ラックやロードケースに設置できます。モジュラー方式なので、同じ1Uラックの形状の製品を設置して、ポータブルで、実用的な機材のセットアップを構築できます。

以下の図は、3つのUniversal Rack Shelfを小さなラックに設置し、互換性のある様々なユニットをマウントした例です。一番下の棚には1/3ラック幅のブランクパネルが取り付けられており、ユニット間の使用されていないスペースをカバーしています。



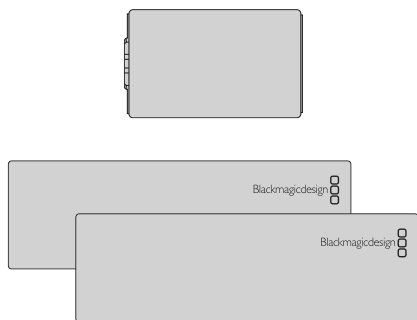
内容品

Universal Rack Shelf Kitには、以下が含まれます：



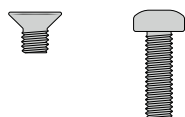
Blackmagic Universal Rack Shelf x1

1Uラック幅。Blackmagic Design機器の設置に使用。



ブランクパネル

1/6ラック幅 x1、1/3ラック幅 x2。使用されていないスペースをカバーするために使用。



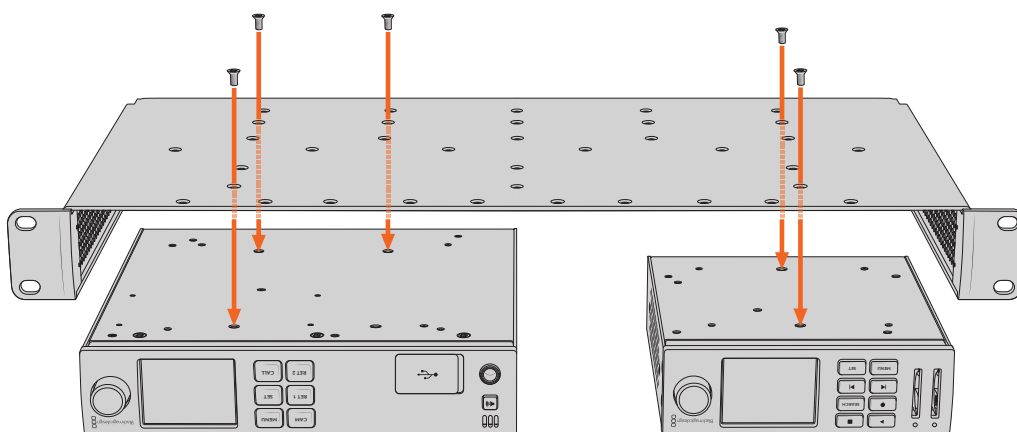
ネジ

M3 (5mm) マウント用の皿頭ネジ x12

M3 (9mm) 1/6ラック幅ブランクパネル用の皿小ネジ x2

Universal Rack Shelfにユニットをマウントする

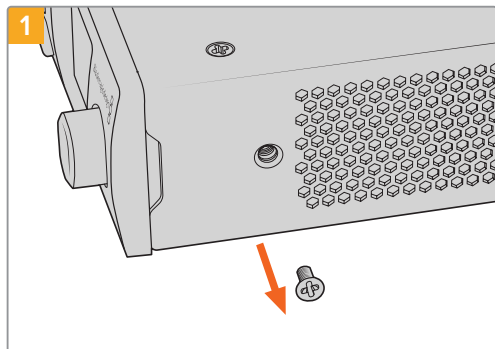
- 1 ゴム製の脚が付いている場合は、先端がプラスチックのスクレーパーでユニットから脚を取り外します。
- 2 棚とユニットの両方を上下逆さまにして置き、棚のプレートの穴とユニットのマウント用のネジ穴が揃うように配置します。1/3ラック幅の製品には中央に2つのマウントポイント、1/2ラック幅の製品には最大3つのマウントポイントがあります。



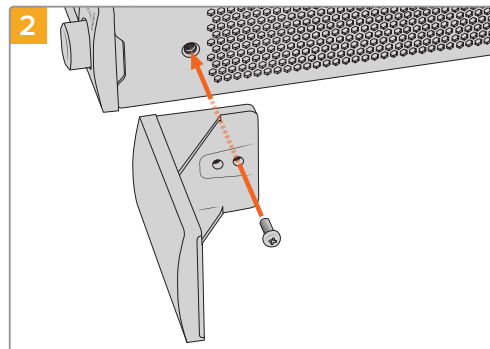
- 3 同梱のM3 (5mm) 皿頭ネジで、ユニットを棚にネジ留めします。
 - 4 固定されたら、棚の向きを元に戻し、補助金具を使用してラックに取り付けます。
- 同梱のブランクパネルは、空いているスペースをカバーできます。

1/6ラック幅ブランクパネルの取り付け

1/6ラック幅ブランクパネルは、1/2ラック幅と1/3ラック幅のユニットを並べてマウントしている場合に、空いているスペースをカバーできます。パネルは、ユニットのどちら側にも取り付けられます。空気の循環を考慮して、ユニットとユニットの間にパネルを設置することをお勧めします。



フロントの前面近くにあるM3 (5mm) 皿頭ネジを取り除きます。



ブランクパネルをネジ穴に揃え、同梱のM3 (9mm) ネジで固定します。

1/3ラック幅ブランクパネルの取り付け

1/3ラック幅ブランクパネルは、1台のユニットをマウントする場合に、棚のどちら側にも取り付けられます。ブランクパネルを取り付けるには、パネル底部のネジ穴と固定ポイントを棚と揃え、同梱のM3 (5mm) 皿頭ネジを2本使ってパネルを固定します。

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend	
↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```


Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

SHUTDOWN:↵

Action: Reboot↵

↵

ACK↵

↵

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

SHUTDOWN:↵

Action: Factory Reset↵

↵

ACK↵

↵

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/  
Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

ヘルプ

ヘルプライン

すぐに情報が必要な方は、Blackmagic Designオンラインサポートページで、Blackmagic Streaming Processorの最新サポート情報を確認できます。

Blackmagic Designオンラインサポートページ

最新のマニュアルは、Blackmagic Designサポートセンターで確認できます。

www.blackmagicdesign.com/jp/support

Blackmagic Designフォーラム

弊社ウェブサイトのBlackmagic Designフォーラムは、様々な情報やクリエイティブなアイデアを共有できる有益なリソースです。経験豊富なユーザーやBlackmagic Designスタッフによって、すでに多くの問題の解決策が公開されていますので、このフォーラムを参考にすることで、現在の問題をすばやく解決できることがあります。ぜひご利用ください。Blackmagicフォーラムには、<http://forum.blackmagicdesign.com>からアクセスできます。

Blackmagic Designサポートへの連絡

サポートページやフォーラムで必要な情報を得られなかった場合は、サポートページの「メールを送信」ボタンを使用して、サポートのリクエストをメール送信してください。あるいは、サポートページの「お住まいの地域のサポートオフィス」をクリックして、最寄りのBlackmagic Designサポートオフィスに電話でお問い合わせください。

規制に関する警告



欧州連合内での電気機器および電子機器の廃棄処分

製品に記載されている記号は、当該の機器を他の廃棄物と共に処分してはならないことを示しています。機器を廃棄するには、必ずリサイクルのために指定の回収場所に引き渡してください。機器の廃棄において個別回収とリサイクルが行われることで、天然資源の保護につながり、健康と環境を守る方法でリサイクルが確実に行われるようになります。廃棄する機器のリサイクルのための回収場所に関しては、お住まいの地方自治体のリサイクル部門、または製品を購入した販売業者にご連絡ください。



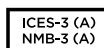
この機器は、FCC規定の第15部に準拠し、クラスAデジタル機器の制限に適合していることが確認されています。これらの制限は、商業環境で機器を使用している場合に有害な干渉に対する妥当な保護を提供するためのものです。この機器は無線周波エネルギーを生成、使用、放出する可能性があります。また、指示に従ってインストールおよび使用しない場合、無線通信に有害な干渉を引き起こす恐れがあります。住宅地域で当製品を使用すると有害な干渉を引き起こす可能性があります、その場合はユーザーが自己責任で干渉に対処する必要があります。

動作は次の2つを条件とします：

- 1 本機は、有害な干渉を起こさない。
- 2 本機は希望しない動作を発生しかねない干渉を含む、いかなる受信干渉も受け入れる必要がある。



R-R-BMD-20201201001
R-R-BMD-20201201002



ISED Canadaステートメント

本機は、カナダのクラスAデジタル機器の規格に準拠しています。

本機のいかなる改造、あるいは目的の用途以外での使用は、これらの規格への順守を無効にすることがあります。

HDMIインターフェースへの接続は、必ず高品質のシールドHDMIケーブルを使用する必要があります。

本機は、商用環境で目的の用途に順守した使用においてテストを行なっています。非商用環境で使用された場合、無線妨害を引き起こす可能性があります。

安全情報

必ず保護接地のあるコンセントに接続してください。

感電のリスクを減らすため、水が跳ねたり、滴るような場所には置かないでください。

この機器は、周囲温度が最高40°Cまでの熱帯地区での使用に対応しています。

気温-20°Cから60°C、相対湿度の0%から90%（結露なし）の場所に保管してください。

通気が妨げられないように、当製品の周囲は通気に十分なスペースを開けるようにしてください。

ラックマウントする場合は、隣接する機器により通気が妨げられないようにしてください。

ユーザーが保守できる部品はありません。サービスに関しては、お近くのBlackmagic Designのサービスセンターにお問い合わせください。



海拔2000m以上では使用しないでください。

カリフォルニア州ステートメント

この製品のユーザーは、プラスチック部品内の微量の多臭素化ビフェニルなどの化学物質にさらされる可能性があります。カリフォルニア州は、多臭素化ビフェニルは発がん性があり、先天異常や生殖機能へ危害を及ぼす物質であると認識しています。

詳細は、以下のウェブサイトをご確認ください。www.P65Warnings.ca.gov

保証

36ヶ月限定保証

Blackmagic Designは、お買い上げの日から36ヶ月間、Blackmagic Streaming Processorの部品および仕上がりについて瑕疵がないことを保証します。しかし、コネクタ、ケーブル、光ファイバーモジュール、ヒューズ、バッテリーについては、それらの部品および仕上がりについて瑕疵がないことに対する保証は12ヶ月間です。この保証期間内に製品に瑕疵が見つかった場合、Blackmagic Designは弊社の裁量において部品代および人件費無料で該当製品の修理、あるいは製品の交換のいずれかで対応いたします。

この保証に基づいたサービスを受ける際、お客様は必ず保証期限終了前にBlackmagic Designに瑕疵を通知し、適応する保証サービスの手続きを行ってください。お客様の責任において不良品を梱包し、Blackmagic Designが指定するサポートセンターへ配送料前払で送付いただきますようお願い致します。理由の如何を問わず、Blackmagic Designへの製品返送のための配送料、保険、関税、税金、その他すべての費用はお客様の自己負担となります。

不適切な使用、または不十分なメンテナンスや取扱いによる不具合、故障、損傷に対しては、この保証は適用されません。Blackmagic Designはこの保証で、以下に関してサービス提供義務を負わないものとします。a) 製品のインストールや修理、サービスを行うBlackmagic Design販売代理人以外の者によって生じた損傷の修理、b) 不適切な使用や互換性のない機器への接続によって生じた損傷の修理、c) Blackmagic Designの部品や供給品ではない物を使用して生じたすべての損傷や故障の修理、d) 改造や他製品との統合により時間増加や製品の機能低下が生じた場合のサービス。

この保証はBlackmagic Designが保証するもので、明示または黙示を問わず他の保証すべてに代わるものです。Blackmagic Designとその販売社は、商品性と特定目的に対する適合性のあらゆる黙示保証を拒否します。Blackmagic Designの不良品の修理あるいは交換の責任が、特別に、間接的、偶発的、または結果的に生じる損害に対して、Blackmagic Designあるいは販売社がそのような損害の可能性についての事前通知を得ているか否かに関わらず、お客様に提供される完全唯一の救済手段となります。Blackmagic Designはお客様による機器のあらゆる不法使用に対して責任を負いません。Blackmagic Designは本製品の使用により生じるあらゆる損害に対して責任を負いません。使用者は自己の責任において本製品を使用するものとします。

© Copyright 2025 Blackmagic Design 著作権所有、無断複写・転載を禁じます。「Blackmagic Design」、「DeckLink」、「HDLINK」、「Workgroup Videohub」、「Multibridge Pro」、「Multibridge Extreme」、「Intensity」、「Leading the creative video revolution」は、米国ならびにその他諸国での登録商標です。その他の企業名ならびに製品名全てはそれぞれ関連する会社の登録商標である可能性があります。

ThunderboltおよびThunderboltのロゴは、米国またはその他諸国のIntel Corporationの登録商標です。

Blackmagic Streaming Processors



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Chère cliente, cher client,

Merci d'avoir fait l'acquisition d'un Blackmagic Streaming Processor.

Le Blackmagic Streaming Encoder se branche directement aux équipements SDI, convertit le signal en H.264 ou H.265 et vous permet de streamer sur des plateformes de streaming populaires, telles que YouTube Live, Facebook Live et Twitch. Vous pouvez également transmettre de la vidéo de qualité broadcast point à point à l'aide du Blackmagic Streaming Decoder. Ainsi, il est facile de transmettre de la vidéo professionnelle à distance via Internet.

Le Blackmagic Streaming Decoder vous permet de recevoir un stream depuis le Blackmagic Streaming Encoder et de le convertir en vidéo SDI ou HDMI. Vous bénéficiez même de fonctionnalités telles que le tally, le réseau d'ordres et le contrôle caméra, ce qui le rend idéal pour les productions en direct ! Le Streaming Decoder décode aussi les streams provenant de caméras Blackmagic et de mélangeurs ATEM qui disposent du streaming intégré.

Ce manuel d'instruction contient toutes les informations dont vous aurez besoin pour installer et utiliser votre Blackmagic Streaming Processor.

Consultez notre page d'assistance sur www.blackmagicdesign.com/fr pour obtenir la dernière version du manuel et les mises à jour du logiciel interne du Blackmagic Streaming Processor. Enfin, veuillez enregistrer votre équipement lors du téléchargement du logiciel afin que nous puissions vous tenir informé des mises à jour.

Nous souhaitons continuer à améliorer nos produits, n'hésitez donc pas à nous faire part de vos commentaires !

A stylized, handwritten signature in black ink that reads "Grant Petty". The script is fluid and cursive, with a long horizontal line extending from the end of the name.

Grant Petty,

PDG de Blackmagic Design

Sommaire

Mise en route	145	Utiliser la sortie webcam	173
Connecter l'alimentation	145	Blackmagic Universal Rack Shelf	173
Se connecter à un réseau	146	Contenu	174
Connecter une source vidéo	146	Installer un appareil sur l'Universal Rack Shelf	174
Connecter un moniteur au Streaming Encoder	147	Fixer la plaque d'obturation de 1/6	175
Connecter des destinations vidéo	147	Fixer la plaque d'obturation latérale de 1/3 de largeur	175
Streaming simple sur un réseau	147	Developer Information	176
Écran LCD	150	Blackmagic Streaming Encoder Ethernet Protocol	176
Icônes de connexion	151	Protocol Blocks	178
Sortie de monitoring du Streaming Encoder	151	Streaming Encoder Control REST API	188
Blackmagic Streaming Setup	156	Event Control API	190
Live Stream (Stream en direct)	157	Livestream Control API	190
Audio	161	Monitor Output Control API	195
Setup (Réglages)	162	System Control API	196
Stream Source Settings (Réglages des sources de streaming)	165	Notification websocket - 1.0.0 messages	198
Créer des liens broadcast	166	Device Properties	199
Créer le fichier XML	167	Blackmagic Streaming XML Format	201
Exporter le fichier XML	167	Aide	208
Charger le fichier XML	169	Avis réglementaires	209
Réseau d'ordres, tally et contrôle caméra	169	Informations de sécurité	210
Streamer à l'aide de votre smartphone	171	Garantie	211
Streaming en direct sur Internet	172		

Mise en route

Pour commencer à utiliser votre Blackmagic Streaming Processor, connectez-le simplement à une source d'alimentation, branchez un câble réseau et connectez votre source et vos destinations vidéo.



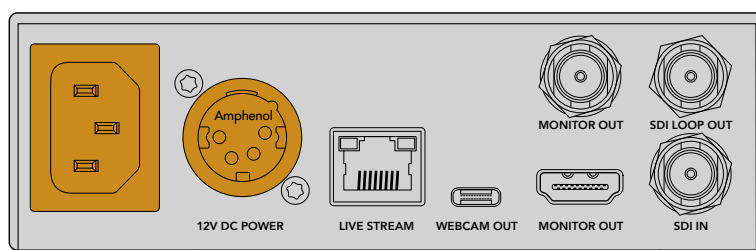
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

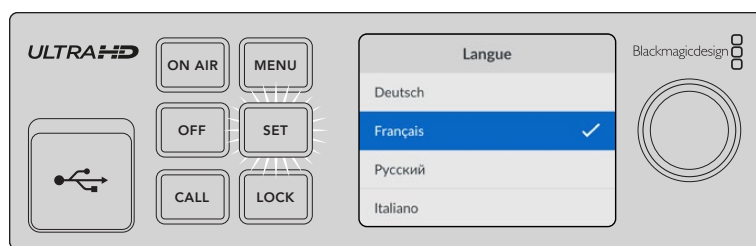
Connecter l'alimentation

Pour alimenter l'appareil, branchez un câble d'alimentation CEI standard au connecteur d'alimentation situé sur le panneau arrière de votre processeur de streaming.



Les Blackmagic Streaming Encoder et Streaming Decoder disposent tous deux d'une entrée d'alimentation 12V DC supplémentaire. Vous pouvez également utiliser cette entrée si vous souhaitez connecter une alimentation externe ou redondante via un système d'alimentation externe sans coupure ou une batterie 12V.

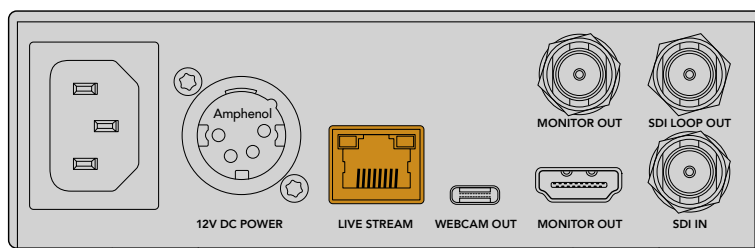
Une fois l'appareil alimenté, un message sur l'écran LCD vous demandera de choisir une langue. À l'aide de la molette, faites défiler jusqu'à la langue désirée et appuyez sur le bouton clignotant **Set**.



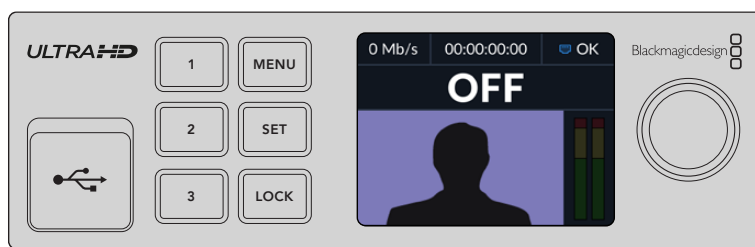
Appuyez sur le bouton **Set** pour confirmer votre langue.

Se connecter à un réseau

Connectez votre Blackmagic Streaming Processor à votre réseau ou à Internet en branchant un câble réseau du port Ethernet **Live stream** à un routeur Internet ou un commutateur réseau.



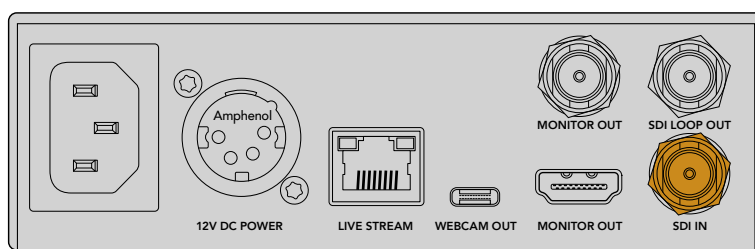
Votre processeur de streaming Blackmagic est configuré par défaut sur DHCP et devrait trouver immédiatement une adresse IP. Une fois la connexion établie avec succès, vous verrez une icône Ethernet bleue s'afficher dans le coin supérieur droit de l'écran d'accueil LCD. Si vous devez vous connecter à l'aide d'une adresse IP statique, veuillez consulter la section « Réglages de streaming Blackmagic » de ce manuel.



Connecter une source vidéo

Connectez la source vidéo SDI que vous souhaitez streamer, par exemple une Blackmagic URSA Mini Pro 12K ou un mélangeur ATEM SDI à l'entrée SDI du Blackmagic Streaming Encoder. Le Blackmagic Streaming Encoder prend en charge le 12G-SDI et commute automatiquement entre les normes HD et Ultra HD jusqu'à 2160p60 lorsque l'entrée vidéo change.

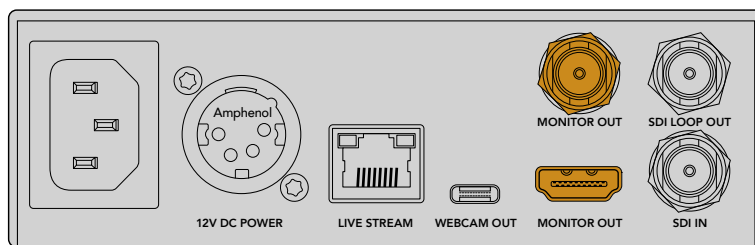
Lorsque la vidéo est connectée, elle s'affiche sur l'écran LCD de votre Streaming Encoder. L'audio est intégré à la vidéo sur les signaux vidéo SDI, ce qui se confirme en observant les indicateurs audio sur l'écran LCD.



Connectez votre source vidéo SDI à l'entrée SDI du Blackmagic Streaming Encoder

Connecter un moniteur au Streaming Encoder

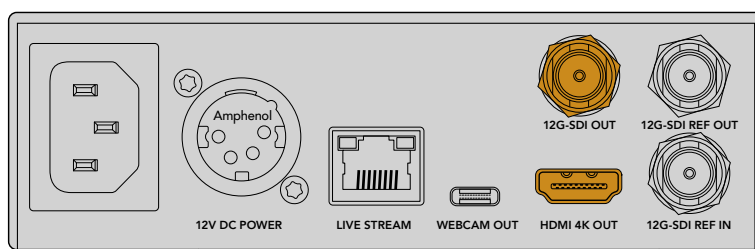
Branchez un téléviseur HDMI ou un moniteur SDI à l'une des sorties de monitoring du panneau arrière du Blackmagic Streaming Encoder. La sortie de monitoring vous permet de contrôler votre broadcast et d'afficher des informations importantes sur votre stream vidéo, comme l'état On air, le débit de données et les niveaux audio. Vous pouvez en apprendre davantage sur la sortie de monitoring dans la section « Sortie de monitoring du Streaming Encoder » de ce manuel.



Connectez un téléviseur ou un moniteur au Blackmagic Streaming Encoder pour voir des informations importantes sur votre stream

Connecter des destinations vidéo

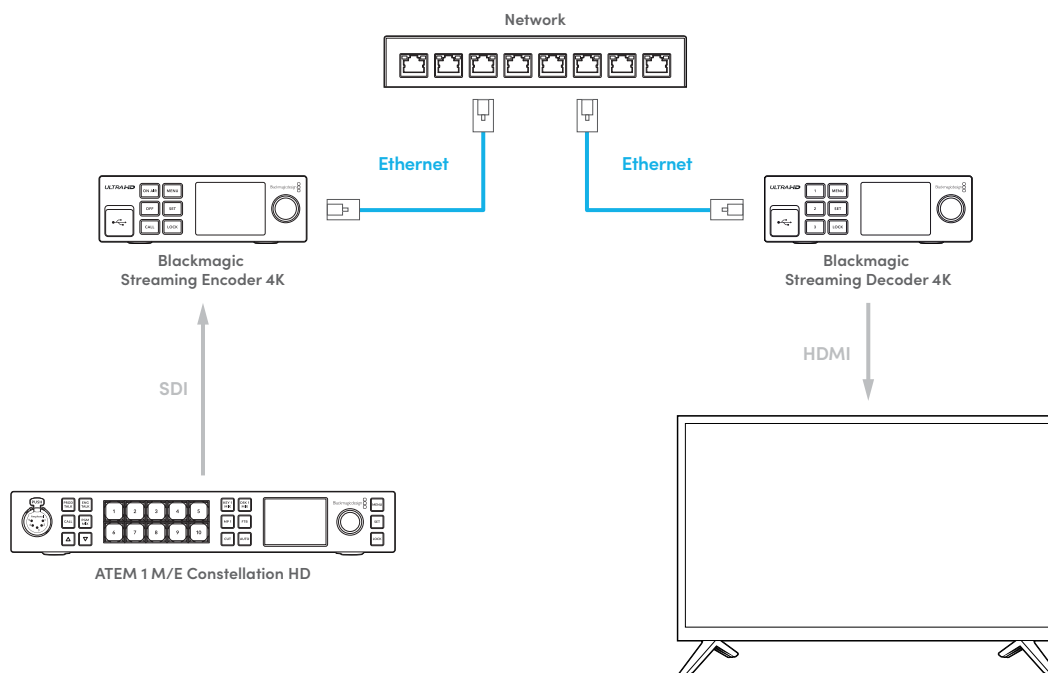
Avec le Blackmagic Streaming Decoder, vous souhaitez probablement envoyer le flux décodé vers une destination, par exemple un mélangeur SDI ATEM et un téléviseur HDMI. Il suffit de brancher le mélangeur ATEM à la sortie 12G-SDI et le téléviseur au connecteur HDMI.



Connectez les destinations vidéo aux sorties SDI et HDMI du Streaming Decoder

Streaming simple sur un réseau

Une fois connecté, un bon moyen de tester que tout fonctionne correctement est de configurer un stream simple entre le Blackmagic Streaming Encoder et le Blackmagic Streaming Decoder sur un réseau local. Cette configuration peut être très utile pour envoyer un stream en direct vers une salle de conférence ou un vidéoprojecteur dans un grand bâtiment. L'exemple ci-dessous montre une configuration de streaming simple d'un mélangeur ATEM à un téléviseur HDMI.



Le panneau avant de votre processeur de streaming est doté d'un écran LCD qui affiche des informations importantes et vous permet de contrôler la vidéo et l'audio. La molette et les boutons de menu permettent un accès rapide aux paramètres de menu de votre processeur de streaming, afin que vous puissiez configurer, démarrer et terminer un stream directement depuis le panneau avant.

Tous les paramètres des menus disponibles sur l'écran LCD du panneau avant peuvent également être modifiés à l'aide du Blackmagic Streaming Setup. Pour des informations détaillées sur chaque paramètre, consultez la section « Blackmagic Streaming Setup » de ce manuel.

Pour configurer un stream simple :

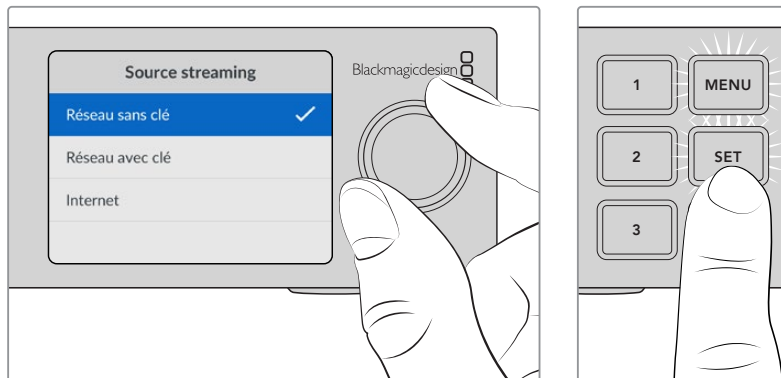
- 1 Connectez le Blackmagic Streaming Encoder et le Blackmagic Streaming Decodeur au même commutateur réseau.

CONSEIL Pour une configuration point à point encore plus simple sans utiliser de commutateur réseau, connectez le Blackmagic Streaming Encoder et le Blackmagic Streaming Decoder à l'aide d'un seul câble Ethernet.

- 2 Sur le Blackmagic Streaming Decoder, appuyez sur le bouton **Menu** pour ouvrir le menu LCD du panneau avant, puis appuyez sur **Set** pour ouvrir le sous-menu **Stream en direct**.

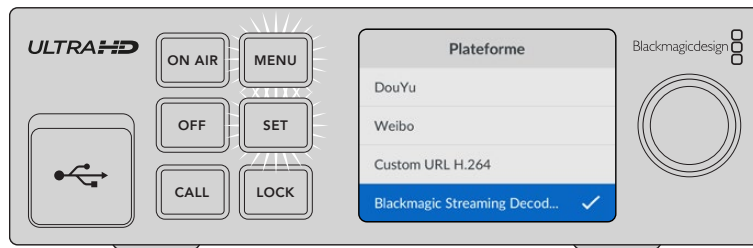


Tournez le bouton pour sélectionner **Source streaming**, appuyez sur **Set** et sélectionnez **Réseau sans clé** dans la liste. Appuyez sur **Set** pour confirmer.



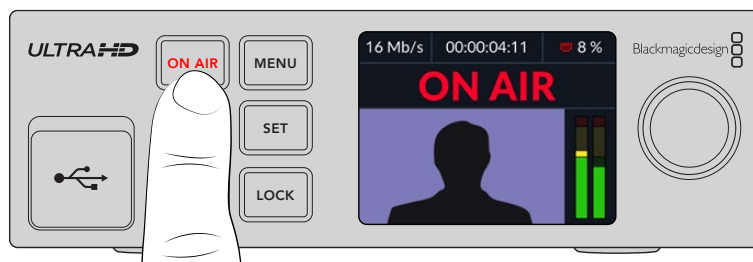
Appuyez sur le bouton **Menu** pour revenir à l'écran d'accueil.

- 3 Sur le Blackmagic Streaming Encoder, appuyez sur le bouton **Menu** pour ouvrir le menu **Stream en direct**, appuyez sur **Set** et tournez le bouton pour faire défiler jusqu'aux paramètres **Plateforme**. Appuyez sur **Set** pour sélectionner le sous-menu **Plateforme**.

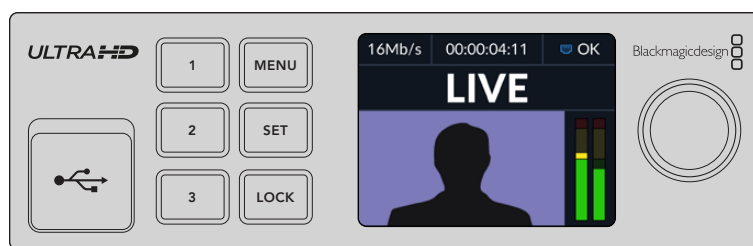


Sélectionnez votre Blackmagic Streaming Decoder dans la liste **Plateforme** et appuyez sur **Set**. Appuyez sur **Menu** pour revenir à l'écran d'accueil.

- 4 Appuyez sur le bouton **On air** du panneau avant du Blackmagic Streaming Encoder. Le bouton s'allume en rouge pendant le streaming et **On air** s'affiche sur l'écran d'accueil LCD.



Vous verrez votre stream sur l'écran LCD du Blackmagic Streaming Decoder.



Un indicateur **Live** s'affiche sur l'écran LCD du Streaming Decoder

Pour arrêter le streaming, appuyez sur le bouton **Off** sur le panneau avant du Streaming Encoder.

CONSEIL Si le bouton **On air** clignote, le stream en direct n'a pas démarré ou s'est arrêté de manière inattendue. C'est peut-être dû à un problème avec votre connexion réseau ou les paramètres de streaming. Il vous faudra donc vérifier que vos câbles réseau sont connectés et que vos paramètres de streaming sont corrects.

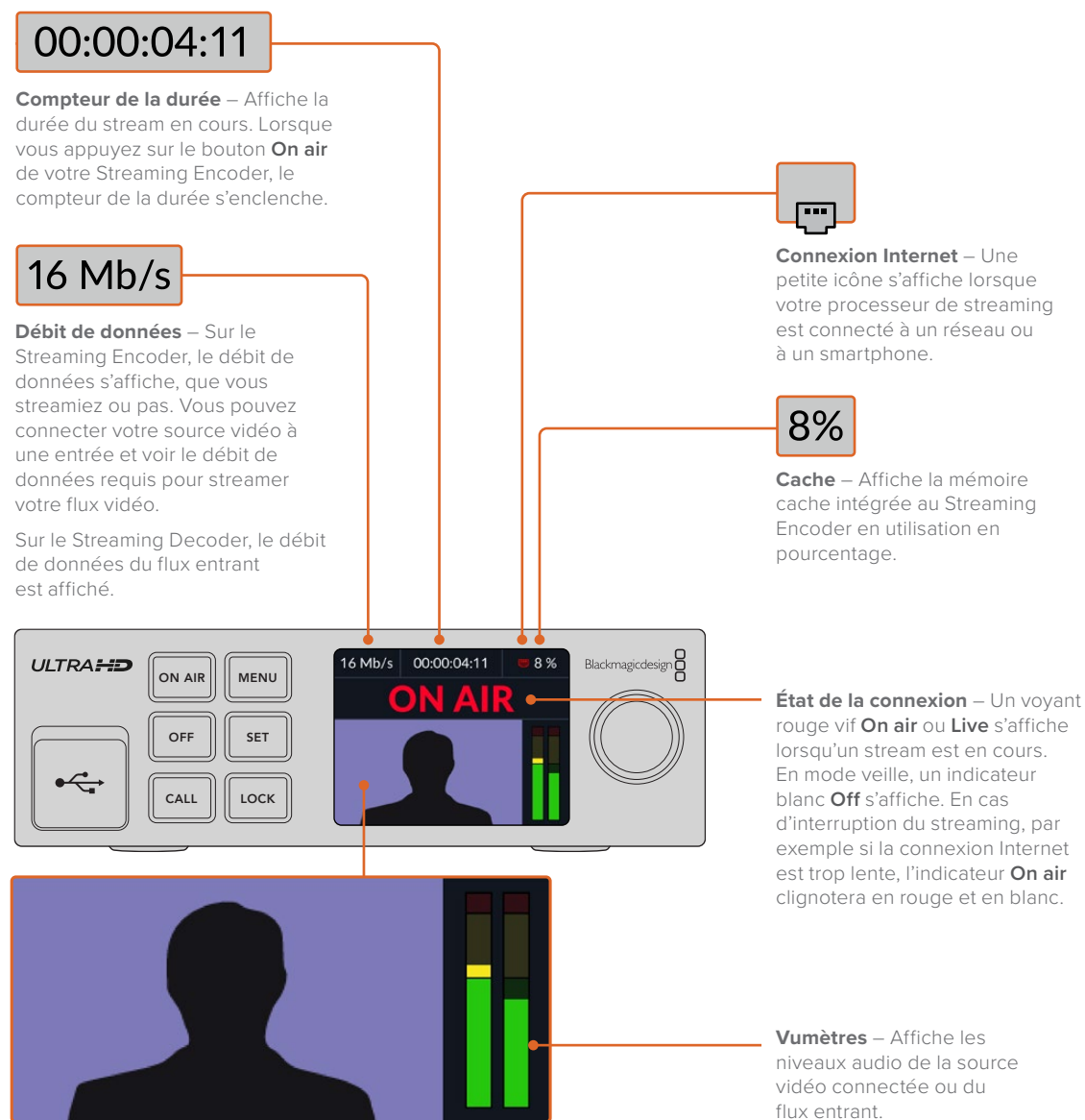
Bouton Lock

Pour verrouiller les commandes du panneau avant de votre processeur de streaming, appuyez et maintenez le bouton **Lock** enfoncé pendant une seconde. Cela permet de désactiver les boutons et la molette, empêchant quiconque de modifier accidentellement les réglages ou d'interrompre un stream.

Appuyez et maintenez ce bouton enfoncé pendant deux secondes pour déverrouiller le panneau.

Écran LCD

L'écran d'accueil LCD de votre processeur de streaming Blackmagic fournit un monitoring vidéo et audio, ainsi que des informations importantes sur votre flux.



Icônes de connexion

L'icône de connexion dans le coin supérieur droit de l'écran LCD indique l'état actuel de la connexion de votre processeur de streaming Blackmagic.



Une icône Ethernet bleue s'affiche lorsqu'un câble Ethernet est connecté et que la connexion Ethernet sera utilisée pour le streaming.



Sur le Blackmagic Streaming Encoder, une icône Ethernet rouge s'affiche lorsque le signal est à l'antenne et que le streaming est effectué via Ethernet.



Une icône smartphone bleue s'affiche lorsque la connexion Internet d'un smartphone connecté sera utilisée pour le streaming.



Sur le Blackmagic Streaming Encoder, une icône smartphone rouge s'affiche lorsque le signal est à l'antenne et que le streaming est effectué via un smartphone connecté.

CONSEIL Si aucune icône de connexion n'est affichée, votre Blackmagic Streaming Processor n'est pas connecté à un réseau ou à un smartphone. Assurez-vous que vos câbles sont correctement connectés.

Sortie de monitoring du Streaming Encoder

La sortie de monitoring de votre Blackmagic Streaming Encoder vous permet de visionner l'entrée vidéo, les niveaux audio, l'état de l'indicateur On air, le débit de données et les niveaux du cache, ainsi que des informations techniques sur l'entrée SDI.



La sortie de monitoring fournit de nombreuses informations dont le débit de données et l'état du cache

L'affichage de la sortie de monitoring comprend 8 zones. Vous trouverez ci-dessous une description de chaque zone et des informations qu'elle affiche.

Affichage de l'entrée

La zone principale affiche l'entrée vidéo de la source vidéo SDI connectée.



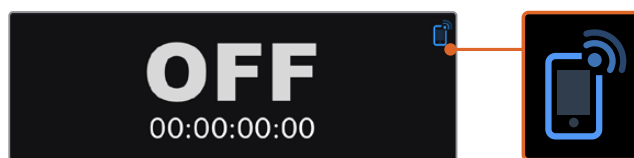
Indicateur On air

Avant le streaming, l'indicateur affichera **Off** pour vous informer que le Streaming Encoder est en attente et prêt à diffuser. Lorsque le streaming commence, l'indicateur affiche l'état **On air** en rouge, jusqu'à l'arrêt du streaming.



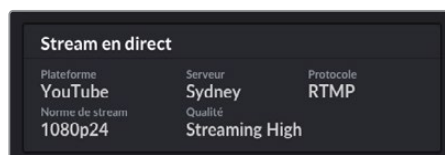
Le compteur de la durée se trouve sous l'indicateur On air. Lorsque vous appuyez sur le bouton On air de votre Streaming Encoder, le compteur de la durée s'enclenche.

Si votre Blackmagic Streaming Encoder est hors antenne, mais qu'il streame via un smartphone connecté, une icône smartphone bleue s'affiche au coin de l'indicateur **Off**. L'icône smartphone s'allume en rouge lors du passage à l'antenne.



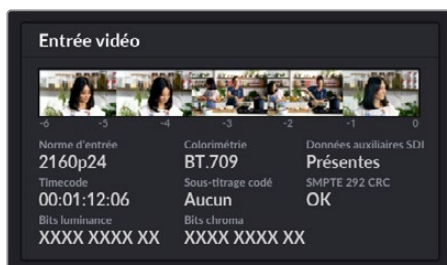
Stream en direct

La zone du stream en direct affiche des informations sur les paramètres de ce dernier, dont la plateforme de streaming, le serveur et le protocole. Elle affiche également la résolution du stream et les paramètres de qualité.



Entrée vidéo

Les 5 mini viewers en haut de la zone de l'entrée vidéo affichent les 6 dernières secondes de votre stream en direct. Chaque mini viewer représente 1,2 seconde de temps de streaming.

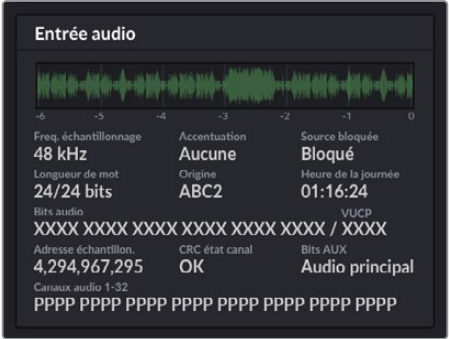


Au-dessous des mini viewers, vous trouverez des informations techniques sur la source d'entrée vidéo connectée à l'entrée SDI du Streaming Encoder.

Norme d'entrée	Affiche la résolution et la fréquence d'images de l'entrée vidéo SDI. Le Streaming Encoder prend en charge jusqu'à 2160p60.
Colorimétrie	Affiche l'espace colorimétrique de l'entrée vidéo SDI. Le Blackmagic Streaming Encoder prend en charge les espaces colorimétriques Rec.601, Rec.709 et Rec.2020.
Données auxiliaires SDI	Les données auxiliaires sont des données acheminées au sein de l'entrée vidéo SDI en plus de la vidéo. Elles incluent l'audio intégré, le timecode et le sous-titrage codé. Si votre entrée SDI comprend des données auxiliaires, la mention Présentes s'affichera.
Timecode	Affiche le timecode de la source d'entrée vidéo SDI.
Sous-titrage codé	Si votre entrée vidéo SDI comprend le sous-titrage codé, son format s'affichera ici. Les formats CEA-608 et CEA-708 sont supportés.
SMPTE 292 CRC	C'est une fonction de vérification des erreurs pour la vidéo SDI. Si votre Streaming Encoder détecte un problème dans l'entrée vidéo SDI, une erreur s'affichera. Les erreurs CRC sont en général causées par des câbles SDI défectueux ou par un câble trop long.
Bits luminance Y et Bits chroma	Les indicateurs Bits luminance Y et Bits chroma affichent l'activité du signal d'entrée vidéo SDI. Chaque lettre représente l'état d'un bit du signal vidéo. X - Un X indique un bit en constant changement. L - Un bit bas. H - Un bit haut. Le décalage SDI est soustrait pour faciliter la compréhension. Par exemple, tous les bits sont bas lorsque la vidéo est noire. En général, les 10 bits de votre entrée vidéo SDI afficheront la mention X. Cela signifie que tous les bits de votre stream vidéo changent constamment. Si votre entrée SDI est une vidéo 8 bits, les deux bits les plus à droite seront toujours bas (L), car ils ne contiennent pas de données. Si un bit reste sur L ou sur H, et que vous vous attendiez à ce qu'il soit sur X, cela indique un « bit bloqué » qui est peut-être causé par un défaut dans la vidéo en amont.

Entrée audio

La forme d'onde audio en haut de la zone Entrée audio affiche les informations audio des 6 dernières secondes de votre stream en direct. Elle est continuellement mise à jour et se défile de droite à gauche.

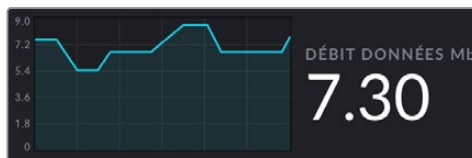


Au-dessous de l'affichage de la forme d'onde, vous trouverez des informations techniques détaillées concernant l'entrée audio.

Fréquence d'échantillonnage	Affiche la fréquence d'échantillonnage de l'audio intégré à l'entrée SDI.
Accentuation	Indique si l'option d'accentuation de la source audio est activée.
Verrouillage de la source audio	Indique si la fréquence de la source audio est verrouillée sur une source de référence externe.
Longueur de mot	Affiche la profondeur de bits de l'audio intégré à l'entrée SDI.
Origine	Ces quatre caractères indiquent l'origine du canal.
Heure de la journée	Timecode continu.
Bits audio	Affiche l'activité des bits des échantillons audio intégrés à la connexion SDI. Même si l'état du canal audio indique que vous avez 16, 20 ou 24 bits audio, l'activité des bits audio le confirmera.
VUCP	Lorsque vous lisez les bits VUCP de gauche à droite : le bit V signifie Valid (valide), le U signifie User (utilisateur), le C signifie Channel status (état du canal) et le P signifie Parity (parité). Ce champ ressemble à celui de Bits audio.
Adresse d'échantillonnage	Compteur d'échantillons audio.
Bits AUX	Indique si des bits AUX sont utilisés pour l'audio principal.
Canaux audio 1-32	Chaque chiffre représente un canal audio intégré à l'entrée SDI. Un P indique qu'un canal audio est utilisé et un - signifie qu'il n'y a pas d'audio sur ce canal.

Affichage du débit de données

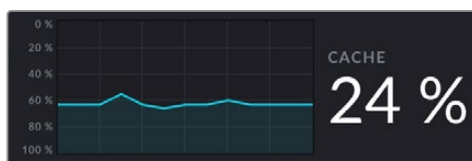
L'affichage du débit de données indique le débit de données de l'encodeur durant les 60 dernières secondes. Le débit de données est mesuré en mégabits par seconde. Cet indicateur est tout le temps actif, même hors antenne, afin que vous puissiez mesurer votre bande passante avant le direct.



Affichage du cache

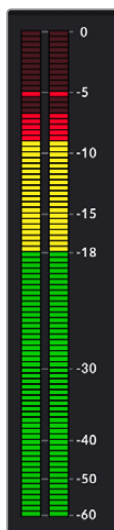
L'affichage du cache indique la mémoire tampon intégrée du Blackmagic Streaming Encoder en pourcentage et le graphique indique la quantité utilisée durant les 60 dernières secondes. Le cache est une petite mémoire interne qui enregistre et lit en continu la sortie programme. Il agit en mémoire de secours si le débit de données du streaming est trop bas et qu'il n'est plus capable de traiter la vidéo.

Le débit Internet peut être aléatoire, car il dépend principalement de l'activité du réseau ou de la force du signal sans fil. Si le débit de diffusion diminue, les données mises en tampon vont augmenter en conséquence. Si le débit Internet devient trop bas pour supporter le streaming, le cache va se remplir avec les images vidéo pour compenser. Cependant, une fois le cache rempli à 100 %, le streaming sera compromis. Il faut donc éviter d'atteindre la capacité maximum du cache. Vous pouvez effectuer un test en connectant un flux vidéo et en observant l'affichage du cache sur la sortie de monitoring sans démarrer le stream. Si le cache s'approche fréquemment de 100 %, choisissez une qualité de streaming plus basse.



Indicateurs audio

Visionnez les niveaux de votre source audio à l'aide des indicateurs audio. Ils peuvent être réglés sur des niveaux PPM ou VU dans les menus de configuration du Blackmagic Streaming Encoder. Si vos niveaux audio sont trop élevés, les indicateurs s'allumeront en rouge. Le cas échéant, il se peut que l'audio de votre stream en direct soit distordu ou écrêté. Idéalement, essayez de maintenir l'audio vers le haut de la section verte et occasionnellement dans la section jaune.



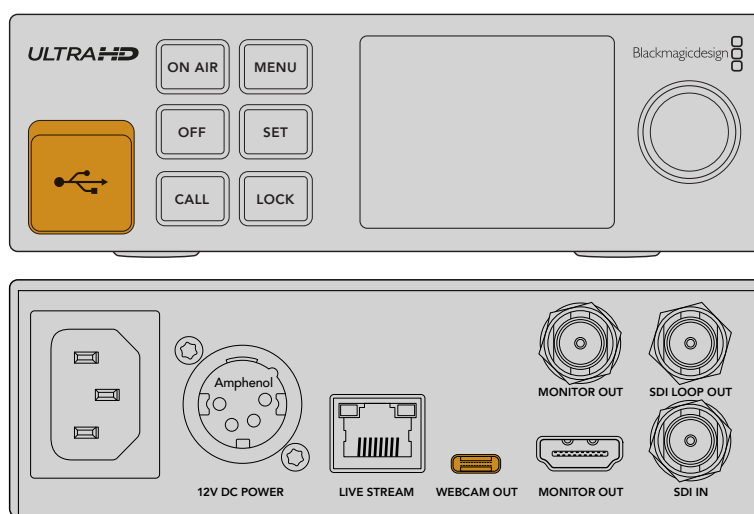
Blackmagic Streaming Setup

Le Blackmagic Streaming Setup est un utilitaire qui permet de modifier les paramètres, de configurer les réseaux, de mettre à jour le logiciel interne du Blackmagic Streaming Processor, ainsi que de sauvegarder et de charger des fichiers de paramètres de streaming.

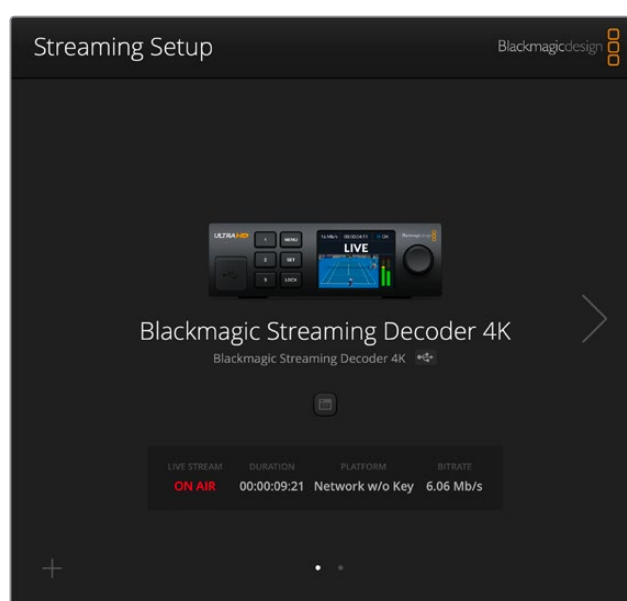
Vous pouvez télécharger et installer la dernière version du logiciel Blackmagic Streaming Setup à partir de la page d'assistance Blackmagic Design sur www.blackmagicdesign.com/fr/support.

Pour utiliser le Blackmagic Streaming Setup :

- 1 Connectez le processeur de streaming à votre ordinateur via le port USB-C situé sur le panneau avant ou arrière.



- 2 Lancez le Blackmagic Streaming Setup. Le modèle du processeur de streaming est indiqué sur la page d'accueil de l'utilitaire.
- 3 Pour ouvrir la page des paramètres, cliquez sur l'icône carrée de paramétrage ou sur l'image de votre Blackmagic Streaming Processor. Si plusieurs processeurs de streaming sont connectés au réseau, utilisez les flèches sur les côtés de la fenêtre de configuration pour naviguer jusqu'à l'appareil auquel vous souhaitez accéder.



Live Stream (Stream en direct)

L'onglet **Live Stream** contient tous les paramètres pour configurer la connexion de streaming en direct de votre Streaming Processor.

Blackmagic Streaming Encoder

L'onglet **Live Stream** du Blackmagic Streaming Encoder contient tous les paramètres pour configurer la qualité du stream, choisir et configurer une plateforme de streaming, et charger un fichier de paramètres de streaming XML.

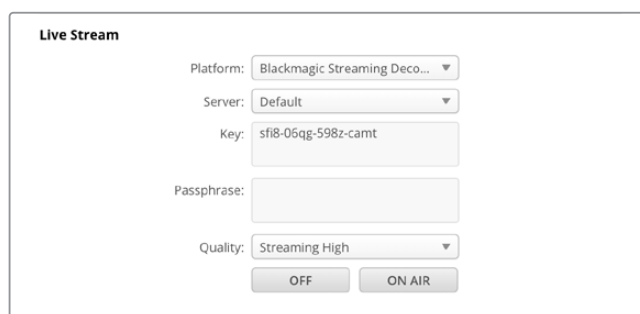
Video Output (Sortie vidéo)



Cliquez sur le menu de la norme de stream pour sélectionner les paramètres de résolution vidéo pour votre stream. Vos choix s'étendent de 720p25 à 2160p60.

Live Stream (Stream en direct)

Les paramètres **Live Stream** vous permettent de sélectionner une plateforme de streaming, de configurer les paramètres et de régler la qualité du streaming.



Platform (Plateforme)

Cliquez sur ce menu et sélectionnez la plateforme de streaming pour votre diffusion. Vous avez le choix entre YouTube, Facebook et Twitch. Si vous avez importé des paramètres de streaming personnalisés, ils apparaîtront également dans la liste de ce menu.

Pour streamer sur une URL personnalisée, sélectionnez une option dans le menu **Platform**. Vous pouvez choisir de streamer sur une URL personnalisée en H.264 ou H.265.

Server (Serveur)

Sélectionnez le serveur le plus proche de vous depuis la liste. La liste des serveurs varie selon la plateforme de streaming que vous avez choisie.

Si vous streamez sur Instagram, Microsoft Teams ou une URL personnalisée, la liste des serveurs sera un champ modifiable. Entrez l'URL assignée par votre compte de plateforme de streaming ou les détails de l'URL.

Key (Clé)

Entrez la clé de stream qui a été assignée à votre diffusion par votre plateforme de streaming.

Passphrase (Phrase de passe)

Si vous utilisez un service de streaming avec le protocole SRT, saisissez la phrase de passe assignée par votre compte de plateforme de streaming.

Quality (Qualité)

Sélectionnez la qualité de streaming de votre flux. Le tableau ci-dessous affiche les débits de données pour les codecs H.264 et H.265.

H.264	
HD	4K
HyperDeck High 45 to 70 Mb/s	HyperDeck High 95 to 220 Mb/s
HyperDeck Medium 25 to 45 Mb/s	HyperDeck Medium 66 to 150 Mb/s
HyperDeck Low 12 to 20 Mb/s	HyperDeck Low 38 to 80 Mb/s
Streaming High 6 to 9 Mb/s	Streaming High 34 to 51 Mb/s
Streaming Medium 4.5 to 7 Mb/s	Streaming Medium 23 to 35 Mb/s
Streaming Low 3 to 4.5 Mb/s	Streaming Low 13 to 20 Mb/s

H.265	
HD	4K
Streaming High 2.3 to 4.5 Mb/s	Streaming High 22.5 to 30 Mb/s
Streaming Medium 1.5 to 3 Mb/s	Streaming Medium 14 to 20 Mb/s
Streaming Low 0.8 to 2 Mb/s	Streaming Low 8 to 10 Mb/s

Le débit de données utilisé par le paramètre de qualité change selon la norme vidéo du Streaming Encoder. Par exemple, si vous sélectionnez une qualité de streaming élevée (Streaming high), et que vous opérez à 1080p24, le débit de données sera de 6 Mb/s.

Comme le montre le tableau, les débits de données du streaming sont plus bas que ceux de l'HyperDeck. Cela permet de transmettre des données via Internet, ce qui utilise moins de bande passante que d'enregistrer des données sur un disque.

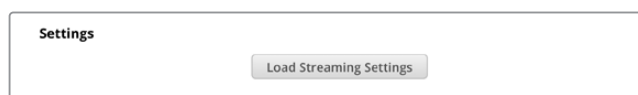
Vous remarquerez que chaque option comprend 2 débits. Le débit le plus bas est utilisé pour les fréquences d'images les plus basses de 24p, 25p et 30p. Le débit le plus élevé est utilisé pour les fréquences d'images les plus élevées de 50p et 60p. Veuillez noter que le débit pour le streaming est réglé par défaut sur Streaming High, car il offre une très haute qualité de streaming.

Boutons Off et On air

Vous pouvez lancer et arrêter le streaming live en utilisant les boutons **On air** et **Off**. Le bouton **On air** s'allume en rouge lorsque le streaming live est en cours.

Settings (Réglages)

Cliquez sur le bouton **Load Streaming Settings** et suivez les instructions pour charger un fichier de paramètres de streaming XML depuis un Blackmagic Streaming Decoder.

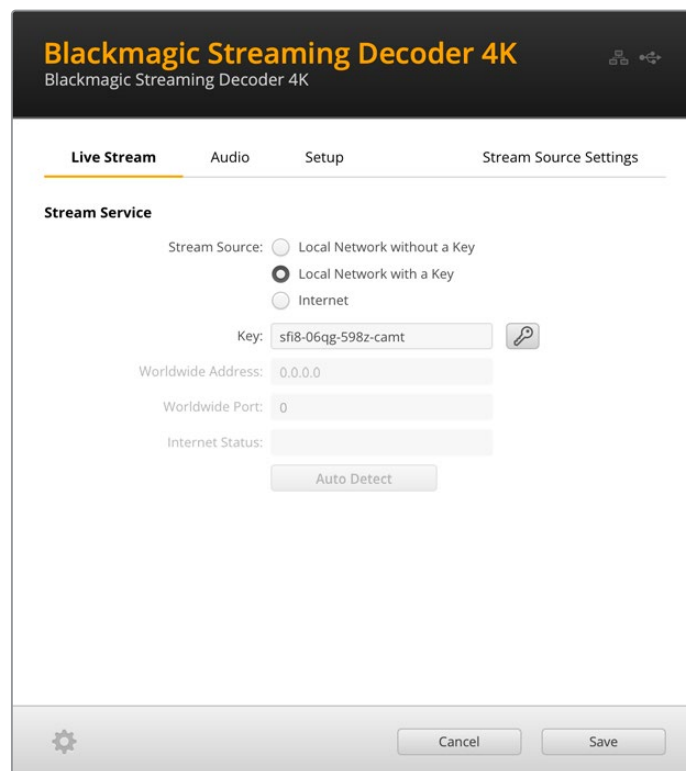


Supprimer les paramètres importés

Pour supprimer tous les paramètres de streaming importés depuis votre Blackmagic Streaming Encoder, cliquez sur l'icône de la roue dentée en bas à gauche de l'onglet **Live stream**. Pour confirmer votre choix, cliquez sur **Remove**.

Blackmagic Streaming Decoder

L'onglet **Live Stream** du Blackmagic Streaming Decoder vous permet de sélectionner une source de streaming et de configurer les paramètres Internet de votre décodeur.



Stream Service (Service de streaming)

Les options sous **Stream Service** vous permettent de configurer les paramètres pour connecter votre Streaming Decoder à un Streaming Encoder à distance, une caméra Blackmagic ou un mélangeur ATEM qui prend en charge le streaming intégré.

Stream Source (Source streaming)

Utilisez le menu **Stream Source** afin de sélectionner une source pour votre flux entrant. Les options comprennent **Local Network without a Key** (réseau local sans clé), **Local Network with a Key** (réseau local avec clé), et Internet.

Key (Clé)

Comme n'importe qui peut envoyer un stream vers un Blackmagic Streaming Decoder du réseau, il peut être judicieux de configurer une clé de stream afin que personne ne vienne perturber votre vidéo. En effet, comme il est très facile de sélectionner un Streaming Decoder sur votre réseau, cela pourrait vite devenir le chaos si tout le monde diffusait sa vidéo simultanément au même endroit.

Heureusement, la clé de stream permet de régler ce problème car c'est un mot de passe qui permet de protéger l'accès à votre Blackmagic Streaming Decoder. Dans le Streaming Setup, vous pouvez saisir un mot de passe dans le champ dédié à la clé de stream. Ensuite, seuls les utilisateurs qui partagent la même clé de stream dans leurs réglages seront autorisés à se connecter à ce Blackmagic Streaming Decoder.

Vous pouvez régler le mot de passe de votre choix, ou utiliser le générateur de mot de passe dans le Streaming Setup pour que l'ordinateur génère à votre place un mot de passe sécurisé. Il suffit de copier-coller ce mot de passe et de l'envoyer à ceux avec qui vous souhaitez vous connecter. Une fois qu'ils le saisiront dans leur Blackmagic Streaming Encoder, caméra Blackmagic ou mélangeur ATEM, ils auront la permission de se connecter à votre Streaming Decoder.

Connexion Internet

La meilleure façon de connecter le Blackmagic Streaming Decoder est de le connecter via Internet. C'est un tout petit peu plus complexe, car il faut s'assurer qu'un Streaming Encoder, une caméra Blackmagic ou un mélangeur ATEM puisse trouver le Streaming Decoder où qu'il soit dans le monde. Vous devrez donc configurer davantage de paramètres pour que cela fonctionne.

Marche à suivre

Le Blackmagic Streaming Decoder et le Streaming Encoder, la caméra ou l'ATEM qui streamera vers ce dernier devront tous deux être connectés à Internet. Vous aurez également besoin d'une adresse IP publique pour le Streaming Decoder, ainsi que d'une adresse fixe.

Le problème est que le Blackmagic Streaming Decoder se trouve sur votre réseau Ethernet local et qu'il faut qu'il soit visible sur Internet. Le Streaming Decoder utilise la redirection de port du pare-feu Internet pour permettre au Streaming Encoder, à la caméra ou au mélangeur ATEM de se connecter à lui via votre connexion Internet. Si cela n'est pas configuré, le Streaming Encoder, la caméra ou l'ATEM ne pourra pas trouver le Streaming Decoder.

Il faudra donc demander à un fournisseur d'accès Internet, ou à votre administrateur réseau de régler la redirection de port de votre connexion Internet sur « TCP port 1935 ». Ils sauront ce qu'ils ont à faire ! Le Blackmagic Streaming Decoder essaiera également de régler cette fonction pour vous, car la plupart des connexions Internet et des pare-feux ont un protocole qui règle automatiquement la redirection de port. Il est donc possible que le Streaming Decoder communique avec votre matériel réseau et essaie de régler cela lors de l'installation avec le Streaming Setup.

Confirmer l'accès à Internet

Vous remarquerez plus bas qu'il y a un champ destiné à l'état d'Internet. Le Blackmagic Streaming Decoder essaiera de se connecter à Internet et vous communiquera si tout fonctionne correctement. Si son état passe à Connected, c'est bon signe, car cela signifie que le Streaming Decoder a pu régler votre équipement réseau avec les paramètres de la redirection de port et que la connexion Internet est bonne.

REMARQUE Ouvrir les ports de votre réseau pour le trafic extérieur peut réduire la sécurité de votre réseau. Il est donc recommandé de vérifier avec votre fournisseur de services Internet ou votre administrateur réseau si vous avez des inquiétudes concernant la sécurité.

Si l'état d'Internet n'affiche pas Visible Worldwide, vous devrez peut-être configurer manuellement la redirection de port sur votre pare-feu Internet. Tous les pare-feux ne supportent pas le protocole de réglage automatique de ce genre d'information, toutefois, le réglage manuel est toujours supporté.

Vous devrez éventuellement contacter votre fournisseur de services Internet si vous ne pouvez pas accéder aux commandes du routeur ou que vous ne savez pas comment configurer la redirection de port. Sur les réseaux plus grands, il est recommandé de discuter du réglage de la redirection de port avec votre administrateur de réseau afin d'éviter tout conflit sur le réseau.

État d'Internet

Lorsque vous réglez la connexion Internet, la fonction de l'état d'Internet peut vous aider à régler des problèmes. Certaines des informations affichées et la cause du problème sont listées ci-dessous.

Visible Worldwide	C'est un bon signe, car ce message signifie que tout semble fonctionner correctement. La redirection de port est réglée et fonctionne. Le Blackmagic Streaming Decoder est prêt à recevoir un stream vidéo depuis Internet.
No Internet Access	Ce message indique que le Streaming Decoder ne peut pas se connecter à Internet. Il vous faudra vérifier les paramètres réseau et votre connexion Internet.
Port Forwarding Error	Ce message indique qu'il se peut que vous soyez connecté à Internet, mais que la redirection de port de votre pare-feu Internet n'a pas pu être réglée via le Streaming Decoder. Ce dernier ne peut donc pas être atteint depuis Internet. Il vous faudra demander à votre administrateur réseau de régler cela pour vous.
UPnP error	Ce message d'erreur indique également que le Streaming Decoder n'a pas pu régler la redirection de port sur le routeur Internet. Il vous faudra demander à votre administrateur réseau de régler cela pour vous ou consulter les documents relatifs au routeur pour configurer la redirection de port.

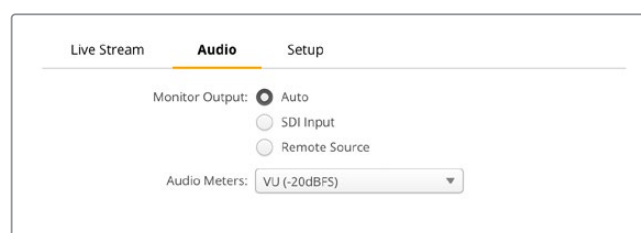
Auto Detect (Détection auto)

Cliquez sur le bouton **Auto Detect** pour détecter automatiquement vos paramètres de connexion Internet.

Audio

L'onglet **Audio** contient des paramètres pour configurer la sortie de monitoring audio de votre Streaming Processor, ainsi que le réseau d'ordres et les indicateurs audio.

Blackmagic Streaming Encoder



Monitor Output (Sortie de monitoring)

Utilisez les options de la sortie de monitoring afin de choisir la source audio pour les sorties de monitoring SDI et HDMI de votre Streaming Encoder.

Auto

Quand la sortie de monitoring est réglée sur **Auto**, votre Streaming Encoder détectera et vérifiera automatiquement l'audio du réseau d'ordres envoyé depuis un mélangeur ATEM via un Blackmagic Streaming Decoder. Si aucun réseau d'ordres n'est détecté, l'audio provenant de l'entrée SDI sera utilisé.

SDI Input (Entrée SDI)

Sélectionnez **SDI Input** pour contrôler l'audio depuis la source d'entrée SDI de votre Streaming Encoder, comme une Blackmagic Studio Camera connectée.

Source à distance

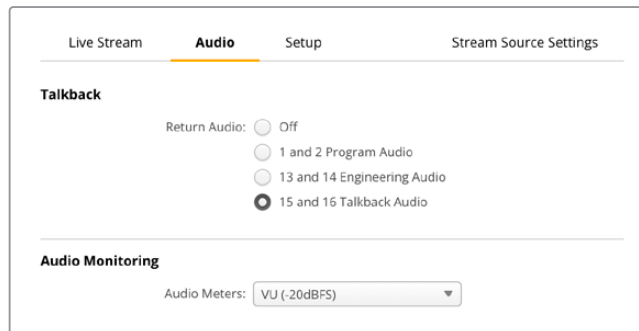
Utilisez cette option pour vérifier l'audio du réseau d'ordres envoyé depuis un mélangeur ATEM à distance ou un Streaming Decoder.

Indicateurs audio

Utilisez ce menu pour sélectionner le type d'indicateur audio à afficher. Les options disponibles sont les niveaux de références VU -18dBFS, VU -20dBFS, PPM -18dBFS ou PPM -20dBFS.

Blackmagic Streaming Decoder

L'onglet **Audio** du Streaming Decoder vous permet de sélectionner les canaux du réseau d'ordres et de configurer les indicateurs audio de l'écran LCD du panneau avant.



Talkback (Réseau d'ordres)

Utilisez ce paramètre pour choisir les canaux audio qui retournent vers le Blackmagic Streaming Encoder à distance. Les options sont **Off**, **1 and 2 Program Audio**, **13 and 14 Engineering Audio** et **15 and 16 Talkback Audio**.

Audio Monitoring (Monitoring audio)

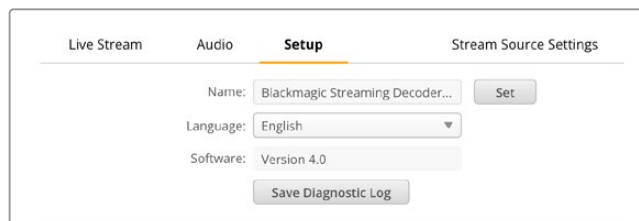
Utilisez ce menu pour sélectionner le type d'indicateur audio à afficher sur l'écran LCD du panneau avant. Les options disponibles sont les niveaux de références VU -18dBFS, VU -20dBFS, PPM -18dBFS ou PPM -20dBFS.

Setup (Réglages)

Les paramètres de l'onglet **Setup** vous permettent de régler le nom de votre processeur de streaming, de changer les paramètres réseau et de restaurer l'appareil sur ses paramètres d'usine. Sur le Blackmagic Streaming Decoder, l'onglet **Setup** contient également des options pour régler le timing de référence et la sortie SDI.

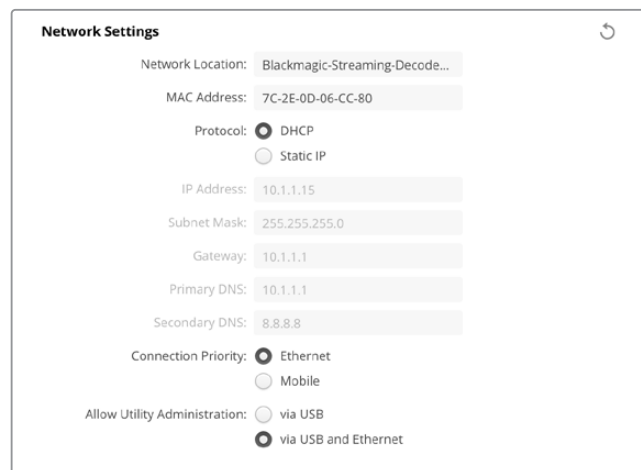
Paramètres d'identification

Utilisez les paramètres d'identification pour saisir le nom et la langue de votre processeur de streaming.



Un nom personnalisé permet d'identifier le bon Blackmagic Streaming Processor lorsque plusieurs d'entre eux sont connectés à votre réseau. Ces paramètres fournissent également le nom de l'emplacement réseau, ainsi que la version logicielle installée.

Network Settings (Paramètres réseau)



Network Settings

Network Location: Blackmagic-Streaming-Decode...

MAC Address: 7C-2E-0D-06-CC-80

Protocol: ☒ DHCP ☐ Static IP

IP Address: 10.1.1.15

Subnet Mask: 255.255.255.0

Gateway: 10.1.1.1

Primary DNS: 10.1.1.1

Secondary DNS: 8.8.8.8

Connection Priority: ☒ Ethernet ☐ Mobile

Allow Utility Administration: ☐ via USB ☒ via USB and Ethernet

Network Location (Emplacement réseau)

L'emplacement réseau est le nom de votre Blackmagic Streaming Processor qui apparaîtra dans le registre. Il est basé sur le nom d'identification figurant en haut de l'utilitaire. Il convient de noter que les préfixes numériques sont ignorés.

MAC Address (Adresse MAC)

Affiche l'adresse MAC du processeur de streaming. L'adresse MAC est un identifiant matériel unique à chaque port Ethernet. Ce paramètre est important lorsque vous configurez des systèmes de sécurité réseau qui restreignent l'accès aux appareils selon leur adresse MAC.

Protocol (Protocole)

Les paramètres DHCP et Static IP permettent de déterminer comment votre processeur de streaming est connecté à votre réseau.

DHCP	Les Blackmagic Streaming Processors sont réglés sur DHCP par défaut. Le Dynamic Host Configuration Protocol, ou DHCP, est un service de serveurs réseau qui attribue automatiquement une adresse IP au processeur de streaming. Ce service facilite la connexion des équipements via Ethernet et veille à ce que leur adresse IP ne soit pas en conflit l'une avec l'autre. La plupart des ordinateurs et des commutateurs réseau supportent le DHCP.
Static IP (IP statique)	Une fois l'IP statique sélectionnée, vous pouvez saisir les informations du réseau manuellement. Lorsque vous réglez des adresses IP manuellement pour que tous les appareils puissent communiquer, ils doivent partager les mêmes paramètres de masque de sous-réseau et de passerelle.

Avec une IP statique, si d'autres appareils sur le réseau possèdent le même numéro d'identification dans leur adresse IP, il y aura un conflit et les appareils ne se connecteront pas. Le cas échéant, il suffit de modifier le numéro d'identification dans l'adresse IP de l'appareil.

Par exemple, si l'adresse conflictuelle est 192.100.40.30, modifiez le dernier numéro par n'importe quel autre numéro, sauf le 30. Si le nouveau numéro est également déjà utilisé par un autre équipement, continuez à changer jusqu'à ce que vous en trouviez un de disponible.

Connection Priority (Connexion prioritaire)

Quand Ethernet et un téléphone portable sont connectés à votre Blackmagic Streaming Processor, ce paramètre vous permet de choisir la connexion à utiliser pour le streaming. Pour plus d'informations sur le partage des données mobiles, veuillez consulter la section « Streamer à l'aide de votre smartphone ».

Allow utility administration (Autoriser l'administration de l'utilitaire)

Activer le paramètre **Via USB** limite les modifications à l'ordinateur connecté via USB uniquement. Cela permet d'éviter que quelqu'un sur le réseau effectue des modifications accidentellement.

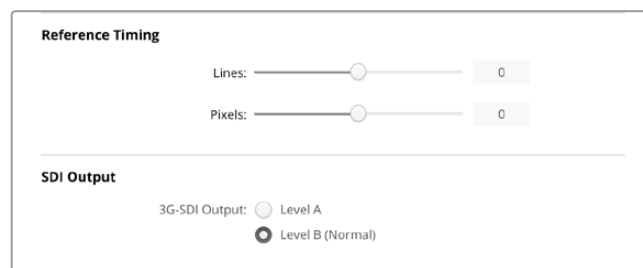
Reset (Réinitialisation)

Cliquez sur **Factory reset** pour restaurer votre Blackmagic Streaming Processor sur ses paramètres d'usine. Une fois que vous aurez appuyé sur **Set**, il vous sera demandé de confirmer votre sélection. Pour continuer, cliquez sur **Reset**.



Blackmagic Streaming Decoder

En plus des paramètres d'identification et de réseau, l'onglet **Setup** du Blackmagic Streaming Decoder comprend les paramètres suivants.



Reference Timing (Timing de référence)

Le paramètre **Reference Timing** vous permet d'ajuster manuellement le timing de référence défini par un nombre de lignes ou de pixels. Le Blackmagic Streaming Decoder est doté d'une entrée de référence vidéo analogique tri-sync et black burst, ainsi que d'une entrée SDI qui peut servir de référence. La référence est utilisée par les diffuseurs qui doivent aligner toutes les connexions vidéo de leur studio afin qu'elles puissent être commutées au sein d'un grand système.

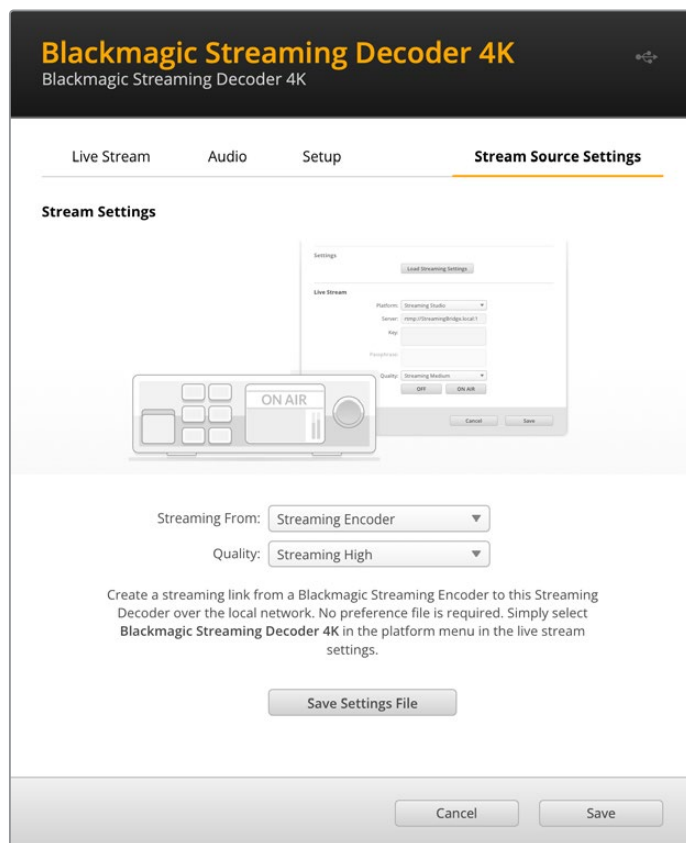
SDI Output (Sortie SDI)

Certains équipements broadcast n'acceptent que la vidéo 3G-SDI de niveau A ou de niveau B. Pour conserver la compatibilité avec d'autres équipements broadcast, sélectionnez le type 3G-SDI approprié. Par défaut, ce paramètre est réglé sur Niveau B.

Stream Source Settings (Réglages des sources de streaming)

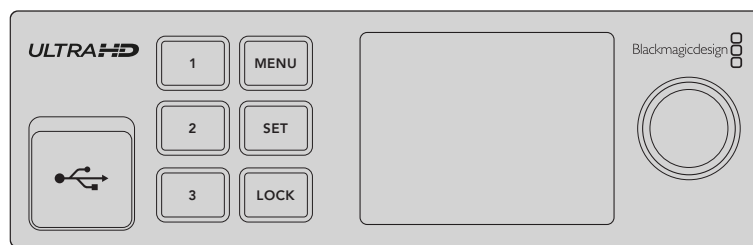
L'onglet **Stream Source Settings** du Blackmagic Streaming Decoder vous permet de créer des fichiers de paramètres de streaming XML qui peuvent être chargés dans un encodeur de streaming à distance, une caméra Blackmagic ou un mélangeur ATEM prenant en charge le streaming intégré.

Pour plus d'informations sur la création de fichiers de paramètres de streaming XML, consultez la section « Créer des liens broadcast » de ce manuel.



Créer des liens broadcast

Grâce aux Blackmagic Streaming Processors, vous pouvez streamer de la vidéo sur un réseau local ou partout dans le monde via Internet.



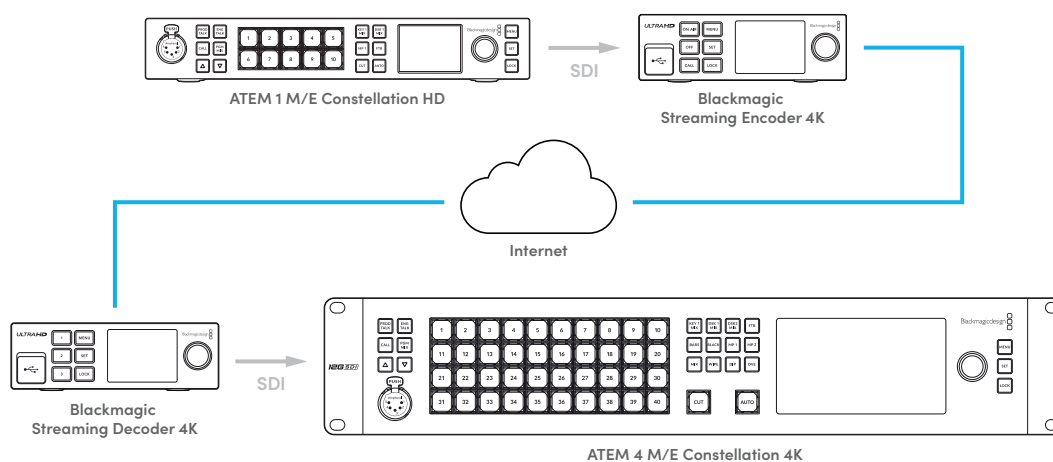
Si votre Blackmagic Streaming Decoder se trouve sur le même réseau local que votre Streaming Encoder, il sera listé dans le menu **Platform** de l'onglet **Live Stream** du Blackmagic Streaming Setup. Pour plus d'informations sur la façon de configurer un stream sur un réseau local, consultez la section « Mise en route ».

Si vous souhaitez streamer via Internet ou sur un réseau local à l'aide d'une clé de streaming pour une sécurité accrue, vous pouvez créer un fichier de paramètres de streaming XML depuis votre décodeur de streaming. Ce fichier sera chargé dans le Blackmagic Streaming Encoder à l'aide du Blackmagic Streaming Setup.

CONSEIL Vous pouvez également exporter des fichiers de paramètres de streaming XML pour les caméras Blackmagic et les mélangeurs ATEM prenant en charge le streaming intégré. Pour plus d'informations sur la façon d'importer des fichiers de paramètres, consultez le manuel de votre caméra Blackmagic ou de votre mélangeur ATEM.

Transmettre un bulletin météo au studio depuis le lieu de tournage est un bon exemple de la façon dont les Blackmagic Streaming Processors fonctionnent ensemble. Tout ce dont vous avez besoin pour une transmission à distance est d'un encodeur de streaming et d'une connexion Internet qui peut provenir d'un smartphone ou d'une connexion réseau.

Au studio, le Blackmagic Streaming Decoder convertit le flux Internet en SDI afin qu'il puisse être connecté au mélangeur principal du studio.



Voici la configuration du workflow pour cet exemple :

- 1 Sur le lieu de tournage, le Blackmagic Streaming Encoder est connecté à la sortie programme SDI du mélangeur ATEM, par exemple l'ATEM 1M/E Constellation HD.
- 2 Le Blackmagic Streaming Encoder est ensuite connecté à un smartphone.
- 3 Au studio, le Blackmagic Streaming Decoder est également connecté à Internet via Ethernet.
- 4 Le Streaming Decoder 4K envoie le flux vidéo SDI converti d'Internet vers l'entrée SDI du mélangeur situé dans le studio pour la diffusion.

Pour que votre studio connecte le Streaming Decoder au flux Internet du Streaming Encoder, il vous faudra ouvrir le Blackmagic Streaming Setup et configurer les paramètres Internet. Il sera également nécessaire de générer un fichier XML contenant tous les paramètres du streaming qui seront chargés dans le Streaming Encoder sur site.

Créer le fichier XML

Pour créer un fichier de paramètres XML, connectez le Blackmagic Streaming Decoder à Internet en branchant un câble réseau du port **Live stream** au routeur Internet ou au commutateur réseau.

Connectez le Streaming Decoder à votre ordinateur via un câble USB-C et lancez le Blackmagic Streaming Setup. Dans l'onglet **Live stream**, vérifiez que les paramètres réseau sont corrects et sélectionnez **Internet** dans les options **Stream service**. Le message **Visible worldwide** devrait s'afficher dans la boîte d'état d'Internet. Cela veut dire que tout fonctionne correctement. Pour plus d'informations sur la configuration de votre Streaming Decoder, veuillez consulter « Service de streaming » dans la section « Blackmagic Streaming Setup ».

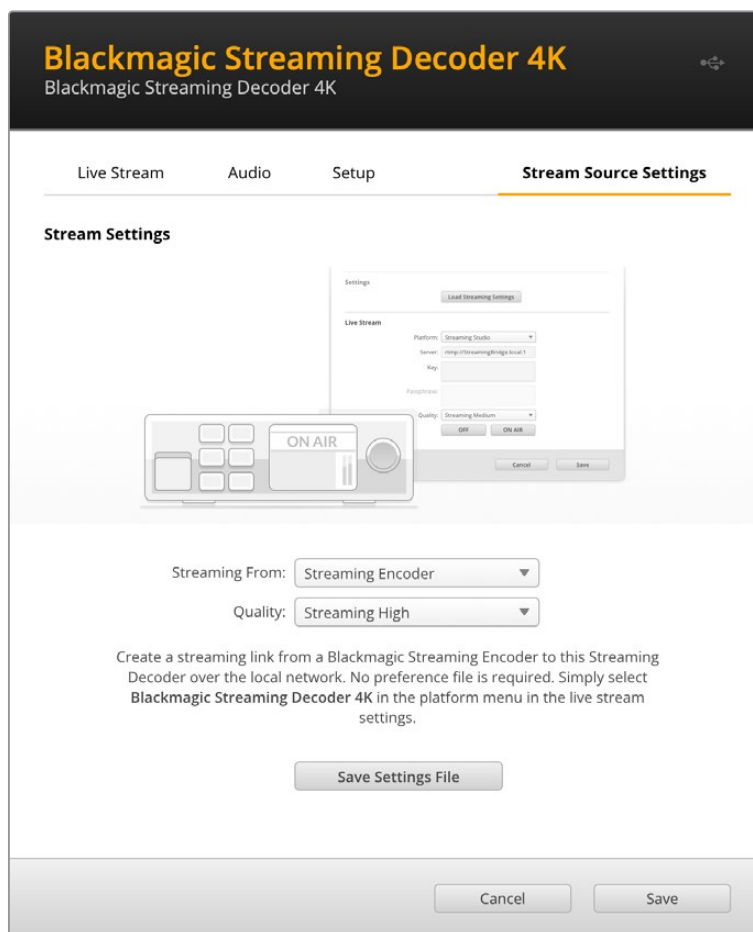
Remarque sur la redirection de port

Si une erreur de redirection de port ou UPnP s'affiche dans la boîte d'état d'Internet, il faudra demander à votre fournisseur de services Internet ou à votre administrateur réseau de configurer la redirection de port de votre connexion Internet sur **TCP port 1935**.

Exporter le fichier XML

Une fois que vous avez confirmé vos paramètres dans l'onglet **Setup** du Blackmagic Streaming Setup et que vous avez réussi à connecter le Streaming Decoder à votre réseau ou à Internet, vous pouvez exporter le fichier XML.

- 1 Cliquez sur l'onglet **Streaming Source Settings** en haut à droite de la fenêtre.



- 2 Dans le menu **Streaming from**, sélectionnez **Streaming encoder**.
Si vous créez un fichier XML de paramètres de streaming pour une caméra Blackmagic ou un mélangeur ATEM qui prend en charge le streaming intégré, sélectionnez **ATEM switcher** ou **Blackmagic camera** depuis le menu **Streaming from**.
- 3 Sélectionnez la qualité du streaming. Cela règlera la qualité du Blackmagic Streaming Encoder connecté à distance.
- 4 Cliquez sur le bouton **Save Settings file** et choisissez un emplacement pour sauvegarder le fichier.

Une fois le fichier sauvegardé, envoyez-le par email à l'opérateur à distance du Blackmagic Streaming Encoder.

CONSEIL Vous pouvez utiliser les réglages du réseau d'ordres depuis l'onglet **Audio** pour sélectionner les canaux audio que vous souhaitez renvoyer au Streaming Encoder à distance.

Charger le fichier XML

Une fois le fichier de paramètres envoyé sur le lieu de tournage, l'équipe pourra le charger dans le Blackmagic Streaming Encoder à l'aide du Blackmagic Streaming Setup, puis appuyer sur le bouton **On air** pour démarrer le streaming du bulletin météo au studio.

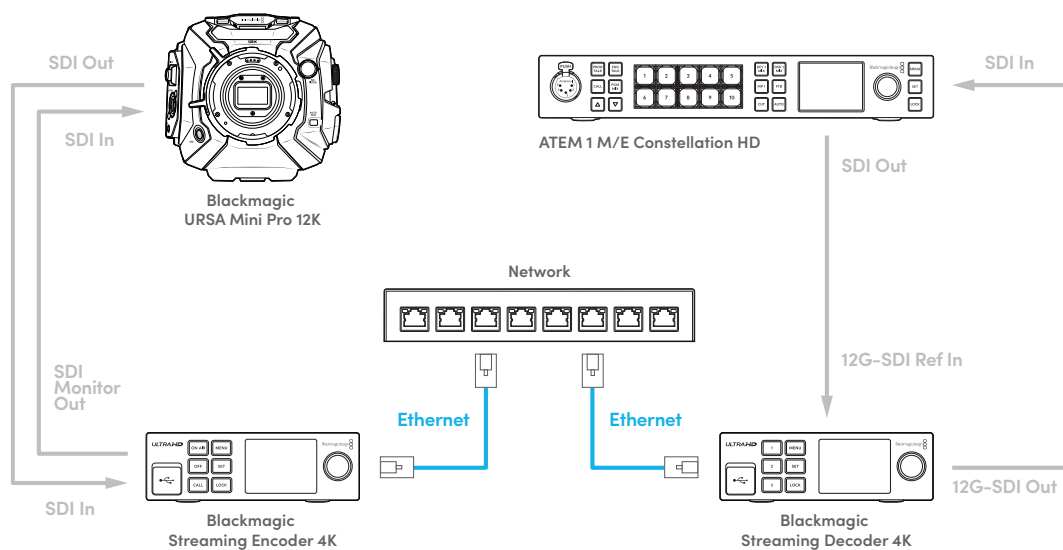
Il est important de mentionner qu'une fois que vous aurez chargé le fichier de streaming XML, vous pourrez démarrer et arrêter le streaming sans avoir à le recharger. Ainsi, il sera facile de configurer un lien vidéo constant entre le Streaming Encoder et le Streaming Decoder.

Tant que le Streaming Decoder au studio n'a pas changé de paramètres de streaming et de réseau, et qu'il cherche toujours le Streaming Encoder, il le trouvera peu importe son emplacement sur Internet. Il vous suffira de connecter votre Streaming Encoder à Internet et d'appuyer sur **On air** pour streamer immédiatement vers le Streaming Decoder au studio.

Réseau d'ordres, tally et contrôle caméra

Les Blackmagic Streaming Processors permettent aux mélangeurs ATEM d'envoyer les informations concernant le tally, le réseau d'ordres et le contrôle caméra. Ainsi, toute caméra SDI Blackmagic Design se trouvant sur votre réseau local ou n'importe où dans le monde via Internet, peut disposer du tally, du réseau d'ordres et du contrôle caméra.

C'est très simple à configurer. L'illustration ci-dessous indique comment connecter une URSA Mini Pro 12K à un ATEM Constellation HD sur un réseau local et disposer du tally, du réseau d'ordres et du contrôle caméra.



Quand tout est connecté :

- 1 Appuyez sur le bouton **Menu** du Blackmagic Streaming Encoder pour ouvrir le menu à l'écran et allez sur le menu **Stream en direct**.
- 2 Sélectionnez le Blackmagic Streaming Decoder dans le menu **Plateforme**.
- 3 Appuyez sur **Set** pour confirmer votre choix.

Pour que le tally fonctionne, veillez à ce que l'identifiant de la caméra pour l'ATEM corresponde à l'entrée sur le mélangeur. Pour plus d'informations sur la façon de régler cet identifiant, consultez le manuel de la URSA Mini.

Pour vérifier que le tally fonctionne, faites basculer la caméra sur la sortie programme du mélangeur ATEM. Si l'identifiant de la caméra pour l'ATEM est réglé correctement sur votre caméra, le voyant tally ainsi qu'une bordure rouge autour de l'écran LCD de la caméra s'allumeront. Maintenant, commutez la caméra sur la sortie prévisualisation, et le voyant tally deviendra vert.

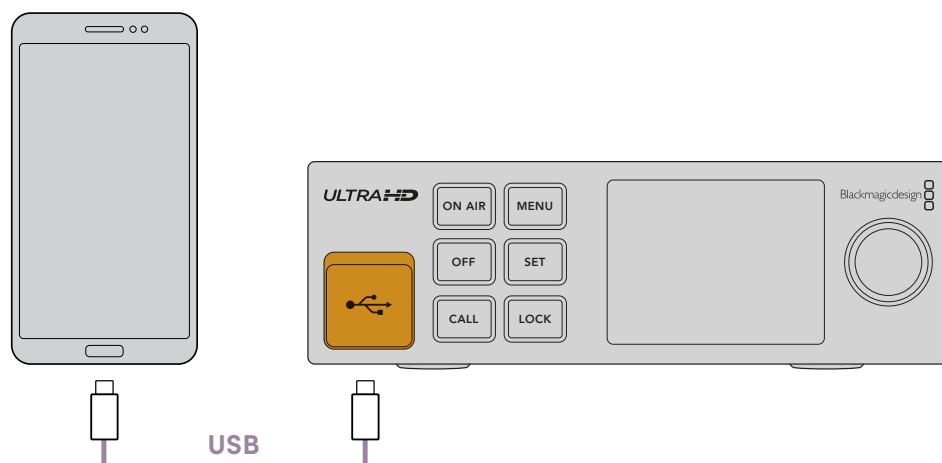
Essayez d'ajuster l'iris et le niveau de noir sur la page Caméra de l'ATEM Software Control pour tester le contrôle caméra.

Par défaut, les canaux du réseau d'ordres sont les canaux audio 15 et 16 intégrés au signal SDI. Toutefois, vous pouvez les régler sur les canaux ingénieurs 13 et 14, ou sur la sortie programme à l'aide du Blackmagic Streaming Setup.

Lors de la transmission via Internet, un fichier de configuration XML est créé à l'aide du Blackmagic Streaming Setup. Ce fichier XML est ensuite chargé dans le Blackmagic Streaming Encoder afin que ce dernier puisse trouver le Blackmagic Streaming Decoder sur Internet. Pour plus d'informations sur la façon de créer et de charger le fichier de configuration XML, consultez la section précédente de ce manuel.

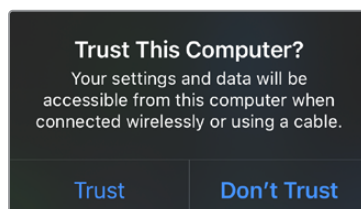
Streamer à l'aide de votre smartphone

Les Blackmagic Streaming Processors peuvent se connecter à Internet via le partage de connexion de votre smartphone. Pour commencer, branchez votre smartphone à la connexion USB-C avant ou arrière de votre Streaming Processor. Cette connexion permet d'envoyer ou de recevoir rapidement un stream depuis n'importe quel endroit où votre smartphone dispose d'une connexion mobile 4G ou 5G.



Pour régler le partage de connexion mobile :

- 1 Sur votre appareil iOS ouvrez Réglages > Partage de connexion et veillez à ce que l'option **Autoriser d'autres utilisateurs** soit activée.
- 2 Un message apparaîtra, vous demandant si vous faites confiance à l'ordinateur connecté. Sélectionnez **Se fier** et une icône de partage de connexion verte sera visible sur l'écran. C'est ainsi que vous pouvez vérifier que la connexion fonctionne correctement.



L'horloge de votre smartphone apparaîtra toujours sur un fond vert lorsque le partage de connexion est activé.

Sur les appareils Android, balayez l'écran pour afficher le menu. Appuyez longuement sur l'icône de point d'accès, puis activez le partage de connexion via USB.

CONSEIL Une fois le streaming terminé, nous vous recommandons de désactiver le partage de connexion afin d'économiser la batterie de votre smartphone.

Streaming en direct sur Internet

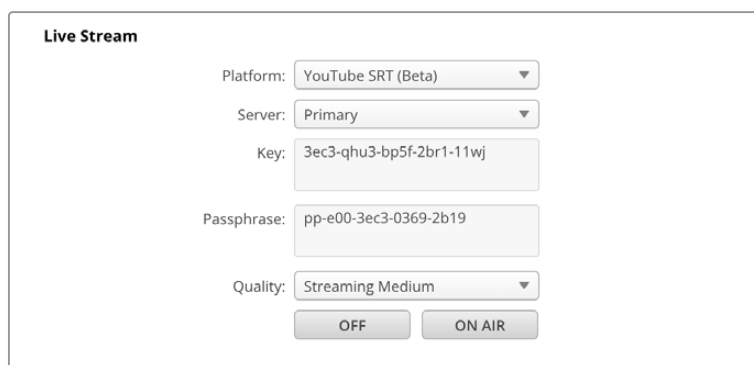
Le Blackmagic Streaming Encoder vous permet de streamer directement sur les plateformes de streaming Internet, telles que YouTube, Facebook ou Twitch. Dans cet exemple, nous allons utiliser YouTube Live.

- 1 Copiez votre clé de stream depuis votre compte YouTube Studio.
- 2 Lancez le Blackmagic Streaming Setup et allez dans l'onglet **Live stream**.
- 3 Réglez la plateforme sur YouTube et le serveur sur **Primary**. Collez la clé de stream YouTube dans le champ **Key** et sélectionnez une qualité pour le streaming. Cliquez sur **Save**.
- 4 Vous êtes maintenant prêt à streamer partout dans le monde ! Cliquez sur le bouton **On air** ou appuyez sur le bouton **On air** du panneau avant de l'appareil. Une fois votre production terminée, appuyez sur le bouton **Off** pour arrêter la diffusion.

Utiliser le protocole de streaming SRT

Le protocole Secure Reliable Transport (SRT) offre une latence de streaming plus faible que le RTMP. Le SRT est également plus sécurisé car il utilise une phrase de passe, qui fonctionne comme une clé de chiffrement.

Lorsque vous sélectionnez la version du protocole SRT de votre service de streaming, copiez la phrase de passe et la clé de stream depuis votre compte de streaming et collez-les dans les champs **Key** et **Passphrase** du Blackmagic Streaming Setup.



Live Stream

Platform: YouTube SRT (Beta) ▼

Server: Primary ▼

Key: 3ec3-qhu3-bp5f-2br1-11wj

Passphrase: pp-e00-3ec3-0369-2b19

Quality: Streaming Medium ▼

OFF ON AIR

Collez votre phrase de passe dans le champ **Passphrase** de l'utilitaire

Le protocole RTMP ou SRT, ainsi que le codec H.264 ou H.265, peuvent être modifiés dans le fichier XML par les diffuseurs expérimentés techniquement qui souhaitent personnaliser leurs paramètres de streaming. Pour plus d'informations, veuillez consulter la section « Developer information ».

Utiliser la sortie webcam

Les logiciels comme Zoom ou Microsoft Teams règlent généralement le Blackmagic Streaming Processor en tant que webcam automatiquement. Ainsi, quand vous lancez l'application, le stream vidéo apparaît immédiatement. Si l'application ne sélectionne pas votre Streaming Encoder ou Decoder automatiquement, réglez-le manuellement en tant que webcam et microphone.

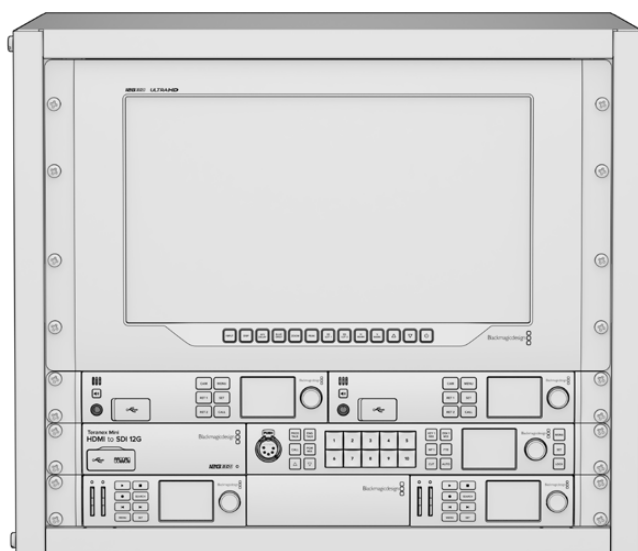
Vous trouverez ci-dessous un exemple pour régler la webcam sur Microsoft Teams.

- 1 À l'aide d'un câble USB-C, connectez votre Blackmagic Streaming Processor à votre ordinateur via le port **Webcam out** à l'arrière du panneau.
- 2 Dans la barre de menu de Teams, ouvrez **Réglages**, puis sélectionnez **Appareil**.
- 3 Dans le panneau **Audio**, cliquez sur le menu **Microphone** et sélectionnez **Blackmagic Design** comme source audio.
- 4 Accédez aux paramètres **Vidéo** et sélectionnez votre Blackmagic Streaming Processor dans le menu **Caméra**.

Blackmagic Universal Rack Shelf

Le Blackmagic Universal Rack Shelf est un support d'une unité de rack qui vous permet d'installer une large gamme d'équipements Blackmagic Design dans un rack broadcast ou une caisse de transport. Grâce à son design modulaire, vous pouvez créer des configurations de matériel portables et pratiques avec des produits au format d'une unité de rack.

L'illustration ci-dessous montre 3 Universal Rack Shelf installés dans un petit rack avec une combinaison d'appareils compatibles. La partie inférieure comprend une plaque d'obturation d'une largeur d'un tiers de rack pour remplir l'espace vide entre les appareils.



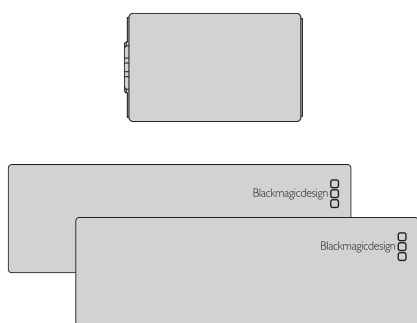
Contenu

L'Universal Rack Shelf Kit contient les éléments suivants :



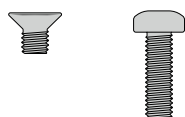
1 x Blackmagic Universal Rack Shelf

Support d'une unité de rack pour installer des équipements Blackmagic Design.



Plaques d'obturation

1 x plaque d'obturation de 1/6 de rack et 2 x plaques d'obturation de 1/3 de rack pour couvrir les espaces vides.



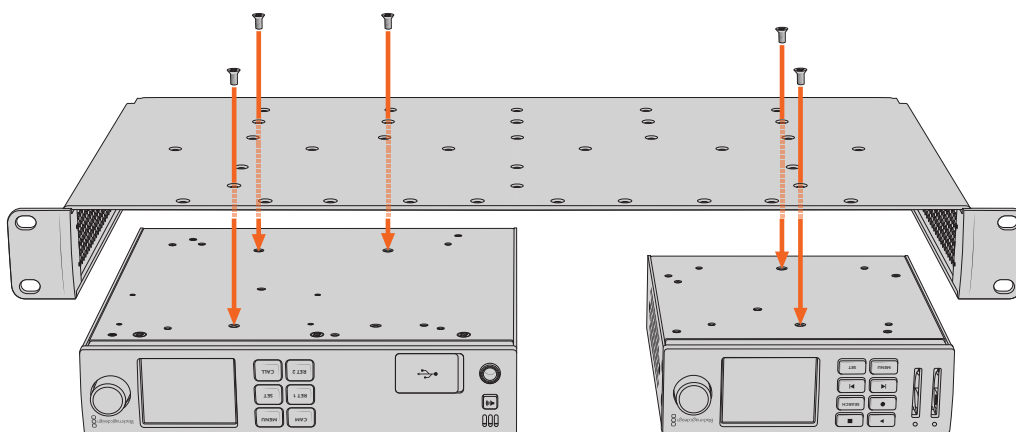
Vis

12 x vis de montage à tête fraisée M3 5mm.

2 x vis à tête plate M3 9mm pour les plaques d'obturation de 1/6.

Installer un appareil sur l'Universal Rack Shelf

- 1 Si les pieds en caoutchouc sont installés, retirez-les de la base de l'appareil à l'aide d'un gratteur en plastique.
- 2 Une fois l'Universal Rack Shelf et l'appareil retournés, alignez les trous pré-perçés de l'Universal Rack Shelf avec les trous de montage filetés de la base de l'appareil Blackmagic Design. Il y a deux pas de vis centraux sur les appareils d'une largeur d'un tiers de rack et jusqu'à trois pas de vis sur les appareils plus larges d'un demi-rack.

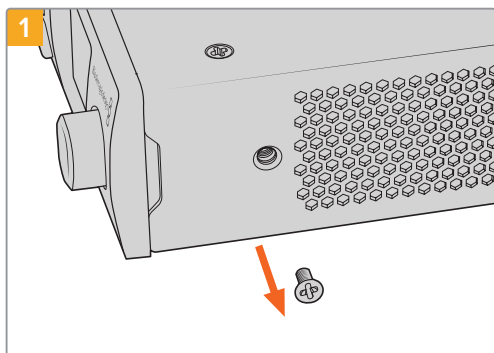


- 3 À l'aide des vis M3 5mm à tête fraisée, vissez l'appareil sur l'Universal Rack Shelf.
- 4 Une fois l'appareil fixé, retournez l'Universal Rack Shelf et installez-le dans le rack via les supports latéraux intégrés.

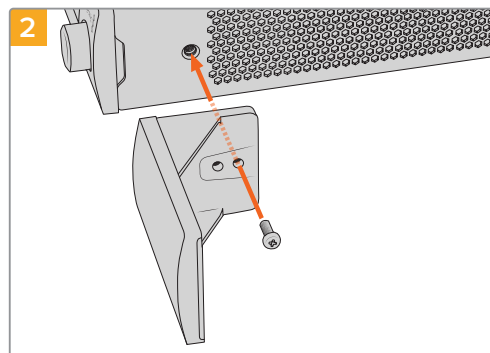
Les plaques d'obturation fournies peuvent être utilisées pour couvrir les espaces vides.

Fixer la plaque d'obturation de 1/6

La petite plaque d'obturation de 1/6 de rack peut être utilisée pour remplir les espaces vides lorsque vous installez des appareils d'une largeur de 1/2 et 1/3. Cette plaque peut se fixer sur les côtés de chaque appareil. Il est conseillé d'installer la plaque entre les appareils pour améliorer la circulation de l'air.



Retirez la vis M3 5mm située près de la face avant de l'appareil



Alignez la plaque d'obturation et fixez-la à l'aide de la vis M3 9mm en nylon

Fixer la plaque d'obturation latérale de 1/3 de largeur

Les plaques d'obturation de 1/3 de largeur peuvent être fixées directement sur les deux côtés de l'Universal Rack Shelf lorsque vous installez un seul appareil. Pour installer une plaque d'obturation, alignez les trous de vis et le point d'ancrage à la base de la plaque avec l'Universal Rack Shelf et fixez-la à l'aide de deux des vis à tête fraisée M3 5mm fournies.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```


Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path `/control/api/v1/` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path `/control/documentation.html` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Aide

Obtenir de l'aide

Le moyen le plus rapide d'obtenir de l'aide est d'accéder aux pages d'assistance en ligne de Blackmagic Design et de consulter les dernières informations de support technique concernant votre Blackmagic Streaming Processor.

Pages d'assistance en ligne de Blackmagic Design

Les dernières versions du manuel peuvent être consultées sur la page d'assistance technique de Blackmagic Design : www.blackmagicdesign.com/fr/support

Forum Blackmagic Design

Le forum Blackmagic Design est une source d'information utile qui offre des idées innovantes pour vos productions. Cette plateforme d'aide vous permettra également d'obtenir des réponses rapides à vos questions, car un grand nombre de sujets peuvent avoir déjà été abordés par d'autres utilisateurs. Pour vous rendre sur le forum : <http://forum.blackmagicdesign.com>

Contacter le service d'assistance de Blackmagic Design

Si vous ne parvenez pas à trouver l'aide dont vous avez besoin dans nos pages d'aide ou sur les forums, veuillez utiliser l'option « Envoyer un email », accessible sur la page d'assistance pour envoyer une demande d'assistance par email. Vous pouvez également cliquer sur le bouton « Trouver un support technique » situé sur la page d'assistance et contacter ainsi le centre de support technique Blackmagic Design le plus proche de chez vous.

Avis réglementaires



Élimination des déchets d'équipements électriques et électroniques au sein de l'Union européenne.

Le symbole imprimé sur ce produit indique qu'il ne doit pas être jeté avec les autres déchets. Cet appareil doit être déposé dans un point de collecte agréé pour être recyclé. Le tri, l'élimination et le recyclage séparés de vos équipements usagés permettent de préserver les ressources naturelles et d'assurer le recyclage de ces équipements dans le respect de l'homme et de l'environnement. Pour plus d'informations quant aux lieux d'éliminations des déchets d'équipements électriques, vous pouvez contacter votre mairie ou le service local de traitement des ordures ménagères.



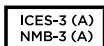
Cet équipement a été testé et déclaré conforme aux limites imposées aux appareils numériques de classe A, en vertu du chapitre 15 des règles de la FCC. Ces limites ont pour objectif d'assurer une protection suffisante contre les interférences nuisibles lorsque l'équipement est utilisé dans un environnement commercial. Cet appareil génère, utilise et émet de l'énergie de fréquences radio et peut, en cas d'installation ou d'utilisation non conforme aux instructions, engendrer des interférences nuisibles au niveau des communications radio. L'utilisation de cet équipement en zone résidentielle est susceptible de provoquer des interférences nuisibles, auquel cas il sera demandé à l'utilisateur de corriger ces interférences à ses frais.

L'utilisation de cet appareil est soumise aux deux conditions suivantes :

- 1 Cet appareil ne doit pas causer d'interférences nuisibles.
- 2 Cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un dysfonctionnement.



R-R-BMD-20201201001
R-R-BMD-20201201002



Déclaration de ISDE Canada

Cet appareil est conforme aux normes canadiennes relatives aux appareils numériques de Classe A.

Toute modification ou utilisation de ce produit en dehors de son utilisation prévue peut annuler la conformité avec ces normes.

Les connexions aux interfaces HDMI doivent être effectuées avec des câbles HDMI blindés d'excellente qualité.

Cet équipement a été testé pour être en conformité avec une utilisation prévue dans un environnement commercial. Si cet équipement est utilisé dans un environnement domestique, il peut provoquer des interférences radio.

Informations de sécurité

Cet appareil doit être connecté à une prise secteur équipée d'un conducteur de protection.

Afin de réduire le risque de décharge électrique, ne pas éclabousser ou renverser de liquide sur cet appareil.

Cet appareil peut être utilisé dans un climat tropical lorsque la température ambiante n'excède pas 40°C.

La température de stockage est comprise entre -20°C et 60°C et l'humidité relative entre 0% et 90% sans condensation.

Veillez à ce que l'espace autour du produit soit suffisant afin de ne pas compromettre la ventilation.

Lorsque vous installez l'appareil sur rack, veillez à ce que la ventilation ne soit pas compromise par les autres équipements.

Les pièces de cet appareil ne sont pas réparables par l'opérateur. Toute réparation/opération d'entretien doit être effectuée par un centre de service Blackmagic Design.



Cet appareil doit être utilisé à une altitude inférieure à 2000 mètres.

Déclaration de l'État de Californie

Ce produit est susceptible de vous exposer à des produits chimiques, dont des traces de polybromobiphényle dans les parties en plastique, reconnu par l'État de Californie comme étant responsable de cancers, d'anomalies congénitales ou d'autres effets nocifs sur la reproduction.

Pour de plus amples informations, veuillez vous rendre sur www.P65Warnings.ca.gov.

Garantie

Garantie limitée à 36 mois

Par la présente, Blackmagic Design garantit que les Blackmagic Streaming Processor seront exempts de défauts matériels et de fabrication pendant une durée de 36 mois à compter de la date d'achat, ceci excluant les connecteurs, câbles, ventilateurs, modules à fibre optique, fusibles, claviers et batteries qui seront exempts de défauts matériels et de fabrication pendant une durée de 12 mois à compter de la date d'achat. Si le produit s'avère défectueux pendant la période de garantie, Blackmagic Design peut, à sa seule discrétion, réparer le produit défectueux sans frais pour les pièces et la main-d'œuvre, ou le remplacer.

Pour se prévaloir du service offert en vertu de la présente garantie, il vous incombe d'informer Blackmagic Design de l'existence du défaut avant expiration de la période de garantie, et de prendre les mesures nécessaires pour l'exécution des dispositions de ce service. Le consommateur a la responsabilité de s'occuper de l'emballage et de l'expédition du produit défectueux au centre de service nommé désigné par Blackmagic Design, en frais de port prépayé. Il incombe au Consommateur de payer tous les frais de transport, d'assurance, droits de douane et taxes et toutes autres charges relatives aux produits qui nous auront été retournés et ce, quelle que soit la raison.

La présente garantie ne saurait en aucun cas s'appliquer à des défauts, pannes ou dommages causés par une utilisation inappropriée ou un entretien inadéquat ou incorrect. Blackmagic Design n'a en aucun cas l'obligation de fournir un service en vertu de la présente garantie : a) pour réparer les dommages résultant de tentatives de réparations, d'installations ou tous services effectués par du personnel non qualifié par Blackmagic Design, b) pour réparer tout dommage résultant d'une utilisation inadéquate ou d'une connexion à du matériel incompatible, c) pour réparer tout dommage ou dysfonctionnement causé par l'utilisation de pièces ou de fournitures n'appartenant pas à la marque de Blackmagic Design, d) pour examiner un produit qui a été modifié ou intégré à d'autres produits quand l'impact d'une telle modification ou intégration augmente les délais ou la difficulté d'examiner ce produit.

CETTE GARANTIE REMPLACE TOUTE GARANTIE EXPLICITE OU TACITE. BLACKMAGIC DESIGN ET SES REVENDEURS DÉCLINENT EXPRESSÉMENT TOUTE GARANTIE IMPLICITE DE COMMERCIALISATION OU D'ADAPTATION QUEL QU'EN SOIT LE BUT. LA RESPONSABILITÉ DE BLACKMAGIC DESIGN POUR RÉPARER OU REMPLACER UN PRODUIT S'AVÉRANT DÉFECTUEUX CONSTITUE LA TOTALITÉ ET LE SEUL RECOURS EXCLUSIF PRÉVU ET FOURNI AU CONSOMMATEUR POUR TOUT DOMMAGE INDIRECT, SPÉCIFIQUE, ACCIDENTEL OU CONSÉCUTIF, PEU IMPORTE QUE BLACKMAGIC DESIGN OU SES REVENDEURS AIENT ÉTÉ INFORMÉS OU SE SOIENT RENDU COMPTE AU PRÉALABLE DE L'ÉVENTUALITÉ DE CES DOMMAGES. BLACKMAGIC DESIGN NE PEUT ÊTRE TENU POUR RESPONSABLE DE TOUTE UTILISATION ILLICITE DU MATÉRIEL PAR LE CONSOMMATEUR. BLACKMAGIC DESIGN N'EST PAS RESPONSABLE DES DOMMAGES RÉSULTANT DE L'UTILISATION DE CE PRODUIT. LE CONSOMMATEUR UTILISE CE PRODUIT À SES SEULS RISQUES.

© Copyright 2025 Blackmagic Design. Tous droits réservés. 'Blackmagic Design', 'DeckLink', 'HDLink', 'Workgroup Videohub', 'Multibridge Pro', 'Multibridge Extreme', 'Intensity' et 'Leading the creative video revolution' sont des marques déposées aux États-Unis et dans d'autres pays. Tous les autres noms de société et de produits peuvent être des marques déposées des sociétés respectives auxquelles ils sont associés.

Thunderbolt et le logo Thunderbolt sont des marques d'Intel Corporation aux États-Unis et/ou dans d'autres pays.

Blackmagic Streaming Processors



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Lieber Kunde, liebe Kundin!

Vielen Dank, dass Sie sich zum Kauf eines Blackmagic Streaming Processors entschieden haben.

Blackmagic Streaming Encoder lassen sich direkt an sämtliches SDI-Equipment anschließen, konvertieren Signale in H.264 und ermöglichen das Streamen an gängige Streaming-Dienste wie YouTube Live, Facebook Live und Twitch. Außerdem können Sie Video mithilfe eines Blackmagic Streaming Decoders in Broadcastqualität von Punkt-zu-Punkt übertragen. Die Internetübertragung von professionellem Video an entfernte Standorte ist so ein Leichtes.

Dabei empfängt der Blackmagic Streaming Decoder den Stream vom Blackmagic Streaming Encoder und wandelt ihn in SDI- und HDMI-Video. Er enthält sogar Funktionen wie Tally, Talkback und Kamerasteuerung, was ihn ideal für Live-Produktionen macht. Überdies dekodiert der Streaming Encoder auch Streams von Blackmagic Kameras und ATEM Mischern, die über eine integrierte Streaming-Funktion verfügen.

Diese Bedienungsanleitung enthält alle Informationen, die Sie für die Installation und Inbetriebnahme Ihres Blackmagic Streaming Processors benötigen.

Sehen Sie auf der Support-Seite unter www.blackmagicdesign.com/de nach der aktuellsten Ausgabe der Bedienungsanleitung sowie Aktualisierungen der Produktsoftware Ihres Blackmagic Streaming Processors. Registrieren Sie sich beim Herunterladen der Software mit Ihren Kontaktdaten, damit wir Sie über neue Softwareveröffentlichungen informieren können.

Wir arbeiten ständig an neuen Features und Verbesserungen und freuen uns über Feedback von Ihnen!

A stylized, handwritten signature in black ink that reads "Grant Petty".

Grant Petty

CEO Blackmagic Design

Inhalt

Erste Schritte	215	Verwenden der Webcam-Ausgabe	243
Anschließen an das Stromnetz	215	Blackmagic Universal Rack Shelf	243
Verbinden mit einem Netzwerk	216	Inhalt	244
Verbinden einer Videoquelle	216	Installieren von Geräten in einem Rack	244
Verbinden eines Monitors an einen Streaming Encoder	217	So bringen Sie eine 1/6-Blindplatte an:	245
Verbinden mit Videozielen	217	So bringen Sie eine 1/3-Blindplatte an der Seite an:	245
Einfaches Streaming über ein Netzwerk	217	Informationen für Entwickler (in englischer Sprache)	246
LC-Display	220	Blackmagic Streaming Encoder Ethernet Protocol	246
Symbole zur Verbindung	221	Protocol Blocks	248
Monitoring-Ausgabe des Streaming Encoders	221	Streaming Encoder Control REST API	258
Blackmagic Streaming Setup	226	Event Control API	260
Livestream	227	Livestream Control API	260
Audio	231	Monitor Output Control API	265
Setup	232	System Control API	266
Einstellungen für Streamquellen	235	Notification websocket - 1.0.0	268
Erstellen von Broadcast-Links	236	messages	268
Erstellen einer XML-Datei	237	Device Properties	269
Exportieren der XML-Datei	237	Blackmagic Streaming XML Format	271
Laden der XML-Datei	239	Hilfe	278
Tally, Talkback und Kamerasteuerung	239	Gesetzliche Vorschriften	279
Streaming mithilfe Ihres Smartphones	241	Sicherheitshinweise	280
Live ins Internet streamen	242	Garantie	281

Erste Schritte

Der Einstieg in die Arbeit mit Ihrem Blackmagic Streaming Processor ist einfach. Sie müssen bloß ein Stromkabel und ein Netzkabel einstecken und Ihre Videoquelle und -ziele anschließen.



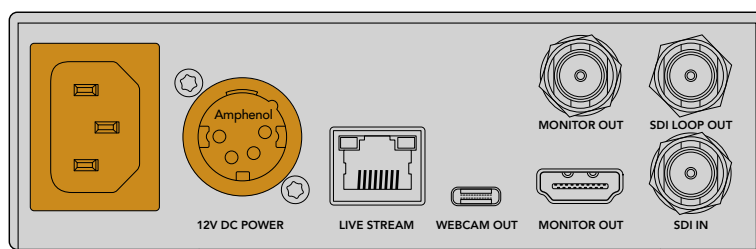
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

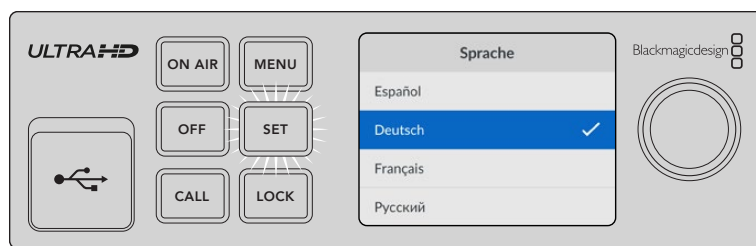
Anschließen an das Stromnetz

Für die Stromversorgung schließen Sie ein reguläres IEC-Kabel an den Stromeingang am Geräte Rücken Ihres Streaming Processors an.



Sowohl der Blackmagic Streaming Encoder als auch der Blackmagic Streaming Decoder verfügen über einen zusätzlichen 12V-DC-Stromeingang. An diesen Eingang können Sie eine externe Stromquelle oder Redundanz für ein externes Netzteil anschließen, bspw. eine unterbrechungsfreie Stromversorgung (UVS) oder einen 12V-Akku.

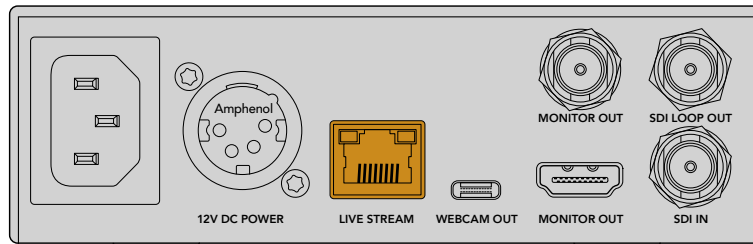
Sobald das Gerät mit Strom versorgt wird, werden Sie aufgefordert, auf dem LC-Display Ihre Sprache auszuwählen. Scrollen Sie mit dem Regler zur gewünschten Sprache und drücken Sie die blinkende SET-Taste.



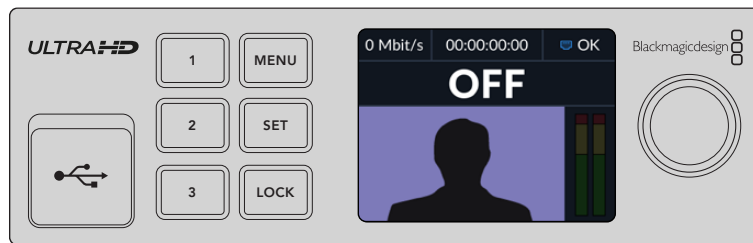
Drücken Sie die SET-Taste, um Ihre Sprache zu bestätigen

Verbinden mit einem Netzwerk

Verbinden Sie Ihren Blackmagic Streaming Processor mit dem Internet, indem Sie ein Netzkabel vom LIVE-STREAM-Ethernet-Port zu einem Internetrouter oder Netzwerk-Switch anschließen.



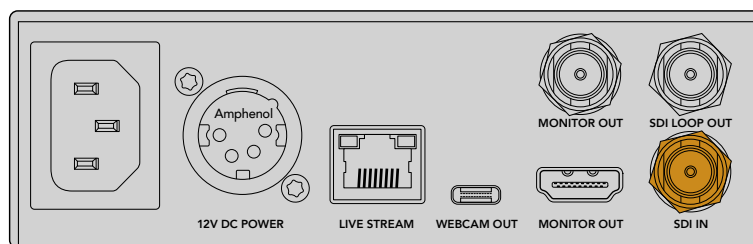
Ihr Blackmagic Streaming Processor ist standardmäßig auf DHCP eingestellt und sollte eine IP-Adresse automatisch finden. Wenn die Verbindung erfolgreich hergestellt wurde, sehen Sie ein blaues Ethernet-Symbol in der oberen rechten Ecke des LCD-Startbildschirms. Wie Sie eine Verbindung über eine Statische IP herstellen, erfahren Sie im Abschnitt „Blackmagic Streaming Setup“ weiter hinten in dieser Bedienungsanleitung.



Verbinden einer Videoquelle

Verbinden Sie die SDI-Videoquelle für den Stream, bspw. eine Blackmagic URSA Mini Pro 12K oder einen SDI-fähigen ATEM Mischer, mit dem SDI-Eingang Ihres Blackmagic Streaming Encoders. Der Blackmagic Streaming Encoder unterstützt 12G-SDI. Wechselt das eingehende Videosignal, schaltet er automatisch zwischen HD- und Ultra-HD-Formaten bis 2160p/60 um.

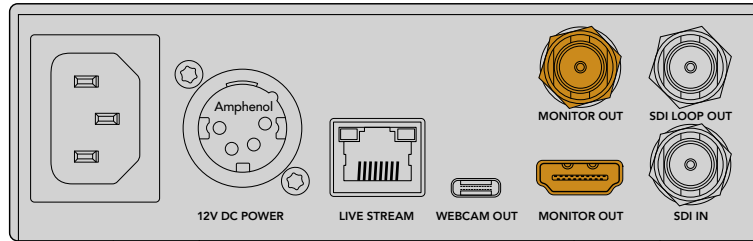
Sobald Ihr Video verbunden ist, wird es auf dem eingebauten LCD Ihres Streaming Encoders angezeigt. Der Ton wird mit dem Video ins SDI-Videosignal eingebettet und kann anhand der Audiopegelmeter auf dem LCD geprüft werden.



Schließen Sie Ihre SDI-Videoquelle an den SDI-IN-Eingang des Blackmagic Streaming Encoders an

Verbinden eines Monitors an einen Streaming Encoder

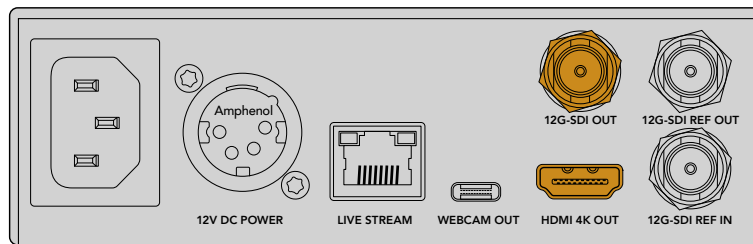
Schließen Sie Ihren HDMI-Fernseher oder SDI-Monitor an einen der MONITOR-OUT-Ausgänge am Geräte Rücken des Blackmagic Streaming Encoders an. Mit den Monitoring-Ausgängen können Sie Ihre Sendung überwachen und wichtige Informationen zu Ihrem Videostream sichten, z. B. den On-Air-Status, die Datendurchsatzraten und die Audiopegel. Weitere Informationen zum Monitorausgang finden Sie im Abschnitt „Monitoring-Ausgabe des Streaming Encoders“ in dieser Bedienungsanleitung.



Schließen Sie einen Fernseher oder Monitor an den Blackmagic Streaming Encoder an, um wichtige Informationen über Ihren Stream zu sichten.

Verbinden mit Videozielen

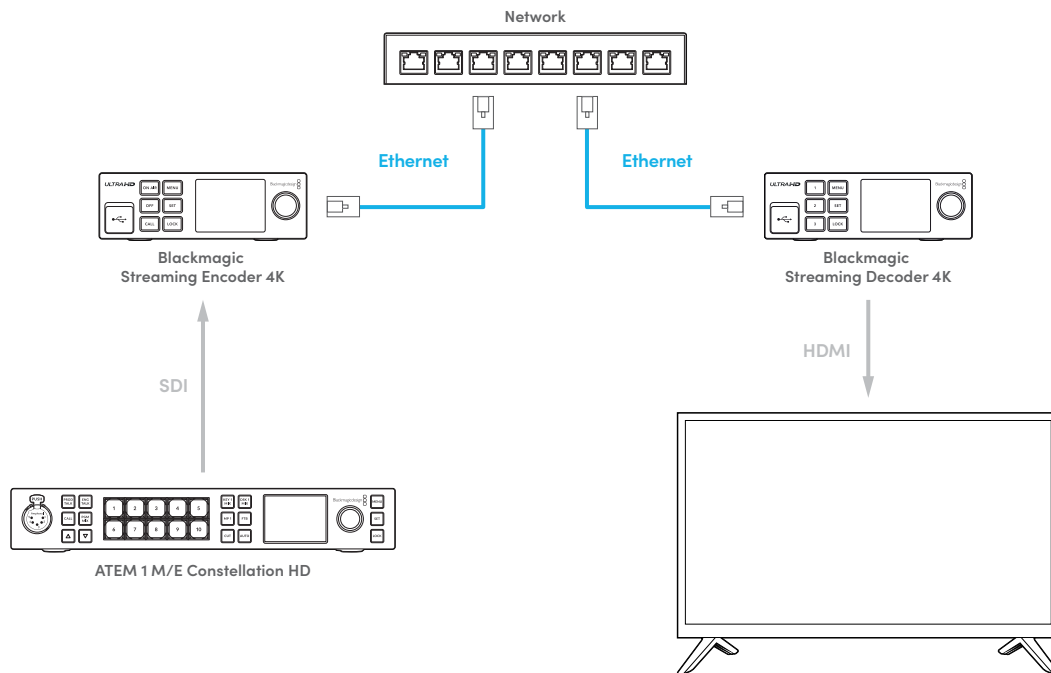
Mit dem Blackmagic Streaming Decoder werden Sie wahrscheinlich den dekodierten Stream an ein Ziel senden wollen, z. B. an einen SDI-fähigen ATEM Mischer und einen HDMI-Fernseher. Verbinden Sie den ATEM Mischer einfach über den 12G-SDI-Ausgang und den Fernseher über den HDMI-Anschluss.



Ihre Videoziele verbinden Sie mit den SDI- und HDMI-Anschlüssen des Streaming Decoders

Einfaches Streaming über ein Netzwerk

Sobald die Verbindung hergestellt ist, können Sie testen, ob alles korrekt funktioniert. Über ein lokales Netzwerk richten Sie einfach einen Stream zwischen dem Blackmagic Streaming Encoder und dem Blackmagic Streaming Decoder ein. Dieses Setup kann praktisch sein, wenn ein Livestream an einen Konferenzraum oder einen Videoprojektor geschickt werden soll. Im nachstehenden Beispiel sehen Sie ein einfaches Streaming-Setup von einem ATEM Mischer zu einem HDMI-Fernseher.



Die Frontblende Ihres Streaming Processors ist mit einem LCD ausgestattet, das wichtige Informationen anzeigt und das Monitoring von Video und Audio ermöglicht. Der Regler und die Menü-Tasten erlauben den schnellen Zugriff zu den Menü-Einstellungen Ihres Streaming Processors. Der Stream kann direkt von der Frontblende gestartet und beendet werden.

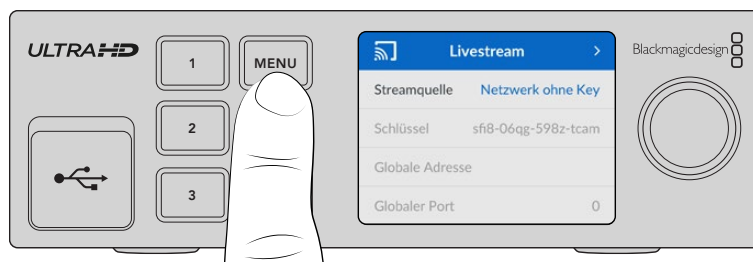
Alle im LCD-Menü an der Frontblende verfügbaren Einstellungen können auch über die Blackmagic Streaming Setup Software gesteuert werden. Näheres zur Einrichtung finden Sie unter „Blackmagic Streaming Setup“ weiter hinten in dieser Bedienungsanleitung.

Einen einfachen Stream einrichten:

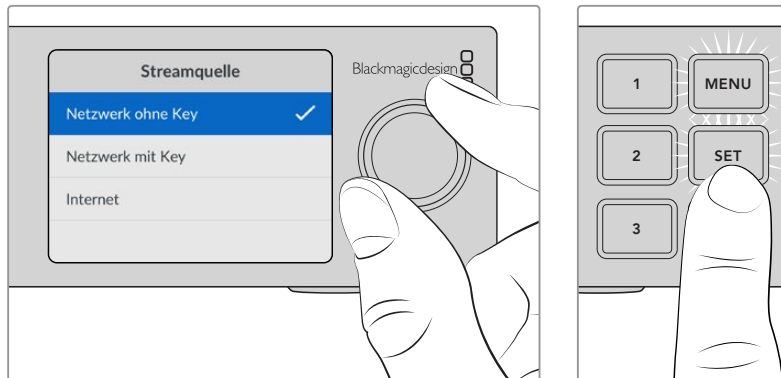
- 1 Verbinden Sie den Blackmagic Streaming Encoder und den Blackmagic Streaming Decoder mit dem gleichen Netzwerk-Switch.

TIPP Für eine noch einfachere Punkt-zu-Punkt-Einrichtung ohne Netzwerk-Switch können Sie den Blackmagic Streaming Encoder und den Blackmagic Streaming Decoder über ein einziges Ethernet-Kabel miteinander verbinden.

- 2 Drücken Sie beim Blackmagic Streaming Decoder die MENU-Taste, um das LCD-Menü an der Frontblende zu öffnen, und drücken Sie dann SET, um das Untermenü „Livestream“ zu öffnen.

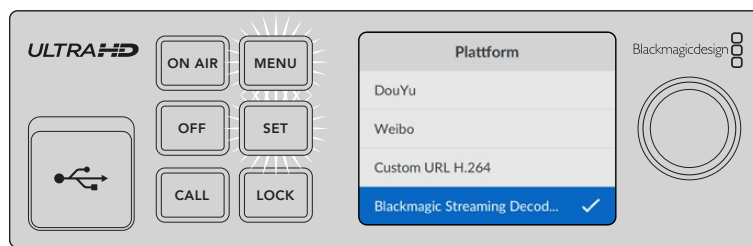


Navigieren Sie mit dem Drehregler zu „Streamquelle“, drücken Sie die SET-Taste und wählen Sie „Netzwerk ohne Key“ aus der Liste. Bestätigen Sie Ihre Auswahl durch Drücken der SET-Taste.



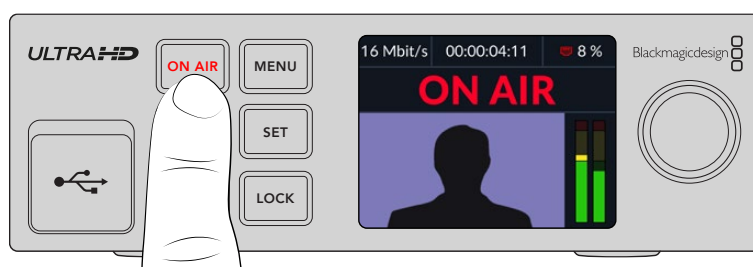
Drücken Sie die MENU-Taste, um zum Startbildschirm zurückzukehren.

- 3 Drücken Sie die MENU-Taste am Blackmagic Streaming Encoder, um das „Livestream“-Menü zu öffnen. Drücken Sie SET und drehen Sie den Regler, um zu den „Plattform“-Einstellungen zu scrollen. Drücken Sie die SET-Taste, um das „Plattform“-Untermenü zu wählen.

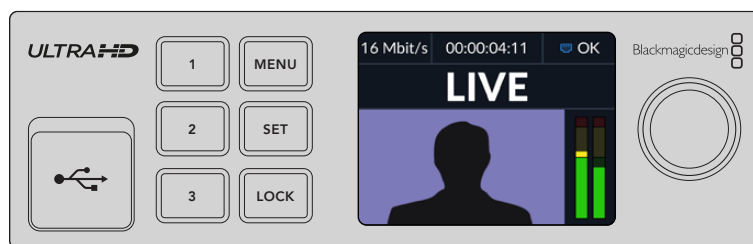


Wählen Sie den Blackmagic Streaming Decoder aus der „Plattform“-Liste und drücken Sie auf die SET-Taste. Drücken Sie die MENU-Taste, um zum Homescreen zurückzukehren.

- 4 Drücken Sie auf die ON-AIR-Taste an der Frontblende des Blackmagic Streaming Encoders. Die Taste leuchtet während des Streamings Rot auf und der ON-AIR-Status wird auf dem LCD-Startbildschirm angezeigt.



Ihr Stream kann auf dem LCD des Blackmagic Streaming Decoders gesichtet werden.



Auf dem LCD des Streaming Decoders wird ein LIVE-Indikator angezeigt

Um das Streaming zu beenden, drücken Sie die OFF-Taste an der Frontblende des Streaming Encoders.

TIPP Eine blinkende ON-AIR-Taste bedeutet, dass der Start eines Livestreams fehlgeschlagen ist oder der Livestream unerwartet abgebrochen wurde. Dies mag auf ein Problem mit der Netzwerkverbindung oder mit den Streaming-Einstellungen zurückzuführen sein. Prüfen Sie, ob Ihre Streaming-Einstellungen korrekt und die Netzkabel verbunden sind.

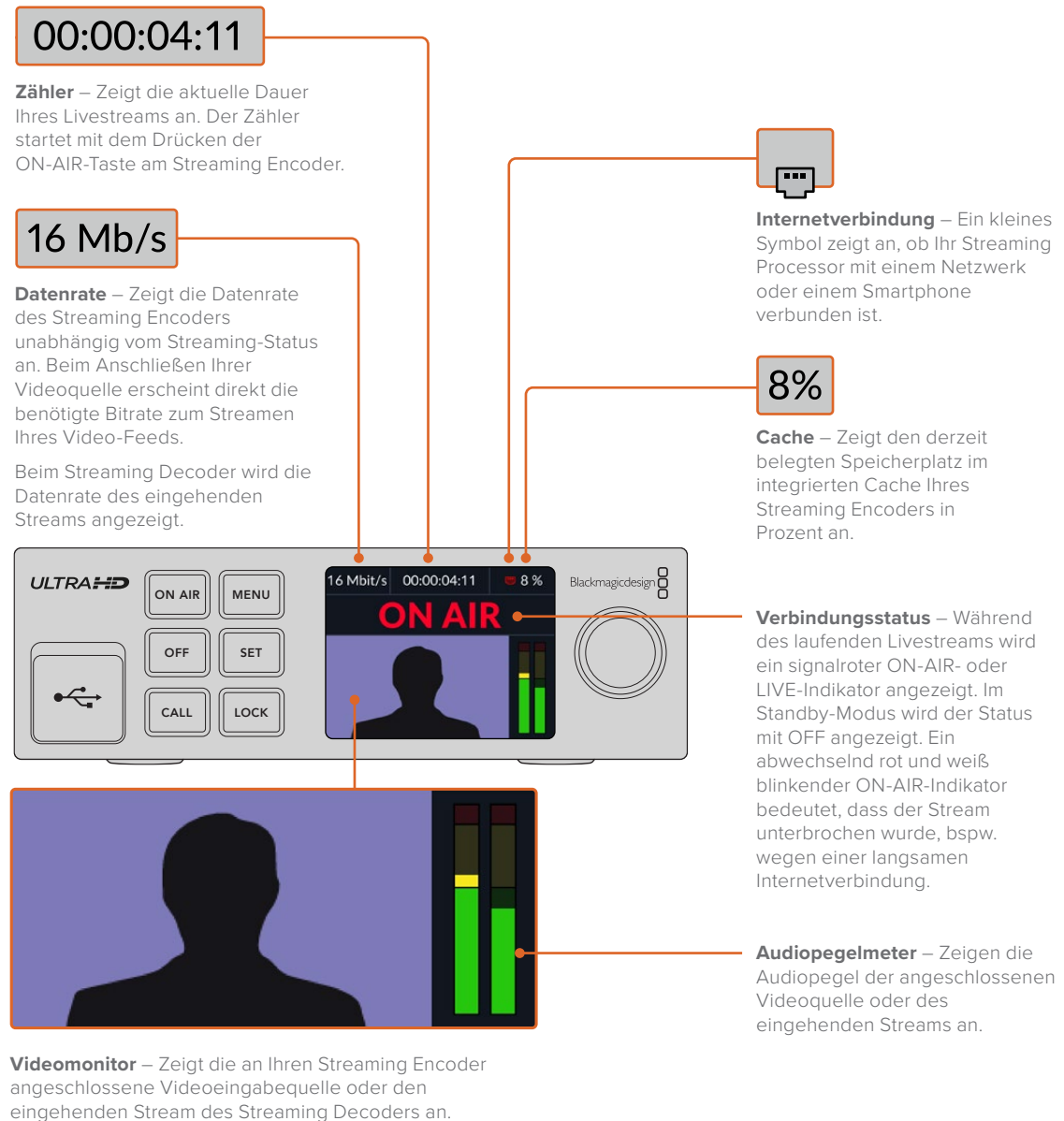
Sperrtaste

Um die Frontblende zu sperren, drücken Sie die LOCK-Taste eine Sekunde lang. Dies deaktiviert die Tasten und den Regler und verhindert, dass Signalwege oder Einstellungen versehentlich geändert werden.

Um die Frontblende zu entsperren, halten Sie die Taste 2 Sekunden lang gedrückt.

LC-Display

Der LCD-Hauptbildschirm Ihres Blackmagic Streaming Processors bietet Video- und Audiomonitoring sowie wichtige Informationen zu Ihrem Stream.



Symbole zur Verbindung

Das Verbindungssymbol in der oberen rechten Ecke des LC-Displays zeigt den Verbindungsstatus Ihres Blackmagic Streaming Processors an.



Das blaue Ethernet-Symbol zeigt an, dass ein Ethernet-Kabel angeschlossen ist und fürs Streaming die Ethernet-Verbindung verwendet wird.



Ein rotes Ethernet-Symbol am Blackmagic Streaming Encoder zeigt an, dass das Gerät on air ist und per Ethernet streamt.



Ein blaues Handysymbol zeigt an, dass fürs Streaming eine von einem Smartphone freigegebene Internetverbindung verwendet wird.



Ein rotes Handysymbol auf dem Blackmagic Streaming Encoder zeigt an, dass das Gerät on air ist und fürs Streaming eine von einem Smartphone freigegebene Verbindung verwendet wird.

TIPP Wenn kein Symbol erscheint, ist Ihr Blackmagic Streaming Processor nicht mit dem Netzwerk verbunden. Vergewissern Sie sich, dass die Kabel korrekt eingesteckt sind.

Monitoring-Ausgabe des Streaming Encoders

Über die Monitoring-Ausgabe Ihres Blackmagic Streaming Encoders können Sie Videoeingabe, Audiopegel, On-Air-Status, Datenrate und Cache-Status sowie technische Informationen zur SDI-Eingabe überwachen.



Die Monitoring-Ausgabe liefert umfassende Informationen, u. a. zu Datenrate und Cache-Status

Die Monitoring-Ausgabe besteht aus acht Bereichen. Nachstehend werden die einzelnen Bereiche und die dort angezeigten Informationen beschrieben.

Eingabe-Ansicht

Der größte Bereich zeigt das aktuell von der angeschlossenen SDI-Videoquelle eingehende Video an.



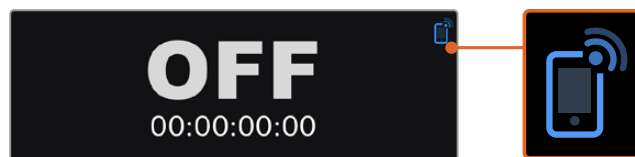
On-Air-Status

Vor dem Streamen steht der ON-AIR-Statusindikator auf AUS. Dies signalisiert, dass der Streaming Encoder sich im Standby-Modus befindet und sendebereit ist. Ab Beginn des Streamens leuchtet der ON-AIR-Statusindikator so lange rot, bis der Stream gestoppt wird.



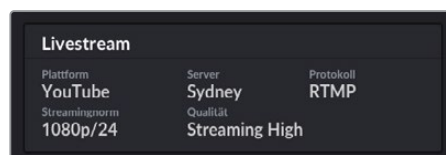
Unterhalb des ON-AIR-Indikators befindet sich ein Zähler. Der Zähler startet, sobald die ON-AIR-Taste am Streaming Encoder gedrückt wird.

Wenn Ihr Streaming Encoder off air ist, aber über Smartphone-Tethering streamen soll, erscheint in der oberen rechten Ecke des OFF-Indikators ein blaues Handysymbol. Ist das Gerät on air, ist das Handysymbol rot.



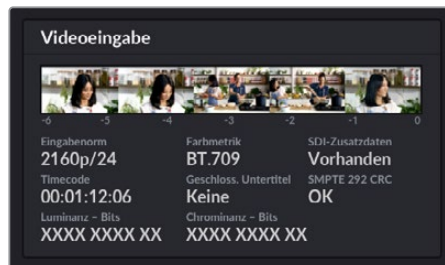
Livestream

Das „Livestream“-Fenster zeigt Informationen zu Ihren Livestream-Einstellungen an. Dazu gehören die Streaming-Plattform, der Server und das Protokoll. Zudem werden die Streamauflösung und die Qualitätseinstellungen angezeigt.



Videoeingabe

Fünf Mini-Viewer am oberen Rand des Videoeingabe-Bereichs zeigen die letzten 6 Sekunden Ihres Livestreams. Jeder Viewer bildet jeweils 1,2 Sekunden davon ab.



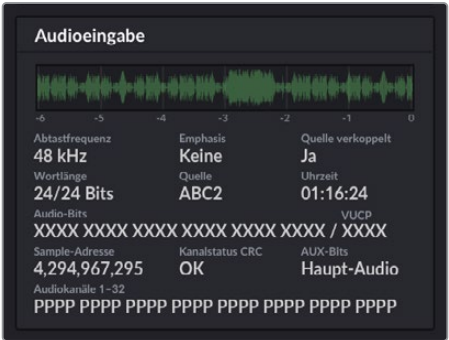
Unterhalb der Mini-Viewer sehen Sie detaillierte technische Informationen zur Videoquelle, die an den SDI-Eingang Ihres Streaming Encoders angeschlossen ist.

Eingabenorm	Zeigt die Auflösung und Bildwechselfrequenz der SDI-Videoeingabe. Der Streaming Encoder unterstützt bis zu 2160p/60.
Farbmetrik	Zeigt den Farbraum der SDI-Videoeingabe. Der Streaming Encoder unterstützt die Farbräume Rec. 601, Rec. 709 und Rec. 2020.
SDI-Zusatzdaten	Zusatzdaten werden in der SDI-Videoeingabe neben dem Video übertragen. Diese umfassen eingebettetes Audio, Timecode und geschlossene Untertitel. Falls Ihre SDI-Eingabe zusätzliche Daten übermittelt, wird unter diesem Punkt „Vorhanden“ angezeigt.

Timecode	Zeigt den Timecode der SDI-Videoeingabequelle an.
Geschlossene Untertitel	Wenn Ihre SDI-Videoeingabe geschlossene Untertitel beinhaltet, wird hier das Format angezeigt. Unterstützt werden CEA-608- und CEA-708-Formate.
SMPTE 292 CRC	Dies ist eine Fehlerüberprüfungsfunktion für SDI-Video. Wenn ihr Streaming Encoder ein Problem mit der SDI-Videoeingabe erkennt, wird ein Fehler angezeigt. Die meisten CRC-Fehler sind auf fehlerhafte oder übermäßig lange SDI-Kabel zurückzuführen.
Luminanz Bits und Chrominanz Bits	Die Indikatoren für „Luminanz – Bits“ und „Chrominanz – Bits“ zeigen die Aktivität des SDI-Signals der Videoeingabe. Jeder Buchstabe steht für den Zustand eines Bits im Videosignal. X – Ein „X“ steht für ein sich ständig veränderndes Bit L – Ein „Low“- oder „0“-Bit H – Ein „High“- oder „1“-Bit Zum besseren Verständnis werden SDI-Offsets subtrahiert, bspw. sind bei schwarzem Video alle Bits „Low“. Grundsätzlich werden alle 10 Bits Ihrer SDI-Videoeingabe mit einem „X“ angezeigt. Sie verweisen auf ständige Veränderungen der Bits in Ihrem Videostream. Verwenden Sie 8-Bit-Video für die SDI-Eingabe, werden die beiden Bits ganz rechts immer mit einem „L“ angezeigt, weil sie keine Daten aufweisen. Bleibt ein Bit bei „L“ oder „H“ stehen, wenn der Zustand eigentlich „X“ sein sollte, könnte das Bit infolge eines Fehlers mit dem Upstream-Video „haken“.

Audioeingabe

Die Audio-Waveform-Anzeige am oberen Rand des Audioeingabe-Bereichs zeigt Audioinformationen der letzten 6 Sekunden Ihres Streams an. Sie aktualisiert sich ständig und läuft von rechts nach links.

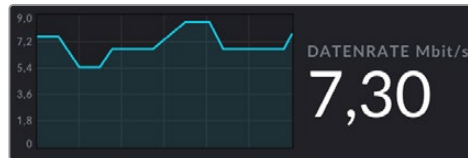


Unterhalb der Audio-Waveform-Anzeige erscheinen detaillierte technische Informationen zur Audioeingabe.

Abtastfrequenz	Zeigt die Abtastrate des in die SDI-Eingabe eingebetteten Audios ein.
Emphasis	Zeigt an, ob für die Audioquelle die Option „Emphasis“ aktiviert ist.
Quelle verkoppelt	Zeigt an, ob die Frequenz der Audioquelle mit einer externen Referenzquelle verkoppelt ist.
Wortlänge	Zeigt die Bittiefe des in die SDI-Eingabe eingebetteten Audios an.
Quelle	Diese vier Zeichen verweisen auf die Quelle des Kanals.
Uhrzeit	Frei laufender Timecode.
Audio-Bits	Zeigt die Bitaktivität in den Audio-Samples an, die in die SDI-Verbindung eingebettet sind. Der Status des Audiokanals gibt an, ob Ihr Audio 16, 20 oder 24 Bit aufweist. Die Audio-Bitaktivität bestätigt dies zusätzlich.
VUCP	Von links nach rechts gelesen stehen VUCP-Bits für „Valid“ (gültig), „User“ (Nutzer), „Channel Status“ (Kanalstatus) und „Parity“ (Parität). Das Feld ist ähnlich wie „Audio-Bits“.
Sample-Adresse	Audiosample-Zähler.
AUX-Bits	Zeigt, ob fürs Hauptaudio Aux-Bits verwendet werden.
Audiokanäle 1–32	Jede Stelle steht für einen in die SDI-Eingabe eingebetteten Audiokanal. „P“ steht für einen belegten Audiokanal und „–“ für einen Kanal ohne Audio.

Datenratenanzeige

Die Datenratenanzeige zeigt die aktuelle Datenrate des Encoders für die letzten 60 Sekunden an. Die Datenrate wird in Megabits pro Sekunde angegeben. Damit Sie die Bandbreite vor dem Streamen genau einschätzen können, läuft der Indikator auch off air konstant weiter.



Cache-Anzeige

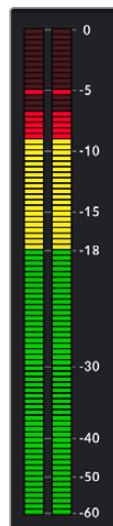
Die Cache-Anzeige zeigt den derzeit belegten Speicherplatz des in den Blackmagic Streaming Encoder integrierten Pufferspeichers in Prozent an, und der Graph den in den letzten 60 Sekunden verbrauchten Speicherplatz. Der Cache ist ein kleiner interner Speicher, der unaufhörlich aufzeichnet und die Programmausgabe wiedergibt. Sinkt die Streaming-Datenrate unter ein für kontinuierliches Video benötigtes Level ab, fungiert der Cache als Sicherheitspuffer.

Schwankende Internetverbindungen sind vorrangig durch die Netzwerkauslastung oder Funksignalstärke bedingt. Sobald die Übertragungsdatenrate abnimmt, puffert der Cache mehr Daten. Sinkt die Datenübertragungsrate unter die für den Videostream benötigte Geschwindigkeit, gleicht der Cache das durch Zwischenspeichern der Videobilder aus. Sobald der Cache zu 100 % ausgelastet ist, leidet die Streamqualität. Vermeiden Sie es deshalb, den Cache ganz voll werden zu lassen. Testen Sie dies, indem Sie einen Video-Feed anschließen und die Cache-Anzeige auf der Monitoring-Ausgabe beobachten, ohne den Stream zu starten. Wenn sich der Cache häufig der 100-Prozentmarke nähert, geben Sie in den „Livestream“-Einstellungen eine geringere Qualitätsstufe vor.



Audiopegelmeter

Anhand der Audiopegelmeter können Sie die Pegel Ihrer Audioquelle überwachen. In den Menü-Einstellungen des Blackmagic Streaming Encoders können Pegel entweder auf PPM oder VU eingestellt werden. Zu hoch ausgesteuerte Audiopegel erscheinen in den Pegelmetern in Rot. Dies kann in Ihrem Livestream Verzerrung oder Clipping verursachen. Halten Sie Ihr Audio idealerweise im oberen Abschnitt des grünen Balkenbereichs mit gelegentlichen Ausschlägen in den gelben Bereich.



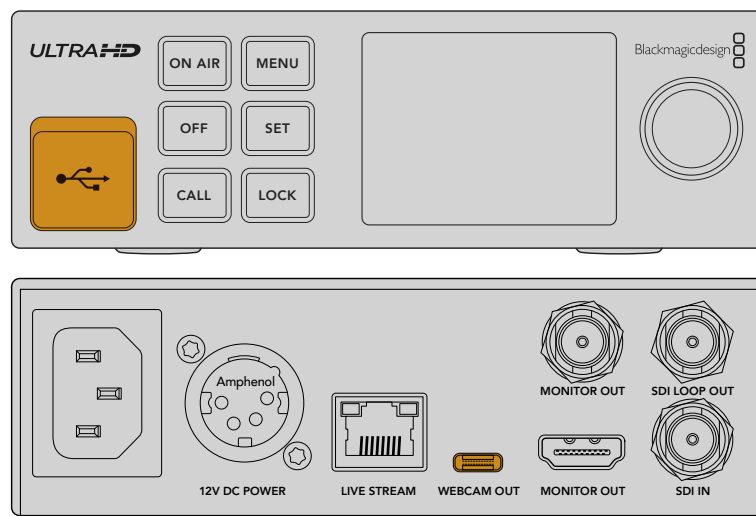
Blackmagic Streaming Setup

Blackmagic Streaming Setup ist ein Software-Dienstprogramm zum Ändern von Einstellungen, Konfigurieren von Netzwerken, Aktualisieren der Produktsoftware Ihres Blackmagic Streaming Processors sowie zum Speichern und Laden von Streaming-Einstellungsdateien.

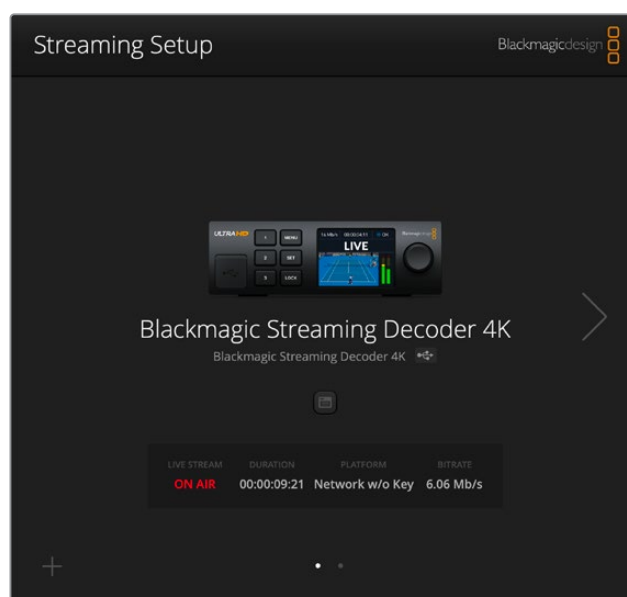
Laden Sie die aktuellste Blackmagic Streaming Setup Software zum Installieren aus dem Support-Center unter www.blackmagicdesign.com/de/support herunter.

So verwenden Sie Blackmagic Streaming Setup:

- 1 Verbinden Sie Ihren Streaming Processor über den vorder- oder rückseitigen USB-C-Port mit Ihrem Computer.



- 2 Starten Sie Blackmagic Streaming Setup. Der Name Ihres Streaming Processors erscheint auf der Startseite des Dienstprogramms.
- 3 Um die Einstellungen zu öffnen, klicken Sie auf das quadratische Setup-Symbol oder das Bild Ihres Blackmagic Streaming Processors. Sind mehr als ein Streaming Processor ins Netzwerk eingebunden, klicken Sie auf die seitlichen Pfeil-Buttons des Setup-Fensters, um zum gewünschten Gerät zu navigieren.



Livestream

Der „Live Stream“-Tab enthält alle Einstellungen, um die Livestream-Verbindung für Ihren Streaming Processor zu konfigurieren.

Streaming Encoder

Der „Live Stream“-Tab für den Blackmagic Streaming Encoder enthält Einstellungen für die Streamqualität, zum Wählen und Konfigurieren einer Streaming-Plattform sowie zum Laden einer XML-Datei mit Streaming-Einstellungen.

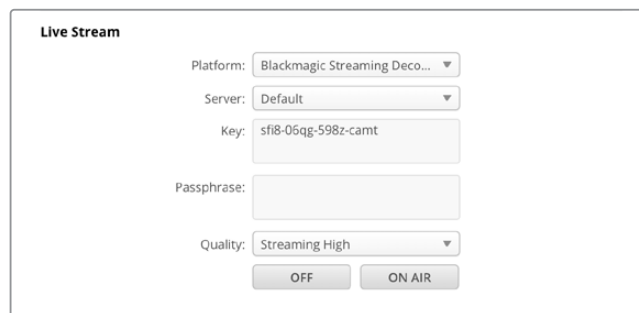
Video Output



Wählen Sie im Menü „Stream Standard“ die Auflösung für Ihren Videostream. Sie haben die Wahl zwischen den Auflösungen von 720p/25 bis 2160p/60.

Live Stream

In den „Live Stream“-Einstellungen wählen Sie einen Streaming-Dienst, konfigurieren die Einstellungen und bestimmen die Streamqualität.



Platform

Klicken Sie auf das Menü „Platform“ und wählen Sie dort die Streaming-Plattform für Ihre Übertragung. Zur Verfügung stehen u. a. YouTube, Facebook und Twitch. Importierte benutzerdefinierte Streaming-Einstellungen erscheinen ebenfalls unter „Platform“.

Um zu einer benutzerdefinierten URL zu streamen, wählen Sie eine benutzerdefinierte URL-Option aus dem Menü „Platform“. Zum Streamen an eine benutzerdefinierte URL können Sie zwischen H.264 und H.265 wählen.

Server

Wählen Sie den nächstgelegenen Server zu Ihrem Standort aus der Liste. Abhängig von der ausgewählten Streaming-Plattform werden Ihnen in der Liste unterschiedliche Server angezeigt.

Wenn Sie an Instagram, Microsoft Teams oder eine benutzerdefinierte URL streamen, ist die Serverliste ein bearbeitbares Feld. Geben Sie hier die URL ein, die Ihrem Streaming-Plattformkonto oder den benutzerdefinierten URL-Details zugewiesen wurde.

Key

Geben Sie hier den Streamschlüssel ein, den die Streaming-Plattform Ihrer Übertragung zugewiesen hat.

Passphrase

Geben Sie bei Gebrauch eines Streaming-Dienstes mit dem SRT-Streaming-Protokoll die Ihnen von Ihrem Streaming-Dienst-Konto zugewiesene Passphrase ein.

Quality

Wählen Sie die für Ihren Stream gewünschte Streaming-Qualität. In der folgenden Tabelle finden Sie die Datenraten für H.264- und H.265-Codexs.

H.264	
HD	4K
HyperDeck High 45 to 70 Mb/s	HyperDeck High 95 to 220 Mb/s
HyperDeck Medium 25 to 45 Mb/s	HyperDeck Medium 66 to 150 Mb/s
HyperDeck Low 12 to 20 Mb/s	HyperDeck Low 38 to 80 Mb/s
Streaming High 6 to 9 Mb/s	Streaming High 34 to 51 Mb/s
Streaming Medium 4,5 to 7 Mb/s	Streaming Medium 23 to 35 Mb/s
Streaming Low 3 to 4.5 Mb/s	Streaming Low 13 to 20 Mb/s

H.265	
HD	4K
Streaming High 2.3 to 4.5 Mb/s	Streaming High 22.5 to 30 Mb/s
Streaming Medium 1.5 to 3 Mb/s	Streaming Medium 14 to 20 Mb/s
Streaming Low 0.8 to 2 Mb/s	Streaming Low 8 to 10 Mb/s

Die für die Qualitätseinstellung verwendete Datenrate richtet sich nach der Videonorm, in der Ihr Streaming Encoder betrieben wird. Beispiel: Wenn Sie fürs Streamen die hohe Qualitätsstufe „HyperDeck High“ wählen und in 1080p/24 arbeiten, wird die Datenrate 6 Mb/s verwendet.

Wie Sie der Tabelle entnehmen können, sind die Streaming-Datenraten vergleichsweise niedriger als die HyperDeck-Datenraten. Dies ermöglicht die Übertragung von Daten übers Internet, wofür in der Regel eine geringere Bandbreite benötigt wird als für die Aufzeichnung von Daten auf eine Festplatte.

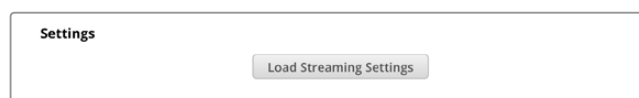
Sie werden bemerken, dass es für jede Einstellung zwei Datenraten gibt. Die niedrigere Rate wird für die niedrigeren Frameraten 24p, 25p und 30p verwendet. Die höhere Datenrate wird für die höheren Frameraten 50p und 60p verwendet. Wichtig: Die Standardeinstellung für die Streaming-Qualität ist „Streaming High“. Sie bietet einen sehr hochwertigen Streaming-Kanal.

Die Buttons ON und ON AIR

Mit den Buttons ON und ON AIR starten oder stoppen Sie einen Livestream. Der ON-AIR-Button leuchtet rot, solange ein Livestream im Gange ist.

Settings

Klicken Sie auf den Button „Load Streaming Settings“ und folgen Sie den Anweisungen, um eine XLM-Datei mit Streaming-Einstellungen von einem Blackmagic Streaming Decoder zu laden.

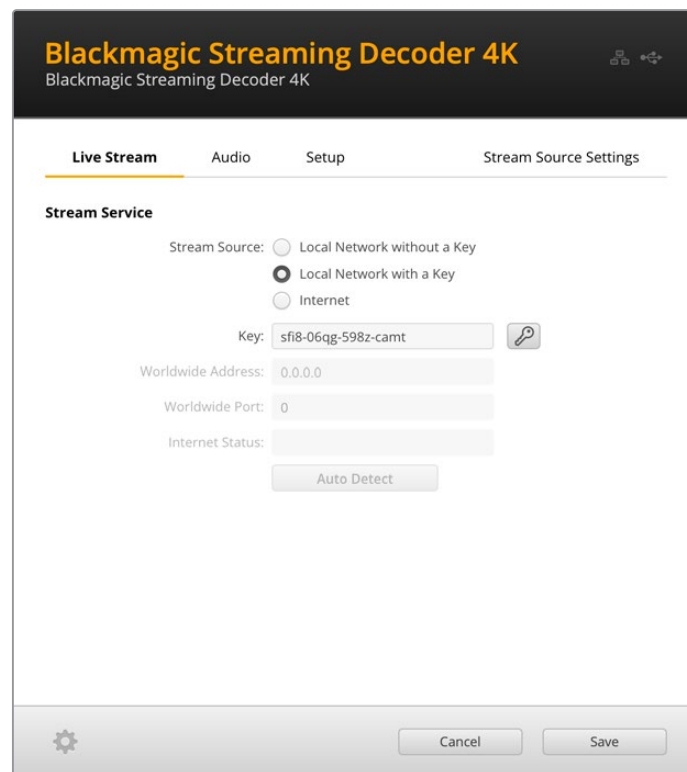


Löschen von importierten Einstellungen

Um alle importierten Streaming-Einstellungen aus Ihrem Blackmagic Streaming Encoder zu löschen, klicken Sie auf das Zahnradsymbol unten links auf dem Tab „Live Stream“. Klicken Sie auf „Remove“, um Ihre Auswahl zu bestätigen.

Streaming Decoder

Im „Live Stream“-Tab für den Blackmagic Streaming Decoder wählen Sie eine Streaming-Quelle und konfigurieren die Interneteinstellungen für Ihren Decoder.



Stream Service

Unter „Stream Service“ finden sich Einstellungsoptionen, um Ihren Streaming Decoder mit einem standardunabhängigen Streaming Encoder, einer Blackmagic Kamera oder einem ATEM Mischer zu verbinden, wenn diese Geräte internes Streaming unterstützen.

Stream Source

Im Menü „Stream Source“ wählen Sie für Ihren eingehenden Stream eine Quelle aus. Die Optionen umfassen „Local Network without a Key“, und „Internet“.

Key

Jeder kann Streams an den im Menü aufgeführten Blackmagic Streaming Decoder senden. Um Unbefugten den Zugriff zu verwehren, empfiehlt es sich, einen Streamschlüssel einzurichten. Weil die Auswahl eines Blackmagic Streaming Decoders in einem Netzwerk so einfach ist, kann es ohne Streamschlüssel ein Wirrwar aus Streams verschiedener Benutzer geben.

Mit einem Streamschlüssel passiert so etwas nicht. Er fungiert als Passwort und verweigert Unbefugten Zugriff auf Ihren Blackmagic Streaming Decoder. Wenn Sie Streaming Setup geöffnet haben, sehen Sie das Texteingabefeld für den Streamschlüssel. Geben Sie dort einfach ein Passwort als Streamschlüssel ein. Mit dem eingerichteten Streamschlüssel können sich dann ausschließlich Blackmagic Streaming Decoder mit dem gleichen Streamschlüssel verbinden.

Sie können sich ein Passwort ausdenken. Alternativ klicken Sie in Streaming Setup auf das Schlüsselsymbol und lassen den Computer ein sicheres Passwort erstellen. Dann kopieren Sie das Passwort einfach, fügen es als Streamschlüssel ein und teilen diesen allen mit, die sich verbinden dürfen. Nach Eingabe des Streamschlüssels für den Blackmagic Streaming Encoder, eine Blackmagic Kamera oder einem ATEM Mischer haben ausschließlich diese berechtigten Personen Zugriff auf Ihren Streaming Decoder.

Verbindung per Internet

Am spannendsten ist es, einen Blackmagic Streaming Decoder über das Internet zu verbinden. Das ist etwas komplizierter, weil Sie dafür sorgen müssen, dass ein Streaming Encoder, eine Blackmagic Kamera oder ein ATEM Mischer Ihren Streaming Decoder von überall auf der Welt erkennt. Die Welt ist groß und darum müssen Sie ein paar weitere Einstellungen aktualisieren, damit es funktioniert.

Voraussetzungen

Um eine Verbindung über das Internet zu ermöglichen, müssen sowohl der Blackmagic Streaming Decoder als auch der Streaming Encoder, die Kamera oder der ATEM Mischer, der oder die den Stream sendet, mit dem Internet verbunden sein. Des Weiteren muss Ihrem Streaming Decoder eine öffentliche und zugleich statische IP-Adresse zugewiesen sein, damit sie im Laufe der Zeit unverändert bleibt.

Dann ist der Blackmagic Streaming Decoder in Ihrem lokalen Ethernet-Netzwerk auch im Internet auffindbar. Um dem Streaming Decoder zu erlauben, über Ihre Internetverbindung eine Verbindung mit einem Streaming Encoder, der Kamera oder einem ATEM Mischer aufzubauen, wird die Portweiterleitung durch Ihre Firewall verwendet. Ohne dies eingerichtet zu haben, kann der Streaming Encoder, die Kamera oder der ATEM den Streaming Decoder nicht auffinden.

Bitte Sie in diesem Fall Ihren Internetanbieter oder Netzwerkadministrator, die Portweiterleitung für Ihre Internetverbindung auf „TCP Port 1935“ einzurichten. Diese Fachleute wissen, wie man das macht. Das Gute ist: Der Blackmagic Streaming Decoder versucht ebenfalls, die Portweiterleitungsfunktion einzurichten. Die meisten Internetverbindungen und Firewalls verfügen nämlich über ein Protokoll zur automatischen Einrichtung der Portweiterleitung. Der Streaming Decoder kann also mit Ihrem Netzwerkequipment kommunizieren und die Portweiterleitung schon während der Einrichtung in Streaming Setup vorgeben.

Bestätigen des Internetzugangs

Weiter unten findet sich ein Feld mit dem Internetstatus. Der Blackmagic Streaming Decoder wird versuchen, eine Internetverbindung aufzubauen. Gelingt das, werden Sie benachrichtigt, dass alles funktioniert. Wird Ihnen der Text „Connected“ angezeigt, heißt das, dass der Streaming Decoder Ihr Netzwerkequipment erfolgreich mit den Einstellungen für die Portweiterleitung eingerichtet und eine Internetverbindung aufgebaut hat.

HINWEIS Da das Öffnen von Ports in Ihrem Netzwerk für den externen Datenverkehr ggf. die Netzwerksicherheit reduziert, erfragen Sie diesbezügliche Vorbehalte am besten bei Ihrem Internetanbieter oder Netzwerkadministrator.

Wenn im Internetstatus-Feld etwas anderes steht als „Visible worldwide“ (Weltweit sichtbar), müssen Sie die Portweiterleitung Ihrer Internet-Firewall ggf. selbst konfigurieren. Nicht alle Firewalls unterstützen das Protokoll zur automatischen Einrichtung solcher Infos, aber die manuelle Einrichtung wird von allen Protokollen unterstützt.

Wenn Sie nicht auf die Routereinstellungen zugreifen können oder nicht wissen, wie man die Portweiterleitung einrichtet, wenden Sie sich ggf. an Ihren Internetanbieter. Bei größeren Netzwerken lassen Sie die Portweiterleitung am besten von Ihrem Netzwerkadministrator einrichten, um eventuellen Konflikten in Ihrem Netzwerk vorzubeugen.

Internet Status

Beim Einrichten der Internetverbindung dient die Internetstatus-Anzeige als Hilfe zur Problembehebung. Es folgen Infos zu den von dieser Feature angezeigten Problemen und ihren Ursachen.

Visible Worldwide (Weltweit sichtbar)	Deutet darauf hin, dass alles korrekt funktioniert. Die Portweiterleitung wurde erfolgreich eingerichtet und der Blackmagic Streaming Decoder ist bereit, einen Videostream aus dem Internet zu empfangen.
No Internet Access (Kein Internetzugang)	Der Streaming Decoder kann sich nicht mit dem Internet verbinden. Prüfen Sie Ihre Netzwerkeinstellungen und Internetverbindung.
Port Forwarding Error (Portweiterleitungsfehler)	Es mag eine Internetverbindung bestehen, die Portweiterleitung auf Ihrer Firewall konnte über den Streaming Decoder aber nicht eingerichtet werden. Darum ist der Prozessor nicht über das Internet erreichbar. Bitten Sie Ihren Netzwerkadministrator, diese Funktion einzurichten.
UPnP error (UPnP-Fehler)	Diese kryptische Fehlermeldung bedeutet ebenfalls, dass die Einrichtung der Portweiterleitung zwischen Streaming Decoder und Internetrouter fehlgeschlagen ist. Bitten Sie Ihren Netzwerkadministrator um die Einrichtung dieser Funktion oder ziehen Sie zur Einrichtung einer Portweiterleitung das Routerhandbuch zu Rate.

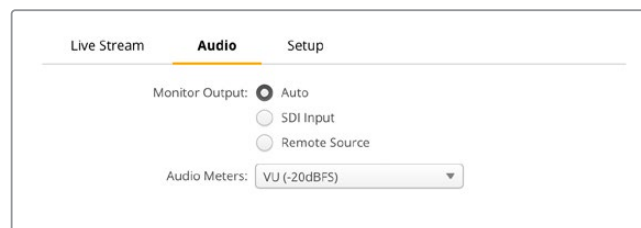
Auto Detect

Klicken Sie auf „Auto Detect“, damit die Einstellungen für Ihre Internetverbindung automatisch erkannt werden.

Audio

Im „Audio“-Tab konfigurieren Sie die Einstellungen für die Audio-Monitoring-Ausgabe Ihres Streaming Processors sowie Talkback und die Optionen für Audiopegelmeter.

Streaming Encoder



Monitor Output

Verwenden Sie die Monitorausgabe-Optionen, um die Audioquelle auszuwählen, die für die SDI- und HDMI-Monitorausgaben Ihres Streaming Encoders verwendet wird.

Auto

Wenn die Monitorausgabe auf „Auto“ eingestellt ist, erkennt und hört Ihr Streaming Encoder automatisch Talkback-Audio, das von einem ATEM Mischer über einen Blackmagic Streaming Decoder gesendet wird. Wird kein Talkback erkannt, wird der Ton vom SDI-Eingang verwendet.

SDI Input

Wählen Sie „SDI Input“, um den Ton von der SDI-Eingabequelle Ihres Streaming Encoders mitzuverfolgen, bspw. von einer angeschlossenen Blackmagic Studio Camera.

Remote Source

Mit dieser Option können Sie Talkback-Audio mithören, das von einem entfernten ATEM Mischer oder einem Streaming Decoder gesendet wird.

Audio Meters

Wählen Sie im „Audio Meters“-Menü den gewünschten Audiometertyp aus. Die verfügbaren Optionen sind VU -18dBFS, VU -20dBFS, PPM -18dBFS und PPM -20dBFS Referenzpegel.

Streaming Decoder

Im „Audio“-Tab für den Streaming Decoder wählen Sie Talkback-Kanäle aus und konfigurieren die Audiopegelmeter für das Frontblenden-LCD.

The screenshot shows the 'Audio' tab selected in the 'Live Stream' window. Under the 'Talkback' section, there are four radio button options: 'Off', '1 and 2 Program Audio', '13 and 14 Engineering Audio', and '15 and 16 Talkback Audio'. The '15 and 16 Talkback Audio' option is selected. Below this, in the 'Audio Monitoring' section, there is a dropdown menu labeled 'Audio Meters' with 'VU (-20dBFS)' selected.

Talkback

Mit dieser Einstellung wählen Sie die Audiokanäle aus, deren Signale an einen Blackmagic Streaming Encoder mit Remote-Standort zurückgesendet werden. Die Optionen sind „Off“, „1 and 2 Program Audio“, „13 and 14 Engineering Audio“ und „15 and 16 Talkback Audio“ für „Aus“, „1 und 2 Programm-Audio“, „13 und 14 Technik-Audio“ und „15 und 16 Talkback-Audio“.

Audio Monitoring

Wählen Sie im „Audio Meters“-Menü aus, welcher Audiopegelmeter-Typ auf dem Frontblenden-LCD angezeigt werden soll. Die verfügbaren Optionen sind VU -18dBFS, VU -20dBFS, PPM -18dBFS und PPM -20dBFS Referenzpegel.

Setup

Im „Setup“-Tab können Sie Ihrem Streaming Processor einen Namen geben, die Netzwerkeinstellungen ändern und das Gerät auf seine Werkseinstellungen zurücksetzen. Für den Blackmagic Streaming Decoder gibt es im „Setup“-Tab zusätzliche Optionen zum Einstellen der Referenzzeit und der SDI-Ausgabe.

Identifizierungseinstellungen

Geben Sie hier den Namen und die Sprache für Ihren Streaming Processor ein.

The screenshot shows the 'Setup' tab selected in the 'Live Stream' window. It contains fields for 'Name' (set to 'Blackmagic Streaming Decoder...'), 'Language' (set to 'English'), and 'Software' (set to 'Version 4.0'). There is a 'Set' button next to the Name field and a 'Save Diagnostic Log' button at the bottom.

Die individuelle Benennung hilft, den richtigen Blackmagic Streaming Processor zu identifizieren, wenn mehr als einer in Ihr Netzwerk eingebunden ist. So wird auch der Name für den Netzwerkstandort bereitgestellt.

Hier finden Sie auch die Versionsnummer der aktuellen Software.

Network Settings

Network Settings

Network Location: Blackmagic-Streaming-Decode...

MAC Address: 7C-2E-0D-06-CC-80

Protocol: ☒ DHCP ☐ Static IP

IP Address: 10.1.1.15

Subnet Mask: 255.255.255.0

Gateway: 10.1.1.1

Primary DNS: 10.1.1.1

Secondary DNS: 8.8.8.8

Connection Priority: ☒ Ethernet ☐ Mobile

Allow Utility Administration: ☐ via USB ☒ via USB and Ethernet

Network Location

Der Name im „Network Location“-Feld ist der Name Ihres Blackmagic Streaming Processors, der im Netzwerkregister erscheint. Er leitet sich vom identifizierenden Namen oben auf der „Setup“-Seite ab. Wichtig: Numerische Präfixe werden ignoriert.

MAC Address

Zeigt die MAC-Adresse für Ihren Streaming Processor an. Die MAC-Adresse ist ein für jeden Ethernet-Port einzigartiger Hardware-Identifikationscode. Sie ist zum Einrichten von Netzwerksicherheitssystemen wichtig, die den Zugang zu Geräten mithilfe einer MAC-Adresse beschränken.

Protocol

Mit den Einstellungen „DHCP“ und „Static IP“ bestimmen Sie, wie Sie Ihren Streaming Processor in Ihr Netzwerk einbinden.

DHCP	Blackmagic Streaming Processors sind standardmäßig auf DHCP eingestellt. Das Dynamic Host Configuration Protocol (DHCP) ist ein auf Netzwerkservern verwendeter Dienst, der Ihren Streaming Processor automatisch auffindet und diesem eine IP-Adresse zuweist. DHCP erleichtert die Einbindung von Geräten per Ethernet und sorgt dafür, dass deren IP-Adressen nicht miteinander in Konflikt geraten. Die meisten Computer und Netzwerkrouter unterstützen DHCP.
Static IP	Aktivieren Sie die Option „Static IP“, um Ihre Netzwerkdaten manuell einzugeben. Achten Sie beim manuellen Einrichten von IP-Adressen zur Kommunikation zwischen allen Geräten darauf, dass alle die gleichen Subnetzmasken- und Gateway-Einstellungen haben.

Wird eine statische IP-Adresse verwendet und es gibt im Netzwerk andere Geräte mit der gleichen Identifikationsnummer, entsteht ein Konflikt und die Verbindung schlägt fehl. Ändern Sie bei Auftreten solcher Konflikte einfach die identifizierende Nummer in der IP-Adresse des Konverters.

Beispiel: Wenn die Adresse 192.100.40.30 Probleme verursacht, ändern Sie die Zahl 30 im letzten Zahlenblock. Ist auch die neue Zahl bereits in Gebrauch, wiederholen Sie den Vorgang, bis Sie eine von anderen Geräten unbesetzte Adresse gefunden haben.

Connection Priority

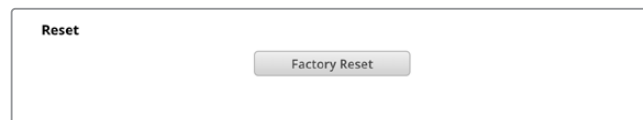
Wenn Ihr Blackmagic Streaming Processor sowohl per Ethernet als auch mit einem Mobiltelefon verbunden ist, wählen Sie mit dieser Einstellung, über welche Verbindung gestreamt wird. Näheres zum Tethering per Handy wird unter „Streaming mithilfe Ihres Smartphones“ erklärt.

Allow utility administration

Ist für „Allow utility administration“ die Option „Via USB“ aktiviert, sind Änderungen an den Einstellungen nur auf einem über USB angeschlossenen Computer möglich. Dies verhindert, dass jemand versehentlich Einstellungen im Netzwerk ändert.

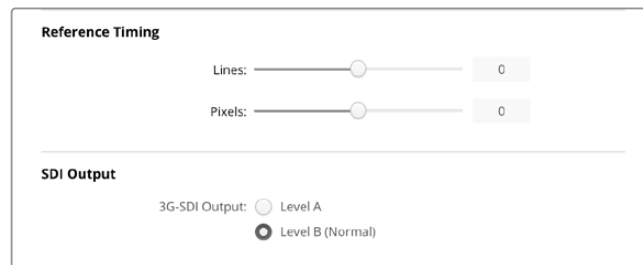
Reset

Um Ihren Blackmagic Streaming Processor auf seine Werkseinstellungen zurückzusetzen, klicken Sie auf „Factory Reset“. Nach Betätigen von „Set“ werden Sie aufgefordert, Ihre Auswahl zu bestätigen. Um fortzufahren, klicken Sie auf „Reset“.



Streaming Decoder

Zusätzlich zu den Identifizierungs- und Netzwerkeinstellungen finden sich im „Setup“-Tab des Blackmagic Streaming Decoders folgenden Einstellungen:



Reference Timing

Mit diesen Einstellungen können Sie die Referenzzeitvorgabe nach Zeilen oder Pixeln manuell justieren. Der Blackmagic Streaming Decoder hat sowohl einen Referenzeingang für Tri-Sync- und Black-Burst-Signale als auch einen für Referenzsignale verwendbaren SDI-Eingang. Bei großen Sendern wird mit Referenzsignalen gearbeitet, da alle Videoverbindungen in diesen Einrichtungen für die Signalverteilung in einem großen System synchronisiert sein müssen.

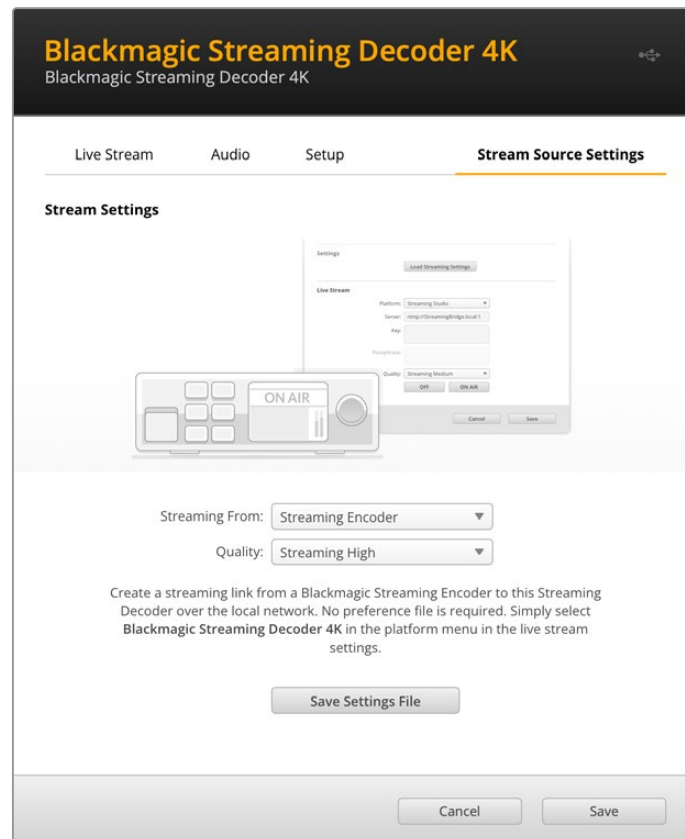
SDI Output

Manche Broadcast-Geräte können nur Level A oder Level B 3G-SDI-Videosignale empfangen. Um Kompatibilität mit anderen Sendegeräten zu gewährleisten, wählen Sie den passenden 3G-SDI-Typ für das angeschlossene Gerät. Die Standardeinstellung ist Level B.

Einstellungen für Streamquellen

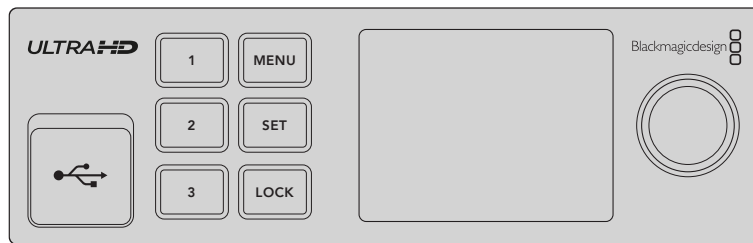
Im Tab „Stream Source Settings“ können Sie für Ihren Blackmagic Streaming Decoder XML-Dateien mit Streaming-Einstellungen erstellen. Sie können diese auf einen Streaming Encoder an einem entfernten Standort oder eine Blackmagic Kamera oder einen ATEM Mischer laden, wenn diese Geräte integriertes Streaming unterstützen.

Näheres zum Erstellen von XML-Dateien mit Streaming-Einstellungen finden Sie im nächsten Abschnitt „Erstellen von Broadcast-Links“.



Erstellen von Broadcast-Links

Mit Blackmagic Streaming Processors können Sie Video über ein lokales Netzwerk oder übers Internet in alle Welt streamen.



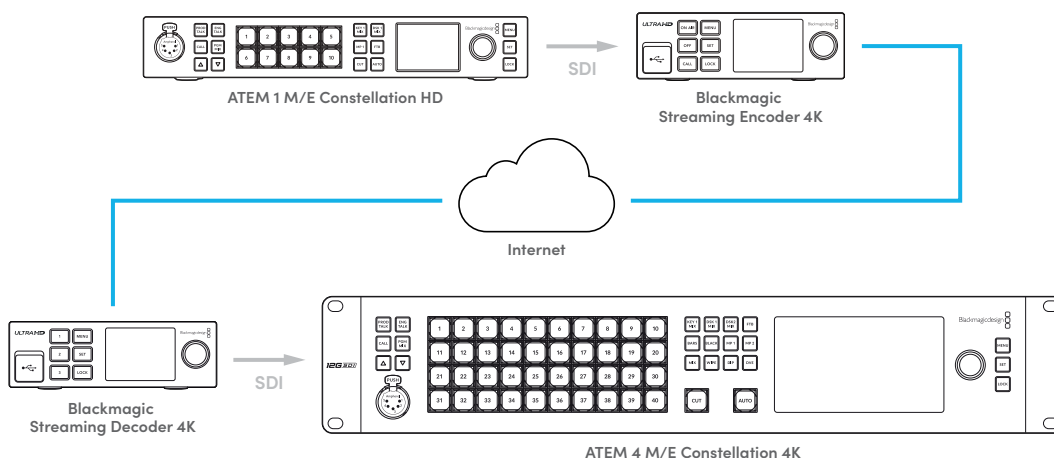
Befindet sich Ihr Blackmagic Streaming Decoder im selben lokalen Netzwerk wie Ihr Streaming Encoder, wird er in Blackmagic Streaming Setup im „Live Stream“-Tab unter „Plattform“ aufgelistet. Näheres darüber, wie Sie Streaming über ein lokales Netzwerk einrichten, finden Sie im Abschnitt „Erste Schritte“.

Wenn Sie über das Internet oder für zusätzliche Sicherheit über ein lokales Netzwerk mithilfe eines Streamschlüssels streamen wollen, können Sie von Ihrem Streaming Decoder aus eine XML-Datei mit Streaming-Einstellungen erstellen. Diese Datei kann über Blackmagic Streaming Setup auf den Blackmagic Streaming Encoder geladen werden.

TIPP Für Blackmagic Kameras und ATEM Mischer mit integrierter Streaming-Feature können Sie ebenfalls XML-Dateien mit Streaming-Einstellungen exportieren. Näheres zum Importieren von Einstellungsdateien finden Sie in den Bedienungsanleitungen für Blackmagic Kameras oder ATEM Mischer.

Ein gutes Beispiel für den Einsatz des Blackmagic Streaming Processors ist die Übertragung des Wetterberichts von einem externen Standort an ein Studio. Alles, was Sie zur Übertragung von einem externen Standort benötigen, sind ein Streaming Encoder und eine Internetverbindung, die über ein Smartphone oder ein Netzwerk hergestellt werden kann.

Der Blackmagic Streaming Decoder im Studio nimmt diesen Internet-Feed und wandelt ihn in SDI, damit der Hauptmischer im Studio ihn verarbeiten kann.



Das Setup für diesen Workflow könnte wie folgt aussehen:

- 1 Am Drehort wird der Blackmagic Streaming Encoder an den SDI-Programmausgang des Mischers angeschlossen, zum Beispiel einen ATEM 1 M/E Constellation HD.
- 2 Als Nächstes wird der Blackmagic Streaming Encoder mit einem Smartphone verbunden.
- 3 Der Blackmagic Streaming Decoder im Studio wird ebenfalls per Ethernet mit dem Internet verbunden.
- 4 Der Streaming Decoder 4K sendet den in SDI-Video gewandelten Internet-Feed für die Hauptübertragung der Nachrichten an den SDI-Eingang des Studiomischers.

Damit Ihr Studio den Streaming Decoder mit dem Internet-Feed des Streaming Encoders verbinden kann, müssen Sie Blackmagic Streaming Setup starten und die Interneteinstellungen konfigurieren. Generieren Sie eine XML-Datei mit allen Streaming-Einstellungen und laden Sie diese auf den Streaming Encoder am Drehort.

Erstellen einer XML-Datei

Um eine XML-Datei mit Einstellungen zu erstellen, verbinden Sie den Blackmagic Streaming Decoder mit dem Internet, indem Sie ein Netzkabel vom LIVE-STREAM-Port zu einem Router oder Netzwerk-Switch anschließen.

Verbinden Sie den Streaming Decoder mithilfe eines USB-C-Kabels mit Ihrem Computer und starten Sie Blackmagic Streaming Setup. Bestätigen Sie die korrekten Netzwerkeinstellungen im „Live Stream“-Tab und wählen unter „Stream Service“ die Option „Internet“. Im Feld „Internetstatus“ sollte die Meldung „Visible worldwide“ (Weltweit sichtbar) erscheinen. Sie bedeutet, dass alles korrekt funktioniert. Näheres dazu, wie Sie den Streaming Decoder konfigurieren, finden Sie im Abschnitt „Blackmagic Streaming Setup“ unter „Stream Service“.

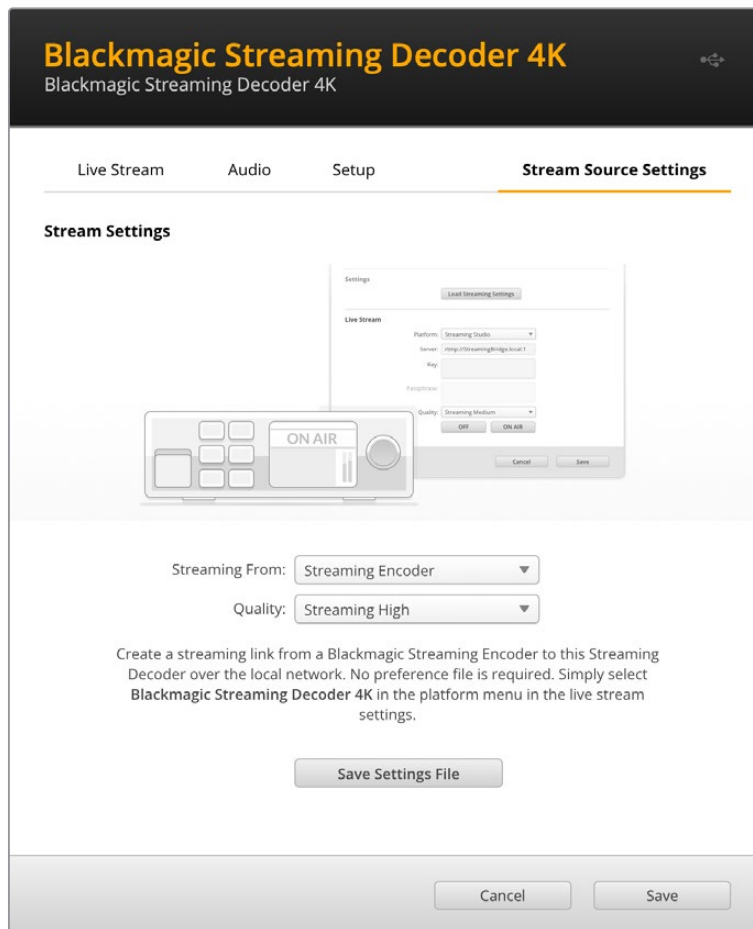
Ein Hinweis zur Portweiterleitung

Wenn Ihnen im Feld „Internetstatus“ ein Portweiterleitungs- oder UPnP-Fehler angezeigt wird, sollten Sie Ihren Internetanbieter oder Netzwerkadministrator bitten, die Portweiterleitung für Ihre Internetverbindung auf „TCP-Port 1935“ einzustellen.

Exportieren der XML-Datei

Nachdem Sie Ihre Einstellungen im Setup-Tab von Blackmagic Streaming Setup bestätigt und erfolgreich eine Verbindung zwischen Ihrem Streaming Decoder und dem Netzwerk oder Internet hergestellt haben, können Sie die XML-Setup-Datei exportieren.

- 1 Klicken Sie oben rechts im Fenster auf den „Stream Source Settings“-Tab.



- 2 Wählen Sie im Menü „Streaming From“ die Option „Streaming Encoder“.
Wenn Sie für eine Blackmagic Kamera oder einen ATEM Mischer mit integrierter Streaming-Feature eine XML-Datei mit Streaming-Einstellungen erstellen, wählen Sie im Menü „Streaming From“ die Option „ATEM Switcher“ oder „Blackmagic Camera“.
- 3 Geben Sie für Ihren Stream unter „Quality“ die gewünschte Qualität vor. Diese Einstellung gibt die Qualität für den remote eingesetzten Blackmagic Streaming Encoder vor.
- 4 Klicken Sie auf den Button „Save Settings File“, um einen Speicherort zu wählen und die Datei auf Ihrem Computer zu speichern.

Ist die Einstellungsdatei gespeichert, können Sie sie an den Bediener des extern gesteuerten Blackmagic Streaming Encoders mailen.

TIPP In den Talkback-Einstellungen des „Audio“-Tabs können Sie wählen, welche Audiokanäle Sie zurück an den Remote-Streaming-Encoder senden möchten.

Laden der XML-Datei

Nachdem die Einstellungsdatei per E-Mail an den externen Standort verschickt wurde, kann die dortige Crew die XML-Datei über Blackmagic Streaming Setup auf den Blackmagic Streaming Encoder laden. Dann muss nur noch jemand die ON-AIR-Taste drücken, um mit dem Streaming des Wetterberichts ans Studio zu beginnen.

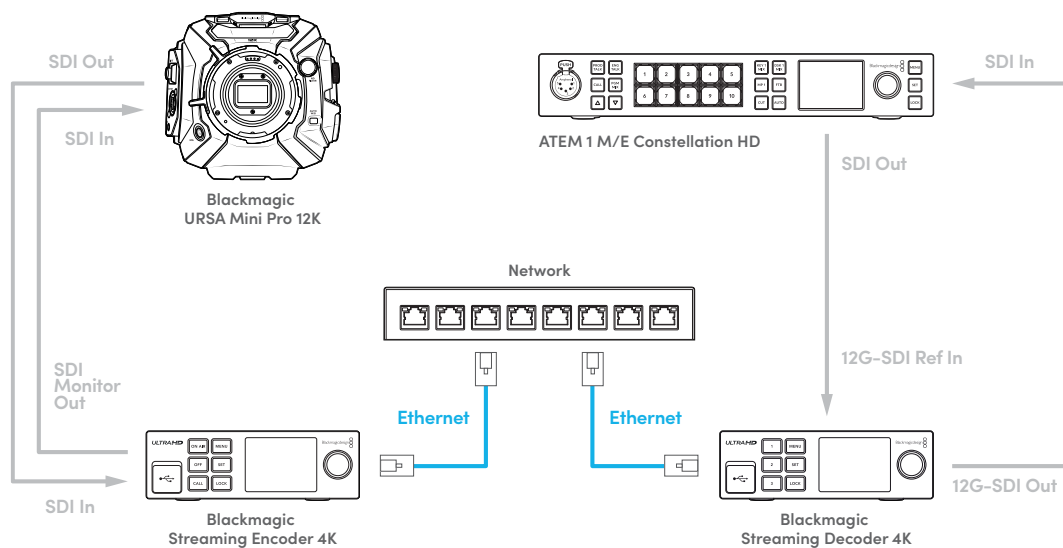
Nach Laden der XML-Streaming-Datei können Sie den Stream beliebig starten und stoppen, ohne die Datei erneut zu laden. Auf diese Weise lässt sich mühelos ein ständiger Videolink zwischen dem Streaming Encoder und dem Streaming Decoder erstellen.

Solange die Streaming- und Netzwerkeinstellungen des Streaming Decoders im Studio nicht geändert werden und der Streaming Encoder ihn nach wie vor sucht, wird er ihn auf jeden Fall finden, egal von wo aus er mit dem Internet verbunden ist. Sie können Ihren Streaming Encoder an jedem beliebigen Ort mit dem Internet verbinden. Wenn Sie dann die ON-AIR-Taste drücken, streamt er umgehend an den Streaming Decoder im Studio.

Tally, Talkback und Kamerasteuerung

Blackmagic Streaming Processors unterstützen die Übermittlung von Tally-, Talkback- und Kamerasteuerungsdaten mit ATEM Mischern. Demnach sind Tally, Talkback und Kamerasteuerung für jede SDI-basierte Blackmagic Design Kamera an einem beliebigen Standort in Ihrem lokalen Netzwerk oder per Internet an einem beliebigen Ort in der Welt möglich.

Die Einrichtung geht einfach. Die nachstehende Abbildung zeigt, wie Sie eine URSA Mini Pro 12K mitsamt Tally-, Talkback- und Kamerasteuersignalen über ein lokales Netzwerk mit einem ATEM 1 M/E Constellation HD verbinden.



Wenn alles verbunden ist:

- 1 Drücken Sie die MENU-Taste am Blackmagic Streaming Encoder, um das LCD-Menü zu öffnen und zum „Livestream“-Menü zu navigieren.
- 2 Wählen Sie im „Plattform“-Menü die Option „Blackmagic Streaming Decoder“.
- 3 Bestätigen Sie Ihre Auswahl mit der SET-Taste.

Damit das Tally funktioniert, sollten Sie sichergehen, dass die ATEM Kamera-ID dem entsprechenden Eingang am Mischer entspricht. Weitere Informationen, wie Sie die ATEM Kamera-ID einrichten, finden Sie in der Bedienungsanleitung der URSA Mini.

Sie können das Tally testen, indem Sie die Kamera auf die Programmausgabe des ATEM Mischers umschalten. Ist die ATEM Kamera-ID auf Ihrer Kamera richtig eingestellt, leuchten das Tally-Licht und die Tally-Umrandung um das LCD der Kamera. Wenn Sie die Kamera nun auf Vorschauausgabe schalten, leuchtet das Tally grün.

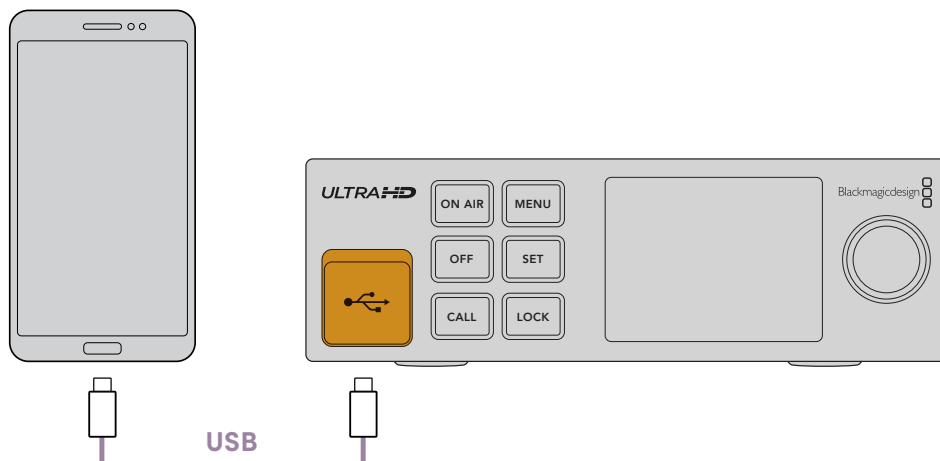
Um die Kamerasteuerung zu testen, versuchen Sie, Blende und Schwarzabhebung über die Kamera-Seite in ATEM Software Control anzupassen.

Die Audiokanäle 15 und 16 für eingebettetes SDI dienen standardmäßig für Talkback. In Blackmagic Streaming Setup können Sie Talkback jedoch auch auf die Techniker-Kanäle 13 und 14 oder die Programmausgabe einstellen.

Für Übertragungen über das Internet wird mit dem Dienstprogramm Blackmagic Streaming Setup eine XML-Setup-Datei erstellt. Diese XML-Datei wird dann auf den Blackmagic Streaming Encoder geladen, damit das Gerät den Blackmagic Streaming Decoder im Internet findet. Weitere Informationen zum Erstellen und Laden der XML-Setup-Datei finden Sie im vorigen Abschnitt dieser Bedienungsanleitung.

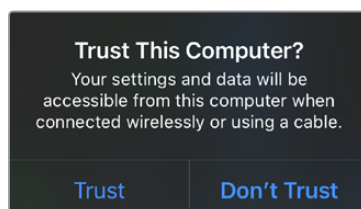
Streaming mithilfe Ihres Smartphones

Blackmagic Streaming Processors können per Tethering über Ihr Smartphone mit dem Internet verbunden werden. Verbinden Sie Ihr Smartphone zuerst über den vorderen oder hinteren USB-C-Port mit dem Streaming Processor. Mit dieser Verbindung sind Sie schnell in der Lage, überall dort, wo Ihr Smartphone 4G- oder 5G-Mobilfunkempfang hat, Streams zu senden oder zu empfangen.



So richten Sie mobiles Tethering ein:

- 1 Gehen Sie auf iOS-Geräten zu „Einstellungen“ > „Persönlicher Hotspot“, um sicherzustellen, dass die Option „Zugriff für andere erlauben“ aktiviert ist.
- 2 Es erscheint eine Nachricht, in der Sie gefragt werden, ob Sie dem verbundenen Computer vertrauen können. Wählen Sie „Vertrauen“, woraufhin auf dem LCD ein grünes Tethering-Icon erscheint. Daran erkennen Sie, dass die Verbindung funktioniert.



Solange Tethering aktiv ist, wird die Uhr Ihres Smartphones grün hinterlegt angezeigt.

Wischen Sie auf Android-Geräten vom oberen Rand nach unten, um ins Quick-Menü zu gelangen. Tippen Sie auf das Hotspot-Icon und halten Sie es gedrückt, um dann USB-Tethering zu aktivieren.

TIPP Um auf Ihrem Smartphone Akkulaufzeit zu sparen, empfehlen wir, die Tethering-Verbindung nach Beenden des Streams zu deaktivieren.

Live ins Internet streamen

Mit dem Blackmagic Streaming Encoder können Sie direkt an Internet-Plattformen wie YouTube, Facebook, Twitch und andere streamen. Im folgenden Beispiel richten wir einen Livestream für YouTube ein.

- 1 Kopieren Sie den Streamschlüssel aus Ihrem YouTube-Konto.
- 2 Starten Sie Blackmagic Streaming Setup und gehen Sie zum „Live Stream“-Tab.
- 3 Wählen Sie als Plattform „YouTube“ und als Server „Primary“ aus. Fügen Sie Ihren Streamschlüssel in das Feld „Key“ ein und geben Sie die Streaming-Qualität vor. Klicken Sie auf „Save“.
- 4 Jetzt können Sie in alle Welt streamen! Tippen Sie auf den ON-AIR-Button auf dem LCD oder drücken Sie die gleichnamige Taste an der Frontblende des Geräts. Am Ende Ihrer Sendung stoppen Sie die Übertragung durch Drücken der OFF-Taste.

Verwenden des SRT-Streaming Protokolls

Im Vergleich zu RTMP bietet das SRT-Protokoll (Secure Reliable Transport Protocol) eine geringere Latenzzeit beim Streaming. Durch die Verwendung einer Passphrase, die wie ein Kodierungsschlüssel funktioniert, erhöht SRT auch die Sicherheit.

Bei der Auswahl der SRT-Protokoll-Version Ihres Streaming-Dienstes, kopieren Sie die Passphrase und den Streamschlüssel von Ihrem Streaming-Konto. Fügen Sie diese dann in die Felder „Key“ und „Passphrase“ in Blackmagic Streaming Setup ein.

The screenshot shows the 'Live Stream' configuration interface. It includes dropdown menus for 'Platform' (set to 'YouTube SRT (Beta)') and 'Server' (set to 'Primary'). Below these are text input fields for 'Key' (containing '3ec3-qhu3-bp5f-2br1-11wj') and 'Passphrase' (containing 'pp-e00-3ec3-0369-2b19'). A 'Quality' dropdown is set to 'Streaming Medium'. At the bottom, there are two buttons: 'OFF' and 'ON AIR'.

Fügen Sie die Passphrase in das „Passphrase“-Feld des Setup Dienstprogramms ein

Um die Streaming-Einstellungen anzupassen, können technisch versierte Broadcaster sowohl das Protokoll RTMP und SRT als auch den Codec H.264 und H.265 in der XML-Datei ändern. Näheres finden Sie unter „Blackmagic Streaming XML Format“ im englischsprachigen Abschnitt „Information für Entwickler“.

Verwenden der Webcam-Ausgabe

Softwares wie Zoom und Microsoft Teams sollten Blackmagic Streaming Processors automatisch als Webcam erkennen, sodass Sie beim Start der Anwendung sofort den Videostream sehen. Wählt die Anwendung Ihren Streaming Encoder oder Ihren Decoder nicht automatisch als Webcam, können Sie ihn manuell als Webcam und Mikrofon einrichten.

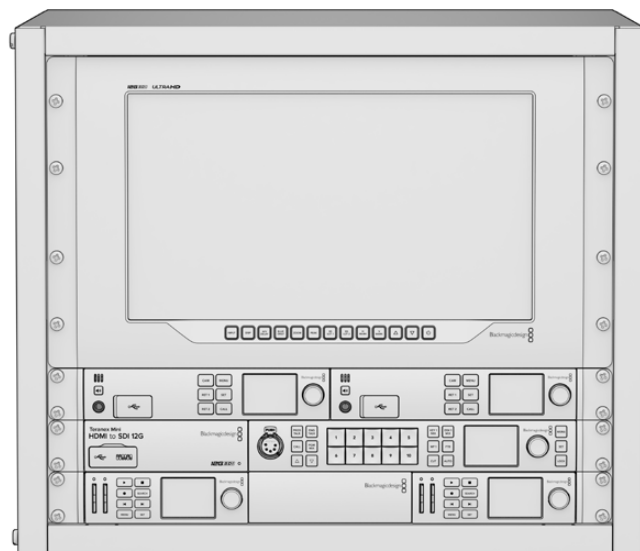
Das folgende Beispiel zeigt, wie man eine Webcam in Microsoft Teams einrichtet.

- 1 Schließen Sie Ihren Blackmagic Streaming Processor mit einem USB-C-Kabel mit über den hinteren WEBCAM-OUT-Ausgang an Ihren Computer an.
- 2 Öffnen Sie in der Menüzeile von Teams „Einstellungen“ und wählen dann „Geräte“.
- 3 Klicken Sie im „Audio“-Panel auf das „Mikrofon“-Menü und wählen Sie „Blackmagic Design“ als Ihre Audioquelle.
- 4 Gehen Sie dann zu den „Video“-Einstellungen und wählen „Blackmagic Streaming Processor“ aus dem „Kamera“-Menü.

Blackmagic Universal Rack Shelf

Die Blackmagic Universal Rack Shelf ist eine 1-HE-Rackwanne zum Einbau von vielerlei Blackmagic Design Geräten in ein Broadcast-Rack oder Flightcase. Dank des modularen Designs können Sie portable und praktische Setups mit Ihren Geräten erstellen, indem Sie Produkte in Baugrößen verwenden, die nebeneinander in eine einzelne Rackeinheit passen.

Die folgende Abbildung zeigt 3 Universal Rack Shelves, die jeweils in einem kleinen Rack installiert und mit unterschiedlich kombinierten, kompatiblen Geräten bestückt sind. Der untere Fachboden enthält eine Blindplatte mit 1/3-Rackbreite, um ungenutzten Raum zwischen den Geräten zu füllen.



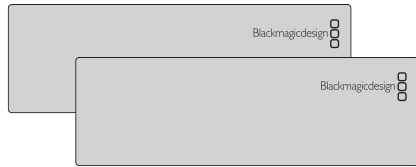
Inhalt

Das Universal Rack Shelf Kit enthält Folgendes:



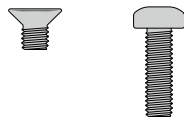
1 Blackmagic Universal Rack Shelf

Ein Fachboden von einer Rackeinheit in voller Breite für die Installation von Blackmagic Design Geräten.



Blindplatten

1 x 1/6 Rackbreite und 2 x 1/3 Rackbreite Blindplatten, um ungenutzten Raum zwischen den Geräten zu füllen.



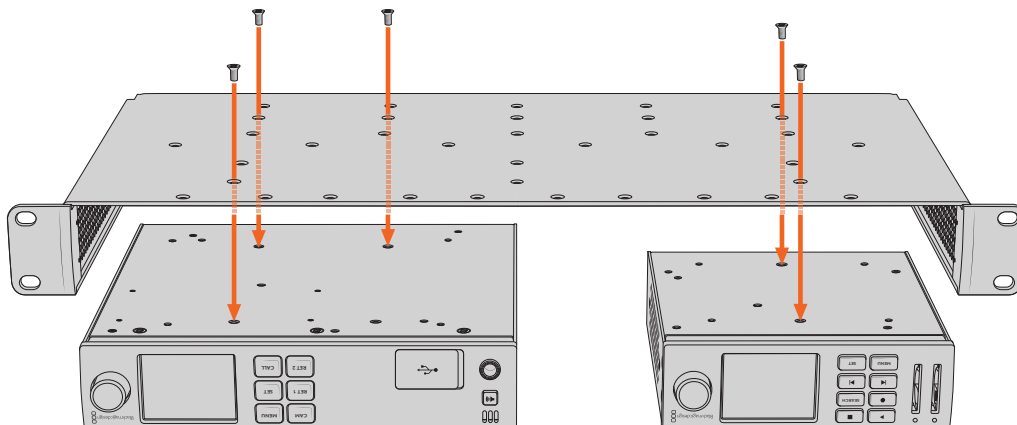
Schrauben

12 x 5mm-M3-
Senkkopfschrauben

2 x 9mm-M3-
Flachkopfschrauben
für 1/6-Blindplatten

Installieren von Geräten in einem Rack

- 1 Entfernen Sie an einem Gerät mit Gummifüßen erst die Füße von seiner Unterseite mit einem Schabwerkzeug mit Kunststoffkanten.
- 2 Legen Sie die Rackwanne und das Gerät mit der Rückseite nach oben ab. Richten Sie dann die vorgebohrten Löcher am Rack auf die Montagepunkte an der Unterseite des Blackmagic Design Geräts aus. Es gibt zwei zentrale Montagepunkte an 1/3 breiten Geräten sowie bis zu 3 zentrale Montagepunkte bei größeren Geräten mit 1/2 Rackbreite.

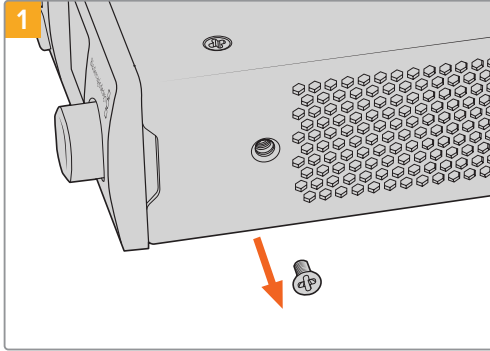


- 3 Befestigen Sie das Gerät mithilfe der mitgelieferten 5mm-M3-Senkkopfschrauben im Rack.
- 4 Drehen Sie die Rackwanne mit dem befestigten Gerät richtig herum und installieren Sie sie an den integrierten Rackohren in die Rackwanne.

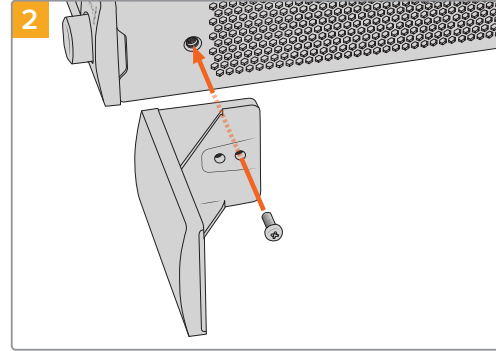
Die mitgelieferten Blindplatten dienen zum Verdecken ungenutzter Rackplätze.

So bringen Sie eine 1/6-Blindplatte an:

Die kleine 1/6-Blindplatte kann verwendet werden, um nach der Befüllung des Racks mit Geräten von 1/2- und 1/3-Rackbreite leere Plätze zu verdecken. Die Platte kann an den Seiten beider Geräte befestigt werden. Montieren Sie die Platte zur Gewährleistung der Luftströmung vorzugsweise zwischen den Geräten.



Entfernen Sie die 5mm-M3-Schraube nahe der Vorderseite des Geräts



Richten Sie die Blindplatte aus und befestigen Sie sie mit der mitgelieferten 9mm-M3-Nylonschraube

So bringen Sie eine 1/3-Blindplatte an der Seite an:

Die großen 1/3 breiten Blindplatten lassen sich bei der Montage einzelner Geräte direkt an beiden Seiten der Rackwanne anbringen. Um eine Blindplatte zu installieren, richten Sie die Schraubenlöcher und den Ankerpunkt an der Unterseite der Platte mit der Rackwanne aus. Befestigen Sie sie mit zwei der mitgelieferten 5mm-M3-Senkkopfschrauben.

Informationen für Entwickler (in englischer Sprache)

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```


Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```


Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing a audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

SHUTDOWN:↵

Action: Reboot↵

↵

ACK↵

↵

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

SHUTDOWN:↵

Action: Factory Reset↵

↵

ACK↵

↵

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/  
Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```


Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Hilfe

Hilfestellung

Am schnellsten erhalten Sie Hilfe online über die Support-Seiten der Website von Blackmagic Design. Sehen Sie dort nach dem aktuellsten Support-Material für Ihren Blackmagic Streaming Processor.

Blackmagic Design Online Support Seiten

Das aktuellste Handbuch finden Sie im Blackmagic Support Center unter <https://www.blackmagicdesign.com/de/support>.

Blackmagic Design Forum

Das Blackmagic Design Forum auf unserer Website ist eine praktische Ressource für weitere Informationen und kreative Ideen. Manchmal finden Sie dort schneller Lösungen, da möglicherweise bereits Antworten auf ähnliche Fragen von anderen erfahrenen Anwendern und Blackmagic Design Mitarbeitern vorliegen, die Ihnen weiterhelfen. Das Forum finden Sie unter <http://forum.blackmagicdesign.com>.

Kontaktaufnahme mit Blackmagic Design Support

Wenn unser Support-Material oder das Forum Ihnen nicht wie gewünscht hilft, gehen Sie bitte auf unsere Support-Seite und schicken Sie uns Ihre Anfrage über „Senden Sie uns eine E-Mail“. Oder klicken Sie auf „Finden Sie Ihr lokales Support-Team“ und rufen Sie Ihre nächstgelegene Blackmagic Design Support Stelle an.

Gesetzliche Vorschriften



Entsorgung von elektrischen und elektronischen Geräten innerhalb der Europäischen Union.

Das auf dem Produkt abgebildete Symbol weist darauf hin, dass dieses Gerät nicht zusammen mit anderen Abfallstoffen entsorgt werden darf. Altgeräte müssen daher zur Wiederverwertung an eine dafür vorgesehene Sammelstelle übergeben werden. Mülltrennung und Wiederverwertung von Altgeräten tragen zum nachhaltigen Umgang mit natürlichen Ressourcen bei. Gleichzeitig wird sichergestellt, dass die Wiederverwertung nicht zulasten der menschlichen Gesundheit und der Umwelt geht. Weitere Informationen zur Entsorgung von Altgeräten sowie zu den Standorten der zuständigen Sammelstellen erhalten Sie von Ihren örtlichen Müllentsorgungsbetrieben sowie vom Händler, bei dem Sie dieses Produkt erworben haben.



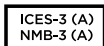
Dieses Gerät wurde geprüft und entspricht den Grenzwerten für Digitalgeräte der Klasse A gemäß Abschnitt 15 der FCC-Bestimmungen für Funkentstörung. Diese Grenzwerte dienen dem angemessenen Schutz gegen schädliche Störungen bei Betrieb des Geräts in einer gewerblichen Umgebung. Geräte dieser Art erzeugen und verwenden Hochfrequenzen und können diese auch ausstrahlen. Bei Nichteinhaltung der Installations- und Gebrauchsvorschriften können sie zu Störungen beim Rundfunkempfang führen. Der Betrieb solcher Geräte in Wohngebieten führt mit großer Wahrscheinlichkeit zu Funkstörungen. In diesem Fall kann vom Betreiber verlangt werden, selbst für die Beseitigung solcher Störungen aufzukommen.

Der Betrieb unterliegt den beiden folgenden Bedingungen:

- 1 Das Gerät darf keine schädigenden Störungen hervorrufen.
- 2 Das Gerät muss alle empfangenen Störungen akzeptieren, einschließlich solcher, die einen unerwünschten Betrieb verursachen.



R-R-BMD-20201201001
R-R-BMD-20201201002



ISED-Zertifizierung für den kanadischen Markt

Dieses Gerät erfüllt die kanadischen Vorschriften für digitale Geräte der Klasse A.

Jedwede an diesem Produkt vorgenommene Änderung oder unsachgemäße Verwendung kann die Konformitätserklärung zum Erlöschen bringen.

Verbindungen zu HDMI-Schnittstellen müssen über abgeschirmte HDMI-Kabel hergestellt werden.

Dieses Gerät wurde geprüft und erfüllt die Bestimmungen zum Einsatz in einem gewerblichen Umfeld. Bei Einsatz des Geräts in einer häuslichen Umgebung verursacht es möglicherweise Funkstörungen.

Sicherheitshinweise

Dieses Gerät muss an ein vorschriftsmäßig geerdetes Stromnetz angeschlossen werden.

Um das Risiko eines elektrischen Schlages zu verringern, setzen Sie das Gerät weder Tropfen noch Spritzern aus.

Das Gerät eignet sich für den Einsatz in tropischen Gebieten mit einer Umgebungstemperatur von bis zu 40 °C.

Die Lagertemperatur ist -20–60 °C bei einer relativen Luftfeuchtigkeit von 0–90 % nichtkondensierend.

Achten Sie auf eine ausreichende Luftzufuhr um das Gerät herum, sodass die Belüftung nicht eingeschränkt wird.

Achten Sie bei der Installation im Rack darauf, dass die Luftzufuhr nicht durch andere Geräte eingeschränkt wird.

Es befinden sich keine durch den Anwender zu wartenden Teile im Inneren des Gehäuses. Wenden Sie sich für die Wartung an ein Blackmagic Design Service Center in Ihrer Nähe.



Nicht in Höhen von über 2000 m über dem Meeresspiegel einsetzen.

California Proposition 65

Plastikteile dieses Produkts können Spuren von polybromierten Biphenylen enthalten. Im US-amerikanischen Bundesstaat Kalifornien werden diese Chemikalien mit Krebs, Geburtsfehlern und anderen Schäden der Fortpflanzungsfähigkeit in Verbindung gebracht.

Weitere Informationen finden Sie unter www.P65Warnings.ca.gov.

Garantie

36 Monate eingeschränkte Garantie

Für den Blackmagic Streaming Processor gewährt Blackmagic Design eine Garantie auf Material- und Verarbeitungsfehler von 36 Monaten ab Kaufdatum mit Ausnahme von Steckverbindern, Kabeln, Glasfasermodule, Sicherungen und Batterien, für die eine Garantie auf Material- und Verarbeitungsfehler von 12 Monaten ab dem Kaufdatum gewährt wird. Sollte sich das Produkt innerhalb dieser Garantiezeit als fehlerhaft erweisen, wird die Firma Blackmagic Design nach ihrem Ermessen das defekte Produkt entweder ohne Kostenerhebung für Teile und Arbeitszeit reparieren oder Ihnen das defekte Produkt ersetzen.

Zur Inanspruchnahme der Garantieleistungen müssen Sie als Kunde Blackmagic Design über den Defekt innerhalb der Garantiezeit in Kenntnis setzen und die entsprechenden Vorkehrungen für die Leistungserbringung treffen. Es obliegt dem Kunden, für die Verpackung und den bezahlten Versand des defekten Produkts an ein spezielles von Blackmagic Design benanntes Service Center zu sorgen und hierfür aufzukommen. Sämtliche Versandkosten, Versicherungen, Zölle, Steuern und sonstige Abgaben im Zusammenhang mit der Rücksendung von Waren an uns, ungeachtet des Grundes, sind vom Kunden zu tragen.

Diese Garantie gilt nicht für Mängel, Fehler oder Schäden, die durch unsachgemäße Handhabung oder unsachgemäße oder unzureichende Wartung und Pflege verursacht wurden. Blackmagic Design ist im Rahmen dieser Garantie nicht verpflichtet, die folgenden Serviceleistungen zu erbringen: a) Behebung von Schäden infolge von Versuchen Dritter, die Installation, Reparatur oder Wartung des Produkts vorzunehmen, b) Behebung von Schäden aufgrund von unsachgemäßer Handhabung oder Anschluss an nicht kompatible Geräte, c) Behebung von Schäden oder Störungen, die durch die Verwendung von nicht Blackmagic-Design-Ersatzteilen oder -Verbrauchsmaterialien entstanden sind, d) Service für ein Produkt, das verändert oder in andere Produkte integriert wurde, sofern eine solche Änderung oder Integration zu einer Erhöhung des Zeitaufwands oder zu Schwierigkeiten bei der Wartung des Produkts führt.

ÜBER DIE IN DIESER GARANTIEERKLÄRUNG AUSDRÜCKLICH AUFGEFÜHRTEN ANSPRÜCHE HINAUS ÜBERNIMMT BLACKMAGIC DESIGN KEINE WEITEREN GARANTIEEN, WEDER AUSDRÜCKLICH NOCH STILLSCHWEIGEND. DIE FIRMA BLACKMAGIC DESIGN UND IHRE HÄNDLER LEHNEN JEDLICHE STILLSCHWEIGENDEN GARANTIEEN IN BEZUG AUF AUSSAGEN ZUR MARKTGÄNGIGKEIT UND GEBRAUCHSTAUGLICHKEIT FÜR EINEN BESTIMMTEN ZWECK AB. DIE VERANTWORTUNG VON BLACKMAGIC DESIGN, FEHLERHAFTE PRODUKTE ZU REPARIEREN ODER ZU ERSETZEN, IST DIE EINZIGE UND AUSSCHLIESSLICHE ABHILFE, DIE GEGENÜBER DEM KUNDEN FÜR ALLE INDIREKTEN, SPEZIELLEN, NEBEN- ODER FOLGESCHÄDEN ZUR VERFÜGUNG GESTELLT WIRD, UNABHÄNGIG DAVON, OB BLACKMAGIC DESIGN ODER DER HÄNDLER VON DER MÖGLICHKEIT SOLCHER SCHÄDEN ZUVOR IN KENNTNIS GESETZT WURDE. BLACKMAGIC DESIGN IST NICHT HAFTBAR FÜR JEDLICHE WIDERRECHTLICHE VERWENDUNG DER GERÄTE DURCH DEN KUNDEN. BLACKMAGIC HAFTET NICHT FÜR SCHÄDEN, DIE SICH AUS DER VERWENDUNG DES PRODUKTS ERGEBEN. NUTZUNG DES PRODUKTS AUF EIGENE GEFAHR.

© Copyright 2025 Blackmagic Design. Alle Rechte vorbehalten. „Blackmagic Design“, „DeckLink“, „HDLink“, „Workgroup Videohub“, „Multibridge Pro“, „Multibridge Extreme“, „Intensity“ und „Leading the creative video revolution“ sind eingetragene Warenzeichen in den USA und in anderen Ländern. Alle anderen Unternehmens- und Produktnamen sind möglicherweise Warenzeichen der jeweiligen Firmen, mit denen sie verbunden sind.

Thunderbolt und das Thunderbolt-Logo sind Warenzeichen der Firma Intel Corporation in den USA bzw. in anderen Ländern.

Junio 2025

Manual de instalación y funcionamiento



Blackmagic Procesadores de transmisiones



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Bienvenido

Gracias por haber adquirido este producto.

El dispositivo Streaming Encoder se conecta directamente a cualquier equipo SDI y permite obtener una señal en formato H.264 o H.265 para poder emitirla a través de plataformas populares, tales como YouTube Live, Facebook Live y Twitch. A su vez, el modelo Blackmagic Streaming Decoder brinda la posibilidad de transmitir las imágenes directamente con calidad profesional. Esto facilita la transmisión de contenido audiovisual a lugares distantes por medio de Internet.

Los dispositivos Blackmagic Streaming Decoder reciben las fuentes provenientes de unidades Blackmagic Streaming Encoder y las convierten para obtener señales SDI o HDMI. Además, permiten activar las luces piloto en las cámaras, controlarlas y entablar una comunicación, por lo cual resultan ideales al llevar a cabo producciones en directo. Estos equipos también ofrecen la posibilidad de decodificar señales de cámaras Blackmagic y mezcladores ATEM que incluyen una función de transmisión integrada.

Este manual de instrucciones contiene toda la información necesaria para instalar los procesadores y comenzar a utilizarlos.

En nuestra página de soporte técnico, encontrarás la versión más reciente de este manual, así como material de apoyo adicional para estos productos. Por último, no olvides registrarte al descargar las actualizaciones, a fin de que podamos mantenerte informado sobre nuevos lanzamientos.

Trabajamos continuamente para desarrollar herramientas innovadoras y superarnos, de modo que nos encantaría conocer tu opinión.

Grant Petty

Director ejecutivo de Blackmagic Design

Índice

Primeros pasos	285	Detección del dispositivo como cámara web	313
Alimentación del dispositivo	285	Estante para bastidores	313
Conexión a redes	286	Índice	314
Conexión de fuentes	286	Instalación de una unidad en el estante	314
Conexión de un monitor al codificador	287	Instalación de una placa ciega de 1/6	315
Conexión de destinos	287	Instalación de una placa ciega lateral de 1/3	315
Transmisiones simples a través de una red	287	Developer Information	316
Pantalla de cristal líquido	290	Blackmagic Streaming Encoder Ethernet Protocol	316
Indicadores de la conexión	291	Protocol Blocks	318
Salida del codificador para monitores	291	Streaming Encoder Control REST API	328
Programa utilitario	296	Event Control API	330
Transmisión en directo	297	Livestream Control API	330
Audio	301	Monitor Output Control API	335
Configuración	302	System Control API	336
Configuración de fuentes	305	Notification websocket - 1.0.0	338
Creación de enlaces de transmisión	306	messages	338
Creación del archivo XML	307	Device Properties	339
Exportación del archivo XML	307	Blackmagic Streaming XML Format	341
Carga del archivo XML	309	Ayuda	348
Comunicación, señalización y control de cámaras	309	Normativas	349
Transmisión mediante teléfonos inteligentes	311	Seguridad	350
Transmisiones en directo a través de Internet	312	Garantía	351

Primeros pasos

Para comenzar a utilizar los procesadores, basta con enchufarlos a una toma de corriente y conectar un cable de red, así como las fuentes y destinos.



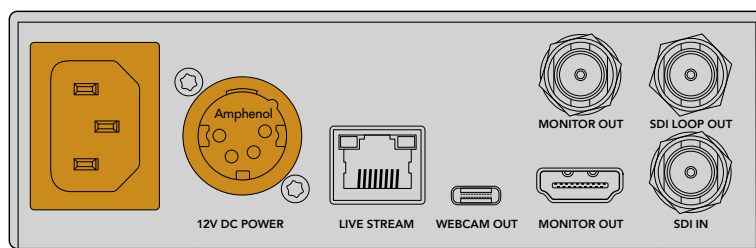
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

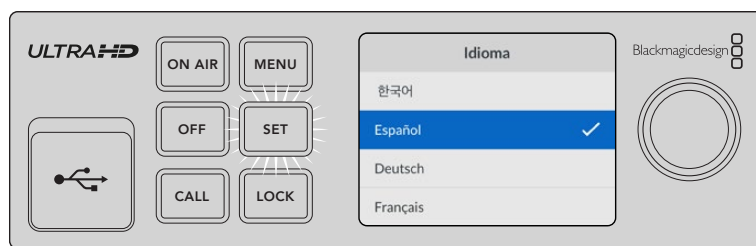
Alimentación del dispositivo

Conecte un cable IEC convencional a la entrada de alimentación, situada en el panel trasero del dispositivo, a fin de suministrarle corriente eléctrica.



Los modelos Blackmagic Streaming Encoder y Streaming Decoder incluyen una entrada adicional para corriente continua de 12 V que puede emplearse con el propósito de utilizar fuentes de alimentación externas o complementarias, tales como sistemas de alimentación ininterrumpida o una batería externa de 12 V.

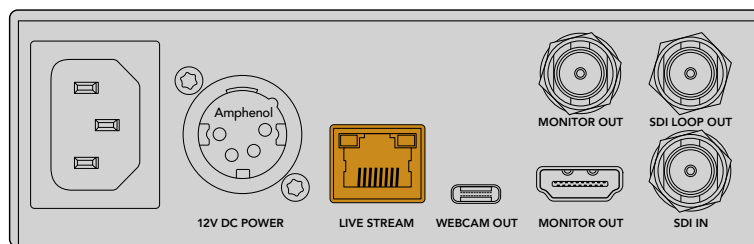
Una vez conectado el dispositivo, los idiomas disponibles para la interfaz se mostrarán en la pantalla frontal. Gire el mando para seleccionar uno de ellos y presione el botón **SET**, que estará parpadeando.



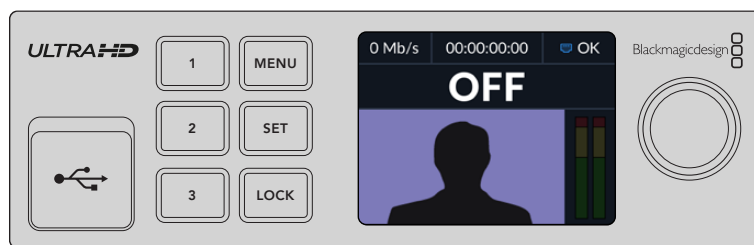
Presione el botón **SET** para confirmar el idioma.

Conexión a redes

Conecte el puerto Ethernet de la unidad a un conmutador de red mediante el respectivo cable para acceder a una red local o a Internet.



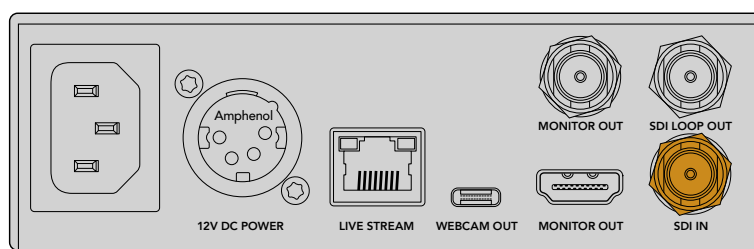
Por defecto, los dispositivos están configurados para utilizar el protocolo DHCP de manera predeterminada, por lo cual deberían encontrar una dirección IP de inmediato. Una vez establecida la conexión, aparecerá un ícono de Ethernet azul en la esquina superior izquierda de la pantalla de la unidad. Si fuera necesario emplear una dirección IP fija, consulte el apartado referente al programa utilitario Blackmagic Streaming Setup para obtener más información al respecto.



Conexión de fuentes

Conecte la fuente SDI que desea transmitir (por ejemplo, una cámara Blackmagic URSA Mini Pro 12K o un mezclador ATEM) a la entrada respectiva del codificador. Gracias a la tecnología SDI 12G, el dispositivo admite fuentes con una resolución máxima de 2160p60 y ajusta automáticamente la definición.

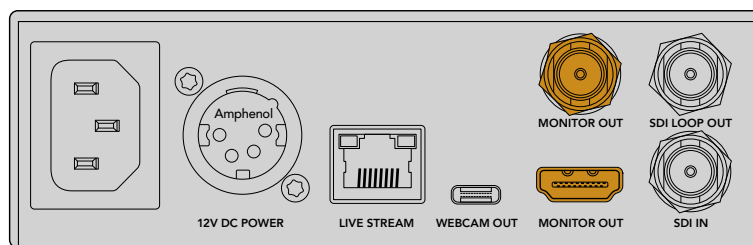
Al recibir una señal, las imágenes respectivas se mostrarán en la pantalla frontal de la unidad. El audio se encuentra integrado en la señal SDI, y es posible verificar su presencia observando los indicadores correspondientes.



Conecte la fuente SDI a la entrada respectiva del modelo Blackmagic Streaming Encoder.

Conexión de un monitor al codificador

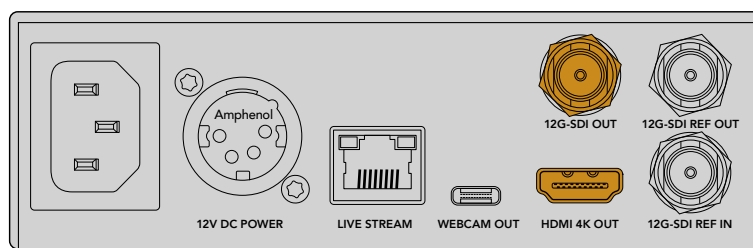
Conecte un televisor HDMI o un monitor SDI a las salidas **MONITOR OUT** correspondientes en el panel trasero de la unidad. Estas permiten supervisar la transmisión y ver información importante, por ejemplo, si la señal está al aire, la velocidad de transferencia de datos y los niveles del audio. Consulte el apartado referente a estas salidas para obtener más información al respecto.



Conecte un televisor o monitor al modelo Blackmagic Streaming Encoder para ver datos relevantes de la transmisión.

Conexión de destinos

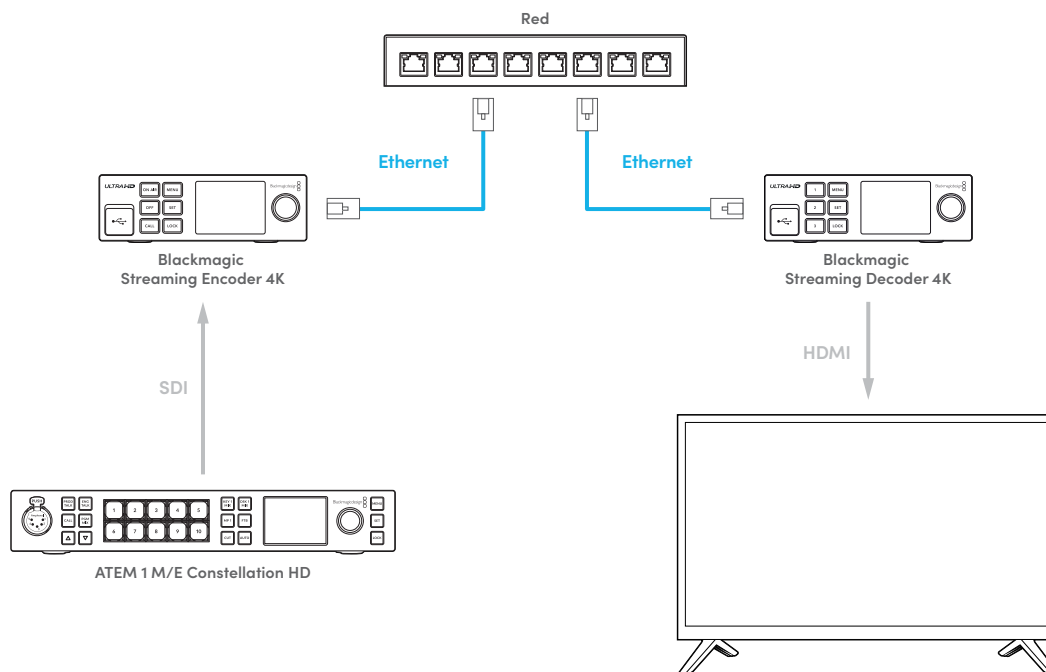
El modelo Blackmagic Streaming Decoder permite transmitir una señal decodificada a un destino particular, por ejemplo, un mezclador ATEM SDI o un televisor HDMI. Para ello, basta con conectarlos a las salidas **12G-SDI OUT** o **HDMI 4K OUT** de la unidad, respectivamente.



Conecte equipos de destino a las salidas SDI y HDMI del decodificador.

Transmisiones simples a través de una red

Una vez establecidas las conexiones, es recomendable efectuar una transmisión simple entre el codificador y el decodificador para verificar que todo funcione correctamente. Esto puede resultar útil si se desea transmitir en directo a una sala de conferencias o a través de un proyector en un recinto de grandes dimensiones. El siguiente ejemplo muestra cómo realizar una transmisión simple de un mezclador ATEM a un televisor HDMI.



El panel frontal del procesador de transmisiones incluye una pantalla de cristal líquido (LCD) que muestra información importante y permite supervisar las imágenes y el audio. El mando giratorio y el botón **MENU** brindan la posibilidad de acceder rápidamente a los distintos menús para configurar, iniciar y detener transmisiones directamente desde dicho panel.

Todos los ajustes disponibles en la pantalla del dispositivo también pueden modificarse mediante el programa utilitario Blackmagic Streaming Setup. Consulte el apartado referente a dicho programa más adelante en este manual para obtener información detallada al respecto.

Para configurar una transmisión simple:

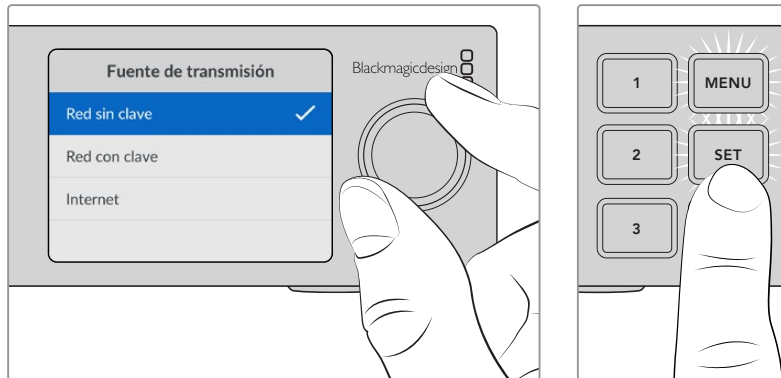
- 1 Conecte los dispositivos Blackmagic Streaming Encoder y Blackmagic Streaming Decoder al mismo conmutador de red.

SUGERENCIA: También es posible conectar directamente un dispositivo a otro de manera más simple mediante un cable de red, sin necesidad de recurrir a un conmutador.

- 2 En el decodificador, presione el botón **MENU** para acceder al menú en la pantalla frontal y, a continuación, oprima **SET** a fin de seleccionar la opción **Transmisión en vivo**.

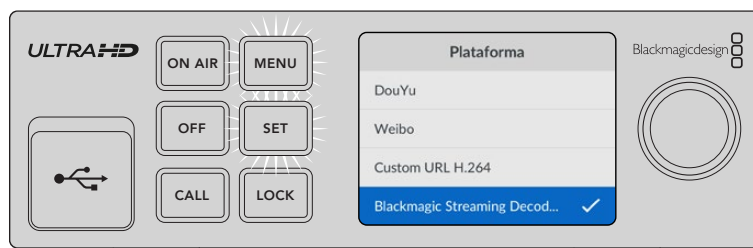


Mueva el mando giratorio para seleccionar la opción **Fuente de transmisión**. Luego, presione el botón **SET** y seleccione **Red sin clave**. Presione el botón **SET** para confirmar los cambios.



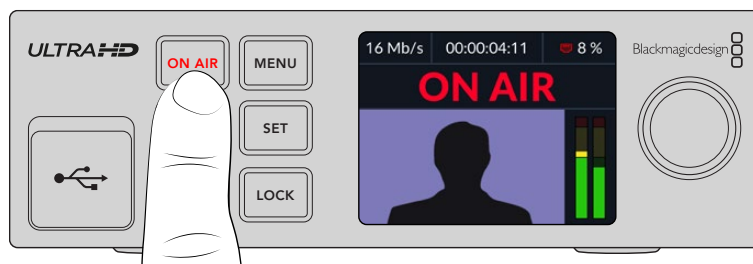
Presione el botón **MENU** para regresar a la pantalla de inicio.

- En el codificador, presione el botón **MENU** para acceder al menú **Transmisión en vivo**. A continuación, oprima el botón **SET** y mueva el mando giratorio a fin de resaltar el menú **Plataforma**. Presione el botón **SET** nuevamente para seleccionarlo.

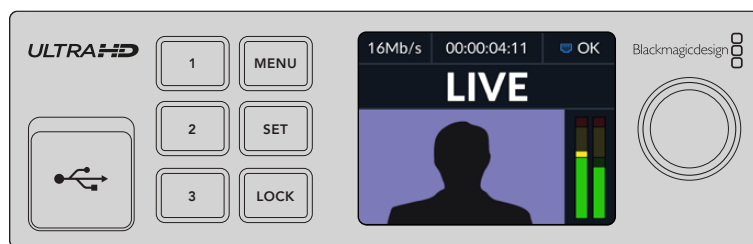


Seleccione el decodificador en la lista y presione el botón **SET**. Oprima el botón **MENU** para regresar a la pantalla de inicio.

- Presione el botón **ON AIR** en el panel frontal del codificador. Este se encenderá de rojo durante la transmisión, y la pantalla del dispositivo indicará que la señal está al aire.



Las imágenes se verán en la pantalla del decodificador.



Arriba de la imagen, la palabra **LIVE** indica que la señal está al aire.

Para detener la transmisión, presione el botón **OFF** en el panel frontal del codificador.

SUGERENCIA: Si el indicador **ON AIR** parpadea, significa que no ha sido posible comenzar la transmisión o que esta se ha detenido inesperadamente. Esto puede deberse a un problema con la conexión de red o la configuración. Compruebe que los cables de red se hayan conectado correctamente y verifique los ajustes de la transmisión.

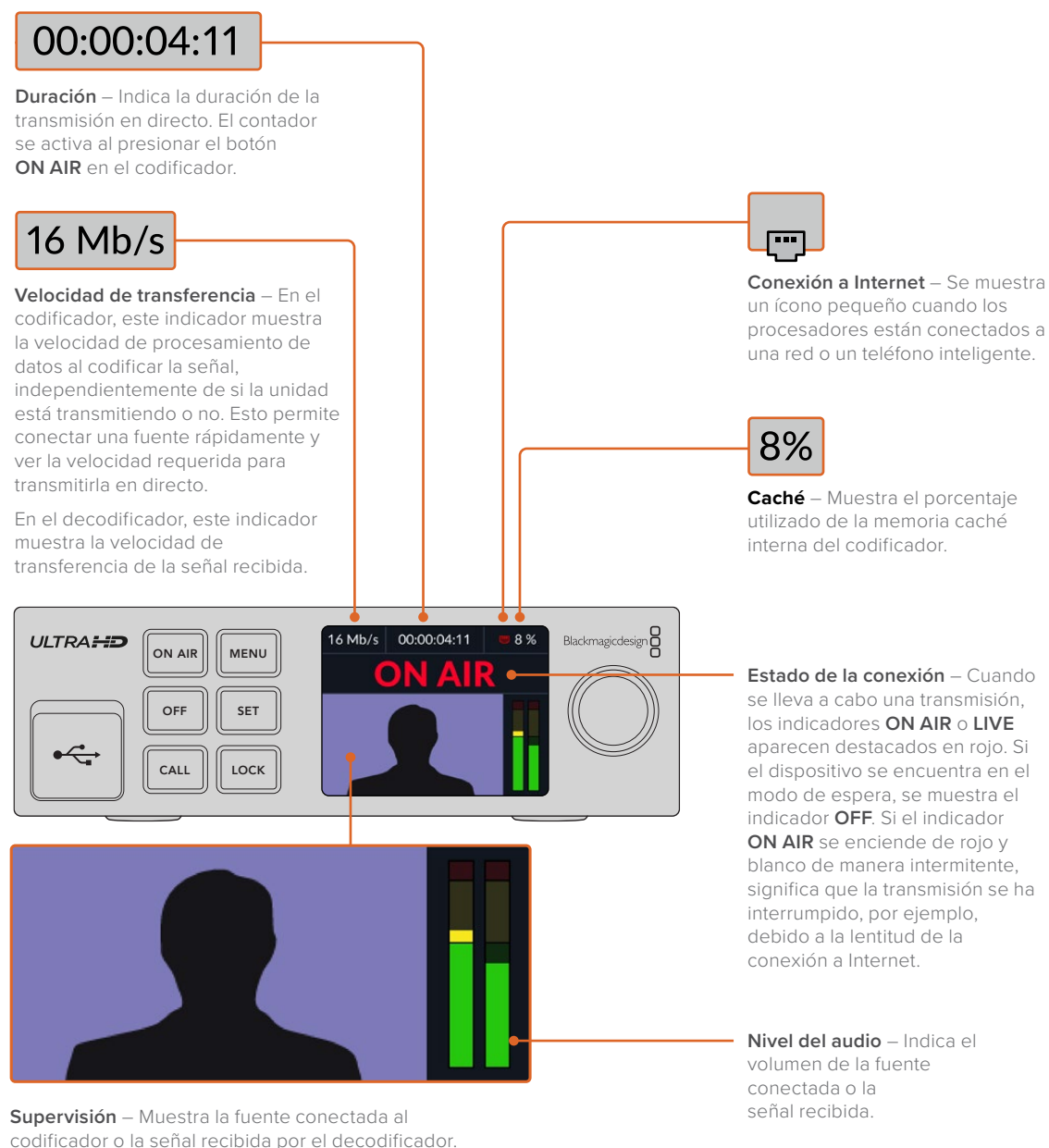
Botón de bloqueo

Para bloquear el panel frontal de la unidad, mantenga presionado el botón **LOCK** durante un segundo. Esto permite desactivar los botones y el mando giratorio, a fin de evitar que los ajustes se modifiquen de manera imprevista o que la transmisión se interrumpa.

Mantenga presionado este botón durante dos segundos para desbloquear el panel frontal.

Pantalla de cristal líquido

La pantalla frontal del procesador de transmisiones permite supervisar el audio y las imágenes, a la vez que proporciona datos importantes de la transmisión.



Indicadores de la conexión

El indicador en la esquina superior derecha de la pantalla muestra el estado de la conexión del dispositivo.



Este ícono aparece cuando hay un cable de red conectado y se utiliza una conexión Ethernet para la transmisión.



En el modelo Blackmagic Streaming Encoder, este ícono aparece cuando la transmisión se está llevando a cabo mediante la red Ethernet.



Este ícono aparece cuando se utiliza la conexión a Internet de un teléfono móvil para la transmisión.



En el modelo Blackmagic Streaming Encoder, este ícono aparece cuando la transmisión se está llevando a cabo mediante la conexión a Internet de un teléfono inteligente.

SUGERENCIA: Si el ícono de conexión no aparece en la pantalla, el dispositivo no está conectado a una red ni a un teléfono inteligente. Compruebe que los cables se hayan conectado correctamente.

Salida del codificador para monitores

Esta salida permite supervisar la fuente, el nivel del audio, el estado de la transmisión, la velocidad de transferencia y el uso de la memoria caché, además de brindar información acerca de la señal SDI.



La salida de supervisión del dispositivo permite acceder a información variada, por ejemplo, la velocidad de transferencia y el estado de la memoria caché.

A continuación, se describen los ocho paneles que componen la imagen visualizada en el monitor o televisor conectado y los datos que se proporcionan.

Fuente

El panel principal muestra la imagen correspondiente a la fuente SDI conectada.



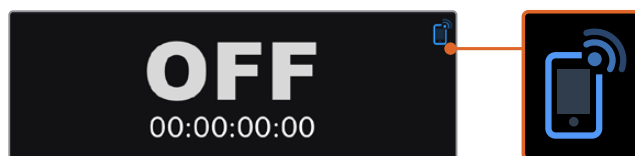
Indicador de señal al aire

Antes de comenzar la transmisión, el indicador **OFF AIR** muestra que la unidad está lista. Cuando se inicia, el indicador **ON AIR** se destacará en rojo hasta que la emisión se detenga.



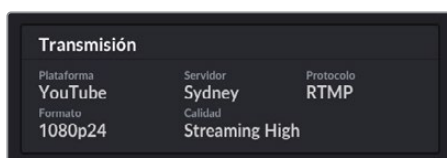
La duración se muestra debajo de dicho indicador. El contador se activa al presionar el botón **ON AIR**.

Si la transmisión se lleva a cabo mediante la conexión a Internet de un teléfono inteligente, aparecerá un ícono azul en la esquina superior derecha. Este se encenderá de rojo cuando la señal esté al aire.



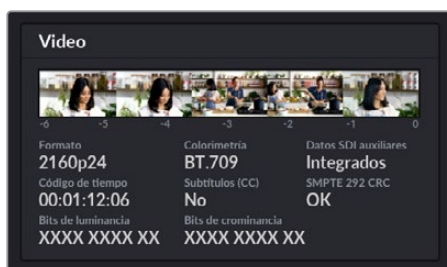
Transmisión en directo

Este panel brinda información sobre los ajustes de la transmisión, que incluyen la plataforma, el servidor y el protocolo. Asimismo, muestra la resolución y la calidad.



Imágenes

Las 5 imágenes pequeñas en la parte superior de este panel corresponden a los 6 segundos previos de la transmisión. Cada una equivale a 1.2 segundos.



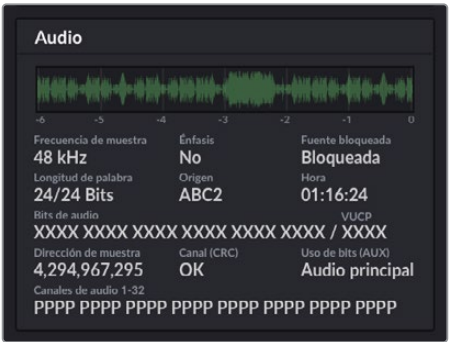
Debajo de estas, se brinda información técnica sobre la fuente conectada a la entrada SDI del dispositivo.

Formato de la fuente	Indica la resolución y la frecuencia de imagen de la fuente SDI. El codificador admite señales con una resolución máxima de 2160p60.
Colorimetría	Indica el espacio cromático de la fuente SDI. El dispositivo es compatible con los espacios cromáticos Rec. 601, Rec. 709 y Rec. 2020.
Datos SDI auxiliares	Los datos auxiliares se integran en la señal SDI y comprenden el audio, el código de tiempo y los subtítulos opcionales (CC). Si la fuente incluye dichos datos, el indicador dirá Presentes.

Código de tiempo	Indica el código de tiempo de la fuente SDI.
Subtítulos opcionales	Indica el formato de los subtítulos opcionales (CC), si están presentes en la señal. El dispositivo admite los formatos CEA-608 y CEA-708.
CRC SMPTE 292	Indica los errores detectados por el dispositivo con respecto a la fuente SDI. Estos pueden deberse al uso de cables defectuosos o demasiado largos.
Bits de luminancia (Y) y crominancia	Estos indicadores muestran la actividad de la fuente SDI. Cada letra representa el estado de un bit de la señal. X - Representa un bit que cambia constantemente. L - Representa un bit menos significativo. H - Representa un bit más significativo. Las compensaciones SDI se restan para facilitar la comprensión. Por ejemplo, cuando la señal es una imagen negra, ningún bit es significativo. Generalmente, los 10 bits correspondientes a la fuente SDI se representan mediante una X, ya que cambian constantemente. Si la señal es de 8 bits, los dos situados en el extremo derecho siempre se representan mediante una L, pues no contienen datos. Cuando un bit que debería ser X aparece representado mediante una L o una H, significa que se ha <i>atascado</i>, y esto podría indicar una falla en la señal.

Audio

La forma de onda en la parte superior de este panel muestra la información del audio correspondiente a los 6 segundos previos de la transmisión. y se actualiza constantemente.

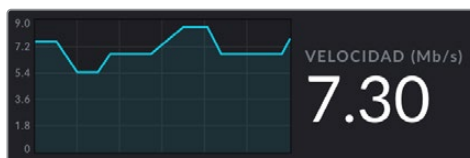


Debajo de esta, se brindan datos técnicos sobre la fuente.

Frecuencia de muestra	Indica la frecuencia de la muestra de audio integrada en la señal SDI.
Énfasis	Indica si dicha opción está activada.
Fuente sincronizada	Indica si la fuente de audio está sincronizada con una señal de referencia externa.
Longitud de palabra	Indica la profundidad de bits del audio integrado en la señal SDI.
Origen	Estos cuatro caracteres indican el canal de origen.
Hora	Código de tiempo continuo.
Bits de audio	Indica la actividad de los bits en las muestras de audio integradas en la señal SDI y permite confirmar su presencia.
VUCP	De izquierda a derecha, estas letras indican la validez (V), el bit de usuario (U), el estado del canal (C) y la paridad (P). Este campo funciona de manera similar al indicador correspondiente a los bits de audio.
Dirección de muestra	Contador de la muestra de audio.
Uso de bits (AUX)	Indica el uso de bits auxiliares en la señal de audio.
Canales de audio 1-32	Cada dígito representa un canal de audio integrado en la señal SDI. Una P indica que el canal está en uso, mientras que un guion hace referencia a la ausencia de audio en dicho canal.

Velocidad de transferencia

Este panel muestra la velocidad de la codificación durante los 60 segundos previos en megabits por segundo. El indicador funciona constantemente, incluso cuando la señal no está al aire, a fin de determinar el ancho de banda necesario para la transmisión.



Memoria caché

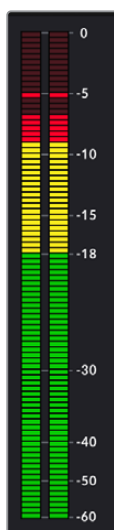
El indicador y la gráfica muestran el porcentaje de la memoria intermedia utilizado durante los 60 segundos previos. Esta es una memoria interna con capacidad limitada que graba y reproduce la señal transmitida de manera continua. Funciona como una medida de seguridad en caso de que la velocidad de transmisión disminuya.

La naturaleza variable de Internet se debe mayoritariamente a la actividad de la red o a la potencia de la señal inalámbrica. De este modo, si la velocidad de transferencia disminuye, se almacenarán más datos en la memoria caché a fin de compensar la falta de velocidad requerida para la transmisión. Sin embargo, cuando su capacidad se agote, la transmisión se verá comprometida, por lo que es recomendable evitar que esto suceda siempre que sea posible. Para realizar una prueba, conecte una fuente y observe el indicador sin comenzar la transmisión. Si este se aproxima al 100 % con frecuencia, seleccione una calidad inferior en los ajustes para la transmisión.



Nivel del audio

Los medidores indican la intensidad de la señal de audio según la opción seleccionada en el menú de ajustes del dispositivo (PPM o VU). Si el volumen es demasiado alto, los indicadores se encenderán de rojo, y podría ocurrir una distorsión en el audio de la transmisión. Intente que el nivel no rebase demasiado la parte superior de la sección verde.



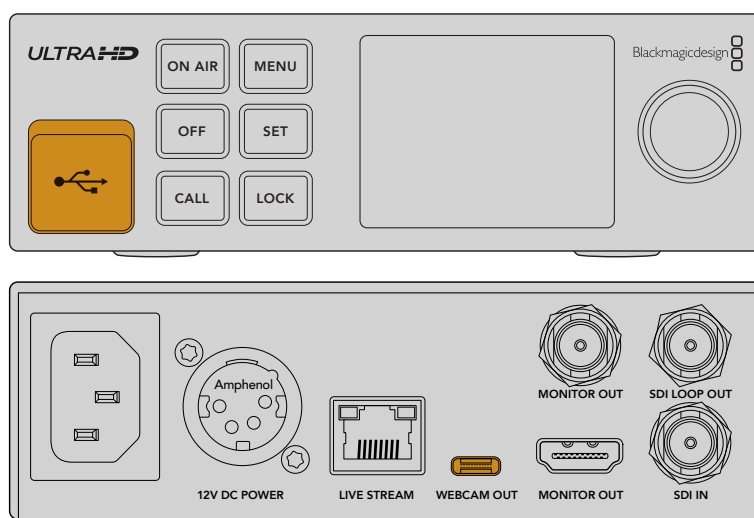
Programa utilitario

El programa utilitario Blackmagic Streaming Setup permite cambiar diversos parámetros, configurar redes y actualizar el sistema operativo interno del dispositivo, además de cargar y guardar archivos con ajustes relativos a las transmisiones.

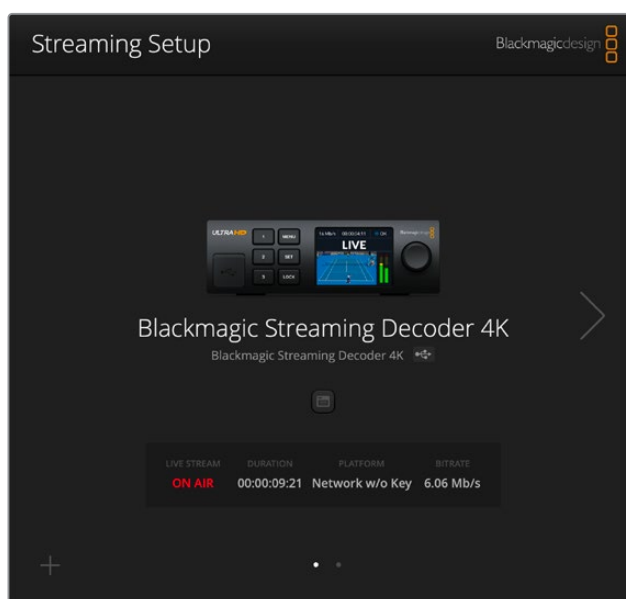
Descargue e instale la versión más reciente del programa, que se encuentra disponible en nuestra página de soporte técnico.

Para usar el programa utilitario:

- 1 Conecte el dispositivo a un equipo informático mediante el puerto USB en el panel delantero o trasero.



- 2 Ejecute el programa utilitario. El modelo del procesador aparecerá en la ventana principal.
- 3 Haga clic en el ícono cuadrado o en la imagen del dispositivo para acceder a la configuración. Si hay más de un procesador conectado a la red, haga clic en las flechas a ambos lados de la ventana para acceder a otra unidad.



Transmisión en directo

La pestaña **Live Stream** contiene todos los ajustes necesarios para configurar una transmisión

Codificador de transmisiones

En el caso del modelo Blackmagic Streaming Encoder, la pestaña **Live Stream** incluye opciones para la calidad de la señal transmitida y la configuración de la plataforma de transmisión. Además, permite cargar archivos XML que contengan ajustes específicos para la transmisión.

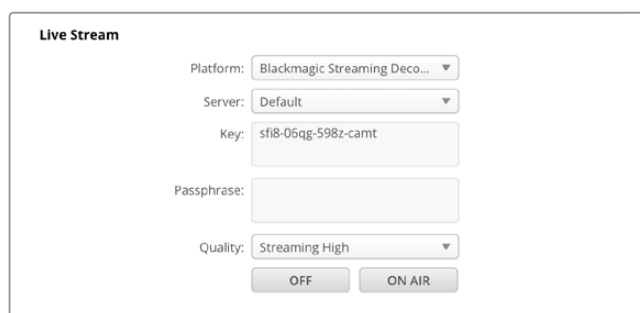
Señal saliente



La opción **Stream Standard** permite seleccionar la resolución de la señal transmitida. Existen diversas opciones disponibles, desde 720p25 hasta 2160p60.

Transmisión en directo

Los ajustes en la opción **Live Stream** permiten seleccionar una plataforma de transmisión, configurar diversos parámetros y determinar la calidad de la señal transmitida.



Plataforma

El menú **Platform** permite seleccionar la plataforma para la transmisión. Las opciones disponibles incluyen YouTube, Facebook y Twitch. Al importar ajustes personalizados, estos también aparecerán en la lista.

Para transmitir a una dirección URL, seleccione una opción específica en el menú **Platform**. Es posible realizar la transmisión en formato H.264 o H.265.

Servidor

El menú **Server** permite seleccionar el servidor más cercano. La lista de opciones disponibles varía según la plataforma de transmisión elegida.

Al transmitir a través de Instagram, Microsoft Teams o una dirección URL específica, la lista de servidores puede modificarse. Ingrese la dirección asignada por la plataforma de transmisión o los datos correspondientes.

Clave

El campo **Key** se utiliza para ingresar la clave asignada por la plataforma de transmisión.

Frase de contraseña

Al utilizar un servicio de transmisión con el protocolo SRT, ingrese la frase de contraseña asignada por la plataforma.

Calidad

Seleccione la calidad de la transmisión. Las siguientes tablas muestran las velocidades de transferencia de datos para los códecs H.264 y H.265.

H.264	
HD	4K
HyperDeck High (45-70 Mb/s)	HyperDeck High (95-220 Mb/s)
HyperDeck Medium (25-45 Mb/s)	HyperDeck Medium (66-150 Mb/s)
HyperDeck Low (12-20 Mb/s)	HyperDeck Low (38-80 Mb/s)
Streaming High (6-9 Mb/s)	Streaming High (34-51 Mb/s)
Streaming Medium (4.5-7 Mb/s)	Streaming Medium (23-35 Mb/s)
Streaming Low (3-4.5 Mb/s)	Streaming Low (13-4.5 Mb/s)

H.265	
HD	4K
Streaming High (2.3-4.5 Mb/s)	Streaming High (22.5-30 Mb/s)
Streaming Medium (1.5-3 Mb/s)	Streaming Medium (14-20 Mb/s)
Streaming Low (0.8-2 Mb/s)	Streaming Low (8-10 Mb/s)

La velocidad de transmisión dependerá del formato empleado por el dispositivo. Por ejemplo, al seleccionar la opción **Streaming High** para transmitir una señal en formato 1080p24, la velocidad de transmisión será de 6 Mb/s.

Como se aprecia en la tabla, las velocidades de transferencia de datos son menores a las de las opciones HyperDeck. Esto permite transmitir por Internet, puesto que durante este proceso el ancho de banda es menor que el utilizado al grabar información en un disco.

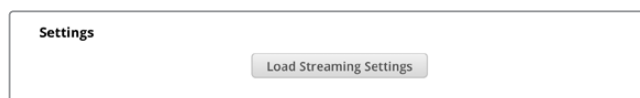
Nótese que para cada ajuste se mencionan dos velocidades. La inferior se emplea con frecuencias de imagen de 24p, 25p y 30p, mientras que la superior corresponde a valores de 50p y 60p. Asimismo, cabe mencionar que la opción predeterminada para la transmisión es **Streaming High** (6-9 Mb/s), ya que brinda la mejor calidad.

Botones de señal al aire

Los botones **ON AIR** y **OFF** permiten iniciar o detener la transmisión, respectivamente. El primero se enciende de color rojo cuando la transmisión se está llevando a cabo.

Configuración

Haga clic en el botón **Load Streaming Settings** y siga las instrucciones para cargar un archivo XML con ajustes para la transmisión.

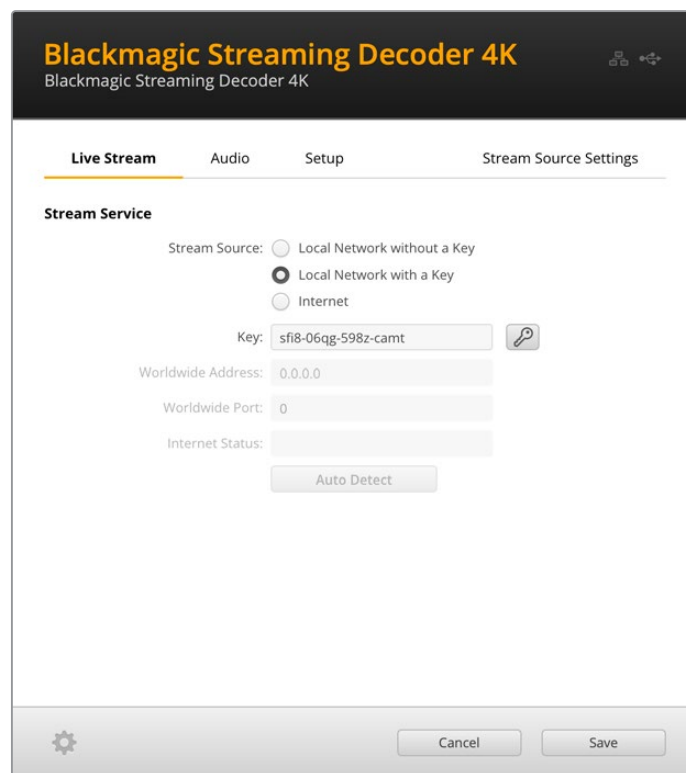


Eliminar ajustes importados

Para eliminar los ajustes importados del dispositivo, haga clic en el ícono de la rueda dentada en la esquina inferior izquierda de la pestaña **Live Stream**. A continuación, haga clic en el botón **Remove** para confirmar.

Decodificador de transmisiones

En el caso del modelo Blackmagic Streaming Decoder, la pestaña **Live Stream** permite seleccionar la fuente de la transmisión y configurar los ajustes de Internet del dispositivo.



Servicio de transmisión

La opción **Stream Server** incluye ajustes para configurar la conexión del dispositivo a un codificador remoto, o bien a una cámara Blackmagic o un mezclador ATEM que brinden la posibilidad de transmitir en directo.

Fuente de transmisión

El menú **Stream Source** permite elegir la fuente de la transmisión recibida. Las opciones incluyen Internet o redes locales con o sin contraseña.

Clave

Debido a que cualquiera puede transmitir a un decodificador Blackmagic que aparezca en el menú, es una buena idea configurar una clave para evitar accesos no autorizados. Como es fácil elegir cualquier decodificador en la red, resultaría caótico si todos transmitieran simultáneamente.

Esto no es un problema al crear una clave de transmisión. Básicamente, esta es una contraseña que evita el acceso de cualquier usuario al dispositivo. En el programa utilitario, es posible ver el campo para introducir la clave de transmisión. Basta con escribir una contraseña, y luego solo los usuarios que tengan la misma clave de transmisión podrán conectarse a dicho conversor.

Aunque es posible usar cualquier contraseña deseada, el programa utilitario incluye un botón que permite generar opciones más seguras. A continuación, dicha contraseña puede compartirse con cualquier persona que desee conectarse. Una vez introducida la clave en el codificador, la cámara o el mezclador, solo esta persona tendrá autorización para acceder al decodificador.

Conexión a Internet

La mejor manera de conectar una unidad Blackmagic Streaming Decoder es mediante Internet. Puede resultar un tanto complejo, porque es necesario asegurarse de que el codificador, la cámara Blackmagic o el mezclador ATEM logre encontrar dicho dispositivo desde cualquier lugar. Como las posibilidades son muchas, es preciso configurar algunos ajustes adicionales para que este método funcione.

Requerimientos

Es necesario conectar a Internet tanto el decodificador como el codificador, el mezclador o la cámara que se usará para la transmisión. También es preciso contar con una dirección IP pública fija para el decodificador.

El problema es que, aunque el decodificador esté conectado a la red Ethernet local, también debe ser visible en Internet. El modelo Blackmagic Streaming Decoder emplea el redireccionamiento de puertos en el cortafuegos de Internet para permitir que el codificador, el mezclador o la cámara se conecten mediante una conexión a Internet. Si esta función no está configurada, dichos dispositivos no podrán ubicar al decodificador.

Por tal motivo, es necesario solicitarle al proveedor de Internet o al administrador de red que establezca el redireccionamiento de puertos de la conexión como *TCP Port 1935*. Esto es muy sencillo. La ventaja es que el decodificador intentará configurar esta opción, ya que la mayoría de las conexiones a Internet y cortafuegos incluyen un protocolo para establecer el redireccionamiento de puertos automáticamente. Es decir, es posible que el decodificador se comunique con los equipos de la red e intente llevar a cabo dicha configuración, al igual que en el programa utilitario.

Confirmación del acceso a Internet

Es posible observar que en la parte inferior hay un campo que indica el estado de la conexión a Internet. El decodificador intentará conectarse a Internet y notificará si todo funciona correctamente. Si el estado indica que el dispositivo está conectado, es una buena señal, dado que significa que ha podido configurar los ajustes de redireccionamiento de puertos y se ha establecido una conexión a Internet.

NOTA: Al abrir puertos de una red al tráfico externo, su seguridad disminuye. Por lo tanto, ante cualquier duda, recomendamos contactar al proveedor de servicios de Internet o al administrador de la red.

Si no es posible ver el estado de conexión, quizás sea preciso configurar el redireccionamiento de puertos manualmente en el cortafuegos. No todos los cortafuegos son compatibles con el protocolo para configurar automáticamente este tipo de información, pero sí permiten el ajuste manual de dicha función.

En este sentido, tal vez sea necesario contactar al proveedor de servicios de Internet. En redes corporativas más complejas, es recomendable contactar al administrador, a fin de evitar conflictos entre dispositivos.

Estado de Internet

Al configurar la conexión a Internet, este indicador sirve de ayuda para solucionar cualquier problema. La información que muestra y la causa de los problemas se describen a continuación.

Visible	Si el estado dice Visible Worldwide , esto es una buena señal, ya que significa que todo funciona correctamente. Es decir, el redireccionamiento de puertos se ha configurado adecuadamente, por lo que el decodificador está listo para recibir una señal transmitida por Internet.
Sin acceso a Internet	Si el estado dice No Internet Access , significa que el dispositivo no puede conectarse a Internet. Es necesario comprobar los ajustes de red y la conexión a Internet.
Error de direccionamiento de puertos	Si el estado dice Port Forwarding Error , significa que, a pesar de que el dispositivo puede estar conectado a Internet, el redireccionamiento de puertos en el cortafuegos no se ha configurado correctamente, por lo que no es posible acceder al dispositivo a través de Internet. Se recomienda contactar al administrador de red a fin de corregir el problema.
Error UPnP	Este es un mensaje poco común que indica que el dispositivo no ha podido conectarse al puerto asignado en el conmutador de red. Se recomienda contactar al administrador de red o consultar la documentación del conmutador a fin de solucionar este error.

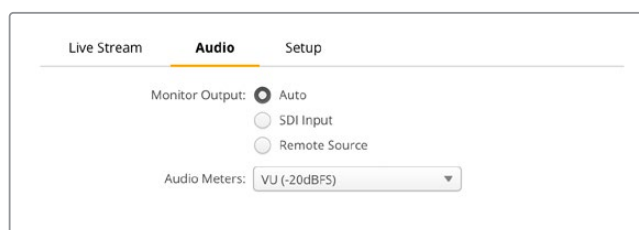
Detectar

Haga clic en el botón **Auto Detect** para detectar automáticamente los ajustes de la conexión a Internet.

Audio

Esta pestaña incluye ajustes para configurar la salida de supervisión del audio de los procesadores, así como opciones para la comunicación y los medidores del nivel de la señal.

Codificador de transmisiones



Supervisión

El grupo de ajustes **Monitor Output** permite seleccionar la fuente de audio transmitida a través de las salidas SDI y HDMI del dispositivo.

Modo automático

Al seleccionar la opción automática, el codificador detectará automáticamente el audio de la comunicación que se transmite del mezclador ATEM al decodificador. Si este no se detecta, se escuchará el audio recibido a través de la entrada SDI.

Entrada SDI

Seleccione la opción **SDI Input** para supervisar el audio de una fuente SDI, por ejemplo, una unidad Blackmagic Studio Camera conectada al codificador.

Fuente remota

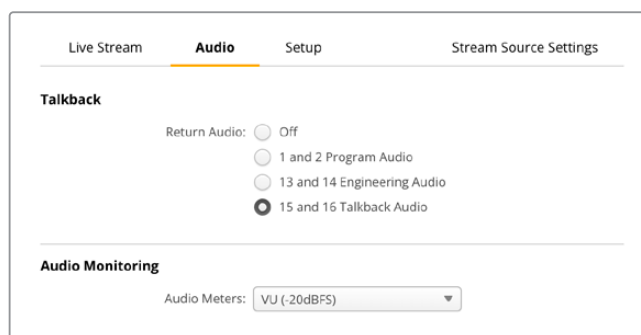
Seleccione la opción **Remote Source** para supervisar el audio de la comunicación transmitido desde un mezclador ATEM o un decodificador.

Medición de audio

Este menú permite elegir el sistema empleado para la medición del audio. Las opciones disponibles son **VU -18dBFS**, **VU -20dBFS**, **PPM -18dBFS** y **PPM -20dBFS**.

Decodificador de transmisiones

En el modelo Blackmagic Streaming Decoder, la pestaña **Audio** permite seleccionar los canales para la comunicación y configurar los medidores del panel frontal.



Comunicación

Los ajustes en la sección **Talkback** permiten elegir los canales de audio que se transmiten de regreso al codificador. Las opciones incluyen canales exclusivos para el audio del programa y la comunicación entre diversos integrantes del equipo de producción.

Medición de audio

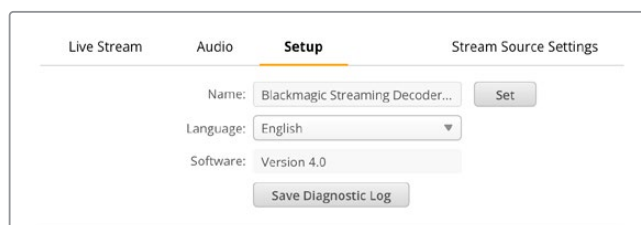
La opción **Audio Monitoring** permite elegir el sistema empleado para la medición del audio. Las opciones disponibles son **VU -18dBFS**, **VU -20dBFS**, **PPM -18dBFS** y **PPM -20dBFS**.

Configuración

Las opciones de la pestaña **Setup** permiten ver el nombre del dispositivo, cambiar los ajustes de red y restablecer la configuración original. En el modelo Blackmagic Streaming Decoder, esta pestaña también incluye opciones adicionales para seleccionar el modo de sincronización y el nivel de la señal transmitida a través de la salida SDI.

Identificación

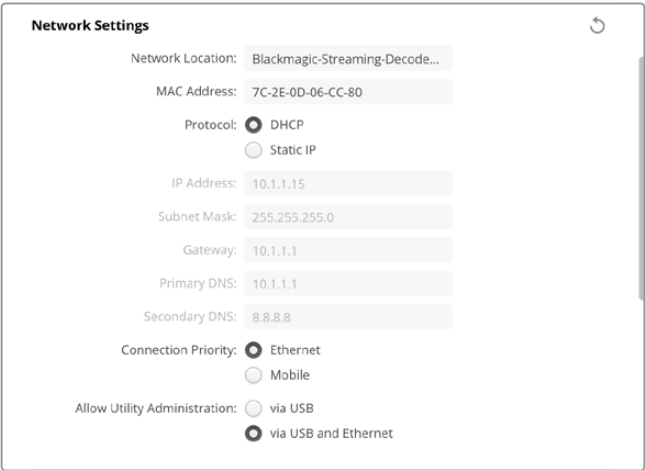
Los ajustes de la sección **Identification** permiten asignar un nombre a los dispositivos y seleccionar el idioma de la interfaz.



Al escribir un nombre específico, se facilita la identificación de las unidades cuando hay varias conectadas a la red. Además, se proporciona el nombre para la ubicación de la red.

Por otra parte, es posible ver la versión del sistema operativo interno del conversor.

Ajustes de red



Network Settings

Network Location: Blackmagic-Streaming-Decode...

MAC Address: 7C-2E-0D-06-CC-80

Protocol: ☒ DHCP ☐ Static IP

IP Address: 10.1.1.15

Subnet Mask: 255.255.255.0

Gateway: 10.1.1.1

Primary DNS: 10.1.1.1

Secondary DNS: 8.8.8.8

Connection Priority: ☒ Ethernet ☐ Mobile

Allow Utility Administration: ☐ via USB ☒ via USB and Ethernet

Ubicación de la red

La ubicación de la red (**Network location**) es el nombre del dispositivo que aparecerá en el registro y se basa en el nombre asignado al mediante el programa utilitario. Cabe destacar que se ignoran los prefijos numéricos.

Dirección MAC

El campo **MAC Address** muestra la dirección MAC del dispositivo. Esta consiste en un identificador único para cada puerto Ethernet y es importante al configurar sistemas de seguridad para redes que restringen el acceso a ciertos dispositivos según dicha dirección.

Protocolo

Las opciones **Static IP** y **DHCP** determinan la forma en la cual el dispositivo se conecta a la red.

DHCP	De manera predeterminada, tanto el codificador como el decodificador utilizan el protocolo de configuración dinámica o DHCP. Este permite a los servidores de red reconocer automáticamente la unidad y asignarle una dirección IP. A su vez, brinda una manera estupenda de facilitar la conexión de equipos mediante la tecnología Ethernet y garantiza que dichas direcciones sean compatibles entre ellas. La mayoría de los equipos informáticos y conmutadores de red admiten el uso de este protocolo.
Dirección IP fija	Al seleccionar la opción Static IP, es posible agregar los datos de la red. Para configurar una dirección IP y que todos los equipos puedan comunicarse, es necesario que compartan los mismos ajustes de máscara de subred y puerta de enlace.

Al utilizar una dirección IP fija, si existen otros dispositivos en la red con el mismo número identificador en la dirección, se producirá un conflicto y las unidades no se conectarán. Si esto sucede, basta con cambiar dicho valor en la unidad correspondiente.

Por ejemplo, si la dirección que genera el problema es 192.100.40.30, se deberá cambiar el último campo numérico a cualquier otro número distinto de 30. En caso de que dicho número ya se haya utilizado, sustitúyalo nuevamente por cualquier otro que no esté siendo empleado por los restantes equipos.

Conexión prioritaria

Al conectar el dispositivo a una red Ethernet y un teléfono móvil, la opción **Connection Priority** permite seleccionar la conexión empleada para la transmisión. Consulte el apartado *Transmisión mediante teléfonos inteligentes* para obtener más información al respecto.

Acceso al programa utilitario

Al seleccionar **Via USB** en la opción **Allow utility administration**, el dispositivo solo se podrá controlar mediante el equipo informático al cual está conectado a través del puerto USB. Esto evita que otros usuarios en la red efectúen modificaciones de manera imprevista.

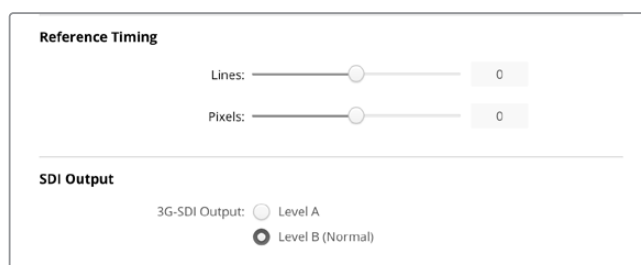
Restablecer

Haga clic en el botón **Factory Reset** a fin de restablecer los ajustes originales del dispositivo. Al presionar el botón **SET**, el dispositivo le solicitará que confirme la opción seleccionada. Haga clic en **Reset** para continuar.



Decodificador de transmisiones

En el caso del modelo Blackmagic Streaming Decoder, la pestaña **Setup** incluye además las siguientes opciones.



Modo de sincronización

Las opciones **Lines** y **Pixels** del ajuste **Reference Timing** permiten ajustar manualmente el modo de sincronización. El conversor decodificador cuenta con una entrada para señales de referencia analógicas (Tri-Sync y Black Burst) y una entrada SDI que también puede emplearse para recibir dichas señales. Estas se emplean en las grandes difusoras a fin de sincronizar todas las conexiones y permitir la distribución de contenidos en el sistema.

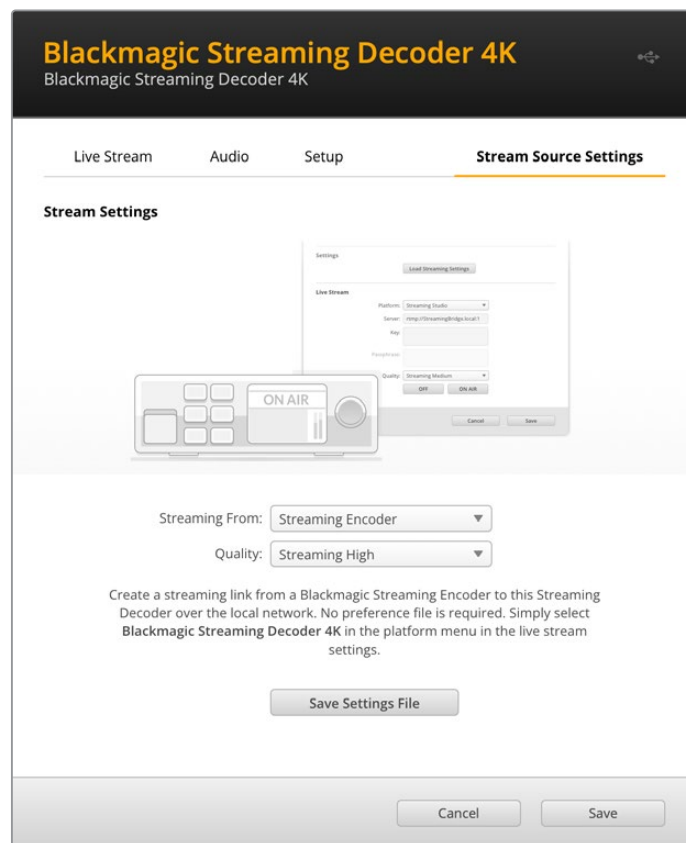
Salida SDI

Algunos equipos solo son capaces de recibir señales SDI 3G nivel A o B. A fin de mantener la compatibilidad con otros equipos de difusión, seleccione la opción adecuada según el dispositivo conectado. El ajuste predeterminado es **Level B** (nivel B).

Configuración de fuentes

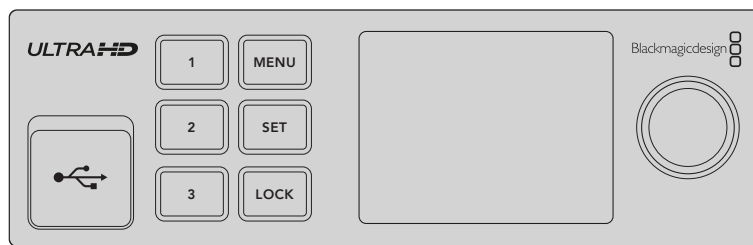
En el caso del modelo Blackmagic Streaming Decoder, la pestaña **Stream Source Settings** permite generar archivos XML con ajustes de transmisión que pueden cargarse en un codificador remoto, o bien en una cámara Blackmagic o un mezclador ATEM que brinde la posibilidad de transmitir en directo por Internet.

Consulte el siguiente apartado del manual para obtener más información al respecto.



Creación de enlaces de transmisión

Los procesadores permiten transmitir señales mediante una red local o a cualquier lugar del mundo a través de Internet.



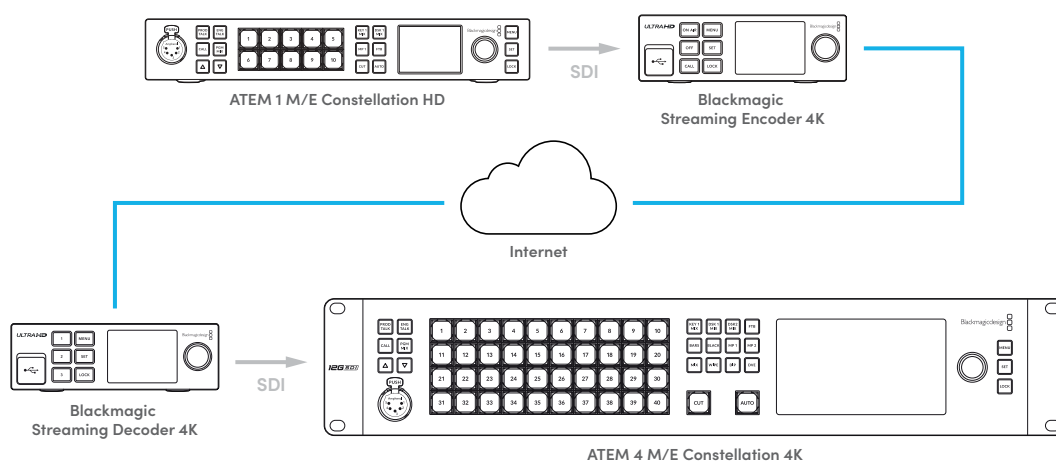
Si el decodificador se encuentra conectado a la misma red que el codificador, aparecerá en el menú **Platform** de la pestaña **Live Stream** del programa utilitario. Consulte el apartado *Primeros pasos* para obtener más información al respecto.

Para transmitir a través de Internet o mediante una red local utilizando una clave de seguridad, el decodificador puede generar un archivo XML con los ajustes necesarios. Dicho archivo se carga en el codificador mediante el programa utilitario.

SUGERENCIA: También es posible exportar archivos XML con ajustes a cámaras Blackmagic y mezcladores ATEM que permitan transmitir por Internet. Consulte el manual de dichos dispositivos para obtener más información al respecto.

Un buen ejemplo de cómo el codificador y el decodificador funcionan conjuntamente es la transmisión de un informe meteorológico desde exteriores a un estudio. A tales efectos, solo es necesario contar con una conexión a Internet a través de una red o un teléfono inteligente.

En el estudio, el decodificador recibe la señal transmitida mediante Internet y la convierte para obtener otra en formato SDI, a fin de poder conectar un mezclador.



En este caso, la dinámica de trabajo sería la siguiente:

- 1 En exteriores, el dispositivo Blackmagic Streaming Encoder se conecta a la salida SDI principal de un mezclador ATEM, por ejemplo, el modelo ATEM 1M/E Constellation HD.
- 2 A continuación, el codificador se conecta a un teléfono inteligente.
- 3 En el estudio, el dispositivo Blackmagic Streaming Decoder también se conecta a Internet mediante una red Ethernet.
- 4 El decodificador 4K recibe la señal a través de Internet y la convierte para obtener otra en formato SDI que se transmite a la entrada SDI del mezclador para emitirla al aire.

A fin de que el decodificador pueda recibir la señal transmitida por el codificador, es preciso ejecutar el programa utilitario Blackmagic Streaming Setup y configurar los ajustes de Internet. Esto incluye generar un archivo XML con los ajustes de la transmisión para cargarlo en el codificador ubicado en exteriores.

Creación del archivo XML

Para crear un archivo XML con los ajustes, conecte un cable de red del puerto **LIVE STREAM** del dispositivo Blackmagic Streaming Decoder a un enrutador o un conmutador de red.

A continuación, conecte el decodificador al equipo informático mediante un cable USB-C y ejecute el programa Blackmagic Streaming Setup. En la pestaña **Live Stream**, compruebe que la red se haya configurado correctamente y luego seleccione **Internet** en la opción **Stream Service**. En el recuadro del estado de Internet, aparecerá el siguiente mensaje: **Visible worldwide**. Esto significa que todo funciona correctamente. Consulte el apartado referente al programa utilitario Blackmagic Streaming Setup para obtener más información al respecto.

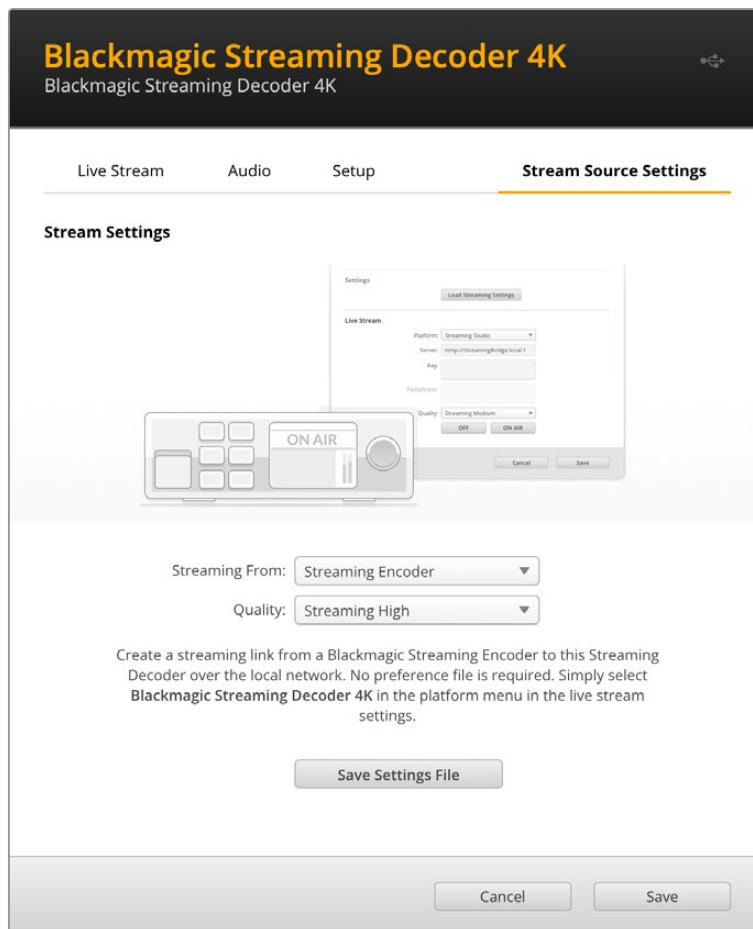
Nota sobre el redireccionamiento de puertos

Si en el recuadro del estado de Internet se indica un error UPnP o aparece un mensaje relativo a un problema con el redireccionamiento del puerto, consulte al administrador de red o al proveedor de servicios de Internet sobre la forma de configurar este parámetro como **TCP port 1935**.

Exportación del archivo XML

Después de confirmar los ajustes en la pestaña **Setup** y conectar correctamente el decodificador a Internet o a la red, es posible exportar el archivo XML.

- 1 Haga clic en la pestaña **Stream Source Settings**, situada en la esquina superior derecha de la ventana.



- 2 En el menú **Stream From**, seleccione la opción **Streaming Encoder**.
A los efectos de crear un archivo XML con ajustes de transmisión para una cámara Blackmagic o un mezclador ATEM que permite emitir en directo por Internet, seleccione la opción **ATEM Switcher** o **Blackmagic Camera** en el menú **Streaming From**.
- 3 Seleccione la calidad de la transmisión. Este ajuste también determinará la calidad en el codificador conectado remotamente.
- 4 Haga clic en el botón **Save Settings File** y elija una ubicación en el equipo informático para guardar el archivo.

Una vez guardado el archivo, envíelo por correo electrónico al usuario del codificador.

SUGERENCIA: El ajuste **Talkback** en la pestaña **Audio** permite seleccionar los canales de audio que se transmiten de vuelta al codificador remoto.

Carga del archivo XML

Una vez recibido el archivo con los ajustes por correo electrónico, el equipo en exteriores solo debe cargarlo en el dispositivo Blackmagic Streaming Encoder mediante el programa Blackmagic Streaming Setup y presionar el botón **ON AIR** para comenzar la transmisión.

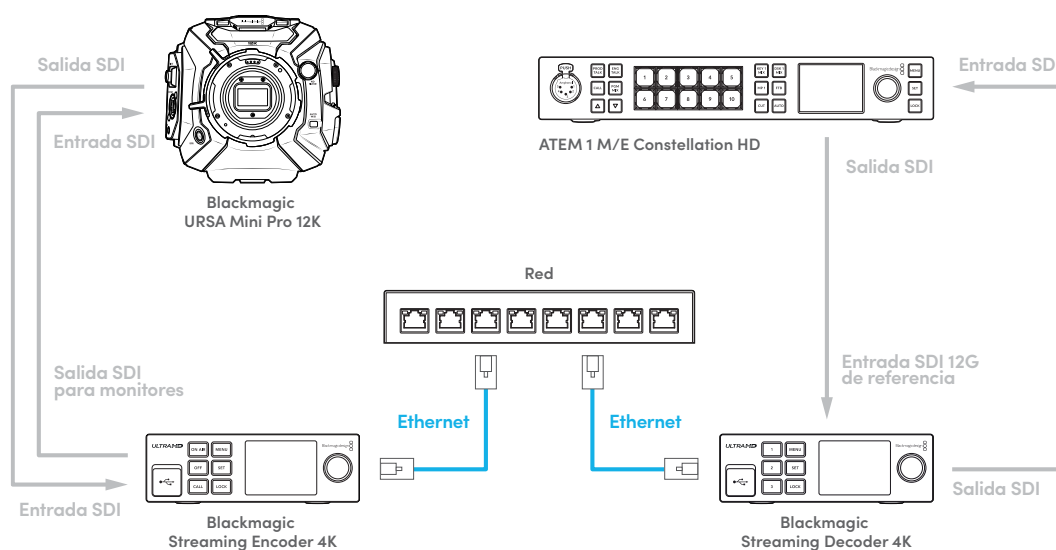
Es importante mencionar que, una vez cargado el archivo, es posible comenzar y detener la transmisión sin necesidad de hacerlo nuevamente. Esto permite que sea más fácil establecer un enlace audiovisual constante entre el codificador y el decodificador de transmisiones.

Mientras la transmisión sea la misma y los ajustes de red no se modifiquen, ambos dispositivos podrán comunicarse sin importar dónde se encuentren. Basta con conectar el codificador a Internet y presionar el botón **ON AIR** para transmitir la señal inmediatamente al decodificador en el estudio.

Comunicación, señalización y control de cámaras

Los procesadores de transmisiones Blackmagic pueden recibir información transmitida desde un mezclador ATEM para activar la luz piloto, establecer la comunicación y controlar las cámaras. De esta forma, es posible trabajar con cámaras SDI de Blackmagic Design desde cualquier lugar del mundo, siempre que tengan acceso a Internet o a la red local para poder hacer uso de dichas funciones.

La configuración es muy simple. La siguiente ilustración muestra cómo conectar el modelo URSA Mini Pro 12K a un mezclador ATEM 1 M/E Constellation mediante una red local para activar la luz piloto, establecer la comunicación y controlar las cámaras.



Después de conectar todos los equipos:

- 1 Presione el botón **MENÚ** en el dispositivo Blackmagic Streaming Encoder para acceder al menú en la pantalla y seleccione la opción **Transmisión en vivo**.
- 2 En el menú **Plataforma**, seleccione la opción **Blackmagic Streaming Decoder**.
- 3 Presione el botón **SET** para confirmar.

Para que la luz piloto funcione, es necesario verificar que el número identificador de la cámara coincida con el de la entrada en el mezclador. Consulte el manual del modelo URSA Mini a fin de obtener más información al respecto.

Para comprobar que la luz piloto funcione adecuadamente, seleccione la cámara como fuente para la salida principal del mezclador. Si el número identificador de la unidad es correcto, la luz piloto se encenderá, y aparecerá un borde rojo en la pantalla de la cámara. Al seleccionar la señal de la cámara como anticipo, la luz piloto se encenderá de verde.

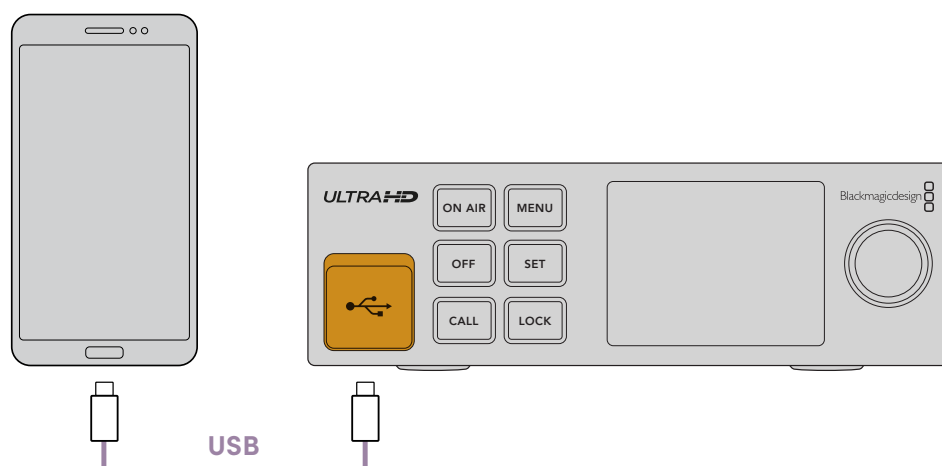
Intente ajustar la apertura del diafragma y el pedestal en la pestaña **Cámara** del programa ATEM Software Control para verificar que pueda controlar la unidad.

Por defecto, la comunicación se establece a través de los canales de audio 15 y 16, pero es posible seleccionar los canales 13 y 14, destinados a los ingenieros, o la salida principal mediante el programa utilitario Blackmagic Streaming Setup.

Al transmitir por Internet, se crea un archivo XML mediante el programa utilitario Blackmagic Streaming Setup. Luego, dicho archivo se carga en el codificador para que este detecte el decodificador en la red. Consulte el apartado anterior en este manual para obtener más información al respecto.

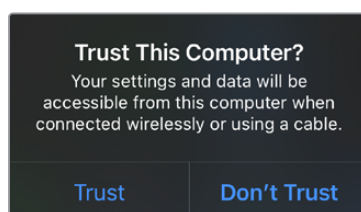
Transmisión mediante teléfonos inteligentes

Los procesadores de transmisiones Blackmagic pueden acceder a Internet a través de un teléfono inteligente. Para comenzar, basta con conectar el teléfono al puerto USB-C en la parte frontal o trasera del procesador. Esta opción brinda la oportunidad de configurar el dispositivo rápidamente y transmitir o recibir una señal desde cualquier lugar donde el teléfono disponga de cobertura 4G o 5G.



Para compartir la conexión del teléfono inteligente:

- 1 En dispositivos con sistema iOS, compruebe que la opción **Permitir que otros se conecten** esté activada en el menú correspondiente de los ajustes para el punto de acceso personal.
- 2 El sistema le solicitará que verifique si conoce el equipo informático conectado. Al confirmar, aparecerá un ícono verde en la pantalla que indica el anclaje a la red y que la conexión se ha establecido correctamente.



En este caso, el reloj del teléfono siempre se verá con un fondo verde.

En dispositivos con sistema Android, deslice el dedo hacia abajo sobre la pantalla a fin de ver el menú de acceso rápido. Mantenga pulsado el ícono **Compartir conexión** y active el anclaje mediante la conexión USB.

SUGERENCIA: Recomendamos desactivar dichos ajustes una vez terminada la transmisión, a fin de extender la duración de la batería del teléfono.

Transmisiones en directo a través de Internet

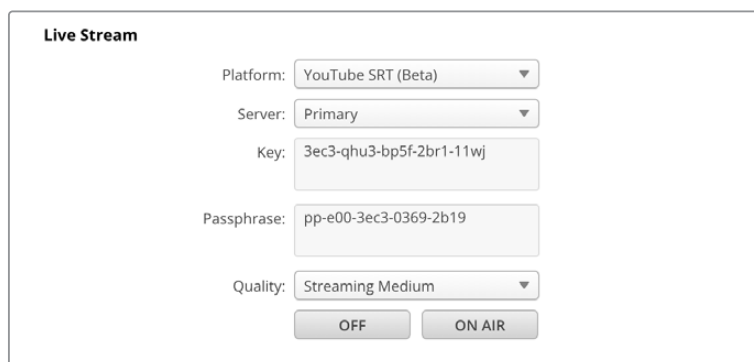
El dispositivo Blackmagic Streaming Encoder permite transmitir directamente a través de Internet mediante plataformas tales como YouTube, Facebook y Twitch. En el siguiente ejemplo, se explica cómo configurar una transmisión en YouTube Live.

- 1 Copie la clave de transmisión proporcionada por YouTube Studio.
- 2 Ejecute el programa Blackmagic Streaming Setup y acceda a la pestaña **Live Stream**.
- 3 Elija **YouTube** como plataforma y seleccione la opción **Primary** para el servidor. Copie la clave de la transmisión en el campo **Key** y seleccione la calidad. Haga clic en **Save** para guardar los ajustes.
- 4 Ya está todo listo para comenzar la transmisión. Haga clic en la opción **ON AIR** o presione el botón correspondiente en el panel frontal de la unidad. Al finalizar el programa, haga clic en el botón **OFF** para detener la transmisión.

Uso del protocolo SRT

El protocolo de transporte seguro y confiable (SRT) ofrece una latencia menor en comparación con el protocolo de mensajería en tiempo real (RTMP). Además, brinda una mayor seguridad al utilizar una frase de contraseña, que es similar a una clave de cifrado.

Cuando seleccione la versión del protocolo SRT del dispositivo, copie la frase de contraseña y la clave de transmisión de su cuenta y péguelas en los campos **Passphrase** y **Key** del programa utilitario, respectivamente.



The screenshot shows the 'Live Stream' configuration window. It includes the following fields and values:

- Platform: YouTube SRT (Beta)
- Server: Primary
- Key: 3ec3-qhu3-bp5f-2br1-11wj
- Passphrase: pp-e00-3ec3-0369-2b19
- Quality: Streaming Medium

At the bottom of the window are two buttons: 'OFF' and 'ON AIR'.

Pegue la frase de contraseña en el campo **Passphrase** del programa utilitario.

Es posible cambiar el protocolo (RTMP o SRT) y el códec (H.264 o H.265) en el archivo XML si se cuenta con la experiencia técnica, a fin de personalizar los ajustes de transmisión. Consulte el apartado correspondiente al formato de dicho archivo en la sección para desarrolladores de este manual a fin de obtener más información al respecto.

Detección del dispositivo como cámara web

Los programas como Zoom o Microsoft Teams reconocen automáticamente el procesador como una cámara web, de modo que, al ejecutarlos, es posible ver de inmediato la señal transmitida por este. Si esto no sucede, elija el codificador o decodificador en la lista de opciones para la cámara y el micrófono.

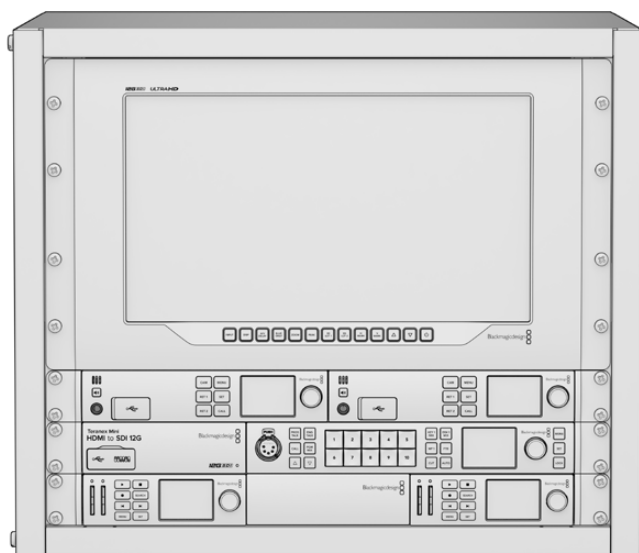
A continuación, se proporciona un ejemplo de configuración en Microsoft Teams.

- 1 Conecte el puerto **WEBCAM OUT** del procesador al equipo informático mediante un cable USB-C.
- 2 En la barra de menús, acceda a la opción de configuración y seleccione **Dispositivos**.
- 3 En el panel **Audio**, haga clic en el menú **Micrófono** y seleccione **Blackmagic Design** como fuente.
- 4 En el panel **Video**, seleccione el procesador en el menú respectivo.

Estante para bastidores

Este accesorio, denominado Blackmagic Universal Rack Shelf, es un estante de 1 U que permite instalar una amplia gama de dispositivos de Blackmagic Design en bastidores o cajas de transporte. Su diseño modular brinda la posibilidad de crear sistemas portátiles y prácticos con productos que ocupan una unidad de bastidor.

La siguiente imagen muestra tres estantes Blackmagic Universal Rack Shelf instalados en un bastidor pequeño con distintas unidades compatibles. El estante inferior incluye una placa ciega de 1/3 U, a fin de rellenar el espacio vacío entre los dispositivos.



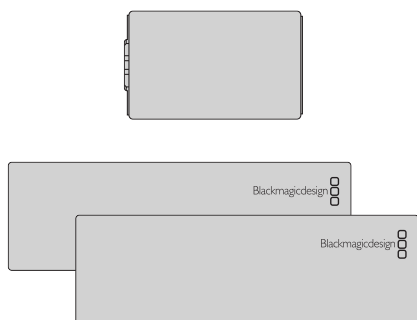
Índice

El kit de instalación incluye los siguientes componentes:



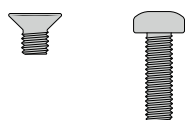
Blackmagic Universal Rack Shelf

Estante de 1 U y ancho completo que permite instalar equipos de Blackmagic Design.



Placas ciegas

Una placa de 1/6 del ancho del bastidor y dos de 1/3 que permiten cubrir los espacios vacíos en el estante.



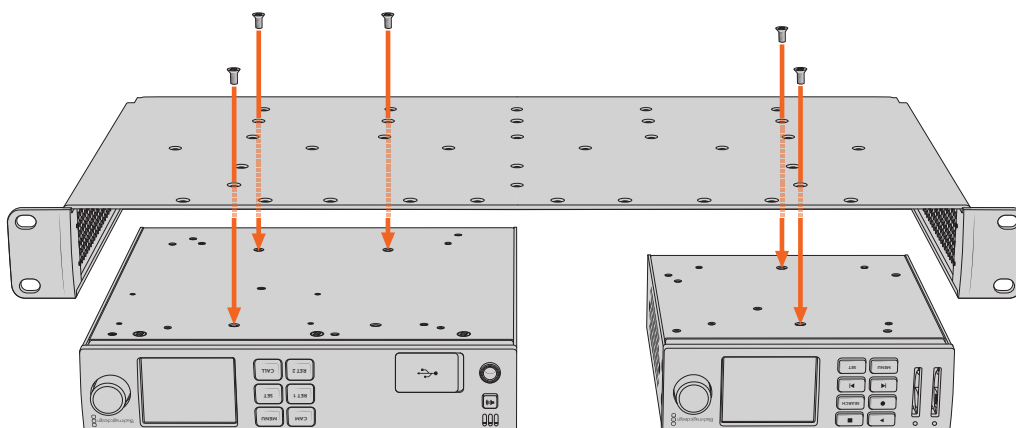
Tornillos

12 tornillos M3 avellanados (5 mm).

2 tornillos M3 de cabeza plana (9 mm) para las placas ciegas de 1/6.

Instalación de una unidad en el estante

- 1 Si el dispositivo cuenta con pies de goma, retírelos de la base de la unidad con un raspador de plástico.
- 2 Gire el estante y la unidad de manera que la parte inferior mire hacia arriba y haga coincidir los agujeros del estante con los orificios roscados del dispositivo. Hay dos orificios roscados centrales en las unidades que ocupan 1/3 del bastidor y hasta tres orificios en las de mayores dimensiones, que ocupan la mitad del bastidor.

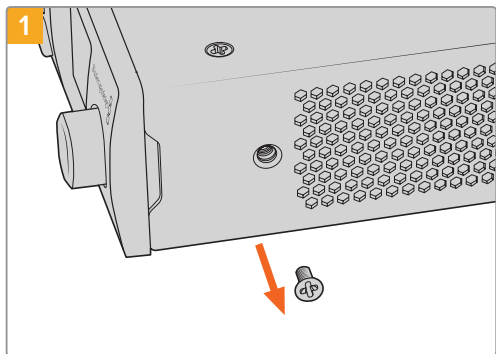


- 3 Instale el dispositivo en el bastidor mediante los tornillos avellanados que se suministran.
- 4 Una vez ajustados, gire nuevamente el estante e instálelo en el bastidor con las escuadras integradas.

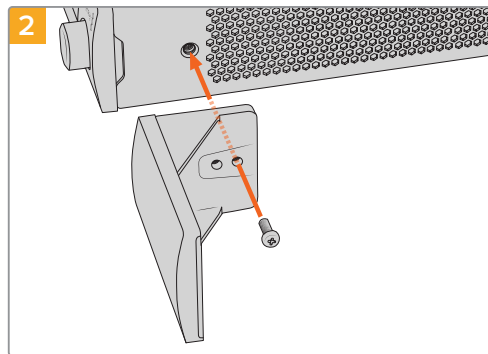
Las placas ciegas proporcionadas permiten cubrir los espacios vacíos en el estante.

Instalación de una placa ciega de 1/6

La placa ciega más pequeña (1/6 del ancho del bastidor) permite cubrir los espacios vacíos al instalar unidades que ocupan 1/3 y 1/2 del ancho del bastidor. La placa se puede adosar a los laterales de las unidades. A fin de mejorar la ventilación, se recomienda colocarla entre los dispositivos.



Quite el tornillo M3 de 5 mm ubicado cerca de la parte delantera del dispositivo.



Haga coincidir los agujeros de la placa ciega y sujétela mediante el tornillo M3 de 9 mm suministrado.

Instalación de una placa ciega lateral de 1/3

Es posible instalar estas placas ciegas directamente en los laterales del estante al montar unidades individuales. Para colocar una placa ciega, los orificios y el punto de fijación en la base de la placa deben estar alineados con el estante, y es necesario utilizar dos tornillos M3 (5 mm) avellanados a fin de sujetarla.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the , and \ characters escaped with a \ character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```



```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```


Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a *204 No Content* response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with *200 OK* and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with *204 No Content*.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
eventsi	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response <i>i</i>	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers <i>i</i>	object	Server configuration.	

Name	Type	Description	Example
serveri.server (required)	string	Server name.	Primary
serveri.url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
serveri.srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
serveri.srtExtensionsi	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
serveri.srtExtensionsi{key}	string	SRT tag value.	
serveri.group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles	object	Quality configuration.	
profiles.profile (required)	string	Quality level name.	Streaming High
profiles.configs (required)	array	List of video format configurations.	
profiles.configsi	object	Video format configuration for profiles.	
profiles.configsi.resolution (required)	string	Video format serialised as a string.	1080p
profiles.configsi.fps (required)	string	Frames per second.	60
profiles.configsi.bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles.configsi.audioBitrate	integer	Audio bitrate (bps).	128000
profiles.configsi.keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles.configsi.videoCodecs	array	Supported video encoding algorithm/s.	
profiles.configsi.videoCodecsi	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles.lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response <i>i</i>	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formatsi	object	Video format configuration.	
formatsi.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formatsi.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formatsi.height	number	Height dimension of video format.	1080
formatsi.width	number	Width dimension of video format.	1920
formatsi.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.propertiesi	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.propertiesi	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
i	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```


Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Ayuda

Cómo obtener ayuda

Visite nuestra página de soporte técnico a fin de obtener ayuda rápidamente y acceder al material de apoyo más reciente para los productos descritos en este manual.

Página de soporte técnico

La versión más reciente de este manual se encuentra disponible en nuestra página de soporte técnico.

Foro

El foro de Blackmagic Design permite compartir ideas creativas y constituye un recurso útil para obtener más información sobre nuestros productos. Por otra parte, brinda la posibilidad de encontrar rápidamente respuestas suministradas por usuarios experimentados o por el personal de Blackmagic Design. Para acceder al foro, visite la siguiente página: <https://forum.blackmagicdesign.com>

Cómo ponerse en contacto con Blackmagic Design

Si no encuentra la ayuda que necesita, solicite asistencia mediante el botón **Enviar correo electrónico**, situado en la parte inferior de nuestra página de soporte técnico. De manera alternativa, haga clic en el botón **Soporte técnico local** para acceder al número telefónico del centro de atención más cercano.

Normativas



Tratamiento de residuos de equipos eléctricos y electrónicos en la Unión Europea:

Este símbolo indica que el dispositivo no debe desecharse junto con otros residuos domésticos. A tales efectos, es preciso llevarlo a un centro de recolección para su posterior reciclaje. Esto ayuda a preservar los recursos naturales y garantiza que dicho procedimiento se realice protegiendo la salud y el medioambiente. Para obtener más información al respecto, comuníquese con el distribuidor o el centro de reciclaje más cercano.



Según las pruebas realizadas, este equipo cumple con los límites indicados para dispositivos digitales Clase A, en conformidad con la sección 15 de las normas establecidas por la Comisión Federal de Comunicaciones. Esto permite proporcionar una protección razonable contra interferencias nocivas al operar el dispositivo en un entorno comercial. Este equipo usa, genera y puede irradiar energía de radiofrecuencia, y si no se instala o utiliza de acuerdo con el manual de instrucciones, podría ocasionar interferencias nocivas para las comunicaciones radiales. El funcionamiento de este equipo en una zona residencial podría ocasionar interferencias nocivas, en cuyo caso el usuario deberá solucionar dicho inconveniente por cuenta propia.

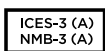
El funcionamiento de este equipo está sujeto a las siguientes condiciones:

- 1 El dispositivo no debe ocasionar interferencias nocivas.
- 2 El dispositivo debe admitir cualquier interferencia recibida, incluidas aquellas que pudieran provocar un funcionamiento incorrecto del mismo.



R-R-BMD-20201201001

R-R-BMD-20201201002



Declaración ISED (Canadá)

Este dispositivo cumple con las normas del gobierno de Canadá relativas a equipos digitales clase A.

Cualquier modificación o uso indebido del mismo podría acarrear un incumplimiento de dichas normas.

Las conexiones a interfaces HDMI deberán realizarse mediante cables blindados.

Este equipo cumple con las normas descritas anteriormente al emplearse en entornos comerciales. Nótese que podría ocasionar interferencia radial al utilizarlo en ambientes domésticos.

Seguridad

Este equipo debe enchufarse a una toma de corriente que disponga de una conexión a tierra.

A fin de reducir el riesgo de descarga eléctrica, evite exponer el equipo a goteras o salpicaduras.

Este equipo puede utilizarse en climas tropicales, a una temperatura ambiente máxima de 40 °C.

La temperatura de almacenamiento se sitúa entre -20 y 60 °C, con una humedad relativa de 0-90 % (sin condensación).

Compruebe que haya suficiente ventilación en torno a la unidad.

Al instalar el equipo en un bastidor, verifique que el dispositivo contiguo no impida la ventilación.

La reparación de los componentes internos del equipo no debe ser llevada a cabo por el usuario.

Comuníquese con nuestro centro de atención más cercano para obtener más información al respecto.



Evite utilizar el equipo a una altura mayor de 2000 metros.

Declaración del Estado de California

Las partes plásticas de este producto pueden contener trazas de compuestos químicos, tales como polibromobifenilos (PBB), que el Estado de California reconoce como causantes de cáncer, anomalías congénitas o daños reproductivos.

Consulte el sitio www.P65Warnings.ca.gov para obtener más información al respecto.

Garantía

36 meses de garantía limitada

Blackmagic Design ofrece una garantía de 36 meses a partir de la fecha de compra de este producto por defectos relativos a los materiales o la fabricación, a excepción de los conectores, cables, módulos de fibra óptica, fusibles y baterías, cuya garantía es de 12 meses. Si el producto resulta defectuoso durante el período de validez de la garantía, Blackmagic Design podrá optar por reemplazarlo o repararlo sin cargo alguno por concepto de piezas y/o mano de obra.

Para acceder al servicio proporcionado de acuerdo con los términos de esta garantía, el Cliente deberá dar aviso del defecto a Blackmagic Design antes del vencimiento del período de garantía y encargarse de los arreglos necesarios para su prestación. El Cliente será responsable del empaque y el envío del producto defectuoso al centro de servicio técnico designado por Blackmagic Design y deberá abonar las tarifas postales por adelantado. El Cliente será responsable de todos los gastos de envío, seguros, aranceles, impuestos y cualquier otro importe que surja con relación a la devolución de productos por cualquier motivo.

Esta garantía carecerá de validez ante defectos o daños causados por un uso indebido del producto o por falta de cuidado y mantenimiento. Blackmagic Design no tendrá obligación de prestar el servicio estipulado en esta garantía para (a) reparar daños provocados por intentos de personal ajeno a Blackmagic Design de instalar el producto, repararlo o realizar un mantenimiento del mismo; (b) reparar daños resultantes del uso de equipos incompatibles o conexiones a los mismos; (c) reparar cualquier daño o mal funcionamiento provocado por el uso de piezas o repuestos no suministrados por Blackmagic Design; o (d) brindar servicio técnico a un producto que haya sido modificado o integrado con otros productos, cuando dicha modificación o integración tenga como resultado un aumento de la dificultad o el tiempo necesario para reparar el producto.

ESTA GARANTÍA OFRECIDA POR BLACKMAGIC DESIGN SUSTITUYE CUALQUIER OTRA GARANTÍA, EXPRESA O IMPLÍCITA. POR MEDIO DE LA PRESENTE, BLACKMAGIC DESIGN Y SUS DISTRIBUIDORES RECHAZAN CUALQUIER GARANTÍA IMPLÍCITA DE COMERCIALIZACIÓN O IDONEIDAD PARA UN PROPÓSITO PARTICULAR. LA RESPONSABILIDAD DE BLACKMAGIC DESIGN EN CUANTO A LA REPARACIÓN O SUSTITUCIÓN DE PRODUCTOS DEFECTUOSOS CONSTITUYE UNA COMPENSACIÓN COMPLETA Y EXCLUSIVA PROPORCIONADA AL CLIENTE POR CUALQUIER DAÑO INDIRECTO, ESPECIAL, FORTUITO O EMERGENTE, AL MARGEN DE QUE BLACKMAGIC DESIGN O SUS DISTRIBUIDORES HAYAN SIDO ADVERTIDOS CON ANTERIORIDAD SOBRE LA POSIBILIDAD DE TALES DAÑOS. BLACKMAGIC DESIGN NO SE HACE RESPONSABLE POR EL USO ILEGAL DE EQUIPOS POR PARTE DEL CLIENTE. BLACKMAGIC DESIGN NO SE HACE RESPONSABLE POR DAÑOS CAUSADOS POR EL USO DE ESTE PRODUCTO. EL USUARIO UTILIZA EL PRODUCTO BAJO SU PROPIA RESPONSABILIDAD.

© Copyright 2025 Blackmagic Design. Todos los derechos reservados. Blackmagic Design, DeckLink, HDLink, Videohub Workgroup, Multibridge Pro, Multibridge Extreme, Intensity y *Leading the creative video revolution* son marcas registradas en Estados Unidos y otros países. Todos los demás nombres de compañías y productos pueden ser marcas comerciales de las respectivas empresas a las que estén asociados.

El nombre Thunderbolt y el logotipo respectivo son marcas registradas de Intel Corporation en Estados Unidos y otros países.

Blackmagic Streaming Processor系列



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



致用户

感谢购买Blackmagic Streaming Processor推流处理器系列!

Blackmagic Streaming Encoder可以直接连接到任何SDI设备, 将信号转换为H.264或H.265格式, 从而在YouTube Live、Facebook Live和Twitch等网络平台上直播。您还可以使用选购Blackmagic Streaming Decoder实现广播级高品质视频的点到点传输, 通过网络轻松实现专业视频的远程传输!

Blackmagic Streaming Decoder可以接收来自Streaming Encoder的数据流, 并将其转换回SDI和HDMI视频。搭载Tally、对讲和摄影机控制, 是现场制作的理想选择! 此外, Streaming Decoder还可以解码来自包含内置推流功能的Blackmagic摄影机和ATEM切换台的数据流。

本操作手册包含安装和开始使用Blackmagic Streaming Processor所需的全部信息。

请访问公司网站www.blackmagicdesign.com/cn的支持页面, 获取Blackmagic Streaming Processor产品的最新版操作手册及其内部软件更新。下载软件时, 请注册您的相关信息, 以便我们发布新软件时能及时通知您。

我们会不断地增加新功能, 提升产品性能, 同时也由衷地希望聆听您的宝贵意见!

A stylized, handwritten signature in black ink that reads "Grant Petty".

Grant Petty

Blackmagic Design首席执行官

目录

开始使用	355	使用网络摄像头输出	383
连接电源	355	Blackmagic Universal Rack Shelf	383
连接到网络	356	包含组件	384
连接到视频源	356	将设备安装到机架上	384
将监视器连接到Streaming Encoder	357	安装1/6机架宽度空白挡板	385
连接视频目标	357	安装侧面的1/3机架宽度空白挡板	385
通过网络简单推流	357	Developer Information	386
LCD显示屏	360	Blackmagic Streaming Encoder Ethernet Protocol	386
连接图标	361	Protocol Blocks	388
Streaming Encoder的监看输出	361	Streaming Encoder Control REST API	398
Blackmagic Streaming Setup	366	Event Control API	400
Live Stream (流媒体直播)	367	Livestream Control API	400
Audio (音频)	371	Monitor Output Control API	405
Setup (设置)	372	System Control API	406
Stream Source Settings (推流源设置)	375	Notification websocket – 1.0.0	408
创建播出链路	376	messages	408
创建XML文件	377	Device Properties	409
导出XML文件	377	Blackmagic Streaming XML Format	411
加载XML文件	379	帮助	418
对讲、Tally和摄影机控制	379	监管声明	419
通过智能手机推流	381	安全信息	420
向互联网进行流媒体直播	382	保修	421

开始使用

开始使用Blackmagic Streaming Processor只需连接电源, 接入网线, 并连接视频源和目标即可。



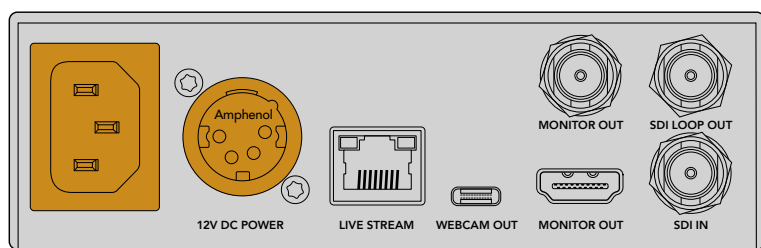
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

连接电源

请使用标准IEC电源线连接推流处理器后面板的电源输入接口。



Blackmagic Streaming Encoder和Streaming Decoder均搭载一路额外的12V DC电源输入。这一电源输入可以用来连接如UPS不间断电源或12V电池电源等外部电源供应, 从而实现冗余方案。

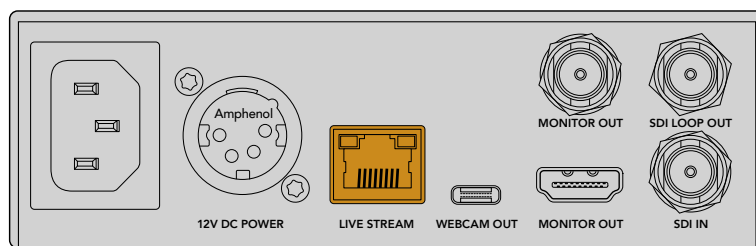
一旦连接电源后, 前面板上的LCD显示屏会弹出提示让您选择语言。使用旋钮滚动到您想要使用的语言选项, 然后按下闪烁的“SET”按钮。



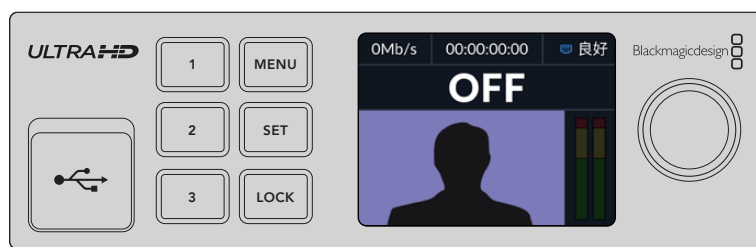
按下“SET”按钮确认您的语言

连接到网络

要将Blackmagic Streaming Processor连接到您的网络或互联网, 只需使用一根网线将标有“LIVE STREAM”字样的以太网端口和网络路由器或网络交换机即可。



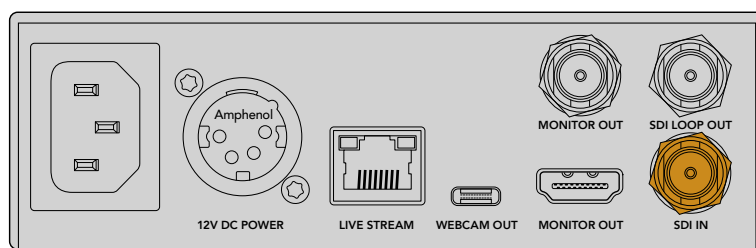
Blackmagic Streaming Processor默认设置为DHCP, 会直接找到IP地址。成功连接后, 您将看到LCD主页屏幕右上角显示的蓝色以太网图标。如果需要通过静态IP地址进行连接, 请参阅本手册后续“Blackmagic Streaming Setup”章节内容。



连接到视频源

连接您希望推流的SDI视频源, 例如将Blackmagic URSA Mini Pro 12K或SDI ATEM切换台连接到Blackmagic Streaming Encoder的SDI输入。Blackmagic Streaming Encoder支持12G-SDI, 并且当视频输入改变时, 它会自动在HD和Ultra HD之间切换, 最高可达2160p60。

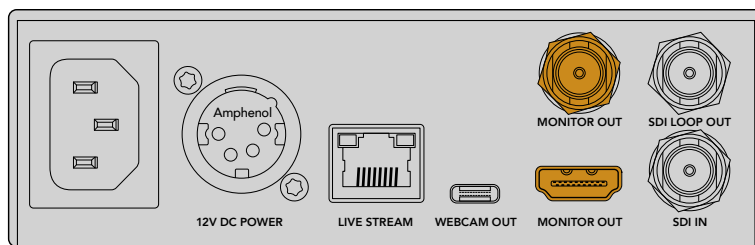
连接的视频会在Streaming Encoder的LCD显示屏上显示。音频会嵌入到所连接的SDI视频信号上, 您可以通过观察LCD上的音频表加以确认。



将SDI视频源连接到Blackmagic Streaming Encoder的SDI输入

将监视器连接到Streaming Encoder

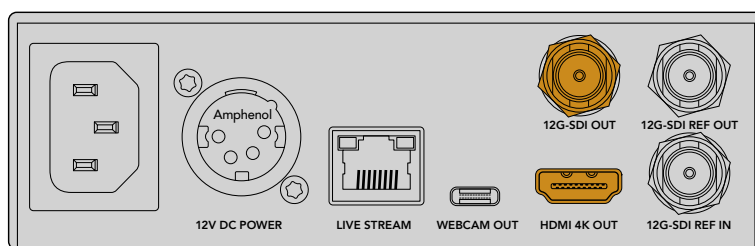
将HDMI电视机或SDI监视器连接到Blackmagic Streaming Encoder后面板上的监看输出。您可以利用监看输出监看播出内容, 并查看关于视频流的重要信息, 比如播出状态、数据速率和音频电平。您可以在本手册中的“Streaming Encoder的监看输出”部分了解更多关于监看输出的信息。



将电视机或监视器连接到Blackmagic Streaming Encoder, 查看关于数据流的重要信息。

连接视频目标

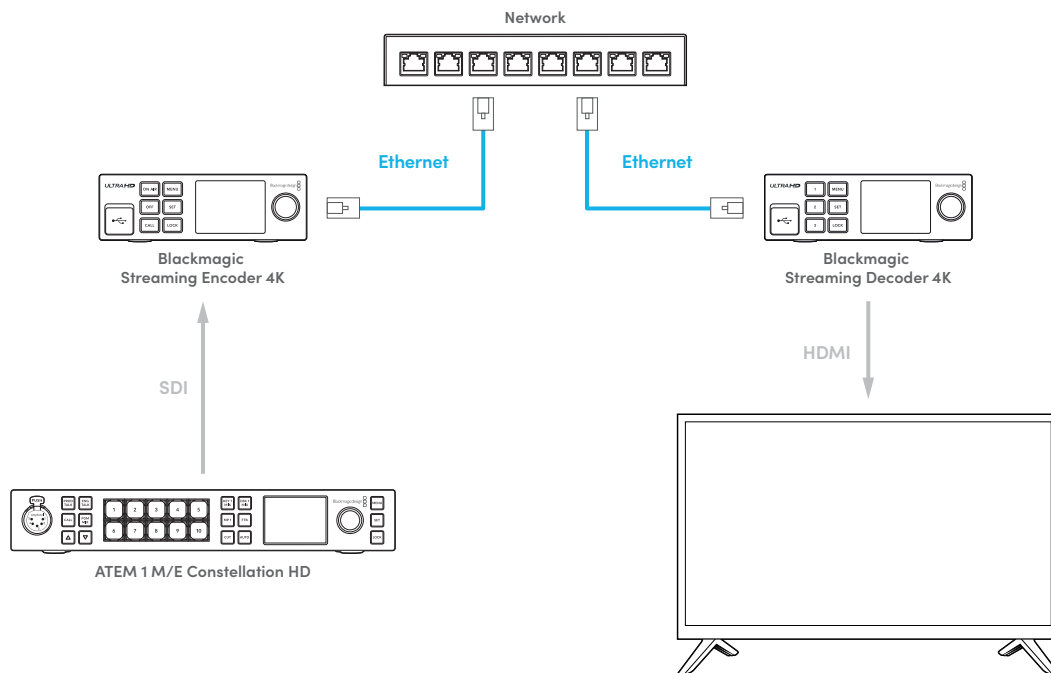
有了Blackmagic Streaming Decoder, 您可以把解码后的数据流发送给目标, 例如SDI ATEM切换台和HDMI电视机。只需将ATEM切换台连接到12G-SDI输出, 将电视机连接到HDMI接口即可。



将视频目标连接到Streaming Decoder的SDI和HDMI输出

通过网络简单推流

连接完毕后, 测试一切是否准确运行的一个有效方法, 是在Blackmagic Streaming Encoder和Blackmagic Streaming Decoder之间通过本地网络设置简单的数据流。如果需要向会议室或在大楼里的视频投影仪提供流媒体直播, 这一方案会十分有用。下面的例子显示了从ATEM切换台到HDMI电视机的简单推流设置。



推流处理器的前面板搭载一块LCD显示屏，能够显示重要信息，并可用于监看视频和音频。旋钮和菜单按钮可以快速访问推流处理器的菜单设置，让您能够直接从前面板进行设置，并且开始和结束推流。

前面板LCD菜单中的所有设置也可以通过Blackmagic Streaming Setup软件更改。获取各个设置的详细信息，请参阅本手册后续“Blackmagic Streaming Setup”部分的内容。

设置简单数据流的步骤如下：

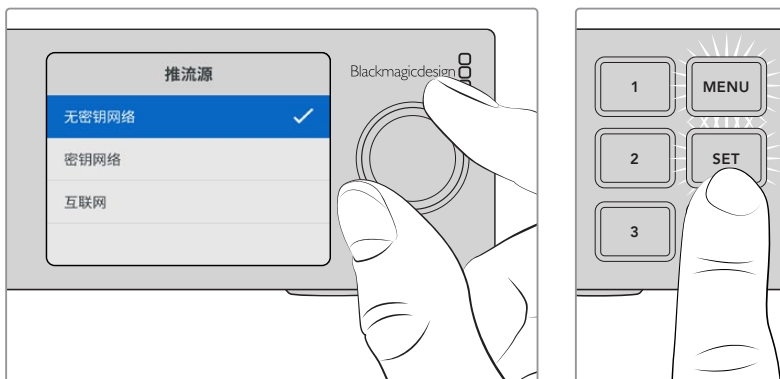
- 1 将Blackmagic Streaming Encoder和Blackmagic Streaming Decoder连接到同一个网络交换机。

提示 用一根以太网线缆连接Blackmagic Streaming Encoder和Blackmagic Streaming Decoder，即可不使用网络交换机完成更简单的点到点设置。

- 2 按下Blackmagic Streaming Decoder上的“MENU”按钮打开前面板LCD菜单，然后按“SET”打开“流媒体直播”子菜单。

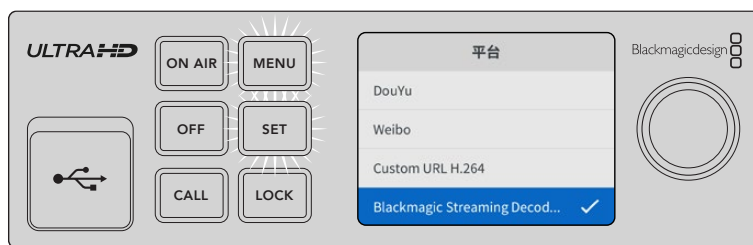


转动旋钮选择“推流源”，按下“SET”，在列表中选择“无密钥网络”。按“SET”以确认您的选择。



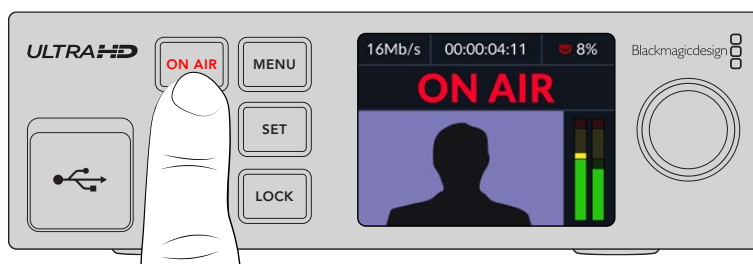
按下“MENU”按钮可返回主页面。

- 3 按下Blackmagic Streaming Encoder上的“MENU”按钮打开“流媒体直播”菜单，按下“SET”，并将旋钮向下转动到“平台”设置。按“SET”选择“平台”子菜单。

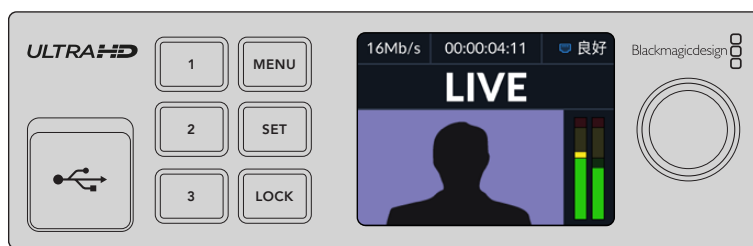


在“平台”列表中选择您的Blackmagic Streaming Decoder”，然后按“SET”。按下“MENU”按钮返回主页面。

- 4 按下Blackmagic Streaming Encoder前面板上的“ON AIR”按钮。推流时该按钮会亮起红色，同时LCD主页面会显示“ON AIR”。



您会在Blackmagic Streaming Decoder的LCD显示屏上看到数据流。



Streaming Decoder的LCD上会显示“LIVE”提示。

如要停止推流，按下Streaming Encoder前面板上的“OFF”按钮。

提示 如果Blackmagic Streaming Encoder的“ON AIR”按钮闪烁, 则表示流媒体直播无法开始, 或者意外停止, 这可能是您的网络连接或流媒体设置出了问题所导致的。请检查流媒体设置是否正确, 并且网线连接是否正常。

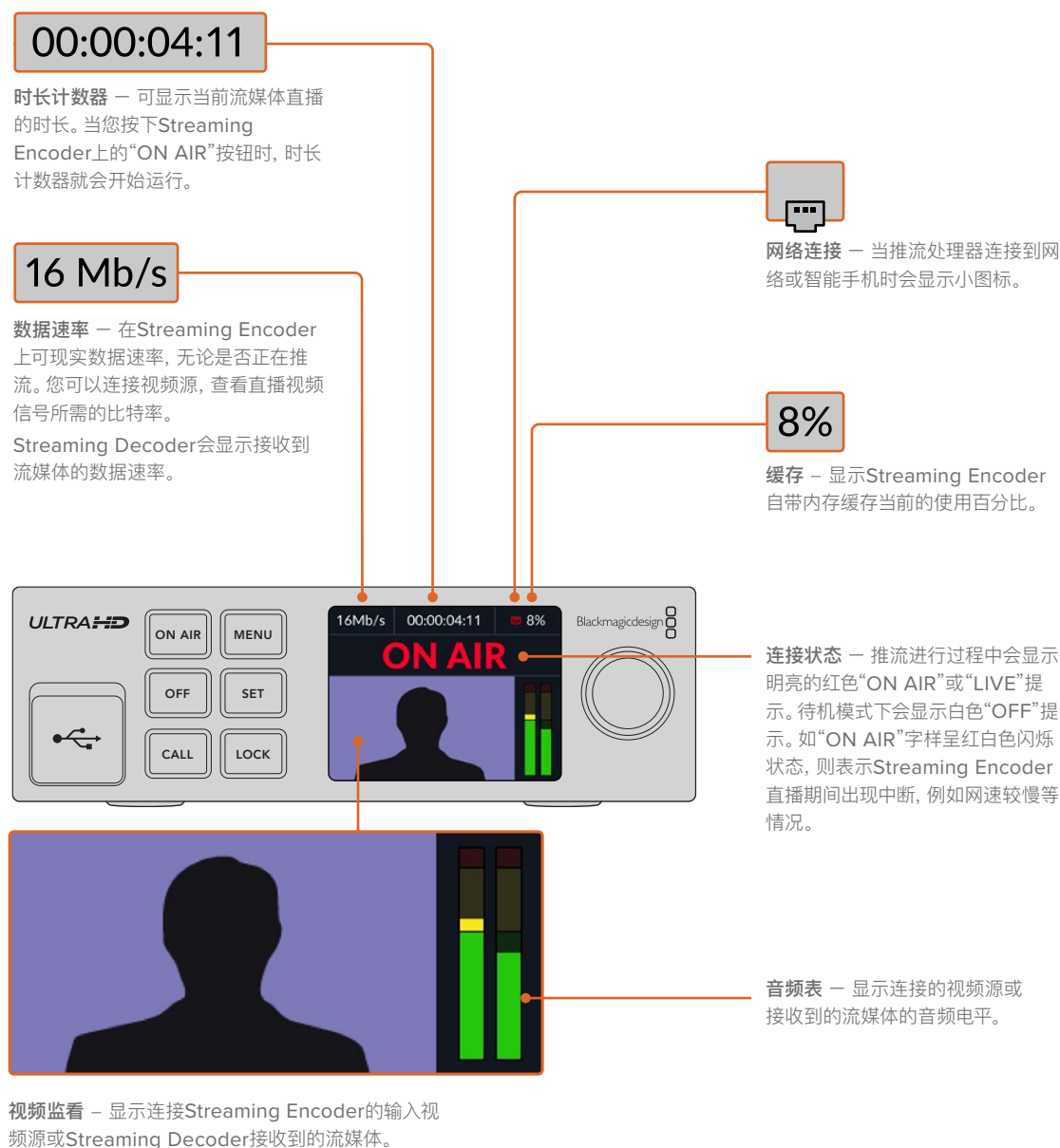
锁定按钮

要锁定推流处理器的前面板控制, 请长按“LOCK”按钮1秒。该操作可禁用按钮和旋钮, 防止任何人意外更改菜单设置或中断推流。

长按该按钮2秒可解除设备面板的锁定功能。

LCD显示屏

Blackmagic Streaming Processor的LCD主页屏幕提供视频和音频监看, 以及关于数据流的重要信息。



输入画面

这一主要的面板区域可显示来自当前连接SDI视频源的视频输入。



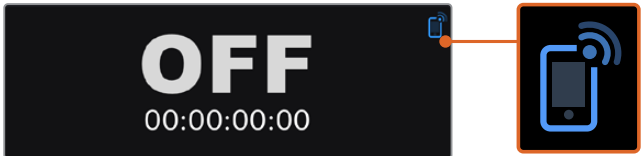
直播状态

流媒体直播前，直播状态提示将显示“OFF”，表示Streaming Encoder此刻为待命状态，可以开始播出。开始流媒体直播后，这一状态提示将亮起红色“ON AIR”字样，直到直播结束。



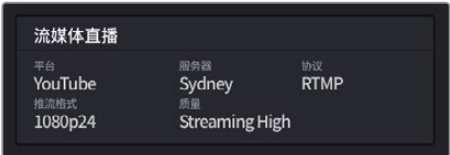
时长计数器位于直播提示下方。当您按下Streaming Encoder的“ON AIR”按钮时，时长计数器将会开始运行。

如果Blackmagic Streaming Encoder处于非直播状态，但即将通过智能手机的共享网络进行直播，此时“OFF”提示字样一侧的角落就会显示一个蓝色的智能手机图标。直播时，这个智能手机图标将会亮起红色。



流媒体直播

流媒体直播面板可显示直播设置的相关信息，包括流媒体平台、服务器和协议。同时显示的还有直播的分辨率以及画质设置。



视频输入

视频输入面板的顶部设有5个小型检视器，它们可显示直播画面的前6秒内容，每个小型检视器分别占1.2秒直播时间。



小型检视器下方显示的是Streaming Encoder的SDI输入上所连接视频输入源的具体技术信息。

输入格式	可显示SDI视频输入的分辨率和帧率。Streaming Encoder最高支持2160p60。
色域标准	可显示SDI视频输入的色彩空间。Streaming Encoder支持Rec.601、Rec.709和Rec.2020色彩空间。
SDI辅助数据	辅助数据是SDI视频输入上所携带的视频之外的数据。这包括嵌入音频，时间码，以及隐藏式字幕。如果您的SDI输入包含辅助数据，此处就会显示“具备”提示字样。
时间码	可显示SDI视频输入源的时间码。
隐藏式字幕	如果您的SDI视频输入包含隐藏式字幕，此处就会显示相应的格式。支持的有CEA-608和CEA-708格式。
SMPTE 292 CRC	这是SDI视频的错误检查功能。如果您的Streaming Encoder检测到SDI视频输入中出现问题，则会显示某项错误。CRC错误通常是因SDI线缆故障或线缆过长所导致。
亮度Y比特和色度比特	“亮度Y比特”和“色度比特”的信息提示可显示SDI视频输入信号的活动情况。每个字母都代表视频信号中一个比特位的状态。 X – “X”表示一个持续变化的比特位。 L – 低比特位。 H – 高比特位。 为了便于理解，SDI偏置已被减去。例如，视频为黑色时，所有比特位都是低比特位。 通常来说，SDI视频输入的所有10个比特位都会显示“X”，表示视频流的所有比特位都处于持续变化的状态。如果您的SDI输入是8bit视频，那么最右侧的两个比特位将始终为“L”，因为它们不具备任何数据。如果某个比特位显示“L”或“H”，而您却认为它应显示“X”，这表示当中存在“stuck bit”，并且有可能在上游视频中导致错误。

音频输入

音频输入面板顶部的音频波形可显示直播视频流中过去6秒音频的相关信息。该显示会不断更新，从右到左滚动显示。

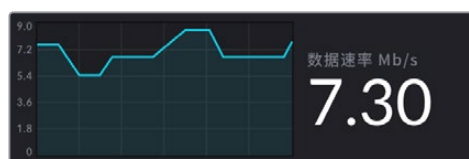


您可以在音频波形显示的下方查看该音频输入的具体技术信息。

采样频率	可显示SDI输入上内嵌音频的采样频率。
加重	可提示您的音频源是否启用了加重选项。
音频源锁定	提示了音频源频率是否被锁定到外部参考源。
字长	可显示SDI输入上内嵌音频的位深。
来源	这里的四字符表示通道来源。
当日时间 (TOD)	自由运行时间码。
音频比特	可显示SDI连接内嵌音频样本中的比特活动情况。即使音频通道状态显示您有16、20或24bit音频，音频比特活动情况也会加以确认。
VUCP	从左到右，“V”表示“有效性”比特，“U”表示“用户”数据比特，“C”表示“信道状态”比特，而“P”则表示“偶校验”比特。这一栏相当于“音频比特”。
采样地址	音频采样计数器。
辅助比特使用	可提示AUX比特是否用于主音频。
音频通道1-32	每个数字均代表SDI输入上的一个嵌入音频通道。“P”表示音频通道正在使用中，“-”表示该通道没有音频。

数据速率显示

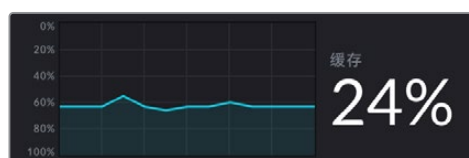
数据速率可显示编码器在过去60秒里的当前数据速率。数据速率的单位为兆比特每秒。即使不处于直播状态, 这一提示信息依然会持续显示, 以便您在直播前准确测量带宽。



缓存显示

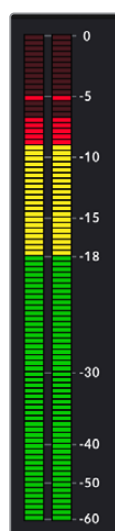
缓存显示可给出Blackmagic Streaming Encoder内置存储缓冲器当前的使用百分比, 图表可显示过去60秒的缓存使用情况。缓存是很小一部分内部存储, 可持续录制和播放节目输出。在遇到流媒体直播数据速率下降到无法维持视频信号的水平时, 它可以作为确保安全的措施。

网络变化大多数是因为网络活动或无线信号强度, 因此如果播出数据速率降低, 缓冲数据就会相应加快。如果连接速度太慢以至于无法支持视频流, 那么缓存就会填充视频帧加以补偿。但是, 一旦缓存达到100%满额, 视频流就会有所损失, 因此请尽量避免出现缓存满额的情况。您无需开始直播就能进行测试, 只需连接视频信号并观察监看输出上的缓存显示即可。如果缓存频繁接近100%, 可在流媒体直播设置中选择一个较低质量的选项。



音频表

您可以使用音频表来监看音频源的电平, 具体可到Blackmagic Streaming Encoder的菜单设置中将电平表设置为PPM表或VU表显示标准。如果您的音频电平过高, 音频表就会亮起红色, 表示直播视频可能出现失真或削波。因此, 请尽量将音频保持在靠近绿色区域顶格, 并偶尔触及黄色区域的范围内。



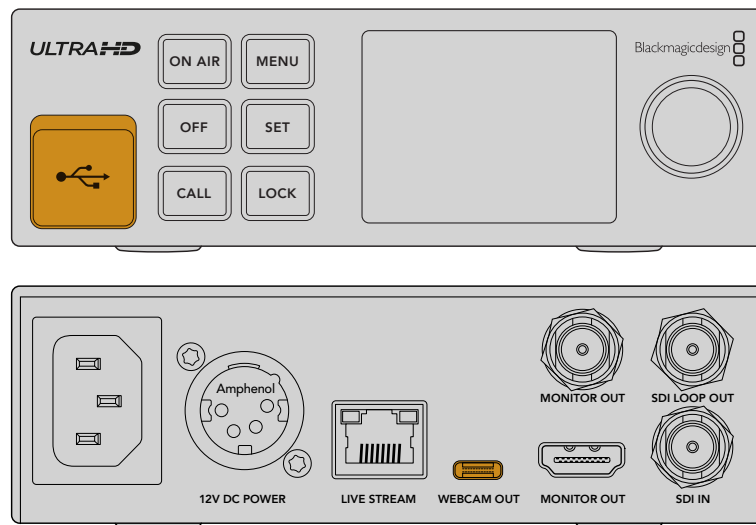
Blackmagic Streaming Setup

Blackmagic Streaming Setup是一款实用软件程序, 可用来更改设置、配置网络、更新Blackmagic Streaming Processor内部软件, 并保存和加载推流设置文件。

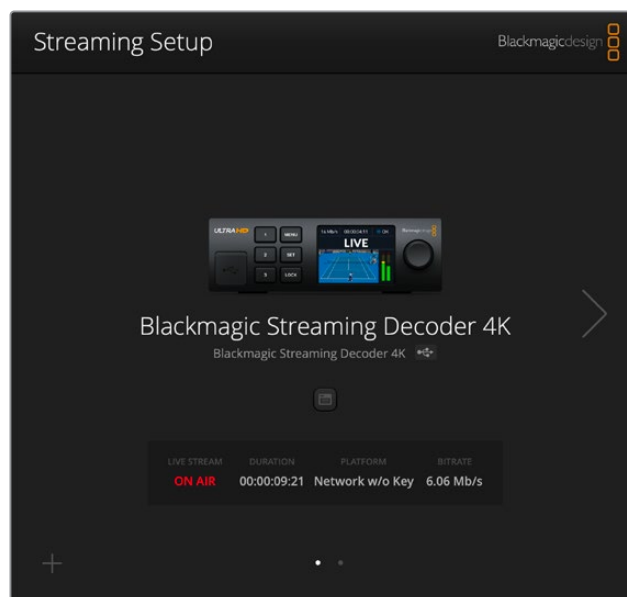
首先, 请到Blackmagic Design支持中心下载并安装最新版Blackmagic Streaming Setup软件, 网址: www.blackmagicdesign.com/cn/support

要使用Blackmagic Streaming Setup:

- 1 使用推流处理器前面板或后面板的USB-C端口将设备连接到您的计算机。



- 2 运行Blackmagic Streaming Setup。您的推流处理器型号会显示在实用程序的主页上。
- 3 点击方形的设置图标或Blackmagic Streaming Processor图像打开设置。如果您在网络中连接了一台以上推流处理器, 请使用界面窗口两侧的箭头进行导航, 找到您想要访问的设备。



Live Stream (流媒体直播)

“Live Stream”选项卡包含了配置推流处理器的流媒体直播连接的所有设置。

推流编码器

在Blackmagic Streaming Encoder上, “Live Stream”选项卡包含了设置推流质量, 选择和配置推流平台, 以及加载XML推流设置文件。

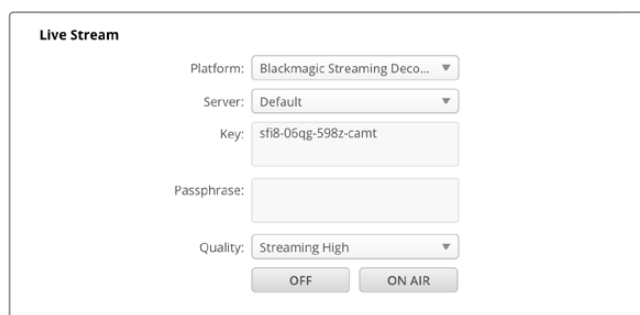
Video Output (视频输出)



点击“Stream Standard” (推流格式) 菜单可选择推流的视频分辨率设置。选择范围从720p25到2160p60。

Live Stream (流媒体直播)

“Live Stream”设置可让您选择推流平台, 配置设置和设置推流质量。



Platform (平台)

点击“Platform”菜单, 为播出选择流媒体平台。选项包括Facebook、YouTube和Twitch。如果您导入了自定义流媒体设置, 这一列表中也会出现其他平台名称。

要推流到自定义URL, 请从“平台”菜单里选择自定义URL选项。您可以选择使用H.264或H.265推流到自定义URL。

Server (服务器)

从列表中选择离您所在地最近的服务器。服务器列表会根据您所选的流媒体直播平台而有所不同。

如果要推流到Instagram、Microsoft Teams或自定义URL, 服务器列表将成为可编辑文本框。请输入您的流媒体平台帐户分配信息或自定义URL信息。

Key (密钥)

输入流媒体平台指派给您播出所用的推流密钥。

Passphrase (密码短语)

如果您使用的推流服务设有SRT视频流协议, 那么请输入您流媒体平台分配的密码短语。

Quality (质量)

为您的流媒体选择推流质量, 以下图表列出了针对H.264和H.265编解码的数据速率。

H.264	
HD	4K
HyperDeck High 45 to 70 Mb/s	HyperDeck High 95 to 220 Mb/s
HyperDeck Medium 25 to 45 Mb/s	HyperDeck Medium 66 to 150 Mb/s
HyperDeck Low 12 to 20 Mb/s	HyperDeck Low 38 to 80 Mb/s
Streaming High 6 to 9 Mb/s	Streaming High 34 to 51 Mb/s
Streaming Medium 4.5 to 7 Mb/s	Streaming Medium 23 to 35 Mb/s
Streaming Low 3 to 4.5 Mb/s	Streaming Low 13 to 20 Mb/s

H.265	
HD	4K
Streaming High 2.3 to 4.5 Mb/s	Streaming High 22.5 to 30 Mb/s
Streaming Medium 1.5 to 3 Mb/s	Streaming Medium 14 to 20 Mb/s
Streaming Low 0.8 to 2 Mb/s	Streaming Low 8 to 10 Mb/s

质量设置使用的数据速率会根据Streaming Encoder的视频格式而改变。比如, 如果选择“Streaming High”的高质量流媒体, 并以1080p24运行, 则会使用6Mb/s的数据速率。

如图表所示, 流媒体数据速率比HyperDeck的速率低。这样就可以通过网络传送数据, 这种方式比在硬盘上录制数据使用的带宽更低。

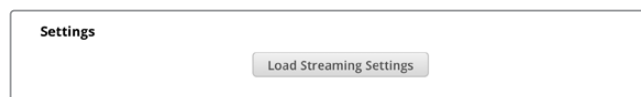
您会发现每个设置都提到了两种数据速率。较低的数字用于24p、25p和30p等较低的帧率, 而较高的数据速率用于50p和60p等较高的帧率。另外值得注意的是, 流媒体质量的默认设置是“Streaming High”, 这能为流媒体直播频道提供非常高的画质。

“OFF”和“ON AIR”按钮

使用“OFF”和“ON AIR”按钮可分别停止或开始流媒体直播。流媒体直播期间, “ON AIR”按钮会亮起红色。

Settings (设置)

点击“Load Streaming Settings” (加载推流设置) 按钮, 根据提示从Blackmagic Streaming Decoder加载XML推流设置文件。

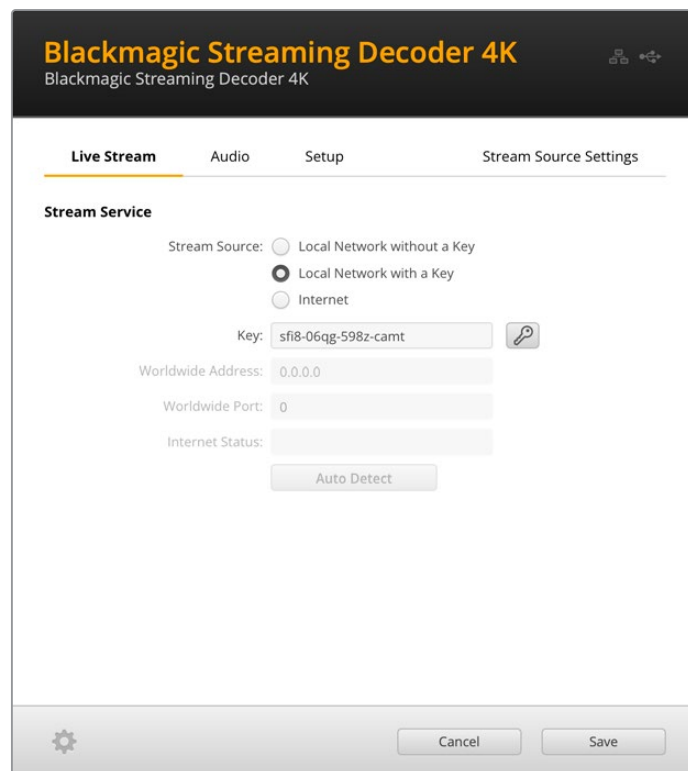


移除导入设置

要将所有导入推流设置从Blackmagic Streaming Encoder移除, 请点击“Live Stream”选项卡左下角的齿轮图标。点击“Remove”(移除) 确认移除。

推流解码器

在Blackmagic Streaming Decoder上, “Live Stream”选项卡可让您选择推流源并配置解码器网络设置。



Stream Service (推流服务)

“Stream Service”选项可让您为Streaming Decoder连接远程Streaming Encoder或支持内置推流功能的Blackmagic摄影机或ATEM切换台配置设置。

Stream Source (推流源)

使用“Stream Source”菜单选择您的输入推流源。选项包括“Local Network Without a Key”(无密钥网络)、 “Local Network With a Key”(密钥网络) 和“Internet”(互联网)。

Key (密钥)

由于任何人都可以向菜单中的任何Blackmagic Streaming Decoder推流, 我们建议您设置推流密钥, 以防外人擅自闯入您的视频链路。选择网络中的Blackmagic Streaming Decoder非常方便, 如果大家都争先恐后进行推流就会造成混乱。

只要设置推流密钥, 就不会出现这类情况。它相当于一个密码, 可以防止他人使用您的Blackmagic Streaming Decoder。运行Streaming Setup时, 您会看到一个推流密钥文本输入框。在这里输入密码后, 就只有推流设置中具备相同推流密钥的用户才能连接到这台Blackmagic Streaming Decoder。

您可以使用自己的密码, 也可以选择使用Streaming Setup的密码生成器按钮, 获得一个电脑生成的安全密码。把这个密码复制粘贴给您同意连接的设备。当用户输入密码到Blackmagic Streaming Encoder、Blackmagic摄影机或ATEM切换台后, 只有这些用户才可以有权限连接到Streaming Decoder。

互联网连接

在Blackmagic Streaming Decoder的连接方式中, 互联网连接应该是最令人激动的一种。这一连接方式略有难度, 因为需要确保位于世界任何位置的远程Streaming Encoder、Blackmagic摄影机或ATEM切换台能够找到您的Streaming Decoder。因此, 您还需要完成几项设置, 才能完成上述操作。

准备工作

要连接到互联网, 您的Blackmagic Streaming Decoder以及向它推流的Streaming Encoder、摄影机或ATEM都需要完成网络连接。此外, 您还需要为Streaming Decoder准备一个固定不变的公共IP地址, 以便您的切换台能与其建立连接。

问题是, 您的Blackmagic Streaming Decoder位于本地以太网网络, 而您需要它能在互联网上可见。您的Streaming Decoder使用互联网防火墙的端口转发功能, 从而让互联网上的Streaming Encoder、摄影机或ATEM切换台可通过您的网络连接到Streaming Decoder。如果没有设置好, Streaming Encoder、摄影机或ATEM就不会找到Streaming Decoder。

因此, 您需要请网络供应方或者网络管理员将网络连接的端口转发设置为“TCP port 1935”, 他们会明白这串代码的含义。好消息是, Blackmagic Streaming Decoder也会尝试为您设置端口转发功能, 因为大部分网络连接和防火墙都有自动设置端口转发的协议。也就是说, Streaming Decoder可能会和您的网络设备建立通讯, 并像您使用Streaming Setup实用程序一样完成这项设置。

确认接入互联网

您会注意到界面下方有一个网络状态栏。Blackmagic Streaming Decoder会尝试连接到互联网, 并会在连接成功且正常运行后给出反馈。如果该栏的状态改为已连接, 则表示Streaming Decoder已经帮您完成了网络设备端口转发设置, 并成功连接到了互联网。

备注 对外部访问开放端口可能会降低网络安全性, 如有任何疑虑, 请与网络供应方或网络管理员取得联系。

如果连接状态未显示“全球可见”, 您可能需要为网络防火墙手动配置端口转发。并不是所有防火墙都支持这类信息的自动设置协议, 但手动设置都是支持的。

如果无法进入路由器控制, 或者不知道如何配置端口转发, 就可能需要联系您的网络服务供应商。对于大型网络, 建议您联系网络管理员来设置端口转发, 以确保网络上不会出现任何冲突。

Internet Status (网络状态)

设置互联网连接时, 网络状态显示功能可以帮助您解决各类问题。下面的表格中列出了部分显示信息以及造成此类问题的原因。

Visible Worldwide (全球可见)	表示一切运行正常。该信息表示端口转发已设置完成并正常工作, Blackmagic Streaming Decoder已准备就绪, 可接收来自互联网的视频流。
No Internet Access (无法访问网络)	表示Streaming Decoder无法连接到互联网。此时您需要检查网络设置和互联网连接。
Port Forwarding Error (端口转发错误)	表示您可以连接到互联网, 但无法通过Streaming Decoder设置互联网防火墙的端口转发, 因此无法从互联网找到它。此时您需要请网络管理员完成这一设置。
UPnP error (UPnP错误)	表示Streaming Decoder无法设置互联网路由器上的端口转发功能。此时您需要请网络管理员完成这一设置, 或者查看路由器的相关说明来完成端口转发设置。

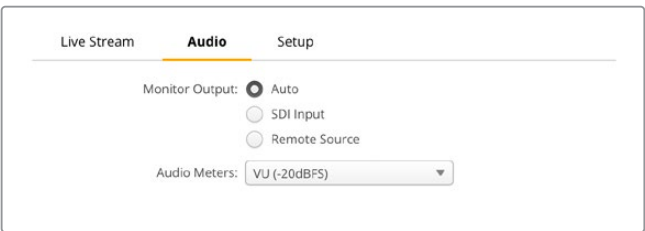
Auto Detect (自动检测)

点击“Auto Detect”按钮可自动检测互联网连接设置。

Audio (音频)

“Audio”选项卡设置可配置Streaming Processor的音频监测输出, 对讲和音频表选项。

推流编码器



Monitor Output (监看输出)

通过监看输出选项可为Streaming Encoder的SDI和HDMI监看输出选择所使用的音频源。

Auto (自动)

当监看输出设为“Auto”时, Streaming Encoder将自动检测并监测ATEM切换台通过Blackmagic Streaming Decoder发送的对讲音频。如果没有检测到对讲, 那么将使用来自SDI输入的音频。

SDI Input (SDI输入)

选择“SDI Input”可监看来自Streaming Encoder的SDI输入源的音频, 例如所连接的Blackmagic Studio Camera。

Remote Source (远程源)

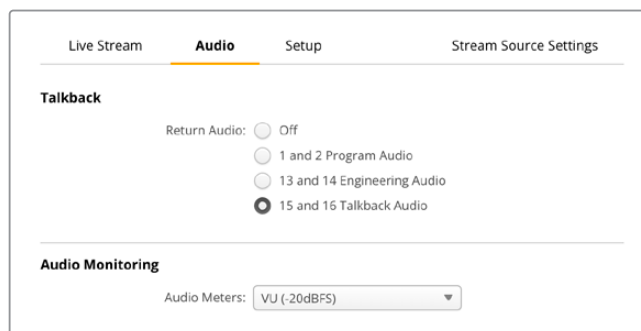
使用该选项可监测来自远程ATEM切换台或Streaming Decoder的对讲音频。

Audio Meters (音频表)

使用音频表菜单可选择显示的音频表类型。选项包括: VU -18dBFS、VU -20dBFS、PPM -18dBFS或PPM -20dBFS参考电平。

推流解码器

在Streaming Decoder上,“Audio”(音频)选项卡可让您选择对讲通道并为前面板LCD配置音频表。



The screenshot shows the 'Audio' tab selected in the 'Live Stream' settings. Under the 'Talkback' section, there are four radio button options: 'Off', '1 and 2 Program Audio', '13 and 14 Engineering Audio', and '15 and 16 Talkback Audio'. The '15 and 16 Talkback Audio' option is selected. Below this, in the 'Audio Monitoring' section, there is a dropdown menu for 'Audio Meters' currently set to 'VU (-20dBFS)'.

Talkback (对讲)

使用本设置可选择返回远程Blackmagic Streaming Encoder的音频通道, 选项有“Off”(关)、“1 and 2 Program Audio”(节目1和2)、“13 and 14 Engineering Audio”(工程13和14)和“15 and 16 Talkback Audio”(对讲15和16)。

Audio Monitoring (音频监测)

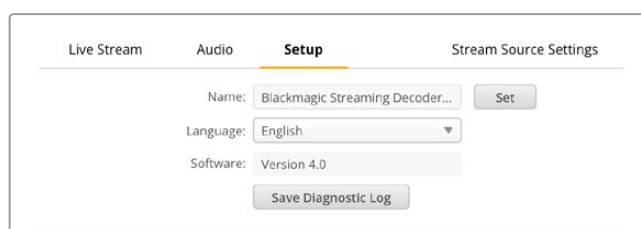
使用音频表菜单可选择显示在前面板LCD的音频表类型。选项包括: VU -18dBFS、VU -20dBFS、PPM -18dBFS或PPM -20dBFS参考电平。

Setup (设置)

“Setup”选项卡的设置可让您设置推流处理器名称, 更改网络设置以及恢复出厂设置。在Blackmagic Streaming Decoder上,“Setup”选项卡还包括设置时间同步和SDI输出选项。

识别设置

识别设置可用来输入推流处理器的名称和语言。



The screenshot shows the 'Setup' tab selected in the 'Live Stream' settings. It contains fields for 'Name' (set to 'Blackmagic Streaming Decoder...'), 'Language' (set to 'English'), and 'Software' (set to 'Version 4.0'). There are 'Set' and 'Save Diagnostic Log' buttons.

如果网络中连接了多台Blackmagic Streaming Processor, 不妨为它们添加自定义名称, 以便正确识别每台设备。它还会提供网络位置的名称。

同时, 您还能识别当前软件版本。

Network Settings (网络设置)

Network Location (网络位置)

“Network Location”是将会出现在注册表中的Blackmagic Streaming Processor的名称。它会根据设置实用程序顶部的识别名称而定。值得注意的是，数字前缀将被忽略。

MAC Address (MAC地址)

为推流处理器显示了MAC地址。MAC地址是每个以太网端口独特的硬件标识。当设置根据MAC地址限制访问设备的网络安全系统时，这很重要。

Protocol (协议)

DHCP和静态IP设置让您决定如何将推流处理器连接到网络。

DHCP	Blackmagic Streaming Processor默认设置为DHCP。动态主机配置协议也叫DHCP，这个网络服务器可以自动寻找您的推流处理器并为其指派一个IP地址。DHCP协议非常实用，它能轻松通过以太网连接设备，并且可以确保设备的IP地址不会相互冲突。大部分计算机和网络交换机都支持DHCP。
Static IP (静态IP)	选中“Static IP”选项后，您可以手动输入具体的网络信息。当您进行手动设置IP地址以便让所有设备都能建立通信时，这些设备必须共享同一个子网掩码和网关设置。

使用静态IP时，如果网络上其他设备的IP地址具有相同的识别数值，就会发生冲突，导致设备无法连接。如果遇到冲突，只要修改该设备IP地址的识别数值即可。

例如，如果发生冲突的地址是192.100.40.30，可将最后一段改成30以外的任何数字。如果新改的数字也被使用，可继续更改直到找到未被其他设备使用的唯一数字。

Connection Priority (优先连接)

当以太网和手机同时连接Blackmagic Streaming Processor时，这一设置可用来选择使用哪个连接的设备进行推流。更多关于手机网络共享的信息，请参考“通过智能手机推流”部分的介绍。

Allow utility administration (允许实用程序管理)

启用“Via USB”可将设置更改为仅限通过USB连接的计算机。这样将避免任何连接网络的人意外修改设置的情况。

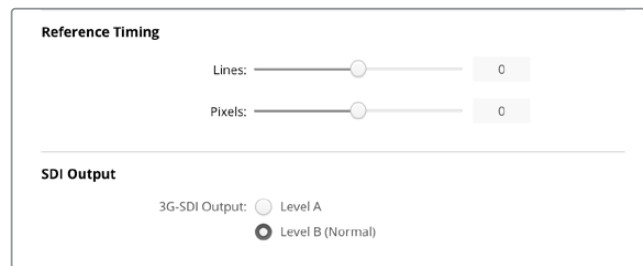
Reset (重置)

可点击“Factory Reset” (恢复出厂设置) 可将Blackmagic Streaming Processor恢复到出厂设置。按下“Set”按钮后, 设备会弹出确认信息。如要继续, 请点击“Reset”进行重置。



推流解码器

除了识别和网络设置外, Blackmagic Streaming Decoder上的“Setup” (设置) 选项卡还包括以下设置。



Reference Timing (时间同步)

这些设置可以扫描线或像素为单位手动调整同步时间。Blackmagic Streaming Decoder同时具备模拟三电平同步和黑场视频同步输入以及SDI输入, 可用于信号同步。大型播出机构会使用同步信号使机构内的所有视频连接都同步, 便于大型系统切换。

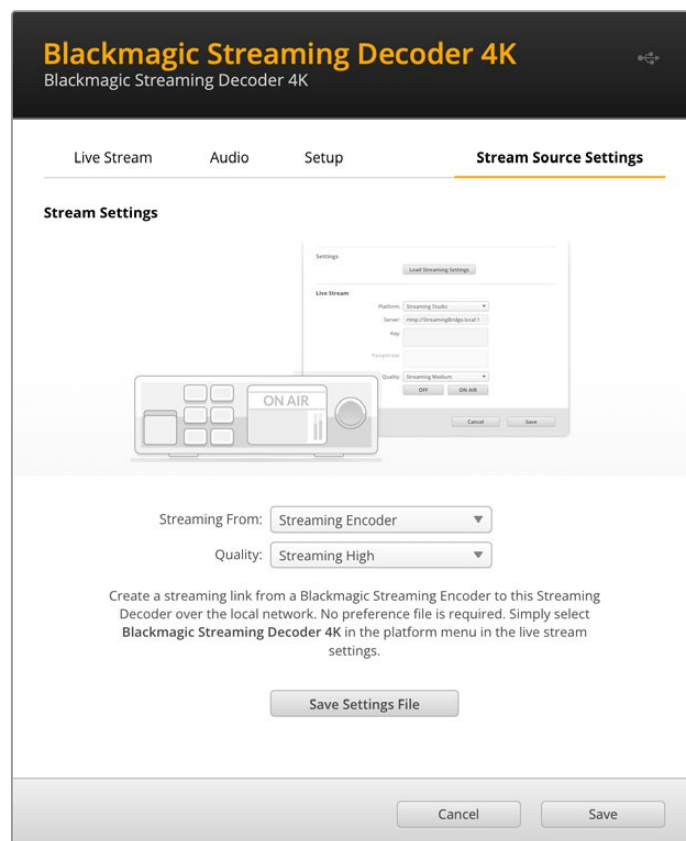
SDI Output (SDI输出)

有些广播设备只接收A级或B级的3G-SDI视频信号。为了保持和其他广播级设备之间的兼容性, 请选择对应的3G-SDI类型。默认设置为B级。

Stream Source Settings (推流源设置)

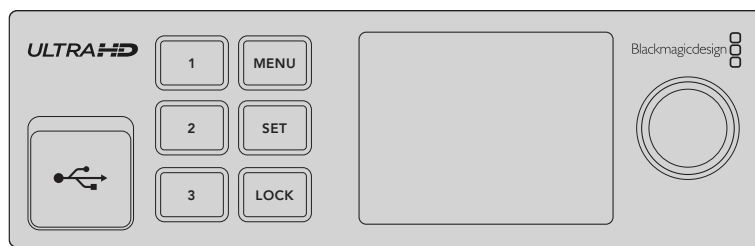
Blackmagic Streaming Decoder的“Stream Source Setup”选项卡可让您创建推流设置XML文件,从而可加载到远程推流编码器或支持内置推流功能的Blackmagic摄影机或ATEM切换台。

更多关于创建推流设置XML文件的信息,请参阅本手册下一章节关于“创建播出链路”部分的内容。



创建播出链路

有了Blackmagic Streaming Processor, 您可以通过本地网络推流或通过互联网向世界任意地方推流。



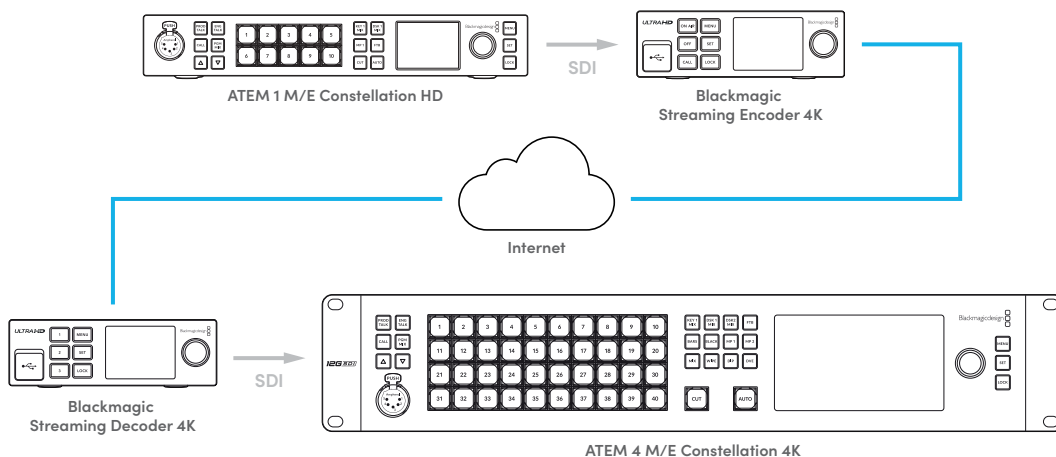
如果Blackmagic Streaming Decoder和Streaming Encoder位于同一个本地网络, 它就会出现在Blackmagic Streaming Setup实用程序“Live Stream” (流媒体直播) 选项卡的“Platform” (平台) 菜单中。更多关于如何通过本地网设置流媒体的信息, 请参阅“开始使用”部分的内容。

如果想通过互联网进行推流, 或通过安全性更高的、需使用推流密钥的本地网络进行推流, 您可以从推流解码器创建推流设置XML文件。该文件可通过Blackmagic Streaming Setup加载到Blackmagic Streaming Encoder。

提示 您还可以为支持内置推流功能的Blackmagic摄影机和ATEM切换台导出推流设置XML文件。更多关于导入设置文件的内容, 请参阅Blackmagic摄影机或ATEM切换台操作手册。

Blackmagic Streaming Decoder和Blackmagic Streaming Encoder搭配工作的典型例子就是, 从一个远程位置将气象预报节目传输到演播室。要实现远程信号传输, 您只需要一台推流编码器和网络连接, 其中网络连接可以使用智能手机共享网络, 也可以通过联网实现。

演播室方面, Blackmagic Streaming Decoder会负责接收网络信号, 并将其转换为SDI信号, 以便连接演播室的主切换台。



工作流程设置如下:

- 1 在现场, 将Blackmagic Streaming Encoder连接ATEM切换台的SDI节目输出。比如ATEM 1 M/E Constellation HD。
- 2 然后, 再将Blackmagic Streaming Encoder连接智能手机。
- 3 在演播室, 将Blackmagic Streaming Decoder通过以太网连接到同一个网络。
- 4 然后, Streaming Decoder 4K会通过网络将转换后的SDI视频信号发送到演播室切换台的SDI输入, 供新闻播报使用。

要为您的演播室实现推流解码器和推流编码器网络信号之间的连接, 您需要运行Blackmagic Streaming Setup软件, 配置网络设置。这包括生成一个包含所有推流设置的XML文件, 并将其加载到位于其他地点的推流编码器上。

创建XML文件

若要创建一个XML设置文件, 可使用一根网线将“LIVE STREAM”端口连接互联网路由器或网络交换机, 从而将Blackmagic Streaming Decoder连接到互联网。

使用USB-C线缆将推流解码器连接到您的计算机, 然后运行Blackmagic Streaming Setup。在“Live Stream” (流媒体直播) 选项卡中, 确认网络设置信息正确, 然后从“Stream Service” (推流服务) 选项中选择“Internet” (互联网)。“Internet Status” (网络状态) 栏里应显示“Visible Worldwide” (全球可见), 表示一切运行正常。更多关于如何配置推流解码器的信息, 请参阅“Blackmagic Streaming Setup”章节在“推流服务”部分的介绍。

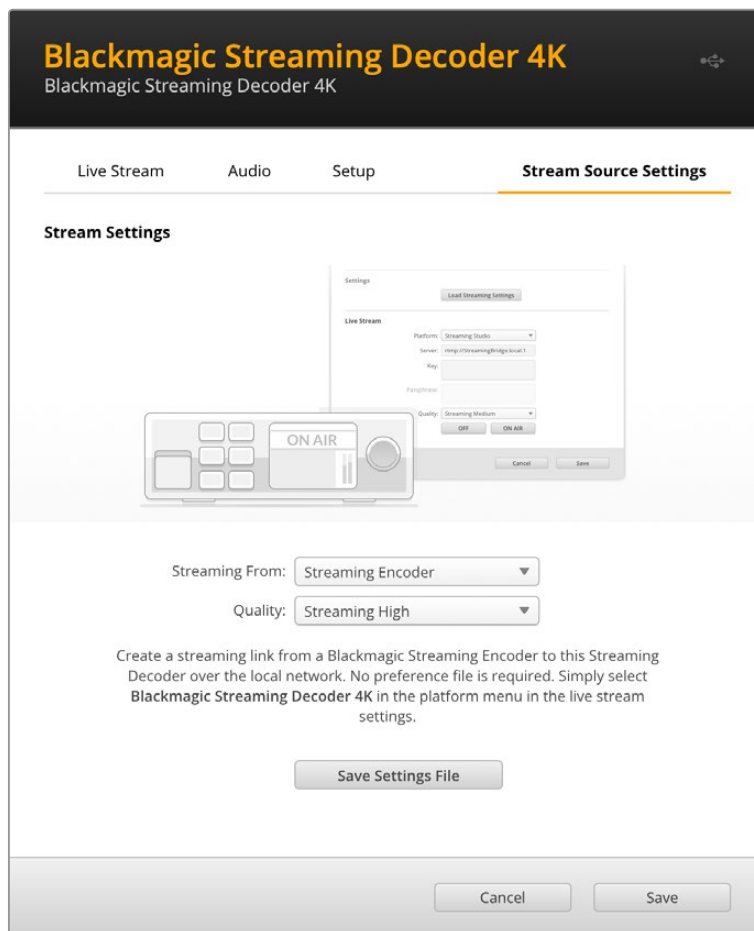
关于端口转发的说明

如果在“网络状态”栏中看到端口转发或UPnP错误, 那么您需要询问互联网供应方或网络管理员将网络连接的端口转发设置为“TCP port 1935”。

导出XML文件

在Blackmagic Streaming Setup的“Setup” (设置) 选项卡中确认了您的设置, 并且成功地将推流解码器连接到您的网络或互联网后, 就可以导出XML设置文件了。

- 1 点击窗口右上方的“Stream Source Settings” (推流源设置) 选项卡。



- 2 在“Streaming From”（推流自）菜单中，选择“Streaming Encoder”（推流编码器）。
如果您需要为支持内置推流功能的Blackmagic摄影机或ATEM切换台创建推流设置XML文件，请从“Streaming From”菜单中选择“ATEM Switcher”或“Blackmagic Camera”。
- 3 在“Quality”（质量）中选择推流质量。该选项可用来设定远程Blackmagic Streaming Encoder的质量设置。
- 4 点击“Save Settings File”（保存设置文件）按钮，然后在计算机上选择一个文件保存位置。

保存好设置文件后，您可以通过电子邮件将它发送给Blackmagic Streaming Encoder的远程操作人员。

提示 您可以使用“Audio”（音频）选项卡中的对讲设置来选择将哪几路音频通道发送回远程推流编码器。

加载XML文件

将设置文件通过电子邮件发送到现场位置后, 现场工作人员只需要使用Blackmagic Streaming Setup将这个XML文件加载到Blackmagic Streaming Encoder上, 然后按“ON AIR”按钮, 就可以开始向演播室进行天气预报推流!

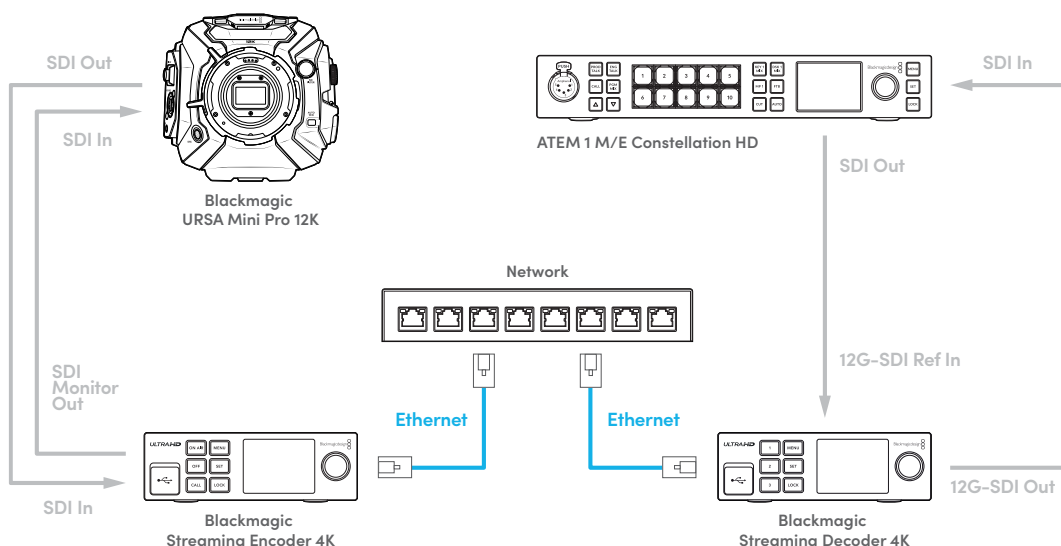
请注意, 加载XML推流文件之后, 您每次开始和停止推流时都不必再次加载该文件。这样能便于在推流编码器和Streaming Decoder之间设置一个固定不变的视频链路。

只要部署在演播室的推流解码器不去更改其推流设置和网络设置, 并且依然寻找这台推流编码器进行连接, 它就能始终找到这台推流编码器, 不论这台推流编码器在网络中的哪个位置。不论身在何处, 您只要将推流编码器连接到互联网, 按下“ON AIR”按钮, 它就会立即向演播室的推流解码器推流。

对讲、Tally和摄影机控制

Blackmagic Streaming Processor系列可以让ATEM切换台发送Tally、对讲和摄影机控制信息。这意味着任何基于SDI的Blackmagic Design摄影机都可以被放置在您本地网络的任何位置, 或者通过互联网放置在世界任何地方, 同时仍然拥有Tally、对讲和摄影机控制功能。

设置非常简单。下图显示了如何通过本地网络将URSA Mini Pro 12K与ATEM 1 M/E Constellation HD连接, 获得Tally、对讲和摄影机控制。



完成设备连接后, 请执行以下步骤:

- 1 按下Blackmagic Streaming Encoder上的“MENU”按钮, 打开LCD菜单, 前往“流媒体直播”菜单。
- 2 在“平台”菜单中选择“Blackmagic Streaming Decoder”。
- 3 按下“SET”确认。

为保证Tally正常运行, 您需要确保摄影机的ATEM摄影机ID与切换台的输入匹配。更多关于如何设置ATEM摄影机ID的信息, 请参阅URSA Mini操作手册。

您可以在ATEM切换台上把摄影机切换到节目输出, 以此来测试Tally是否运行正常。如果摄影机的ATEM摄影机ID设置正确, Tally灯会亮起, 包括摄影机LCD屏幕一圈的红色Tally边框。然后把摄影机切换到预览输出, Tally会亮绿色。

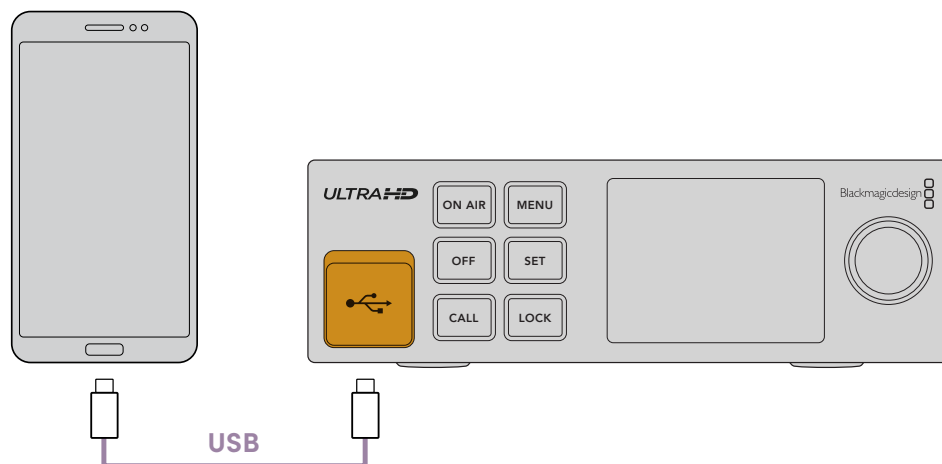
尝试在ATEM Software Control的摄影机页面调整光圈和黑电平来测试摄影机控制。

内嵌SDI音频通道15和16为默认对讲通道, 但您可以使用Blackmagic Streaming Setup将其修改成工程通道13和14, 或者节目输出。

通过互联网传输时, Blackmagic Streaming Setup会创建一个XML设置文件。该XML文件会被加载到Blackmagic Streaming Encoder, 以便在互联网上找到Blackmagic Streaming Decoder。更多关于如何创建和加载设置XML文件的信息, 请参阅本操作手册中之前的章节。

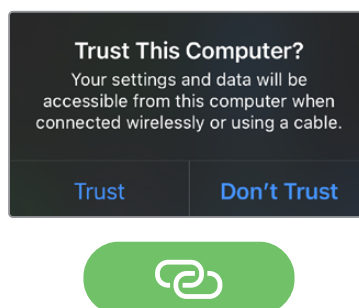
通过智能手机推流

Blackmagic Streaming Processor系列可以通过您的智能手机网络共享连接互联网。如要执行这一操作, 请将您的智能手机连接到推流处理器正面或后侧的USB-C端口即可。这一连接方案可让您快速完成设置, 并且在智能手机具备4G或5G蜂窝连接的任何位置发送或接收流。



设置手机网络共享:

- 1 在您的iOS设备上打开“设置”>“个人热点”, 并确保“允许他人加入”选项是启用的。
- 2 设备会弹出信息, 询问是否信任所连接的计算机。选择“信任”, 然后屏幕上会看到绿色的网络共享图标。您可以通过这个图标来检查是否连接成功。



启用网络共享时, 智能手机上的时间显示会出现绿色背景。

如使用安卓设备, 滑动屏幕显示快捷菜单。长按热点图标, 然后打开USB网络共享。

提示 推流完成后, 建议您关闭网络共享连接, 以节省手机电量。

向互联网进行流媒体直播

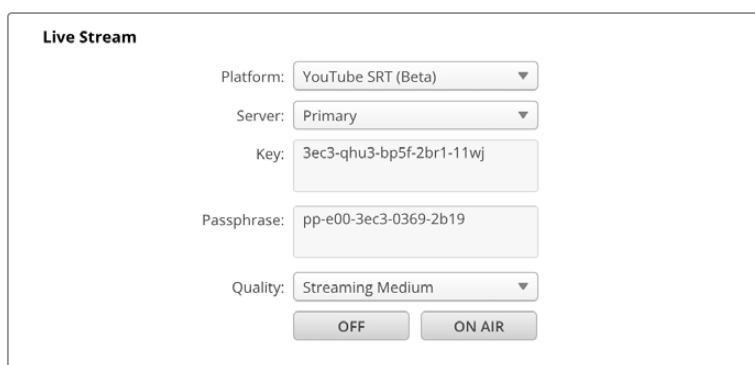
Blackmagic Streaming Encoder可让您向YouTube、Facebook、Twitch等互联网流媒体平台直接推流。本例中,我们将设置YouTube Live进行流媒体直播。

- 1 复制YouTube Studio账户的推流密钥(直播码)。
- 2 运行Blackmagic Streaming Setup,进入“Live Stream”(流媒体直播)选项卡。
- 3 将直播“平台”设置为“YouTube”,将“服务器”设置为“Primary”。将您的YouTube推流密钥(直播码)粘贴到“Key”(密钥)栏,并选择一个推流质量。点击“Save”(保存)。
- 4 一切准备就绪,马上就可以开始全球直播了!点击“On Air”按钮或按下设备前面板上的“ON AIR”按钮。直播结束后,按“OFF”(关)按钮停止播出。

使用SRT推流协议

安全可靠传输协议(简称SRT)与RTMP相比而言,可提供更低延迟的流媒体直播。SRT还可以通过使用类似加密密钥的密码短语来提升安全性。

当选择SRT协议版本的推流服务时,从您的流媒体账户上复制密码短语和推流密钥,粘贴到Blackmagic Streaming Setup实用程序的“Key”(密钥)和“Passphrase”(密码短语)栏。



The screenshot shows the 'Live Stream' configuration window in Blackmagic Streaming Setup. It includes the following fields and controls:

- Platform:** YouTube SRT (Beta) (dropdown menu)
- Server:** Primary (dropdown menu)
- Key:** 3ec3-qhu3-bp5f-2br1-11wj (text field)
- Passphrase:** pp-e00-3ec3-0369-2b19 (text field)
- Quality:** Streaming Medium (dropdown menu)
- Buttons:** OFF and ON AIR (toggle buttons)

将密码短语粘贴到实用程序的“Passphrase”(密码短语)栏内

如果技术经验丰富的播出方想要自定义推流设置,那么RTMP或SRT协议以及H.264或H.265编解码可在XML文件中进行更改。详情请参阅“Developer Information”(开发人员信息)章节在“Blackmagic Streaming XML Format”(Blackmagic流媒体XML格式)部分的介绍。

使用网络摄像头输出

Microsoft Teams或Zoom等软件会自动将Blackmagic Streaming Processor设置为网络摄像头, 因此当您运行此类程序时, 可以立即看到视频流。如果应用程序没有自动选择您的推流编码器或解码器, 您可以手动将其设置为网络摄像头和麦克风。

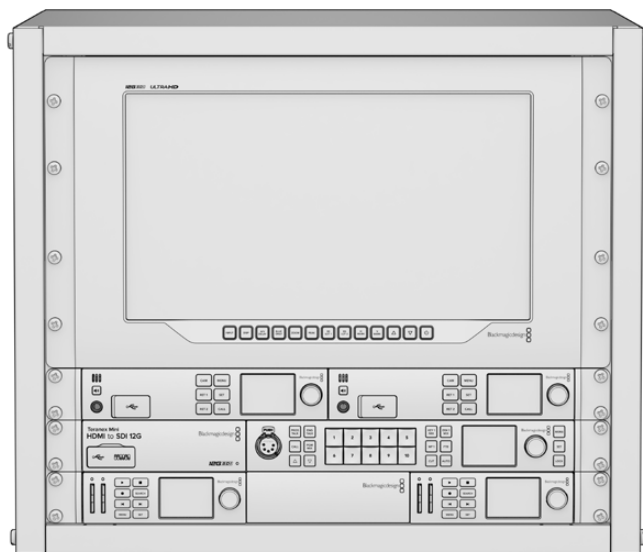
以下举例说明如何在Microsoft Teams上设置网络摄像头。

- 1 取一根USB-C线缆, 将您的Blackmagic Streaming Processor通过后面板的“WEBCAM OUT”端口连接到计算机。
- 2 在Teams的菜单栏中, 打开“设置”并选择“设备”。
- 3 在“音频”面板中, 点击“麦克风”菜单, 选择“Blackmagic Design”作为音频源。
- 4 进入“视频”设置, 从“摄影机”菜单中选择您的Blackmagic Streaming Processor。

Blackmagic Universal Rack Shelf

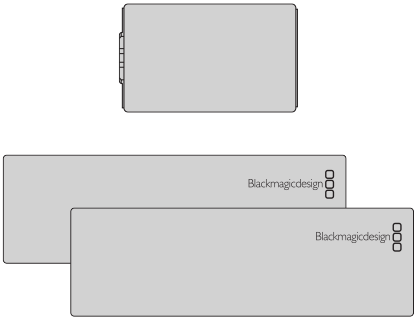
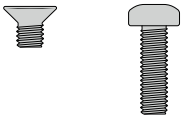
Blackmagic Universal Rack Shelf是一个1RU机架, 您可以用它把各类Blackmagic Design设备安装在广播机架或航空箱内。它采用模块化设计, 可将容纳于一个机架单位的产品组建成便携式实用型设备组装方案。

下图展示的是安装在小型机架中的3个Universal Rack Shelf机架, 当中安装了一系列兼容设备组合。其中, 底部的机架中间安装了一块1/3机架宽度的挡板, 用于填充设备之间未使用的空间。



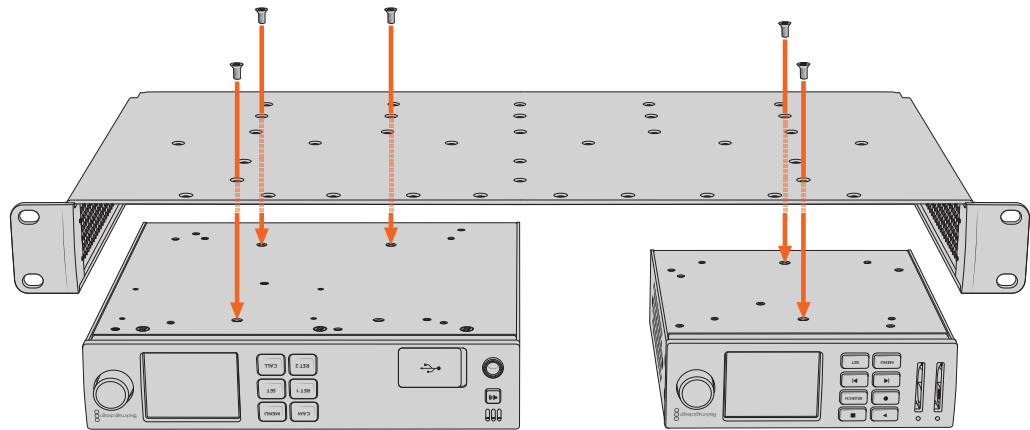
包含组件

Universal Rack Shelf Kit包含以下组件：

	1 x Blackmagic Universal Rack Shelf 1RU全宽机架, 可用于安装Blackmagic Design设备。
	空白挡板 1 x 1/6机架宽度空白挡板, 2 x 1/3机架宽度空白挡板, 可用于覆盖未使用的机架空间。
	螺丝 12 x M3 5mm规格埋头螺丝。 2 x M3 9mm规格平头螺丝, 用于1/6机架宽度空白挡板。

将设备安装到机架上

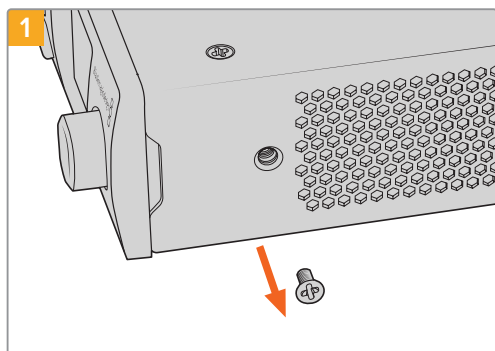
- 1 如果安装了橡胶垫, 请使用塑料边缘的刮削工具将橡胶垫从设备底座上移除。
- 2 将机架和设备倒置, 然后将机架的预钻孔与Blackmagic Design设备底座上的螺纹安装孔对齐。1/3机架宽度的设备上设有两个中央安装点, 而较大的1/2机架宽度设备上则设有最多三个安装点。



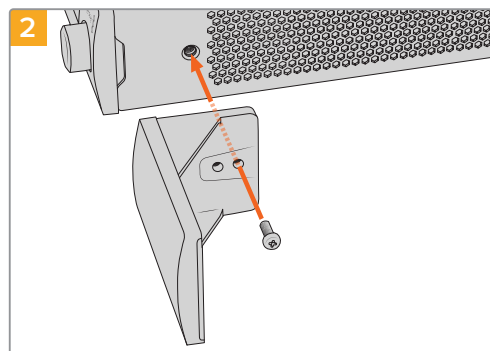
- 3 使用产品内附的M3 5mm埋头螺丝, 将设备固定在机架上。
 - 4 固定完成后, 将机架正面朝上放置, 并通过自带的固定支架将其安装到设备机架上。
- 产品内附的空白挡板可用于覆盖未使用的机架空间。

安装1/6机架宽度空白挡板

尺寸较小的1/6机架宽度空白挡板可在安装1/2机架宽度和1/3机架宽度的设备时用于填充未使用的机架空间。该挡板可安装到任何一台设备的侧面。为了改善空气流通, 建议您将挡板安装在设备之间。



卸下靠近设备正面的5mm M3螺丝。



对齐空白挡板, 并使用产品内附的M3 9mm尼龙螺丝进行安装。

安装侧面的1/3机架宽度空白挡板

尺寸较大的1/3机架宽度空白挡板可在安装单台设备时直接安装到机架的任何一侧。在安装空白挡板时, 请将挡板底部的螺孔和锚点与机架对齐, 并使用产品内附的两枚M3 5mm规格埋头螺丝固定到位。

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: true↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: true↵
```

```
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: false↵
```

```
Static Addresses: 192.168.1.2/255.255.255.0↵
```

```
Static Gateway: 192.168.1.1↵
```

```
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: false↵
```

```
Static Addresses: 192.168.1.2/255.255.255.0↵
```

```
Static Gateway: 192.168.1.1↵
```

```
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
```

```
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
```

```
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
```

```
Current Locale: en_US.UTF-8↵
```

```
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
```

```
Current Audio Meter: PPM -20dB↵
```

```
↵
```


Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

SHUTDOWN:↵

Action: Reboot↵

↵

ACK↵

↵

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

SHUTDOWN:↵

Action: Factory Reset↵

↵

ACK↵

↵

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket – 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

帮助

获得帮助

如需获得帮助, 建议您登陆Blackmagic Design在线支持页面, 浏览有关Blackmagic Streaming Processor的最新支持信息和文件。

Blackmagic Design在线支持页面

请登陆Blackmagic Design支持中心www.blackmagicdesign.com/cn/support获得最新操作手册。

Blackmagic Design论坛

您可以登陆我们的网站访问Blackmagic Design论坛, 获得更多信息和有用的创意资源。访问论坛也是获取帮助的一个捷径, 因为论坛中不乏经验丰富的用户和Blackmagic Design的员工, 他们都能为您答疑解惑。请登陆网址<https://forum.blackmagicdesign.com>进入论坛。

联系Blackmagic Design支持中心

如果我们提供的支持信息和论坛均无法解答您的疑问, 请到支持页面下点击“给我们发送电子邮件”按钮即可发送技术支持请求。或者, 您也可以点击支持页面下的“查找您所在地区的支持团队”按钮, 致电您所在地区的Blackmagic Design支持中心获得帮助。

监管声明



在欧盟范围内处置电子垃圾和电子设备的注意事项。

根据产品所附的提示标志, 本设备不得与其它废弃材料共同处置。处置废弃设备时, 必须交给指定收集点进行回收。对废弃设备进行单独收集并回收能够节省自然资源, 且回收方式不会损害环境和人体健康。获取更多关于废弃设备回收点的信息, 请联系您所在城市的回收站, 或当时购买设备的经销商。



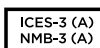
本设备经过测试, 符合FCC规则的第15部分对A类数字设备的限制。这些限制旨在为运行于商业环境中的设备提供合理保护, 使其免受有害干扰的影响。本设备可生成、使用且辐射射频能量, 如果未按照安装手册来安装和使用本设备, 则可能导致对无线电通信的有害干扰。在住宅区运行本产品可能会产生有害干扰, 在这种情况下将由用户自行承担消除干扰的费用。

必须满足以下条件后方可操作:

- 1 设备不会造成有害干扰。
- 2 设备必须能够承受任何干扰, 包括可能导致意外操作的干扰。



R-R-BMD-20201201001
R-R-BMD-20201201002



加拿大ISED认证声明

本设备符合加拿大A类数码产品的相关标准。

任何对本产品的改装或预期用途之外的使用均可能导致相关标准认证无效。

必须使用有高品质屏蔽的HDMI电缆连接HDMI接口。

本设备经检测符合商业环境使用要求。在家用环境中, 本设备可能会造成无线电干扰。

安全信息

设备必须连接在配有保护地线的电源插座。

为了降低触电风险, 请勿将设备放在会滴水或溅水的地方。

设备适合在环境温度低于40°C的热带地区使用。

存储温度范围为-20°C到60°C, 相对湿度为0%到90%不结露。

确保设备四周留有足够的空间, 没有阻挡物。

安装在机架上时, 确保相邻设备不会阻碍通风。

设备内部没有操作人员可维护的零件。维修服务请联系当地Blackmagic Design服务中心。



请在海拔高度2000米以下的地区使用。

加利福尼亚安全声明

该产品可能会让您暴露在塑料部件中所含的微量多溴化联苯等化学物质下, 此类物质已被加州政府认定为可能导致癌症、先天畸形或其他遗传危害的物质。

详情请访问网址: www.P65Warnings.ca.gov

保修

36个月有限保修

Blackmagic Design保证Blackmagic Streaming Processor推流处理器自购买之日起36个月内不会有材料和工艺上的缺陷；自购买之日起12个月内，接口、线缆、光纤模块、保险丝、及电池不会出现材料或工艺上的缺陷。若本产品在保修期内出现质量问题，Blackmagic Design可选择为产品提供免费修理或更换零部件，或者更换缺陷产品。

为确保消费者有权享受本保修条款中的服务，如遇产品质量问题请务必在保修期内联系Blackmagic Design并妥善安排保修事宜。消费者应将缺陷产品包装并运送到Blackmagic Design的指定服务中心进行维修，运费由消费者承担并预先支付。若消费者因任何原因退货，所有运费、保险费、关税等各项税务以及其他费用均由消费者承担。

本保修条款不适用于任何因使用、维护不当或保养不周造成的缺陷、故障或损坏。根据本保修服务，Blackmagic Design的保修范围不包括以下内容：1. 对由非Blackmagic Design专门人员进行的安装、维修或保养所造成的损坏进行维修，2. 对因使用不当或连接到不兼容设备所造成的损坏进行维修，3. 对因使用了非Blackmagic Design生产的零部件所导致的损坏或故障进行维修，及 4. 对经过改装或其他产品进行组装的产品进行保养维修（因为产品经改装或组装后会增加保养维修所需时间或保养难度）。

本保修条款由BLACKMAGIC DESIGN提供，它可取代所有其他明示或隐含的保修。BLACKMAGIC DESIGN及其供应商对任何有关适销性及就特定用途的适用性等隐含保证不作任何担保。BLACKMAGIC DESIGN负责为消费者提供缺陷产品的维修或更换服务是完整和排他性补救措施，不论BLACKMAGIC DESIGN或其供应商是否事先获悉发生间接、特殊、偶然或必然损坏等损坏的可能性。若消费者对本设备进行非法使用，BLACKMAGIC DESIGN概不负责。对因使用本产品造成的损失，BLACKMAGIC DESIGN概不负责。本产品的操作风险由用户自行承担。

© 版权所有 2025 Blackmagic Design。保留一切权利。“Blackmagic Design”、“DeckLink”、“HDLink”、“Workgroup Videohub”、“Multibridge Pro”、“Multibridge Extreme”、“Intensity”以及“Leading the creative video revolution”均为美国及其他国家的注册商标。所有其他公司名称及产品名称可能是其他所有者的注册商标。

Thunderbolt及其商标为英特尔公司在美国和/或其他国家的商标。

Blackmagic 스트리밍 프로세서



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



환영합니다

Blackmagic 스트리밍 프로세서를 구입해 주셔서 감사합니다.

Blackmagic Streaming Encoder는 모든 SDI 장비에 직접 연결할 수 있으며, 신호를 H.264 또는 H.265로 변환하여 YouTube Live 및 Facebook Live, Twitch와 같은 인기 스트리밍 서비스에서 스트리밍할 수 있습니다. Blackmagic Streaming Decoder를 함께 사용하여 방송용 품질의 영상을 원하는 지점으로 전송할 수도 있습니다. 이를 통해 전문 영상을 인터넷을 통해 원하는 장소로 쉽게 전송해 보세요!

Blackmagic Streaming Decoder를 사용해 Blackmagic Streaming Encoder의 스트림을 수신한 다음 이를 다시 SDI 및 HDMI 비디오로 변환할 수 있습니다. 탈리와 토크백, 카메라 컨트롤 등의 기능도 제공해 라이브 프로덕션에 사용하기 완벽합니다. 이뿐만 아니라 Blackmagic Streaming Decoder는 스트리밍 기능이 내장된 Blackmagic 카메라와 ATEM 스위처의 스트림도 디코딩합니다.

본 설명서에는 Blackmagic 스트리밍 프로세서의 설치 및 시작에 필요한 모든 정보가 제공됩니다.

또한 최신 버전 설명서와 Blackmagic 스트리밍 프로세서의 내부 소프트웨어 업데이트는 당사 웹사이트 www.blackmagicdesign.com/kr의 고객 지원 페이지에서 확인하실 수 있습니다. 소프트웨어를 다운로드할 때 사용자 정보를 등록하시면 새로운 소프트웨어가 출시될 때마다 업데이트 소식을 받아볼 수 있습니다.

앞으로도 새로운 기능 및 제품 향상을 위해 끊임없이 노력할 것이며 고객 여러분의 다양한 의견을 기다리겠습니다.

Blackmagic Design의 CEO

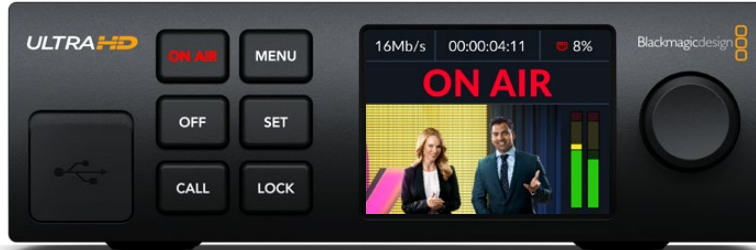
그랜트 패티

목차

시작하기	425	웹캠 출력 사용하기	453
전원 연결하기	425	Blackmagic Universal Rack Shelf	453
네트워크에 연결하기	426	구성품	454
비디오 소스 연결하기	426	장비를 Rack Shelf에 설치하기	454
Blackmagic Streaming Encoder에 모니터 연결하기	427	1/6 블랭킹 패널 장착하기	455
비디오 목적지 연결하기	427	측면 1/3RU 블랭킹 패널 장착하기	455
네트워크를 통해 간단히 스트리밍하기	427	개발자 정보	456
LCD 디스플레이	430	Blackmagic Streaming Encoder 이더넷 프로토콜	456
연결 아이콘	431	Protocol Blocks	458
Blackmagic Streaming Encoder의 모니터링 출력	431	Streaming Encoder Control REST API	468
Blackmagic Streaming Setup	436	Event Control API	470
라이브 스트리밍(Live Stream)	437	Livestream Control API	470
오디오(Audio)	441	Monitor Output Control API	475
Setup	442	System Control API	476
Stream Source Settings	445	Notification websocket - 1.0.0	478
방송 링크 생성하기	446	messages	478
XML 파일 생성하기	447	Device Properties	479
XML 파일 보내기	447	Blackmagic Streaming XML Format	481
XML 파일 로딩하기	449	도움말	488
탈리, 토크백, 카메라 컨트롤	449	규제 사항	489
스마트폰을 사용한 스트리밍하기	451	안전 정보	490
인터넷으로 라이브 스트리밍하기	452	보증	491

시작하기

Blackmagic 스트리밍 프로세서의 사용 방법은 아주 간단합니다. 전원과 네트워크 케이블, 비디오 소스 및 목적지를 연결하기만 하면 사용 준비가 완료됩니다.



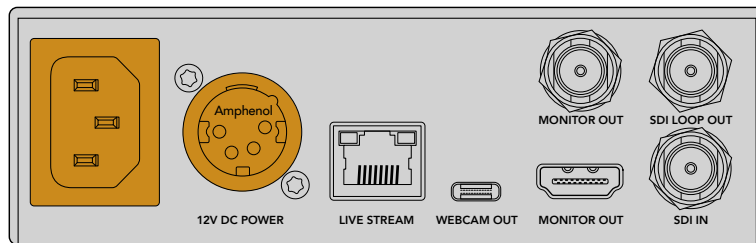
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

전원 연결하기

스트리밍 프로세서 후면 패널에 있는 전원 입력에 표준 IEC 전원 케이블을 연결해 전원을 공급하세요.



Blackmagic Streaming Encoder와 Blackmagic Streaming Decoder에는 추가 12V DC 전원 입력이 탑재되어 있습니다. 또한 12V DC 입력을 사용해 외부 전원을 연결하거나 전원 공급 장치(UPS) 또는 12V 배터리 같은 외부 전원 장치를 통해 리던던시 전원을 연결할 수 있습니다.

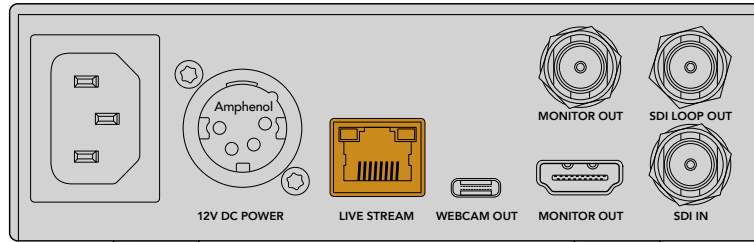
전원이 연결되면 전면 패널에 있는 LCD에 언어 선택 화면이 나타납니다. 노브를 사용해 원하는 언어를 선택한 다음 깜빡이는 SET 버튼을 누르세요.



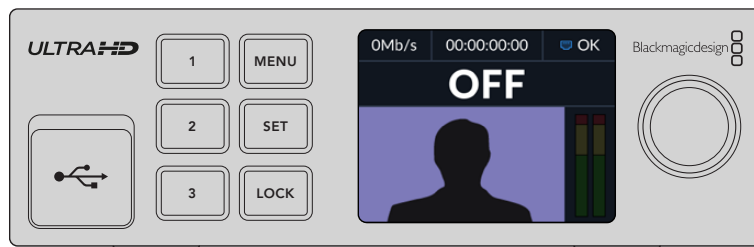
SET 버튼을 눌러 선택한 언어를 확인하세요.

네트워크에 연결하기

Blackmagic 스트리밍 프로세서의 LIVE STREAM 이더넷 포트에 네트워크 케이블을 꽂고 이를 인터넷 라우터 또는 네트워크 스위치로 연결하여 네트워크나 인터넷에 연결하세요.



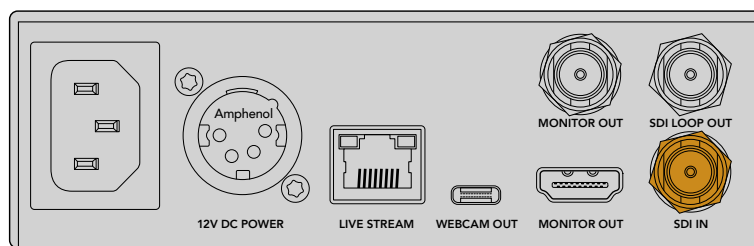
Blackmagic 스트리밍 프로세서는 DHCP로 기본 설정되어 있으며, IP 주소를 바로 찾을 수 있습니다. 성공적으로 연결되면 파란색 이더넷 아이콘이 LCD 시작 화면 우측 상단에 나타납니다. 고정 IP 주소를 통해 연결해야 할 경우, 본 사용 설명서 뒷부분의 [Blackmagic Streaming Setup] 부분을 참고하세요.



비디오 소스 연결하기

Blackmagic URSA Mini Pro 12K나 SDI ATEM 스위치 등의 스트리밍하려는 SDI 비디오 소스를 Blackmagic Streaming Encoder의 SDI 입력에 연결하세요. Blackmagic Streaming Encoder는 12G-SDI를 지원하며 비디오 입력이 변경될 시, 최대 2160p60의 HD 및 UHD 사이의 포맷으로 자동 변환합니다.

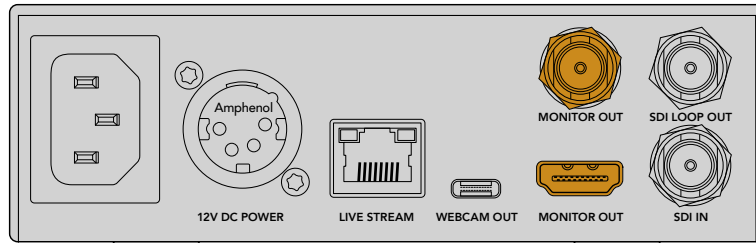
비디오가 연결되면 Blackmagic Streaming Encoder의 LCD 디스플레이에 영상이 나타납니다. 오디오는 비디오에 임베드되어 SDI 비디오 신호와 함께 전송되며, 이를 LCD 화면의 오디오 미터를 통해 확인할 수 있습니다.



비디오 소스를 Blackmagic Streaming Encoder의 SDI 입력에 연결하세요.

Blackmagic Streaming Encoder에 모니터 연결하기

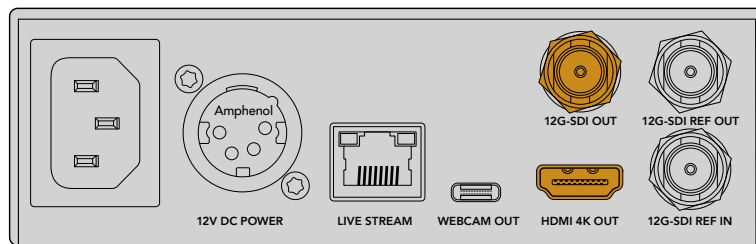
HDMI TV나 SDI 모니터를 Blackmagic Streaming Encoder의 후면 패널에 있는 모니터 출력 중 하나에 연결하세요. 이 모니터 출력들을 사용해 방송을 모니터링하고, 온에어 상태 정보나 데이터 전송률, 오디오 레벨 등의 주요 비디오 스트리밍 정보를 확인할 수 있습니다. 모니터 출력에 관한 자세한 정보는 본 설명서의 [Blackmagic Streaming Encoder의 모니터링 출력] 부분을 참고하세요.



TV나 모니터를 Blackmagic Streaming Encoder에 연결해 주요 스트리밍 정보를 확인할 수 있습니다.

비디오 목적지 연결하기

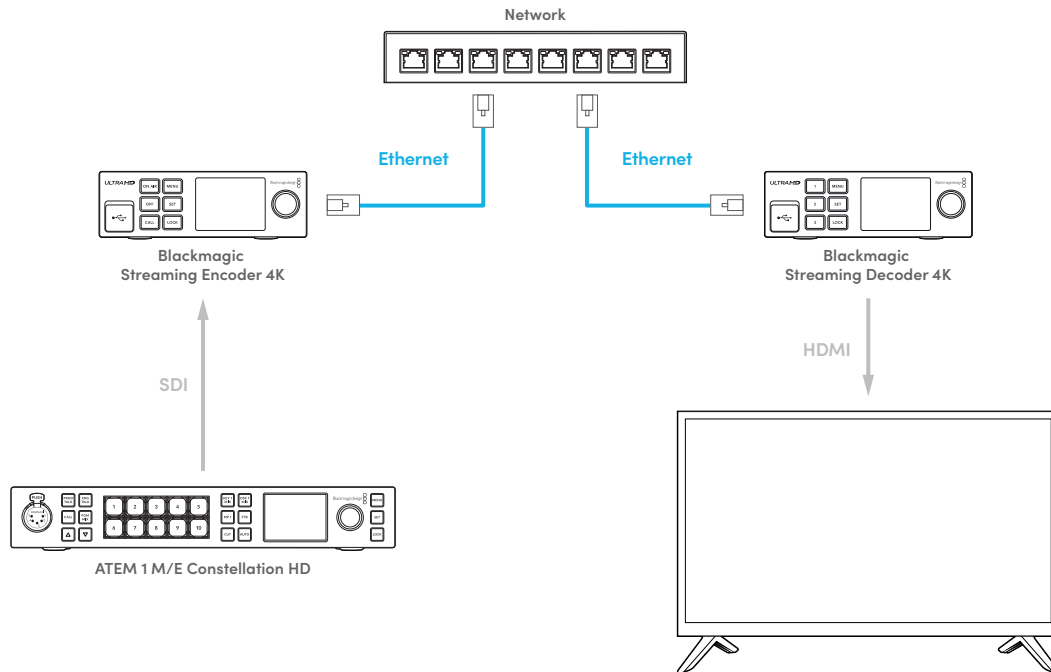
Blackmagic Streaming Decoder를 사용할 경우, 디코딩된 스트림을 SDI ATEM 스위처나 HDMI TV 같은 목적지에 전송해야 할 경우가 있습니다. 이런 경우엔 ATEM 스위처를 2G-SDI 출력에 연결하고 TV를 HDMI 커넥터에 연결하기만 됩니다.



Blackmagic Streaming Decoder의 SDI 및 HDMI 출력 단자를 통해 비디오 목적지를 연결하세요.

네트워크를 통해 간단히 스트리밍하기

연결 완료 후에 모든 기능이 제대로 작동하는지 확인하기 가장 좋은 방법은 로컬 네트워크로 연결된 Blackmagic Streaming Encoder와 Blackmagic Streaming Decoder 간의 간단한 스트리밍을 셋업하는 것입니다. 이런 셋업은 회의실이나 대규모 공간에서 비디오 프로젝터로 라이브 스트리밍 영상을 전송할 때 유용합니다. 아래 예시를 통해 ATEM 스위처에서 HDMI TV로 연결된 간단한 스트리밍 셋업을 확인할 수 있습니다.



스트리밍 프로세서의 전면 패널에는 주요 정보가 표시되는 LCD 디스플레이가 탑재되어 있으며, 이를 통해 비디오 및 오디오를 모니터링할 수 있습니다. 노브와 MENU 버튼을 사용해 스트리밍 프로세서의 메뉴 설정에 신속하게 접속할 수 있기 때문에 전면 패널에서 스트리밍을 직접 셋업/시작/종료할 수 있습니다.

전면 패널 LCD 메뉴에서 사용 가능한 모든 설정은 Blackmagic Streaming Setup 소프트웨어를 통해서도 변경 가능합니다. 각 설정에 관한 자세한 정보는 본 설명서 뒷부분의 [Blackmagic Streaming Setup] 부분을 참고하세요.

간단한 스트리밍 셋업하기

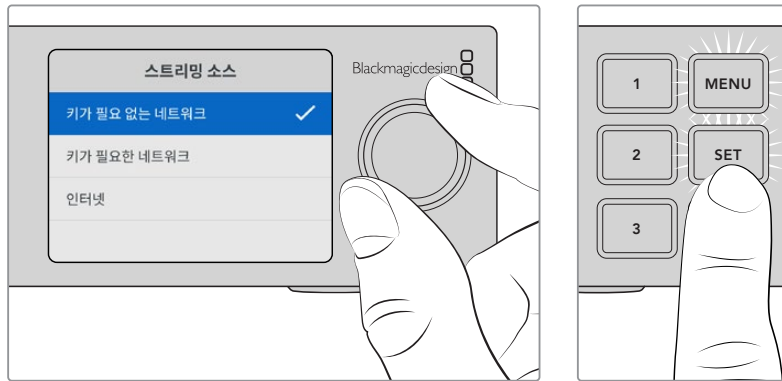
- 1 Blackmagic Streaming Encoder와 Blackmagic Streaming Decoder를 동일한 네트워크 스위치에 연결하세요.

정보 네트워크 스위치를 사용하지 않는 간단한 점대점 셋업의 경우에도 이더넷 케이블 하나를 사용해 Blackmagic Streaming Encoder와 Blackmagic Streaming Decoder를 함께 연결하세요.

- 2 Blackmagic Streaming Decoder에 탑재된 MENU 버튼을 누르면 전면 패널 LCD 메뉴가 열리며, 이후 SET 버튼을 누르면 '라이브 스트리밍' 메뉴가 열립니다.

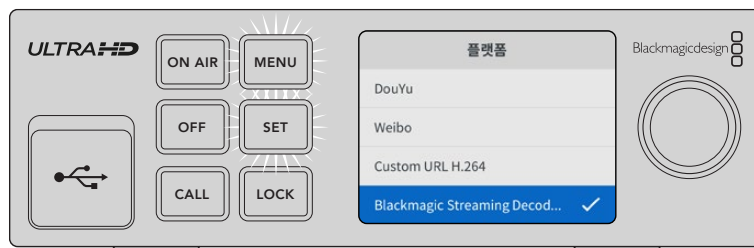


노브를 돌려 '스트리밍 소스'를 선택한 다음 SET 버튼을 누르고, 목록 중에서 '키가 필요 없는 네트워크'를 선택하세요. SET 버튼을 눌러 선택을 확인하세요.



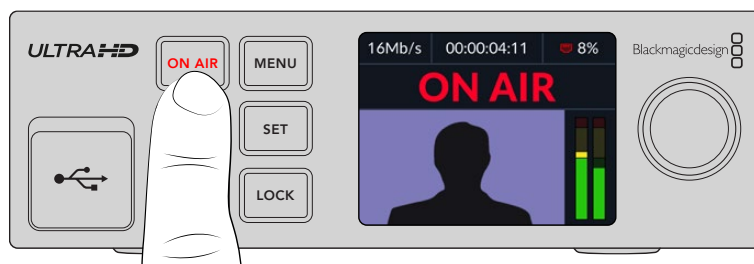
MENU 버튼을 누르면 시작 화면으로 되돌아갑니다.

- 3 Blackmagic Streaming Encoder에 탑재된 MENU 버튼을 누르면 '라이브 스트리밍' 메뉴가 열립니다. SET 버튼을 누르고 노브를 돌려 '플랫폼' 설정으로 스크롤하세요. SET 버튼을 눌러 '플랫폼'의 하위 메뉴를 선택하세요.

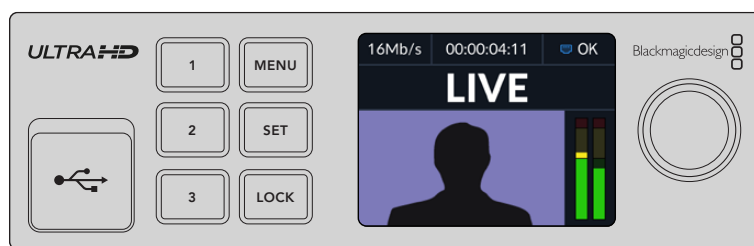


'플랫폼' 목록에서 'Blackmagic Streaming Decoder'를 선택한 다음 SET 버튼을 누르세요. MENU 버튼을 누르면 시작 화면으로 되돌아갑니다.

- 4 Blackmagic Streaming Encoder의 전면 패널에 탑재된 ON AIR 버튼을 누르세요. 스트리밍 중에는 이 버튼에 빨간 불빛이 들어오며, LCD 시작 화면에 'ON AIR'라는 표시가 나타납니다.



Blackmagic Streaming Decoder의 LCD 디스플레이에는 스트리밍 영상이 나타납니다.



'LIVE'라는 표시가 Blackmagic Streaming Decoder의 LCD에 나타납니다.

스트리밍을 멈추려면 Blackmagic Streaming Decoder의 전면 패널에 있는 OFF 버튼을 누르세요.

정보 Blackmagic Streaming Encoder의 깜박이는 ON AIR 버튼은 라이브 스트리밍이 시작되지 않았거나 예기치 않게 정지되었음을 나타냅니다. 이는 네트워크 연결 또는 스트리밍 설정 때문일 수 있습니다. 스트리밍 설정이 올바른지, 그리고 네트워크 케이블이 연결되어 있는지 확인하세요.

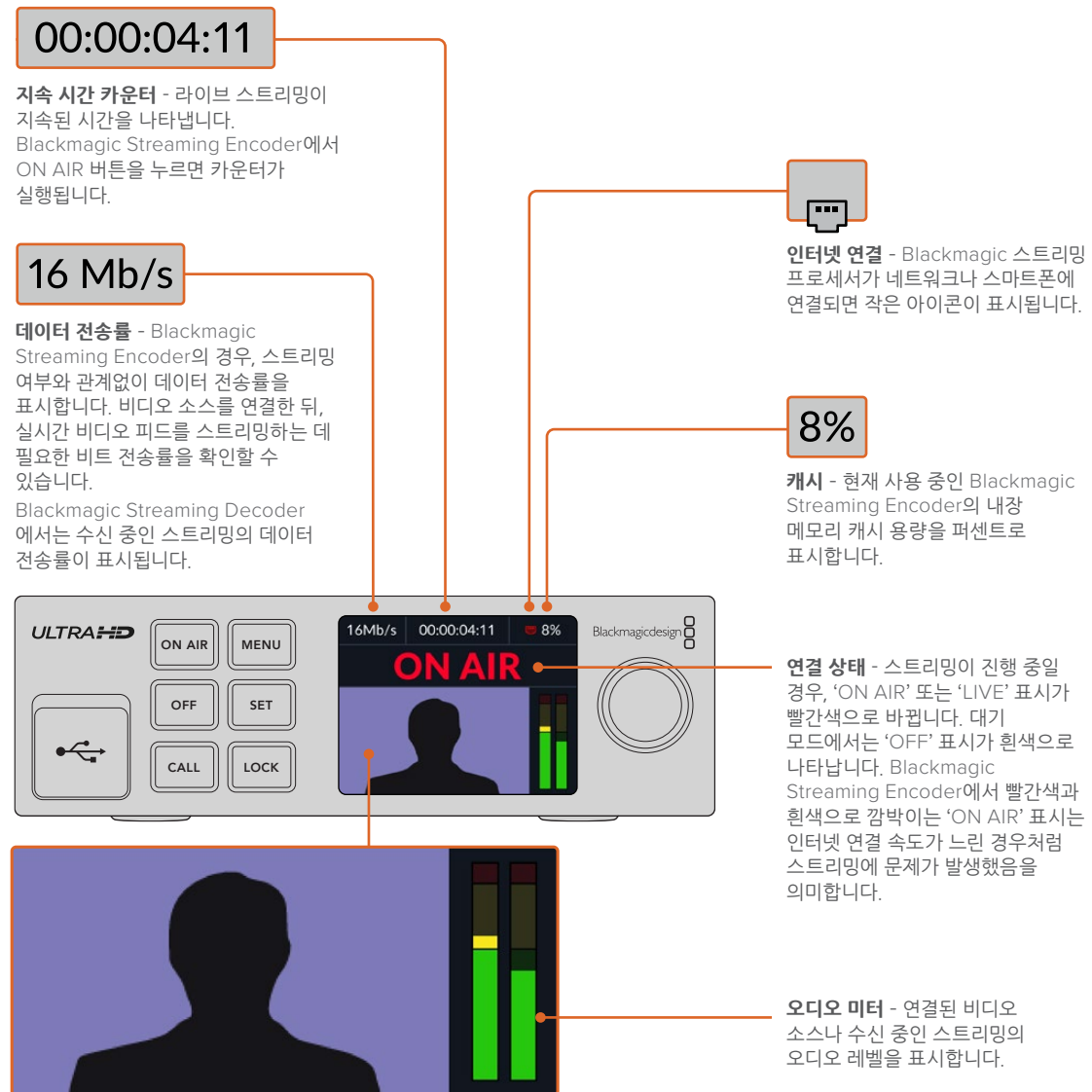
LOCK 버튼

스트리밍 프로세서의 전면 패널을 잠그려면 LOCK 버튼을 1초간 누르세요. 그러면 버튼과 노브가 비활성화되어 실수로 메뉴 설정을 변경하거나 스트리밍을 방해하는 일을 막을 수 있습니다.

패널의 잠금을 해제하려면 LOCK 버튼을 2초간 누르세요.

LCD 디스플레이

Blackmagic 스트리밍 프로세서의 LCD 시작 화면을 통해 비디오와 오디오를 모니터링할 수 있을 뿐 아니라 주요 스트리밍 정보를 확인할 수 있습니다.



연결 아이콘

LCD 디스플레이 우측 상단의 연결 아이콘에는 현재 Blackmagic 스트리밍 프로세서의 연결 상태가 표시됩니다.



이더넷 케이블이 연결되면 파란색 이더넷 아이콘이 표시되어 스트리밍 시 이더넷 연결이 사용될 예정임을 나타냅니다.



Blackmagic Streaming Encoder의 경우, 이더넷을 통해 온에어 상태로 스트리밍 중일 때 빨간색 이더넷 아이콘이 표시됩니다.



테더링된 스마트폰의 인터넷 데이터를 이용하여 스트리밍할 예정인 경우, 파란색 스마트폰 아이콘이 표시됩니다.



Blackmagic Streaming Encoder의 경우, 테더링된 스마트폰을 통해 온에어 상태로 스트리밍 중일 때 빨간색 스마트폰 아이콘이 표시됩니다.

정보 Blackmagic 스트리밍 프로세서가 네트워크나 스마트폰에 연결되지 않은 경우엔 연결 아이콘이 표시되지 않습니다. 케이블이 올바르게 연결되었는지 확인하세요.

Blackmagic Streaming Encoder의 모니터링 출력

Blackmagic Streaming Encoder의 모니터링 출력을 통해 비디오 입력과 오디오 레벨, 방송 상태, 데이터 전송률 및 캐시 레벨, SDI 입력에 관한 기술 정보를 모니터링할 수 있습니다.



모니터링 출력은 데이터 전송률 및 캐시 상태를 포함한 포괄적인 정보를 제공합니다.

모니터링 출력 디스플레이는 8개의 패널로 구성되어 있습니다. 다음은 각 패널에 대한 설명과 표시되는 정보입니다.

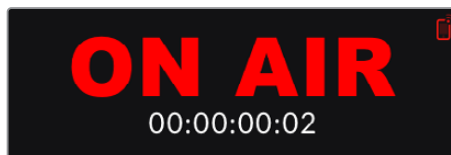
입력 뷰

메인 패널은 연결된 SDI 비디오 소스의 현재 비디오 입력을 표시합니다.



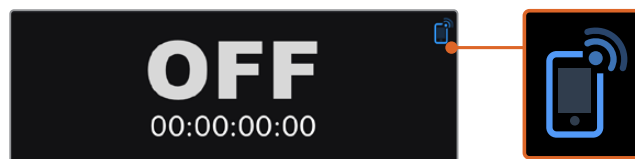
온에어 상태 정보

스트리밍 전에는 이 상태 정보에 'OFF'라고 표시되며 Blackmagic Streaming Encoder가 대기 중으로 방송 준비가 완료되었음을 나타냅니다. 스트리밍이 시작되면 이 표시가 밝은 빨간색의 'ON AIR'로 바뀌며, 스트리밍이 정지될 때까지 이 표시가 지속됩니다.



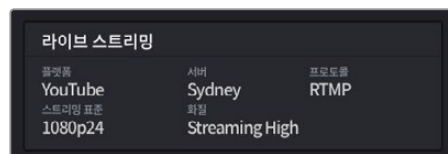
'ON AIR' 표시 밑에 있는 지속 시간 카운터는 Blackmagic Streaming Encoder에서 ON AIR 버튼을 누를 때 실행됩니다.

Blackmagic Streaming Encoder가 방송 중이 아니지만 테더링된 스마트 폰을 통해 스트리밍되는 경우, 'OFF'라는 상태 정보 우측 모서리에 파란색 스마트폰 아이콘이 표시됩니다. 방송 중인 경우 스마트폰 아이콘에 빨간 불빛이 들어옵니다.



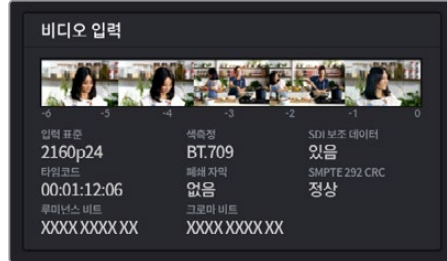
라이브 스트리밍

라이브 스트리밍 패널에는 실시간 스트리밍 설정 정보가 표시됩니다. 표시되는 정보에는 스트리밍 플랫폼과 서버, 프로토콜이 있습니다. 또한 스트리밍 해상도 및 품질 설정을 표시합니다.



비디오 입력

비디오 입력 패널 상단에 있는 5개의 미니 뷰어는 6초 전의 실시간 스트리밍 내용을 표시하며, 각 소형 뷰어는 스트리밍 1.2초 동안의 영상을 나타냅니다.

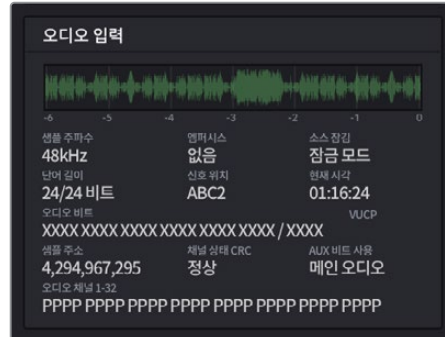


미니 뷰어 아래에서 Blackmagic Streaming Encoder의 SDI 입력에 연결된 비디오 입력 소스에 대한 자세한 기술 정보를 볼 수 있습니다.

입력 표준	SDI 비디오 입력의 해상도 및 프레임 레이트를 표시합니다. Blackmagic Streaming Encoder는 최대 2160p60까지 지원합니다.
색재현율	SDI 비디오 입력의 색공간을 표시합니다. Blackmagic Streaming Encoder는 Rec.601 및 Rec.709, Rec.2020 색공간을 지원합니다.
SDI 보조 데이터	보조 데이터는 SDI 비디오 입력으로 전달되는 영상 이외의 데이터입니다. 이 데이터는 임베드된 오디오와 타임코드 및 폐쇄 자막을 포함합니다. SDI 입력에 보조 데이터가 포함된 경우, '있음'으로 표시됩니다.
타임코드	SDI 비디오 입력 소스의 타임코드를 표시합니다.
폐쇄 자막	SDI 비디오 입력에 폐쇄 자막이 포함된 경우, 해당 포맷이 여기에 표시됩니다. CEA-608 및 CEA-708 포맷이 지원됩니다.
SMPTE 292 CRC	SDI 비디오에 오류가 있는지 확인하는 기능입니다. Blackmagic Streaming Encoder가 SDI 비디오 입력에서 문제를 감지하면 오류 정보가 표시됩니다. CRC 오류는 일반적으로 결함이 있는 SDI 케이블이나 너무 긴 케이블로 인해 발생합니다.
루미넌스 Y 비트 및 크로마 비트	'루미넌스 Y 비트' 및 '크로마 비트' 표시는 SDI 비디오 입력 신호의 활동을 보여줍니다. 각 문자는 비디오 신호의 비트 하나의 상태를 나타냅니다. X - 'X'는 지속적으로 변하는 비트를 나타냅니다. L - 낮은 비트를 나타냅니다. H - 높은 비트를 나타냅니다. SDI 오프셋 정보는 이해하기 쉽도록 생략됩니다. 예를 들어, 화면이 검은색으로 나타나면 모든 비트는 낮은 비트가 됩니다. 일반적으로 SDI 비디오 입력의 모든 10비트는 'X'로 표시되어 비디오 스트리밍의 모든 비트가 지속적으로 변경됨을 나타냅니다. SDI 입력이 8비트 비디오인 경우, 오른쪽 끝의 두 비트는 데이터가 없기 때문에 항상 'L'로 표시됩니다. 'X' 표시를 예상했는데 'L' 또는 'H'로 나타난다면 이는 비트가 막혔다는 것을 나타내며, 이런 현상은 업스트림 동영상의 오류로 인해 발생할 수 있습니다.

오디오 입력

오디오 입력 패널 상단의 오디오 파형 디스플레이에는 실시간 스트리밍된 지난 6초 동안의 오디오 정보가 표시됩니다. 이 정보는 지속적으로 업데이트되며 오른쪽에서 왼쪽으로 스크롤됩니다.

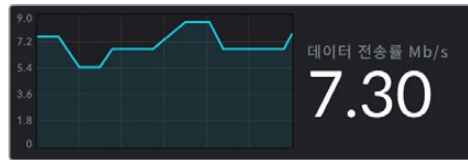


오디오 파형 디스플레이 아래에서 오디오 입력에 대한 자세한 기술 정보를 볼 수 있습니다.

샘플 주파수	SDI 입력에 임베드된 오디오의 샘플 주파수 속도를 표시합니다.
오퍼시스	오디오 소스에 오퍼시스 옵션의 활성화 여부를 나타냅니다.
오디오 소스 잠금	오디오 소스 주파수가 외부 레퍼런스 소스에 잠겨 있는지를 나타냅니다.
단어 길이	SDI 입력에 임베드된 오디오의 비트 심도를 표시합니다.
신호 위치	여기에서 4개 문자는 채널 신호 위치를 나타냅니다.
현재 시각	프리런 모드의 타임코드가 표시됩니다.
오디오 비트	SDI 연결에 임베드된 오디오 샘플의 비트 활동 상태 정보를 나타냅니다. 오디오 채널 상태 정보에 16/20/24비트의 오디오가 있다고 표시되더라도 오디오 비트 활동 상태 정보를 통해 정확한 비트를 확인할 수 있습니다.
VUCP	왼쪽에서 오른쪽으로 VUCP 비트를 읽습니다. 'V' 비트는 유효, 'U'는 사용자 비트, 'C'는 채널 상태 비트, 'P'는 패리티를 나타냅니다. 이 필드는 '오디오 비트'와 유사합니다.
샘플 주소	오디오 샘플 카운터가 나타납니다.
AUX 비트 사용	AUX 비트가 메인 오디오에 사용되는지 여부를 나타냅니다.
오디오 채널 1-32	각 숫자는 SDI 입력에 임베드된 오디오 채널을 나타냅니다. 'P'는 오디오 채널이 사용 중임을 나타내고 '-'는 해당 채널에 오디오가 없음을 의미합니다.

데이터 전송률 표시

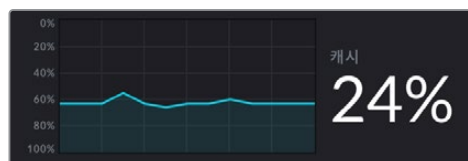
데이터 전송률 디스플레이는 지난 60초 동안의 인코더 데이터 전송률을 보여줍니다. 데이터 전송률은 초당 메가비트(Mb/s) 단위로 측정됩니다. 이 표시는 방송 중이 아닌 경우에도 일관되게 실행되므로 방송을 시작하기 전에 대역폭을 정확하게 가늠할 수 있습니다.



캐시 디스플레이

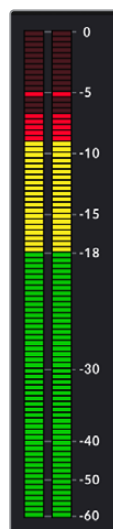
캐시 디스플레이에는 현재 사용 중인 Blackmagic Streaming Encoder의 내장 메모리 버퍼 비율이 표시되며, 그래프를 통해 지난 60초 동안 사용된 메모리 용량이 표시됩니다. 캐시는 작은 용량의 내부 메모리로서, 프로그램 출력을 지속적으로 녹화 및 재생합니다. 스트리밍 데이터 전송률이 비디오 전송을 지속하기 어려운 레벨 아래로 떨어질 경우, 캐시가 안전장치의 역할을 합니다.

인터넷은 주로 네트워크 활동이나 무선 신호 강도의 영향을 받기 때문에 변수가 많습니다. 따라서 방송 데이터 속도가 감소할 경우에는 이 버퍼 데이터가 그에 맞게 증가합니다. 연결 속도가 감소하여 비디오 스트리밍이 불가능할 정도가 될 경우, 캐시가 비디오 프레임을 보완합니다. 하지만 캐시가 100%로 가득 차게 되면 비디오 스트리밍이 이에 따라 영향을 받게 되므로, 가능하면 캐시가 가득 차는 것을 방지해야 합니다. 스트리밍을 시작하지 않고도 비디오 피드를 연결하고 모니터 출력의 캐시 디스플레이를 보면서 시험해 볼 수 있습니다. 캐시가 자주 100%에 도달할 경우, 스트리밍 설정에서 더 낮은 화질을 선택하세요.



오디오 미터

오디오 미터를 사용하여 오디오 소스의 레벨을 모니터링할 수 있습니다. Blackmagic Streaming Encoder의 메뉴에서 PPM 또는 VU 레벨을 표시하도록 설정할 수 있습니다. 오디오 레벨이 너무 높으면 미터에 빨간 불빛이 들어오는데, 이는 라이브 스트리밍의 오디오가 왜곡되거나 클리핑될 수 있음을 나타냅니다. 오디오를 녹색 상단 부분까지 유지하는 것을 권장하지만 가끔씩 노란색 부분까지 사용 가능합니다.



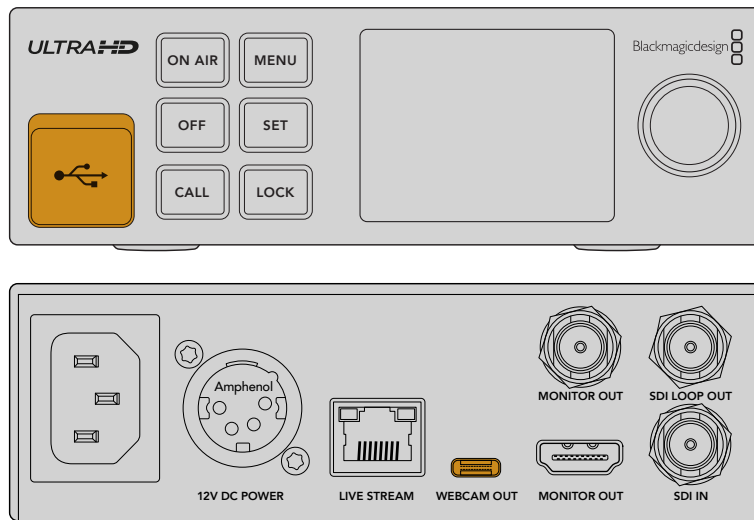
Blackmagic Streaming Setup

Blackmagic Streaming Setup은 설정 변경 및 네트워크 환경 설정, Blackmagic 스트리밍 프로세서의 내부 소프트웨어 업데이트에 필요한 소프트웨어 유틸리티입니다.

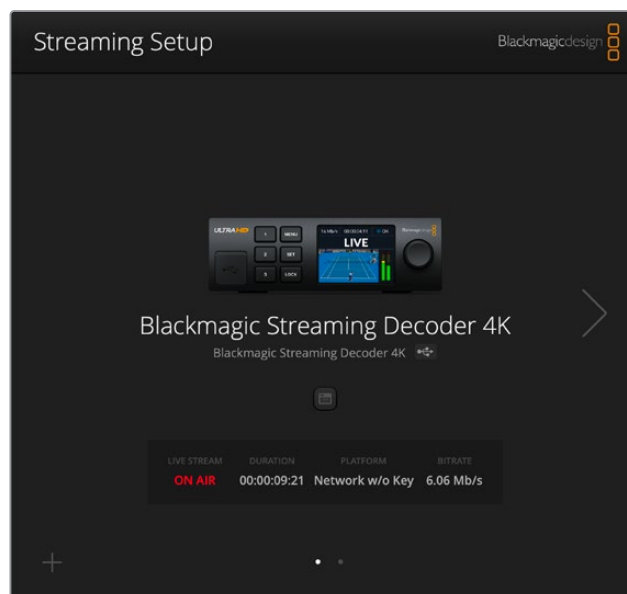
Blackmagic 고객 지원 센터(www.blackmagicdesign.com/kr/support)에서 최신 Blackmagic Streaming Setup 소프트웨어를 다운로드할 수 있습니다.

Blackmagic Streaming Setup 사용하기

- 1 Blackmagic 스트리밍 프로세서의 전/후면 패널에 있는 USB-C 포트를 사용해 사용자 컴퓨터에 연결하세요.



- 2 Blackmagic Streaming Setup을 실행하세요. 연결된 Blackmagic 스트리밍 프로세서 모델명이 유틸리티 시작 화면에 나타납니다.
- 3 사각형 설정 아이콘이나, Blackmagic 스트리밍 프로세서의 이미지를 클릭해 설정 페이지를 여세요. 네트워크에 한 대 이상의 Blackmagic 스트리밍 프로세서가 연결된 경우, 설정 화면 양쪽 끝에 있는 화살표를 클릭하여 원하는 기기에 접속하세요.



라이브 스트리밍(Live Stream)

‘Live Stream’ 탭에서 Blackmagic 스트리밍 프로세서의 라이브 스트리밍 연결 시 필요한 모든 환경 설정을 조정할 수 있습니다.

Blackmagic Streaming Encoder

Blackmagic Streaming Encoder 사용 시 ‘Live Stream’ 탭에서 스트리밍 화질을 설정하고 스트리밍 플랫폼을 선택 및 환경 설정할 수 있을 뿐 아니라 XML 스트리밍 설정 파일을 로딩할 수도 있습니다.

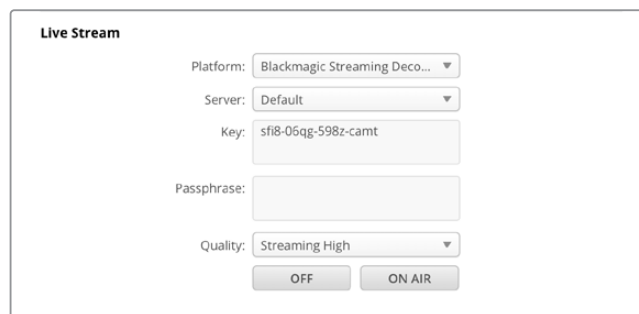
Video Output



‘Stream Standard’ 메뉴를 클릭하여 스트리밍 영상 해상도를 선택하세요. 720p25에서 최대 2160p60 까지 선택할 수 있습니다.

Live Stream

‘Live Stream’ 설정에서 스트리밍 플랫폼을 선택하거나 설정을 조정하고 스트리밍 화질을 설정할 수 있습니다.



Platform

‘Platform’ 메뉴 목록을 클릭한 뒤 방송에 사용할 스트리밍 플랫폼을 선택하세요. YouTube, Facebook, Twitch 등의 옵션을 선택할 수 있습니다. 사용자 지정 스트리밍 설정을 가져온 경우, 해당 설정이 플랫폼 목록에도 나타납니다.

사용자 지정 URL로 스트리밍하려면, ‘Platform’ 메뉴에서 ‘Custom URL’ 옵션을 선택하세요. H.264 또는 H.265를 사용해 사용자 지정 URL로 스트리밍을 할 수 있습니다.

Server

현재 사용자 위치에서 가장 가까운 서버를 목록에서 선택하세요. 서버 목록은 선택한 스트리밍 플랫폼에 따라 다릅니다.

Instagram, Microsoft Teams 또는 사용자 지정 URL에 스트리밍할 경우엔 서버 목록을 수정할 수 있습니다. 사용하는 스트리밍 플랫폼 계정에 지정된 URL 또는 사용자 지정 URL 정보를 입력하세요.

Key

스트리밍 플랫폼에서 할당받은 스트림 키를 입력하세요.

Passphrase

스트리밍 서비스에서 SRT 스트리밍 프로토콜을 사용하는 경우, 사용 중인 스트리밍 플랫폼 계정에 지정된 패스프레이즈를 입력하세요.

Quality

스트리밍을 위한 화질을 선택하세요. 아래 표는 H.264 및 H.265 코덱 사용 시의 데이터 전송률을 표시합니다

H.264	
HD	4K
HyperDeck High(HyperDeck 높음) 45~70 Mb/s	HyperDeck High(HyperDeck 높음) 95~220 Mb/s
HyperDeck Medium(HyperDeck 중간) 25~45 Mb/s	HyperDeck Medium(HyperDeck 중간) 66~150 Mb/s
HyperDeck Low(HyperDeck 낮음) 12~20 Mb/s	HyperDeck Low(HyperDeck 낮음) 38~80 Mb/s
Streaming High(스트리밍 높음) 6~9 Mb/s	Streaming High(스트리밍 높음) 34~51 Mb/s
Streaming Medium(스트리밍 중간) 4.5~7 Mb/s	Streaming Medium(스트리밍 중간) 23~35 Mb/s
Streaming Low(스트리밍 낮음) 3~4.5 Mb/s	Streaming Low(스트리밍 낮음) 13~20 Mb/s

H.265	
HD	4K
Streaming High(스트리밍 높음) 2.3~4.5 Mb/s	Streaming High(스트리밍 높음) 22.5~30 Mb/s
Streaming Medium(스트리밍 중간) 1.5~3 Mb/s	Streaming Medium(스트리밍 중간) 14~20 Mb/s
Streaming Low(스트리밍 낮음) 0.8~2 Mb/s	Streaming Low(스트리밍 낮음) 8~10 Mb/s

화질 설정에서 사용 가능한 데이터 전송률은 Blackmagic Streaming Encoder에서 사용 중인 비디오 표준에 따라 달라집니다. 예를 들어, 'Streaming High(스트리밍 높음)' 옵션을 선택하고 1080p24로 운영하는 경우, 6Mb/s의 데이터 전송률이 적용됩니다.

위 표를 보면 스트리밍 데이터 전송률이 HyperDeck 전송률에 비해 낮은 것을 확인할 수 있습니다. 덕분에 인터넷을 통한 데이터 전송이 가능합니다. 이는 일반적으로 인터넷이 디스크 녹화 데이터보다 낮은 대역폭을 가지기 때문입니다.

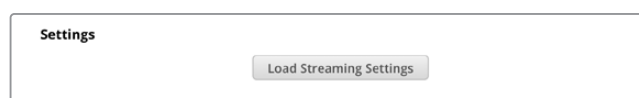
각 설정에서는 2가지 데이터 전송률이 제공됩니다. 24p/25p/30p의 낮은 프레임 속도의 경우, 낮은 값의 데이터 전송률을 사용하며, 50p/60p의 높은 프레임 속도를 사용하는 경우에는 높은 데이터 전송률이 사용됩니다. 스트리밍 화질은 'Streaming High(스트리밍 높음)'로 기본 설정되어 초고화질의 스트리밍 채널을 제공합니다.

OFF 및 ON AIR 버튼 사용하기

OFF 및 ON AIR 버튼을 사용하여 라이브 스트리밍을 시작하거나 중지할 수 있습니다. 라이브 스트리밍이 진행 중이면 ON AIR 버튼에 빨간 불빛이 켜집니다.

설정

'Load Streaming Settings' 버튼을 클릭하고 화면에 나타나는 지시에 따라 Blackmagic Streaming Encoder에서 생성된 XML 스트리밍 설정 파일을 로딩하세요.

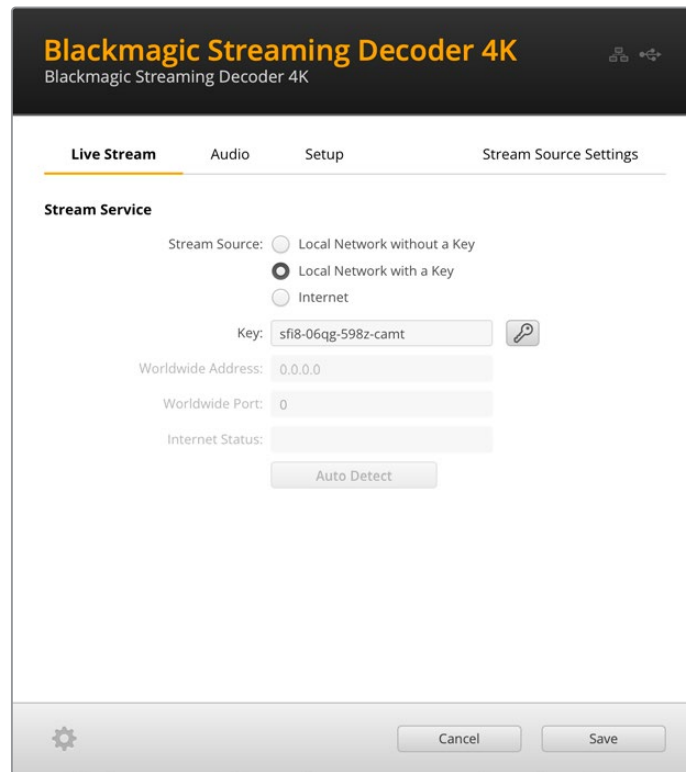


불러온 설정 제거하기

Blackmagic Streaming Encoder로 불러오기 한 모든 스트리밍 설정을 제거하려면, 'Live Stream' 탭 좌측 하단에 있는 톱니 아이콘을 클릭하세요. 'Remove'를 클릭해 선택을 확인하세요.

Blackmagic Streaming Decoder

Blackmagic Streaming Decoder 사용 시, 'Live Stream' 탭에서 스트리밍 소스를 선택하고 디코더의 인터넷 설정을 조정할 수 있습니다.



Stream Service

'Stream Service' 옵션을 사용해 Blackmagic Streaming Decoder를 원격 Blackmagic Streaming Encoder 또는 스트리밍 기능이 내장된 Blackmagic 카메라나 ATEM 스위처에 연결하는 데 필요한 설정을 조정할 수 있습니다.

Stream Source

'Stream Source' 메뉴를 사용해 수신되는 스트리밍 소스를 선택하세요. 옵션에는 'Local Network without a Key' 및 'Local Network with a Key', 'Internet'이 제공됩니다.

Key

누구나 메뉴에 있는 Blackmagic Streaming Decoder로 스트리밍할 수 있기 때문에 사용자의 비디오 링크와 충돌하지 않도록 스트리밍 키를 설정하는 것이 좋습니다. 사용자의 네트워크에서 Blackmagic Streaming Decoder를 선택하는 것이 매우 간편한데, 이로 인해 여러 사용자의 스트리밍이 서로 겹쳐서 스트리밍되는 혼란이 발생할 수 있습니다.

이런 문제는 스트리밍 키를 설정하여 간단히 방지할 수 있습니다. 스트리밍 키는 다른 사용자가 Blackmagic Streaming Decoder에 접속하는 것을 막는 비밀번호 역할을 합니다. Blackmagic Streaming Setup 구동 시, 스트리밍 키 텍스트 입력란을 확인할 수 있습니다. 여기에 비밀번호를 입력하기만 하면, 각 기기의 스트리밍 설정에서 동일한 스트리밍 키를 가진 운영자만 사용자의 Blackmagic Streaming Decoder에 연결할 수 있습니다.

원하는 비밀번호를 설정할 수 있지만, Blackmagic Streaming Setup에 있는 비밀번호 생성 버튼을 사용해 컴퓨터가 안전한 비밀번호를 생성하도록 할 수도 있습니다. 연결을 원하는 사용자에게 이 비밀번호를 복사 및 붙여 넣기 하도록 안내할 수 있습니다. Blackmagic Streaming Encoder나 Blackmagic 카메라 또는 ATEM 스위처에 비밀번호를 입력한 운영자만 Blackmagic Streaming Decoder 연결 승인을 받을 수 있습니다.

인터넷 연결

Blackmagic Streaming Decoder에 연결하는 가장 흥미로운 방법은 바로 인터넷을 통한 연결입니다. 하지만 Blackmagic Streaming Encoder나 Blackmagic 카메라 또는 ATEM 스위처가 전 세계 어디서든 Blackmagic Streaming Decoder를 검색할 수 있도록 설정해야 하기 때문에 조금 복잡할 수 있습니다. 검색 범위가 전 세계이기 때문에 이를 위해서는 몇 가지 설정을 추가로 업데이트해야 합니다.

준비 사항

인터넷에 연결하려면, 우선 Blackmagic Streaming Decoder와 여기에 영상을 스트리밍할 Blackmagic Streaming Decoder나 카메라 또는 ATEM 스위처 모두를 인터넷에 연결하세요. Blackmagic Streaming Decoder를 위한 공인 IP 주소도 필요하며 또한 변하지 않는 고정 IP 주소도 필요합니다.

문제는 Blackmagic Streaming Decoder가 로컬 이더넷 네트워크에 존재하기 때문에, 이것이 인터넷에 나타나도록 설정해야 합니다. 사용자의 Blackmagic Streaming Decoder는 인터넷 방화벽에서 포트 포워딩 설정을 사용해 인터넷 상에 있는 Blackmagic Streaming Encoder나 카메라 또는 ATEM 스위처가 사용자의 인터넷 연결을 통해 Blackmagic Streaming Decoder에 연결되도록 합니다. 이렇게 설정하지 않으면 Blackmagic Streaming Encoder나 카메라 또는 ATEM 스위처가 Blackmagic Streaming Decoder를 검색할 수 없습니다.

이러한 경우, 현재 사용 중인 인터넷 업체나 네트워크 관리자에게 문의하여 인터넷 연결의 포워딩을 'TCP 포트 1935'로 설정해야 합니다. 이렇게 문의하면 알아서 설정을 변경해 줍니다. 좋은 소식은 Blackmagic Streaming Decoder에서 포트 포워딩 설정을 시도한다는 점입니다. 대부분의 인터넷 연결 및 방화벽은 포트 포워딩을 자동 설정하는 프로토콜을 지원합니다. 즉, Blackmagic Streaming Decoder에서 네트워크 장비와 의사소통하며, Blackmagic Streaming Setup 유틸리티를 사용해 해당 설정을 시도합니다.

인터넷 접속 확인하기

아래쪽에 보면 'Internet Status' 확인란이 있습니다. Blackmagic Streaming Decoder에서 인터넷 연결을 시도하며 모든 기능이 올바르게 작동하는지의 여부를 알려줍니다. 연결된 것으로 나타난다면, 이는 Blackmagic Streaming Decoder에서 포트 포워딩을 설정한 네트워크 장비 설치 및 인터넷 연결이 가능하다는 것을 의미합니다.

참고 외부 트래픽을 위해 사용자의 네트워크에서 포트를 열어보는 행위는 네트워크 보안 수준을 떨어뜨릴 수 있으니, 보안이 염려된다면 인터넷 공급 업체 또는 네트워크 담당자와 협의하는 것이 좋습니다.

인터넷 상태가 '전 세계 연결 가능(Visible Worldwide)'으로 나타나지 않는다면, 인터넷 방화벽의 포트 포워딩을 수동으로 설정해야 할 수 있습니다. 모든 방화벽이 이런 정보를 자동으로 설정하는 프로토콜을 지원하지는 않지만, 수동 설정 기능을 모두 지원합니다.

라우터 컨트롤에 접속할 수 없거나 포트 포워딩 설정 방법을 모를 경우, 해당 인터넷 서비스 제공 업체에 문의하세요. 대규모 네트워크의 경우, 사내의 인터넷 담당자에게 문의하여 네트워크 상의 충돌이 일어나지 않는 범위에서 포트 포워딩을 설정할 수 있도록 도움을 받는 것이 좋습니다.

Internet Status(인터넷 상태)

인터넷 연결을 설정하는 동안 인터넷 상태 기능을 통해 모든 문제를 해결할 수 있습니다. 표시되는 일부 정보와 발생하는 문제의 원인에 대한 정보를 아래쪽에서 확인하세요.

Visible Worldwide (전 세계 연결 가능)	이는 좋은 신호로 모든 것이 올바르게 작동되고 있음을 의미합니다. 포트 포워딩이 제대로 설정되었으며, 인터넷에서 Blackmagic Streaming Decoder로 영상 스트리밍 신호를 받을 준비가 완료되었음을 의미합니다.
No Internet Access (인터넷 접속 제한)	Blackmagic Streaming Decoder를 인터넷에 연결할 수 없음을 나타냅니다. 네트워크 설정 및 인터넷 연결을 확인하세요.
Port Forwarding Error (포트 포워딩 오류)	인터넷은 연결되어 있으나, Blackmagic Streaming Decoder를 통한 인터넷 방화벽의 포트 포워딩이 제대로 설정되어 있지 않아 인터넷에서 신호가 다다를 수 없다는 것을 나타냅니다. 네트워크 관리자를 통해 이를 설정해야 합니다.
UPnP error	이 오류 메시지 또한 Blackmagic Streaming Decoder가 인터넷 라우터에서 포트 포워딩을 설정할 수 없음을 의미합니다. 네트워크 관리자를 통해 이를 설정하거나 라우터 설명서를 참조하여 포트 포워딩을 설정해야 합니다.

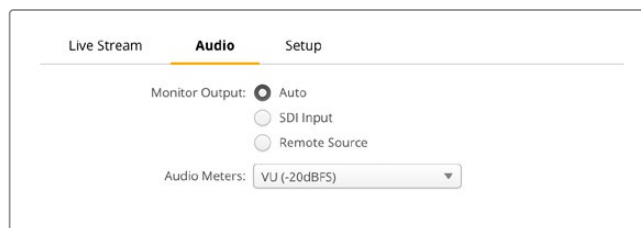
Auto Detect

인터넷 연결 설정을 자동 감지하려면 'Auto Detect' 버튼을 클릭하세요.

오디오(Audio)

'Audio' 탭에서 스트리밍 프로세서의 오디오 모니터링 출력 및 토크백, 오디오 미터 옵션 설정을 조정합니다.

Blackmagic Streaming Encoder



Monitor Output

모니터 출력 옵션을 사용하여 Blackmagic Streaming Encoder의 SDI 및 HDMI 모니터링 출력에 사용할 오디오 소스를 선택하세요.

Auto

'Monitor Out'이 'Auto'로 설정되면 Blackmagic Streaming Decoder를 통해 ATEM Switcher로부터 전송되는 토크백 오디오를 Blackmagic Streaming Encoder가 자동으로 감지하여 모니터링합니다. 감지된 토크백이 없을 시에는 SDI 입력의 오디오가 사용됩니다.

SDI Input

예를 들어, Blackmagic Studio Camera가 Blackmagic Streaming Encoder의 SDI 입력 소스에서 전송되는 오디오를 모니터링하려면 'SDI Input'을 선택하세요.

Remote Source

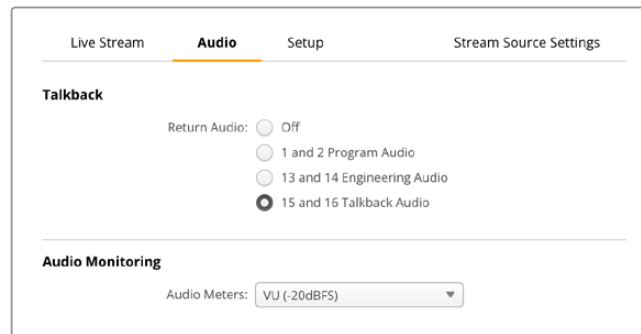
원격 ATEM 스위처 또는 Blackmagic Streaming Decoder에서 전송되는 토크백 오디오를 모니터링하려면 이 옵션을 사용하세요.

Audio Meters

이 오디오 미터 메뉴를 사용하여 표시할 오디오 미터 유형을 선택하세요. VU -18dBFS, VU -20dBFS, PPM -18dBFS, PPM -20dBFS 레퍼런스 레벨에서 원하는 옵션을 선택할 수 있습니다.

Blackmagic Streaming Decoder

Blackmagic Streaming Decoder의 'Audio' 탭에서 토크백 채널 선택 및 전면 패널 LCD에 표시될 오디오 미터를 설정할 수 있습니다.



Talkback

이 설정을 사용해 원격 Blackmagic Streaming Encoder로 재전송되는 오디오 채널을 선택하세요. 선택 옵션에는 'Off', '1 and 2 Program Audio', '13 and 14 Engineering Audio', '15 and 16 Talkback Audio'가 있습니다.

Audio Monitoring

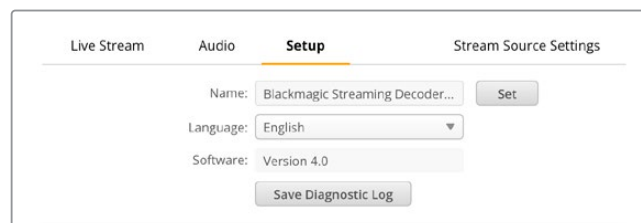
이 메뉴를 사용하여 전면 패널 LCD에 표시할 오디오 미터 유형을 선택하세요. VU -18dBFS, VU -20dBFS, PPM -18dBFS, PPM -20dBFS 레퍼런스 레벨에서 원하는 옵션을 선택할 수 있습니다.

Setup

'Setup' 탭 안에 있는 설정을 사용해 Blackmagic 스트리밍 프로세서의 이름 설정, 네트워크 설정 변경 및 공장 초기 설정값 복원 등의 작업을 할 수 있습니다. Blackmagic Streaming Decoder에서 'Setup' 탭은 레퍼런스 타이밍 및 SDI 출력을 설정하는 옵션을 제공합니다.

식별 설정

식별 설정을 사용해 스트리밍 프로세서의 이름 및 사용 언어를 설정할 수 있습니다.



네트워크에 한 대 이상의 Blackmagic 스트리밍 프로세서가 연결된 경우, 사용자가 지정한 이름을 입력하면 쉽게 제품을 식별할 수 있습니다. 이 설정은 네트워크 위치명 또한 제공하며

현재 사용 중인 소프트웨어의 버전도 확인할 수 있습니다.

Network Settings

Network Location

네트워크 위치는 등록 시 나타나는 Blackmagic 스트리밍 프로세서의 이름입니다. 이는 셋업 유틸리티 상단에 나타나는 식별 이름을 기반으로 합니다. 앞부분의 숫자는 무시된다는 사실을 기억하세요.

MAC Address

Blackmagic 스트리밍 프로세서를 위한 MAC 주소를 표시합니다. MAC 주소는 각 이더넷 단자가 가지는 고유 하드웨어 식별자입니다. 이는 MAC 주소에 기반하여 장치 접근을 제한하는 네트워크 보안 시스템을 설정할 때 중요합니다.

Protocol

DHCP 및 고정 IP 설정을 통해 Blackmagic 스트리밍 프로세서가 네트워크에 연결되는 방식을 결정할 수 있습니다.

DHCP	Blackmagic 스트리밍 프로세서는 DHCP로 기본 설정되어 있습니다. DHCP(Dynamic Host Configuration Protocol)는 자동으로 사용 중인 Blackmagic 스트리밍 프로세서를 검색하여 IP 주소를 지정하는 네트워크 서버의 서비스를 의미합니다. DHCP는 이더넷을 통해 장비를 쉽게 연결하도록 돕고 다른 IP 주소와 충돌을 방지하는 유용한 서비스입니다. 대부분의 컴퓨터와 네트워크 스위치는 DHCP를 지원합니다.
Static IP(고정 IP)	‘Static IP’를 선택하면 네트워크 정보를 직접 입력할 수 있습니다. 모든 장치가 통신할 수 있도록 고정 IP 주소를 수동으로 설정할 경우, 동일한 서브넷 마스크 및 게이트웨이 설정을 공유하도록 해야 합니다.

고정 IP 사용 시 해당 네트워크에 이미 같은 IP를 보유한 장비가 있다면, 이 설정은 충돌을 일으켜 네트워크에 제대로 연결되지 않습니다. 충돌 발생 시, IP 주소의 마지막 필드를 변경하면 이 문제가 해결됩니다.

예를 들어, 충돌되는 주소가 192.100.40.30이라면 마지막 두 자리 숫자를 30 이외의 다른 숫자로 변경하세요. 새로 입력한 숫자도 이미 사용 중인 숫자라고 나올 경우, 다른 장비에서 사용하지 않은 숫자가 나올 때까지 숫자를 다르게 입력하세요.

연결 우선순위

이더넷 및 휴대폰이 모두 Blackmagic 스트리밍 프로세서에 연결되어 있을 때 이 설정을 통해 스트리밍에 사용할 연결을 정할 수 있습니다. 휴대폰 테더링에 대한 자세한 내용은 [스마트폰을 사용한 스트리밍 하기] 부분을 참고하세요.

유틸리티 관리 허용하기

‘via USB’ 설정을 활성화하면 설정 변경이 USB로 연결된 컴퓨터로만 제한됩니다. 이렇게 하면 네트워크에 접속한 사람이 실수로 설정을 변경하는 일을 막을 수 있습니다.

Reset

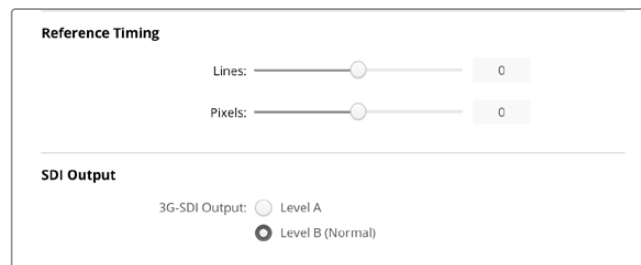
‘Factory Reset’을 클릭하면 Blackmagic 스트리밍 프로세서가 공장 초기 설정값으로 복원됩니다.

‘Set’을 누르면 선택을 확인하라는 메시지가 뜹니다. 계속하려면 ‘Reset’을 클릭하세요.



Blackmagic Streaming Decoder

Blackmagic Streaming Decoder 사용 시 ‘Setup’ 탭은 식별 설정 및 네트워크 설정 이외에 다음과 같은 항목을 추가로 지원합니다.



Reference Timing

‘Reference Timing’ 설정을 통해 레퍼런스 타이밍을 라인 및 픽셀 기반으로 수동 조절할 수 있습니다. Blackmagic Streaming Decoder는 아날로그 Tri-sync 및 블랙 버스트 비디오 레퍼런스 입력뿐만 아니라 레퍼런스로 사용할 수 있는 SDI 연결을 지원합니다. 레퍼런스는 대규모 시스템 속에서 전환이 가능하도록 모든 비디오 연결을 일치시켜야 하는 대형 방송국에서 사용합니다.

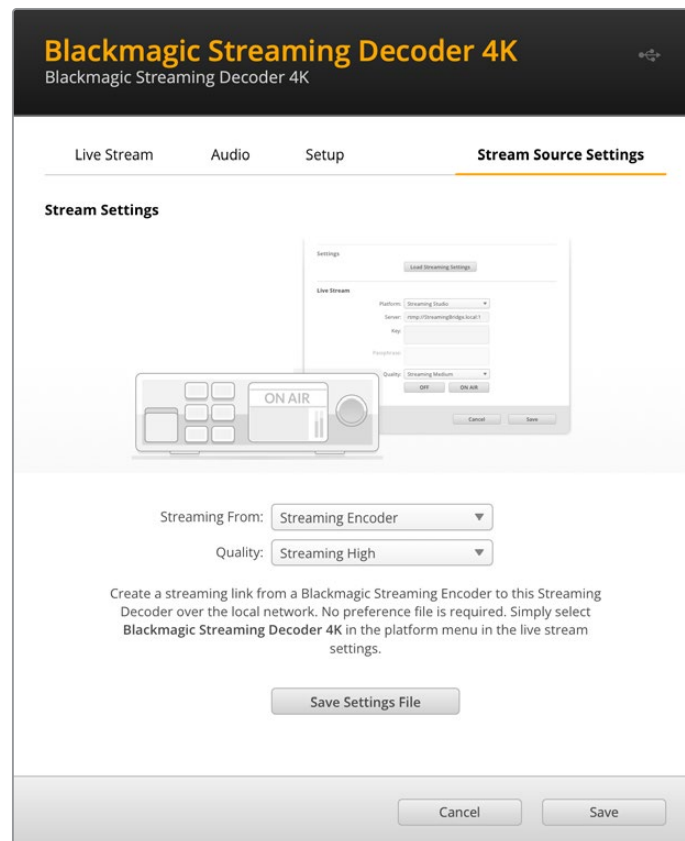
SDI Output

일부 방송 장비는 3G-SDI 영상 수신 시 ‘A 레벨’ 또는 ‘B 레벨’ 방식만 수신 가능합니다. 다른 방송 장비와의 호환성을 유지하려면 해당 3G-SDI 타입을 선택하세요. 기본 설정은 레벨 B입니다.

Stream Source Settings

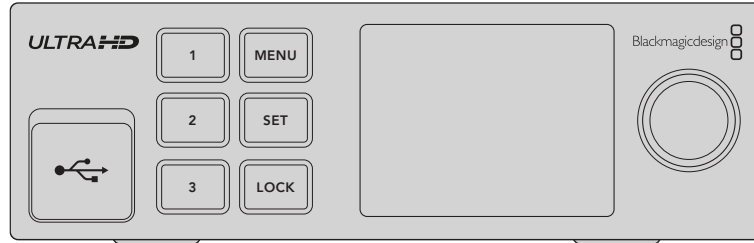
Blackmagic Streaming Decoder 사용 시 스트리밍 소스 설정 탭에서 스트리밍 설정 XML 파일을 생성하여 원격 Blackmagic Streaming Encoder나 내장 스트리밍 기능이 내장된 Blackmagic 카메라 및 ATEM 스위처 등에 로딩하여 사용할 수 있습니다.

스트리밍 설정 XML 파일 생성에 관한 자세한 정보는 본 설명서의 다음 부분에 나오는 [방송 링크 생성하기] 부분을 참고하세요.



방송 링크 생성하기

Blackmagic 스트리밍 프로세서를 사용하면 로컬 네트워크를 통해 스트리밍하거나 또는 전 세계 어디서든 인터넷을 통해 영상을 스트리밍할 수 있습니다.



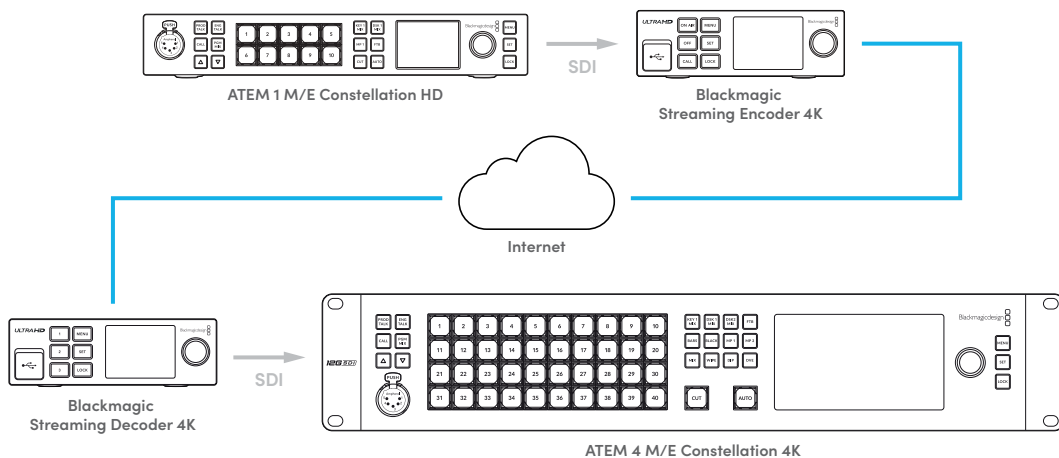
Blackmagic Streaming Decoder가 Blackmagic Streaming Encoder와 동일한 로컬 네트워크를 사용한다면, Blackmagic Streaming Setup의 'Live Stream' 탭 안에 있는 'Platform' 메뉴 목록에 나타납니다. 로컬 네트워크를 통한 스트리밍 설정에 관해 자세한 정보는 [시작하기] 부분을 참고하세요.

인터넷을 통해 또는 스트리밍 키를 사용해 보안이 향상된 로컬 네트워크를 통해 스트리밍할 경우, 사용자의 Blackmagic Streaming Decoder에서 스트리밍 설정 XML 파일을 생성할 수 있습니다. 이렇게 생성된 파일을 Blackmagic Streaming Setup 통해 Blackmagic Streaming Encoder에 로딩할 수 있습니다.

정보 생성된 스트리밍 설정 XML 파일을 익스포트해 스트리밍 기능이 내장된 Blackmagic 카메라 및 ATEM 스위처에서 사용할 수 있습니다. 설정 파일 불러오기에 관한 자세한 정보는 Blackmagic 카메라 또는 ATEM 스위처 사용자 설명서를 참고하세요.

Blackmagic 스트리밍 프로세서 제품들을 함께 운용한 대표적인 예는 기상 예보를 원격지에서 스튜디오로 송신하는 것입니다. 원격지에서 신호 전송 시 Blackmagic Streaming Encoder와 휴대폰 또는 네트워크를 통한 인터넷 연결만 있으면 됩니다.

스튜디오에서는 Blackmagic Streaming Decoder가 해당 인터넷 피드를 전송받아 이를 SDI로 변환하면 스튜디오에 있는 메인 스위처에 연결할 수 있습니다.



위와 같은 워크플로 셋업을 위한 예시는 다음과 같습니다.

- 1 송신 장소에서 Blackmagic Streaming Encoder를 ATEM 스위치의 SDI 프로그램 출력에 연결하세요. 예) ATEM 1M/E Constellation HD
- 2 Blackmagic Streaming Encoder를 스마트폰에 연결하세요.
- 3 스튜디오에서는 Blackmagic Streaming Decoder를 이더넷 연결을 통해 인터넷에 연결하세요.
- 4 그러면 Blackmagic Streaming Decoder 4K는 변환한 SDI 인터넷 피드를 메인 뉴스 방송을 위한 스튜디오 스위치의 SDI 입력에 전송합니다.

스튜디오에서 Blackmagic Streaming Decoder를 Blackmagic Streaming Encoder의 인터넷 피드에 연결하려면 Blackmagic Streaming Setup을 열고 인터넷 설정을 변경하세요. 여기서 모든 스트리밍 설정을 포함한 XML 파일을 생성할 수도 있으며, 이를 원격으로 사용하는 Blackmagic Streaming Encoder에 로딩하는 데 사용합니다.

XML 파일 생성하기

XML 설정 파일을 생성하려면 Blackmagic Streaming Decoder의 LIVE STREAM 포트를 네트워크 케이블을 사용하여 인터넷 라우터 또는 네트워크 스위치에 연결하세요.

USB-C 케이블을 사용해 사용자 컴퓨터를 Blackmagic Streaming Decoder와 연결하고 Blackmagic Streaming Setup을 구동하세요. 'Live Stream' 탭에서 네트워크가 올바르게 설정되어 있는지 확인하고, 'Stream Service' 옵션을 'Internet'으로 선택하세요. 'Internet Status' 확인란에 'Visible Worldwide'가 나타나는 것을 확인할 수 있습니다. 이는 모든 것이 올바르게 작동되고 있음을 의미합니다. 스트리밍 디코더 환경 설정에 대한 자세한 정보는 [Blackmagic Streaming Setup] 부분의 [Stream Service]를 참고하세요.

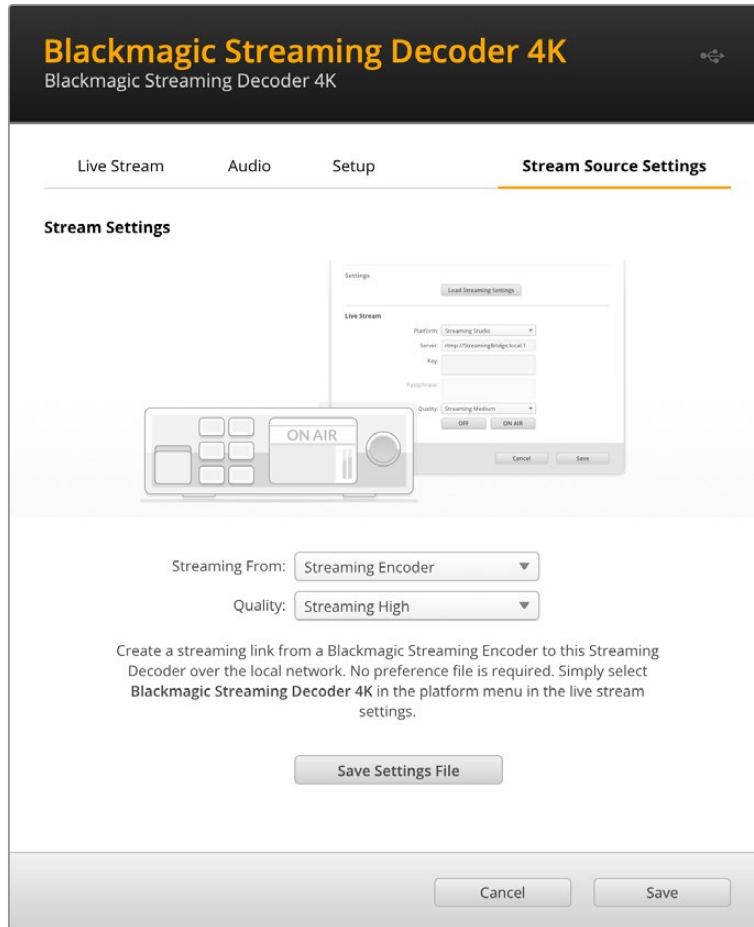
포트 포워딩에 관한 정보

'Internet Status' 확인란에 포트 포워딩 또는 UPnP 에러가 나타날 경우, 사용하는 인터넷 업체나 네트워크 관리자에게 문의하여 사용하는 인터넷 연결의 포트 포워딩을 'TCP port 1935'로 설정하세요.

XML 파일 보내기

Blackmagic Streaming Setup의 'Setup' 탭에서 설정을 확인하고 Blackmagic Streaming Decoder가 현재 사용 중인 네트워크 또는 인터넷에 올바르게 연결되어 있는지 확인한 다음, XML 설정 파일을 익스포트 하세요.

- 1 창 우측 상단의 'Stream Source Settings' 탭을 클릭하세요.



- 2 'Streaming From' 메뉴에서 'Streaming Encoder'를 선택하세요.

내장 스트리밍 기능을 지원하는 Blackmagic 카메라 또는 ATEM 스위처에 사용할 스트리밍 설정 XML 파일을 생성하려면, 'Streaming From' 메뉴에서 'ATEM Switcher' 또는 'Blackmagic Camera'를 선택하세요.

- 3 원하는 스트리밍 화질을 선택하세요. 이 설정은 원거리에 있는 Blackmagic Streaming Encoder의 화질을 설정합니다.
- 4 'Save Settings File' 버튼을 클릭하고, 파일을 저장하려는 위치를 지정한 다음, 'Save' 버튼을 클릭하세요.

설정 파일을 저장했으면 Blackmagic Streaming Encoder의 원격 운영자에게 파일을 이메일로 보내세요.

정보 'Audio' 탭에 있는 토크백 설정을 사용하여 원격 스트리밍 인코더로 다시 전송하려는 오디오 채널을 선택할 수 있습니다.

XML 파일 로딩하기

XML 파일을 원격지에 있는 제작진에게 이메일로 보냈다면, 원격지에 있는 제작진은 이 XML 파일을 Blackmagic Streaming Setup을 사용하여 Blackmagic Streaming Encoder에 간단히 로딩할 수 있습니다. 그다음 ON AIR 버튼을 누르면 스튜디오에 기상 예보를 스트리밍할 수 있습니다.

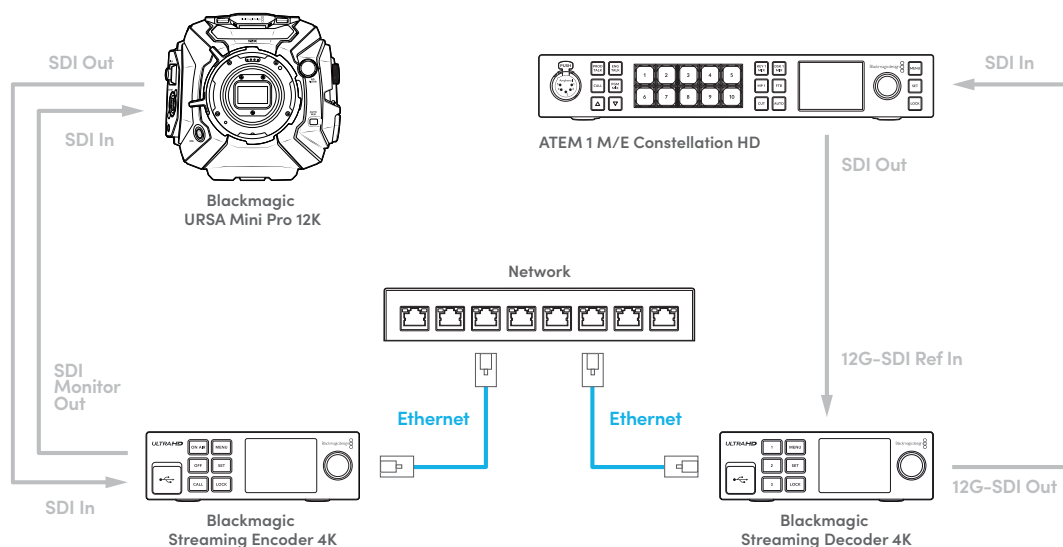
스트리밍 XML 파일을 로딩하고 나면 다시 로딩하지 않고 스트리밍을 시작/정지할 수 있는 점을 기억하세요. 이를 통해 Blackmagic Streaming Encoder와 Blackmagic Streaming Decoder 사이의 일관된 비디오 링크를 손쉽게 설정할 수 있습니다.

스튜디오에서 사용하는 Blackmagic Streaming Decoder의 스트리밍 및 네트워크 설정을 변경하지 않는 한 계속해서 Blackmagic Streaming Encoder와 연결하기 위해 탐색하며 인터넷 위치와 상관없이 항상 Blackmagic Streaming Encoder를 감지합니다. 어디서든 Blackmagic Streaming Encoder를 인터넷에 연결하고 ON AIR 버튼만 누르면 스튜디오에 있는 Blackmagic Streaming Decoder로 즉각 스트리밍됩니다.

탈리, 토크백, 카메라 컨트롤

Blackmagic 스트리밍 프로세서를 통해 ATEM 스위처에서 탈리 토크백, 카메라 컨트롤 정보를 전송하도록 할 수 있습니다. 이에 따라 SDI 기반의 모든 Blackmagic Design 카메라를 로컬 네트워크 상의 모든 곳 또는, 인터넷을 사용할 수 있는 전 세계 어디든 설치할 수 있으며, 여전히 탈리와 토크백, 카메라 컨트롤 기능을 사용할 수 있습니다.

셋업은 매우 간단합니다. 아래 그림은 로컬 네트워크를 통해 URSA Mini Pro 12K를 ATEM 1 M/E Constellation HD에 연결하여 탈리 및 토크백, 카메라 컨트롤 기능이 작동하는 방식을 보여줍니다.



모든 연결이 완료되면 다음과 같이 설정하세요.

- 1 Blackmagic Streaming Encoder의 MENU 버튼을 눌러 LCD 메뉴를 열고 '라이브 스트리밍' 메뉴로 이동하세요.
- 2 '플랫폼' 메뉴에서 'Blackmagic Streaming Decoder'를 선택하세요.
- 3 'SET'을 눌러 선택을 완료하세요.

탈리가 작동하기 위해서는 카메라의 ATEM 카메라 ID가 스위처의 입력과 일치해야 합니다. ATEM 카메라 ID 설정 방법에 관한 자세한 정보는 URSA Mini 사용 설명서를 참조하세요.

ATEM 스위처에서 카메라를 프로그램 출력으로 전환하여 탈리가 작동 중인지 테스트해 볼 수 있습니다. 카메라에 ATEM 카메라 ID가 제대로 설정되면 탈리 불빛과 함께 카메라 LCD 테두리에 들어오는 빨간색 탈리를 확인할 수 있습니다. 이제 스위처에서 이 카메라를 미리보기 출력으로 전환하면 탈리에 초록색 불이 켜집니다.

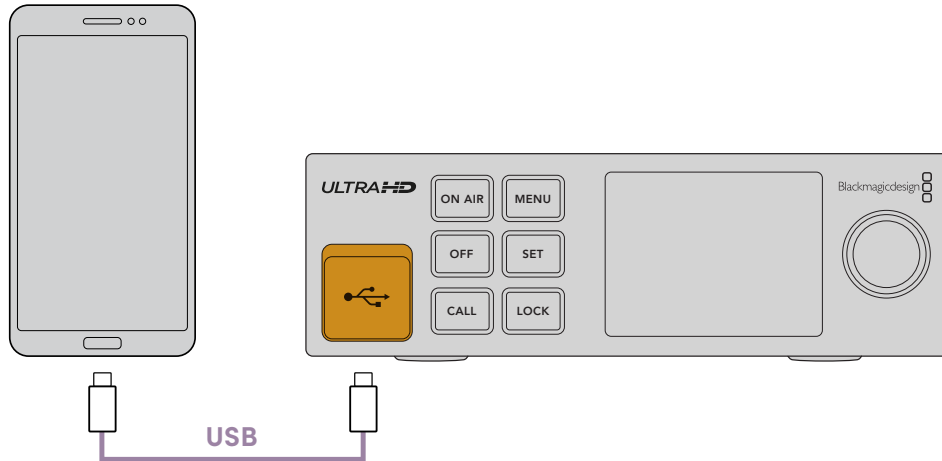
ATEM Software Control의 카메라 페이지에서 조리개와 페디스털을 조절하여 카메라 컨트롤 기능을 테스트해보세요.

임베디드 SDI 오디오 채널 15/16이 기본 토크백 채널로 설정되어 있지만, 엔지니어링 채널 13/14로 토크백 채널을 바꾸거나 Blackmagic Streaming Setup을 사용하여 프로그램 출력으로 바꿀 수 있습니다.

인터넷으로 송신할 경우에는 Blackmagic Streaming Setup을 사용해 XML 셋업 파일을 생성하세요. 생성된 XML 파일을 Blackmagic Streaming Encoder에 로딩하면 인터넷 상에서 Blackmagic Streaming Decoder를 찾을 수 있습니다. XML 셋업 파일 생성 및 로딩 방법에 관한 자세한 정보는 본 설명서의 앞부분에서 확인할 수 있습니다.

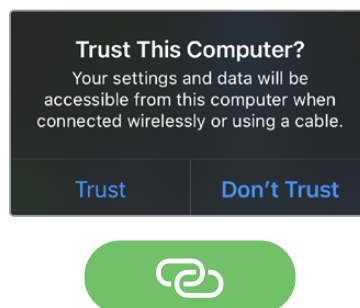
스마트폰을 사용한 스트리밍하기

Blackmagic 스트리밍 프로세서를 스마트폰 테더링을 통해 인터넷에 연결할 수 있습니다. 먼저, 스마트폰을 간단히 Blackmagic 스트리밍 프로세서의 전/후면에 있는 USB-C 포트에 연결하세요. 4G 또는 5G 스마트폰 셀룰러 연결이 가능한 곳이면 어디서든 신속하게 연결을 설정하고 스트리밍할 수 있습니다.



휴대폰 테더링 설정하기

- 1 사용하는 iOS 장치에서 설정 > 개인용 핫스팟으로 이동하여 '다른 사람의 연결 허용' 옵션을 켜세요.
- 2 연결된 컴퓨터를 신뢰하는지 묻는 메시지가 나타납니다. '신뢰'를 선택하면 초록색 테더링 아이콘이 화면에 나타나며 연결이 제대로 이루어졌음을 표시합니다.



테더링 기능이 활성화되어 있는 동안 초록색 배경 아이콘에 스마트폰 시계가 항상 나타납니다.

안드로이드 장치를 사용하는 경우, 화면을 쓸어 넘겨 킷 메뉴에 접속하세요. 핫스팟 아이콘을 길게 누른 다음, USB 테더링 기능을 켜세요.

정보 스트리밍이 끝나면 테더링 연결을 다시 꺼서 스마트폰의 배터리 수명을 절약하는 것이 좋습니다.

인터넷으로 라이브 스트리밍하기

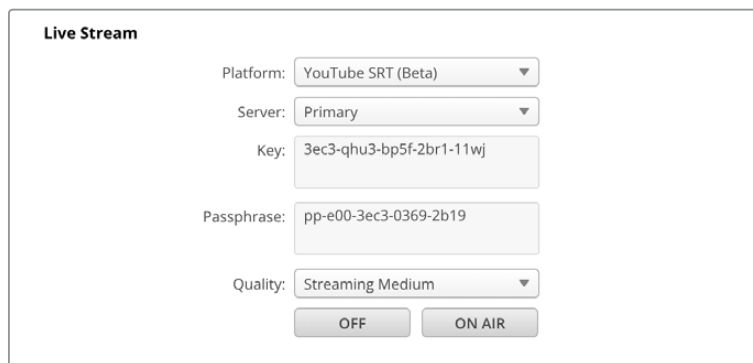
Blackmagic Streaming Encoder를 사용해 YouTube, Facebook, Twitch 등의 인터넷 스트리밍 플랫폼으로 바로 스트리밍할 수 있습니다. 아래에서는 Youtube Live로 스트리밍하는 경우를 설명합니다.

- 1 사용자의 YouTube Studio 계정에서 스트리밍 키를 복사하세요.
- 2 Blackmagic Streaming Setup을 시작하고 'Live Stream' 탭으로 이동하세요.
- 3 플랫폼을 'YouTube'로 설정하고 서버를 'Primary'로 설정하세요. 복사했던 스트리밍 키를 'Key' 필드에 붙여넣고 스트리밍 화질을 선택하세요. 'save' 버튼을 클릭하세요.
- 4 이제 전 세계 원하는 곳이 어디든 스트리밍할 수 있습니다! 'ON AIR' 버튼을 클릭하거나 전면 패널에 있는 ON AIR 버튼을 누르세요. 프로덕션을 완료한 후에는 OFF 버튼을 눌러 방송을 중지하세요.

SRT 스트리밍 프로토콜 사용하기

SRT(Secure Reliable Transport) 프로토콜은 RTMP에 비해 지연 현상이 낮은 스트리밍을 지원합니다. SRT는 또한 암호 키와 같은 패스프레이즈 사용을 통해 보안성을 향상시킵니다.

스트리밍 서비스에서 SRT 프로토콜 버전 선택 시, 사용하는 스트리밍 계정에서 패스프레이즈와 스트림 키를 복사하여 Blackmagic Streaming Setup의 'Key'와 'Passphrase' 입력란에 붙여넣으세요.



The image shows the 'Live Stream' configuration window in Blackmagic Streaming Setup. It contains the following fields and controls:

- Platform:** A dropdown menu set to 'YouTube SRT (Beta)'.
- Server:** A dropdown menu set to 'Primary'.
- Key:** A text input field containing the value '3ec3-qhu3-bp5f-2br1-11wj'.
- Passphrase:** A text input field containing the value 'pp-e00-3ec3-0369-2b19'.
- Quality:** A dropdown menu set to 'Streaming Medium'.
- Buttons:** Two buttons at the bottom, 'OFF' and 'ON AIR'.

유틸리티의 'Passphrase' 입력란에 패스프레이즈를 붙여넣으세요.

기술 관련 경력을 가진 방송국 관계자가 스트리밍 서비스 설정을 변경하려는 경우, XML 파일에서 프로토콜 RTMP 또는 SRT뿐만 아니라, 코덱 H.264 또는 H.265 또한 변경할 수 있습니다. 더욱 자세한 정보는 [Blackmagic Streaming XML Format]을 참고하세요.

웹캠 출력 사용하기

Microsoft Teams 또는 Zoom 같은 소프트웨어는 Blackmagic 웹캠 프로세서를 웹캠으로 자동 설정하기 때문에 프로그램을 시작하면 곧바로 스트리밍 영상이 나타납니다. 프로그램에서 Blackmagic Streaming Encoder 또는 Decoder를 자동으로 선택하지 않을 경우, 기기를 웹캠과 마이크로 사용할 수 있도록 수동 설정하세요.

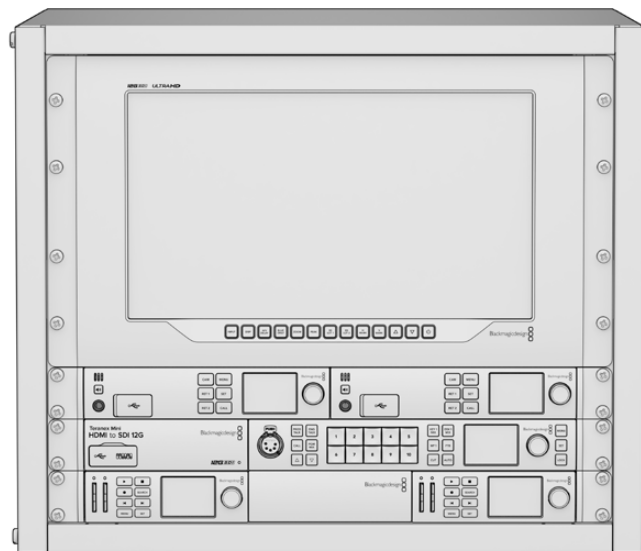
아래 예는 Microsoft Teams의 웹캠 설정 방법을 설명합니다.

- 1 Blackmagic 스트리밍 프로세서의 후면 패널에 있는 WEBCAM OUT 포트에 USB-C 케이블을 연결해 사용자 컴퓨터에 연결하세요
- 2 Teams 메뉴 바에서, '기본 설정'을 열고 '장치'를 선택하세요.
- 3 '오디오' 패널에서, '마이크' 메뉴를 클릭한 뒤, Blackmagic Design을 오디오 소스로 지정하세요.
- 4 '동영상 설정'으로 가서, '카메라' 메뉴에서 Blackmagic 스트리밍 프로세서를 선택하세요.

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelf는 1RU 크기의 선반으로, 다양한 종류의 Blackmagic Design 장비를 방송용 장비랙 또는 로드 케이스에 설치할 수 있습니다. 실용성과 휴대성을 제공하는 모듈식 디자인으로 1RU 크기 장비를 실용적인 이동식 셋업으로 설치할 수 있습니다.

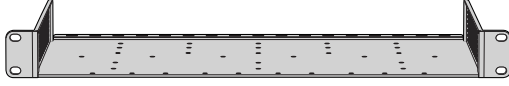
밑의 보기는 3개의 Universal Rack Shelf가 소형 장비랙에 설치되어 있으며, 내부에는 여러 대의 호환 장비가 설치되어 있는 모습입니다. 맨 아래 선반에는 제품 사이의 빈 공간을 채우기 위한 1/3 너비의 블랭킹 패널이 포함되어 있습니다.



구성품

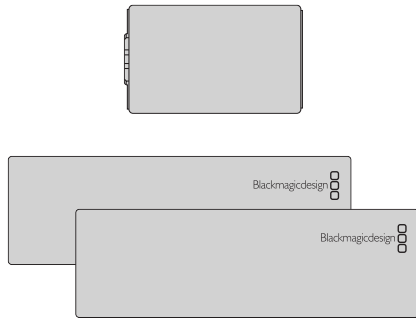
Universal Rack Shelf Kit의 구성 품목은 다음과 같습니다.

1 x Blackmagic Universal Rack Shelf



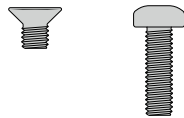
Blackmagic Design 장비 설치를 위한 전체 너비의 1RU 크기의 선반입니다.

블랭킹 패널



사용하지 않는 선반 공간을 가리기 위한 1개의 1/6 랙 너비 패널과 2개의 1/3 랙 너비 패널을 제공하는 블랭킹 패널입니다.

나사



12 x M3 5mm

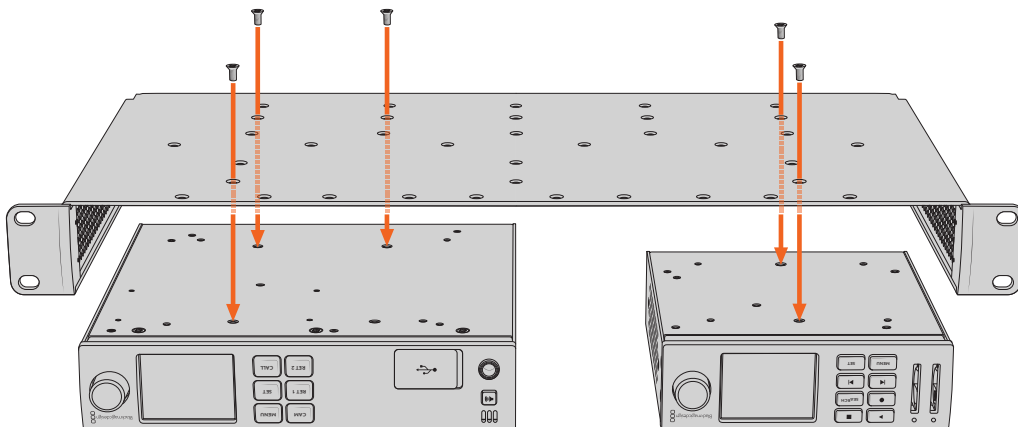
카운터싱크 마운팅 나사

2 x M3 9mm 접시머리

나사(1/6 블랭킹 패널용)

장비를 Rack Shelf에 설치하기

- 1 고무발이 부착된 경우 가장자리가 플라스틱인 스크래핑 도구를 사용하여 장비 밑면의 발을 제거하세요.
- 2 랙과 제품을 모두 뒤집은 다음, 랙에 있는 구멍과 Blackmagic Design 장비 밑면에 있는 나사 구멍이 일치하도록 정렬하세요. 1/3 너비의 장비에는 2개의 중앙 마운팅 포인트가 있고 이보다 더 큰 1/2 랙 너비 장비에는 최대 3개의 마운팅 포인트가 있습니다.

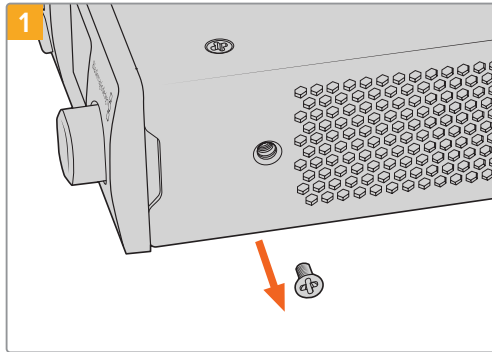


- 3 제품과 함께 제공된 M3 5mm 카운터싱크 나사를 사용해 장비를 설치하세요.
- 4 나사를 조인 후, 랙 선반을 다시 돌려 정위치로 놓고 함께 제공되는 랙 이어를 사용하여 랙 선반을 장비랙에 설치하세요.

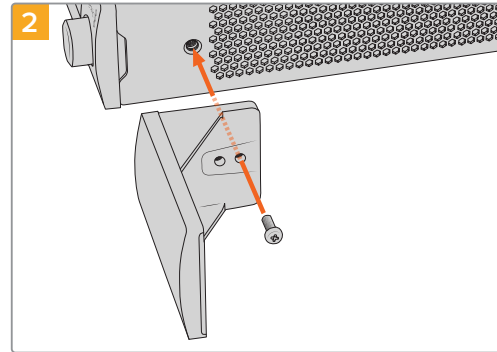
제공되는 블랭킹 패널은 사용하지 않는 선반 내 공간을 덮는 용도로 사용할 수 있습니다.

1/6 블랭킹 패널 장착하기

작은 1/6 블랭킹 패널은 1/2 및 1/3 랙 너비의 장비를 설치할 때 사용하지 않는 선반 공간을 채우는 데 사용할 수 있습니다. 이 패널은 장비 측면에 부착할 수 있습니다. 원활한 공기 흐름을 위해 장비 사이에 블랭킹 패널을 설치하는 것을 권장합니다.



기기 앞쪽에 있는 5mm M3 나사를 제거하세요.



구멍에 맞춰 블랭킹 패널을 정렬한 다음 제품과 함께 제공된 M3 9mm 나일론 나사를 사용해 장착하세요.

측면 1/3RU 블랭킹 패널 장착하기

대형 측면 1/3 블랭킹 패널은 여러 1RU 장비 설치 시, 랙 선반 측면에 바로 부착할 수 있습니다. 블랭킹 패널을 설치하려면 패널 바닥에 있는 나사 구멍과 고정점을 선반에 맞춰 함께 제공되는 M3 5mm 카운터싱크 나사 2개를 사용해 고정하세요.

개발자 정보

Blackmagic Streaming Encoder 이더넷 프로토콜

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```


Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

SHUTDOWN:↵

Action: Reboot↵

↵

ACK↵

↵

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

SHUTDOWN:↵

Action: Factory Reset↵

↵

ACK↵

↵

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

도움말

지원 받기

가장 빠르게 지원 받을 수 있는 방법은 Blackmagic Design 온라인 고객지원 페이지에 접속하여 Blackmagic 스트리밍 프로세서 관련 최신 지원 정보를 이용하는 것입니다.

Blackmagic Design 온라인 고객지원 페이지

Blackmagic 고객지원 센터(www.blackmagicdesign.com/kr/support)에서 최신 사용 설명서를 확인할 수 있습니다.

Blackmagic Design 포럼

저희 웹사이트에 있는 Blackmagic Design 포럼은 유용한 정보를 제공하는 곳으로, 방문을 통해 자세한 정보와 창의적인 아이디어를 얻을 수 있습니다. 또한 숙련된 사용자나 Blackmagic Design 직원들이 기존에 올려놓은 해결책을 통해 원하는 해답을 얻을 수도 있으므로 신속하게 도움을 받아 한 단계 성장할 수 있는 방법이기도 합니다. 포럼은 <http://forum.blackmagicdesign.com>을 방문해 이용할 수 있습니다

Blackmagic Design 고객 지원에 문의하기

고객 지원 페이지나 포럼에서 원하는 정보를 얻지 못한 경우에는 [이메일 보내기] 버튼을 클릭하여 지원 요청 이메일을 보내주세요. 다른 방법으로는 고객지원 페이지의 [지역별 고객 지원팀 찾기] 버튼을 클릭하여 가장 가까운 Blackmagic Design 고객지원 사무실에 문의하세요.

규제 사항



유럽 연합 국가 내의 전기전자제품 폐기물 처리.

제품에 부착된 기호는 해당 제품을 다른 폐기물과는 별도로 처리되어야 함을 나타냅니다. 제품을 폐기하려면 반드시 재활용 지정 수거 장소에 폐기해야 합니다. 폐기물 제품을 분리수거 및 재활용으로 처리하는 것은 자연 자원을 보전하고 인간의 건강과 환경을 보호할 수 있도록 폐기물을 재활용할 수 있는 방법입니다. 재활용을 위한 제품 폐기물 장소에 관한 자세한 정보는 해당 지역 시청의 재활용 센터 혹은 해당 제품을 구입한 상점으로 문의하세요.



본 제품은 테스트 결과 FCC 규정 제15항에 따라 A급 디지털 기기 제한 사항을 준수하는 것으로 확인되었습니다. 해당 제한 사항은 본 제품을 상업적 환경에서 사용할 시 발생할 수 있는 유해 혼선으로부터 적절한 보호를 제공하기 위함입니다. 이 제품은 무선 주파수를 생성 및 사용, 방출할 수 있습니다. 따라서 설명서의 안내에 따라 제품을 설치 및 사용하지 않을 시, 무선 통신을 방해하는 전파 혼선을 일으킬 수 있습니다. 해당 제품을 주거 지역에서 작동할 경우 유해 전파 혼선이 발생할 가능성이 있으며, 이 경우 사용자는 자체 비용으로 전파 혼선 문제를 해결해야 합니다.

제품 작동은 다음 두 가지 조건을 전제로 합니다.

- 1 본 기기는 유해 혼신을 일으키지 않습니다.
- 2 본 기기는 원치 않는 동작을 유발할 수 있는 혼신을 포함한 수신 되는 모든 혼신을 수용해야 합니다.



R-R-BMD-20201201001
R-R-BMD-20201201002



ISED 캐나다 성명

본 기기는 캐나다 표준 A급 디지털 장치 규정을 준수합니다.

정해진 사용 목적 이외의 다른 목적의 사용 또는 제품 변경은 표준 규정 위반으로 간주할 수 있습니다.

HDMI 인터페이스 연결 시에는 반드시 고품질의 실드 HDMI 케이블을 사용해야 합니다.

이 기기는 업무용 환경에서 사용할 목적으로 적합성 평가를 거쳤습니다. 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

안전 정보

본 장비는 반드시 보호 접지가 되어있는 메인 콘센트에 연결해야 합니다.

감전사고 위험을 줄이기 위해서 본 제품을 물이 튀거나 젖는 곳에 두지 마십시오.

본 장비는 주위 온도가 최대 40°C인 열대 지역에서 사용하기 적합합니다.

보관 온도 범위는 -20°C에서 60°C이며 상대 습도는 0% ~ 90% 비응결입니다.

공기가 잘 통할 수 있도록 제품을 통풍이 잘되는 곳에 둡니다.

장비랙에 제품을 설치할 시, 주변 장비가 제품 통풍에 방해가 되지 않도록 주의하세요.

제품 내부에는 사용자가 수리 가능한 부품이 없습니다. 제품 수리는 해당 지역 Blackmagic Design 서비스 센터에 문의하세요.



최대 작동 고도는 해수면 기준 2000m입니다.

캘리포니아주 성명

본 제품을 사용하는 사용자는 제품의 플라스틱 내 폴리브롬화 비페닐에 노출될 수 있으며 캘리포니아주에서는 해당 물질이 암, 선천적 결손증, 기타 생식기능의 손상을 유발하는 것으로 알려져 있습니다.

더욱 자세한 정보는 www.P65Warnings.ca.gov를 확인하세요.

보증

36개월 한정 보증

Blackmagic Design은 Blackmagic 스트리밍 프로세서 제품의 부품 및 공정 기술에 결함이 없음을 구매일로부터 36개월 동안 보증합니다. 그러나, 커넥터, 케이블, 광섬유 모듈, 퓨즈, 배터리의 부품 및 공정 기술에 대한 보증 기간은 구매일로부터 12개월입니다. 보증 기간 내에 결함이 발견될 경우, Blackmagic Design은 당사의 결정에 따라 무상 수리 또는 새로운 제품으로 교환해드립니다.

구매 고객은 반드시 보증 기간이 만료되기 전에 결함 사실을 Blackmagic Design에 통지해야 적절한 보증 서비스를 제공받을 수 있습니다. 구매 고객은 지정된 Blackmagic Design 서비스 센터로 결함 제품을 포장 및 운송할 책임이 있으며, 운송 비용은 선불로 지급되어야 합니다. 구매 고객은 또한 이유를 불문하고 제품 반송에 대한 운송료, 보험, 관세, 세금, 기타 비용을 부담해야 합니다.

이 보증은 부적절한 사용, 관리 및 취급으로 인한 파손, 고장, 결함에는 적용되지 않습니다. Blackmagic Design은 다음과 같은 경우에 보증 서비스를 제공할 의무가 없습니다. a) Blackmagic Design 판매 대리인이 아닌 개인에 의해 발생한 제품 손상. b) 부적절한 사용 및 호환하지 않는 장비와의 연결로 인한 제품 손상. c) Blackmagic Design사의 부품 및 공급품이 아닌 것을 사용하여 발생한 손상 및 고장. d) 제품을 개조하거나 다른 제품과 통합하여 제품 작동 시간 증가 및 기능 저하가 발생한 경우.

Blackmagic Design에서 제공하는 제품 보증은 다른 모든 명시적 또는 묵시적 보증을 대신합니다. Blackmagic Design사와 관련 판매 회사는 상품성 및 특정 목적의 적합성과 관련된 모든 묵시적 보증을 부인합니다. 구매 고객에게 제공되는 Blackmagic Design의 결함 제품 수리 및 교환 관련 책임은 BLACKMAGIC DESIGN 또는 판매 회사에서 관련 위험의 가능성에 대한 사전 통보의 여부와 관계없이 모든 간접적, 특별, 우발적, 결과적 손해에 대한 유일한 배상 수단입니다. Blackmagic Design은 장비의 불법적 사용과 관련하여 어떤 법적 책임도 지지 않습니다. BLACKMAGIC은 본 제품의 사용으로 인해 발생하는 손해에 대해서는 어떤 법적 책임도 지지 않습니다. 제품 사용으로 인해 발생할 수 있는 위험에 대한 책임은 본인에게 있습니다.

© Copyright 2025 Blackmagic Design. 모든 저작권은 Blackmagic Design에 있습니다. 'Blackmagic Design', 'DeckLink', 'HDLink', 'Workgroup Videohub', 'Multibridge Pro', 'Multibridge Extreme', 'Intensity', 'Leading the creative video revolution'은 모두 미국 및 기타 국가에 등록된 상표입니다. 다른 회사명 및 제품 이름은 관련 회사의 등록 상표일 수 있습니다.

Thunderbolt와 Thunderbolt 로고는 미국 및 기타 국가에서 등록된 Intel Corporation의 상표입니다.

Июнь 2025 г.

Руководство по установке и эксплуатации



Blackmagic Процессоры для стриминга



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Уважаемый пользователь!

Благодарим вас за покупку стримингового процессора Blackmagic Design.

Решение Blackmagic Streaming Encoder можно напрямую подключать к любому SDI-оборудованию, а также использовать для преобразования сигнала в формат H.264 или H.265 и потоковой трансляции на таких популярных платформах, как YouTube Live, Facebook Live и Twitch. Кроме того, для прямой передачи видео в вещательном качестве через Интернет в самые удаленные локации предусмотрено устройство Blackmagic Streaming Decoder.

Изображение, поступающее с Blackmagic Streaming Encoder на Blackmagic Streaming Decoder, можно преобразовать в SDI- или HDMI-видео. Дополнительно предусмотрена поддержка передачи сигналов Tally-индикации, интерком-связи и управления съемочной техникой, что повышает эффективность эфирного производства. Кроме того, модель Streaming Decoder обеспечивает декодирование потоков, поступающих с камер Blackmagic Design и видеомикшеров ATEM, оснащенных встроенной платформой стриминга.

В этом руководстве содержится вся информация, необходимая для установки процессоров и работы с ними.

Последнюю версию руководства и программного обеспечения для данных продуктов можно найти в разделе поддержки на нашем веб-сайте по адресу www.blackmagicdesign.com/ru. Чтобы узнавать о выходе обновлений, не забудьте зарегистрироваться при загрузке ПО.

Мы продолжаем работать над совершенствованием наших продуктов, поэтому ваши отзывы помогут нам сделать их еще лучше!

A stylized, handwritten signature in black ink that reads "Grant Petty".

Грант Петти

Генеральный директор компании Blackmagic Design

Содержание

Подготовка к работе	495	Работа с выходом для стриминга	523
Подключение питания	495	Полка Blackmagic Universal Rack Shelf	523
Подключение к компьютерной сети	496	Содержание	524
Подключение к источнику видео	496	Установка устройства на полке Universal Rack Shelf	524
Подключение монитора к решению Streaming Encoder	497	Порядок установки заглушки 1/6 RU	525
Подключение приемников видео	497	Порядок установки боковой заглушки 1/3 RU	525
Простой стриминг по сети	497	Developer Information	526
ЖК-дисплей	500	Blackmagic Streaming Encoder Ethernet Protocol	526
Значки соединения	501	Protocol Blocks	528
Мониторинг состояния на решении Streaming Encoder	501	Streaming Encoder Control REST API	538
Утилита Blackmagic Streaming Setup	506	Event Control API	540
Вкладка Live Stream («Потоковая трансляция»)	507	Livestream Control API	540
Вкладка Audio («Аудио»)	511	Monitor Output Control API	545
Вкладка Setup («Настройка»)	512	System Control API	546
Вкладка Stream Source Settings («Настройка источника стриминга»)	515	Notification websocket - 1.0.0 messages	548
Создание вещательных каналов	516	Device Properties	549
Создание XML-файла	517	Blackmagic Streaming XML Format	551
Экспорт XML-файла	517	Помощь	558
Загрузка XML-файла	519	Соблюдение нормативных требований	559
Tally-индикация, интерком-связь и управление камерой	519	Правила безопасности	560
Стриминг с помощью смартфона	521	Гарантия	561
Потоковая трансляция в Интернете	522		

Подготовка к работе

Чтобы начать работу с процессором, достаточно подключить питание, сетевой кабель, источники входящего сигнала и оборудование для его приема.



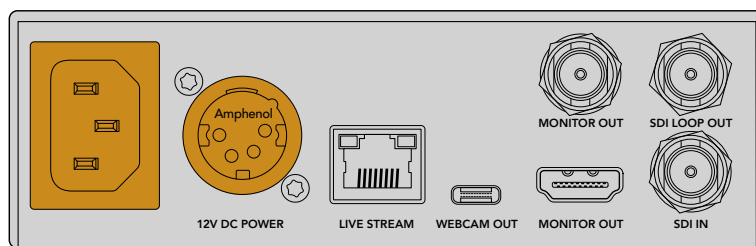
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

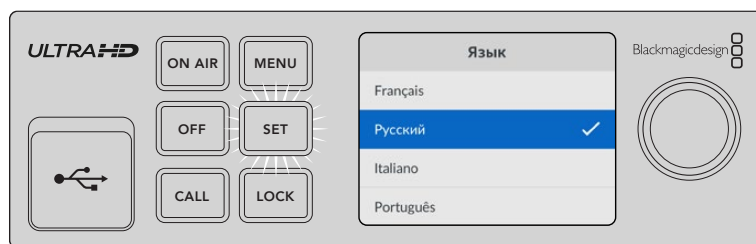
Подключение питания

Для энергоснабжения подключите силовой кабель по стандарту IEC к гнезду на задней панели процессора.



Модели Blackmagic Streaming Encoder и Streaming Decoder также оснащены входом питания 12 В постоянного тока. Его можно использовать для подключения соответствующих дополнительных источников (например, внешней батареи 12 В или блока бесперебойного энергоснабжения).

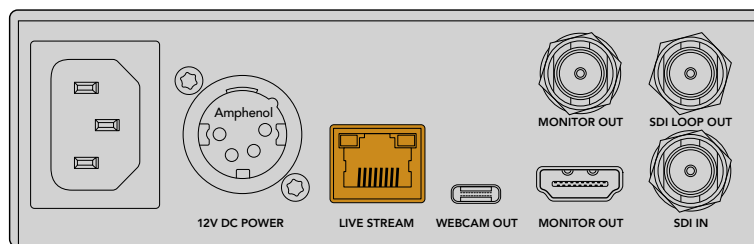
После подачи питания на ЖК-дисплее будет отображаться таблица со списком доступных языков. Выберите нужную опцию с помощью круглой ручки и нажмите мигающую кнопку SET.



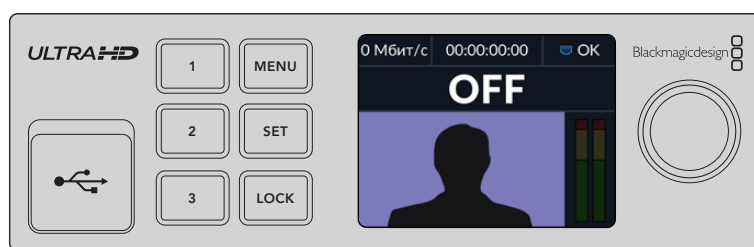
Нажмите кнопку SET, чтобы подтвердить сделанный выбор

Подключение к компьютерной сети

Чтобы получить доступ к сети или Интернету, подключите процессор кабелем к соответствующему маршрутизатору либо коммутатору через Ethernet-порт LIVE STREAM.



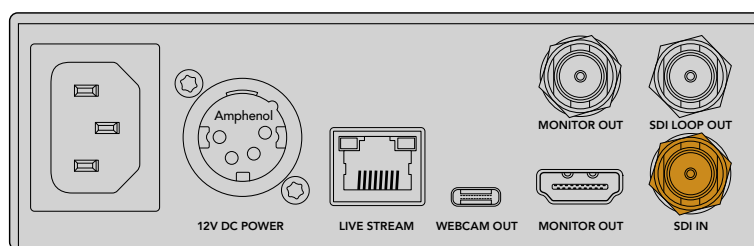
По умолчанию устройство использует протокол DHCP и должно обнаружить IP-адрес сразу. После успешного соединения синий значок Ethernet появится в правом верхнем углу начальной страницы ЖК-дисплея. Если необходимо подключиться через статичный IP-адрес, см. раздел «Утилита Blackmagic Streaming Setup» ниже.



Подключение к источнику видео

Соедините видеоисточник SDI, например камеру URSA Mini Pro 12K или SDI-микшер ATEM, с соответствующим входом на Blackmagic Streaming Encoder. Решение Streaming Encoder поддерживает технологию 12G-SDI и автоматически переключается между HD и Ultra HD вплоть до 2160p/60 при изменении поступающего видеосигнала.

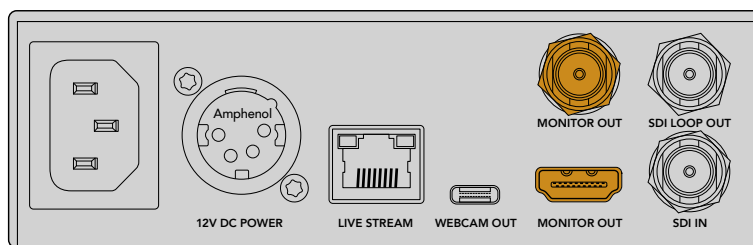
После успешного подключения на встроенном ЖК-дисплее появится изображение. Через SDI-вход видео передается вместе с аудиосигналом, который можно отслеживать с помощью индикаторов звука на ЖК-дисплее.



Подключите SDI-источник к соответствующему входу на решении Blackmagic Streaming Encoder

Подключение монитора к решению Streaming Encoder

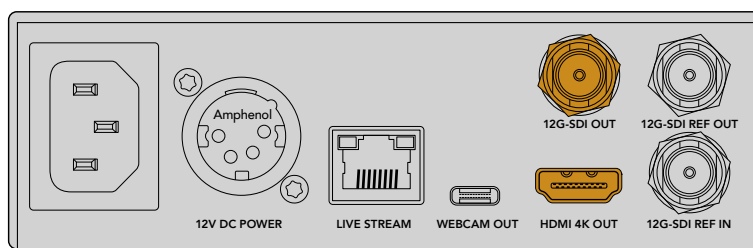
Подключите HDMI-телевизор или SDI-монитор к одному из выходов для мониторинга на задней панели устройства. Это позволит отслеживать трансляцию и просматривать важную информацию, в том числе статус эфира, скорость передачи данных и уровень звука. Подробнее см. соответствующий раздел ниже.



Подключите телевизор или монитор к решению Streaming Encoder, чтобы просматривать важную информацию

Подключение приемников видео

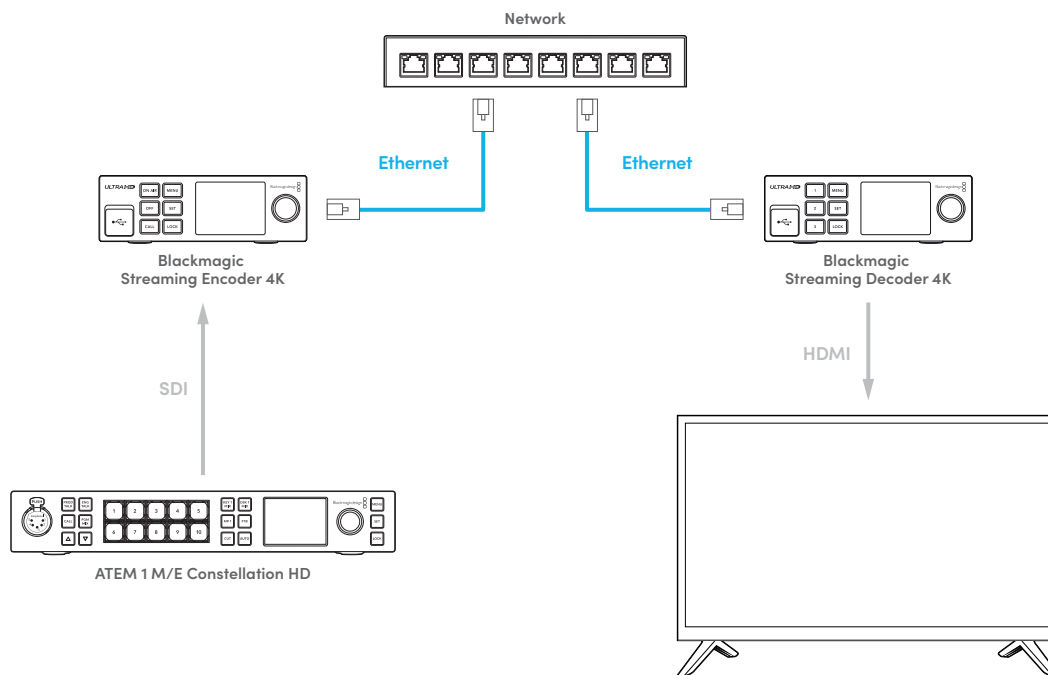
При работе с решением Blackmagic Streaming Decoder преобразованные потоки легко передать на соответствующие приемники, например SDI-микшер ATEM или HDMI-телевизор. Подключите первый из них к выходу 12G-SDI, а второй — к разъему HDMI.



Подключите приемники видео к разъему SDI или HDMI на процессоре

Простой стриминг по сети

После подключения для быстрой проверки оборудования можно выполнить простую передачу потока между решениями Blackmagic Streaming Encoder и Streaming Decoder по локальной сети. Это полезно, если необходимо организовать стриминг в конференц-зале или вывести изображение на видеопроектор в большом здании. Ниже показана базовая конфигурация с использованием микшера ATEM и HDMI-телевизора.



ЖК-дисплей процессора предназначен для вывода важной информации, а также мониторинга видео и аудио. Круглая ручка и кнопки меню обеспечивают быстрый доступ к настройкам устройства, что позволяет изменять его параметры и управлять трансляцией непосредственно с передней панели.

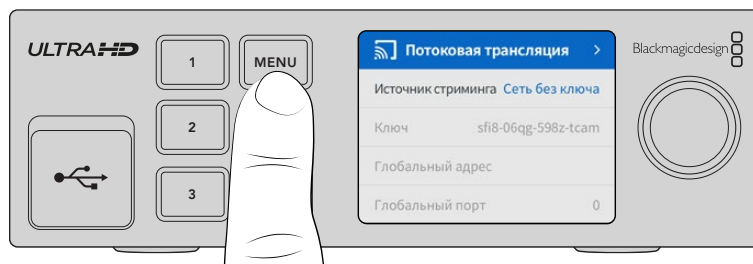
Нужные опции также можно задать с помощью утилиты Blackmagic Streaming Setup. Подробнее см. соответствующий раздел ниже.

Порядок настройки простого стриминга

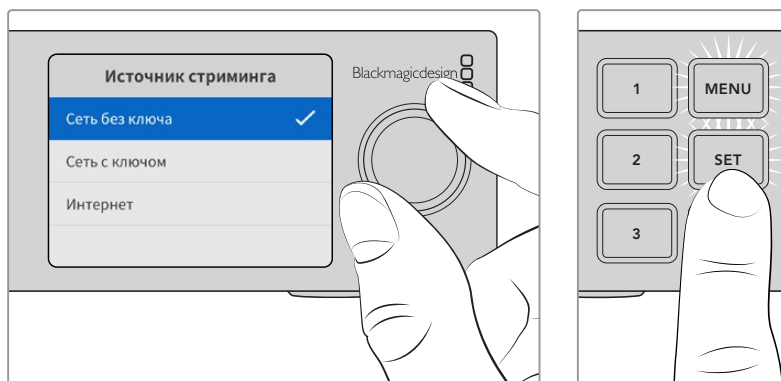
- 1 Подключите решения Blackmagic Streaming Encoder и Streaming Decoder к одному и тому же сетевому коммутатору.

СОВЕТ. Чтобы еще больше упростить конфигурацию, соедините устройства с помощью одного кабеля Ethernet.

- 2 Сначала нажмите кнопку MENU на процессоре Streaming Decoder, чтобы открыть меню настроек на ЖК-дисплее передней панели, затем — клавишу SET для перехода к разделу «Потоковая трансляция».

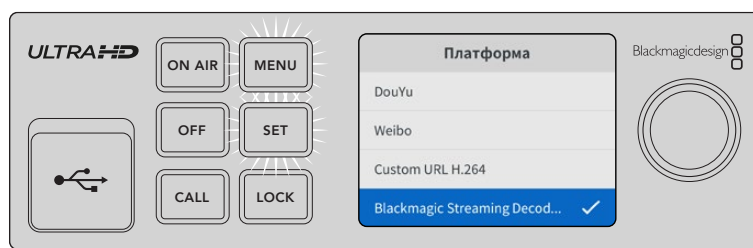


Поворотом круглой ручки выберите источник стриминга. Нажмите кнопку SET и задайте «Сеть без ключа». Еще раз нажмите SET, чтобы подтвердить выбор.



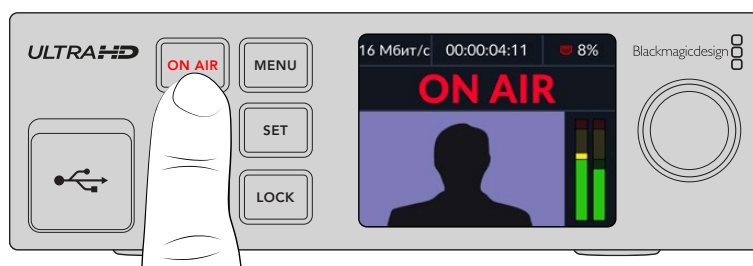
Для возврата к начальной странице используйте кнопку MENU.

- 3 На процессоре Streaming Encoder нажмите кнопку MENU, чтобы открыть раздел «Потоковая трансляция», нажмите клавишу SET и поверните ручку для перехода к настройкам платформы. Нажмите SET для выбора подменю.

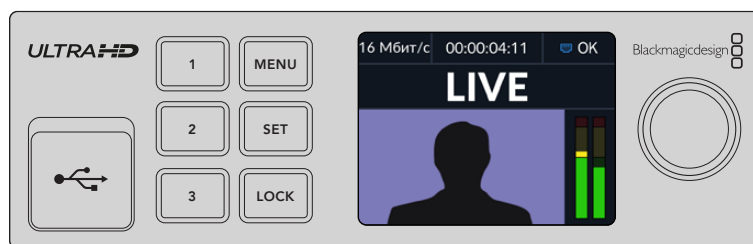


Выберите устройство Streaming Decoder из списка и нажмите клавишу SET. Для возврата к начальной странице нажмите кнопку MENU.

- 4 Нажмите кнопку ON AIR на передней панели устройства Streaming Encoder. Во время потоковой передачи кнопка будет светиться красным цветом, а на начальной странице ЖК-дисплея отобразится соответствующее сообщение.



На ЖК-дисплее процессора Streaming Decoder появится видео.



На ЖК-дисплее процессора Streaming Decoder отображается индикатор LIVE

Чтобы остановить потоковую передачу, нажмите кнопку OFF на передней панели модели Streaming Encoder.

СОВЕТ. Если кнопка ON AIR на решении Streaming Encoder мигает, запуск потоковой трансляции не удался, или она неожиданно прекратилась. Причиной этому может быть сбой интернет-соединения или неправильные настройки стриминга. Если нужно, проверьте их и внесите необходимые изменения.

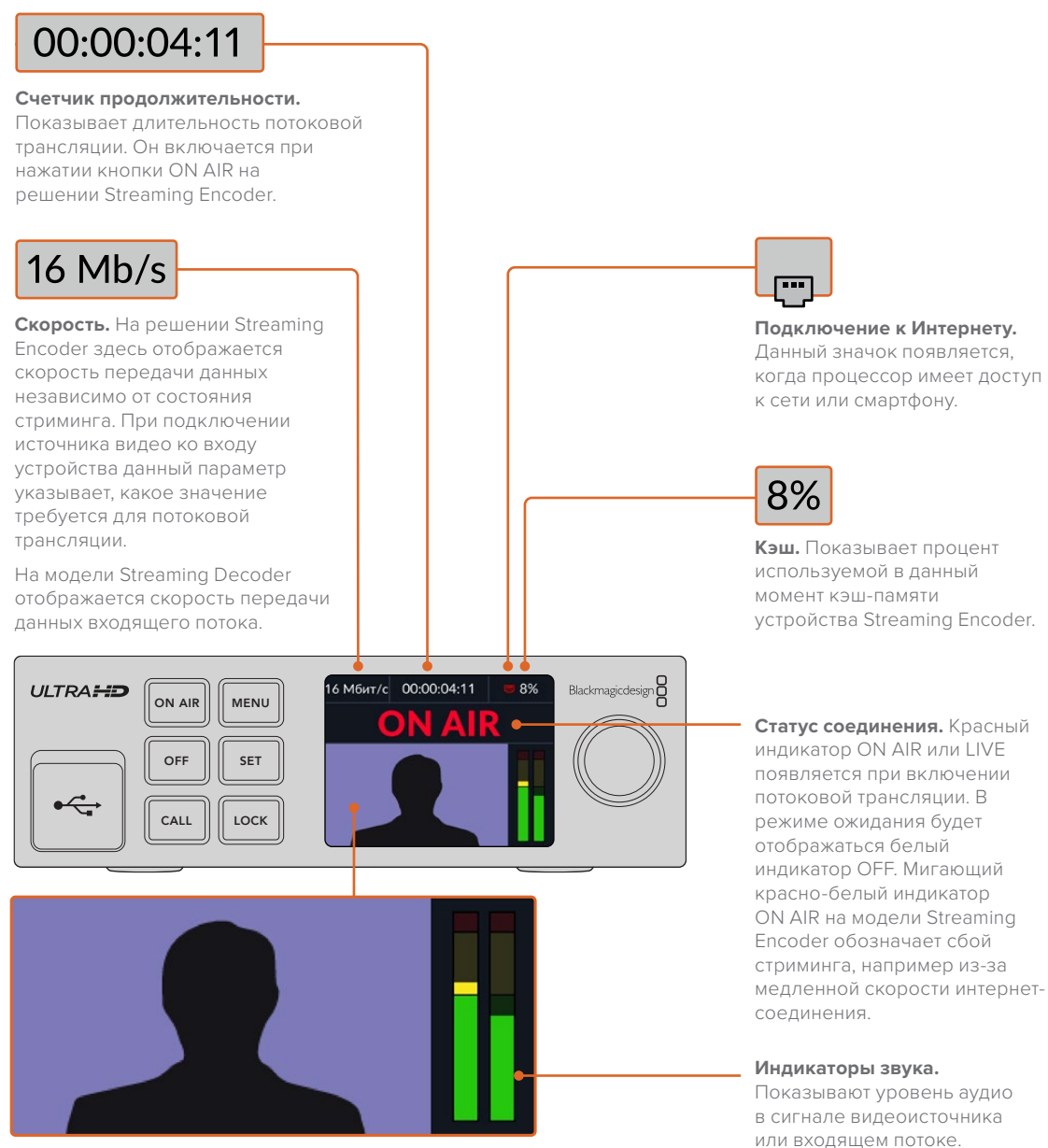
Кнопка LOCK

Чтобы заблокировать переднюю панель процессора, нажмите и удерживайте кнопку LOCK в течение одной секунды. Данная функция позволит избежать изменения настроек или прерывания трансляции в результате случайного нажатия кнопок или поворота круглой ручки.

Чтобы разблокировать панель, нажмите и удерживайте эту кнопку в течение двух секунд.

ЖК-дисплей

Начальная страница ЖК-дисплея служит для мониторинга видео и аудио, а также вывода важной информации о трансляции.



Мониторинг видео. Отображает источник, подключенный к решению Streaming Encoder, или входящий поток на модели Streaming Decoder.

Значки соединения

Значок соединения в правом верхнем углу ЖК-дисплея показывает текущее состояние подключения.



Синий значок разъема Ethernet показывает, что Ethernet-кабель подключен и этот порт будет использован для стриминга.



Красный значок разъема Ethernet на модели Streaming Encoder показывает, что через данный порт ведется потоковая трансляция.



Синий значок смартфона показывает, что он будет использован для подключения к Интернету и стриминга.



Красный значок смартфона на модели Streaming Encoder показывает, что через него ведется потоковая трансляция.

COBET. Если значок соединения не отображается, это означает, что процессор не подключен к сети или смартфону. В подобном случае начните с проверки кабелей.

Мониторинг состояния на решении Streaming Encoder

Выход для мониторинга позволяет выводить на дисплей входящий видеосигнал, индикаторы звука, состояние эфира и скорость передачи данных, а также степень заполнения кэш-памяти и служебную информацию, поступающую через порт SDI.



Выход для мониторинга обеспечивает вывод всей необходимой информации, в том числе скорости передачи данных и состояния кэш-памяти

Для упорядоченного вывода данных дисплей разбит на восемь секций. Описание информации, отображаемой в каждой из них, приведено ниже.

Окно источника

В основном окне отображается видео из источника, подключенного к порту SDI.



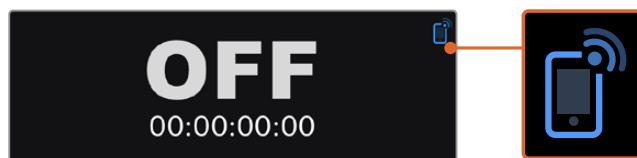
Индикатор эфира

Когда запись выключена, индикатор показывает OFF. Это означает, что устройство находится в режиме ожидания и готово к трансляции. Как только начинается стриминг, появляется красная надпись ON AIR. Она исчезает, когда вещание прекращается.



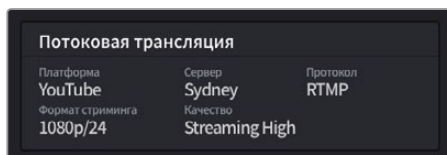
Под индикатором эфира находится счетчик продолжительности. Он включается при нажатии кнопки ON AIR.

Если устройство Streaming Encoder не передает сигнал в эфир, но подключено к Интернету через смартфон, в окне отображается надпись OFF, а в его верхнем углу появляется синий значок смартфона. При включении стриминга он становится красным.



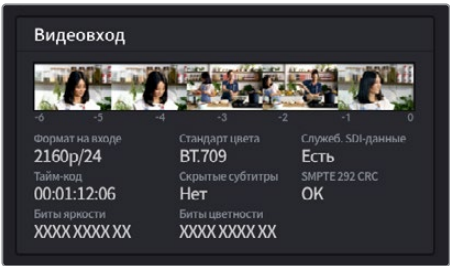
Потоковая трансляция

На этой панели отображается информация о настройках прямой трансляции, включая данные о стриминговой платформе, сервере, протоколе, а также параметрах разрешения и качества изображения.



Входящее видео

В верхней части этого окна приведены пять миниатюрных кадров (1,2 секунды каждый), показанных в предыдущие шесть секунд потоковой трансляции.

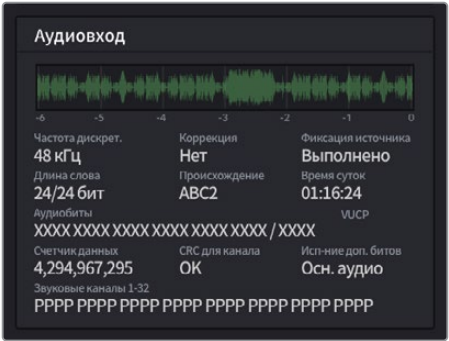


Под ними отображается подробная техническая информация об источнике видео, подключенном к SDI-входу на модели Streaming Encoder.

Формат на входе	Показывает разрешение и кадровую частоту видео, поступающего через SDI-вход. Модель Streaming Encoder поддерживает форматы вплоть до 2160p/60.
Стандарт цвета	Отображает цветовое пространство видео, поступающего через SDI-вход. Процессор Streaming Encoder поддерживает стандарты Rec.601, Rec.709 и Rec.2020.
Служебные SDI-данные	Показывает дополнительную информацию, поступающую вместе с SDI-видео. Сюда могут входить звук, тайм-код и скрытые субтитры. Если в сигнале такие данные присутствуют, в окне будет отображаться «Есть».
Тайм-код	Отображает тайм-код видео, поступающего через SDI-вход.
Скрытые субтитры	Если поступающий видеосигнал содержит скрытые субтитры, будет показан их формат (CEA-608 или CEA-708).
CRC для SMPTE 292	Функция для проверки наличия нарушений в видеосигнале, поступающем через SDI-вход. Если модель Streaming Encoder обнаруживает сбой, в окне отображается «Ошибка». Это обычно происходит из-за неисправного или слишком длинного SDI-кабеля.
Биты яркости и биты цветности	Данные индикаторы показывают состояние видеопотока, поступающего через SDI-вход. Каждая буква обозначает отдельный бит сигнала. X — постоянно меняющийся бит. L — низкий бит. H — высокий бит. Чтобы упростить информацию, смещения сигнала SDI вычитаются. Например, все биты являются низкими, когда изображение черное. Обычно, когда 10 битов видеосигнала представлены буквой X, это означает, что они все постоянно меняются. Если входящий SDI-поток является 8-битным, два правых бита будут показаны буквой L, поскольку не несут никакой информации. Когда бит представлен буквой L или H, хотя ожидается X, это означает, что бит «застрял». Такое может происходить при наличии сбоя в поступающем видеосигнале.

Аудиовход

В верхней части этого окна находится волновая диаграмма звука. Она показывает данные за последние шесть секунд потоковой трансляции. Они постоянно обновляются и перемещаются справа налево.

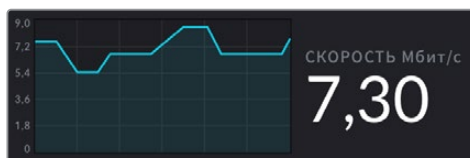


Под волновой диаграммой звука приведена подробная техническая информация о поступающем аудиосигнале.

Частота дискретизации	Показывает частоту дискретизации звука, встроенного в SDI-сигнал.
Коррекция	Указывает, применяется ли данная опция к исходному сигналу.
Фиксация источника	Показывает, привязана ли частота исходного звука ко внешнему опорному сигналу.
Длина слова	Отображает битовую глубину звука, встроенного в SDI-сигнал.
Происхождение	Эти четыре знака указывают происхождение канала.
Время суток	Независимый тайм-код.
Аудиобиты	Показывает состояние битов в звуковых сэмплах, встроенных в SDI-сигнал. Даже если указано, что аудиоканал является 16-, 20- или 24-битным, это будет подтверждено данным индикатором.
VUCP	Звуковые данные по VUCP: бит достоверности отсчета (V), бит данных пользователя (U), бит статуса канала (C) и бит четности (P).
Счетчик данных	Счетчик аудиоданных.
Использование дополнительных битов	Показывает, используются ли дополнительные биты в основном аудиоканале.
Звуковые каналы 1-32	Каждый знак обозначает аудиоканал, встроенный в сигнал на SDI-входе. Буква Р указывает на то, что данный канал используется, а символ "-" показывает, что звук отсутствует.

Индикатор скорости передачи данных

В этом окне отображается текущая скорость кодирования данных за последние 60 секунд. Она измеряется в мегабитах в секунду. Индикатор работает даже при выключенном эфире, что позволяет точно измерить пропускную способность перед началом вещания.



Индикатор кэш-памяти

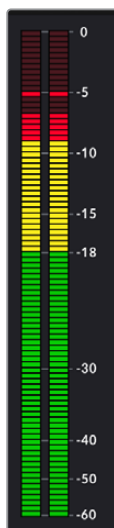
В этом окне отображается процент кэш-памяти решения Blackmagic Streaming Encoder, задействованной в данный момент, а на графике показан объем, использованный за последние 60 секунд. Кэш — это небольшая внутренняя память, которая постоянно записывает и воспроизводит программный контент. Она приходит на выручку в тех случаях, когда скорость передачи данных становится настолько низкой, что не в состоянии обеспечить устойчивую трансляцию видео.

Вследствие постоянного изменения активности сети и колебания силы беспроводного сигнала характеристики интернет-потока имеют переменный характер. Если скорость соединения становится слишком низкой, чтобы поддерживать вещание, объем данных в буфере увеличивается. Заполнение кэша на 100% негативно отразится на качестве видео, и этого по возможности следует избегать. Чтобы выполнить тестирование, можно подключить источник видео и понаблюдать за состоянием памяти без включения стриминга. Если значение часто приближается к 100%, переключитесь на более низкое качество изображения.



Индикаторы звука

Мониторинг уровня исходного аудиосигнала выполняют с помощью индикаторов звука. Для них в настройках решения Blackmagic Streaming Encoder можно выбрать шкалу PPM или VU. Если уровень аудио слишком высокий, загораются красные сегменты. Это может привести к искажению или клиппингу звука во время потоковой трансляции. Для получения оптимальных результатов значения должны находиться в пределах зеленого и желтого сегментов.



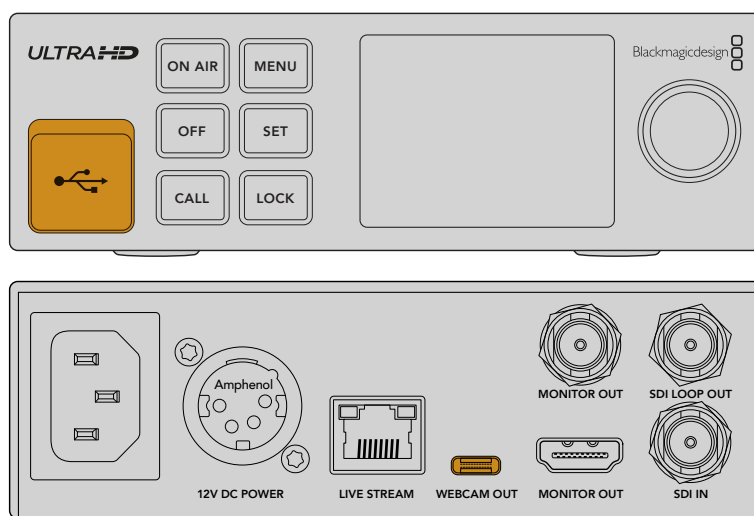
Утилита Blackmagic Streaming Setup

Данная программа позволяет менять опции, задавать сетевые параметры, обновлять внутреннее ПО стриминговых процессоров, а также сохранять и импортировать файлы с настройками.

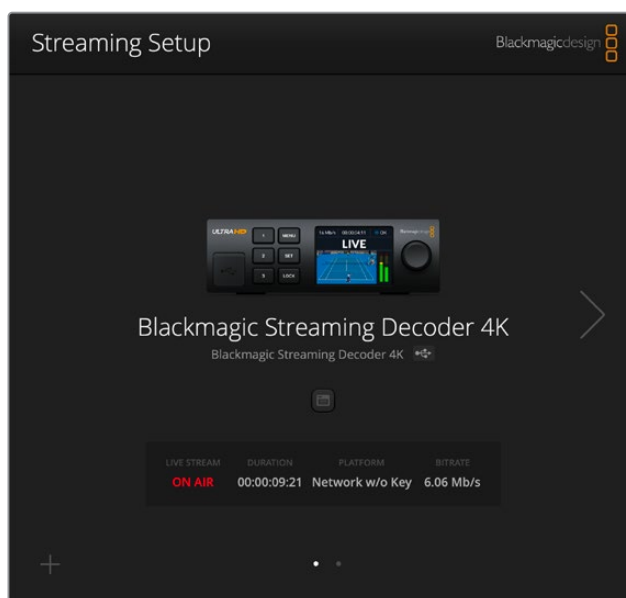
Последний релиз утилиты Blackmagic Streaming Setup доступен в центре поддержки на веб-сайте Blackmagic Design по адресу www.blackmagicdesign.com/ru/support.

Порядок работы с утилитой Blackmagic Streaming Setup

- 1 Подключите процессор к компьютеру через порт USB-C, расположенный на передней или задней панели.



- 2 Откройте утилиту Blackmagic Streaming Setup. Название подключенной модели будет отображено на начальной странице.
- 3 Чтобы открыть настройки, щелкните мышью по квадратному значку Setup или изображению стримингового процессора. Если к сети подключено несколько решений, используйте стрелки по бокам, чтобы перейти к нужному из них.



Вкладка Live Stream («Потоковая трансляция»)

Данная секция содержит все необходимые параметры для настройки трансляции с применением стримингового процессора.

Решение Blackmagic Streaming Encoder

Вкладка потоковой трансляции на этом процессоре включает параметры качества стриминга, выбор и конфигурацию платформы, а также опцию импорта XML-файла с настройками.

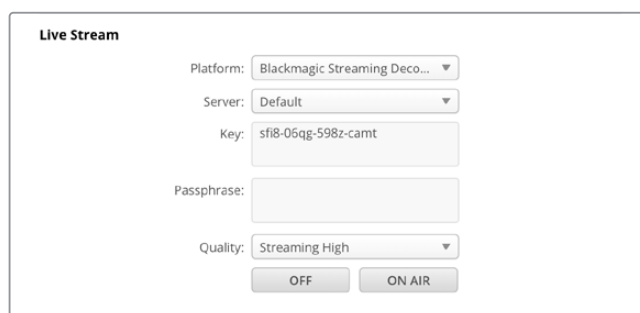
Video Output («Вывод видео»)



В меню Stream Standard можно задать разрешение видео для потоковой трансляции. Доступны значения от 720p/25 до 2160p/60.

Live Stream («Потоковая трансляция»)

Данное меню позволяет выбрать стриминговый сервис, а также задать настройки и качество трансляции.



Platform («Платформа»)

Данное меню позволяет выбрать стриминговый сервис для трансляции. Доступны Facebook, YouTube и Twitch. Если импортированы дополнительные настройки, они также будут отображены в списке платформ.

Чтобы выполнить потоковую передачу на пользовательский URL-адрес, выберите соответствующую опцию в меню Platform. Доступен вывод потока H.264 или H.265.

Server («Сервер»)

Укажите ближайший к вашему местоположению сервер. Доступные варианты будут зависеть от выбранной стриминговой платформы.

При потоковой передаче в Instagram, Microsoft Teams или на собственный URL-адрес список серверов можно отредактировать. Введите URL-адрес из учетной записи на стриминговой платформе или пользовательские данные.

Key («Ключ»)

Введите ключ трансляции, выданный стриминговой платформой.

Passphrase («Кодовая фраза»)

При использовании стримингового сервиса с протоколом SRT введите кодовую фразу, присвоенную учетной записью выбранной платформы.

Quality («Качество»)

Выберите качество трансляции. В таблицах ниже приводится скорость передачи данных для кодеков H.264 и H.265.

H.264	
HD	4K
HyperDeck High: от 45 до 70 Мбит/с	HyperDeck High: от 95 до 220 Мбит/с
HyperDeck Medium: от 25 до 45 Мбит/с	HyperDeck Medium: от 66 до 150 Мбит/с
HyperDeck Low: от 12 до 20 Мбит/с	HyperDeck Low: от 38 до 80 Мбит/с
Streaming High: от 6 до 9 Мбит/с	Streaming High: от 34 до 51 Мбит/с
Streaming Medium: от 4,5 до 7 Мбит/с	Streaming Medium: от 23 до 35 Мбит/с
Streaming Low: от 3 до 4,5 Мбит/с	Streaming Low: от 13 до 20 Мбит/с

H.265	
HD	4K
Streaming High: от 2,3 до 4,5 Мбит/с	Streaming High: от 22,5 до 30 Мбит/с
Streaming Medium: от 1,5 до 3 Мбит/с	Streaming Medium: от 14 до 20 Мбит/с
Streaming Low: от 0,8 до 2 Мбит/с	Streaming Low: от 8 до 10 Мбит/с

Скорость передачи данных меняется в зависимости от качества трансляции, заданного на устройстве Blackmagic Streaming Encoder. Например, если выбрана опция Streaming High и изображение выводится в 1080p/24, скорость будет составлять 6 Мбит/с.

Указанная в таблице скорость передачи данных при стриминге ниже по сравнению с показателями рекордера HyperDeck. Это объясняется тем, что при трансляции контента по Интернету пропускная способность сети не такая высокая, как при записи информации на диск.

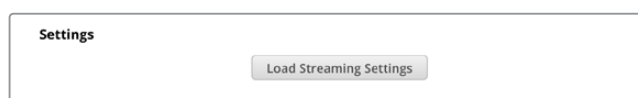
Как видно из приведенных данных, у каждого параметра есть нижняя и верхняя границы. Меньшее число используется для кадровых частот 24p, 25p и 30p, а большее — для 50p и 60p. По умолчанию применяется опция Streaming High, так как она позволяет вести стриминг очень высокого качества.

Кнопки OFF и ON AIR

Кнопка ON AIR позволяет начинать стриминг, а OFF — останавливать. Во время потоковой трансляции кнопка ON AIR горит красным цветом.

Settings («Настройки»)

Нажмите на кнопку Load Streaming Settings и следуйте инструкциям, чтобы загрузить XML-файл с решения Blackmagic Streaming Decoder.

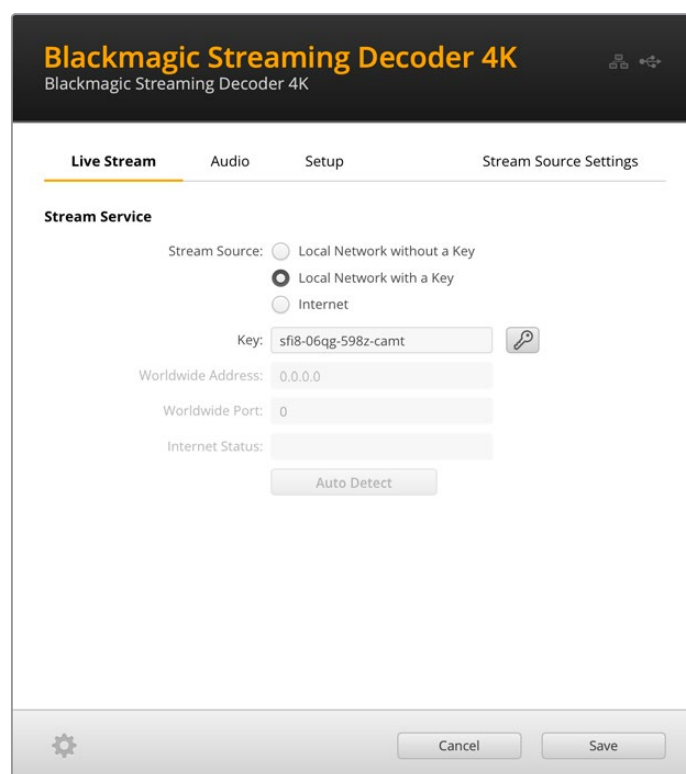


Remove Imported Settings («Удаление импортированных настроек»)

Чтобы удалить все импортированные настройки с решения Blackmagic Streaming Encoder, щелкните по значку шестеренки в левом нижнем углу вкладки Live Stream. Для подтверждения операции нажмите Remove.

Решение Blackmagic Streaming Decoder

На этом устройстве вкладка потоковой трансляции позволяет выбрать источник стриминга и задать настройки Интернет-соединения.



Stream Service («Платформа стриминга»)

В этом меню можно задать настройки при подключении решения Blackmagic Streaming Decoder в удаленном режиме к устройству Blackmagic Streaming Encoder, камере Blackmagic или микшеру АТЕМ со встроенной поддержкой стриминга.

Stream Source («Источник стриминга»)

Данные опции позволяют задать источник потокового сигнала и включают варианты Local Network Without a Key («Сеть без ключа»), Local Network With a Key («Сеть с ключом») и Internet («Интернет»).

Key («Ключ»)

Так как подключиться через меню к решению Blackmagic Streaming Decoder может кто угодно, рекомендуется сгенерировать код, защищающий трансляцию от несанкционированного доступа. Если позволить любому пользователю выбирать для своего источника доступные в сети решения, это приведет к хаосу.

Введение ключа трансляции помогает предотвратить неавторизованный доступ к решению Blackmagic Streaming Decoder. В утилите Blackmagic Streaming Setup есть соответствующее поле для создания кода, после чего подключение к процессору будет возможно только с его помощью.

Пароль можно ввести самому или использовать предусмотренную для этого в утилите кнопку специального генератора. Он создаст более надежную комбинацию. Затем данный пароль легко скопировать и отправить тем, кому разрешен доступ к трансляции. Только пользователи, указавшие его в настройках решения Blackmagic Streaming Encoder, камеры Blackmagic или видеомикшера ATEM, смогут подключиться к процессору Blackmagic Streaming Decoder.

Подключение к Интернету

На первом этапе нужно подключить решение Blackmagic Streaming Decoder к Интернету. Эта задача осложняется тем, что оно должно быть доступно для обнаружения на процессоре Blackmagic Streaming Encoder, камере Blackmagic или микшере ATEM, независимо от своего географического положения. Чтобы установить соединение между двумя устройствами, потребуется задать несколько дополнительных настроек.

Что потребуется

Прежде всего микшер ATEM, камеру или решение Blackmagic Streaming Encoder и процессор Blackmagic Streaming Decoder, на который будет поступать стриминговый сигнал, необходимо обеспечить выходом в Интернет. Для устройства декодирования также потребуется общедоступный фиксированный IP-адрес.

Проблема заключается в том, что решение Blackmagic Streaming Decoder находится в локальной сети Ethernet, но должно быть доступно для обнаружения в Интернете. Оно использует переадресацию порта в брандмауэре, чтобы обеспечить подключение к модели Streaming Encoder, камере или микшеру ATEM через интернет-соединение. Если не выполнить нужные действия, то эти устройства не смогут обнаружить друг друга.

Для этого необходимо обратиться к провайдеру или сетевому администратору, чтобы они задали настройку TCP port 1935 для переадресации порта на интернет-соединении. Решение Blackmagic Streaming Decoder также попытается задать необходимые параметры самостоятельно, поскольку в большинстве случаев брандмауэры поддерживают протоколы автоматического выполнения подобных действий. Вполне возможно, что при первоначальной конфигурации с помощью утилиты Blackmagic Streaming Setup и обмену данными между процессором и сетью будет сделано именно это.

Подтверждение доступа к Интернету

Внизу окна настроек есть поле Internet Status («Состояние Интернета»). Оно позволяет отслеживать состояние подключения к Интернету, когда выполняется попытка установить соединение между Blackmagic Streaming Decoder и глобальной сетью. Если отображается текст "Connected", процессор настроен для переадресации порта в конфигурации используемого оборудования и подключен к Интернету.

ПРИМЕЧАНИЕ. Открытие портов для наружного трафика может снизить защищенность сети. Если есть опасения по этому поводу, лучше обратиться в службу поддержки интернет-провайдера или к сетевому администратору.

Если поле Internet Status не содержит текста "Visible Worldwide", потребуется ручная настройка переадресации порта в брандмауэре. Некоторые брандмауэры не поддерживают автоматическую установку данного параметра, но ручной способ доступен во всех случаях.

Если у вас нет доступа к настройкам маршрутизатора или вы не знаете, как задать переадресацию порта, обратитесь в службу поддержки интернет-провайдера. В системах с большой инфраструктурой решить данную задачу и обеспечить отсутствие конфликтов в сети сможет сетевой администратор.

Состояние Интернета

Поле Internet Status позволяет отслеживать состояние подключения и идентифицировать потенциальные проблемы. Ниже перечислены возможные варианты и способы устранения ошибок.

Visible Worldwide	Подключение выполнено корректно и работает. Переадресация порта настроена, а решение Blackmagic Streaming Decoder готово к получению сигнала через Интернет.
No Internet Access	Решение Blackmagic Streaming Decoder не может выполнить подключение к Интернету. Необходимо проверить сетевые настройки и соединение.
Port Forwarding Error	Подключение к Интернету может быть выполнено, однако переадресация порта в брандмауэре через Blackmagic Streaming Decoder не настроена, поэтому решение недоступно для обнаружения в глобальной сети. Необходимо обратиться за помощью к сетевому администратору.
UPnP error	Решение Blackmagic Streaming Decoder не может выполнить переадресацию порта на интернет-маршрутизаторе. Необходимо обратиться к сетевому администратору или ознакомиться с документацией маршрутизатора для установки нужных настроек.

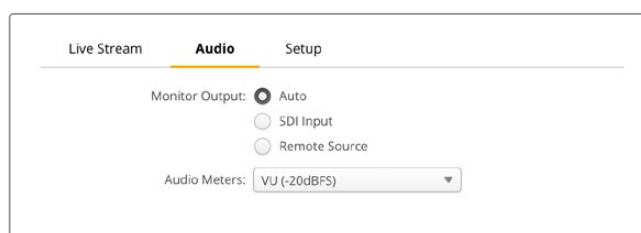
Auto Detect («Автообнаружение»)

Нажмите на кнопку Auto Detect для автоматического обнаружения настроек интернет-соединения.

Вкладка Audio («Аудио»)

Содержит параметры для настройки мониторинга аудиосигнала, индикаторов звука и интерком-связи на стриминговом процессоре.

Решение Blackmagic Streaming Encoder



Monitor Output («Вывод данных для мониторинга»)

В данном разделе можно выбрать источник звука, который выводят через SDI- или HDMI-выход мониторинга на решении Blackmagic Streaming Encoder.

Auto («Автоматически»)

Выбор данной опции позволяет автоматически определять и отслеживать на устройстве Streaming Encoder сигнал двусторонней связи, получаемый с видеомикшера ATEM через решение Blackmagic Streaming Decoder. Если он не обнаружен, будет использоваться звук со входа SDI.

SDI Input («Вход SDI»)

Данная опция позволяет отслеживать звук, поступающий через SDI-вход решения Streaming Encoder, например с подключенной камеры Blackmagic Studio.

Remote Source («Дистанционный источник»)

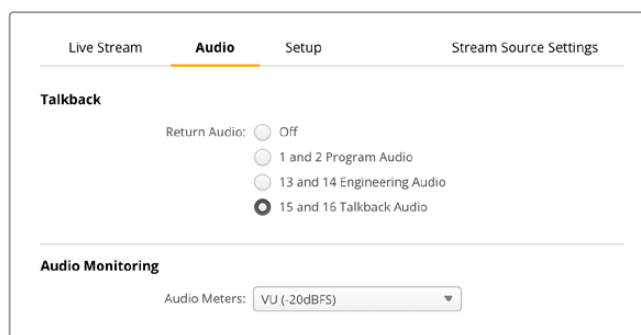
Используйте эту опцию для мониторинга сигнала интерком-связи, получаемого с удаленного видеомикшера ATEM или решения Blackmagic Streaming Decoder.

Audio Meters («Индикаторы звука»)

Позволяет задать опорную шкалу для измерения уровней. Можно выбрать VU -18 dBFS, VU -20 dBFS, PPM -18 dBFS или PPM -20 dBFS.

Решение Blackmagic Streaming Decoder

На этом процессоре вкладка аудио позволяет выбрать каналы интерком-связи и настроить индикаторы звука для ЖК-дисплея на передней панели.



Talkback («Интерком-связь»)

Данная настройка позволяет выбирать аудиоканалы, сигналы которых передаются на удаленный процессор Blackmagic Streaming Encoder. Доступные опции включают Off («Выкл.»), 1 and 2 Program Audio («1 и 2 (программа)»), 13 and 14 Engineering Audio («13 и 14 (техобеспечение)») плюс 15 and 16 Talkback Audio («15 и 16 (интерком)»).

Audio Monitoring («Мониторинг аудио»)

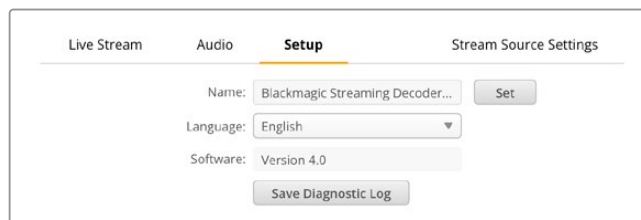
Позволяет задать опорную шкалу на ЖК-дисплее передней панели для измерения уровней звука. Можно выбрать VU -18 dBFS, VU -20 dBFS, PPM -18 dBFS или PPM -20 dBFS.

Вкладка Setup («Настройка»)

В этом меню можно присвоить имя устройству, изменить сетевые параметры или выполнить сброс к заводским настройкам. На решении Blackmagic Streaming Decoder также предусмотрены опции корректировки синхронизации и назначения выхода SDI.

Настройки идентификации

Используйте данные настройки, чтобы ввести имя и выбрать язык решения.



Ввод индивидуального значения помогает идентифицировать стриминговый процессор в сети, если к ней подключено более одного устройства. Оно также используется при определении сетевого адреса.

Кроме того, в данном разделе можно просмотреть текущую версию ПО.

Network Settings («Сетевые параметры»)

Network Location («Сетевой адрес»)

Расположение в сети — это имя стримингового процессора, которое отображается в списке. Его основой является пользовательское значение, указанное в верхней части утилиты. Стоит отметить, что числовые префиксы будут игнорироваться.

MAC Address («MAC-адрес»)

Отображает MAC-адрес стримингового процессора, который представляет аппаратный идентификатор, уникальный для каждого порта Ethernet. Это важно при настройке систем сетевой безопасности, ограничивающих доступ к устройствам на основе данной информации.

Protocol («Протокол»)

Настройки DHCP и Static IP позволяют определить, каким образом решение будет подключено к сети.

DHCP	Стриминговые процессоры по умолчанию применяют протокол динамической настройки узла DHCP, используемый сетевыми серверами для автоматического обнаружения устройства и присвоения ему IP-адреса. Данная функция, которой оснащено большинство компьютеров и сетевых маршрутизаторов, значительно облегчает подключение оборудования через Ethernet и не допускает конфликтов IP-адресов.
Static IP («Статический IP-адрес»)	Когда выбран статический IP-адрес, сетевые настройки можно задавать вручную. Чтобы между устройствами существовал канал связи, они должны иметь одинаковые настройки маски подсети и шлюза.

Если идентифицирующий компонент IP-адреса уже используется другим устройством компьютерной сети, из-за конфликта настроек подключение не будет выполнено. В этом случае необходимо изменить соответствующее поле в IP-адресе.

Например, если таким адресом является 192.100.40.30, замените последнее числовое поле на любое значение, кроме 30. В случае совпадения нового варианта с уже используемым продолжайте перебирать опции, пока не обнаружите уникальный номер.

Connection Priority («Приоритет подключения»)

При подключении процессора к сети Ethernet и мобильному телефону эта настройка позволяет выбрать способ передачи сигнала во время стриминга. Подробнее см. раздел «Стриминг с помощью смартфона».

Allow utility administration («Допуск к управлению утилитой»)

Активация настройки via USB позволяет регулировать параметры устройства только с компьютера, подключенного к нему через USB-интерфейс. Это устраняет риск случайного изменения настроек другими пользователями в сети.

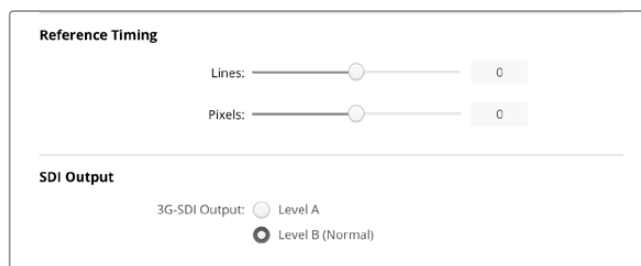
Reset («Сброс»)

Чтобы восстановить первоначальные параметры устройства, выберите опцию Factory Reset. После нажатия кнопки Set появится сообщение с просьбой подтвердить действие. Нажмите Reset.



Решение Blackmagic Streaming Decoder

В дополнение к идентификационным и сетевым настройкам на этой вкладке решения Blackmagic Streaming Decoder предусмотрены следующие параметры.



Reference Timing («Корректировка синхронизации»)

Эта настройка позволяет вручную устанавливать способ синхронизации — по строкам или по пикселям. Решение Blackmagic Streaming Decoder имеет аналоговый синхровход (Tri-Sync и Black burst), а также SDI-вход, который может служить для приема опорного сигнала. Синхронизация используется крупными вещательными компаниями, когда необходимо обеспечить согласование всех видеопотоков.

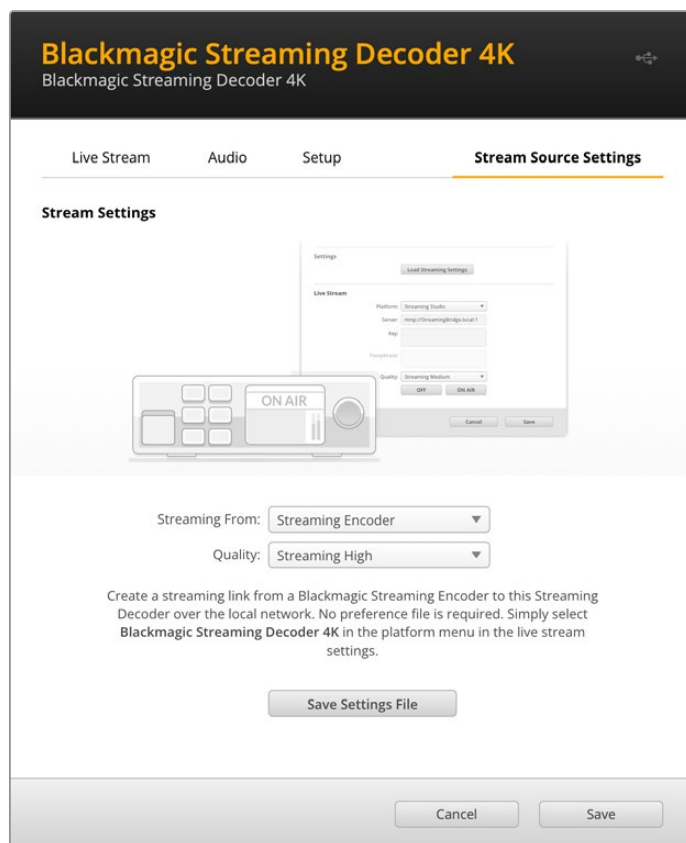
SDI Output («Выход SDI»)

При использовании интерфейса 3G-SDI некоторое вещательное оборудование поддерживает только один уровень — Level A или Level B. Для обеспечения совместимости с разной техникой выберите соответствующую настройку. По умолчанию используется опция Level B.

Вкладка Stream Source Settings («Настройка источника стриминга»)

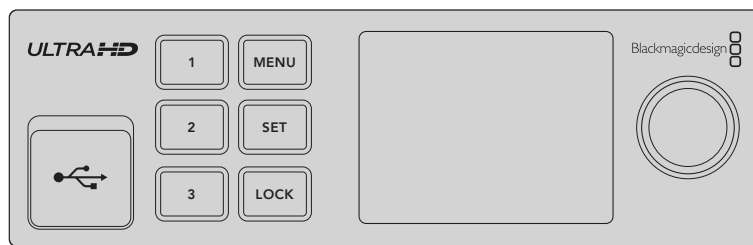
На этой вкладке решения Blackmagic Streaming Decoder можно создавать XML-файлы с настройками трансляции для импорта на удаленный процессор, камеру Blackmagic или микшер ATEM со встроенной поддержкой стриминга.

Подробнее об этом см. следующий раздел «Создание вещательных каналов».



Создание вещательных каналов

Стриминговые процессоры позволяют вести трансляцию по локальной сети или в любую точку мира по интернет-соединению.



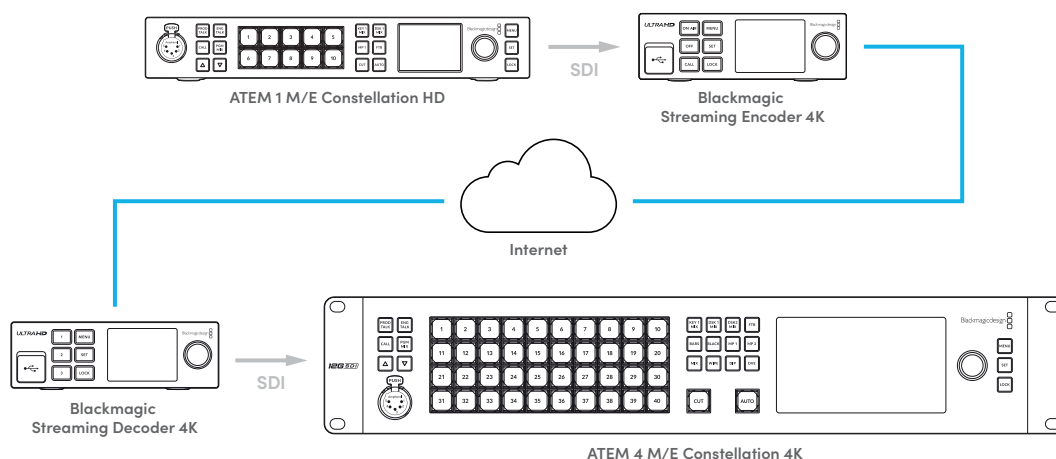
Если решения Streaming Decoder и Streaming Encoder подключены к одной сети, то первый из них появится в перечне платформ на вкладке потоковой трансляции утилиты Blackmagic Streaming Setup. Подробнее об этом см. раздел «Подготовка к работе».

Для стриминга через интернет-соединение или по локальной сети с помощью ключа трансляции с целью дополнительной защиты можно создать XML-файл с настройками для импорта на решение Blackmagic Streaming Encoder через утилиту Blackmagic Streaming Setup.

СОВЕТ. Экспортировать XML-файл с параметрами трансляции можно также на камеры Blackmagic и микшеры ATEM со встроенной поддержкой стриминга. Подробнее об импорте файлов с настройками см. руководство по эксплуатации камеры или микшера ATEM.

В качестве примера совместного использования стриминговых процессоров приведем передачу в студию сведений о погоде из удаленного места. Для этого на локации нужно иметь решение Streaming Encoder и доступ к Интернету. К нему можно подключиться через смартфон или по сети.

Находящееся в студии устройство Blackmagic Streaming Decoder принимает поступающий по Интернету поток и преобразует его в SDI-сигнал для передачи на основной видеомикшер.



Ниже описана конфигурация для такого примера.

- 1 Находящееся на локации устройство Blackmagic Streaming Encoder подключено к программному SDI-выходу на видеомикшере ATEM, например модели ATEM 1 M/E Constellation HD.
- 2 Затем решение Blackmagic Streaming Encoder подключают к смартфону.
- 3 Находящийся в студии процессор Blackmagic Streaming Decoder подключают к Интернету через Ethernet-интерфейс.
- 4 Решение Streaming Decoder 4K будет принимать поступающий по Интернету сигнал, преобразовывать и передавать его на SDI-вход студийного видеомикшера для трансляции в программе новостей.

Чтобы находящийся в студии процессор Streaming Decoder принимал по Интернету поток от решения Streaming Encoder, следует установить необходимые параметры с помощью утилиты Blackmagic Streaming Setup. Для этого также можно экспортировать XML-файл с настройками стриминга, который легко загрузить на Streaming Encoder по месту работы.

Создание XML-файла

Чтобы создать XML-файл с настройками, подключите процессор Streaming Decoder кабелем к сетевому маршрутизатору или коммутатору через Ethernet-порт LIVE STREAM.

С помощью кабеля USB-C соедините решение Streaming Decoder с компьютером и запустите утилиту Blackmagic Streaming Setup. На вкладке Live Stream подтвердите правильность сетевых настроек и в опциях Stream Service выберите Internet. В окне состояния будет отображаться сообщение "Visible Worldwide". Это значит, что подключение выполнено корректно. Подробнее см. соответствующую секцию в разделе «Утилита Blackmagic Streaming Setup».

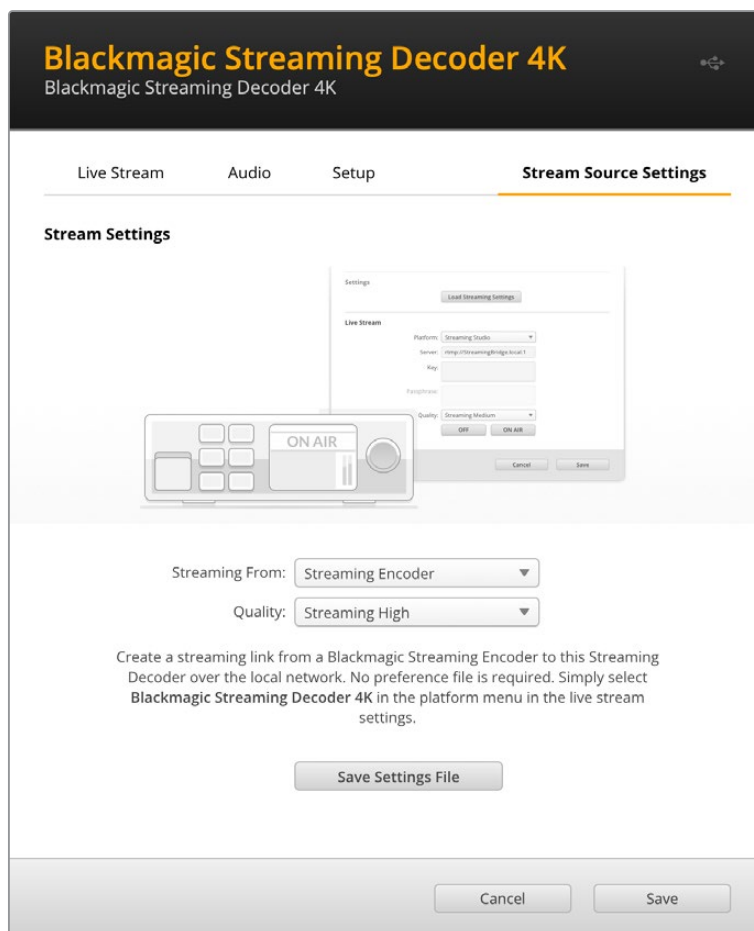
Примечание о переадресации порта

Если в окне состояния интернет-соединения отображается ошибка, связанная с переадресацией порта или UPnP, обратитесь к провайдеру услуг связи или системному администратору, чтобы установить настройку TCP port 1935.

Экспорт XML-файла

После подтверждения настроек на вкладке Setup утилиты Blackmagic Streaming Setup и успешного подключения процессора Streaming Decoder к локальной сети или Интернету можно выполнить экспорт XML-файла с конфигурацией параметров.

- 1 Щелкните на вкладке параметров источника стриминга в правом верхнем углу окна.



- 2 В меню Streaming from выберите Streaming Encoder.

Если XML-файл с настройками предназначен для камеры Blackmagic Design или видеомикшера ATEM со встроенной поддержкой стриминга, задайте там же ATEM switcher либо Blackmagic camera.

- 3 Выберите нужное качество стриминга. Эта настройка задает соответствующий параметр на удаленном процессоре Streaming Encoder.
- 4 Нажмите кнопку Save Settings File («Сохранить файл с настройками»), выберите расположение на компьютере для сохранения XML-файла и щелкните Save.

После сохранения файла отправьте его по электронной почте оператору процессора Blackmagic Streaming Encoder.

COBET. В утилите можно использовать настройки интерком-связи для выбора аудиоканалов, которые будут передаваться обратно на Streaming Encoder.

Загрузка XML-файла

На локации XML-файл с настройками стриминга можно получить по электронной почте и загрузить его на Streaming Encoder с помощью утилиты Blackmagic Streaming Setup. После этого для начала трансляции в студию сведений о погоде достаточно нажать кнопку ON AIR.

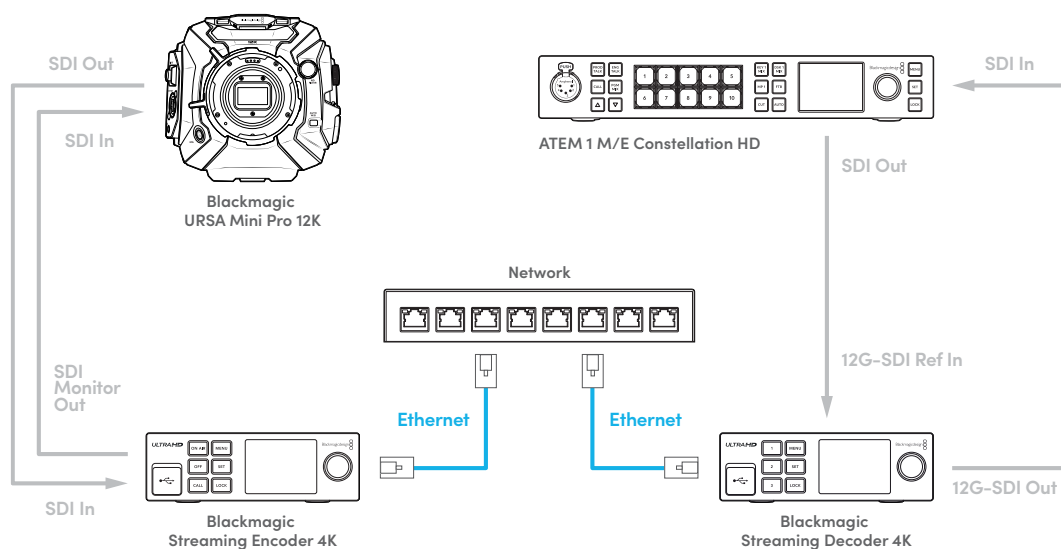
Следует отметить, что XML-файл с настройками стриминга требуется загрузить всего один раз, после чего трансляцию можно вести многократно. Это значительно облегчает установку постоянного видеоканала между процессорами Streaming Encoder и Streaming Decoder.

Если на находящемся в студии решении Streaming Decoder не менять настройки сети, стриминга и обнаружения устройства Streaming Encoder, связь с ним сохранится независимо от его месторасположения. Достаточно просто подключить процессор Streaming Encoder к Интернету, нажать кнопку ON AIR, и он сразу же начнет транслировать сигнал на Streaming Decoder.

Tally-индикация, интерком-связь и управление камерой

Стриминговые процессоры позволяют видеомикшерам ATEM передавать сигналы Tally-индикации, интерком-связи и управления съемочной техникой. Все эти функции будут доступны, если камеру Blackmagic Design с SDI-интерфейсом установить в любом месте локальной сети, а при подключении к Интернету — и в любой точке земного шара.

На рисунке ниже показана схема соединения модели URSA Mini Pro 12K с видеомикшером ATEM 1 M/E Constellation HD по локальной сети для передачи сигналов Tally-индикации, интерком-связи и управления камерой.



После соединения всех устройств между собой выполните описанные ниже действия.

- 1 Нажмите кнопку MENU на Blackmagic Streaming Encoder, чтобы открыть меню на ЖК-дисплее, и перейдите к настройкам потоковой трансляции.
- 2 Выберите решение Blackmagic Streaming Decoder в меню платформы.
- 3 Нажмите кнопку SET, чтобы подтвердить сделанный выбор.

Для работы Tally-индикации убедитесь в том, что идентификатор камеры на ATEM соответствует используемому ею входу микшера. Подробнее о настройке этого параметра см. руководство по URSA Mini.

Чтобы проверить работу Tally, переключите камеру для вывода сигнала на программный выход микшера АТЕМ. Если ее идентификатор на АТЕМ задан корректно, в это время зажжется соответствующий индикатор, в том числе красная окантовка на ЖК-дисплее камеры. При переходе в режим предварительного просмотра цвет изменится на зеленый.

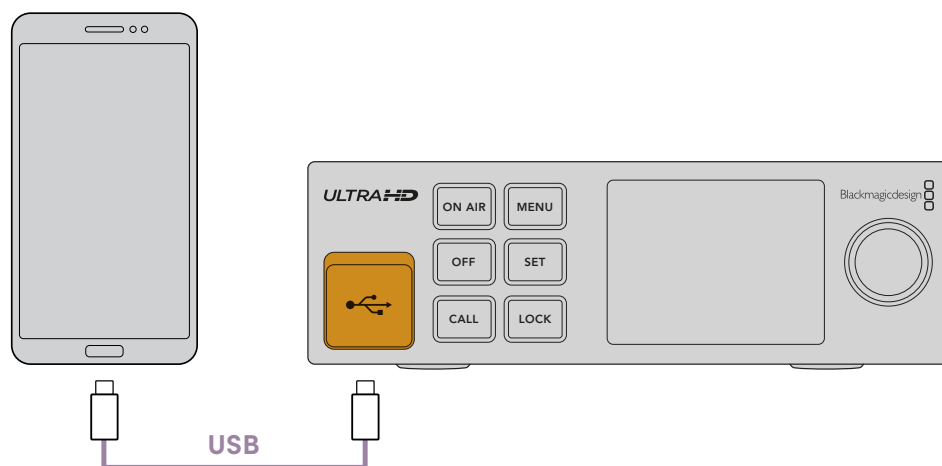
Чтобы проверить управление параметрами съемки, выполните регулировку диафрагмы и уровня черного на странице «Камера» в приложении АТЕМ Software Control.

По умолчанию для интерком-связи служат встроенные в SDI-сигнал аудиоканалы 15 и 16, но с помощью утилиты Blackmagic Streaming Setup вместо них можно задать использование инженерных каналов 13 и 14 или программного выхода.

При трансляции по Интернету XML-файл с конфигурацией настроек создается посредством утилиты Blackmagic Streaming Setup. Затем его загружают на Blackmagic Streaming Encoder, чтобы обнаружить процессор Blackmagic Streaming Decoder во всемирной сети. Подробнее о создании и загрузке XML-файла см. предыдущий раздел данного руководства.

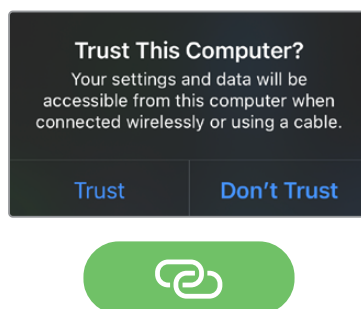
Стриминг с помощью смартфона

Процессоры можно подключить к Интернету с помощью смартфона. Для начала соедините его с портом USB-C на передней или задней панели устройства для стриминга. Наличие доступа к мобильной сети 4G или 5G позволит эффективно осуществлять вещание на мировую аудиторию из любой точки земного шара.



Подключение к Интернету с помощью мобильного телефона

- 1 На устройстве с операционной системой iOS откройте «Настройки» > «Режим модема» и активируйте опцию «Разрешать другим».
- 2 После этого появится сообщение с вопросом, можно ли доверять подключенному компьютеру. Выберите «Доверять», затем на экране появится зеленый значок модема. Таким образом можно убедиться, что соединение работает корректно.



Часы смартфона отображаются внутри зеленого значка модема, пока соответствующий режим активирован.

На устройстве с операционной системой Android откройте быстрое меню. Нажмите и удерживайте значок мобильной точки доступа. Затем активируйте опцию USB-модема.

СОВЕТ. После завершения стриминга рекомендуется выключить режим модема, чтобы сохранить заряд батареи смартфона.

Потоковая трансляция в Интернете

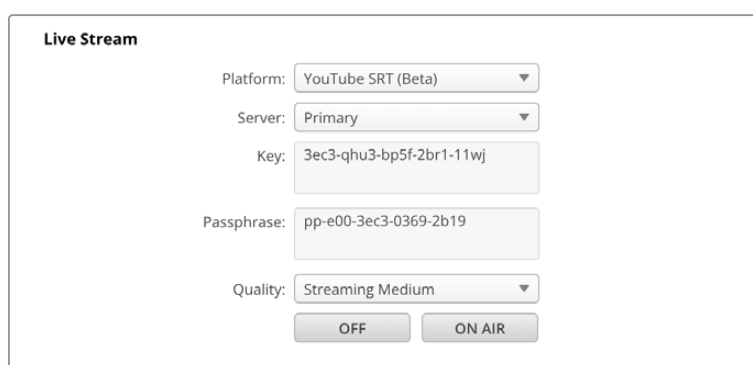
Решение Blackmagic Streaming Encoder можно использовать для потоковой трансляции на таких популярных платформах, как YouTube, Facebook и Twitch. В данном случае подготовим устройство для стриминга на сервисе YouTube Live.

- 1 Скопируйте ключ трансляции со своего аккаунта YouTube Studio.
- 2 Откройте утилиту Blackmagic Streaming Setup и перейдите на страницу Live Stream.
- 3 Выберите платформу YouTube и сервер Primary. Вставьте ключ трансляции YouTube в поле Key и укажите качество стриминга. Нажмите Save.
- 4 Все готово к началу потоковой трансляции. Нажмите кнопку ON AIR в диалоговом окне или на передней панели устройства. Для остановки вещания нажмите кнопку OFF.

Работа с протоколом SRT

Протокол SRT обеспечивает потоковую передачу со сниженной задержкой по сравнению с технологией RTMP, а также повышает общую безопасность за счет наличия кодовой фразы, которая используется как ключ шифрования.

При выборе версии протокола SRT стримингового сервиса скопируйте кодовую фразу и ключ трансляции из своей учетной записи. Затем вставьте эти данные в соответствующие поля в утилите Blackmagic Streaming Setup.



The screenshot shows the 'Live Stream' configuration window. It includes dropdown menus for 'Platform' (YouTube SRT (Beta)) and 'Server' (Primary). Text input fields for 'Key' (3ec3-qhu3-bp5f-2br1-11wj) and 'Passphrase' (pp-e00-3ec3-0369-2b19) are present. A 'Quality' dropdown is set to 'Streaming Medium'. At the bottom, there are 'OFF' and 'ON AIR' buttons.

Вставьте кодовую фразу в соответствующее поле в утилите

Как протокол RTMP или SRT, так и кодек H.264 либо H.265 можно изменить в XML-файле, если технические специалисты хотят самостоятельно настроить параметры стриминга. Подробнее см. соответствующий раздел.

Работа с выходом для стриминга

Программы типа Zoom и Microsoft Teams должны автоматически выбрать процессор в качестве источника сигнала. При запуске приложения сразу появится поступающее с устройства видео. Если это не происходит автоматически, установите использование модели в качестве веб-камеры и микрофона вручную.

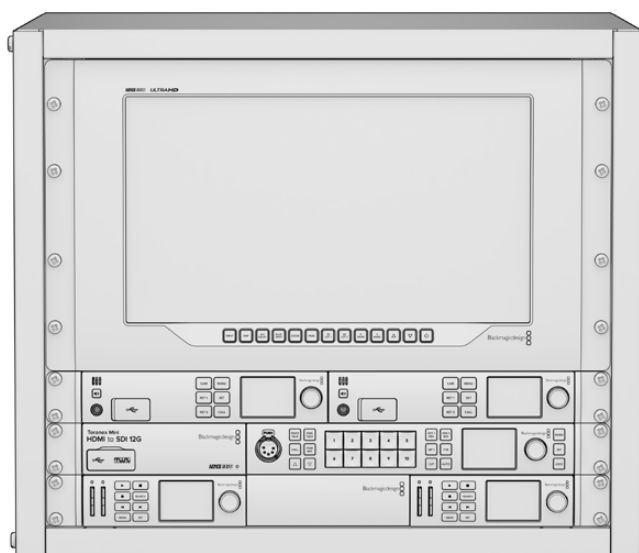
Ниже описан порядок настройки при работе с приложением Microsoft Teams.

- 1 С помощью кабеля USB-C подключите процессор к компьютеру через порт WEBCAM OUT на задней панели.
- 2 В меню приложения Teams откройте настройки и выберите устройства.
- 3 На панели аудио откройте меню микрофона и выберите Blackmagic Design в качестве источника звука.
- 4 Перейдите к параметрам видео и выберите процессор в соответствующем меню камеры.

Полка Blackmagic Universal Rack Shelf

Для установки оснащения Blackmagic Design в телекоммуникационную стойку или мобильный кейс можно использовать полку Blackmagic Universal Rack Shelf размером 1 RU. Ее модульный дизайн позволяет создавать портативные и практичные конфигурации оборудования на основе решений с подходящим форм-фактором.

На рисунке показаны три полки Universal Rack Shelf, размещенные в небольшой стойке, с установленной комбинацией совместимых между собой устройств. Нижняя из них включает в себя заглушку 1/3 RU для заполнения пустого пространства между модулями.



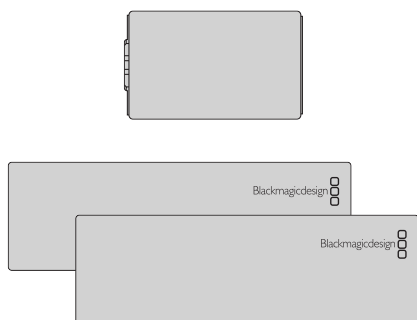
Содержание

Комплект Universal Rack Shelf Kit



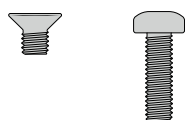
1 x Blackmagic Universal Rack Shelf

Полка шириной 1 RU для установки в стойку оборудования Blackmagic Design



Заглушки

1 x 1/6 RU и 2 x 1/3 RU для заполнения пустого пространства на полке



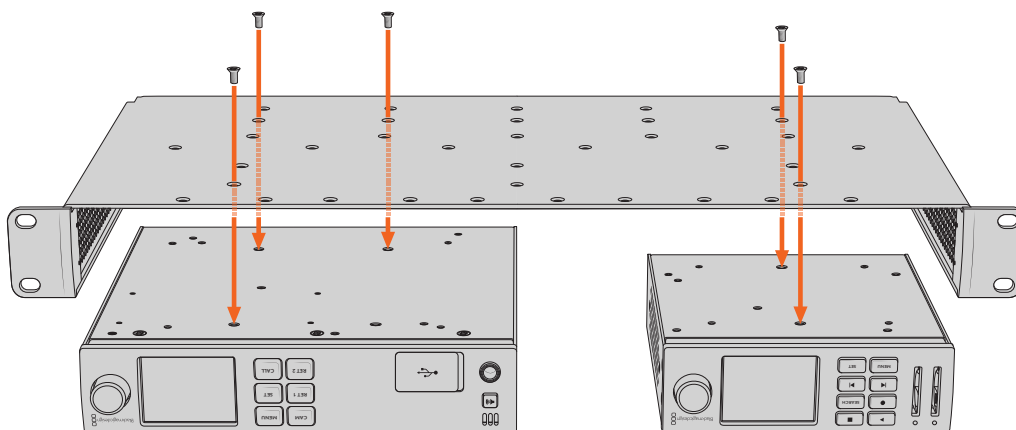
Винты

12 5-мм винтов М3
с утопленной головкой

Два 9-мм плоских
винта М3 для
заглушки 1/6 RU

Установка устройства на полке Universal Rack Shelf

- 1 Если в основании решения находятся резиновые вставки, снимите их с помощью скребка с пластиковыми краями.
- 2 Перевернув полку и устройство вверх дном, совместите предварительно просверленные отверстия полки с монтажными отверстиями в основании решения Blackmagic Design. На моделях шириной 1/3 RU предусмотрено две центральные точки крепления, а на устройствах 1/2 RU — до трех.

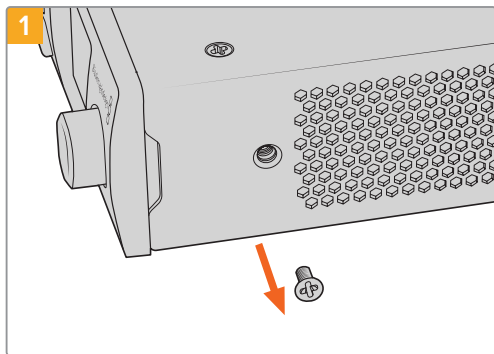


- 3 Используя прилагаемые 5-мм винты М3 с утопленной головкой, закрепите устройство на полке.
- 4 После этого переверните ее правой стороной вверх и установите в стойку с помощью соответствующих скоб.

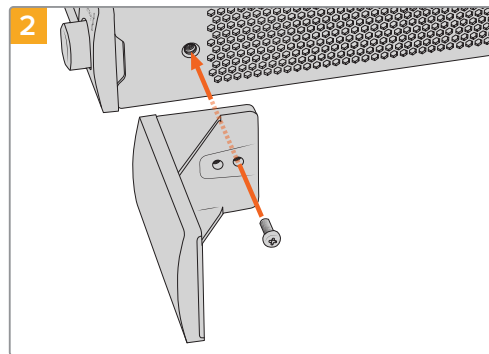
Заглушки, входящие в комплект поставки, можно использовать для заполнения пустого пространства между модулями.

Порядок установки заглушки 1/6 RU

Небольшая заглушка 1/6 RU предназначена для заполнения пустого пространства при установке в стойке решений шириной 1/2 RU и 1/3 RU. Ее можно закрепить с любой стороны нужного устройства. Для улучшения циркуляции воздуха рекомендуется размещать заглушку между модулями.



Извлеките 5-мм винт М3 сбоку от передней панели устройства



Выровняйте заглушку и закрепите ее с помощью прилагаемого 9-мм винта М3

Порядок установки боковой заглушки 1/3 RU

Большие заглушки шириной 1/3 RU можно установить с любой стороны полки при монтаже отдельных устройств. Для этого совместите отверстия под винты и точку крепления в основании заглушки с полкой, а затем закрепите конструкцию с помощью двух прилагаемых 5-мм винтов М3 с утопленной головкой.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```


Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```


Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```


Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Помощь

Как получить помощь

Самый быстрый способ получить помощь — обратиться к разделу поддержки на сайте Blackmagic Design и проверить наличие последних справочных материалов по стриминговым процессорам Blackmagic Design.

Раздел поддержки на сайте Blackmagic Design

Последнюю версию руководства можно найти в разделе поддержки Blackmagic Design на странице www.blackmagicdesign.com/ru/support.

Форум сообщества Blackmagic Design

Посетите форум сообщества Blackmagic Design на нашем веб-сайте, чтобы получить дополнительную информацию и узнать об интересных творческих идеях. На нем можно поделиться своими идеями, а также получить помощь от персонала поддержки и других пользователей. Адрес форума — <https://forum.blackmagicdesign.com>.

Обращение в службу поддержки Blackmagic Design

Если с помощью доступных справочных материалов и форума решить проблему не удалось, воспользуйтесь формой «Отправить нам сообщение» на странице поддержки. Можно также позвонить в ближайшее представительство Blackmagic Design, телефон которого вы найдете в разделе поддержки на нашем веб-сайте.

Соблюдение нормативных требований



Утилизация электрооборудования и электронной аппаратуры в Европейском Союзе

Изделие содержит маркировку, в соответствии с которой его запрещается утилизировать вместе с бытовыми отходами. непригодное для эксплуатации оборудование необходимо передать в пункт вторичной переработки. Раздельный сбор отходов и их повторное использование позволяют беречь природные ресурсы, охранять окружающую среду и защищать здоровье человека. Чтобы получить подробную информацию о порядке утилизации, обратитесь в местные муниципальные органы или к дилеру, у которого вы приобрели это изделие.



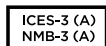
Данное оборудование протестировано по требованиям для цифровых устройств класса А (раздел 15 спецификаций FCC) и признано соответствующим всем предъявляемым критериям. Соблюдение упомянутых нормативов обеспечивает достаточную защиту от вредного излучения при работе оборудования в нежилых помещениях. Так как это изделие генерирует и излучает радиоволны, при неправильной установке оно может становиться источником радиопомех. Если оборудование эксплуатируется в жилых помещениях, высока вероятность возникновения помех, влияние которых в этом случае пользователь должен устранить самостоятельно.

До эксплуатации допускаются устройства, соответствующие двум главным требованиям.

- 1 Оборудование не должно быть источником вредных помех.
- 2 Оборудование должно быть устойчивым к помехам, включая те, которые могут вызвать сбой в работе.



R-R-BMD-20201201001
R-R-BMD-20201201002



Соответствие требованиям ISED (Канада)

Данное оборудование соответствует канадским стандартам для цифровых устройств класса А.

Любая модификация или использование изделия не по назначению могут повлечь за собой аннулирование заявления о соответствии этим стандартам.

Подключение к HDMI-интерфейсу должно выполняться с помощью качественного экранированного кабеля.

Данное оборудование протестировано по требованиям, предъявляемым к устройствам при работе в нежилых помещениях. При использовании в бытовых условиях оно может становиться источником помех для радиосигнала.

Правила безопасности

Электрическая розетка для подключения этого оборудования к сети должна иметь заземляющий контакт.

Чтобы минимизировать опасность поражения электрическим током, изделие необходимо защищать от попадания брызг и капель воды.

Допускается эксплуатация в условиях тропического климата с температурой окружающей среды до 40° С.

Устройство рекомендуется хранить при температуре от -20° С до 60° С и относительной влажности от 0% до 90% (без конденсации).

Для работы устройства необходимо обеспечить достаточную вентиляцию.

При установке в стойку убедитесь в том, что не нарушен приток воздуха.

Внутри корпуса не содержатся детали, подлежащие обслуживанию. Для выполнения ремонтных работ обратитесь в местный сервисный центр Blackmagic Design.



Допускается эксплуатация в местах не выше 2000 метров над уровнем моря.

Уведомление для жителей штата Калифорния

При работе с этим оборудованием существует возможность контакта с содержащимися в пластмассе микропримесями многобромистого бифенила, который в штате Калифорния признан канцерогеном и увеличивает риск врожденных дефектов и пороков репродуктивной системы.

Подробнее см. информацию на сайте www.P65Warnings.ca.gov.

Гарантия

Ограниченная гарантия сроком 3 года

Компания Blackmagic Design гарантирует отсутствие в стриминговых процессорах дефектов материала и производственного брака в течение 36 месяцев с даты продажи. Для разъемов, кабелей, охлаждающих вентиляторов, оптоволоконных модулей, предохранителей, клавиатуры и аккумуляторных батарей гарантия отсутствия дефектов материала и производственного брака составляет 12 месяцев с даты продажи. Если во время гарантийного срока будут выявлены дефекты, Blackmagic Design по своему усмотрению выполнит ремонт неисправного изделия без оплаты стоимости запчастей и трудозатрат или заменит такое изделие новым.

Чтобы воспользоваться настоящей гарантией, потребитель обязан уведомить компанию Blackmagic Design о дефекте до окончания гарантийного срока и обеспечить условия для предоставления необходимых услуг. Потребитель несет ответственность за упаковку и доставку неисправного изделия в соответствующий сервисный центр Blackmagic Design с оплатой почтовых расходов. Потребитель обязан оплатить все расходы по доставке и страхованию, пошлины, налоги и иные сборы в связи с возвратом изделия вне зависимости от причины возврата.

Настоящая гарантия не распространяется на дефекты, отказы и повреждения, возникшие из-за ненадлежащего использования, неправильного ухода или обслуживания. Компания Blackmagic Design не обязана предоставлять услуги по настоящей гарантии: а) для устранения повреждений, возникших в результате действий по установке, ремонту или обслуживанию изделия лицами, которые не являются персоналом Blackmagic Design; б) для устранения повреждений, возникших в результате ненадлежащего использования или подключения к несовместимому оборудованию; в) для устранения повреждений или дефектов, вызванных использованием запчастей или материалов других производителей; г) если изделие было модифицировано или интегрировано с другим оборудованием, когда такая модификация или интеграция увеличивает время или повышает сложность обслуживания изделия.

НАСТОЯЩАЯ ГАРАНТИЯ ПРЕДОСТАВЛЯЕТСЯ КОМПАНИЕЙ BLACKMAGIC DESIGN ВМЕСТО ЛЮБЫХ ДРУГИХ ПРЯМО ВЫРАЖЕННЫХ ИЛИ ПОДРАЗУМЕВАЕМЫХ ГАРАНТИЙ. КОМПАНИЯ BLACKMAGIC DESIGN И ЕЕ ДИЛЕРЫ ОТКАЗЫВАЮТСЯ ОТ ЛЮБЫХ ПОДРАЗУМЕВАЕМЫХ ГАРАНТИЙ КОММЕРЧЕСКОЙ ЦЕННОСТИ ИЛИ ПРИГОДНОСТИ ДЛЯ КАКОЙ-ЛИБО ОПРЕДЕЛЕННОЙ ЦЕЛИ. ОТВЕТСТВЕННОСТЬ BLACKMAGIC DESIGN ПО РЕМОНТУ ИЛИ ЗАМЕНЕ НЕИСПРАВНЫХ ИЗДЕЛИЙ ЯВЛЯЕТСЯ ПОЛНЫМ И ИСКЛЮЧИТЕЛЬНЫМ СРЕДСТВОМ ВОЗМЕЩЕНИЯ, ПРЕДОСТАВЛЯЕМЫМ ПОТРЕБИТЕЛЮ В СВЯЗИ С КОСВЕННЫМИ, ФАКТИЧЕСКИМИ, СОПУТСТВУЮЩИМИ ИЛИ ПОСЛЕДУЮЩИМИ УБЫТКАМИ, ВНЕ ЗАВИСИМОСТИ ОТ ТОГО, БЫЛА ИЛИ НЕТ КОМПАНИЯ BLACKMAGIC DESIGN (ЛИБО ЕЕ ДИЛЕР) ПРЕДВАРИТЕЛЬНО ИЗВЕЩЕНА О ВОЗМОЖНОСТИ ТАКИХ УБЫТКОВ. КОМПАНИЯ BLACKMAGIC DESIGN НЕ НЕСЕТ ОТВЕТСТВЕННОСТИ ЗА ПРОТИВОПРАВНОЕ ИСПОЛЬЗОВАНИЕ ОБОРУДОВАНИЯ СО СТОРОНЫ ПОТРЕБИТЕЛЯ И ЗА УБЫТКИ, ВОЗНИКАЮЩИЕ ВСЛЕДСТВИЕ ПРИМЕНЕНИЯ ЭТОГО ИЗДЕЛИЯ. РИСКИ, СВЯЗАННЫЕ С ЕГО ЭКСПЛУАТАЦИЕЙ, ВОЗЛАГАЮТСЯ НА ПОТРЕБИТЕЛЯ.

© Copyright 2025 Blackmagic Design. Все права защищены. Blackmagic Design, DeckLink, HDLink, Workgroup Videohub, Multibridge Pro, Multibridge Extreme, Intensity и "Leading the creative video revolution" зарегистрированы как товарные знаки в США и других странах. Названия других компаний и наименования продуктов могут являться товарными знаками соответствующих правообладателей.

Технология Thunderbolt и логотип Thunderbolt являются товарными знаками корпорации Intel в США и других странах.

Blackmagic Streaming Processor



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Benvenuta e benvenuto

Grazie per aver acquistato un Blackmagic Streaming Processor!

Blackmagic Streaming Encoder si collega direttamente a qualsiasi dispositivo SDI e converte il segnale in H.264 o H.265 per trasmettere in diretta sulle più importanti piattaforme di streaming, tra cui YouTube Live, Facebook Live e Twitch. Permette anche di trasmettere video professionale punto a punto mediante Blackmagic Streaming Decoder. In questo modo, trasmettere video professionale in località remote sarà facilissimo sfruttando la connessione a internet.

Blackmagic Streaming Decoder riceve un flusso da Blackmagic Streaming Encoder e lo converte in video SDI e HDMI, offrendo anche tally, talkback e controllo camera, ideale per le produzioni dal vivo. Inoltre, Streaming Decoder decodifica i flussi provenienti dalle camere Blackmagic e dagli switcher ATEM con funzionalità di streaming integrate.

Questo manuale contiene le informazioni necessarie per installare e utilizzare un Blackmagic Streaming Processor.

Le versioni più recenti di questo manuale e del software interno dei Blackmagic Streaming Processor sono disponibili alla pagina Supporto del nostro sito www.blackmagicdesign.com/it. Quando scarichi il software, registra i tuoi dati personali per stare al passo con gli aggiornamenti che rilasciamo.

Siamo sempre al lavoro su nuove funzioni e miglioramenti, e ti invitiamo a condividere con noi le tue idee!

A stylized, handwritten signature in black ink that reads "Grant Petty".

Grant Petty

AD Blackmagic Design

Indice

Operazioni preliminari	565	Usare l'uscita webcam	593
Collegare l'alimentazione	565	Blackmagic Universal Rack Shelf	593
Connettersi a una rete	566	Contenuto	594
Connettere una sorgente video	566	Installare un dispositivo sulla mensola	594
Connettere un monitor a Streaming Encoder	567	Installare il pannello di copertura 1/6	595
Connettere destinazioni video	567	Installare il pannello di copertura 1/3	595
Streaming tramite una rete	567	Informazioni per gli sviluppatori (inglese)	596
Display LCD	570	Blackmagic Streaming Encoder Ethernet Protocol	596
Icone di connessione	571	Protocol Blocks	598
Uscita Monitor di Streaming Encoder	571	Streaming Encoder Control REST API	608
Blackmagic Streaming Setup	576	Event Control API	610
Live Stream	577	Livestream Control API	610
Audio	581	Monitor Output Control API	615
Setup	582	System Control API	616
Stream Source Settings	585	Notification websocket - 1.0.0	618
Creare collegamenti broadcast	586	messages	618
Creare un file XML	587	Device Properties	619
Esportare un file XML	587	Blackmagic Streaming XML Format	621
Caricare un file XML	589	Assistenza	628
Talkback, Tally e Controllo Camera	589	Normative	629
Streaming con lo smartphone	591	Sicurezza	630
Diretta streaming su internet	592	Garanzia	631

Operazioni preliminari

Per iniziare a usare Blackmagic Streaming Processor basta collegare l'alimentazione e un cavo di rete, e connettere le sorgenti e le destinazioni video.



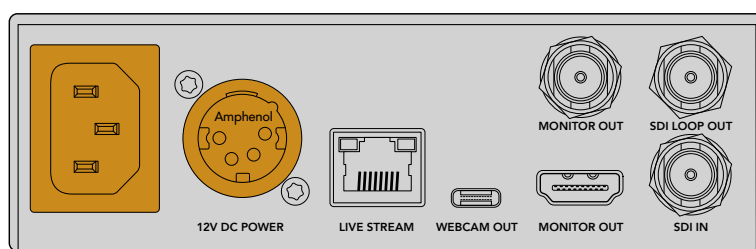
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

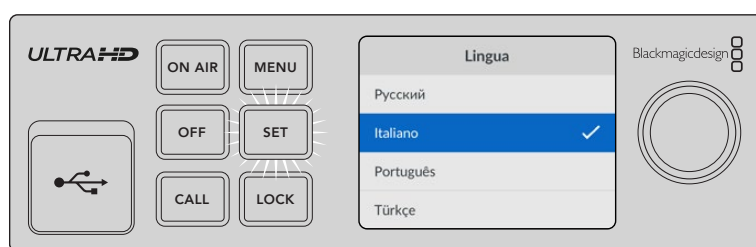
Collegare l'alimentazione

Per alimentare il dispositivo, inserisci un cavo IEC standard nell'apposita porta sul retro del processore di streaming.



Sia Blackmagic Streaming Encoder sia Streaming Decoder offrono un ingresso di alimentazione 12V DC aggiuntivo a cui puoi collegare una fonte di alimentazione esterna o di riserva, per esempio un gruppo statico di continuità (UPS) o una batteria 12V.

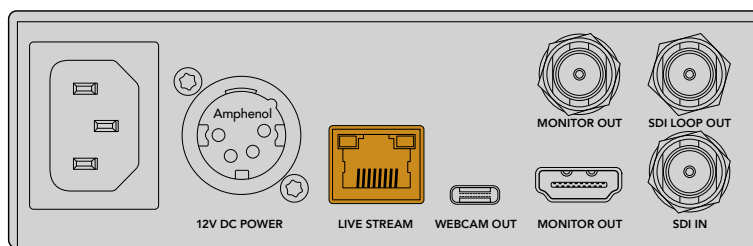
All'accensione, il display LCD sul pannello frontale suggerisce di selezionare una lingua. Ruota la manopola per scorrere tra le opzioni disponibili e premi il pulsante SET lampeggiante.



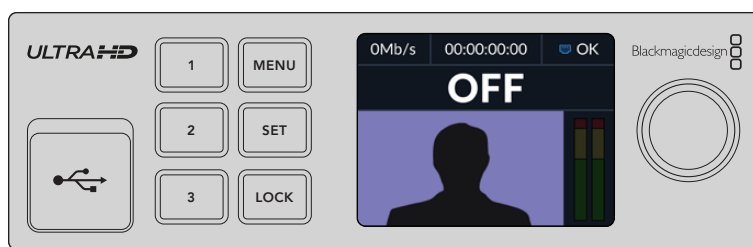
Premi il pulsante SET per confermare la lingua selezionata

Connettersi a una rete

Collega Blackmagic Streaming Processor alla tua rete o a internet con un cavo di rete dalla porta ethernet Live Stream a un router o a uno switch di rete.



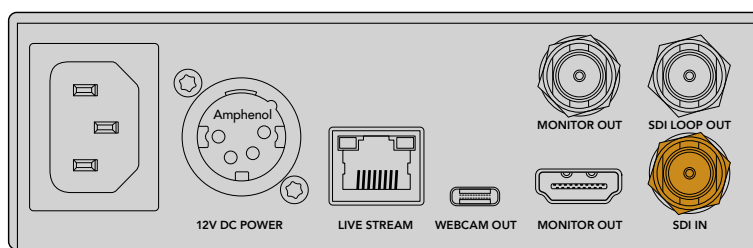
Di default, Blackmagic Streaming Processor è impostato su DHCP e dovrebbe trovare subito un indirizzo IP. Una volta connesso, vedrai un'icona blu della connessione ethernet nell'angolo in alto a destra della schermata principale del display LCD. Se hai bisogno di collegarti tramite un indirizzo IP statico, consulta "Blackmagic Streaming Setup" per tutti i dettagli.



Connettere una sorgente video

Connetti la sorgente video SDI che intendi trasmettere in streaming, per esempio una Blackmagic URSA Mini Pro 12K o uno switcher ATEM SDI all'ingresso SDI di Blackmagic Streaming Encoder. Blackmagic Streaming Encoder supporta il 12G-SDI e commuta automaticamente tra HD e Ultra HD fino al 2160p60.

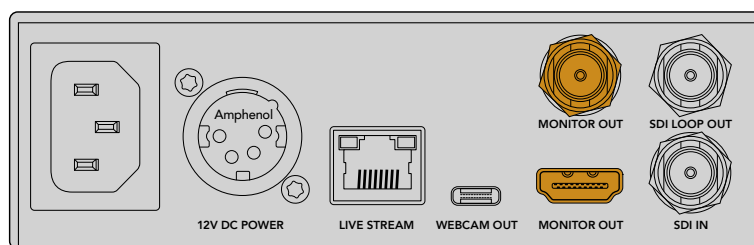
Quando il video è connesso, compare sul display LCD del dispositivo. L'audio è integrato nel segnale video SDI, come confermano gli indicatori di livello sul display LCD.



Connetti la sorgente video SDI all'ingresso SDI di Blackmagic Streaming Encoder

Connettere un monitor a Streaming Encoder

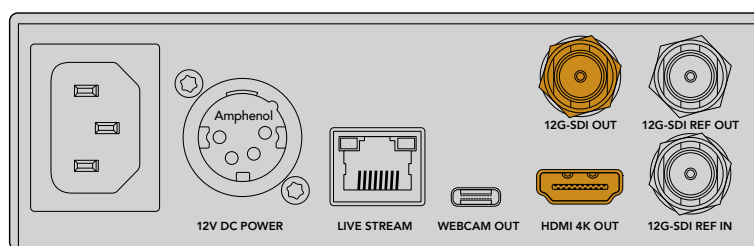
Collega una televisione HDMI o un monitor SDI a una delle uscite Monitor presenti sul retro di Blackmagic Streaming Encoder. Le uscite Monitor ti permettono di monitorare la trasmissione e di tenere d'occhio altre informazioni importanti relative allo streaming, come lo stato della diretta, il data rate e i livelli audio. Consulta "Uscita Monitor di Streaming Encoder" per tutti i dettagli sulle uscite di monitoraggio.



Collega una TV o un monitor a Blackmagic Streaming Encoder per visualizzare informazioni importanti sulla trasmissione

Connettere destinazioni video

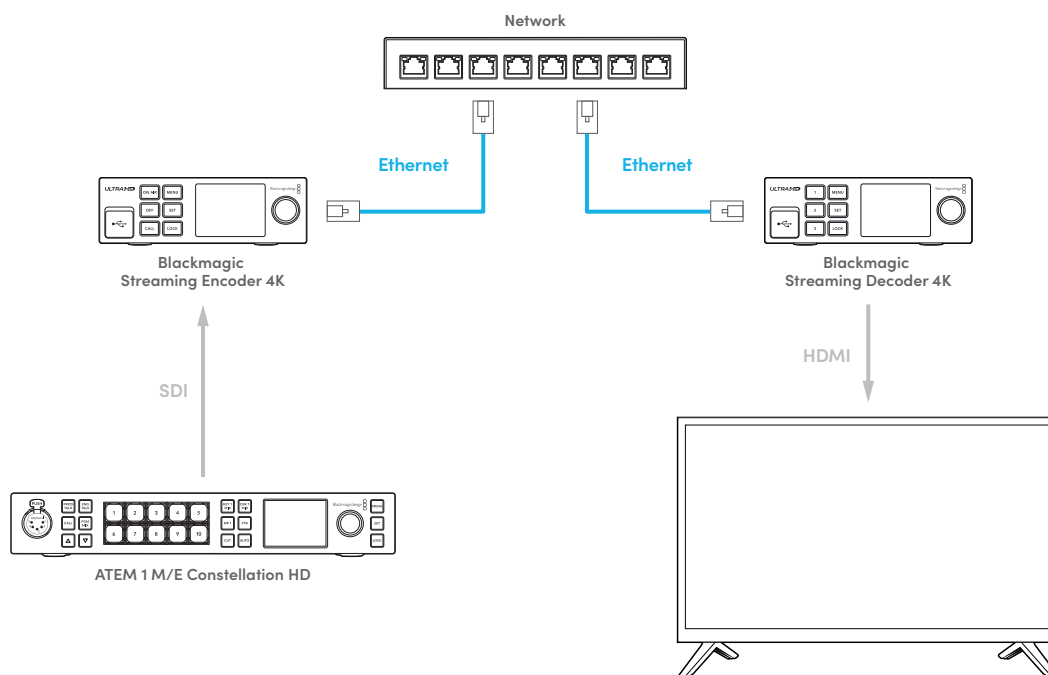
Con Blackmagic Streaming Decoder è possibile inviare il flusso di streaming decodificato a una destinazione, ad esempio uno switcher ATEM SDI e una televisione HDMI. Per farlo, basta collegare lo switcher ATEM all'uscita 12G-SDI e la televisione al connettore HDMI.



Connetti le destinazioni video alle uscite HDMI e SDI di Streaming Decoder

Streaming tramite una rete

Una volta effettuata la connessione, per verificare che tutto funzioni correttamente puoi configurare un semplice collegamento di streaming tra Blackmagic Streaming Encoder e Blackmagic Streaming Decoder tramite una rete locale. Questa configurazione è ideale per trasmettere lo streaming in una sala conferenze o con un proiettore video in una grande struttura. L'esempio riportato qui sotto mostra una configurazione di streaming da uno switcher ATEM a una televisione HDMI.



Sul pannello frontale del processore di streaming è presente un display LCD che mostra informazioni importanti e che permette di monitorare audio e video. La manopola e i pulsanti consentono di accedere velocemente ai menù e alle impostazioni del dispositivo, così da poter configurare, avviare e interrompere lo streaming direttamente dal pannello frontale.

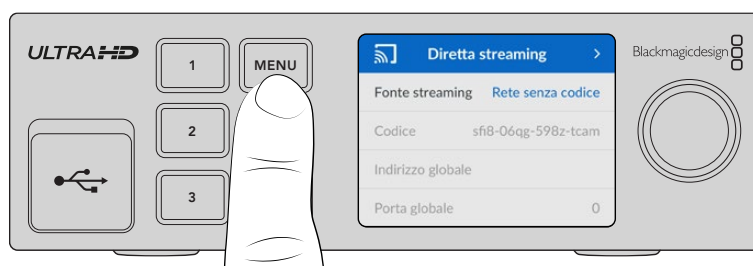
Tutte le impostazioni disponibili sul display LCD si possono modificare anche dall'utilità Blackmagic Streaming Setup. Per maggiori informazioni, consulta "Blackmagic Streaming Setup".

Per configurare un collegamento di streaming:

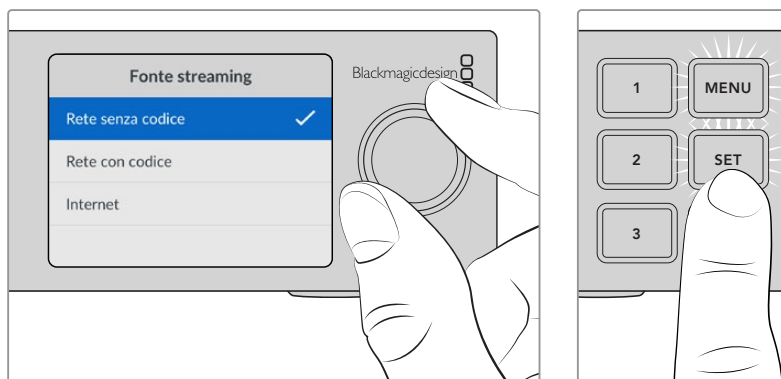
- 1 Connetti Blackmagic Streaming Encoder e Blackmagic Streaming Decoder allo stesso switch di rete.

SUGGERIMENTO Per una configurazione punto a punto ancora più semplice senza dover ricorrere a uno switch di rete, connetti direttamente Blackmagic Streaming Encoder e Blackmagic Streaming Decoder con un cavo ethernet.

- 2 Sul Blackmagic Streaming Decoder, premi il pulsante MENU per aprire il menù sul display LCD del pannello frontale, poi premi SET per aprire il sottomenù **Diretta streaming**.

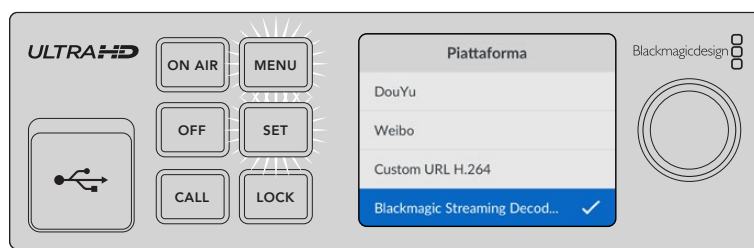


Ruota la manopola fino a visualizzare **Fonte streaming**, premi SET e seleziona la voce **Rete senza codice**. Premi SET per confermare.



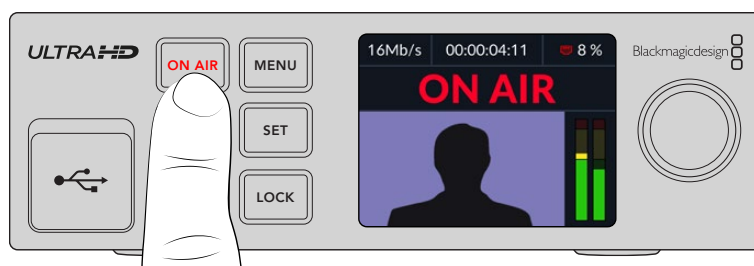
Premi il pulsante MENU per ritornare alla home.

- 3 Sul Blackmagic Streaming Encoder, premi il pulsante MENU per aprire il menù **Diretta streaming**, poi premi SET e ruota la manopola fino alle impostazioni della piattaforma. Premi SET per selezionare il sottomenù **Piattaforma**.

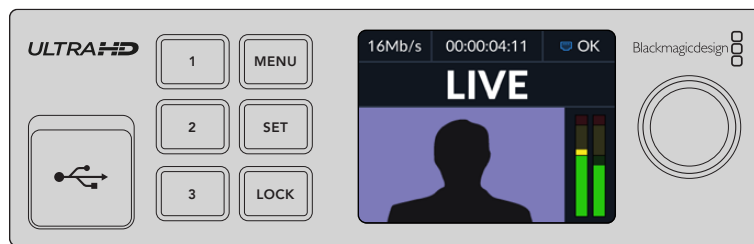


Seleziona Blackmagic Streaming Decoder dalla lista e premi SET. Premi il pulsante MENU per tornare alla home.

- 4 Premi il pulsante ON AIR sul pannello frontale di Blackmagic Streaming Encoder. Il pulsante sarà illuminato di rosso durante la diretta streaming e la home del display LCD mostrerà la scritta ON AIR.



Il display LCD di Blackmagic Streaming Decoder mostra la diretta streaming.



La scritta LIVE è visibile sull'LCD di Streaming Decoder

Per interrompere lo streaming, premi il pulsante OFF sul pannello frontale di Streaming Encoder.

SUGGERIMENTO Se il pulsante ON AIR di Blackmagic Streaming Encoder lampeggia, lo streaming non è iniziato o si è interrotto all'improvviso. Potrebbe dipendere da un problema di connessione di rete o di impostazioni di streaming. Controlla che i cavi di rete siano collegati correttamente e che le impostazioni di streaming siano esatte.

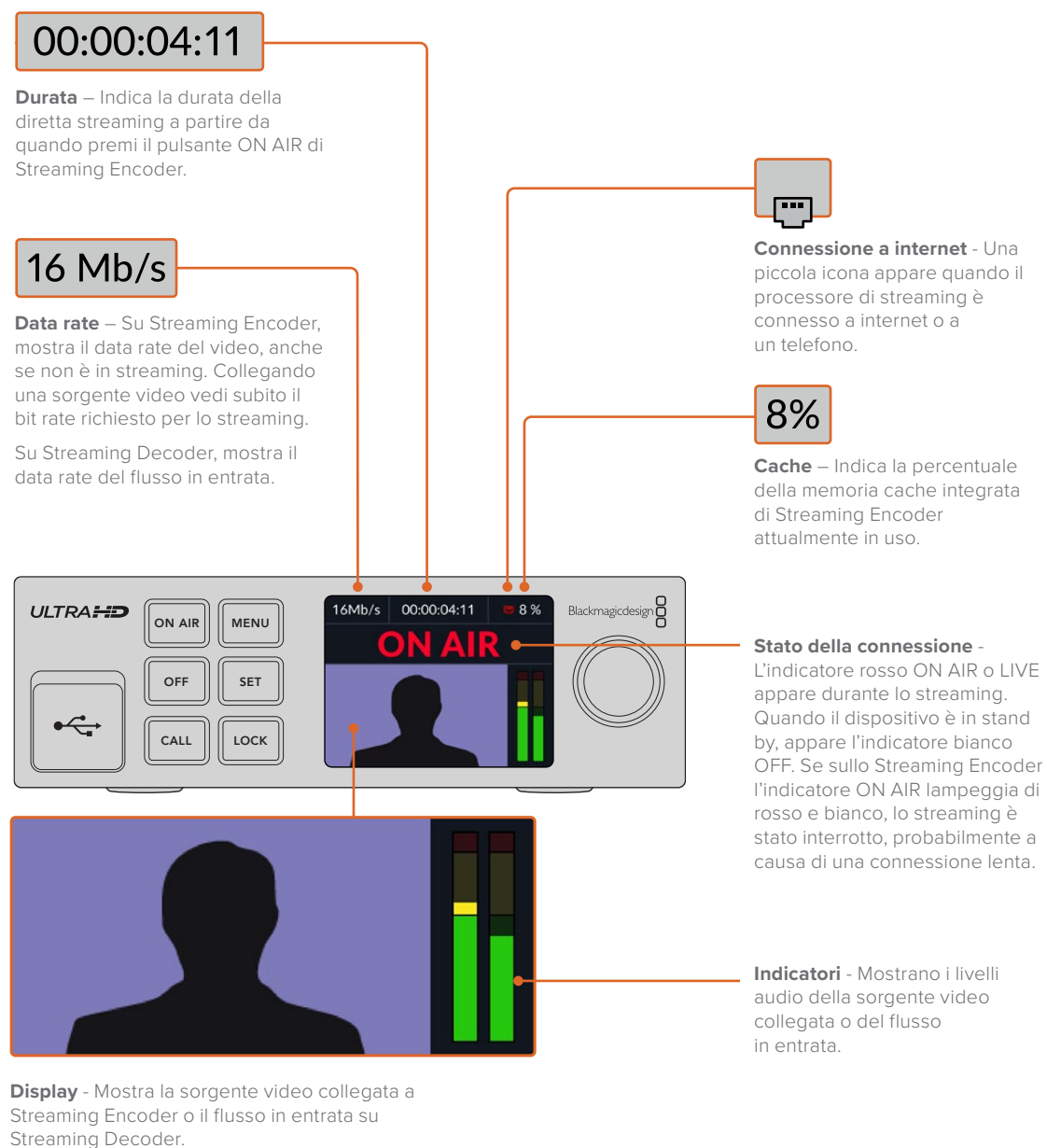
Pulsante LOCK

Per bloccare il pannello frontale del processore di streaming, tieni premuto LOCK per un secondo. I pulsanti e la manopola si disattiveranno per evitare modifiche delle impostazioni o interruzioni dello streaming accidentali.

Per sbloccare il pannello, tieni premuto il pulsante per 2 secondi.

Display LCD

La schermata principale del display LCD di Blackmagic Streaming Processor fornisce monitoraggio audio e video, oltre a mostrare informazioni importanti sullo streaming.



Icone di connessione

L'icona di connessione nell'angolo in alto a destra del display LCD mostra lo stato della connessione di Blackmagic Streaming Processor.



Un'icona di ethernet blu appare quando è collegato un cavo ethernet e questa connessione verrà utilizzata per lo streaming.



Su Blackmagic Streaming Encoder, un'icona di ethernet rossa appare quando il dispositivo è in onda e lo streaming avviene tramite ethernet.



Un'icona di smartphone blu appare quando verrà utilizzata la connessione internet del telefono per lo streaming.



Su Blackmagic Streaming Encoder, un'icona di smartphone rossa appare quando il dispositivo è in onda e lo streaming avviene tramite la connessione internet del telefono.

SUGGERIMENTO Se l'icona di connessione non è visibile, Blackmagic Streaming Processor non è connesso a una rete o a un telefono. Assicurati che i cavi siano collegati correttamente.

Uscita Monitor di Streaming Encoder

L'uscita Monitor di Blackmagic Streaming Encoder è utile per monitorare l'ingresso video, i livelli audio, lo stato dello streaming, il data rate e la cache, oltre alle specifiche tecniche dell'ingresso SDI.



L'uscita di monitoraggio mostra informazioni complete tra cui il data rate e lo stato della cache

La schermata è composta da otto sezioni, ognuna descritta qui sotto con le informazioni fornite.

Video in entrata

La sezione principale mostra il flusso in arrivo dalla sorgente video SDI collegata.



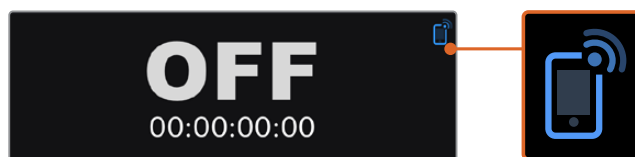
Stato dello streaming

Prima che inizi lo streaming, la scritta **OFF** indica che Streaming Encoder è in stand by e pronto a trasmettere. La scritta **ON AIR** in rosso compare quando inizia lo streaming e rimane visibile per tutta la sua durata.



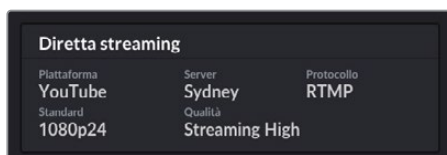
La durata dello streaming appare sotto l'indicatore. Il contatore parte non appena premi il pulsante ON AIR.

Se Blackmagic Streaming Encoder non è in onda, ma è collegato alla connessione internet di uno smartphone, apparirà anche l'icona blu di un telefono in alto a destra. L'icona diventa rossa durante lo streaming.



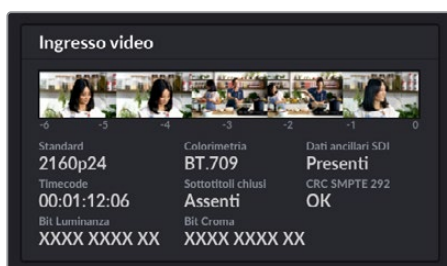
Diretta streaming

Mostra le impostazioni utilizzate per la diretta, tra cui piattaforma di streaming, server e protocollo. Indica anche la risoluzione e le impostazioni di qualità dello streaming.



Ingresso video

I cinque mini visori in alto in questa sezione mostrano gli ultimi 6 secondi della diretta a intervalli da 1,2 secondi ciascuno.

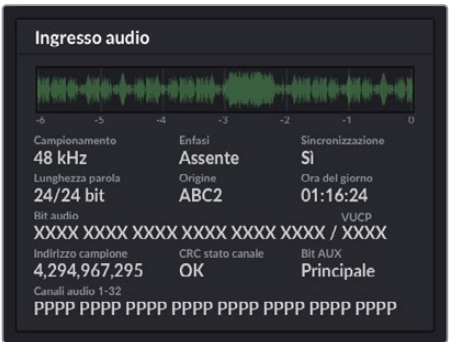


Subito sotto trovi informazioni tecniche dettagliate sulla sorgente video collegata all'ingresso SDI di Streaming Encoder.

Standard	Mostra la risoluzione e il frame rate dell'ingresso video SDI. Streaming Encoder supporta fino al 2160p60.
Colorimetria	Mostra lo spazio colore del video dell'ingresso SDI. Streaming Encoder supporta gli spazi colore Rec.601, Rec.709 e Rec.2020.
Dati ancillari SDI	Sono dati aggiuntivi del video trasportati dall'ingresso SDI, tra cui audio integrato, timecode e sottotitoli chiusi. Se il video contiene dati ancillari, compare il messaggio "Presenti".
Timecode	Mostra il timecode della sorgente video SDI in entrata.
Sottotitoli chiusi	Se inclusi nell'ingresso video SDI, compare il messaggio "Presenti". Sono supportati i formati CEA-608 e CEA-708.
SMPTE 292 CRC	È una funzione di verifica errori per il video SDI. Se Streaming Encoder rileva un problema nell'ingresso video SDI, lo indica con il messaggio "Errore". Gli errori CRC sono in genere causati da un cavo SDI difettoso o troppo lungo.
Bit luminanza Y e Bit croma	Mostrano l'attività del segnale video SDI in entrata. Ogni lettera rappresenta lo stato di uno dei bit del segnale video. X - Indica un bit rate che cambia di continuo. L - Indica un bit rate basso. H - Indica un bit rate alto. Per facilitare la lettura gli scarti SDI vengono omessi. Ad esempio, tutti i bit sono bassi quando il video è nero. In genere, tutti e 10 i bit dell'ingresso video SDI mostrano una "X" a indicare che ogni bit dello streaming video cambia di continuo. Se la sorgente SDI è un video a 8 bit, le ultime due cifre sulla destra saranno sempre contrassegnate con "L" poiché non contengono dati. Se un bit mostra una "L" o una "H" al posto di una "X", potrebbe esserci un bit bloccato a causa di una falla nel flusso video sorgente.

Ingresso audio

La forma d'onda audio in alto in questa sezione mostra le informazioni audio degli ultimi 6 secondi della diretta e si aggiorna di continuo ondeggiando da destra verso sinistra.

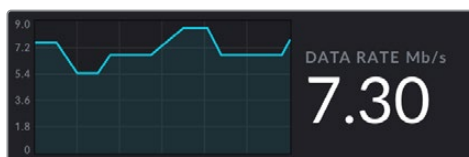


Subito sotto trovi informazioni tecniche dettagliate sull'audio.

Campionamento	Mostra la frequenza di campionamento dell'audio integrato nell'ingresso SDI.
Enfasi	Indica se l'enfasi della sorgente audio è abilitata o meno.
Sincronizzazione	Indica se la frequenza della sorgente audio è allacciata a una fonte di riferimento esterna.
Lunghezza parola	Mostra la profondità di bit dell'audio integrato nell'ingresso SDI.
Origine	Questi quattro caratteri indicano l'origine del canale.
Ora del giorno	Timecode continuo.
Bit audio	Mostra l'attività dei bit nei campioni audio integrati nella connessione SDI. Anche se lo stato del canale audio indica la presenza di 16, 20 o 24 bit audio, la conferma è nell'attività dei bit.
VUCP	Il codice alfanumerico indica, da sinistra a destra, "V" per bit valido, "U" per bit "utente", "C" per bit "stato canale" e "P" per "parità". È simile alla voce Bit audio.
Indirizzo campione	Contatore di campioni audio.
Bit AUX	Indica se l'audio principale fa uso di bit AUX.
Canali audio 1-32	Ogni cifra rappresenta un canale audio integrato nell'ingresso SDI. Una "P" indica un canale audio in uso e un trattino "-" indica un canale vuoto.

Data rate

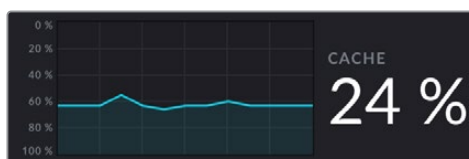
Mostra il data rate del codificatore in megabit al secondo. Il dato si riferisce agli ultimi 60 secondi. Questo indicatore è sempre attivo, anche nel fuori onda, per poter stimare la larghezza di banda prima di andare in onda.



Cache

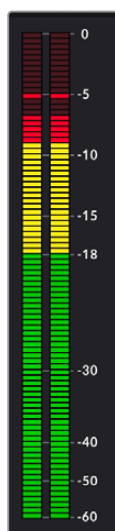
Mostra la percentuale correntemente in uso del buffer di memoria incorporato di Blackmagic Streaming Encoder. Il dato si riferisce agli ultimi 60 secondi. La cache è una piccola memoria interna che registra e riproduce continuamente l'uscita di programma, e funge da riserva se il data rate scende al di sotto del livello necessario per lo streaming.

La variabilità della connessione internet può essere dovuta alle attività di rete e alla potenza del segnale wireless, pertanto se il data rate diminuisce, i dati di buffer aumentano. Se la velocità della connessione è troppo bassa per sostenere il flusso video, la cache si riempie di fotogrammi video per compensarvi. Quando la cache è piena al 100%, il flusso video ne risente negativamente, perciò è importante evitare di riempirla al massimo. Per testare la cache, collega un segnale video e osserva l'indicatore della cache sull'uscita di monitoraggio, senza avviare lo streaming. Se la percentuale della cache si avvicina spesso al 100%, scegli un'opzione di qualità più bassa nelle impostazioni.



Livelli audio

Misurano i livelli della sorgente audio su una scala PPM o VU, selezionabile nelle impostazioni di Blackmagic Streaming Encoder. Se i livelli sono troppo alti, gli indicatori diventano rossi, segnalando che l'audio dello streaming potrebbe subire distorsioni o clipping. La posizione ideale dei livelli rientra nella parte alta della zona verde, e sporadicamente nella parte gialla.



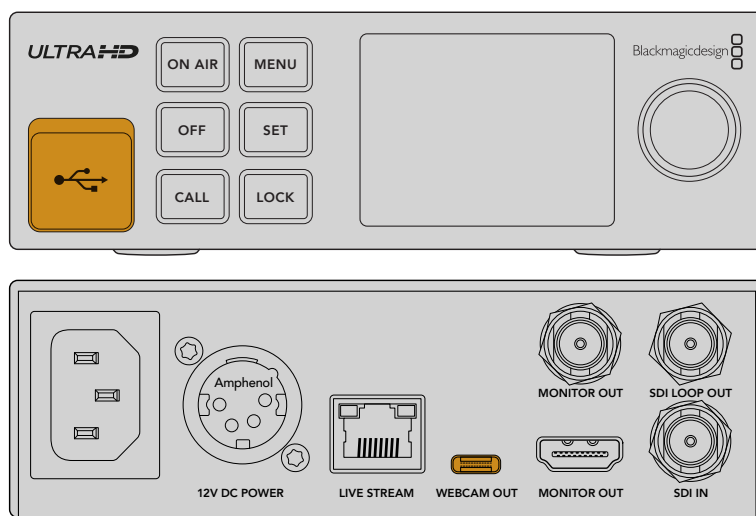
Blackmagic Streaming Setup

Blackmagic Streaming Setup è un'utilità software che permette di cambiare le impostazioni, configurare la rete, aggiornare il software interno di Blackmagic Streaming Processor e salvare o caricare i file delle impostazioni di streaming.

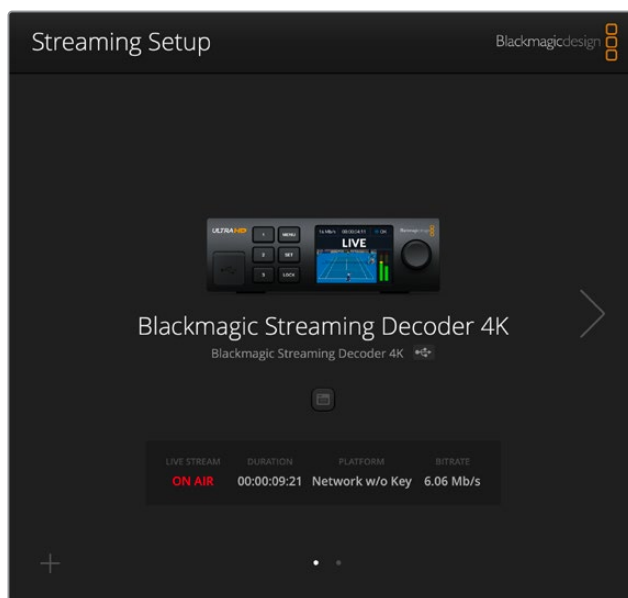
Scarica e installa l'ultima versione del software Blackmagic Streaming Setup alla pagina www.blackmagicdesign.com/it/support di Blackmagic Design.

Usare Blackmagic Streaming Setup:

- 1 Connetti il processore di streaming al computer tramite la porta USB-C frontale o posteriore.



- 2 Avvia Blackmagic Streaming Setup. Il nome del modello del processore di streaming è indicato nella home dell'utilità.
- 3 Clicca sull'icona quadrata o sull'immagine del tuo Blackmagic Streaming Processor per accedere alle impostazioni. Se alla rete sono connessi diversi Streaming Processor, clicca sulle frecce laterali della home fino a raggiungere il tuo.



Live Stream

Questa tab contiene le impostazioni per configurare la connessione per la diretta streaming con Streaming Processor.

Streaming Encoder

Per Blackmagic Streaming Encoder, la tab Live Stream consente di impostare la qualità dello streaming, scegliere e configurare la piattaforma di streaming, e caricare i file XML delle impostazioni di streaming.

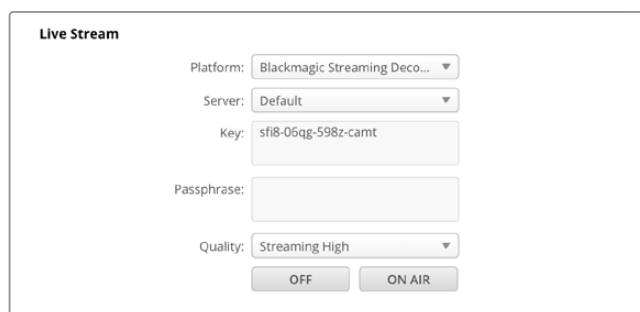
Video Output



Clicca sul menù a discesa accanto a **Stream Standard** e seleziona la risoluzione video per lo streaming, da 720p25 fino a 2160p60.

Live Stream

In questa sezione puoi selezionare e configurare la piattaforma di streaming e impostare la qualità dello streaming.



Platform

Seleziona una piattaforma di streaming per la tua trasmissione, per esempio YouTube, Facebook o Twitch. Se hai importato impostazioni di streaming personalizzate, compariranno in questa lista.

Per trasmettere su un URL specifico, in H.264 o H.265, selezionalo dal menù a discesa.

Server

Seleziona il server più vicino alla tua postazione. Le opzioni disponibili variano a seconda della piattaforma di streaming scelta.

Per trasmettere su Instagram, Microsoft Teams o un URL specifico, questo menù a discesa diventa un campo modificabile. Inserisci l'URL assegnato dall'account della piattaforma di streaming o l'URL specifico.

Key

Inserisci il codice di streaming assegnato alla tua trasmissione dalla piattaforma di streaming.

Passphrase

Se usi un servizio di streaming con un protocollo SRT, inserisci la passphrase che è stata assegnata dal tuo account.

Quality

Seleziona la qualità dello streaming. Le tabelle qui sotto riportano i data rate disponibili per i codec H.264 e H.265.

H.264	
HD	4K
HyperDeck High 45 to 70 Mb/s (alta)	HyperDeck High 95 to 220 Mb/s (alta)
HyperDeck Medium 25 to 45 Mb/s (media)	HyperDeck Medium 66 to 150 Mb/s (media)
HyperDeck Low 12 to 20 Mb/s (bassa)	HyperDeck Low 38 to 80 Mb/s (bassa)
Streaming High 6 to 9 Mb/s (alta)	Streaming High 34 to 51 Mb/s (alta)
Streaming Medium 4.5 to 7 Mb/s (media)	Streaming Medium 23 to 35 Mb/s (media)
Streaming Low 3 to 4.5 Mb/s (bassa)	Streaming Low 13 to 20 Mb/s (bassa)

H.265	
HD	4K
Streaming High 2.3 to 4.5 Mb/s (alta)	Streaming High 22.5 to 30 Mb/s (alta)
Streaming Medium 1.5 to 3 Mb/s (media)	Streaming Medium 14 to 20 Mb/s (media)
Streaming Low 0.8 to 2 Mb/s (bassa)	Streaming Low 8 to 10 Mb/s (bassa)

Il data rate determinato dall'opzione di qualità cambierà in base allo standard video adoperato da Streaming Encoder. Per esempio, selezionando l'opzione di alta qualità Streaming High, con uno standard di 1080p24 il data rate sarà 6 Mb/s.

Come si evince dalla tabella, i data rate delle opzioni "Streaming" sono inferiori a quelli delle opzioni "HyperDeck", permettendo di trasmettere dati tramite internet, che di solito si avvale di una larghezza di banda più bassa rispetto alla registrazione dei dati su un disco.

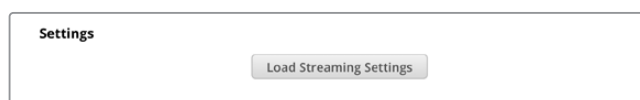
Ciascuna opzione contiene due valori: il primo viene utilizzato per i frame rate bassi, di 24p, 25p e 30p, il secondo per i frame rate alti, di 50p e 60p. L'opzione predefinita per lo streaming è Streaming High, che garantisce uno streaming di qualità molto alta.

Pulsanti On Air e Off

Usa questi pulsanti per avviare e interrompere lo streaming. Il pulsante On Air si illumina di rosso durante la diretta.

Settings

Clicca sul pulsante **Load Streaming Settings** e segui i passaggi indicati per caricare un file XML di impostazioni di streaming da un Blackmagic Streaming Decoder.

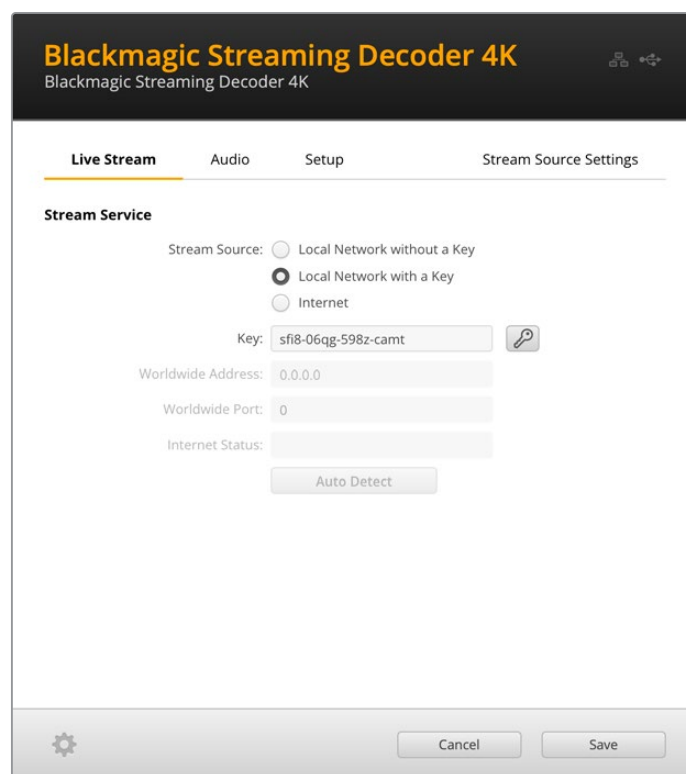


Eliminare le impostazioni importate

Clicca sull'icona dell'ingranaggio in basso a sinistra nella tab Live Stream per eliminare le impostazioni di streaming importate in Blackmagic Streaming Encoder. Clicca su **Remove** per confermare.

Streaming Decoder

Per Blackmagic Streaming Decoder, la tab Live Stream permette di selezionare la sorgente di streaming e configurare le impostazioni internet del decodificatore.



Stream Service

In questa sezione puoi configurare le impostazioni per connettere Streaming Decoder a uno Streaming Encoder remoto o a una camera Blackmagic o switcher ATEM con funzionalità di streaming incorporate.

Stream Source

Seleziona la sorgente del flusso di streaming in entrata tra **Local Network without a key** (rete locale senza codice), **Local Network with a key** (rete locale con codice) e **Internet**.

Key

Poiché chiunque può trasmettere a qualsiasi Blackmagic Streaming Decoder elencato nel menù, questa impostazione serve per creare un codice di streaming per proteggere la tua trasmissione. Selezionare Streaming Decoder nella tua rete è così facile che vari utenti potrebbero confluire nello stesso collegamento video.

Il codice di streaming è una password che impedisce ad altri utenti di accedere al tuo Blackmagic Streaming Decoder. Grazie a questa password, che puoi inserire nell'apposito campo, solo gli utenti che usano la stessa password nelle proprie impostazioni di streaming potranno connettersi al tuo Blackmagic Streaming Decoder.

Puoi creare una password di tua scelta oppure cliccare sull'icona della chiave per generarne automaticamente una sicura. Copia e condividi la password solo con gli utenti a cui vuoi permettere di connettersi. Dopo aver inserito la password nel proprio Blackmagic Streaming Encoder, camera Blackmagic o switcher ATEM, potranno connettersi al tuo Streaming Decoder.

Connettersi a internet

Internet è il modo più interessante per connettere Blackmagic Streaming Decoder, ma è importante che Streaming Encoder, la camera Blackmagic o lo switcher ATEM siano in grado di trovarlo da qualsiasi parte del mondo. Per questo motivo dovrai configurare qualche impostazione in più.

Come fare

Innanzitutto, bisogna connettere a internet sia Blackmagic Streaming Decoder che Streaming Encoder, la camera o lo switcher ATEM. In secondo luogo, serve un indirizzo IP pubblico fisso per Streaming Decoder.

Dato che Blackmagic Streaming Decoder si trova nella tua rete ethernet locale, bisogna renderlo visibile su internet. Streaming Decoder si avvale del port forwarding del firewall per consentire a Streaming Encoder, alla camera o allo switcher ATEM di collegarsi tramite la tua connessione internet. Senza questi accorgimenti, Streaming Encoder, la camera o lo switcher ATEM non potranno trovare Streaming Decoder.

Contatta il fornitore di servizi internet o l'amministratore di rete per configurare il port forwarding della tua connessione internet sulla porta TCP 1935. Loro sapranno cosa fare. Blackmagic Streaming Decoder tenterà di configurare il port forwarding automaticamente, considerando che la maggior parte delle connessioni internet e firewall ha un protocollo che lo consente. Dunque è molto probabile che Streaming Decoder provi a stabilire la comunicazione con i tuoi dispositivi di rete dopo aver configurato le impostazioni nell'utilità Streaming Setup.

Confermare l'accesso a internet

Nella sezione Stream Service, il campo **Internet Status** indica lo stato della connessione internet di Blackmagic Streaming Decoder. Il messaggio **Connected** indica che Streaming Decoder è riuscito a configurare i tuoi dispositivi di rete con il port forwarding e a connettersi a internet.

NOTA Aprire altre porte al traffico esterno nella tua rete potrebbe abbassarne il livello di sicurezza. Per questo motivo consigliamo di rivolgerti al fornitore di servizi internet o all'amministratore di rete.

Se non compare il messaggio **Visible Worldwide**, potrebbe essere necessario configurare il port forwarding sul tuo firewall manualmente. Alcuni firewall sono incompatibili con il protocollo che consente la configurazione automatica di questo tipo di informazioni, però tutti permettono di farlo manualmente.

Se non riesci ad accedere alle impostazioni del router o non sai configurare il port forwarding, contatta il tuo fornitore di servizi internet. Nel caso di grandi reti, è preferibile rivolgersi all'amministratore di rete per impostare il port forwarding in modo corretto ed evitare conflitti in rete.

Internet Status

Questo campo indica lo stato della connessione internet. La tabella qui sotto riporta i messaggi e le possibili soluzioni ai problemi di connessione.

Visible Worldwide	Tutto funziona correttamente. Il port forwarding è stato configurato. Streaming Decoder è pronto a ricevere il flusso video tramite internet.
No Internet Access	Streaming Decoder non riesce a connettersi a internet. Controlla le impostazioni di rete e la connessione internet.
Port Forwarding Error	Streaming Decoder potrebbe essere connesso a internet ma non essere riuscito a configurare il port forwarding nel firewall, e pertanto è irraggiungibile. Contatta l'amministratore di rete per configurare queste impostazioni.
UPnP Error	Streaming Decoder non riesce a configurare il port forwarding sul router internet. Contatta l'amministratore di rete per configurare queste impostazioni o consulta la documentazione del router per scoprire come fare.

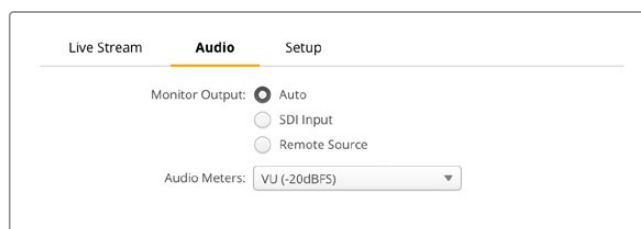
Auto Detect

Clicca su questo pulsante per rilevare automaticamente le impostazioni della connessione internet.

Audio

Questa tab contiene le impostazioni per configurare l'uscita di monitoraggio di Streaming Processor, compreso il talkback e i livelli audio.

Streaming Encoder



Monitor Output

Seleziona la sorgente audio per le uscite di monitoraggio SDI e HDMI di Streaming Encoder.

Auto

Con questa opzione, Streaming Encoder rileva automaticamente e monitora l'audio del talkback inviato da uno switcher ATEM attraverso un Blackmagic Streaming Decoder. In assenza di talkback, il dispositivo seleziona l'ingresso SDI.

SDI Input

Con questa opzione puoi monitorare l'audio della sorgente connessa all'ingresso SDI di Streaming Encoder, per esempio Blackmagic Studio Camera.

Remote Source

Con questa opzione puoi monitorare l'audio del talkback inviato da uno switcher ATEM remoto o da Streaming Decoder.

Audio Meters

Scegli come misurare i livelli audio selezionando l'opzione VU -18dBFS, VU -20dBFS, PPM -18dBFS o PPM -20dBFS.

Streaming Decoder

Per Streaming Decoder, questa tab permette di selezionare i canali del talkback e configurare i livelli audio per lo schermo LCD frontale.

The screenshot shows the 'Audio' tab selected in a settings menu. At the top, there are four tabs: 'Live Stream', 'Audio' (highlighted), 'Setup', and 'Stream Source Settings'. Under the 'Talkback' section, there is a 'Return Audio' label followed by four radio button options: 'Off', '1 and 2 Program Audio', '13 and 14 Engineering Audio', and '15 and 16 Talkback Audio'. The '15 and 16 Talkback Audio' option is selected. Below this, under the 'Audio Monitoring' section, there is a label 'Audio Meters:' followed by a dropdown menu currently showing 'VU (-20dBFS)'.

Talkback

In questa sezione puoi stabilire quali canali audio ritornano a Blackmagic Streaming Encoder, a scelta tra **Off**, **1 and 2 Program Audio**, **13 and 14 Engineering Audio** e **15 and 16 Talkback Audio**.

Audio Monitoring

Scegli come misurare i livelli audio selezionando l'opzione VU -18dBFS, VU -20dBFS, PPM -18dBFS o PPM -20dBFS.

Setup

Questa tab permette di assegnare un nome al processore di streaming, cambiare le impostazioni di rete e ripristinare le impostazioni di fabbrica. Per Blackmagic Streaming Decoder consente anche di impostare i tempi di riferimento e l'uscita SDI.

Identificazione

In questa sezione puoi assegnare un nome al processore di streaming e selezionare una lingua.

The screenshot shows the 'Setup' tab selected in a settings menu. At the top, there are four tabs: 'Live Stream', 'Audio', 'Setup' (highlighted), and 'Stream Source Settings'. The main area contains three input fields: 'Name:' with the text 'Blackmagic Streaming Decoder...', 'Language:' with a dropdown menu showing 'English', and 'Software:' with the text 'Version 4.0'. To the right of the 'Name' field is a 'Set' button. Below these fields is a 'Save Diagnostic Log' button.

Scegli un nome univoco per identificare Blackmagic Streaming Processor facilmente quando alla rete ne sono connessi altri. Il nome servirà inoltre a individuare la posizione in rete.

Qui trovi anche la versione corrente del software.

Network Settings

Network Settings

Network Location: Blackmagic-Streaming-Decode...

MAC Address: 7C-2E-0D-06-CC-80

Protocol: ☒ DHCP
☐ Static IP

IP Address: 10.1.1.15

Subnet Mask: 255.255.255.0

Gateway: 10.1.1.1

Primary DNS: 10.1.1.1

Secondary DNS: 8.8.8.8

Connection Priority: ☒ Ethernet
☐ Mobile

Allow Utility Administration: ☐ via USB
☒ via USB and Ethernet

Network location

La posizione della rete corrisponde al nome del tuo Blackmagic Streaming Processor che compare nel campo Name della tab Setup. I prefissi numerici verranno ignorati.

MAC Address

Mostra l'indirizzo MAC del processore di streaming, ovvero un identificatore hardware univoco per ciascuna porta ethernet. Questo dato è importante quando si configurano sistemi di sicurezza di rete che ammettono solo i dispositivi identificabili in base al loro indirizzo MAC.

Protocol

Le impostazioni DHCP e IP statico determinano il modo in cui il processore di streaming si connette alla rete.

DHCP	I Blackmagic Streaming Processor sono preimpostati su DHCP. Il protocollo di configurazione IP dinamica (DHCP) è un servizio sui server di rete che trova e assegna automaticamente un indirizzo IP al processore di streaming. Il DHCP facilita la connessione dei dispositivi tramite ethernet, evitando che gli indirizzi IP entrino in conflitto tra loro. Gran parte dei computer e degli switch di rete è compatibile con il DHCP.
Static IP	Seleziona questa opzione per inserire manualmente le impostazioni di rete. Per poter comunicare, tutti i dispositivi devono avere la stessa maschera di sottorete e gateway.

Utilizzando un IP statico, se nella rete ci sono altri dispositivi con un indirizzo IP identico, non sarà possibile connetterli. In questi casi basta modificare il numero identificativo dell'indirizzo IP del dispositivo.

Per esempio, se l'indirizzo in questione è 192.100.40.30, cambia il 30 con un altro numero. Se anche il nuovo numero è già in uso, cambialo di nuovo fino a trovarne uno non utilizzato da nessun altro dispositivo.

Connection Priority

Quando Blackmagic Streaming Processor è connesso a ethernet e allo smartphone, usa questa impostazione per scegliere quale connessione usare per lo streaming. Per maggiori informazioni sul tethering consulta "Streaming con lo smartphone".

Allow Utility Administration

Selezionando l'opzione **via USB**, le impostazioni si potranno modificare solo dal computer collegato tramite USB, per non rischiare che qualcun altro in rete le modifichi per sbaglio.

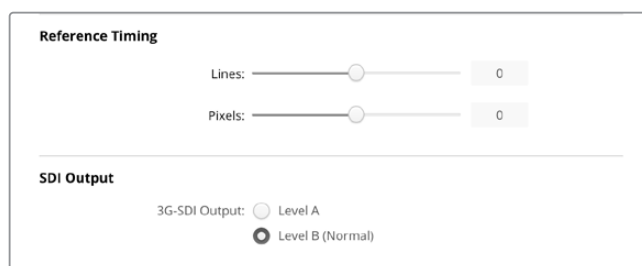
Reset

Clicca su **Factory Reset** per riportare Blackmagic Streaming Processor alle impostazioni di fabbrica. Un avviso ti chiederà di confermare o annullare l'operazione. Clicca su **Reset** per confermare.



Streaming Decoder

Per Blackmagic Streaming Decoder, la tab Setup contiene anche le impostazioni descritte qui sotto.



Reference Timing

Regola manualmente il riferimento temporale a livello di linea o pixel. Blackmagic Streaming Decoder offre un ingresso di riferimento video analogico tri-sync e black burst, e un ingresso SDI adoperabile come riferimento. I segnali di riferimento sono ampiamente utilizzati dalle emittenti per sincronizzare tutte le connessioni video e commutare tra loro all'interno di grandi sistemi.

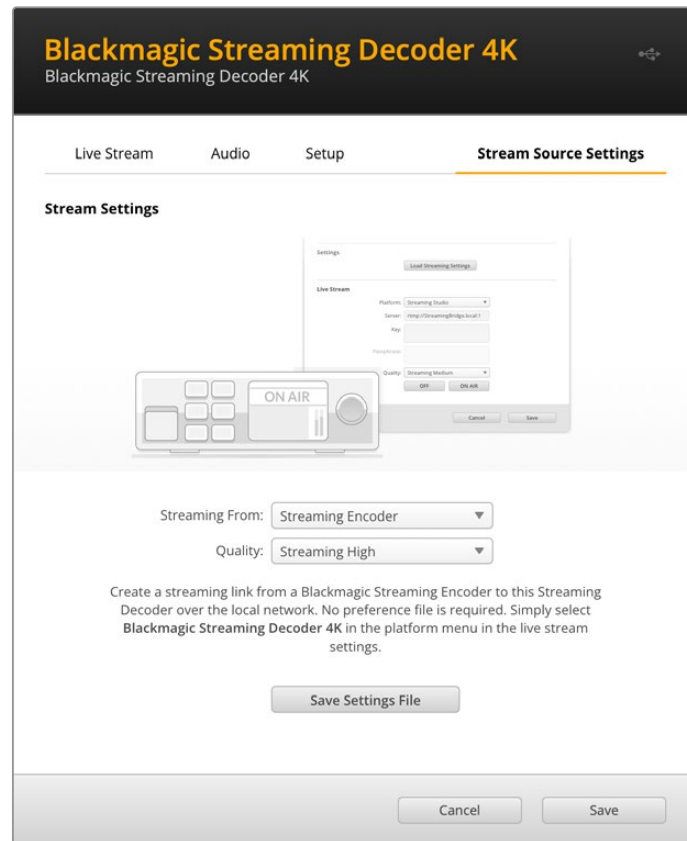
SDI Output

Alcuni dispositivi broadcast possono ricevere video 3G-SDI solo di livello A o solo di livello B. Seleziona il livello 3G-SDI corrispondente per favorire la compatibilità con i dispositivi broadcast impiegati. L'impostazione predefinita è il livello B.

Stream Source Settings

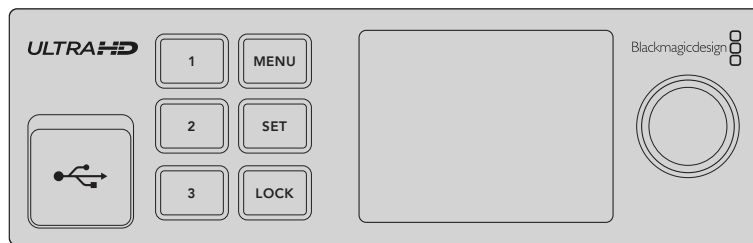
Per Blackmagic Streaming Decoder, questa tab permette di creare i file XML di impostazioni di streaming, che poi è possibile caricare sui codificatori remoti, sulle camere Blackmagic o sugli switcher ATEM con funzionalità di streaming incorporate.

Consulta “Creare collegamenti broadcast” per maggiori informazioni sui file XML di impostazioni di streaming.



Creare collegamenti broadcast

Con i Blackmagic Streaming Processor puoi trasmettere il video in streaming tramite una rete locale oppure ovunque al mondo tramite internet.



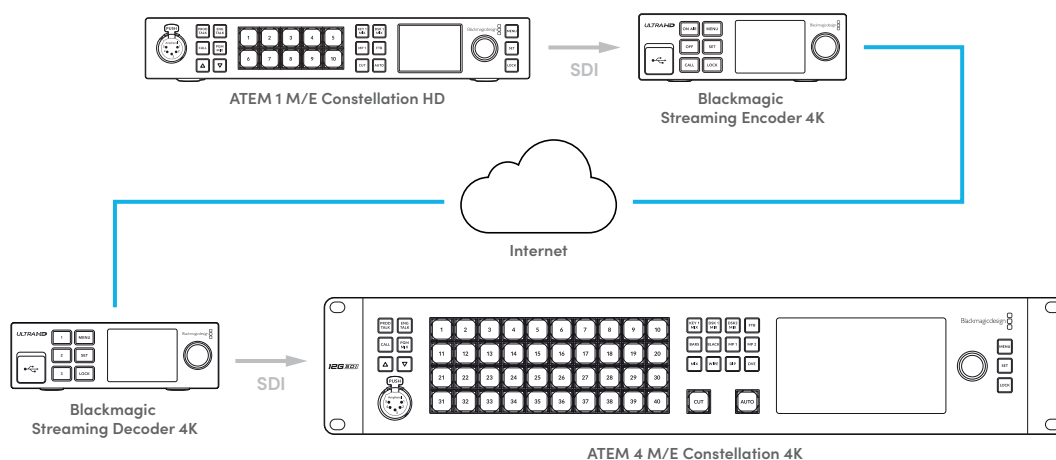
Se Streaming Decoder si trova sulla stessa rete locale di Streaming Encoder, comparirà nel menù a discesa **Piattaforma** della tab **Live Stream** nell'utilità Blackmagic Streaming Setup. Consulta "Operazioni preliminari" per maggiori informazioni su come configurare lo streaming tramite una rete locale.

Per trasmettere in streaming tramite internet, o tramite una rete locale usando un codice di sicurezza, con Streaming Decoder puoi creare un file XML di impostazioni di streaming. Questo file si potrà poi caricare su Blackmagic Streaming Encoder mediante Blackmagic Streaming Setup.

SUGGERIMENTO Il file XML di impostazioni di streaming si può esportare anche per le camere Blackmagic e gli switcher ATEM con funzionalità di streaming incorporate. Consulta il manuale della camera Blackmagic o dello switcher ATEM per informazioni su come importare i file di impostazioni.

Per esempio, i Blackmagic Streaming Processor si possono impiegare per trasmettere i bollettini meteorologici da una location remota allo studio. Nella location remota basteranno un codificatore di streaming e una connessione internet, usando una rete o i dati mobili di uno smartphone.

Nello studio, Blackmagic Streaming Decoder riceverà il flusso internet e lo convertirà in SDI per poterlo connettere allo switcher principale.



Ecco un esempio di questo workflow:

- 1 Nella location, collega Blackmagic Streaming Encoder all'uscita di programma SDI dello switcher, ad esempio un ATEM 1 M/E Constellation HD.
- 2 Collega Blackmagic Streaming Encoder a uno smartphone.
- 3 Nello studio, Blackmagic Streaming Decoder è collegato a internet tramite ethernet.
- 4 Streaming Decoder 4K, tramite internet, riceve e invia il flusso video convertito in SDI all'ingresso SDI dello switcher in studio affinché venga trasmesso durante il notiziario.

In studio, per collegare il decodificatore di streaming al flusso internet del codificatore di streaming, bisogna aprire l'utilità Blackmagic Streaming Setup e configurare le impostazioni internet. Qui è necessario generare un file XML che contenga le impostazioni di streaming da caricare su Blackmagic Streaming Encoder nella location remota.

Creare un file XML

Per creare un file impostazioni XML è necessario connettere Blackmagic Streaming Decoder a internet collegando un cavo di rete dalla porta Live Stream sul retro a un router o a uno switch di rete.

Connetti il decodificatore al tuo computer con un cavo USB-C e lancia Blackmagic Streaming Setup. Nella tab **Live Stream**, controlla che le impostazioni di rete siano esatte e seleziona **Internet** da **Stream Service**. Quando nella sezione **Internet status** vedi il messaggio *visible worldwide*, significa che tutto funziona correttamente. Per maggiori informazioni su come configurare il decodificatore di streaming consulta "Stream Service" nella sezione "Blackmagic Streaming Setup".

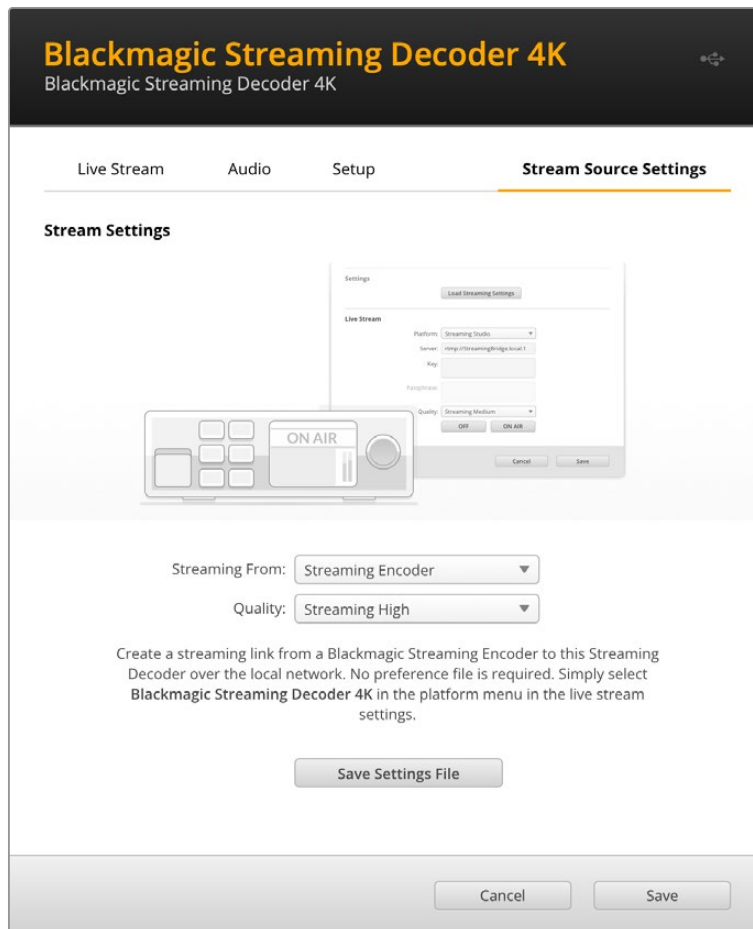
Gestione del port forwarding

Se nella sezione Internet Status vedi un messaggio di errore UPnP, contatta il fornitore internet o l'amministratore di rete per configurare il port forwarding della connessione internet sulla porta TCP 1935.

Esportare un file XML

Dopo aver confermato le impostazioni nella tab Setup di Blackmagic Streaming Setup e aver connesso il decodificatore di streaming alla tua rete o a internet, puoi esportare il file XML di impostazioni.

- 1 Apri la tab **Stream Source Settings** in alto a destra nella finestra.



- 2 Nel menù **Streaming From** seleziona **Streaming Encoder**.
Se stai creando un file XML di impostazioni per una camera Blackmagic o uno switcher ATEM con funzionalità di streaming incorporate, nel menù **Streaming From** seleziona **ATEM switcher** o **Blackmagic camera**.
- 3 Scegli la qualità dello streaming alla voce **Quality**. Questa impostazione definirà la qualità del Blackmagic Streaming Encoder remoto.
- 4 Clicca sul pulsante **Save Settings File** e scegli dove salvare il file XML sul tuo computer.

Dopo aver salvato il file invialo per email all'operatore remoto del Blackmagic Streaming Encoder.

SUGGERIMENTO Usa le impostazioni di talkback nella tab Audio per selezionare i canali audio che vuoi reindirizzare al codificatore di streaming remoto.

Caricare un file XML

Per iniziare la diretta delle previsioni del tempo dalla location remota verso lo studio, la troupe sul posto deve solo caricare su Blackmagic Streaming Encoder, tramite l'utilità Blackmagic Streaming Setup, il file XML con le impostazioni di streaming ricevuto per email, e premere ON AIR.

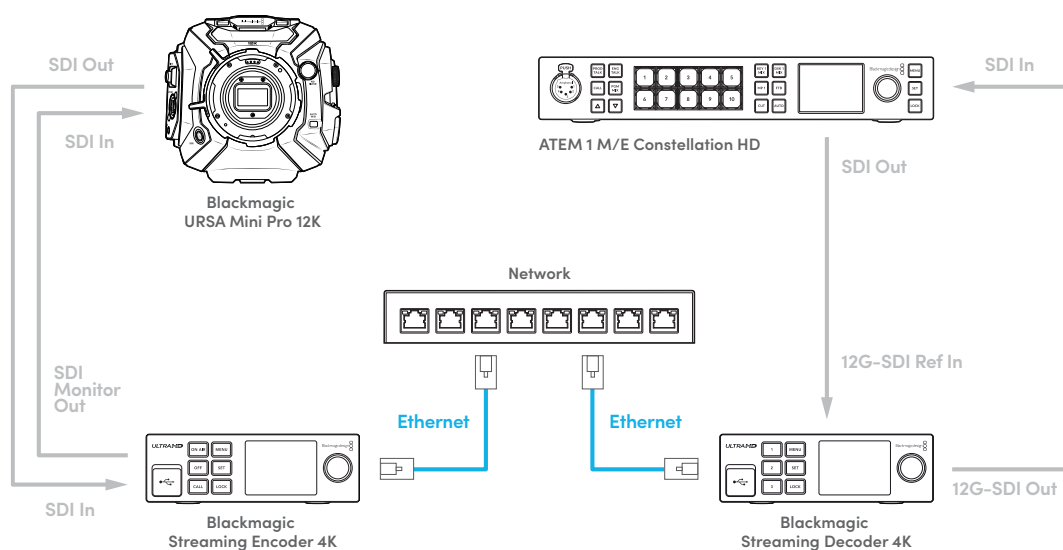
Dopo aver caricato il file XML la prima volta, non è più necessario ricaricarlo per avviare e interrompere lo streaming. È quindi semplicissimo attivare il collegamento video tra lo Streaming Encoder e lo Streaming Decoder.

Se non vi è stata alcuna modifica alle impostazioni di streaming e di rete dello Streaming Decoder in studio, il dispositivo cercherà e troverà lo Streaming Encoder ovunque si trovi collegato su internet. Da qualsiasi location basta collegare il codificatore di streaming a internet e premere ON AIR per inviare immediatamente la diretta al decodificatore di streaming in studio.

Talkback, Tally e Controllo Camera

I Blackmagic Streaming Processor permettono agli switcher ATEM di inviare i segnali di tally, talkback e controllo camera. In questo modo, qualsiasi camera Blackmagic Design con supporto SDI, installata ovunque entro la tua rete locale o in qualsiasi luogo al mondo tramite internet, offrirà le funzionalità di tally, talkback e controllo camera.

La configurazione è semplice. L'illustrazione qui sotto mostra come collegare una URSA Mini Pro 12K a un ATEM 1 M/E Constellation HD in una rete locale per utilizzare tally, talkback e controllo camera.



Dopo aver collegato i dispositivi:

- 1 Premi il pulsante MENU su Blackmagic Streaming Encoder per aprire il menù LCD e andare su **Diretta Streaming**.
- 2 Seleziona Blackmagic Streaming Decoder nel menù **Piattaforma**
- 3 Premi **Set** per confermare.

Per un corretto funzionamento del tally, assicurati che l'ID ATEM della camera corrisponda a quello dello switcher. Per informazioni su come impostare correttamente l'ID ATEM della camera, consulta il manuale di URSA Mini.

Per testarne il funzionamento, commuta la camera sull'uscita di programma con lo switcher ATEM. Se l'ID ATEM della camera è impostato correttamente, sulla camera vedrai accendersi la luce tally e un contorno rosso intorno allo schermo LCD. Quando la camera è sull'uscita di anteprima, il tally si illuminerà di verde.

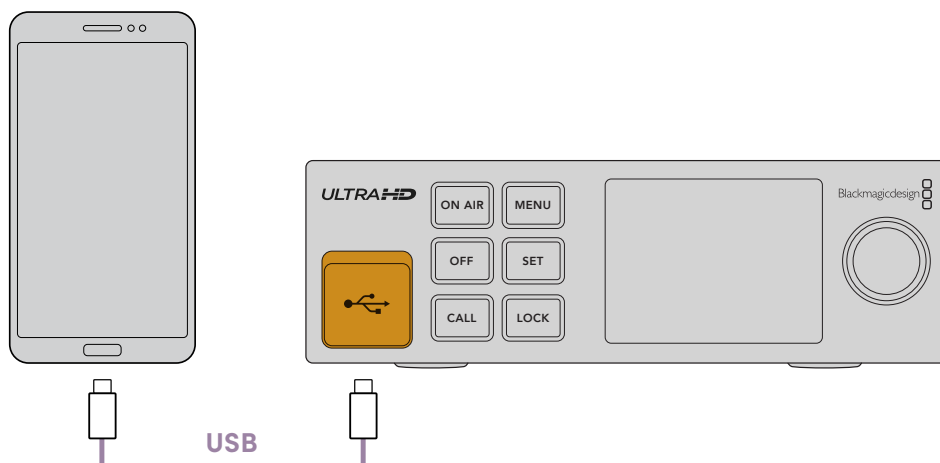
Per testare il controllo camera prova a regolare diaframma e livelli del nero dalla pagina Camera di ATEM Software Control.

I canali audio SDI 15 e 16 integrati sono impostati di default per il talkback, ma si possono anche selezionare i canali 13 e 14 per il talkback tecnico o l'uscita di programma da Blackmagic Streaming Setup.

Quando si trasmette su internet, con Blackmagic Streaming Setup è possibile generare un file XML da caricare su Blackmagic Streaming Encoder dimodoché possa rilevare il Blackmagic Streaming Decoder su internet. Per maggiori informazioni su come creare e caricare il file XML consulta la sezione precedente del manuale.

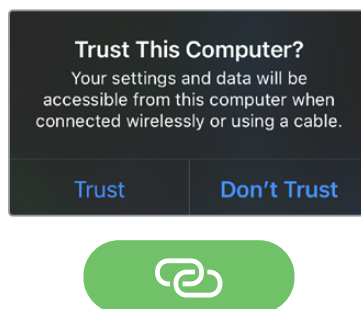
Streaming con lo smartphone

I Blackmagic Streaming Processor si possono collegare a internet sfruttando il tethering degli smartphone. Basta collegare il tuo smartphone alla porta USB-C frontale o posteriore del processore di streaming. Questa configurazione veloce permette di trasmettere o ricevere lo streaming ovunque ti trovi sfruttando una connessione mobile 4G o 5G.



Per impostare la connessione del telefono:

- 1 Sul tuo dispositivo iOS, apri **Impostazioni** > **Hotspot personale** e **Consenti agli altri di accedere**.
- 2 Un messaggio ti chiederà di autorizzare il computer connesso. Seleziona **Autorizza** e vedrai comparire l'icona verde del tethering sullo schermo. Questa icona segnala che la connessione funziona.



Quando il tethering è attivo, lo sfondo dietro l'orologio dello smartphone diventa verde.

Sui dispositivi Android, sfoglia per andare nel menù veloce. Tieni premuta l'icona dell'hotspot e attiva il tethering USB.

SUGGERIMENTO A conclusione dello streaming disabilita il tethering per non consumare la batteria dello smartphone.

Diretta streaming su internet

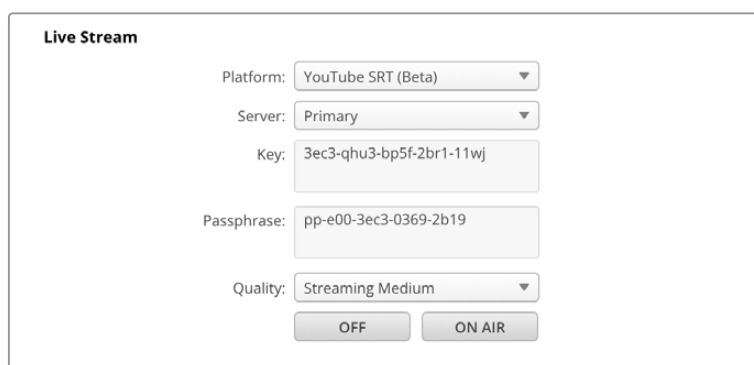
Blackmagic Streaming Encoder consente lo streaming diretto sulle più importanti piattaforme, tra cui YouTube Live, Facebook e Twitch. L'esempio qui sotto mostra come configurare la diretta su YouTube Live.

- 1 Copia il codice di streaming dal tuo account YouTube Studio.
- 2 Lancia Blackmagic Streaming Setup e vai alla tab **Live Stream**.
- 3 Su **Platform** seleziona **YouTube** e su **Server** seleziona **Primary**. Incolla il codice di streaming di YouTube nel campo **Key** e seleziona la qualità. Conferma cliccando su **Save**.
- 4 Adesso puoi trasmettere al pubblico di tutto il mondo. Clicca sul pulsante **ON AIR** sul software o sul pannello frontale. A conclusione della trasmissione, clicca sul pulsante **OFF** per terminare la trasmissione.

Utilizzare il protocollo di streaming SRT

Il protocollo Secure Reliable Transport (SRT) offre una latenza di streaming più bassa rispetto al protocollo RTMP e garantisce maggiore sicurezza perché si serve di una passphrase, come una chiave crittografica.

Quando selezioni il protocollo SRT per il tuo servizio di streaming, copia la passphrase e il codice di streaming dal tuo account di streaming e incollali nei campi **Key** e **Passphrase** di Blackmagic Streaming Setup.



The screenshot shows the 'Live Stream' configuration window. It includes dropdown menus for 'Platform' (YouTube SRT (Beta)) and 'Server' (Primary). Text input fields for 'Key' (3ec3-qhu3-bp5f-2br1-11wj) and 'Passphrase' (pp-e00-3ec3-0369-2b19) are present. A 'Quality' dropdown is set to 'Streaming Medium'. At the bottom, there are 'OFF' and 'ON AIR' buttons.

Copia la passphrase nel campo Passphrase dell'utilità

Per i broadcaster che volessero personalizzare le impostazioni di streaming, sia i protocolli RTMP o SRT che i codec H.264 o H.265 si possono convertire in file XML. Per maggiori informazioni consulta "Blackmagic Streaming XML Format" nella sezione "Informazioni per gli sviluppatori (in inglese)".

Usare l'uscita webcam

Di solito i software come Zoom o Microsoft Teams rilevano automaticamente il tuo Blackmagic Streaming Processor come webcam, quindi basta aprirli per vedere all'istante il flusso video. In caso contrario sarà necessario indicare al software di usare il tuo codificatore o decodificatore di streaming come webcam e microfono.

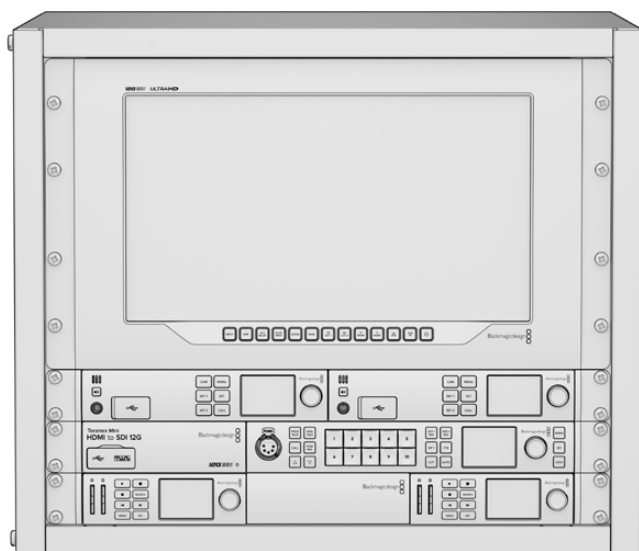
Per configurare la webcam su Microsoft Teams:

- 1 Collega Blackmagic Streaming Processor al tuo computer con un cavo USB-C alla porta Webcam Out sul retro del pannello.
- 2 Nella barra del menù di Teams, apri **Impostazioni** e seleziona **Dispositivi**.
- 3 Nel pannello **Audio**, clicca sul menù del microfono e seleziona **Blackmagic Design** come sorgente audio.
- 4 Vai alle impostazioni **Video** e seleziona il tuo Blackmagic Streaming Processor dal menù **Camera**.

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelf è una mensola di 1RU per installare una vasta gamma di dispositivi Blackmagic Design nei rack broadcast o nei flight case. Il design modulare consente di costruire impianti pratici e portatili composti da dispositivi che misurano 1RU.

La figura qui sotto mostra tre mensole Universal Rack Shelf installate in un piccolo rack con una serie di dispositivi compatibili. Sulla mensola in basso è presente un pannello di copertura largo 1/3 di rack che chiude lo spazio inutilizzato tra i due dispositivi.



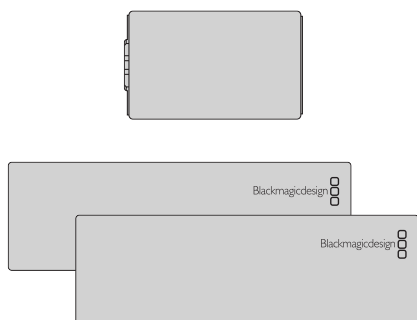
Contenuto

Il kit di Universal Rack Shelf contiene:



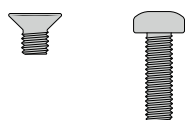
Blackmagic Universal Rack Shelf

Una mensola 1RU per installare dispositivi Blackmagic Design.



Pannelli di copertura

1 pannello largo 1/6 di rack e 2 pannelli larghi 1/3 di rack per chiudere gli spazi inutilizzati.



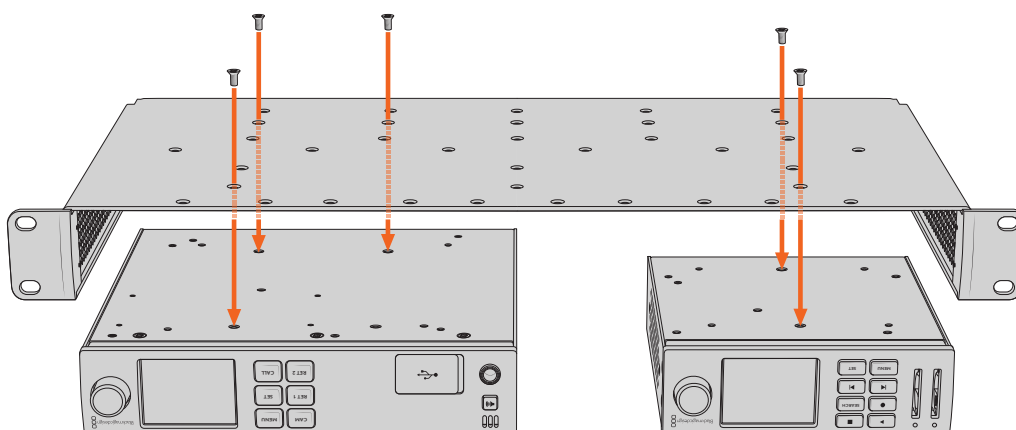
Viti

12 viti M3 5mm a testa svasata.

2 viti M3 9mm piatte per i pannelli di copertura 1/6.

Installare un dispositivo sulla mensola

- 1 Se il dispositivo è dotato di piedini in gomma, rimuovili dalla base con un raschietto in plastica.
- 2 Capovolgi la mensola e il dispositivo Blackmagic Design e allinea i fori della prima con i fori filettati del secondo. Ci sono due fori centrali sui dispositivi larghi 1/3 di rack e tre fori sui dispositivi larghi 1/2 di rack.

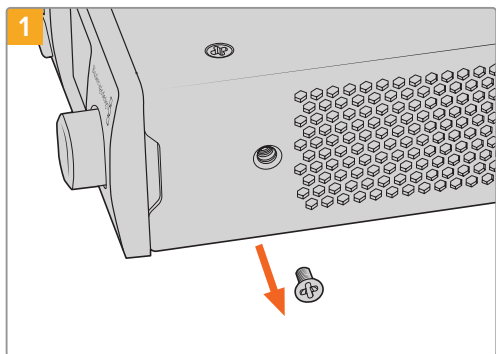


- 3 Usa le viti M3 5mm a testa svasata in dotazione per fissare il dispositivo alla mensola.
- 4 Dopo aver serrato le viti, capovolgi la mensola e installala nel rack usando le alette integrate.

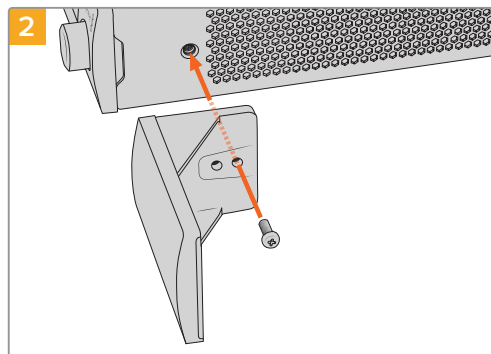
Aggiungi i pannelli di copertura in dotazione per chiudere lo spazio inutilizzato nel rack.

Installare il pannello di copertura 1/6

Il piccolo pannello di copertura 1/6 serve per chiudere lo spazio inutilizzato tra i dispositivi larghi 1/2 o 1/3 di rack installati sulla mensola. Il pannello si può fissare lateralmente su uno qualsiasi dei due dispositivi. Per favorire la ventilazione è preferibile montare il pannello al centro, tra i due dispositivi.



Rimuovi la vite M3 5mm vicino al lato frontale del dispositivo



Allinea il pannello di copertura e fissalo con le viti M3 9mm in nylon in dotazione

Installare il pannello di copertura 1/3

Il pannello di copertura 1/3 si può montare su uno qualsiasi dei lati della mensola su cui è installato un solo dispositivo. Per installare un pannello di copertura, allinea i fori filettati e il punto di ancoraggio alla base del pannello e fissalo alla mensola usando due delle viti M3 5mm a testa svasata in dotazione.

Informazioni per gli sviluppatori (inglese)

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```



```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	IPv4 address/Subnet Mask
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	IPv4 address/Subnet Mask
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```


Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path `/control/api/v1/` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path `/control/documentation.html` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/platformName

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
platformName (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	<i>copy: 1</i>
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/filename

Get a custom platform file.

Parameters

Name	Type	Description	Example
filename (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/filename

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
filename (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/filename

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
filename (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the *Blackmagic Streaming Setup* section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```


Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the *Blackmagic Streaming Setup* section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Assistenza

Assistenza clienti

Il modo più veloce di ottenere assistenza è visitare la pagina Supporto sul sito Blackmagic Design, dove trovi il materiale di supporto più recente per il tuo Blackmagic Streaming Processor.

Supporto online

La versione più recente del manuale è disponibile alla pagina www.blackmagicdesign.com/it/support

Blackmagic Forum

Il Blackmagic Forum sul nostro sito web è un'ottima risorsa per trovare informazioni utili e condividere idee creative. Qui trovi le risposte alle domande più frequenti, oltre ai consigli forniti da utenti esperti e dal team Blackmagic Design. Visita il Forum alla pagina <https://forum.blackmagicdesign.com>

Contattare Blackmagic Design

Se il materiale sulla nostra pagina Forum non risponde alle tue domande, clicca su **Invia una email** nella pagina Supporto, oppure clicca su **Trova un team di supporto** per contattare direttamente il team di Blackmagic Design più vicino a te.

Normative



Smaltimento di apparecchiature elettriche ed elettroniche nell'Unione Europea

Questo simbolo indica che il dispositivo non deve essere scartato insieme agli altri rifiuti, ma consegnato a uno degli appositi centri di raccolta e riciclaggio. La raccolta e lo smaltimento differenziato corretto di questo tipo di dispositivo evitano lo spreco di risorse e contribuiscono alla sostenibilità ambientale e umana. Per tutte le informazioni sui centri di raccolta e riciclaggio, contatta gli uffici del tuo comune di residenza o il punto vendita presso cui hai acquistato il prodotto.



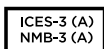
Questo dispositivo è stato testato e dichiarato conforme ai limiti relativi ai dispositivi digitali di Classe A, ai sensi dell'articolo 15 del regolamento FCC. Tali limiti sono stati stabiliti con lo scopo di fornire protezione ragionevole da interferenze dannose in ambienti commerciali. Questo dispositivo genera, usa e può irradiare energia a radiofrequenza e, se non è installato o usato in conformità alle istruzioni, può causare interferenze dannose che compromettono le comunicazioni radio. Operare questo prodotto in ambienti residenziali può causare interferenze dannose, nella cui evenienza l'utente dovrà porvi rimedio a proprie spese.

Il funzionamento è soggetto alle due condizioni seguenti:

- 1 Questo dispositivo non deve causare interferenze dannose.
- 2 Questo dispositivo deve accettare eventuali interferenze ricevute, incluse le interferenze che possono causare un funzionamento indesiderato.



R-R-BMD-20201201001
R-R-BMD-20201201002



Dichiarazione ISED (Canada)

Questo dispositivo è conforme agli standard canadesi sui dispositivi digitali di classe A.

Qualsiasi modifica o utilizzo del dispositivo al di fuori di quello previsto potrebbero invalidare la conformità a tali standard.

Connettere le interfacce HDMI usando cavi schermati HDMI di alta qualità.

Questo dispositivo è stato testato per l'uso in ambienti commerciali. Se utilizzato in ambienti domestici, può causare interferenze radio.

Sicurezza

Questo dispositivo deve essere connesso a una presa di corrente con messa a terra.

Per ridurre il rischio di scosse elettriche, evitare di esporre il dispositivo a gocce o spruzzi.

Questo dispositivo è adatto all'uso nei luoghi tropicali con una temperatura ambiente non superiore ai 40°C.

La temperatura di stoccaggio va da -20° a 60°C e l'umidità relativa da 0% a 90% senza condensazione.

Lasciare uno spazio adeguato intorno al prodotto per consentire sufficiente ventilazione.

Se il dispositivo è installato su rack, assicurarsi che i dispositivi adiacenti non ostacolino la ventilazione.

Le parti all'interno del dispositivo non sono riparabili dall'utente. Contattare il personale qualificato di un centro Blackmagic Design per le operazioni di manutenzione.



Usare il dispositivo a un'altitudine non superiore a 2000 m sopra il livello del mare.

Dichiarazione dello Stato della California

Questo dispositivo può esporre l'utente a sostanze chimiche, per esempio tracce di bifenili polibromurati nelle parti in plastica, che nello Stato della California sono considerati causa di cancro e difetti congeniti o altri danni riproduttivi.

Per maggiori informazioni, visitare la pagina www.P65Warnings.ca.gov.

Garanzia

Garanzia limitata di 36 mesi

Blackmagic Design garantisce al/la Cliente l'esenzione di Blackmagic Streaming Processor da difetti nei materiali e nella fabbricazione per il periodo di garanzia di 36 mesi dalla data di acquisto. Sono esclusi i connettori, i cavi, i moduli per fibra ottica, i fusibili e le batterie, forniti privi di difetti nei materiali e nella fabbricazione per un periodo limitato di 12 mesi dalla data di acquisto. Durante il periodo di garanzia, Blackmagic Design, a sua scelta, riparerà il prodotto difettoso, senza costi aggiuntivi per le parti e la manodopera, o sostituirà il prodotto difettoso, purché quest'ultimo venga restituito.

Per ottenere l'assistenza coperta dalla presente garanzia, il/la Cliente deve notificare Blackmagic Design del difetto entro il periodo di garanzia e accordarsi sulla prestazione del servizio di riparazione. Il/la Cliente è responsabile del costo di imballaggio e di spedizione del prodotto difettoso al centro di assistenza indicato da Blackmagic Design, con spese di spedizione prepagate. Le spese di spedizione, l'assicurazione, le tasse, la dogana e altre spese pertinenti la resa del prodotto a Blackmagic Design sono a carico del/la Cliente.

Questa garanzia perde di validità per difetti, malfunzionamento o danni causati da utilizzo improprio o da manutenzione e cura inadeguate del prodotto. Blackmagic Design non ha obbligo di fornire assistenza sotto questa garanzia per: a) riparare danni causati da tentativi di installazione, riparazione o manutenzione da parte di personale che non sia autorizzato da Blackmagic Design, b) riparare danni causati da uso improprio o connessione ad attrezzatura incompatibile, c) riparare danni o malfunzionamenti causati dall'uso di parti o ricambi non originali Blackmagic Design, o d) fare manutenzione se il prodotto è stato modificato o integrato ad altri prodotti con il risultato di allungare i tempi della manutenzione o di renderla più difficoltosa.

LA PRESENTE GARANZIA DI BLACKMAGIC DESIGN SOSTITUISCE QUALSIASI ALTRA GARANZIA, ESPLICITA O IMPLICITA. BLACKMAGIC DESIGN E I SUOI FORNITORI ESCLUDONO QUALSIASI ALTRA GARANZIA IMPLICITA DI COMMERCIALIZZABILITÀ O DI IDONEITÀ AD UN USO SPECIFICO. L'INTERA RESPONSABILITÀ DI BLACKMAGIC DESIGN E L'UNICO ESCLUSIVO RICORSO DEL/LA CLIENTE PER QUALSIASI DANNO ARRECATO DI NATURA INDIRETTA, SPECIFICA, ACCIDENTALE O CONSEGUENZIALE, ANCHE QUALORA BLACKMAGIC DESIGN O UN SUO FORNITORE FOSSERO STATI AVVERTITI DELLA POSSIBILITÀ DI TALI DANNI, È LA RIPARAZIONE O LA SOSTITUZIONE DEI PRODOTTI DIFETTOSI. BLACKMAGIC DESIGN NON SI ASSUME ALCUNA RESPONSABILITÀ PER QUALSIASI USO ILLEGALE DEL DISPOSITIVO DA PARTE DEL/LA CLIENTE. BLACKMAGIC DESIGN NON SI ASSUME ALCUNA RESPONSABILITÀ PER DANNI DERIVANTI DALL'USO DI QUESTO PRODOTTO. IL/LA CLIENTE UTILIZZA QUESTO PRODOTTO A PROPRIO RISCHIO.

© Copyright 2025 Blackmagic Design. Tutti i diritti riservati. "Blackmagic Design", "DeckLink", "HDLink", "Workgroup Videohub", "Multibridge Pro", "Multibridge Extreme", "Intensity" e "Leading the creative video revolution" sono marchi registrati negli Stati Uniti e in altri Paesi. Altri nomi di prodotti e aziende menzionati in questo manuale potrebbero essere marchi dei rispettivi proprietari. Thunderbolt e il logo Thunderbolt sono marchi registrati di Intel Corporation negli Stati Uniti e/o in altri paesi.

Processadores de Streaming

Blackmagic



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Prezado cliente,

Obrigado por adquirir um processador de streaming Blackmagic!

O Blackmagic Streaming Encoder se conecta diretamente a qualquer equipamento SDI, converte o sinal em H.264 ou H.265 e permite a transmissão para serviços de streaming populares como YouTube Live, Facebook Live e Twitch. Você também pode transmitir vídeo ponto a ponto em qualidade broadcast utilizando o Blackmagic Streaming Decoder. Isso facilita a transmissão de vídeo profissional para locações remotas pela internet.

O Blackmagic Streaming Decoder permite receber um stream do Streaming Encoder e reconverte-lo em vídeo SDI e HDMI. Você ainda conta com sinalização, intercomunicação e controle de câmera, recursos que o tornam ideal para produções ao vivo. Além disso, o Streaming Decoder também decodifica fluxos vindos de câmeras Blackmagic e switchers ATEM com streaming integrado.

Este manual de instruções contém todas as informações necessárias para a instalação e operação do seu processador de streaming Blackmagic.

Consulte a página de suporte no nosso site em www.blackmagicdesign.com/br para obter a versão mais recente deste manual e atualizações do software interno do seu processador de streaming Blackmagic. Ao baixar o software, não se esqueça de fazer o registro com seus dados para que possamos mantê-lo informado sobre novos lançamentos.

Estamos sempre trabalhando em novos recursos e melhorias, por isso, queremos ouvir a sua opinião.

Grant Petty

Diretor-Executivo da Blackmagic Design

Índice

Primeiros Passos	635	Transmitir ao Vivo para a Internet	662
Conectar a Alimentação	635	Usar a Saída de Webcam	663
Conectar à Rede	636	Blackmagic Universal Rack Shelf	663
Conectar uma Fonte de Vídeo	636	Conteúdo	664
Conectar um Monitor ao Streaming Encoder	637	Montar a Unidade no Rack	664
Conectar Destinos de Vídeo	637	Encaixar a Frente Falsa de 1/6	665
Transmissões Simples via Rede	637	Encaixar a Frente Falsa de 1/3	665
Tela LCD	640	Developer Information	666
Ícones de Conexão	641	Blackmagic Streaming Encoder Ethernet Protocol	666
Saída de Monitoramento do Streaming Encoder	641	Protocol Blocks	668
Blackmagic Streaming Setup	646	Streaming Encoder Control REST API	678
Live Stream	647	Event Control API	680
Audio	651	Livestream Control API	680
Setup	652	Monitor Output Control API	685
Stream Source Settings	655	System Control API	686
Criar Links de Transmissão	656	Notification websocket - 1.0.0	688
Criar um Arquivo XML	657	messages	688
Exportar um Arquivo XML	657	Device Properties	689
Carregar um Arquivo XML	659	Blackmagic Streaming XML Format	691
Sinalização, Intercomunicação e Controle de Câmera	659	Ajuda	698
Transmitir com Smartphone	661	Avisos Regulatórios	699
		Informações de Segurança	700
		Garantia	701

Primeiros Passos

Começar a usar o seu processador de streaming Blackmagic é simples. Basta conectar a alimentação, plugar um cabo de rede e ligar as origens e os destinos de vídeo.



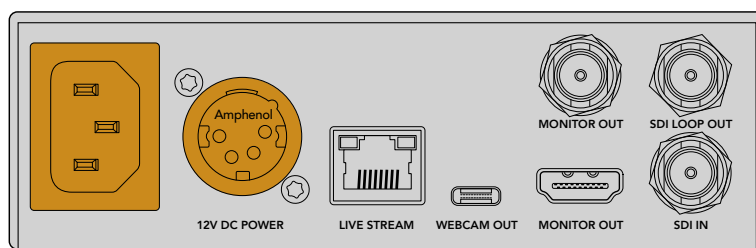
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

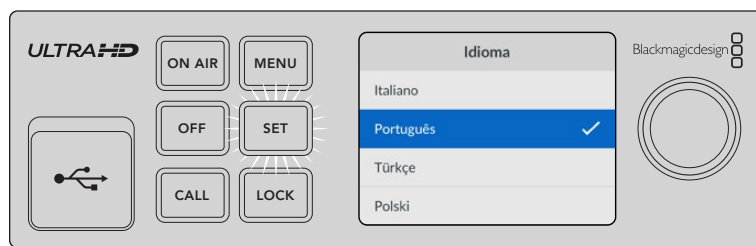
Conectar a Alimentação

Para conectar a alimentação, insira um cabo de força IEC padrão na entrada de energia no painel traseiro do seu processador de streaming.



Os modelos Blackmagic Streaming Encoder e Streaming Decoder também contam com uma entrada DC de 12 V extra. Essa entrada pode ser usada para conectar uma fonte de alimentação externa ou adicionar redundância, como por meio de um no-break (UPS) ou bateria de 12 V.

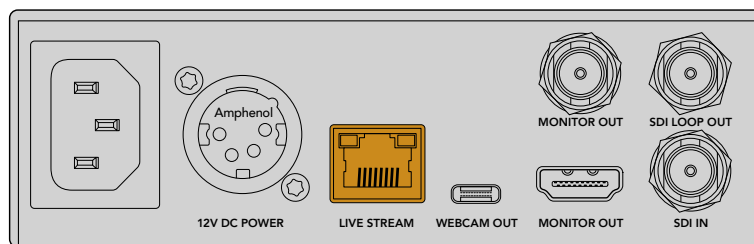
Após ligar o equipamento, a tela LCD no painel frontal solicitará que você selecione um idioma. Use o seletor para navegar até o idioma desejado e pressione o botão “Set” piscando.



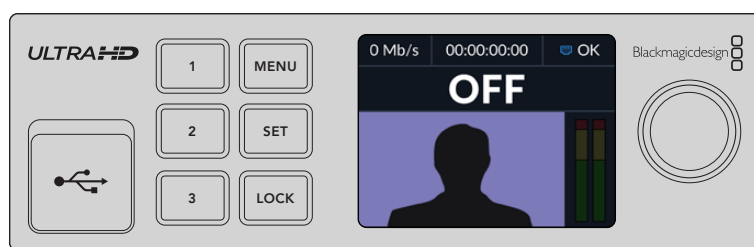
Pressione o botão “Set” para confirmar a configuração.

Conectar à Rede

Conecte seu processador de streaming Blackmagic à rede local ou à internet, inserindo um cabo de rede na porta Ethernet “Live Stream” e conectando-o a um roteador ou switch de rede.



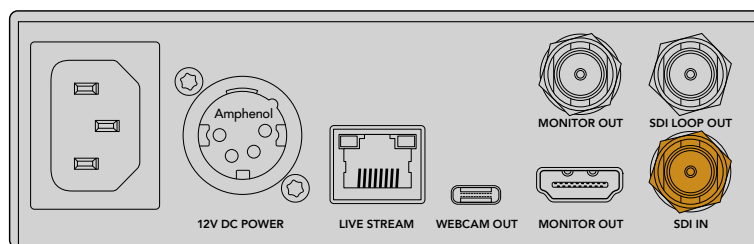
Por padrão, o processador de streaming Blackmagic vem configurado para DHCP e deve obter um endereço IP automaticamente. Após estabelecer a conexão com sucesso, um ícone azul de Ethernet será exibido no canto superior direito da tela inicial do LCD. Se for necessário utilizar um endereço IP estático, consulte a seção ‘Blackmagic Streaming Setup’ mais adiante neste manual.



Conectar uma Fonte de Vídeo

Conecte a fonte de vídeo SDI que deseja transmitir, como a Blackmagic URSA Mini Pro 12K ou um switcher ATEM SDI, à entrada SDI do Blackmagic Streaming Encoder. O Blackmagic Streaming Encoder é compatível com SDI 12G e alterna automaticamente entre HD e Ultra HD até 2160p60, conforme a alteração do sinal de vídeo.

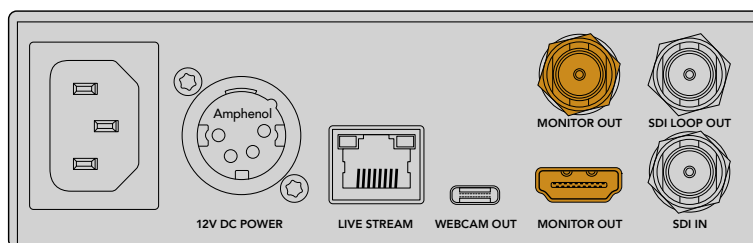
Quando o vídeo for conectado, ele será exibido na tela LCD do Streaming Encoder. O áudio é integrado ao sinal de vídeo SDI, e você pode verificar sua presença observando os medidores de áudio na própria tela LCD.



Conecte sua fonte de vídeo SDI à entrada SDI do Blackmagic Streaming Encoder.

Conectar um Monitor ao Streaming Encoder

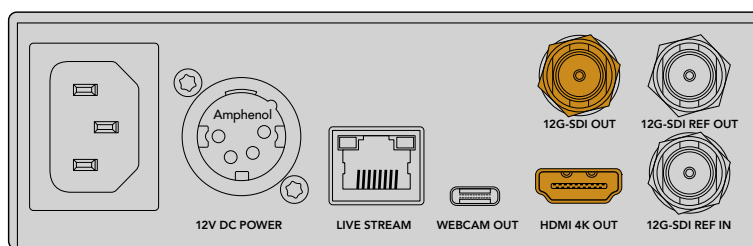
Conecte uma TV HDMI ou um monitor SDI a uma das saídas de monitoramento na parte traseira do Blackmagic Streaming Encoder. As saídas de monitoramento permitem acompanhar a transmissão e visualizar informações importantes sobre o stream de vídeo, como o status de transmissão, a taxa de dados e os níveis de áudio. Para obter mais informações sobre a saída de monitoramento, consulte a seção “Saída de Monitoramento do Streaming Encoder” neste manual.



Conecte uma TV ou monitor ao Blackmagic Streaming Encoder para visualizar informações importantes sobre sua transmissão.

Conectar Destinos de Vídeo

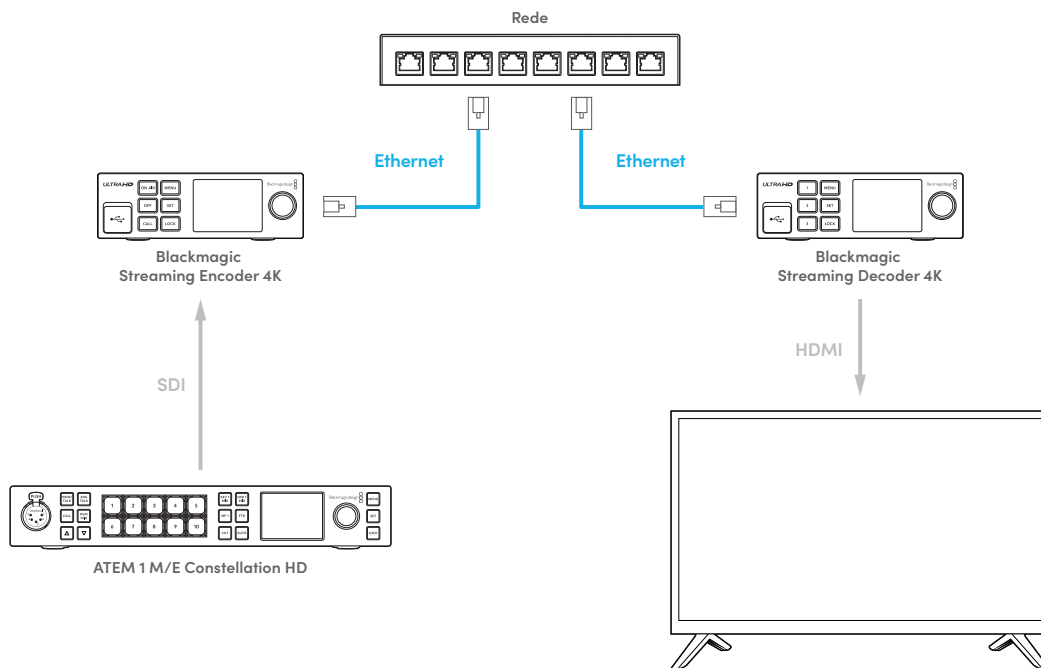
Com o Blackmagic Streaming Decoder, é provável que você queira enviar o stream decodificado para um destino, como um switcher ATEM SDI e uma TV HDMI. Basta conectar o switcher ATEM à saída SDI 12G e a televisão ao conector HDMI.



Conecte os destinos de vídeo às saídas SDI e HDMI do Streaming Decoder.

Transmissões Simples via Rede

Após a conexão, uma boa maneira de verificar se tudo está funcionando corretamente é configurar uma transmissão simples entre o Blackmagic Streaming Encoder e o Blackmagic Streaming Decoder em uma rede local. Essa configuração é útil caso você queira transmitir ao vivo para uma sala de conferências ou um projetor em um grande edifício. O exemplo abaixo mostra uma configuração básica de transmissão de um switcher ATEM para uma televisão HDMI.



O painel frontal do seu processador de streaming tem um visor LCD que exibe informações importantes e permite monitorar vídeo e áudio. O seletor e os botões de menu oferecem acesso rápido às configurações do equipamento, permitindo configurar, iniciar e encerrar uma transmissão diretamente pelo painel frontal.

Todas as configurações disponíveis no menu LCD do painel frontal também podem ser ajustadas pelo software Blackmagic Streaming Setup. Para mais detalhes sobre cada configuração, consulte a seção 'Blackmagic Streaming Setup' mais adiante neste manual.

Para configurar uma transmissão simples:

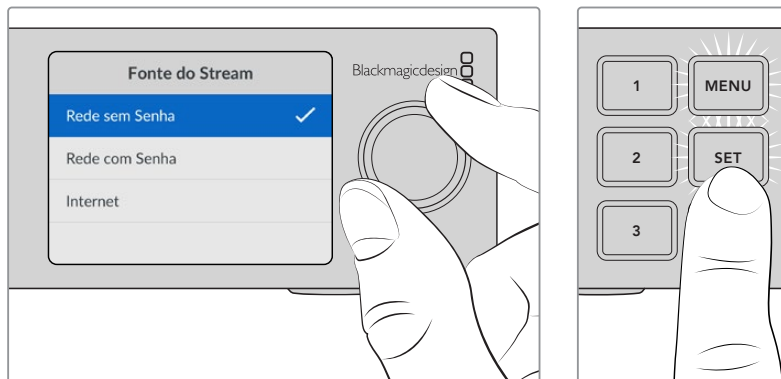
- 1 Conecte o Blackmagic Streaming Encoder e o Blackmagic Streaming Decoder ao mesmo switch de rede.

DICA Para uma configuração ponto a ponto ainda mais simples, sem usar um switch, conecte diretamente o Streaming Encoder ao Streaming Decoder com um único cabo Ethernet.

- 2 No Blackmagic Streaming Decoder, pressione o botão "Menu" para abrir o menu LCD do painel frontal e depois pressione "Set" para acessar o submenu "Stream Ao Vivo".

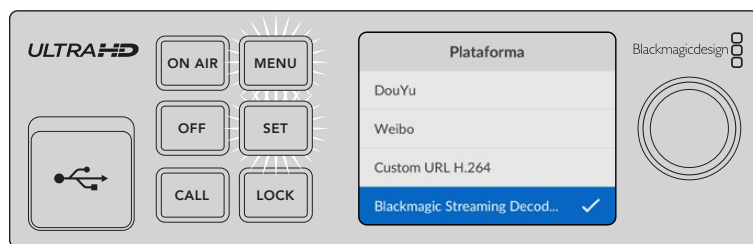


Gire o seletor para selecionar a opção “Fonte do Stream”, pressione “Set” e escolha “Rede sem Senha” na lista. Pressione o botão ‘menu’ para voltar à tela inicial. Pressione “Set” para confirmar sua escolha.



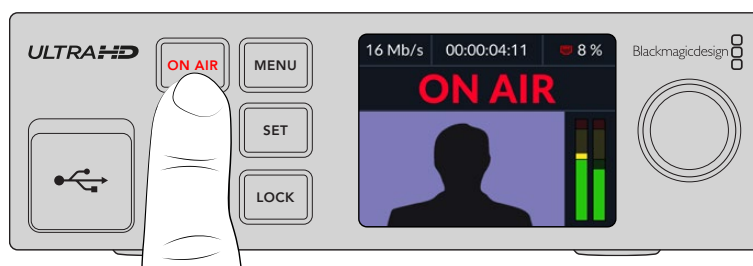
Pressione o botão “Menu” para retornar à tela inicial.

- 3 Na Blackmagic Streaming Encoder, pressione o botão “Menu” para abrir o menu “Stream Ao Vivo”, pressione “Set” e gire o seletor para descer até as configurações de “Plataforma”. Pressione “Set” para acessar o submenu “Plataforma”.

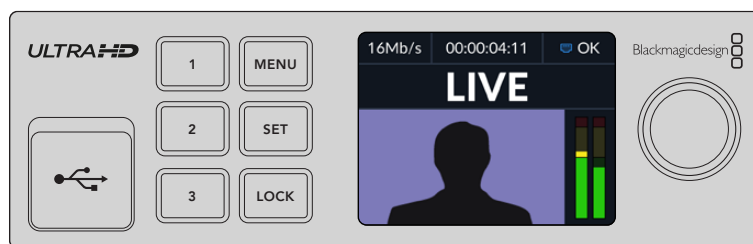


Selecione seu Blackmagic Streaming Decoder na lista de plataformas e pressione “Set”. Volte à tela inicial pressionando o botão “Menu”.

- 4 Pressione o botão “On Air” no painel frontal do Blackmagic Streaming Encoder. Durante a transmissão, o botão acenderá em vermelho e “On Air” aparecerá na tela inicial do LCD.



Você verá sua transmissão na tela LCD do Blackmagic Streaming Decoder.



Um indicador “Live” será exibido no LCD do Streaming Decoder.

Para encerrar a transmissão, pressione o botão “Off” no painel frontal do Streaming Encoder.

DICA Se o botão “On Air” piscar no Blackmagic Streaming Encoder, isso indica que a transmissão ao vivo não foi iniciada corretamente ou foi interrompida inesperadamente. Isso pode ser causado por problemas na conexão de rede ou nas configurações de streaming. Verifique se as configurações de streaming estão corretas e se os cabos de rede estão conectados.

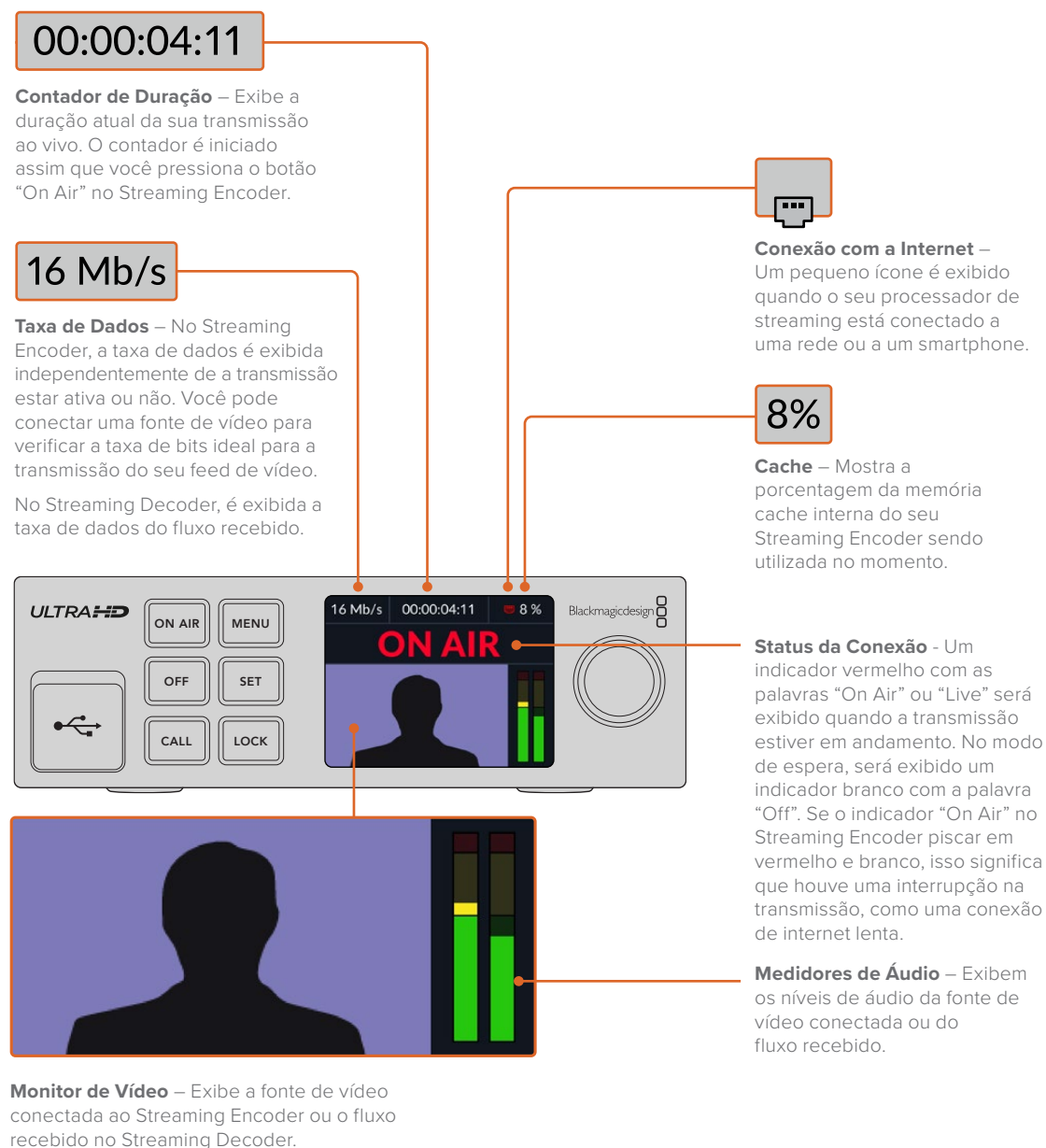
Botão Lock

Para bloquear os controles do painel frontal do seu processador de streaming, mantenha o botão “Lock” pressionado por 1 segundo. Isso desativa os botões e o seletor, evitando alterações acidentais nas configurações ou a interrupção da transmissão.

Mantenha pressionado por 2 segundos para desbloquear o painel.

Tela LCD

A tela inicial do LCD do processador de streaming Blackmagic oferece monitoramento de vídeo e áudio, além de informações importantes sobre sua transmissão.



Ícones de Conexão

O ícone de conexão no canto superior direito da tela LCD indica o status atual da conexão do seu processador de streaming Blackmagic.



Um ícone de Ethernet azul será exibido quando um cabo Ethernet estiver conectado e a conexão Ethernet for usada para transmissão.



No Blackmagic Streaming Encoder, o ícone de Ethernet fica vermelho quando o equipamento estiver no ar e transmitindo via Ethernet.



Um ícone de smartphone azul será exibido quando a conexão de internet de um smartphone conectado for usada para a transmissão.



No Blackmagic Streaming Encoder, o ícone de smartphone fica vermelho quando o streaming estiver no ar e transmitindo via tethering com um smartphone.

DICA Se nenhum ícone de conexão for exibido, o seu processador de streaming Blackmagic não está conectado a uma rede ou smartphone. Verifique se todos os cabos estão conectados corretamente.

Saída de Monitoramento do Streaming Encoder

A saída de monitoramento do Streaming Encoder permite monitorar a entrada de vídeo, níveis de áudio, status no ar, taxa de dados e níveis de cache, além das informações técnicas sobre a entrada SDI.



A saída de monitoramento oferece informações detalhadas, como taxa de dados e status de cache.

A tela da saída de monitoramento é composta por oito painéis. Confira abaixo a descrição de cada painel e as informações que ele exibe.

Visualização de Entrada

O painel principal exibe a entrada de vídeo atual da fonte de vídeo SDI conectada.



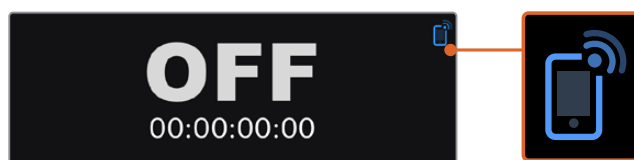
Status de Transmissão

Antes da transmissão, o indicador de status “On Air” exibirá “Off”, indicando que o Streaming Encoder está em espera e pronto para transmitir. Quando a transmissão começar, o indicador exibirá “On Air” em vermelho até que o streaming seja encerrado.



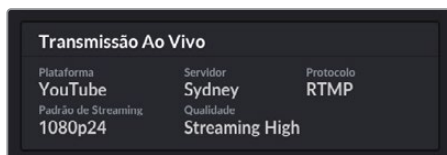
Abaixo do indicador “On Air” está o cronômetro de duração. Ao pressionar o botão “On Air” no Streaming Encoder, o cronômetro começará a contar.

Se o Blackmagic Streaming Encoder estiver fora do ar, mas configurado para transmitir por meio de um smartphone conectado, o indicador “Off” incluirá um ícone azul de smartphone no canto. Quando estiver no ar, o ícone do smartphone ficará vermelho.



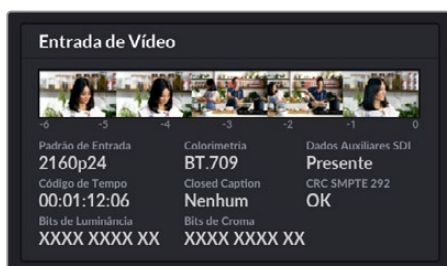
Transmissão Ao Vivo

O painel “Transmissão Ao Vivo” mostra informações sobre as configurações da sua transmissão ao vivo, incluindo a plataforma, o servidor e o protocolo de streaming. Além disso, mostra a resolução e a qualidade da transmissão.



Entrada de Vídeo

Os cinco minivisualizadores na parte superior do painel de entrada de vídeo mostram os seis segundos anteriores da sua transmissão ao vivo. Cada minivisualizador representa 1,2 segundo da transmissão.



Abaixo dos minivisualizadores, você encontra informações técnicas detalhadas sobre a fonte de vídeo conectada à entrada SDI do seu Streaming Encoder.

Padrão de Entrada	Exibe a resolução e a taxa de quadros da entrada de vídeo SDI. O Streaming Encoder é compatível com resoluções de até 2160p60.
Colorimetria	Mostra o espaço de cores da entrada de vídeo SDI. O Streaming Encoder é compatível com os espaços de cores Rec.601, Rec.709 e Rec.2020.
Dados Auxiliares SDI	Dados auxiliares são informações adicionais ao vídeo transportadas pela entrada SDI. Isso inclui áudio embutido, código de tempo e legendas ocultas. Se a entrada SDI incluir dados auxiliares, será exibido “Presente”.
Código de Tempo	Exibe o código de tempo da fonte de entrada de vídeo SDI.
Closed Caption	Se a entrada de vídeo SDI incluir closed captions, o formato será exibido aqui. São compatíveis os formatos CEA-608 e CEA-708.
CRC SMPTE 292	Esta é uma função de verificação de erros para vídeo SDI. Se o Streaming Encoder detectar um problema na entrada de vídeo SDI, será exibido um erro. Erros de CRC geralmente são causados por um cabo SDI com defeito ou excessivamente longo.
Bits de Luminância e Bits de Croma	Os indicadores de “Bits de Luminância” e “Bits de Croma” mostram a atividade do sinal de entrada de vídeo SDI. Cada letra representa o estado de um bit do sinal de vídeo. X - indica um bit em constante mudança. L - indica um bit baixo. H - Indica um bit alto. Os deslocamentos do sinal SDI são subtraídos para facilitar a interpretação. Por exemplo, todos os bits aparecem como “L” quando o vídeo está preto. Em geral, todos os 10 bits da sua entrada SDI aparecerão como “X”, indicando que estão mudando constantemente. Se a entrada SDI for de 8 bits, os dois bits mais à direita aparecerão como “L”, pois não carregam dados. Se algum bit permanecer como “L” ou “H” quando deveria ser “X”, isso indica um bit travado (stuck bit), podendo ser sinal de falha no vídeo a montante.

Entrada de Áudio

A exibição da forma de onda sonora na parte superior do painel de entrada de áudio mostra as informações de áudio dos últimos seis segundos da sua transmissão ao vivo. Ela é atualizada continuamente e se desloca da direita para a esquerda.

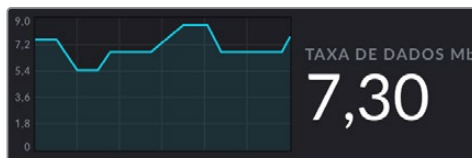


Abaixo da forma de onda, são exibidas informações técnicas detalhadas sobre a entrada de áudio:

Frequência da Amostra	Exibe a taxa de frequência da amostra do áudio embutido na entrada SDI.
Ênfase	Indica se a opção de ênfase está ativada na fonte de áudio.
Fonte Bloqueada	Indica se a frequência da fonte de áudio está sincronizada com uma referência externa.
Tamanho de Palavra	Mostra a profundidade de bits do áudio embutido na entrada SDI.
Origem	Quatro caracteres que indicam a origem do canal.
Hora do Dia	Código de tempo em livro execução.
Bits de Áudio	Mostra a atividade de bits das amostras de áudio embutido na conexão SDI. Mesmo que o status do canal de áudio informe 16, 20 ou 24 bits, esta leitura confirma a atividade real dos bits.
VUCP	Lendo os bits VUCP da esquerda para a direita: o bit “V” indica “Válido”; “U” é o bit “Usuário”; “C” é o bit “Status do Canal” e “P” é “Paridade”. Esse campo é semelhante ao de “Bits de Áudio”.
Endereço de Amostra	Contador de amostras de áudio.
Bits AUX Usados	Indica se os bits auxiliares estão sendo usados para o áudio principal.
Canais de Áudio 1-32	Cada dígito representa um canal de áudio embutido na entrada SDI. Um “P” indica que um canal de áudio está em uso e um “-” indica ausência de áudio no canal correspondente.

Indicador de Taxa de Dados

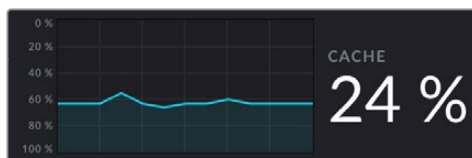
O indicador de taxa de dados mostra a taxa de dados do codificador nos últimos 60 segundos. A taxa de dados é medida em megabits por segundo. Esse indicador funciona continuamente, mesmo quando fora do ar, permitindo avaliar com precisão a largura de banda antes de iniciar a transmissão.



Indicador de Cache

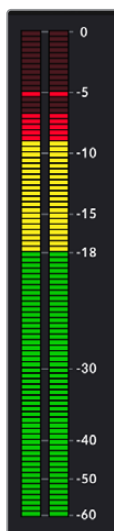
A exibição do cache mostra a porcentagem da memória interna (buffer) do Blackmagic Streaming Encoder que está em uso, com um gráfico exibindo o histórico dos últimos 60 segundos. O cache é uma pequena memória interna que grava e reproduz a saída de programa continuamente. Ele funciona como uma medida de segurança caso a taxa de dados da transmissão caia abaixo do necessário para manter o vídeo.

A oscilação da internet se deve, principalmente, à atividade da rede ou à intensidade do sinal sem fio. Assim, se a taxa de transmissão cair, os dados acumulados no buffer aumentarão proporcionalmente. Se a velocidade da conexão cair a ponto de não conseguir suportar o fluxo de vídeo, o buffer será preenchido com quadros de vídeo para compensar. No entanto, quando o cache atinge 100%, a qualidade da transmissão pode ser comprometida. Por isso, é importante evitar que o cache fique cheio. Você pode fazer um teste conectando uma fonte de vídeo e observando a exibição do cache na saída de monitoramento, sem iniciar a transmissão. Se o cache frequentemente se aproximar de 100%, selecione uma qualidade mais baixa nas configurações da transmissão ao vivo.



Medidores de Áudio

Os níveis da fonte de áudio podem ser monitorados pelos medidores de áudio, que podem ser configurados para exibir os níveis em PPM ou VU no menu do Blackmagic Streaming Encoder. Se os níveis estiverem muito altos, os medidores acenderão em vermelho, indicando que o áudio da transmissão pode estar distorcido ou cortado. O ideal é manter os níveis próximos do topo da seção verde, entrando ocasionalmente na seção amarela.



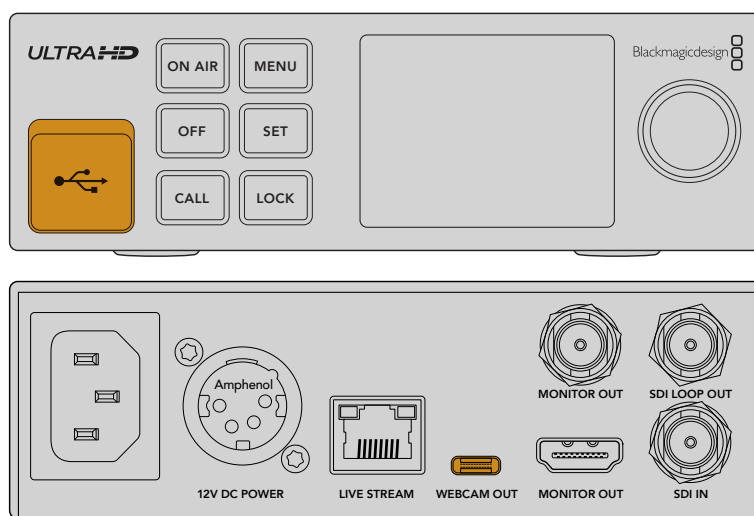
Blackmagic Streaming Setup

O Blackmagic Streaming Setup é um utilitário de software usado para alterar configurações, configurar redes, atualizar o software interno do seu processador de streaming Blackmagic e salvar ou carregar arquivos de configurações de transmissão.

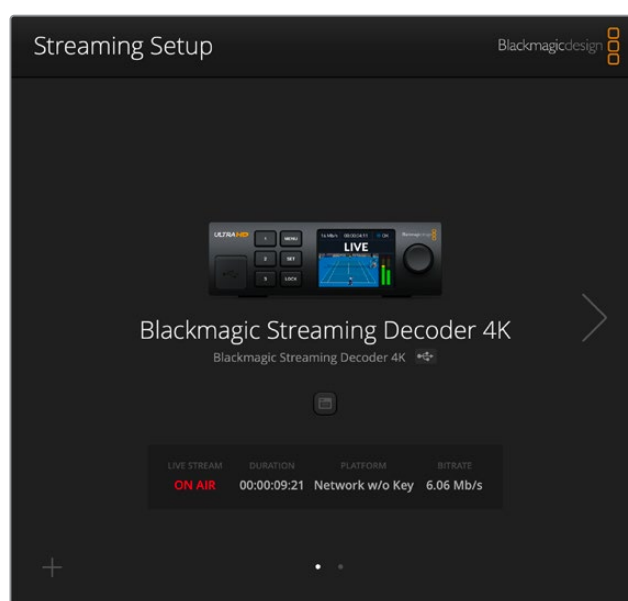
Você pode baixar e instalar a versão mais recente do software Blackmagic Streaming Setup no centro de suporte da Blackmagic Design em www.blackmagicdesign.com/br/support

Para usar o Blackmagic Streaming Setup:

- 1 Conecte seu processador de streaming ao computador usando a porta USB-C no painel frontal ou traseiro.



- 2 Inicie o Blackmagic Streaming Setup. O modelo do seu equipamento será exibido na página inicial do utilitário.
- 3 Clique no ícone quadrado de configuração ou na imagem do seu Blackmagic Streaming Processor para abrir as configurações. Se houver mais de um processador de streaming conectado à rede, use as setas laterais da janela para navegar até o dispositivo desejado.



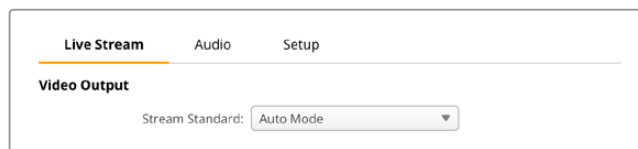
Live Stream

A aba “Live Stream” contém todos os parâmetros necessários para configurar a conexão de transmissão ao vivo do seu processador de streaming.

Streaming Encoder

No Blackmagic Streaming Encoder, a aba “Live Stream” permite definir a qualidade da transmissão, escolher e configurar uma plataforma de streaming e também carregar um arquivo XML com configurações personalizadas.

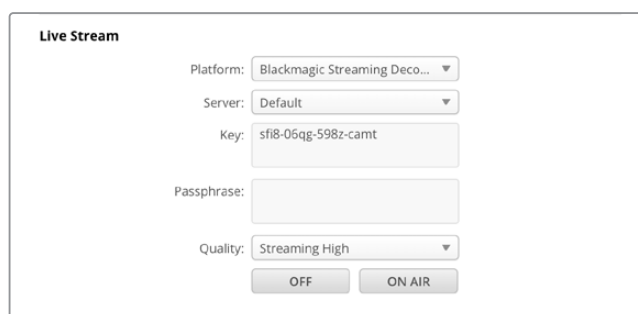
Video Output



Clique no menu “Stream Standard” para selecionar a resolução de vídeo da transmissão. As opções vão de 720p25 até 2160p60.

Live Stream

As configurações da aba “Live Stream” permitem escolher uma plataforma de streaming, configurar os parâmetros e definir a qualidade da transmissão.



Platform

Clique no menu “Platform” para selecionar a plataforma de transmissão. As opções incluem YouTube, Facebook e Twitch. Se você tiver importado configurações personalizadas, elas também aparecerão na lista.

Para transmitir para um URL personalizado, selecione uma das opções de URL personalizadas no menu “Platform”. É possível escolher transmitir com H.264 ou H.265.

Server

Selecione o servidor mais próximo da sua localização a partir da lista disponível. A lista de servidores varia conforme a plataforma escolhida.

Se você estiver transmitindo para Instagram, Microsoft Teams ou para um URL personalizado, o campo do servidor será editável. Insira o URL fornecido pela sua conta na plataforma de streaming ou os dados personalizados.

Key

Insira a chave de transmissão atribuída pela sua plataforma de streaming.

Passphrase

Se estiver utilizando um serviço de streaming com protocolo SRT, insira a senha atribuída pela sua plataforma de streaming.

Quality

Selecione a qualidade de transmissão desejada. As tabelas abaixo mostram as taxas de dados para os codecs H.264 e H.265.

H.264	
HD	4K
HyperDeck High 45 a 70 Mb/s	HyperDeck High 95 a 220 Mb/s
HyperDeck Medium 25 a 45 Mb/s	HyperDeck Medium 66 a 150 Mb/s
HyperDeck Low 12 a 20 Mb/s	HyperDeck Low 38 a 80 Mb/s
Streaming High 6 a 9 Mb/s	Streaming High 34 a 51 Mb/s
Streaming Medium 4,5 a 7 Mb/s	Streaming Medium 23 a 35 Mb/s
Streaming Low 3 a 4,5 Mb/s	Streaming Low 13 a 20 Mb/s

H.265	
HD	4K
Streaming High 2,3 a 4,5 Mb/s	Streaming High 22,5 a 30 Mb/s
Streaming Medium 1,5 a 3 Mb/s	Streaming Medium 14 a 20 Mb/s
Streaming Low 0,8 a 2 Mb/s	Streaming Low 8 a 10 Mb/s

A taxa de dados usada pela configuração de qualidade varia conforme o padrão de vídeo que o codificador de streaming estiver utilizando. Por exemplo, se você selecionar a qualidade “Streaming High” e estiver operando em 1080p24, será usada uma taxa de dados de 6 Mb/s.

Como é possível observar na tabela, as taxas de dados de streaming são menores em comparação às taxas utilizadas pelo HyperDeck. Isso permite a transmissão de dados pela internet, que normalmente dispõe de uma largura de banda inferior à necessária para gravação em disco.

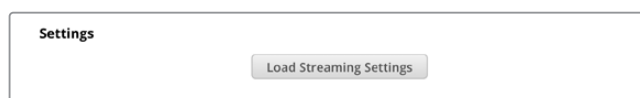
Você notará que cada configuração apresenta duas taxas de dados. O valor mais baixo é utilizado para taxas de quadros reduzidas, como 24p, 25p e 30p, enquanto os valores mais altos são aplicados quando se trabalha com taxas de quadros mais elevadas, como 50p e 60p. Vale destacar também que a configuração padrão de qualidade de streaming é a “Streaming High”, pois proporciona um canal de transmissão com qualidade muito alta.

Botões “Off” e “On Air”

Você pode iniciar ou encerrar uma transmissão ao vivo utilizando os botões “Off” e “On Air”. O botão “On Air” acende em vermelho quando uma transmissão ao vivo está em andamento.

Settings

Clique no botão “Load Streaming Settings” e siga as instruções para carregar um arquivo XML de configurações de streaming proveniente de um Blackmagic Streaming Decoder.

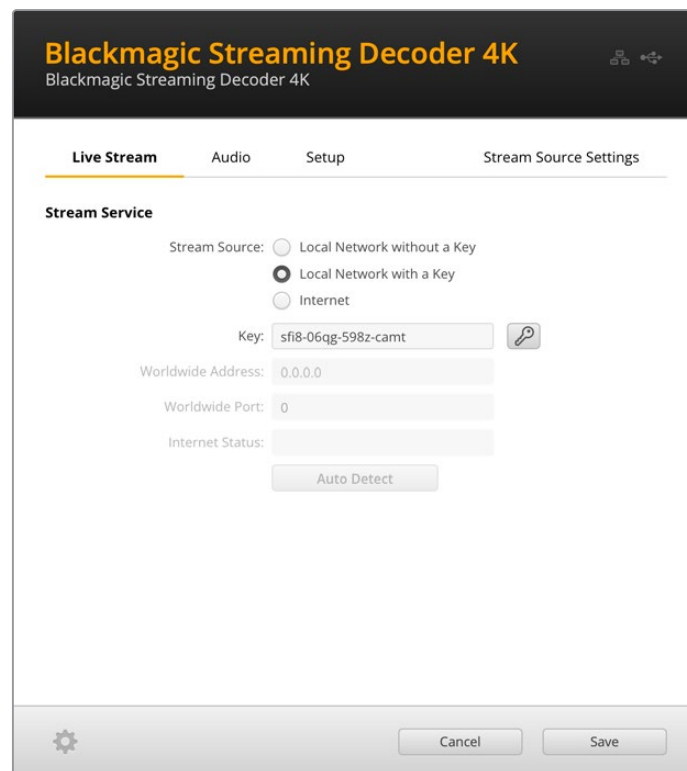


Remove Imported Settings

Para remover todas as configurações de streaming importadas no seu Blackmagic Streaming Encoder, clique no ícone de engrenagem no canto inferior esquerdo da aba “Live Stream”. Para confirmar sua escolha, clique em “Remove”.

Streaming Decoder

No Blackmagic Streaming Decoder, a aba “Live Stream” permite selecionar uma fonte de streaming e configurar as definições de internet do decodificador.



Stream Service

As opções de “Stream Service” permitem configurar a conexão do seu Streaming Decoder com um codificador remoto, uma câmera Blackmagic ou um switcher ATEM com suporte para transmissão integrada.

Stream Source

Use o menu “Stream Source” para selecionar a origem da sua transmissão. As opções são “Local Network without a Key”, “Local Network with a Key” e “Internet”.

Key

Como qualquer pessoa pode transmitir para qualquer Blackmagic Streaming Decoder listado no menu, é recomendável definir uma chave de transmissão para impedir que alguém interfira no seu link de vídeo. É tão fácil selecionar um Streaming Decoder na rede que isso pode acabar gerando confusão, com todos tentando transmitir simultaneamente, levando a conflitos de transmissão.

Isso não é um problema, pois você pode definir uma chave de streaming. Trata-se de uma senha que impede o acesso não autorizado ao seu Blackmagic Streaming Decoder. Quando estiver executando o Streaming Setup, você verá o campo de entrada da chave de transmissão. Basta digitar uma senha aqui, e somente usuários que tiverem a mesma chave em suas configurações de streaming poderão se conectar ao seu Blackmagic Streaming Decoder.

Você pode definir uma senha de sua preferência, mas o Streaming Setup também oferece um botão de geração automática de senha, permitindo que o computador crie uma senha forte e segura. Basta copiar e colar essa senha e enviá-la para as pessoas autorizadas com quem quer se conectar. Assim que essa pessoa inserir a senha no Blackmagic Streaming Encoder, câmera Blackmagic ou switcher ATEM, somente ela terá permissão para se conectar ao seu Streaming Decoder.

Conexão com a Internet

A forma mais interessante de conectar o Blackmagic Streaming Decoder é pela internet. Esse método é um pouco mais complexo, pois é necessário garantir que um Streaming Encoder, câmera Blackmagic ou switcher ATEM consiga localizar o Streaming Decoder de qualquer lugar do mundo. O mundo é grande, por isso será necessário ajustar algumas configurações adicionais para que tudo funcione corretamente.

O que você vai precisar

Para que a conexão com a internet funcione corretamente, tanto o seu Blackmagic Streaming Decoder quanto o Streaming Encoder, câmera ou switcher ATEM que transmitirá para ele devem estar conectados à internet. Além disso, será necessário um endereço IP público para o seu Streaming Decoder, e esse endereço deve ser permanente, sem alterações futuras.

O problema é que o Blackmagic Streaming Decoder está conectado à sua rede Ethernet local, mas precisa estar visível na internet. Para isso, o Streaming Decoder utiliza encaminhamento de portas no firewall da sua conexão de internet, permitindo que o Streaming Encoder, câmera ou switcher ATEM, conectados pela internet, consigam alcançar o seu dispositivo. Se esse encaminhamento não estiver configurado, o Streaming Encoder, câmera ou switcher ATEM não conseguirão localizar o Streaming Decoder.

Isso significa que você precisará solicitar ao seu provedor de internet ou ao administrador da sua rede que configure o encaminhamento da porta TCP 1935 na sua conexão. Eles saberão exatamente do que se trata! A boa notícia é que o Blackmagic Streaming Decoder também tentará configurar automaticamente esse encaminhamento, pois a maioria das conexões de internet e firewalls modernos suporta um protocolo que permite esse processo automático. Isso significa que, durante a configuração com o utilitário Streaming Setup, o Streaming Decoder pode se comunicar com os equipamentos da rede e tentar realizar essa configuração para você.

Confirmar acesso à internet

Você notará, mais abaixo, um campo chamado “Internet Status”. O Blackmagic Streaming Decoder tentará se conectar à internet e informará se tudo parece estar funcionando corretamente. Se o status mudar para conectado, isso é um bom sinal, pois indica que o Streaming Decoder conseguiu configurar o equipamento de rede com as definições de encaminhamento de portas e estabelecer a conexão com a internet corretamente.

OBSERVAÇÃO Abrir portas para tráfego externo na sua rede pode comprometer a segurança. Por isso, é recomendável consultar seu provedor de internet ou o administrador de rede caso tenha alguma preocupação com a segurança.

Se o status da internet não indicar “Visible Worldwide”, pode ser necessário configurar manualmente o encaminhamento de portas no firewall da sua conexão. Nem todos os firewalls oferecem suporte ao protocolo de configuração automática desse tipo de recurso, mas todos permitem a configuração manual.

Caso você não tenha acesso às configurações do roteador ou não saiba como configurar o encaminhamento de portas, talvez precise entrar em contato com seu provedor de internet. Em redes maiores, o ideal é consultar o administrador da rede para configurar o encaminhamento de portas, garantindo que não haja conflitos.

Internet Status

Durante a configuração da conexão com a internet, o recurso de status da internet pode ajudar a identificar e resolver eventuais problemas. A tabela abaixo mostra algumas das informações exibidas e a causa do problema.

Visible Worldwide	Indica que é um bom sinal e tudo está funcionando corretamente. Indica que o encaminhamento de portas foi configurado corretamente e que o Blackmagic Streaming Decoder está pronto para receber um fluxo de vídeo via internet.
No Internet Access	Indica que o Streaming Decoder não conseguiu se conectar à internet. Será necessário verificar as configurações de rede e a conexão com a internet.
Port Forwarding Error	Indica que, embora o dispositivo possa estar conectado à internet, o encaminhamento de portas no seu firewall não pôde ser configurado automaticamente pelo Streaming Decoder e, por isso ele não está acessível pela internet. Será necessário solicitar ao administrador da rede que configure o encaminhamento de portas manualmente.
UPnP error	Também indica que o Streaming Decoder não conseguiu configurar automaticamente o encaminhamento de portas no roteador. Você precisará pedir ajuda ao administrador da rede ou consultar a documentação do roteador para realizar essa configuração manualmente.

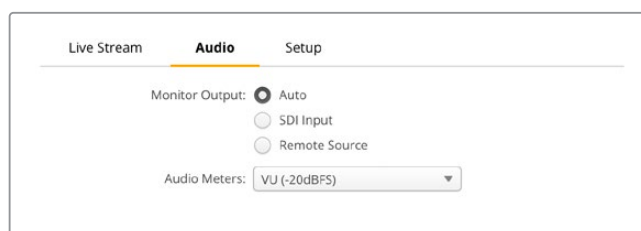
Auto Detect

Clique no botão “Auto Detect” para detectar automaticamente as configurações da sua conexão com a internet.

Audio

A aba “Audio” contém configurações para ajustar a saída de monitoramento de áudio do seu processador de streaming, além de opções de intercomunicação e medidores de áudio.

Streaming Encoder



Monitor Output

Use as opções de saída de monitoramento para selecionar a fonte de áudio usada nas saídas de monitoramento SDI e HDMI do seu Streaming Encoder.

Auto

Quando a saída de monitoramento estiver configurada como “Auto”, o Streaming Encoder detectará e monitorará automaticamente o áudio de intercomunicação enviado de um ATEM Switcher por meio de um Blackmagic Streaming Decoder. Se nenhuma intercomunicação for detectada, o áudio da entrada SDI será utilizado.

SDI Input

Selecione “SDI Input” para monitorar o áudio proveniente da entrada SDI do Streaming Encoder, por exemplo, uma Blackmagic Studio Camera conectada.

Remote Source

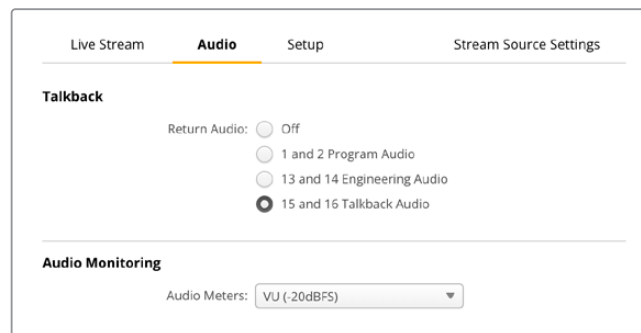
Use esta opção para monitorar o áudio de intercomunicação enviado por um ATEM switcher remoto ou por um Streaming Decoder.

Audio Meters

Use este menu para selecionar o tipo de medidor de áudio a ser exibido. As opções disponíveis são níveis de referência “VU -18dBFS”, “VU -20dBFS”, “PPM -18dBFS” ou “PPM -20dBFS”.

Streaming Decoder

No Streaming Decoder, a aba “Audio” permite selecionar os canais de intercomunicação e configurar os medidores de áudio exibidos no LCD do painel frontal.



Talkback

Use essa configuração para escolher os canais de áudio que serão reenviados ao Blackmagic Streaming Encoder remoto. As opções são: “Off”, “1 and 2 Program Audio”, “13 and 14 Engineering Audio” e “15 and 16 Talkback Audio”.

Audio Monitoring

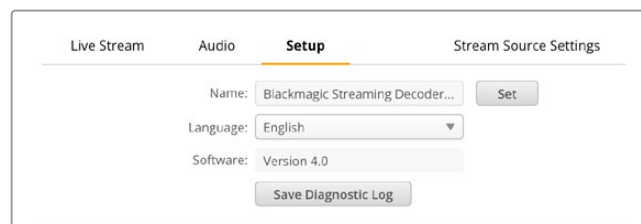
Use este menu para selecionar o tipo de medidor de áudio a ser exibido no painel LCD frontal. As opções disponíveis são níveis de referência “VU -18dBFS”, “VU -20dBFS”, “PPM -18dBFS” ou “PPM -20dBFS”.

Setup

As configurações na aba “Setup” permitem definir o nome do seu processador de streaming, alterar as configurações de rede e restaurar o equipamento para as configurações de fábrica. No Blackmagic Streaming Decoder, a aba “Setup” também inclui opções para ajustar o sinal de referência e a saída SDI.

Identification Settings

Use as configurações de identificação para inserir o nome e o idioma do seu processador de streaming.



Atribuir um nome personalizado é útil para identificar corretamente o processador de streaming Blackmagic quando há mais de um dispositivo conectado à rede. Esse nome também será utilizado como identificação na rede.

Nesta aba, você também pode verificar a versão atual do software.

Network Settings

Network Settings

Network Location: Blackmagic-Streaming-Decode...

MAC Address: 7C-2E-0D-06-CC-80

Protocol: ☒ DHCP ☐ Static IP

IP Address: 10.1.1.15

Subnet Mask: 255.255.255.0

Gateway: 10.1.1.1

Primary DNS: 10.1.1.1

Secondary DNS: 8.8.8.8

Connection Priority: ☒ Ethernet ☐ Mobile

Allow Utility Administration: ☐ via USB ☒ via USB and Ethernet

Network Location

O local de rede é o nome do seu processador de streaming Blackmagic que aparecerá no registro. Esse nome é baseado na identificação definida no topo da interface de configuração. Vale observar que prefixos numéricos são ignorados.

MAC Address

Exibe o endereço MAC do processador de streaming. O endereço MAC é um identificador de hardware único para cada porta Ethernet. Ele é importante na configuração de sistemas de segurança de rede que restringem o acesso a dispositivos com base no endereço MAC.

Protocol

As configurações de DHCP e IP estático determinam como o seu processador de streaming se conecta à rede.

DHCP	Os processadores de streaming Blackmagic vêm configurados para DHCP por padrão. O protocolo dinâmico de configuração do host, ou DHCP, é um serviço em servidores de rede que encontra automaticamente seu processador de streaming e atribui um endereço IP. O DHCP facilita a conexão de equipamentos via Ethernet e evita conflitos de endereços IP. A maioria dos computadores e switchers de rede suporta DHCP.
Static IP	Ao selecionar “Static IP”, você poderá inserir manualmente as informações da rede. Para que todos os dispositivos se comuniquem corretamente com IPs configurados manualmente, eles devem compartilhar a mesma máscara de sub-rede e o mesmo gateway.

Se estiver utilizando IP estático e houver outros dispositivos na rede com o mesmo número identificador no endereço IP, ocorrerá um conflito e os dispositivos não conseguirão se conectar. Caso isso ocorra, basta alterar o número identificador do endereço IP da unidade.

Por exemplo, se o endereço conflitante for 192.100.40.30, altere o último campo para qualquer número, exceto 30. Se o novo número também estiver em uso, continue alterando até encontrar um número único não utilizado por outros dispositivos.

Connection Priority

Quando tanto o cabo Ethernet quanto um celular estiverem conectados ao seu processador de streaming Blackmagic, esta configuração permite escolher qual conexão será usada para a transmissão. Para mais informações sobre o uso dados móveis, consulte a seção ‘Transmitir com Smartphone’.

Allow Utility Administration

Ao ativar a opção “via USB”, as alterações de configuração ficam restritas ao computador conectado via USB, evitando alterações acidentais por outros usuários na rede.

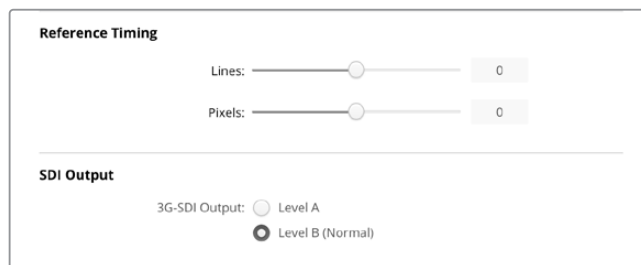
Reset

Clique em “Factory Reset” para restaurar seu processador de streaming Blackmagic às configurações originais de fábrica. Após pressionar “Set”, será exibida uma solicitação para confirmar sua escolha. Para prosseguir, clique em “Reset”.



Streaming Decoder

Além das configurações de identificação e rede, a aba “Setup” no Blackmagic Streaming Decoder inclui as seguintes opções:



Reference Timing

Essas configurações possibilitam o ajuste manual da sincronização de referência com base em linhas ou pixels. O Blackmagic Streaming Decoder conta com uma entrada de sincronização de vídeo Tri-Sync e Black Burst analógica, além de uma entrada SDI que pode ser usada como referência. A referência é usada por grandes emissoras que precisam que todas as conexões de vídeo em suas instalações estejam sincronizadas para que possam ser alternadas em um sistema de grande porte.

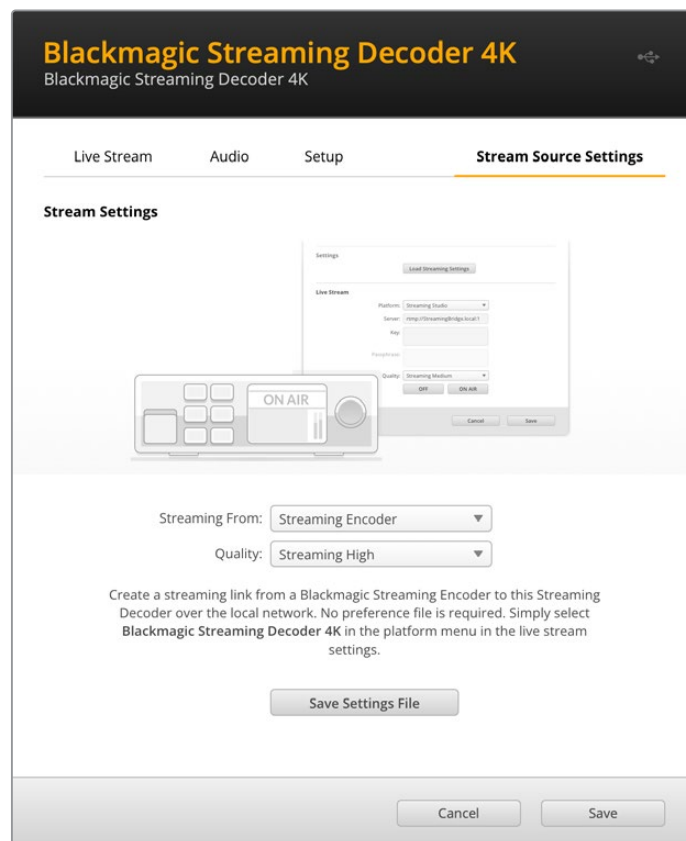
SDI Output

Alguns equipamentos profissionais aceitam somente vídeos SDI 3G de nível A ou nível B. Para manter a compatibilidade com outros equipamentos, selecione o tipo de SDI 3G adequado. A configuração padrão é “Level B”.

Stream Source Settings

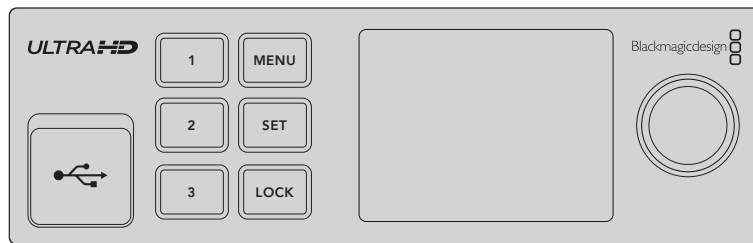
A aba “Stream Source Settings” do Blackmagic Streaming Decoder permite criar arquivos XML de configurações de streaming que podem ser carregados em um codificador remoto, câmera Blackmagic ou switcher ATEM com suporte para transmissão integrada.

Para mais informações sobre como criar arquivos XML de configurações de streaming, consulte a seção ‘Criar Links de Transmissão’ a seguir neste manual.



Criar Links de Transmissão

Com os processadores de streaming Blackmagic, é possível transmitir vídeos por uma rede local ou para qualquer lugar do mundo via internet.



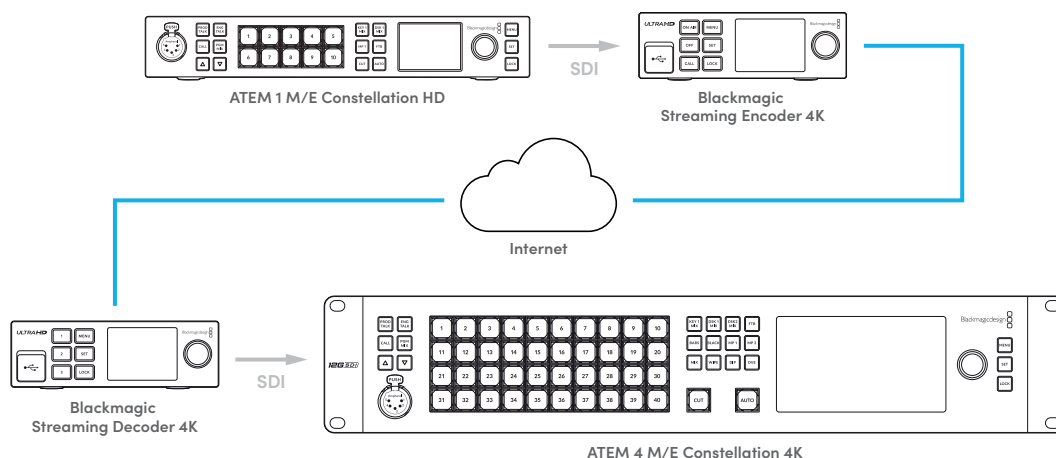
Se o seu Blackmagic Streaming Decoder estiver na mesma rede local que o Streaming Encoder, ele aparecerá no menu “Platform” da aba “Live Stream” do utilitário Blackmagic Streaming Setup. Para mais informações sobre como configurar uma transmissão pela rede local, consulte a seção ‘Primeiros Passos’.

Se você deseja transmitir via internet, ou ainda por rede local utilizando uma chave de transmissão para maior segurança, é possível criar um arquivo XML de configurações de streaming a partir do seu Streaming Decoder. Esse arquivo pode ser carregado no Blackmagic Streaming Encoder por meio do utilitário Blackmagic Streaming Setup.

DICA Também é possível exportar arquivos XML de configurações de streaming para câmeras Blackmagic e switchers ATEM que oferecem suporte à transmissão integrada. Para mais informações sobre como importar esses arquivos, consulte o manual da sua câmera Blackmagic ou switcher ATEM.

Um bom exemplo de como os processadores de streaming Blackmagic podem funcionar em conjunto é a transmissão de um boletim meteorológico de uma locação remota para um estúdio. Para transmitir da locação, tudo o que você precisa é de um codificador de streaming e uma conexão com a internet, seja via smartphone ou rede cabeada.

No estúdio, o Blackmagic Streaming Decoder recebe o feed da internet e o converte para SDI, permitindo sua conexão com o switcher principal do estúdio.



A configuração do fluxo de trabalho para este exemplo seria:

- 1 Na locação, o Blackmagic Streaming Encoder é conectado à saída SDI de programa no switcher ATEM. Por exemplo, um ATEM 1 M/E Constellation HD.
- 2 Em seguida, o Blackmagic Streaming Encoder é conectado a um smartphone.
- 3 No estúdio, o Blackmagic Streaming Decoder também está conectado à internet via Ethernet.
- 4 O Streaming Decoder 4K converte o sinal de vídeo recebido pela internet para SDI e o envia à entrada SDI do switcher principal do estúdio, para a transmissão do telejornal.

Para que o estúdio consiga conectar o Streaming Decoder ao feed de internet enviado pelo Streaming Encoder, será necessário abrir o Blackmagic Streaming Setup e ajustar as definições de internet. Isso inclui a geração de um arquivo XML contendo todas as configurações de streaming, que são então carregadas no codificador remoto.

Criar um Arquivo XML

Para criar um arquivo de configurações XML, conecte o Blackmagic Streaming Decoder à internet ligando um cabo de rede à porta “Live Stream” e a um roteador de internet ou switch de rede.

Depois, conecte o Streaming Decoder ao seu computador usando um cabo USB-C e abra o utilitário Blackmagic Streaming Setup. Na aba “Live Stream”, confirme se as configurações de rede estão corretas e selecione a opção “Internet” em “Streaming Services”. Na janela de status da internet, será exibida a mensagem “Visible Worldwide”, indicando que tudo está funcionando corretamente. Para mais detalhes sobre a configuração do seu Streaming Decoder, consulte a seção ‘Stream Service’ em ‘Blackmagic Streaming Setup’.

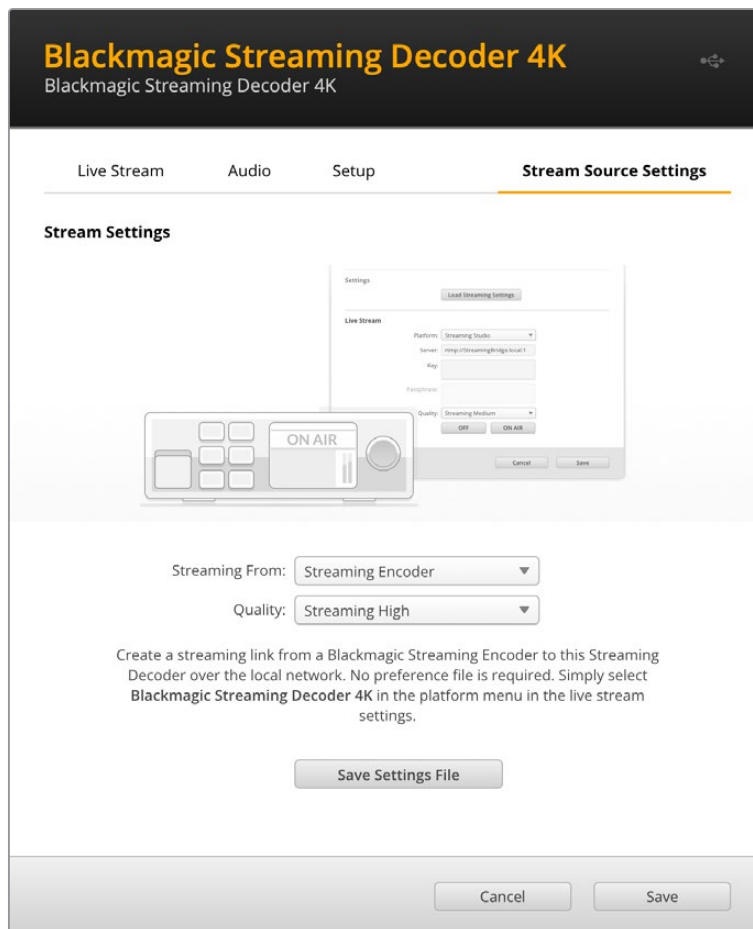
Observação sobre Encaminhamento de Portas

Caso veja um erro relacionado a encaminhamento de portas ou UPnP na janela de status “Internet Status”, solicite ao seu provedor de internet ou administrador de rede que configure o encaminhamento de porta na sua conexão de internet como “TCP port 1935”.

Exportar um Arquivo XML

Após confirmar suas configurações na aba “Setup” do Blackmagic Streaming Setup e conectar com sucesso o seu Streaming Decoder à rede ou à internet, você pode exportar o arquivo XML de configuração.

- 1 Clique na aba “Stream Source Settings” na parte superior direita da janela.



- 2 No menu “Streaming From”, selecione “Streaming Encoder”.

Se estiver criando um arquivo XML de configurações de streaming para uma câmera Blackmagic ou um switcher ATEM com suporte para transmissão integrada, selecione “ATEM Switcher” ou “Blackmagic Camera” nesse menu.

- 3 Selecione a qualidade desejada para a transmissão. Isso definirá a configuração de qualidade do Blackmagic Streaming Encoder remoto.
- 4 Clique no botão “Save Settings File” e escolha um local para salvar o arquivo no seu computador.

Após salvar o arquivo de configurações, envie-o por e-mail ao operador remoto do Blackmagic Streaming Encoder.

DICA Você pode usar as configurações de intercomunicação disponíveis na aba “Audio” para selecionar quais canais de áudio serão reenviados ao codificador de streaming remoto.

Carregar um Arquivo XML

Após o envio do arquivo de configurações por e-mail para a equipe na locação, basta carregá-lo no Blackmagic Streaming Encoder utilizando o utilitário Blackmagic Streaming Setup e pressionar o botão “On Air” para iniciar a transmissão da previsão do tempo para o estúdio.

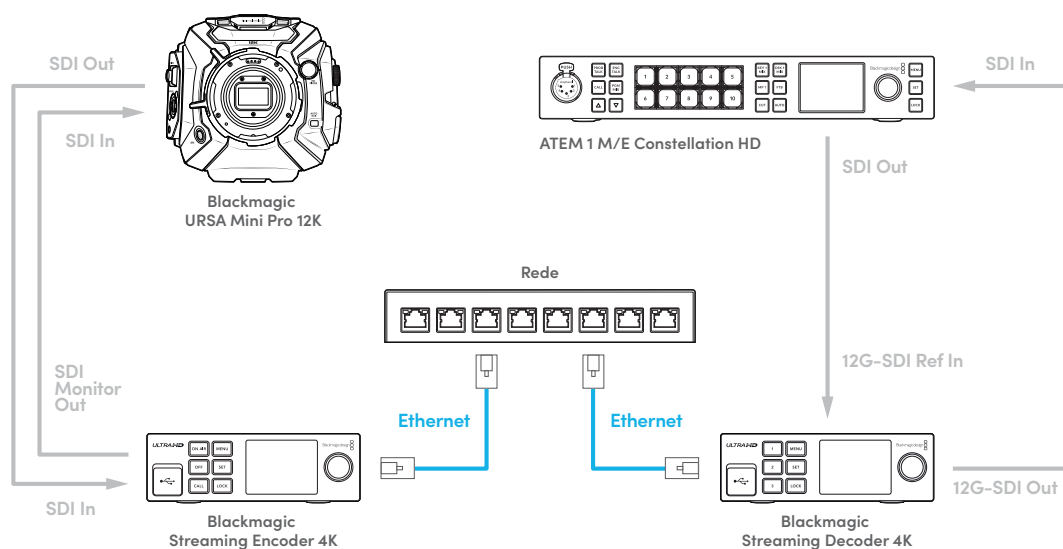
É importante destacar que, uma vez carregado o arquivo XML de configurações de streaming, não é necessário carregá-lo novamente para iniciar ou parar transmissões futuras. Isso facilita a criação de um link de vídeo contínuo entre o Streaming Encoder e o Streaming Decoder.

Enquanto o Streaming Decoder no estúdio mantiver as mesmas configurações de rede e de transmissão, e continuar aguardando aquele Streaming Encoder específico, ele sempre conseguirá encontrá-lo — independentemente de onde esteja na internet. Em qualquer local, basta conectar o seu Streaming Encoder à internet, pressionar “On Air”, e a transmissão começará imediatamente para o Streaming Decoder no estúdio.

Sinalização, Intercomunicação e Controle de Câmera

Os processadores de streaming Blackmagic permitem que switchers ATEM enviem informações de sinalização, intercomunicação e controle de câmera. Isso significa que qualquer câmera Blackmagic Design com conexão SDI pode ser posicionada em qualquer lugar da rede local, ou até mesmo em qualquer parte do mundo via internet, mantendo todas as funcionalidades de sinalização, intercomunicação e controle de câmera.

A configuração é muito simples. A ilustração abaixo mostra como conectar uma URSA Mini 12K a um ATEM 1 M/E Constellation HD em uma rede local, com suporte a sinalização, intercomunicação e controle de câmera.



Quando tudo estiver conectado:

- 1 Pressione o botão “Menu” no Blackmagic Streaming Encoder para abrir o menu no LCD e navegue até o menu “Stream Ao Vivo”.
- 2 No menu “Plataforma”, selecione o Blackmagic Streaming Decoder.
- 3 Pressione “Set” para confirmar.

Para que a sinalização funcione corretamente, é necessário garantir que a câmera esteja configurada com o ID de Câmera ATEM correspondente à entrada do switcher. Para mais informações sobre como configurar o ID de Câmera ATEM, consulte o manual da URSA Mini.

Você pode testar o funcionamento da sinalização alternando a câmera para a saída de programa no switcher ATEM. Se o ID de Câmera ATEM estiver configurado corretamente na sua câmera, a luz de sinalização acenderá, com uma borda vermelha ao redor da tela LCD da câmera. Agora, alterne a câmera para a saída de pré-visualização e a sinalização acenderá em verde.

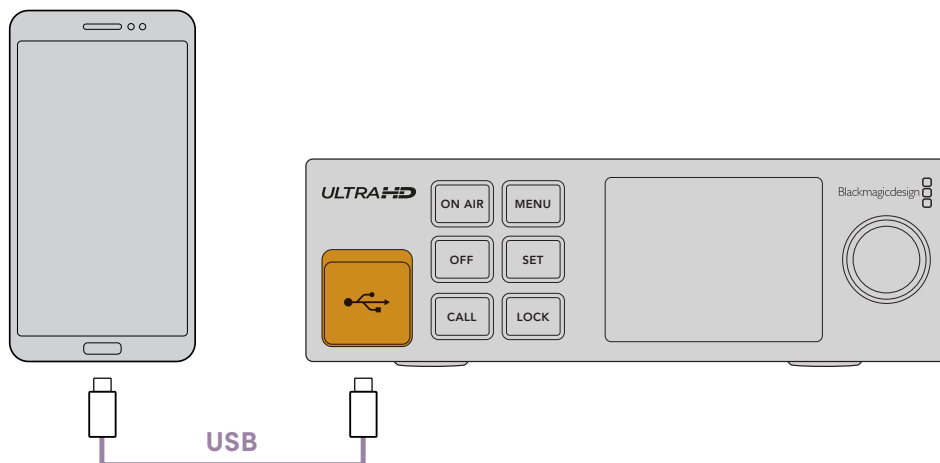
Experimente ajustar a íris e o pedestal na aba de câmeras do ATEM Software Control para testar o controle de câmera.

Os canais de áudio embutido SDI 15 e 16 são definidos como padrão para intercomunicação, mas você pode alterá-los para os canais “Técnicos 13 e 14”, ou para o áudio de programa, utilizando o utilitário Blackmagic Streaming Setup.

Ao transmitir pela internet, um arquivo de configurações XML é criado usando o Blackmagic Streaming Setup. Esse arquivo XML é então carregado no Blackmagic Streaming Encoder para que ele consiga localizar o Blackmagic Streaming Decoder pela internet. Para mais informações sobre como criar e carregar o arquivo de configurações XML, consulte a seção anterior deste manual.

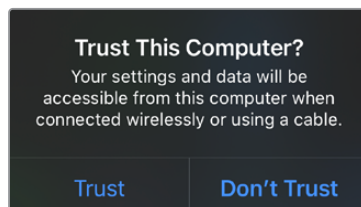
Transmitir com Smartphone

Os processadores de streaming Blackmagic podem se conectar à internet utilizando o compartilhamento de internet (tethering) do seu smartphone. Para começar, basta conectar o smartphone à porta USB-C frontal ou traseira do seu processador de streaming. Com essa conexão, é possível configurar tudo rapidamente e enviar ou receber um sinal em qualquer local onde seu smartphone tenha cobertura 4G ou 5G.



Para configurar o tethering móvel:

- 1 No seu dispositivo iOS, clique em Ajustes > Acesso Pessoal e certifique-se de que a opção “Permitir Acesso a Outros” esteja habilitada.
- 2 Será exibida uma mensagem perguntando se deseja confiar no computador conectado. Selecione “Confiar” e um ícone de vínculo verde será exibido na tela, indicando que a conexão está funcionando.



Enquanto o tethering estiver ativado, o relógio do seu smartphone aparecerá com um fundo verde, indicando que a conexão via USB está ativa.

Em dispositivos Android, deslize a tela para exibir o menu rápido. Pressione e segure o ícone de ponto de acesso e, em seguida, ative o “Vínculo por USB (tethering)”.

DICA Após finalizar a transmissão, recomendamos desativar o tethering para preservar a bateria do seu smartphone.

Transmitir ao Vivo para a Internet

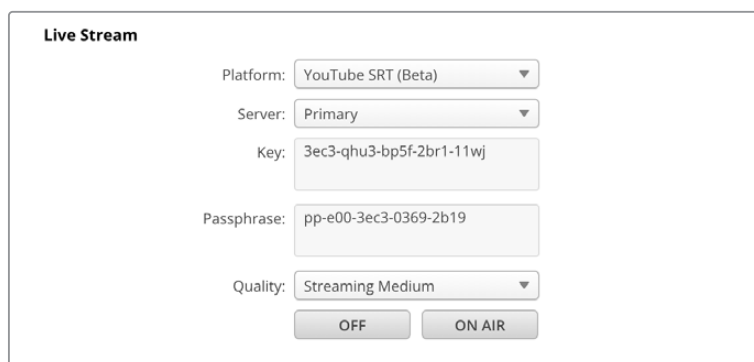
O Blackmagic Streaming Encoder permite transmitir diretamente para plataformas de streaming como YouTube, Facebook, Twitch e outras. Neste exemplo, vamos configurar uma transmissão ao vivo para o YouTube Live.

- 1 Copie sua chave de transmissão da sua conta do YouTube Studio.
- 2 Abra o utilitário Blackmagic Streaming Setup e vá até a aba “Live Stream”.
- 3 Defina a plataforma como “YouTube” e o servidor como “Primary”. Cole sua chave de transmissão do YouTube no campo “Key” e selecione a qualidade da transmissão. Clique em “Save”.
- 4 Agora você está pronto para transmitir ao vivo para o mundo todo. Clique no botão “On Air” ou pressione o botão “On Air” no painel frontal da unidade. Quando sua transmissão terminar, pressione o botão “Off” para encerrá-la.

Usar o Protocolo de Streaming SRT

O protocolo de transporte seguro e confiável, ou SRT, oferece transmissões com latência mais baixa em comparação ao RTMP. O SRT também aumenta a segurança ao usar uma frase de acesso, semelhante a uma chave de criptografia.

Ao selecionar a versão do protocolo SRT no seu serviço de streaming, copie a frase de acesso e a chave de transmissão da sua conta na plataforma de streaming e cole-as nos campos “Key” e “Passphrase” do utilitário Blackmagic Streaming Setup.



The screenshot shows the 'Live Stream' configuration window. It contains the following fields and controls:

- Platform:** A dropdown menu set to 'YouTube SRT (Beta)'.
- Server:** A dropdown menu set to 'Primary'.
- Key:** A text field containing the value '3ec3-qhu3-bp5f-2br1-11wj'.
- Passphrase:** A text field containing the value 'pp-e00-3ec3-0369-2b19'.
- Quality:** A dropdown menu set to 'Streaming Medium'.
- Buttons:** Two buttons at the bottom, 'OFF' and 'ON AIR'.

Cole sua frase de acesso no campo “Passphrase” do utilitário de configuração.

Tanto o protocolo RTMP ou SRT quanto o codec H.264 ou H.265 podem ser alterados no arquivo XML, caso profissionais de transmissão com conhecimento técnico desejem personalizar as configurações da transmissão. Para mais informações, consulte a seção ‘Blackmagic Streaming XML Format’ na seção ‘Developer Information’, disponível em inglês.

Usar a Saída de Webcam

Programas como Zoom ou Microsoft Teams geralmente detectam automaticamente o seu processador de streaming Blackmagic como webcam, o que permite visualizar o vídeo imediatamente ao abrir o aplicativo. Caso o programa não selecione automaticamente o codificador ou decodificador como webcam e microfone, você pode fazer isso manualmente.

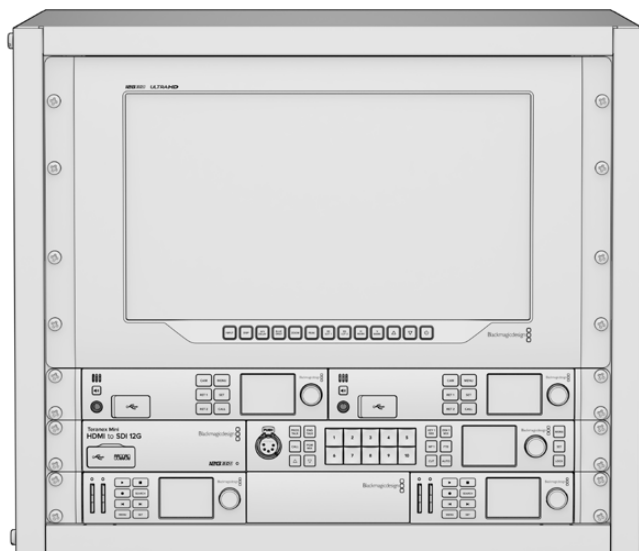
Confira abaixo um exemplo de como configurar a webcam no Microsoft Teams:

- 1 Usando um cabo USB-C, conecte seu processador de streaming Blackmagic ao computador pela porta “Webcam Out” localizada no painel traseiro.
- 2 Na barra de menus do Teams, abra “Configurações” e selecione “Dispositivos”.
- 3 No painel “Áudio”, clique no menu “Microfone” e selecione “Blackmagic Design” como fonte de áudio.
- 4 Vá até as configurações de “Vídeo” e selecione seu processador de streaming Blackmagic no menu “Câmera”.

Blackmagic Universal Rack Shelf

A Blackmagic Universal Rack Shelf é uma prateleira de 1U que permite instalar uma ampla gama de equipamentos Blackmagic Design em um rack profissional ou em uma mala técnica. Graças ao design modular, é possível montar configurações de equipamentos portáteis e práticos usando produtos que compartilham um fator de forma de uma unidade de rack.

A ilustração abaixo mostra três Universal Rack Shelves instaladas em um pequeno rack, com uma combinação de unidades compatíveis instaladas. A prateleira inferior inclui uma frente falsa com 1/3 de unidade de rack de largura para preencher o espaço não utilizado entre as unidades.



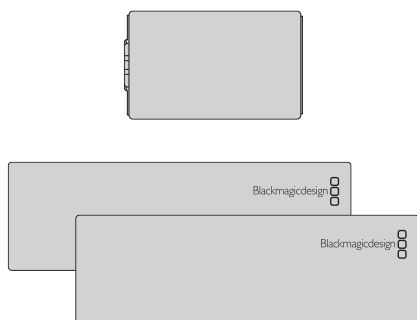
Conteúdo

O kit Universal Rack Shelf contém os seguintes itens:



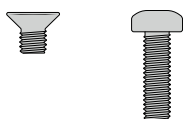
1 x Blackmagic Universal Rack Shelf

Uma prateleira de uma unidade de rack com largura completa para instalar equipamentos Blackmagic Design.



Frentes Falsas

1 x frente falsa com 1/6 de unidade de rack de largura e 2 x frentes falsas com 1/3 de unidade de rack de largura para cobrir lacunas na prateleira.



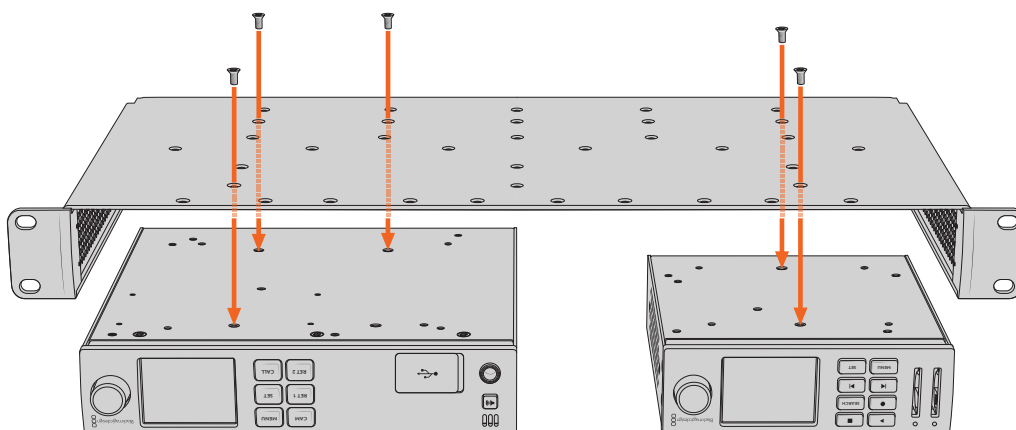
Parafusos

12 x parafusos M3 de 5 mm com cabeça escareada.

2 x parafusos M3 de 9 mm com cabeça chata para as frentes falsas de 1/6 U.

Montar a Unidade no Rack

- 1 Se os pés emborrachados estiverem instalados, remova-os da base da unidade utilizando uma ferramenta de extração plástica.
- 2 Com a prateleira e a unidade de cabeça para baixo, alinhe os orifícios pré-perfurados da prateleira com os orifícios de montagem rosqueados na base da unidade Blackmagic Design. Você encontrará dois pontos de montagem centrais em produtos com 1/3 de unidade de rack de largura ou até três pontos de montagem em produtos maiores com 1/2 de unidade de rack de largura.

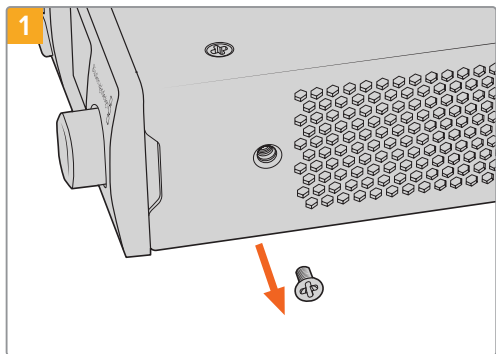


- 3 Utilizando os parafusos M3 de 5 mm com cabeça escareada fornecidos, fixe a unidade à prateleira.
- 4 Após fixar, vire a prateleira de volta à posição normal e instale-a no rack utilizando as orelhas de rack integradas.

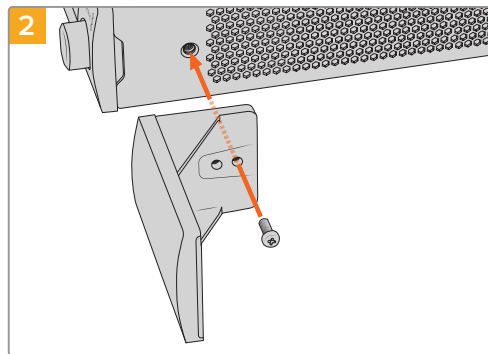
As frentes falsas fornecidas podem ser utilizadas para cobrir lacunas na prateleira.

Encaixar a Frente Falsa de 1/6

A frente falsa de 1/6 pode ser utilizada para preencher o espaço não utilizado na prateleira ao montar unidades com 1/2 e 1/3 de unidade de rack de largura. O painel pode ser fixado nas laterais de qualquer uma das unidades. Para melhorar o fluxo de ar, é recomendável montar o painel entre as unidades.



Remova o parafuso M3 de 5 mm próximo ao painel frontal da unidade.



Alinhe a frente falsa e encaixe-a utilizando o parafuso M3 x 9 mm de nylon fornecido.

Encaixar a Frente Falsa de 1/3

As frentes falsas de 1/3 de largura podem ser fixadas diretamente em ambos os lados da prateleira ao montar unidades individuais. Para instalar uma frente falsa, alinhe os orifícios dos parafusos e o ponto de ancoragem na base do painel com a prateleira e aparafuse utilizando dois dos parafusos M3 de 5 mm com cabeça escareada fornecidos.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```


Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Ajuda

Obter Ajuda

A forma mais rápida de obter ajuda é acessar as páginas de suporte online da Blackmagic Design e consultar o material mais recente disponível para o seu processador de streaming Blackmagic.

Central de Suporte Técnico Online Blackmagic Design

O manual mais recente está disponível na central de suporte técnico da Blackmagic Design em técnico www.blackmagicdesign.com/br/support

Fórum da Blackmagic Design

O fórum da Blackmagic Design em nosso site é uma fonte útil de informações e ideias criativas. Essa também pode ser uma forma mais rápida de obter ajuda, pois talvez já existam respostas compartilhadas por outros usuários experientes e pela equipe da Blackmagic Design, o que ajuda a seguir trabalhando. Acesse o fórum em <https://forum.blackmagicdesign.com>

Contato com o Suporte da Blackmagic Design

Caso não encontre a ajuda que precisa no nosso material de suporte ou no fórum, utilize o botão “Envie-nos um email” na página de suporte para enviar uma solicitação por email. Como alternativa, clique no botão “Encontre sua equipe de suporte local” na página de suporte e ligue para a assistência técnica da Blackmagic Design mais próxima.

Avisos Regulatórios



Descarte de resíduos de equipamentos elétricos e eletrônicos na União Europeia.

O símbolo no produto indica que este equipamento não deve ser descartado junto com outros resíduos comuns. Para realizar o descarte adequado, o equipamento deve ser entregue em um ponto de coleta designado para reciclagem. A coleta e reciclagem separadas desses resíduos no momento do descarte ajudam a conservar os recursos naturais e garantem que o material seja reciclado de forma a proteger a saúde humana e o meio ambiente. Para mais informações sobre onde descartar seu equipamento para reciclagem, entre em contato com o serviço de reciclagem da sua cidade ou o revendedor do produto adquirido.



Este equipamento foi testado e está em conformidade com os limites estabelecidos para dispositivos digitais da Classe A, conforme a Parte 15 das normas da FCC. Esses limites foram definidos para fornecer proteção razoável contra interferências prejudiciais quando o equipamento é operado em ambientes comerciais. Este equipamento gera, usa e pode irradiar energia de radiofrequência e, se não for instalado ou utilizado de acordo com as instruções, poderá causar interferências prejudiciais às comunicações por rádio. A operação deste produto em áreas residenciais provavelmente causará interferência prejudicial, caso em que o usuário deverá corrigi-la por conta própria.

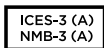
A operação está sujeita às duas condições a seguir:

- 1 Este dispositivo não pode causar interferência prejudicial.
- 2 Este dispositivo deve aceitar qualquer interferência recebida, inclusive interferências que possam causar funcionamento indesejado.



R-R-BMD-20201201001

R-R-BMD-20201201002



Declaração da ISED (Canadá)

Este dispositivo está em conformidade com os padrões canadenses para aparelhos digitais Classe A.

Qualquer modificação ou uso deste produto fora de sua finalidade original pode anular a conformidade com esses padrões.

A conexão com interfaces HDMI deve ser feita com cabos HDMI de alta qualidade protegidos.

Este equipamento foi testado quanto à conformidade com o uso previsto em ambientes comerciais. Caso seja utilizado em ambiente doméstico, pode causar interferência radioelétrica.

Informações de Segurança

Este equipamento deve ser conectado a uma tomada com conexão de aterramento de proteção.

Para reduzir o risco de choque elétrico, não exponha este equipamento a gotejamento ou respingos de líquidos.

Este equipamento é adequado para uso em locais tropicais com temperatura ambiente de até 40 °C.

A faixa de temperatura para armazenamento é de -20 °C a 60 °C e a umidade relativa de 0% a 90%, sem condensação.

Certifique-se de que haja ventilação adequada ao redor do produto e que esta não esteja obstruída.

Ao montar em rack, garanta que a ventilação não esteja bloqueada por equipamentos adjacentes.

Não há peças reparáveis pelo operador em seu interior. Encaminhe reparos ao centro de assistência técnica Blackmagic Design da sua região.



Utilize apenas em altitudes de até 2000 metros acima do nível do mar.

Declaração do Estado da Califórnia

Este produto pode expô-lo a substâncias químicas, como traços de bifenilos polibromados presentes em componentes plásticos, reconhecidas pelo Estado da Califórnia como causadoras de câncer, defeitos congênitos ou outros danos ao sistema reprodutivo.

Para mais informações, visite www.P65Warnings.ca.gov.

Garantia

36 Meses de Garantia Limitada

A Blackmagic Design garante que os processadores de streaming Blackmagic — Blackmagic Streaming Decoder e Blackmagic Streaming Encoder — estarão livres de defeitos de materiais e fabricação por um período de 36 meses a partir da data de compra, com exceção de conectores, cabos, módulos de fibra óptica, fusíveis e baterias, que estarão livres de defeitos de materiais e fabricação por um período de 12 meses a partir da data de compra. Se o produto apresentar defeito durante o período de garantia, a Blackmagic Design, a seu critério, reparará o produto defeituoso sem custo de peças e mão de obra ou fornecerá um produto de substituição em troca do item defeituoso.

Para obter assistência durante o período de garantia, você, Consumidor, deve notificar a Blackmagic Design sobre o defeito antes do vencimento da garantia e tomar as providências necessárias para a realização do serviço. O Consumidor será responsável por embalar e enviar o produto com defeito a um centro de assistência designado pela Blackmagic Design, com os custos de envio pagos antecipadamente. O Consumidor será responsável pelo pagamento de todos os custos de envio, seguro, taxas, impostos e quaisquer outros encargos relacionados à devolução de produtos por qualquer motivo.

Esta garantia não se aplica a defeitos, falhas ou danos causados por uso indevido ou manutenção e cuidados inadequados ou impróprios. A Blackmagic Design não será responsável por prestar assistência técnica nos termos desta garantia: a) em caso de danos causados por tentativas de instalação, reparo ou manutenção realizadas por pessoas não autorizadas pela Blackmagic Design; b) em caso de danos decorrentes de uso indevido ou conexão com equipamentos incompatíveis; c) em caso de falhas ou danos causados pelo uso de peças ou materiais que não sejam da Blackmagic Design; ou d) em produtos que tenham sido modificados ou integrados a outros equipamentos, quando essa modificação ou integração dificultar ou prolongar o serviço técnico.

ESTA GARANTIA É CONCEDIDA PELA BLACKMAGIC DESIGN EM SUBSTITUIÇÃO A QUALQUER OUTRA GARANTIA, EXPRESSA OU IMPLÍCITA. A BLACKMAGIC DESIGN E SEUS FORNECEDORES SE ISENTAM DE QUAISQUER GARANTIAS IMPLÍCITAS DE COMERCIALIZAÇÃO OU ADEQUAÇÃO A UM DETERMINADO FIM. A RESPONSABILIDADE DA BLACKMAGIC DESIGN DE REPARAR OU SUBSTITUIR PRODUTOS COM DEFEITO CONSTITUI O ÚNICO E EXCLUSIVO RECURSO DISPONÍVEL AO CONSUMIDOR PARA QUAISQUER DANOS INDIRETOS, ESPECIAIS, INCIDENTAIS OU CONSEQUENCIAIS, INDEPENDENTEMENTE DE A BLACKMAGIC DESIGN OU O FORNECEDOR TEREM SIDO AVISADOS PREVIAMENTE SOBRE A POSSIBILIDADE DE TAIS DANOS. A BLACKMAGIC DESIGN NÃO SE RESPONSABILIZA POR QUALQUER USO ILEGAL DO EQUIPAMENTO PELO CONSUMIDOR. A BLACKMAGIC DESIGN NÃO SE RESPONSABILIZA POR QUAISQUER DANOS RESULTANTES DO USO DESTE PRODUTO. O USUÁRIO OPERA ESTE PRODUTO POR SUA CONTA E RISCO.

© Direitos autorais 2025 Blackmagic Design. Todos os direitos reservados. 'Blackmagic Design', 'DeckLink', 'HDLink', 'Workgroup Videohub', 'Multibridge Pro', 'Multibridge Extreme', 'Intensity' e 'Leading the creative video revolution' são marcas registradas nos EUA e em outros países. Todos os demais nomes de empresas e produtos podem ser marcas comerciais de suas respectivas empresas com as quais estão associados.

Thunderbolt e o logotipo Thunderbolt são marcas comerciais da Intel Corporation nos EUA e/ou em outros países.

Blackmagic İnternet Yayın İşlemcileri





Hoş Geldiniz

Blackmagic İnternet Yayın İşlemcinizi satın aldığınız için teşekkür ederiz!

Blackmagic Streaming Encoder tüm SDI ekipmanlara doğrudan bağlanır, video sinyalini H.264 veya H.265 formatına dönüştürür ve YouTube Live, Facebook Live ve Twitch gibi, popüler internet yayın servisleri üzerinden internetten yayınlamanızı mümkün kılar. Ayrıca, Blackmagic Streaming Decoder'ı kullanarak yayın kalitesindeki video sinyalini bir noktadan başka bir noktaya gönderebilirsiniz. Bu, interneti kullanarak profesyonel video sinyallerini uzaktaki konumlara aktarmayı kolaylaştırır!

Blackmagic Streaming Decoder, Streaming Encoder'den gelen bir yayın akışını almayı ve bunu tekrar SDI ve HDMI videoya dönüştürmeyi sağlar. Hatta tally, talkback ve kamera kontrolü gibi özellikleri, onu canlı yapımlar için ideal hale getirir! Streaming Decoder ayrıca, dahili internet yayın özelliğine sahip Blackmagic kameralardan ve ATEM görüntü mikserlerinden gelen video sinyallerini kodunu da çözer.

Bu kullanım kılavuzu, Blackmagic İnternet Yayın İşlemcinizi kurmanız ve kullanmaya başlamanız için ihtiyacınız olan tüm bilgileri içerir.

Bu kullanım kılavuzunun en son sürümünü ve Blackmagic İnternet Yayın İşlemci'nizin dahili yazılım güncellemelerini indirmek için, www.blackmagicdesign.com/tr adresindeki destek sayfamıza göz atın. Yazılımı indirirken, muhakkak bilgilerinizle sitemize kaydolun, böylece yeni yazılımlar yayınlandığında sizi bilgilendirebiliriz.

Sürekli olarak yeni özellikler ve iyileştirmeler üzerinde çalıştığımızdan, yorumlarınızı almaktan mutluluk duyarız!

Grant Petty

CEO Blackmagic Design

İçindekiler

Başlarken	705	Web Kamerası Çıkışının Kullanımı	733
Güç Kablosunun Takılması	705	Blackmagic Universal Rack Shelf	733
Bir Ağa Bağlanırken	706	Ürün İçeriği	734
Bir Video Kaynağının Bağlanması	706	Bir Cihazın Ekipman Rafına Montajı	734
Streaming Encoder'e bir		1/6 Boşluk Panelinin Takılması	735
Monitörün Bağlanması	707	1/3 Genişliğindeki Yan Boşluk	
Video Sinyali Hedeflerinin Bağlanması	707	Panelinin Takılması	735
Bir Ağ Üzerinden Basit İnternet Yayını	707	Developer Information	736
LCD Ekran	710	Blackmagic Streaming Encoder	
Bağlantı Simgeleri	711	Ethernet Protocol	736
Streaming Encoder'in Monitör Çıkışı	711	Protocol Blocks	738
Blackmagic Streaming Setup Yazılımı	716	Streaming Encoder Control REST API	748
Live Stream Sekmesi	717	Event Control API	750
Audio Sekmesi	721	Livestream Control API	750
Setup Sekmesi	722	Monitor Output Control API	755
Stream Source Settings	725	System Control API	756
Yayın Linklerinin Oluşturulması	726	Notification websocket - 1.0.0	758
XML Dosyasının Oluşturulması	727	messages	758
XML Dosyasının Çıktısının Alınması	727	Device Properties	759
XML Dosyasının Yüklenmesi	729	Blackmagic Streaming XML Format	761
Talkback, Tally ve Kamera Kontrolü	729	Yardım	768
Akıllı Telefonunuzu Kullanarak		Mevzuata İlişkin Bildirimler	769
İnternet Yayını	731	Güvenlik Bilgileri	770
Canlı İnternet Yayını	732	GARANTİ	771

Başlarken

Blackmagic Internet Yayın İşlemcinizi kullanmaya başlamanız için; cihazı güç kaynağına bağlamanız, bir ağ kablosu takmanız ve video kaynağı ile hedefleri bağlamanız yeterlidir.



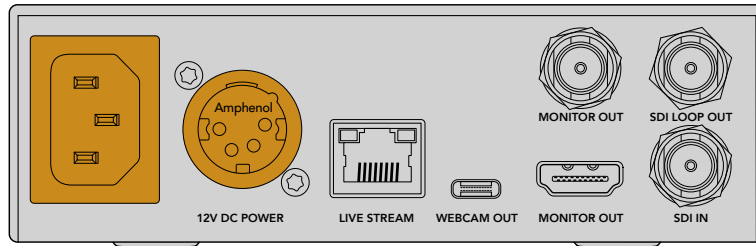
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

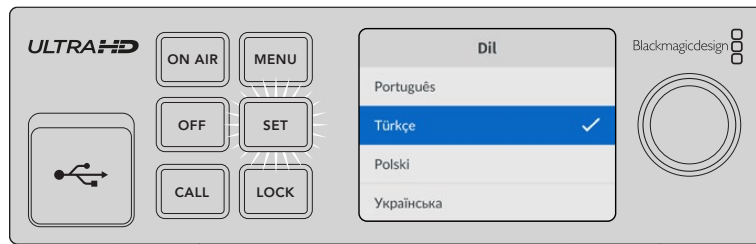
Güç Kablosunun Takılması

Cihaza güç sağlamak için, standart bir IEC güç kablosunu İnternet Yayın İşlemci'nizin arka panelindeki güç girişine takın.



Blackmagic Streaming Encoder ve Streaming Decoder cihazlarının her ikisi de ek 12V DC güç girişine sahiptir. Kesintisiz güç kaynağı (UPS) veya 12V batarya gibi, harici veya yedek güç kaynağı bağlamak istediğinizde bu girişi kullanabilirsiniz.

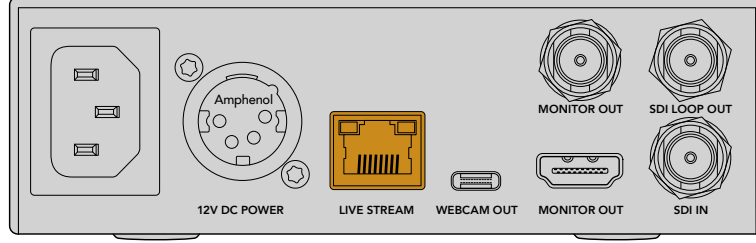
Cihaz çalıştırıldığında, tercih ettiğiniz dili seçmeniz için ön paneldeki LCD ekranda bir komut belirecektir. Döner düğmeyi kullanarak, ayarlamak istediğiniz dile ilerleyin ve yanıp sönen "set" butonuna basın.



Dil tercihinizi teyit etmek için "set" butonuna basın

Bir Ağa Bağlanırken

Blackmagic Internet Yayın İşlemcinizi ağınıza veya internete bağlamak üzere, “live stream” etiketli Ethernet portundan bir internet yönlendiricisine veya ağ dağıtıcıya bir ağ kablosu takın.



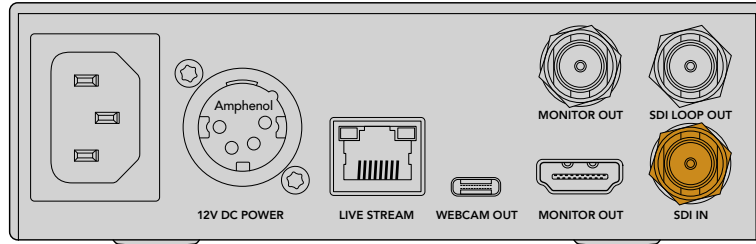
Blackmagic Internet Yayın İşlemciniz varsayılan olarak DHCP'ye ayarlıdır ve anında bir IP adresi bulacaktır. Bağlantı başarıyla kurulduğunda, LCD ana ekranının sağ üst köşesinde mavi bir Ethernet simgesi görürsünüz. Sabit bir IP adresi üzerinden bağlanmanız gerekiyorsa, bu kılavuzun ilerleyen sayfalarındaki “Blackmagic Streaming Setup Yazılımı” bölümüne bakınız.



Bir Video Kaynağının Bağlanması

İnternette yayınlamak istediğiniz bir SDI video kaynağını bağlayın; örneğin Blackmagic URSA Mini Pro 12K veya bir SDI ATEM görüntü mikserini, Blackmagic Streaming Encoder'in SDI girişine bağlayın. Blackmagic Streaming Encoder, 12G-SDI standardını destekler ve video giriş sinyali değiştiğinde, 2160p60'a kadar tüm HD ve Ultra HD arasında otomatik geçiş yapar.

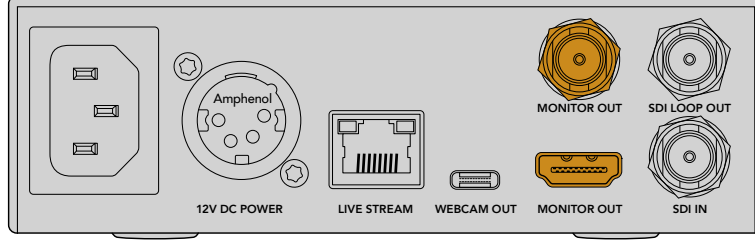
Video bağlandığında, Streaming Encoder'inizin LCD ekranında görüntülenir. Ses, video ile birlikte SDI video sinyaline gömülür ve LCD ekrandaki ses göstergelerini izleyerek bunu doğrulayabilirsiniz.



SDI video kaynağınızı, Blackmagic Streaming Encoder'in SDI girişine bağlayın.

Streaming Encoder'e bir Monitörün Bağlanması

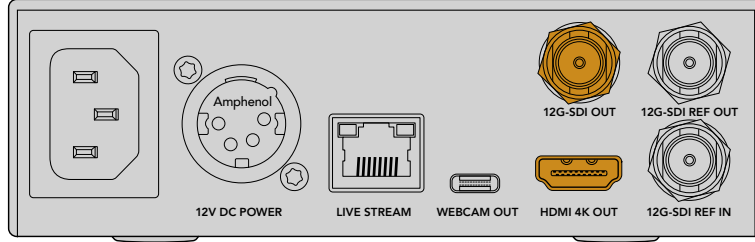
Blackmagic Streaming Encoder'in arka panelindeki monitör çıkışlarından birine bir HDMI televizyon veya SDI monitör takın. Monitör çıkışları; yayınızı izlemenize ve yayın durumu, veri hızı ve ses seviyeleri gibi video sinyal akışınızla ilgili önemli bilgileri görüntülemenize olanak tanır. Bu kılavuzun "Streaming Encoder'in monitör çıkışı" bölümünde, "monitor out" etiketli monitör çıkışı hakkında daha fazla bilgi edinebilirsiniz.



İnternet yayınız hakkında önemli bilgileri görmek için bir televizyon veya monitörü Blackmagic Streaming Encoder'e bağlayın

Video Sinyali Hedeflerinin Bağlanması

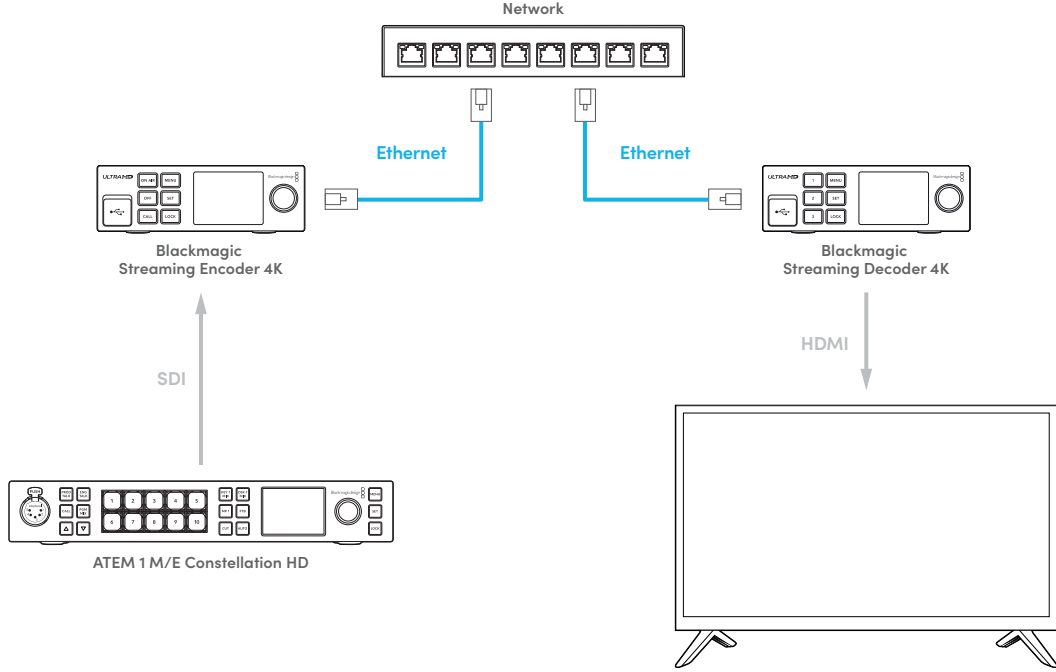
Blackmagic Streaming Decoder'i kullanırken, kod çözümlü yayın sinyalini muhtemelen bir hedefe, örneğin bir SDI ATEM görüntü mikserine ve bir HDMI televizyona göndermek isteyeceksiniz. ATEM görüntü mikserini 12G-SDI çıkışına ve televizyonu ise HDMI konektörüne takmanız yeterlidir.



Video hedeflerini Streaming Decoder'in SDI ve HDMI çıkışlarına bağlayın

Bir Ağ Üzerinden Basit İnternet Yayını

Bağlantı sağlandıktan sonra her şeyin doğru çalıştığını test etmenin iyi bir yolu, yerel ağ üzerinden Blackmagic Streaming Encoder ve Blackmagic Streaming Decoder arasında basit bir yayın akışı ayarlamaktır. Bu kurulum, büyük bir binadaki bir konferans odasına veya video projektörüne canlı yayın yapmak istediğinizde faydalı olabilir. Aşağıdaki örnek, bir ATEM görüntü mikserinden bir HDMI televizyona basit bir yayın akışını gösterir.



İnternet yayın işlemcinizin ön paneli, önemli bilgileri görüntüleyen ve video ile sesi denetlemenizi sağlayan bir LCD ekran içerir. Döner düğme ve menü butonları, internet yayın işlemcinizin menü ayarlarına hızlı erişim sağlar, böylece internet yayınını doğrudan ön panelden ayarlayabilir, başlatabilir ve sonlandırabilirsiniz.

Ön panel LCD menüsünde bulunan tüm ayarlar, Blackmagic Streaming Setup yazılımını kullanarak da değiştirilebilir. Her ayar hakkında ayrıntılı bilgi için bu kılavuzun ilerleyen kısımlarındaki “Blackmagic Streaming Setup Yazılımı” bölümüne bakınız.

Basit bir internet yayını ayarlamak için:

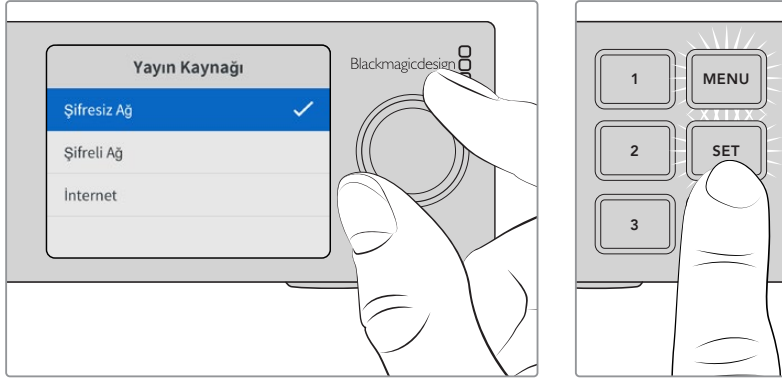
- 1 Blackmagic Streaming Encoder ve Blackmagic Streaming Decoder'i aynı ağ dağıtıcıya bağlayın.

BİLGİ Bir ağ dağıtıcı kullanmadan noktadan noktaya daha kolay bir kurulum için, Blackmagic Streaming Encoder ve Blackmagic Streaming Decoder'i bir tek Ethernet kablosu kullanarak birbirine bağlayın.

- 2 Blackmagic Streaming Decoder'de, ön panel LCD menüsünü açmak için “menu” etiketli butona basın, ardından “canlı yayın” alt menüsünü açmak için “set” butonuna basın.

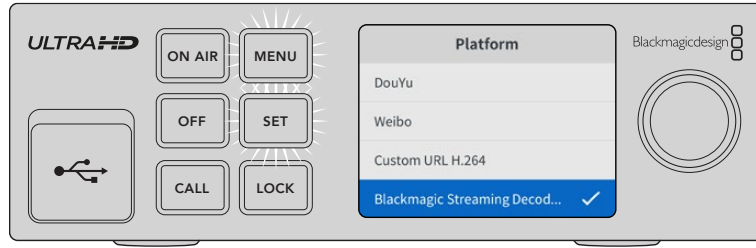


“Yayın kaynağı”nı seçmek için döner düğmeyi çevirin, “set” butonuna basın ve listeden “şifresiz ağ”ı seçin. Seçiminizi teyit etmek için “set” butonuna basın.



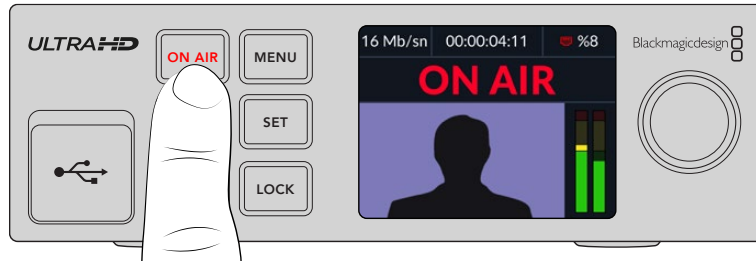
Ana ekrana dönmek için “menu” butonuna basın.

- 3 Blackmagic Streaming Encoder'de, “canlı yayın” menüsünü açmak için “menu” butonuna basın, “set” butonuna basın ve döner düğmeyi çevirerek “platform” ayarlarına gidin. “Platform” alt menüsünü seçmek için “set” butonuna basın.



“Platform” listesinden Blackmagic Streaming Decoder’inizi seçin ve “set” butonuna basın. “Menu” butonuna basarak ana ekrana dönün.

- 4 Blackmagic Streaming Encoder’in ön panelindeki “on air” etiketli butonuna basın. İnternet yayını sırasında buton kırmızı renkte yanar ve LCD ana ekranda “on air” ibaresi görüntülenir.



İnternet yayınızı Blackmagic Streaming Decoder’in LCD ekranında göreceksiniz.



Streaming Decoder'in LCD ekranında “live” yazısı belirir

İnternet yayını durdurmak için Streaming Encoder'in ön panelindeki “off” butonuna basın.

BİLGİ Blackmagic Streaming Encoder'de "on air" butonu yanıp sönüyorsa, bu canlı yayının başarısız olduğu veya beklenmedik bir şekilde sonlandırıldığı anlamına gelir. Bu, ağ bağlantınızdan veya internet yayın ayarlarınızdan kaynaklanan bir sorun yüzünden olabilir. İnternet yayın ayarlarınızın doğru ve ağ kablolarınızın bağlı olduğundan emin olun.

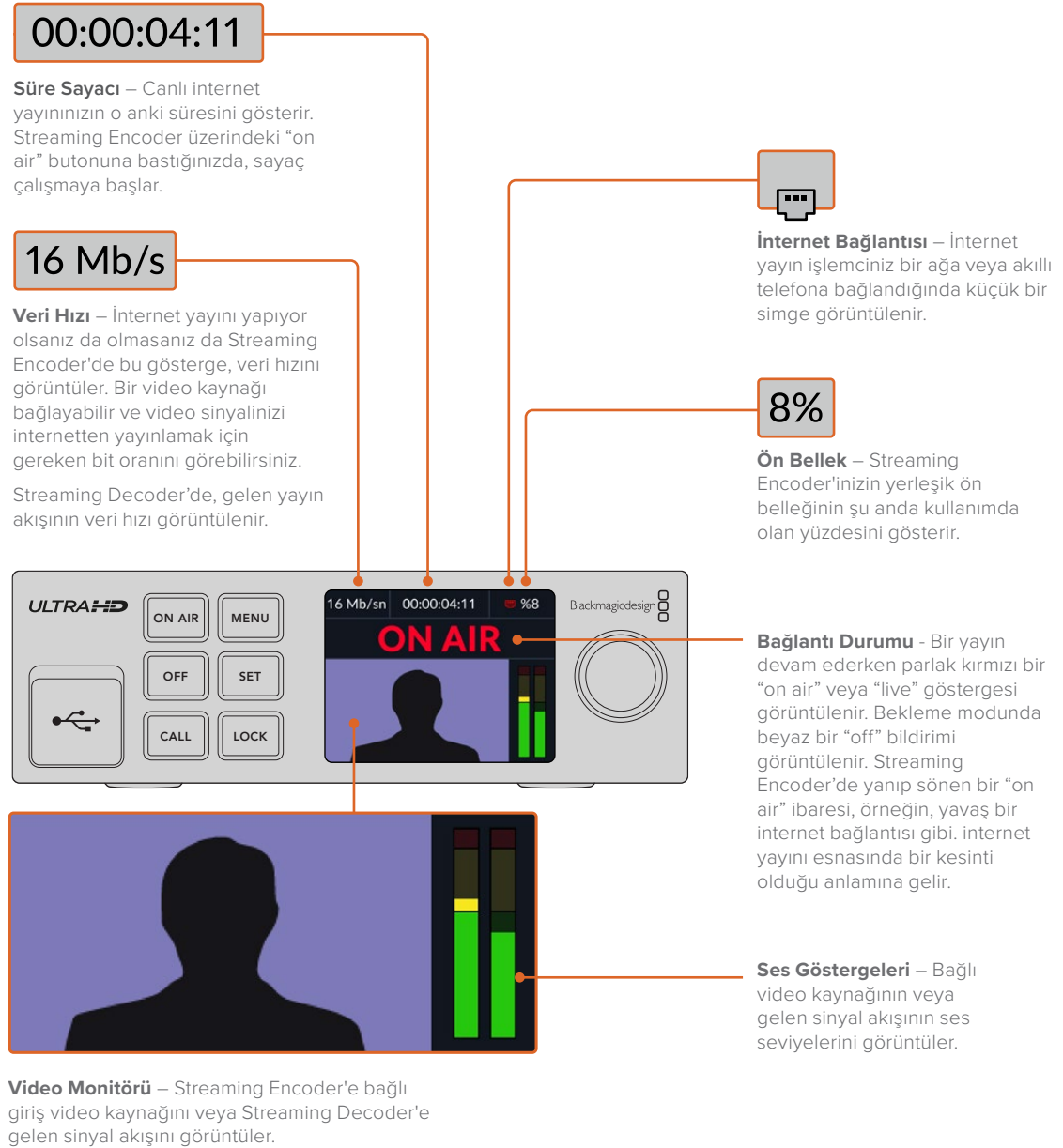
Kilitleme Butonu

İnternet yayın işlemcinizin ön panel kontrollerini kilitlemek için "lock" butonunu 1 saniye boyunca basılı tutun. Bu işlem butonları ve döner düğmeyi devre dışı bırakarak, herhangi birinin ayarları yanlışlıkla değiştirmesini veya internet yayını kesmesini önler.

Panelin kilidini açmak için 2 saniye basılı tutun.

LCD Ekran

Blackmagic İnternet Yayın İşlemcinizdeki LCD ana ekran, video ve ses denetleme imkanının yanı sıra internet yayınız hakkında önemli bilgiler de sağlar.



Bağlantı Simgeleri

LCD ekranın sağ üst köşesindeki bağlantı simgesi, Blackmagic Internet Yayın İşlemcinizin mevcut bağlantı durumunu gösterir.



Bir Ethernet kablosu bağlıyken, mavi bir Ethernet simgesi görüntülenir ve internet yayını için Ethernet bağlantısı kullanılır.



Videonuz yayındayken ve Ethernet üzerinden internet yayını yapılırken, Blackmagic Streaming Encoder üzerinde kırmızı bir Ethernet simgesi görüntülenir.



İnternet yayını için bir cep telefonunun internet bağlantısı paylaşıldığında, mavi bir cep telefonu simgesi görüntülenir.



Videonuz yayındayken ve akıllı telefonunuzun internet paylaşımı üzerinden internet yayını yapılırken, Blackmagic Streaming Encoder üzerinde kırmızı bir akıllı telefon simgesi görüntülenir.

BİLGİ Bir bağlantı simgesi görüntülenmiyorsa, Blackmagic İnternet Yayın İşlemciniz bir ağa veya akıllı telefona bağlı değildir. Kablolarınızın doğru bağlandığından emin olun.

Streaming Encoder'in Monitör Çıkışı

Video girişi, ses seviyeleri, yayın durumu, veri hızı ve önbellek bilgilerinin yanı sıra, SDI girişine ilişkin teknik bilgileri görüntülemenizi, Blackmagic Streaming Encoder'in monitör çıkışı sağlar.



Monitör çıkışı; veri hızı ve önbellek durumu dahil, kapsamlı bilgiler sunar

Monitör çıkışı ekranı 8 panelden oluşur. Aşağıda, her bir panel ve görüntülediği bilgilere ilişkin bir tanım sunulmuştur.

Giriş Ekranı

Ana panel, bağlı olan SDI video kaynağından alınan o anki video girişini görüntüler.



On Air Durum Göstergesi

İnternet yayını başlamadan önce, yayın durumu göstergesi “off” ibaresini görüntüleyerek Streaming Encoder’in beklemede ve yayına hazır olduğunu bildirir. İnternet yayını başladığında, yayın duruncaya kadar göstergede parlak kırmızı bir “on air” (yayında) durumu görüntülenir.



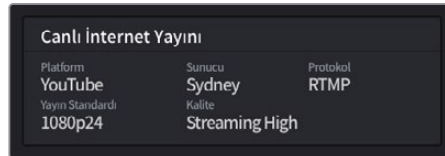
“On air” göstergesinin altında süre sayacını bulacaksınız. Streaming Encoder üzerindeki “on air” butonuna bastığınızda, süre sayacı çalışmaya başlar.

Blackmagic Streaming Encoder’iniz yayında değilse ama internet yayını, bir akıllı telefonun internet paylaşımı üzerinden yapacaksa, “off” göstergesinin köşesinde mavi bir akıllı telefon simgesi belirir. Yayındayken, cep telefonu simgesi kırmızı yanar.



Canlı İnternet Yayını

Canlı internet yayını paneli, canlı internet yayın ayarlarınızın bilgilerini görüntüler. Bu bilgiler arasında; internet yayın platformu, sunucu ve protokol de bulunur. Bunlara ek olarak internet yayın çözünürlüğünü ve kalite ayarlarını da görüntüler.



Video Giriş

Video girişi panelinin üst kısmındaki 5 küçük görüntüleyici, canlı internet yayınının en son 6 saniyesini gösterir, her bir görüntüleyici 1,2 saniyelik internet yayın süresini temsil eder.

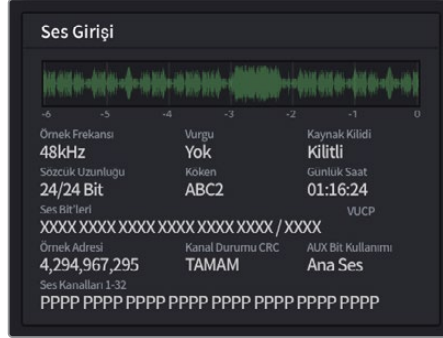


Streaming Encoder'inizin SDI girişine bağlı video giriş kaynağı hakkında ayrıntılı teknik bilgileri, küçük görüntüleyicilerin altında görebilirsiniz.

Giriş Standardı	SDI video girişinin çözünürlüğünü ve kare hızını görüntüler. Streaming Encoder cihazı 2160p60'a kadar olan çözünürlükleri destekler.
Renk Ölçümü	SDI video girişinin renk alanını gösterir. Streaming Encoder; Rec.601, Rec.709 ve Rec.2020 renk alanlarını destekler.
SDI Yardımcı Verileri	SDI video girişindeki video sinyaline ek olarak aktarılan veriler, yardımcı veridir. Bunun içinde gömülü ses, zaman kodu ve kapalı alt yazılar vardır. SDI girişinizde yardımcı veri varsa 'Present' (mevcut) ibaresi görüntülenir.
Zaman Kodu	SDI video giriş kaynağından alınan zaman kodunu sergiler.
Kapalı Altyazılar	SDI video girişinizde Kapalı Altyazılar varsa formatı burada görüntülenir. CEA-608 ve CEA-708 formatları desteklenir.
SMPTE 292 CRC	Bu, SDI video için bir hata denetleme fonksiyonudur. Streaming Encoder cihazınız, SDI video girişinde bir sorun tespit ederse hata mesajı verir. CRC hataları genelde, arızalı bir SDI kablosu ya da çok uzun bir kablo sebebiyle oluşur.
Parlaklık Y Bit'leri ve Chroma Bit'leri	"Parlaklık y bit'leri" ve "chroma bit'leri" göstergeleri SDI video giriş sinyalinin etkinliğini gösterir. Her bir harf, video sinyaline ait tek bir bit durumunu temsil eder. X – "X" harfi, sürekli değişen bir bit değerine işaret eder. L - Düşük bit. H - Yüksek bit. Daha kolay anlaşılmasını sağlamak için SDI offset'leri çıkartılır. Örneğin, video siyah olduğunda tüm bit'ler düşüktür. Genelde, video sinyalindeki tüm bit'lerin sürekli değiştiğini işaret etmek üzere SDI video girişinizdeki 10 bit'in hepsi "X" harfi ile gösterir. SDI girişiniz 8 bitlik bir video ise en sağdaki iki bit her zaman "L" ile gösterilir, çünkü hiçbir veri içermezler. "X" sergilemesini beklediğiniz bir bit "L" veya "H" sergiliyorsa, bu "stuck bit" (takılmış bit) olduğunu belirtir ve upstream videodaki bir arıza sonucunda olabilir.

Ses Girişi

Ses girişi panelinin üst kısmındaki ses dalga şekli ekranı, canlı internet yayınınızın son 6 saniyesi için ses bilgilerini gösterir. Bu sürekli güncellenir ve sağdan sola doğru ilerler.

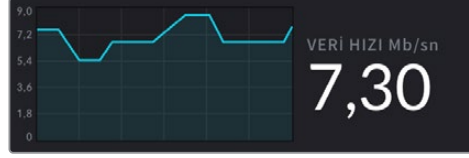


Ses dalga şekli ekranının altında, ses girişi hakkında detaylı teknik bilgileri görebilirsiniz.

Örnek Frekansı	SDI girişindeki gömülü sesin örnek frekans hızını görüntüler.
Vurgu	Ses kaynağınızın vurgu seçeneğinin etkinleştirilmiş olup olmadığını gösterir.
Ses Kaynağı Kilidi	Ses kaynağı frekansının, harici bir referans kaynağına kilitli olup olmadığını gösterir
Kelime Uzunluğu	SDI girişindeki gömülü sesin bit derinliğini gösterir.
Başlangıç Noktası	Bu dört karakter, kanalın başlangıç noktasını gösterir.
Günlük Saat	Bağımsız çalışan zaman kodu.
Ses Bit'leri	SDI bağlantısında gömülü olan ses örneklerinin bit faaliyetlerini gösterir. 16, 20 veya 24 bit ses alındığını ses kanal durumu belirtse bile, ses bit faaliyeti bunu teyit edecektir.
VUCP	VUCP bit'lerinin soldan sağa okunması: 'V' bit 'valid' (geçerli) bir bit belirtir, 'U' 'user' (kullanıcı) bit'idir, 'C' 'channel status' (kanal durumu) bit'i ve 'P' ise 'parity' (eşlik) bit'idir. Bu alan 'ses bit'leri' gibidir.
Örnek Adresi	Ses örneği sayacı.
AUX Bit'lerinin Kullanımı	Ana ses için AUX bit'lerinin kullanılıp kullanılmadığını gösterir.
Ses Kanalları 1-32	Her hane, SDI girişinde gömülü bir ses kanalını temsil eder. "P" harfi bir ses kanalının kullanıldığını belirtir ve "-" işareti de kanalda bir ses sinyalinin olmadığı anlamına gelir.

Veri Hızı Göstergesi

Veri hızı göstergesi, kodlayıcının son 60 saniyedeki veri hızını gösterir. Veri hızı saniyede megabit olarak ölçülür. Bu gösterge, yayında değilken bile sürekli çalışır, böylece yayına girmeden önce bant genişliğini doğru ölçebilirsiniz.



Ön Bellek Ekranı

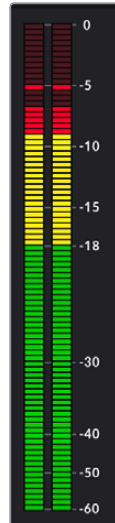
Ön bellek ekranı, Blackmagic Streaming Encoder'inizin dahili arabelleğinin şu an kullanılmakta olan yüzdesini gösterir ve grafik, son 60 saniye içinde kullanılan miktarı gösterir. Dahili belleğin küçük bir bölümü olan önbellek, program çıkışını sürekli kaydeder ve oynatır. İnternet yayın veri hızı videoyu devam ettirmek için gereken seviyenin altına düştüğünde, önbellek bir güvenlik önlemi işlevi görür.

İnternetin değişken yapısı, yoğunlukla ağ trafiğine veya kablosuz sinyal gücüne bağlı olduğundan, internet yayın hızı azalırsa arabellek verisi de buna bağlı olarak yükselir. Bağlantı hızı video akışını destekleyemeyecek kadar yavaşlarsa bunu telafi etmek üzere önbellek video kareleri ile dolar. Ancak, önbellek %100 dolduktan sonra video yayını riske gireceğinden, mümkün olduğunca önbelleği doldurmaktan kaçının. Bir video sinyalini bağlayıp monitör çıkışında önbellek ekranını izleyerek, yayını başlatmaya gerek kalmadan bir test uygulayabilirsiniz. Önbellek sıklıkla %100'e yaklaşıyorsa canlı yayın ayarlarından daha düşük bir kalite seçin.



Ses Göstergeleri

Ses göstergelerini kullanarak ses kaynağınızın seviyelerini görüntüleyebilirsiniz. Göstergeler, Blackmagic Streaming Encoder'in menü ayarlarından PPM veya VU seviyelerini gösterecek şekilde ayarlanabilir. Ses seviyeleriniz çok yüksekse göstergeler kırmızı yanar ve bu, canlı internet yayınındaki sesin bozulabileceği ya da kırılabilirliği anlamına gelebilir. İdeal olarak ses seviyenizi, yeşil bölümün üst kısmına yakın ve nadiren sarı bölümde tutmaya çaba gösterin.



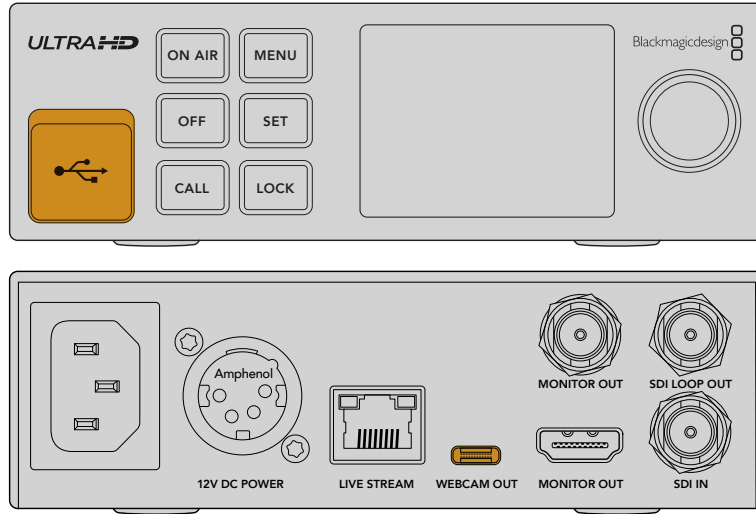
Blackmagic Streaming Setup Yazılımı

Blackmagic Streaming Setup yazılımı; ayarları değiştirmek, ağ yapılandırmak ve Blackmagic Yayın İşlemcinizin dahili yazılımını güncellemek ve yayın ayarlarını bir dosyaya kaydetmek ve yüklemek için kullanılan bir yardımcı yazılımdır.

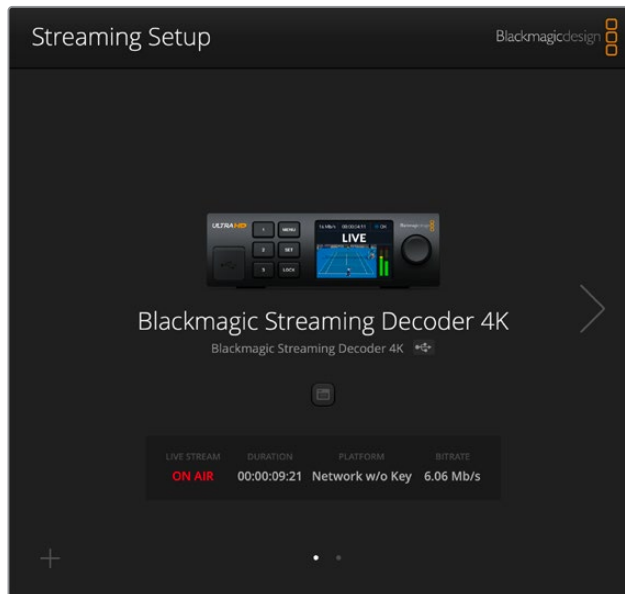
Blackmagic Streaming Setup yazılımının en son sürümünü, www.blackmagicdesign.com/tr/support adresindeki Blackmagic Design Destek Merkezi'nden indirebilirsiniz.

Blackmagic Streaming Setup yazılımı kullanmak için:

- 1 Blackmagic Streaming Encoder'in ön veya arka panelindeki USB-C portunu kullanarak, cihazı bilgisayarınıza bağlayın.



- 2 Blackmagic Streaming Setup yazılımını başlatın. İnternet yayın işlemcinizin modeli, yardımcı yazılımının ana sayfasında görüntülenir.
- 3 Ayarları açmak için kare şeklindeki "kurulum" simgesini veya Blackmagic İnternet Yayın İşlemcinizin resmini tıklayın. Ağa bağlı birden fazla internet yayın işlemciniz varsa, erişmek istediğiniz cihaza gitmek için "setup" ibareli kurulum penceresinin yanlarındaki oklara tıklayın.



Live Stream Sekmesi

Streaming Processor cihazınızın canlı internet yayını ayarlarının tamamı, “Live Stream” ibareli canlı internet yayını sekmesindedir.

Streaming Encoder

Blackmagic Streaming Encoder’de “live stream” sekmesi; yayın kalitesini belirlemek, yayın platformunu seçmek ve yapılandırmak için ayarlara sahiptir, üstelik bir XML yayın ayarları dosyası yükleyebilirsiniz.

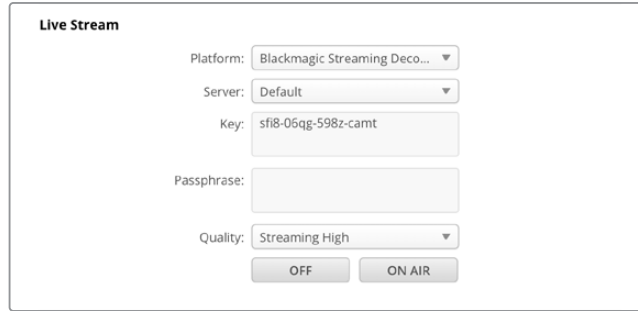
Video Output Sekmesi



Yayınınızın video çözünürlüğünü seçmek için “stream standard” ibareli internet yayın standardı menüsünü tıklayın. 720p25 ile 2160p60 arası bir çözünürlük seçebilirsiniz.

Live Stream Sekmesi

“Live stream” ibareli canlı internet yayını ayarları, yayın platformunu seçmenize, ayarları yapılandırmanıza ve yayın kalitesini seçmenize olanak verir.



Platform

Yayınınız için internet yayın platformunu seçmek için “Platform” menüsünü tıklayın. Seçenekler arasında YouTube, Facebook ve Twitch bulunur. Özel yayın ayarlarınızı cihaza yüklediyseniz onlar da platform listesinde belirir.

Özel bir URL adresine internet yayını yapmak için “platform” menüsünden bir özel URL seçimi yapın. H.264 veya H.265 kullanarak özel bir URL’ye yayın yapmayı seçebilirsiniz.

Server

“Server” ibareli sunucu listesinden, konunuza en yakın sunucuyu seçin. Seçmiş olduğunuz internet yayın platformuna bağlı olarak sunucu listesi değişir.

Instagram, Microsoft Teams veya özel bir URL adresine internet yayını yaptığınızda, sunucu listesi düzenlenebilir bir alan haline gelir. İnternet yayın platformu hesabınızdan atanan URL adresini veya özel URL detaylarını girin.

Key

İnternet yayın platformundan yayınınız için atanan yayın şifresini, “key” ibareli şifre alanına girin.

Passphrase

SRT yayın protokolü olan bir internet yayın hizmeti kullanıyorsanız “passphrase” ibareli alana, internet yayın platformu hesabınızdan atanan uzun parolayı girin.

Quality

Yayınınızın kalitesini seçmek için, “quality” ibareli ayarı kullanın, H.264 ve H.265 kodekleri için veri hızları, aşağıdaki tablolarda gösterilmiştir.

H.264	
HD	4K
HyperDeck High 45 ila 75 Mb/s	HyperDeck High 95 ila 220 Mb/s
HyperDeck Medium 25 ila 45 Mb/s	HyperDeck Medium 66 ila 150 Mb/s
HyperDeck Low 12 ila 20 Mb/s	HyperDeck Low 38 ila 80 Mb/s
Streaming High 6 ila 9 Mb/s	Streaming High 34 ila 51 Mb/s
Streaming Medium 4.5 ila 7 Mb/s	Streaming Medium 23 ila 35 Mb/s
Streaming Low 3 ila 4.5 Mb/s	Streaming Low 13 ila 20 Mb/s

H.265	
HD	4K
Streaming High 2.3 ila 4.5 Mb/s	Streaming High 22.5 ila 30 Mb/s
Streaming Medium 1.5 ila 3 Mb/s	Streaming Medium 14 ila 20 Mb/s
Streaming Low 0.8 ila 2 Mb/s	Streaming Low 8 ila 10 Mb/s

Kalite ayarının veri hızı, Streaming Encoder’inizin kullandığı video standardına bağlı olarak değişir. Örneğin; yüksek kaliteli internet yayını seçerseniz ve 1080p24’te çalışıyorsanız 6 Mb/s’lik veri hızını kullanır.

Tabloda gördüğünüz gibi internet yayını için veri hızları, HyperDeck hızlarına kıyasla daha düşüktür. Bu, bir diske veri kaydetmeye kıyasla, genel olarak daha düşük bir bant genişliği kullanan internet üzerinden veri aktarımına imkan verir.

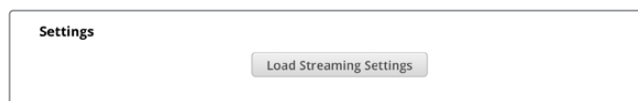
Bahsedilen her bir ayarın 2 adet veri hızı olduğunu fark edeceksiniz. Daha yüksek veri hızları, 50p ve 60p’lik daha yüksek kare hızlarında çalıştığınızda kullanılırken, daha düşük veri hızları; 24p, 25p ve 30p’lik daha düşük kare hızları için kullanılır. İnternet yayın kalitesi için varsayılan ayarın Streaming High 6 ila 9 Mb/s olduğunu belirtmemizde fayda var. Bu ayar, çok yüksek kalite bir internet yayın kanalı sağlar.

Off ve On Air butonları

“Off” ve “On Air” butonlarını kullanarak bir canlı internet yayını başlatabilir veya durdurabilirsiniz. Bir canlı internet yayını esnasında, “on air” butonu kırmızı yanar.

Settings

“Load streaming settings” butonunu tıklayın ve bir Blackmagic Streaming Decoder’dan bir XML yayın ayarları dosyası yüklemek için talimatları takip edin.

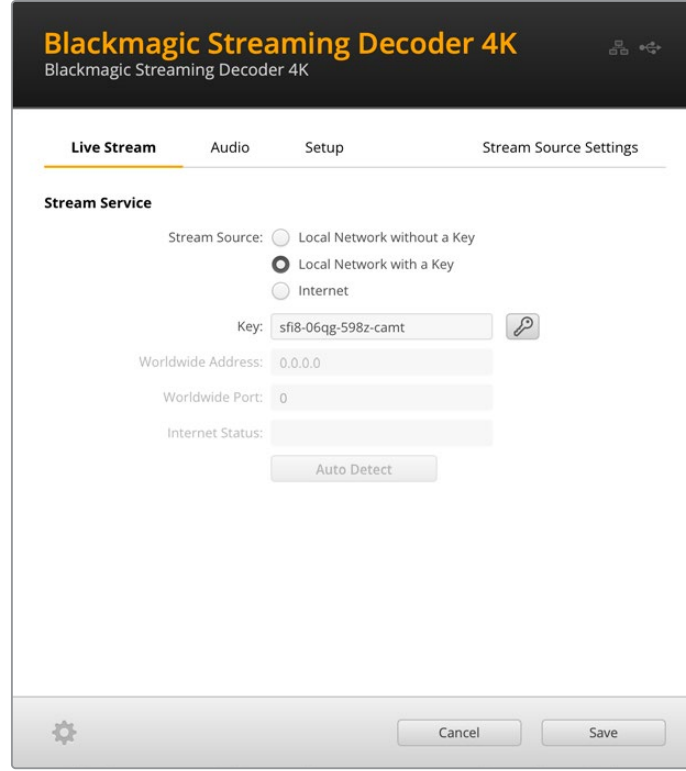


Yüklenen Ayarların Kaldırılması

Cihaza yüklenen tüm internet yayın ayarlarını Blackmagic Streaming Encoder'inizden kaldırmak için, "live stream" sekmesinin sol altındaki çark simgesini tıklayın. "Remove" ibaresini tıklayarak kaldırmak istediğinizi doğrulayın.

Streaming Decoder

Blackmagic Streaming Decoder'da, "live stream" sekmesi bir yayın kaynağı seçmenize ve kod çözücünüzün internet ayarlarını yapılandırmanıza olanak tanır.



Stream Service

"Stream service" ibareli yayın hizmeti seçenekleri; uzak konumdaki bir Streaming Encoder'e ya da yerleşik internet yayınını destekleyen bir Blackmagic kamera veya ATEM görüntü mikserine bağlamak için Blackmagic Streaming Decoder'inizin ayarlarını yapılandırmanıza olanak tanır.

Stream Source

Gelen yayın sinyaliniz için bir kaynak seçmek üzere, "stream source" ibareli yayın kaynağı menüsünü kullanın. Seçenekler arasında, "local network without a key" ibareli şifresiz yerel ağ, "local network with a key" ibareli şifresiz yerel ağ ve "internet" bulunur.

Key

Menüde bulunan herhangi bir Blackmagic Streaming Decoder'e herkes internet yayını yapabileceğinden, size ait video bağlantısına bir başkasının girmesini önlemek üzere, bir internet yayın şifresi belirlemekte fayda var! Ağınızda herhangi bir Streaming Decoder'i seçmek çok kolay olduğundan, herkesin üst üste yayın yapmaya başlaması bir karmaşaya neden olabilir.

Bir internet yayın şifresi belirleyebileceğiniz için bu, bir sorun değildir. Bu yayın şifresi, bir başkasının Blackmagic Streaming Decoder'inize erişmesini engeller. Streaming Setup yazılımını çalıştırırken, internet yayın şifresinin girildiği alanı görebilirsiniz. Buraya bir şifre girdiğinizde, sadece internet yayın ayarlarında aynı yayın şifresine sahip kullanıcıların Blackmagic Streaming Decoder'inize bağlanmasına izin verilir.

İstediğiniz bir şifre belirleyebilirsiniz, fakat Streaming Setup menüsünde bir şifre üretici butonu da bulunur, böylece bilgisayarından yüksek güvenli bir şifre oluşturmasını isteyebilirsiniz. Bu şifreyi, kopyalayıp yapıştırmaları için cihazınıza bağlanmasını istediğiniz kişilere gönderebilirsiniz. Bu kişiler; Blackmagic Streaming Encoder'lerine, Blackmagic kameralarına veya ATEM görüntü mikserlerine bu şifreyi girdiklerinde, sadece onların Streaming Decoder'inize bağlanma izni olur.

İnternet Bağlantısı

Blackmagic Streaming Decoder'inizi bağlamanın en etkili şekli internet üzerindendir. Bu, biraz daha karmaşıktır, çünkü dünyanın herhangi bir yerindeki bir Streaming Encoder, Blackmagic kamera veya ATEM görüntü mikserinin, bu Streaming Decoder'i bulabileceğinden emin olmanız gerekir. Dünya büyük bir yer olduğundan, bunun gerçekleşmesi için güncellenmeniz gereken birkaç ayar daha var.

Bunun için gerekenler

İnternete bağlanmak için hem Blackmagic Streaming Decoder'inizin hem de ona internet yayını yapacak olan Streaming Encoder, kamera veya ATEM görüntü mikserinin internete bağlı olması gerekir. Ayrıca, Streaming Decoder'iniz için genel bir IP adresiniz olması ve bu adresin zamanla değişmeyecek sabit bir adres olması gerekir.

Burada sorun, Blackmagic Streaming Decoder'inizin yerel Ethernet ağınızda olmasına rağmen, internette de görünür olması gerekmesidir. İnternete bağlı olan Streaming Encoder, kamera veya ATEM görüntü mikserinin internet bağlantınız üzerinden kendisine bağlanmasına izin vermek için, Streaming Decoder'iniz internet güvenlik duvarınızda port yönlendirme kullanır. Port yönlendirme yapılmazsa Streaming Encoder, kamera veya ATEM görüntü mikseri, Streaming Decoder'i bulamaz.

Bu durumda, bir internet sağlayıcısından veya ağ yöneticinizden, internet bağlantınızdaki port yönlendirme fonksiyonunu "TCP port 1935" olarak ayarlamasını talep etmeniz gerekir. Onlar, bunun ne anlama geldiğini bilirler! Güzel olan, Blackmagic Streaming Decoder'in sizin için bu port yönlendirme özelliğini de ayarlamaya çalışmasıdır, çünkü çoğu internet bağlantısı ve güvenlik duvarı, port yönlendirmeyi otomatik ayarlamak için bir protokole sahiptir. Yani siz Streaming Setup yardımcı yazılımını kullanarak bunu ayarlarken, Streaming Decoder'in ağ ekipmanlarınızla iletişim kurması ve sizin için bunu ayarlamaya çalışması muhtemeldir.

İnternet erişiminin teyit edilmesi

Aşağıda bir internet durumu alanı olduğunu göreceksiniz. Blackmagic Streaming Decoder internete bağlanmaya çalışacak ve her şeyin gerektiği gibi çalışıp çalışmadığını size bildirecektir. Bağlı olduğunu gösterirse bu iyi bir işarettir, çünkü Streaming Decoder'in, port yönlendirme ayarları ile birlikte ağ ekipmanlarınızı ayarlayabildiğini ve internete bağlandığını gösterir.

NOT Dış trafik için ağınızda port açmak, ağ güvenliğini zayıflatabildiğinden, herhangi bir güvenlik kaygınız varsa internet sağlayıcınıza veya ağ yöneticinize danışmanız en doğrusudur.

Bağlantı durumu, dünya genelinde görünebilir olduğunu belirtmiyorsa internet güvenlik duvarınızda port yönlendirmeyi manuel ayarlamanız gerekebilir. Her güvenlik duvarı, bu gibi bilgileri otomatik ayarlama protokolünü desteklemez, fakat manuel ayarlamayı hepsi destekler.

Yönlendirici kontrollerine erişemiyor veya port yönlendirmeyi yapılandırmayı bilmiyorsanız internet hizmet sağlayıcınızı aramanız gerekebilir. Daha büyük ağlarda, port yönlendirme fonksiyonunun kurulumu için ağ yöneticinizle görüşmeniz daha doğru olabilir, çünkü bu, ağınızda herhangi bir çakışmanın olmamasını temin edecektir.

İnternet Durumu

İnternet bağlantısını kurarken, bağlantı durumu özelliği olası sorunları çözümlemenize yardımcı olabilir. Gösterebileceği bazı bilgiler ve sorunun nedeni aşağıda sıralanmıştır.

Dünya Genelinde Görünür	Bu iyi bir işarettir ve her şey doğru çalışıyor demektir. Port yönlendirmenin ayarlanmış ve çalışıyor olduğunu ve Blackmagic Streaming Decoder'ın internetten üzerinden video yayını almaya hazır olduğunu gösterir.
İnternet Erişimi Yok	Streaming Decoder'nizin internete bağlanamadığını bildirir. Ağ ayarlarınızı ve internet bağlantınızı gözden geçirmeniz gerekir.
Port Yönlendirme Hatası	İnternete bağlı olduğunuza, fakat internet güvenlik duvarınızdaki port yönlendirmenin Streaming Decoder aracılığıyla ayarlanamadığına ve internetten üzerinden cihaza erişilemediğine işaret eder. Ağ yöneticinizden, sizin için bunu ayarlamasını istemeniz gerekir.
UPnP Hatası	Bu tuhaf hata mesajı ayrıca, Streaming Decoder'ın internet yönlendiricideki port yönlendirmeyi ayarlayamadığını gösterir. Ağ yöneticinizden, sizin için bunu ayarlamasını istemeniz ya da port yönlendirmeyi ayarlamak için yönlendiricinin kullanım kılavuzuna bakmanız gerekir.

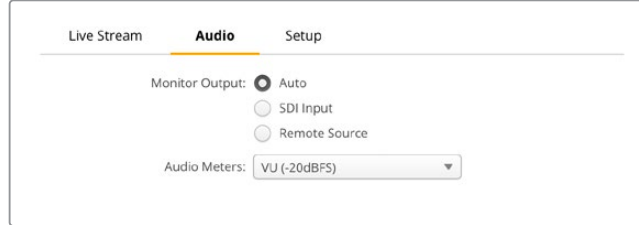
Auto Detect Butonu

İnternet bağlantı ayarlarınızın otomatik algılanması için “auto detect” butonunu tıklayın.

Audio Sekmesi

Blackmagic Streamin Processor cihazınızın ses denetleme çıkışı yapılandırma ayarlarına ilaveten, talkback ve ses göstergesi seçenekleri, “audio” ibareli ses sekmesindedir.

Streaming Encoder



Monitor Output

Streaming Encoder'inizin SDI ve HDMI görüntüleme çıkışlarında kullanılan ses kaynağını seçmek için “monitor output” ibareli ses denetleme çıkışı seçeneklerini kullanın.

Auto

Monitör çıkışı “auto”, yani otomatiğe ayarlıyken Streaming Encoder'iniz, ATEM görüntü mikserinden bir Blackmagic Streaming Decoder aracılığıyla gönderilen talkback sesini otomatik algılar ve monitörlere gönderir. Herhangi bir talkback sinyali algılanmazsa, SDI girişinden gelen ses kullanılır.

SDI Input

Streaming Encoder'inize bağlı bir Blackmagic Studio Camera benzeri bir SDI giriş kaynağından gelen sesi dinlemek için “SDI Input” ibareli SDI girişini seçin.

Remote Source

Uzak bir ATEM görüntü mikserinden veya Streaming Decoder'den gönderilen talkback sesini dinlemek için bu seçeneği kullanın.

Audio Meters Ayarı

Ses göstergeleri menüsünü kullanarak görüntülenmesini istediğiniz ses göstergesi türünü seçin. Seçenekler arasında; VU -18dBFS, VU -20dBFS, PPM -18dBFS veya PPM -20dBFS referans seviyeleri bulunur.

Streaming Decoder

Streaming Decoder'de "audio" ibareli ses sekmesi, talkback kanallarını seçmenize ve ön panel LCD ekranı için ses göstergelerini yapılandırmanıza olanak tanır.

Talkback

Uzak konumdaki Blackmagic Streaming Encoder'e geri gönderilen ses kanallarını seçmek için bu ayarı kullanın. Seçenekler; "off" ibareli kapalı, "1 and 2 program audio" ibareli 1 ve 2 program sesi, "13 and 14 engineering audio" ibareli 13 ve 14 teknik ses ve "15 and 16 talkback audio" ibareli 15 ve 16 talkback sesidir.

Audio Monitoring

"Audio Monitoring" ibareli ses denetleme menüsünü kullanarak, ön panel LCD ekranında görüntülenmesini istediğiniz ses göstergesi türünü seçin. Seçenekler arasında; VU -18dBFS, VU -20dBFS, PPM -18dBFS veya PPM -20dBFS referans seviyeleri bulunur.

Setup Sekmesi

"Setup" ibareli kurulum sekmesindeki ayarlar, yayın işlemcinizin ismini belirlemenize, ağ ayarlarını değiştirmenize ve cihazınızı fabrika ayarlarına döndürmenize imkan verir. Blackmagic Streaming Decoder'de, referans zamanlamasını ve SDI çıkışını ayarlama seçenekleri de "setup" sekmesindedir.

Kimlik Ayarları

Yayın işlemcinizin ismini ve dilini girmek için kimlik ayarlarını kullanın.

Ağınıza bağlı birden fazla Blackmagic Yayın İşlemcisi varken, özel bir isim girmek daha kolay tanınmalarına yardım edebilir. Bu ayrıca, ağ konumu için isim de sağlar.

Mevcut yazılım sürümünü de belirleyebilirsiniz.

Network Settings Sekmesi

Network Location Alanı

“Network Location” ibareli ağ konumu, Blackmagic Yayın İşlemcinizin ağ kayıtlarında görünen adıdır. Bu, kurulum yardımcı yazılımının üst kısmındaki kimlik ismini temel alır. Sayısal ön-eklerin yok sayılacağını unutmayınız.

MAC Address Alanı

Yayın işlemcisinin MAC adresini gösterir. MAC adresi, her Ethernet portuna özel olan bir donanım kimliğidir. MAC adreslerini temel alarak cihazların erişimi kısıtlayan ağ güvenlik sistemlerini kurarken, bu önemlidir.

Protokol

“DHCP” ve “Static IP” ayarları, yayın işlemcinizin ağınıza bağlanma şeklini belirlemenizi sağlar.

DHCP	Blackmagic İnternet Yayın İşlemcileri, varsayılan olarak DHCP'ye ayarlıdır. Dinamik ana bilgisayar yapılandırma protokolü veya diğer adıyla DHCP, yayın işlemcinizi otomatik tespit eder ve bir IP adresi atayan ağ sunucularındaki bir hizmettir. DHCP, Ethernet üzerinden ekipman bağlamayı kolaylaştıran ve IP adreslerinin birbirleriyle çakışmamasını garantileyen iyi bir hizmettir. Bilgisayarların ve ağ dağıtıcıların çoğu DHCP'yi destekler.
Static IP Ayarı	“Static IP” ibareli sabit IP seçiliyken, ağ detaylarınızı manuel olarak girebilirsiniz. Tüm cihazların birbiriyle iletişim kurabilmesi için IP adreslerini manuel ayarlarken, cihazların aynı alt ağ maskesi ve ağ geçidi ayarlarını paylaşması şarttır.

Statik IP kullanırken ve IP adreslerinde aynı tanımlama numarasını paylaşan başka cihazlar ağda olduğunda, bir çakışma oluşur ve cihazlar bağlanmaz. Bir çakışma yaşarsanız cihazın IP adresindeki kimlik numarasını değiştirmeniz yeterlidir.

Örneğin, çakışan adres 192.100.40.30 ise son sayı alanını 30'dan başka bir sayıya değiştirin. Yeni sayı da kullanımda ise diğer ekipmanların kullanımında olmayan farklı bir sayı bulana kadar değiştirmeye devam edin.

Connection Priority

Blackmagic Yayın İşlemcinize hem Ethernet hem de bir cep telefonu bağlıyken, internet yayını için hangi bağlantının kullanılacağını seçmenize bu ayar olanak tanır. Cep telefonu internet bağlantısını paylaşmak hakkında daha fazla bilgi için “akıllı telefonunuzu kullanarak internet yayını” başlıklı bölüme bakın.

Allow Utility Administration

“Via USB” onay kutusunu tıklamak, ayar değişikliklerini sadece USB üzerinden bağlı bilgisayar ile sınırlar. Bu, ağdaki herhangi birinin yanlışlıkla ayar değişiklikleri yapma riskini ortadan kaldırır.

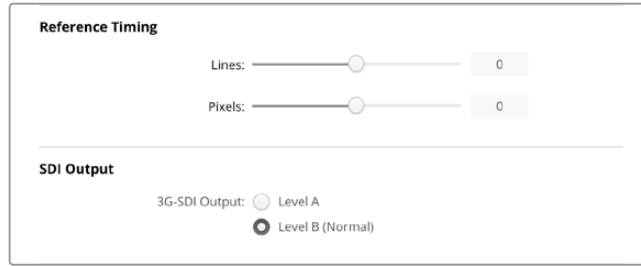
Reset

Blackmagic Internet Yayın İşlemcinizi fabrika ayarlarına döndürmek için “factory reset” butonunu tıklayın. “Reset” butonuna basar basmaz, seçiminizi onaylamanız istenir. Devam etmek için “reset” butonunu tıklayın.



Streaming Decoder

Blackmagic Streaming Decoder'deki “setup” sekmesi, kimlik ve ağ ayarlarının yanında aşağıdaki ayarları içerir.



Reference Timing

Bu ayarlar, çizgi veya piksel bazında referans zamanlamasını manuel olarak ayarlamanızı sağlar. Blackmagic Streaming Decoder, analog tri-sync ve black burst video referans girişlerinin yanı sıra, referans için kullanılabilen bir SDI girişine de sahiptir. Referans; tesislerindeki tüm video bağlantılarının senkronlu olmasına ihtiyaç duyan büyük yayıncılar tarafından kullanılır, böylelikle büyük bir sistemde değiştirilebilirler.

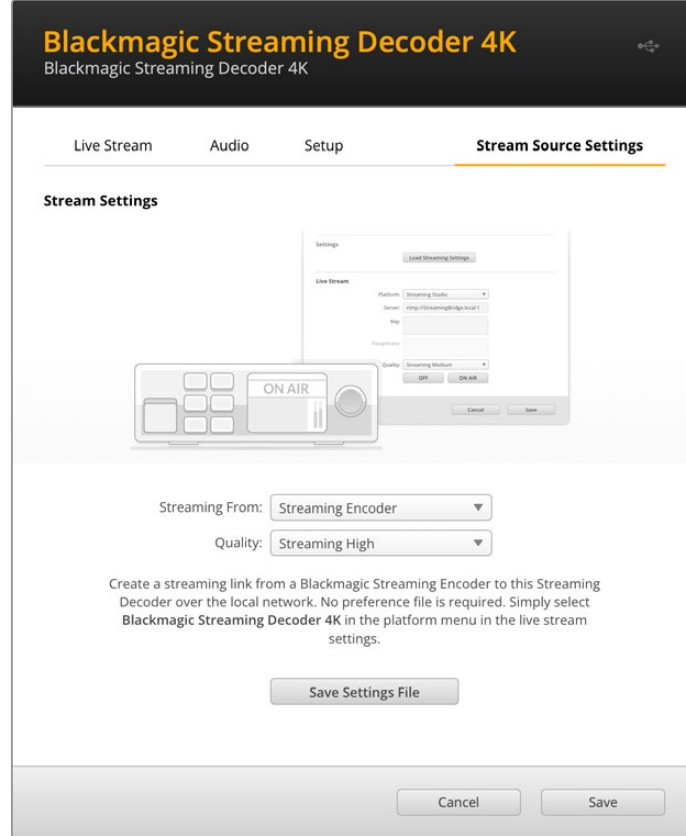
SDI Output

Bazı yayın ekipmanları yalnızca A veya B seviye 3G-SDI video sinyali alabilir. Diğer yayın ekipmanlarıyla uyumluluğu korumak için, karşılık gelen 3G-SDI türünü seçin. Varsayılan ayar B seviyedir.

Stream Source Settings

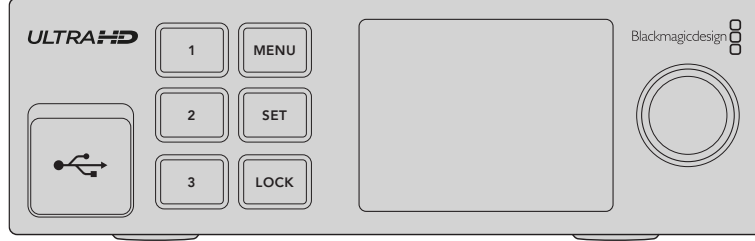
Blackmagic Streaming Decoder'iniz için "stream source settings" sekmesi, bir yayın ayarları XML dosyası oluşturmanıza imkan verir. Bu dosya; uzak konumdaki bir Streaming Encoder'e ya da yerleşik internet yayınına destekleyen bir Blackmagic kamera veya ATEM görüntü mikserine yüklenebilir.

Yayın ayarları XML dosyalarının oluşturulması hakkında daha fazla bilgi için, bu kılavuzun bir sonraki "yayın linklerinin oluşturulması" bölümüne başvurun.



Yayın Linklerinin Oluşturulması

Blackmagic Yayın İşlemcileri ile, bir yerel ağa veya İnternet üzerinden dünyanın her yerine yayın yapabilirsiniz.



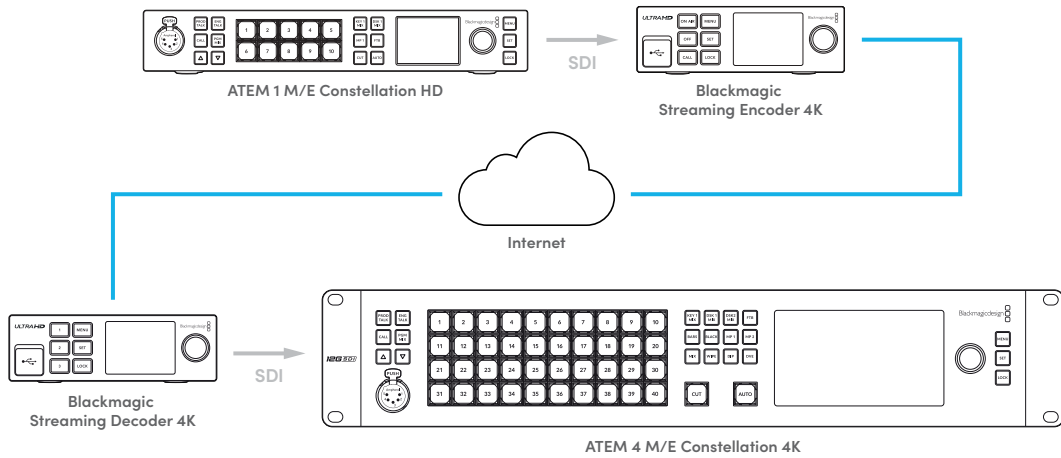
Blackmagic Streaming Decoder'iniz, Streaming Encoder'iniz ile aynı yerel ağ üzerindeyse Blackmagic Streaming Setup yazılımının "live stream" sekmesindeki "platform" menüsünde listelenir. Yerel ağ üzerinden bir İnternet yayını hazırlamak hakkında daha fazla bilgi için "başlangıç" bölümüne başvurun.

İnternet üzerinden veya daha güvenli olması için bir yayın şifresi kullanarak yerel bir ağ üzerinden yayın yapmak istediğinizde, Streaming Decoder'inizde bir yayın ayarları XML dosyası oluşturabilirsiniz. Bu dosya, Blackmagic Streaming Setup yazılımı kullanılarak Blackmagic Streaming Encoder'e yüklenebilir.

BİLGİ Yerleşik İnternet yayınına destekleyen Blackmagic kameralar veya ATEM görüntü mikseri için yayın ayarı XML dosyalarını da aktarabilirsiniz. Yayın ayarları dosyalarının yüklenmesi hakkında daha fazla bilgi için, Blackmagic kamerasının veya ATEM görüntü mikserinizin kullanım kılavuzuna başvurun.

Uzak bir konumdan stüdyoya bir hava durumu raporu aktarmak, Blackmagic Yayın İşlemcilerinin birlikte nasıl çalışabileceğine iyi bir örnektir. Uzak konumdan sinyal aktarmak için bir Streaming Encoder ve İnternet bağlantısı yeterlidir. Bu bağlantı, akıllı telefonunuz aracılığıyla veya bir ağa bağlanarak kurulabilir.

Geride stüdyoda, Blackmagic Streaming Decoder İnternet sinyalini alır ve stüdyodaki ana görüntü mikserine bağlanabilmesi için SDI'ya dönüştürür.



Bu örnek için iş akışı kurulumu şu şekildedir:

- 1 Sette, Blackmagic Streaming Encoder, ATEM görüntü mikserindeki Program SDI çıkışına bağlanır. Örneğin, bir ATEM 1M/E Constellation HD gibi.
- 2 Ardından Blackmagic Streaming Encoder bir akıllı telefona bağlanır.
- 3 Stüdyoda, Blackmagic Streaming Decoder de Ethernet üzerinden internete bağlanır.
- 4 Ardından, ana haber yayını için Streaming Decoder 4K, internetten alınan dönüştürülmüş SDI video sinyali, stüdyodaki görüntü mikserinin SDI girişine iletir.

Stüdyonuzun, Streaming Encoder'ın internet sinyaline Streaming Decoder cihazını bağlayabilmesi için Blackmagic Streaming Setup yazılımını başlatmanız ve internet ayarlarını yapılandırmanız gerekir. Bu işlem, tüm internet yayın ayarlarını içeren bir XML dosyasının oluşturulmasını ve daha sonra setteki Streaming Encoder'e yüklenmesini de kapsar.

XML Dosyasının Oluşturulması

Bir XML ayarlar dosyası oluşturmak için Blackmagic Streaming Decoder'i, "live stream" etiketli portundan bir internet yönlendiricisine veya bir ağ dağıtıcısına, bir ağ kablosu takarak internete bağlayın.

Bir USB-C kablosu kullanarak Streamig Decoder'i bilgisayarınıza bağlayın ve Blackmagic Streaming Setup yazılımını başlatın. "Yayın kaynağı" sekmesinde, ağ ayarlarının doğru olduğunu onaylayın ve "yayın servisi" seçeneklerinden "internet"i seçin. İnternet durum kutusunda, bir "dünya genelinde görünür" mesajı görmemiz gerekir. Bu, her şeyin doğru çalıştığını gösterir. Yayın dekoderinizi yapılandırma hakkında daha fazla bilgi için "Blackmagic Streaming Setup" bölümündeki "yayın servisi" kısmına bakın.

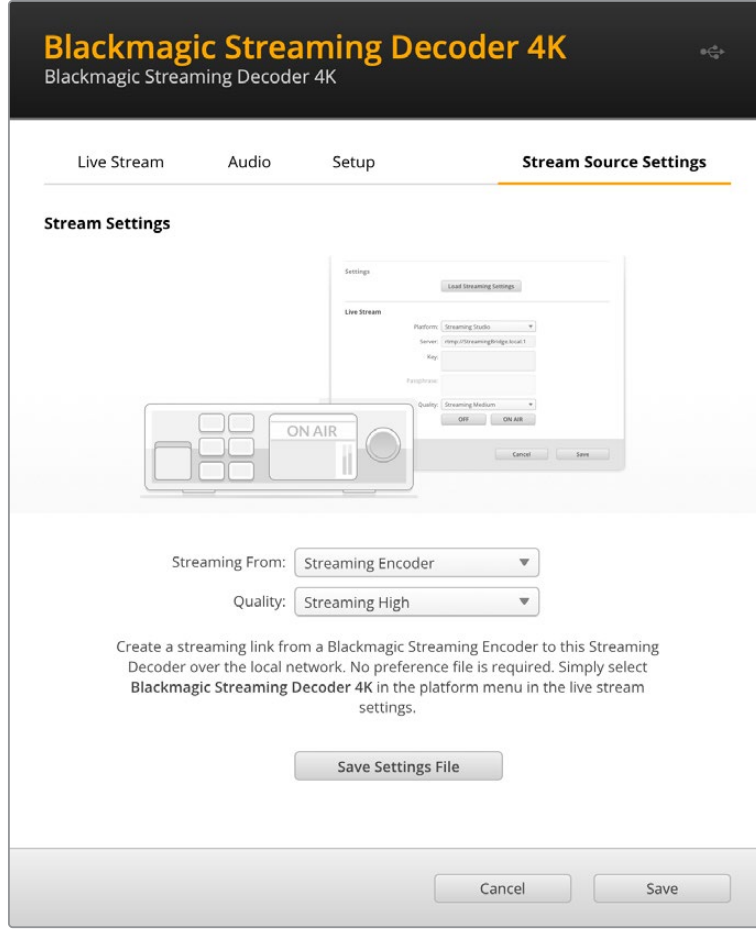
Port Yönlendirme Hakkında Bir Not

"İnternet durumu" kutusunda bir port yönlendirme veya UPnP hatası görürseniz, internet sağlayıcınızdan veya ağ yöneticinizden, internet bağlantınızdaki port yönlendirmeyi "TCP port 1935" olarak ayarlamasını istemeniz gerekir.

XML Dosyasının Çıktısının Alınması

Blackmagic Streaming Setup yazılımının "kurulum" sekmesinde ayarlarınızı onayladıktan ve Streamig Decoder'i ağınıza veya internete başarıyla bağladıktan sonra, XML kurulum dosyasının çıktısını alabilirsiniz.

- 1 Pencerenin sağ üst köşesindeki "yayın kaynağı ayarları" sekmesini tıklayın.



- 2 "Yayın Kaynağı" menüsünde "Streaming Encoder"i seçin.
Yerleşik internet yayını destekleyen bir Blackmagic kamera veya ATEM görüntü mikseri için bir yayın ayarları XML dosyası oluşturuyorsanız, "yayın kaynağı" menüsünden "ATEM görüntü mikserini" veya "Blackmagic kamera"yı seçin.
- 3 İnternet yayını için istediğiniz kaliteyi seçin. Bu ayar, uzaktaki Blackmagic Streaming Encoder'ın kalite ayarını belirler.
- 4 "save settings file" butonunu tıklayın, bilgisayarınızda XML dosyasını kaydetmek için bir konum seçin.

Ayarlar dosyasını kaydettikten sonra, bu dosyayı uzaktaki Blackmagic Streaming Encoder operatörüne e-posta ile gönderin.

BİLGİ Uzaktaki Streamig Encoder'e geri göndermek istediğiniz ses kanallarını seçmek için "audio" sekmesindeki talkback ayarlarını kullanabilirsiniz.

XML Dosyasının Yüklmesi

Elektronik posta yoluyla ayarlar dosyasının çekim sahasına gönderilmesiyle, sahadaki ekip Blackmagic Streaming Setup yazılımını kullanarak XML dosyasını Streaming Encoder'e yükler, sonra hava durumu raporunu stüdyoya internet üzerinden yayınlamak üzere "on air" butonuna basar!

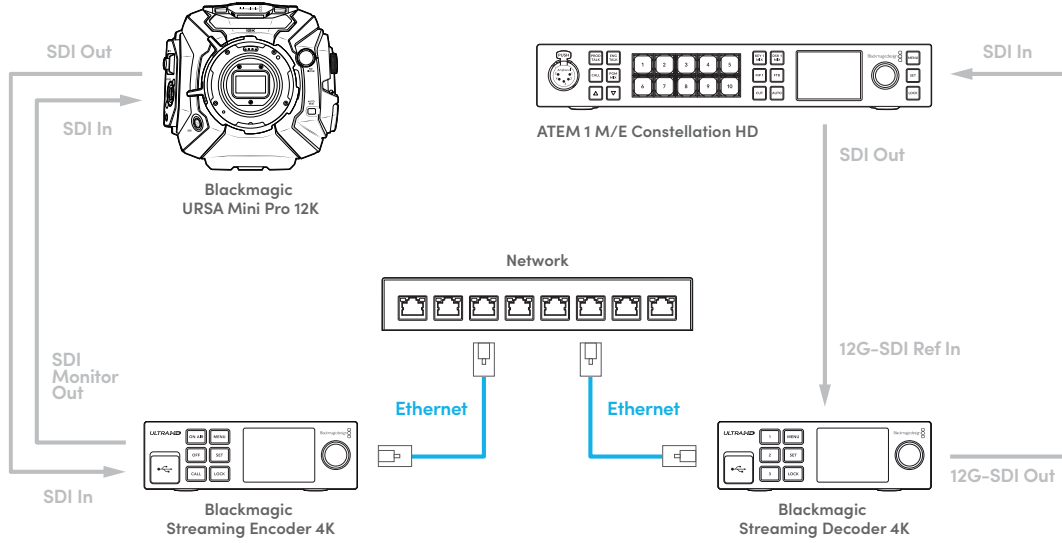
İnternet yayın XML dosyasını yükledikten sonra, tekrar yüklemenize gerek kalmadan yayını başlatıp durdurabileceğinizi belirtmekte fayda var. Bu, Streamig Encoder ve Streamig Decoder arasında sabit bir video bağlantısı kurmayı kolaylaştırır.

Stüdyodaki Streamig Decoder cihazı, internet yayın ve ağ ayarlarını değiştirmedeği ve halen o Streamig Encoder cihazını aradığı müddetçe, internette hangi konumda olursa olsun mutlaka bulacaktır. Bulduğunuz her yerde, Streamig Encoder'i internete bağlayabilir, "on air" butonuna basabilirsiniz ve cihaz, anında stüdyodaki Streamig Decoder'e internet üzerinden yayın yapar.

Talkback, Tally ve Kamera Kontrolü

Blackmagic İnternet Yayın İşlemcileri, ATEM görüntü mikserlerinin tally, talkback ve kamera kontrol bilgilerini göndermesine olanak tanır. Yani, herhangi bir SDI tabanlı Blackmagic Design kamera, yerel ağıınız dahilindeki herhangi bir konuma veya İnternet üzerinden dünyanın herhangi bir yerine yerleştirilebilir ve hala tally, talkback ve kamera kontrol işlevlerine sahip olur.

Kurulumu çok kolaydır. Aşağıdaki çizim; tally, talkback ve kamera kontrol sinyalleri ile birlikte bir URSA Mini Pro 12K'nın, yerel bir ağ üzerinden bir ATEM 1 M/E Constellation HD'ye nasıl bağlanacağını göstermektedir.



Her şey bağlandığında:

- 1 LCD menüsünü açmak için Blackmagic Streaming Encoder'deki "menu" butonuna basın ve "canlı yayın" menüsüne gidin.
- 2 "Platform" menüsünden Blackmagic Streaming Decoder'i seçin.
- 3 Onaylamak için "set" butonuna basın.

Tally özelliğinin çalışması için kameradaki ATEM kamera kimliğinin görüntü mikserindeki girişle eşleşecek şekilde ayarlandığından emin olmanız gerekir. ATEM Kamera Kimliğinin ayarlanması hakkında bilgi için URSA Mini kılavuzuna başvurun.

ATEM görüntü mikserinde kamerayı program çıkışına yönlendirerek, tally'nin çalışıp çalışmadığını test edebilirsiniz. ATEM kamera kimliği kameranıza doğru bir şekilde ayarlanmışsa kamera LCD'sinin çevresinde kırmızı bir tally kenarlığı dahil olmak üzere, tally lambasının yandığını görürsünüz. Şimdi, kamerayı ön izleme çıkışına yönlendirin ve tally lambası yeşil yanacaktır.

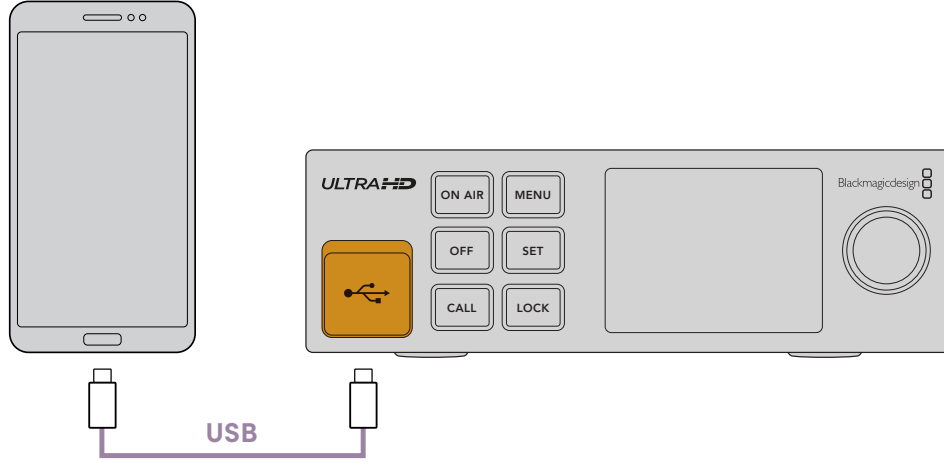
Kamera kontrolünü test etmek için ATEM Software Control'ün kamera sayfasında diyaframı ve ana siyahı ayarlamayı deneyin.

Gömülü SDI ses kanalları 15 ve 16, varsayılan talkback kanalları olarak ayarlanmıştır ancak bunları, Blackmagic Streaming Setup yazılımını kullanarak, teknik ekip kanalları 13 ve 14 veya program çıkışı olarak değiştirebilirsiniz.

İnternet üzerinden aktarım yaparken, Blackmagic Streaming Setup yazılımı kullanılarak bir XML kurulum dosyası oluşturulur. Bu XML dosyası daha sonra, İnternette Blackmagic Streaming Decoder'i bulabilmesi için Blackmagic Streaming Encoder'e yüklenir. Kurulum XML dosyasının nasıl oluşturulacağı ve yükleneceği hakkında daha fazla bilgi için, bu kılavuzda bir önceki bölüme bakın.

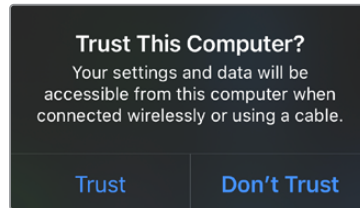
Akıllı Telefonunuzu Kullanarak İnternet Yayını

Blackmagic İnternet Yayın İşlemcileri, akıllı telefonunuzun internet paylaşımını kullanarak internete bağlanabilir. Başlamak için akıllı telefonunuzu yayın işlemcinizdeki ön veya arka USB-C portuna bağlamanız yeterlidir. Bu bağlantı, hızlı bir şekilde kurulum yapmanıza ve akıllı telefonunuzun 4G veya 5G mobil bağlantıya sahip olduğu her yerde yayın yapmanıza veya almanıza olanak verir.



Akıllı telefonunuzun internet paylaşımını kullanmayı ayarlamak için:

- 1 iOS cihazınızda ayarları açın, kişisel erişim noktasına gidin ve “diğerleri katılabilirsin” seçeneğinin açık olduğundan emin olun.
- 2 Bağlanan bilgisayara güvenip güvenmediğinizi soran bir mesaj belirir. “Güven” butonunu seçin ve ekranda yeşil bir internet paylaşımı simgesi görünür. Böylece bağlantının çalıştığından emin olabilirsiniz.



İnternet paylaşımı etkinken, akıllı telefonunuzun saati her zaman yeşil bir arka plan içinde görünür.

Android cihazlarda hızlı menüyü görüntülemek için ekran üzerinde elinizi kaydırın. Kişisel erişim noktası simgesini basılı tutun ve ardından USB internet paylaşımını etkinleştirin.

BİLGİ İnternet yayını bitirdikten sonra, telefonunuzun bataryasının çabuk bitmesini önlemek üzere telefonunuzda internet paylaşımını kapatmanızı tavsiye ederiz.

Canlı İnternet Yayını

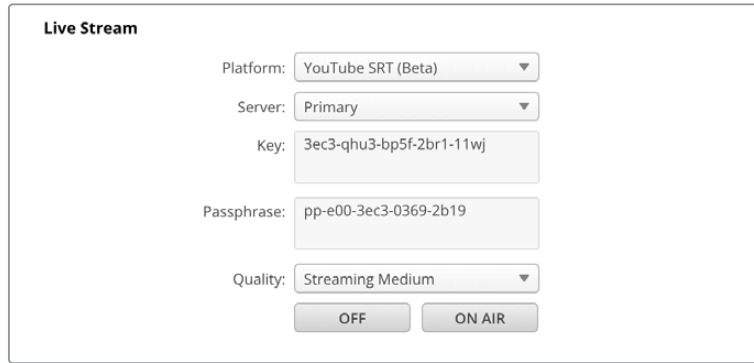
Blackmagic Streaming Encoder; YouTube, Facebook, Twitch ve benzeri İnternet yayın platformlarına doğrudan yayın yapmanızı sağlar. Bu örnekte, YouTube Live üzerinden bir internet yayınının ayarlarını yapacağız.

- 1 YouTube Studio hesabınızdan temin ettiğiniz internet yayın şifrenizi kopyalayın.
- 2 Blackmagic Streaming Setup yazılımını başlatın ve “canlı yayın” sekmesine gidin.
- 3 Platformu YouTube olarak ve sunucuyu da “ana” olarak ayarlayın. “Yayın Şifresi” alanına YouTube internet yayın şifrenizi yapıştırın ve internet yayın kalitesini seçin. “Kaydet” ibaresini tıklayın.
- 4 Artık, internet üzerinden dünyaya yayın yapmaya hazırsınız! Ekrandaki “on air” butonunu tıklayın veya cihazın ön panelindeki “on air” etiketli butona basın. Yapımınız bittiğinde, canlı yayını sonlandırmak için “off” (kapat) butonuna basın.

SRT İnternet Yayın Protokolünün Kullanımı

Güvenli sağlam aktarım protokolü yani SRT, RTMP'ye kıyasla daha düşük gecikmeli internet yayını sağlar. SRT, şifreleme anahtarı gibi bir parola kullanarak güvenliği de artırır.

İnternet yayın hizmetinizin SRT protokol sürümünü seçerken, internet yayın hesabınızdan parolayı ve yayın şifresini kopyalayın ve Blackmagic Streaming Setup yazılımındaki “şifre” ve “uzun parola” alanlarına yapıştırın.



Parolanızı kurulum yardımcı yazılımının “uzun parola” alanına yapıştırın

Teknik açıdan deneyimli yayıncılar, internet yayın ayarlarını kişiselleştirmek isterse XML dosyasında hem RTMP veya SRT protokolü hem de H.264 veya H.265 kodeği değiştirilebilir. Daha fazla bilgi için “Yazılım Geliştiriciler için Bilgiler” bölümündeki “Blackmagic Streaming XML Format” başlıklı kısma bakın.

Web Kamerası Çıkışının Kullanımı

Zoom veya Microsoft Teams gibi yazılımlar, Blackmagic Streaming Processor cihazınızı otomatik olarak web kamerası olarak ayarlar. Dolayısıyla, uygulamayı başlattığınızda, video yayınızı anında görürsünüz. Uygulama, Streaming Encoder veya Streaming Decoder'inizi otomatik olarak seçmezse cihazınızı webcam ve mikrofon olarak kendiniz ayarlayabilirsiniz.

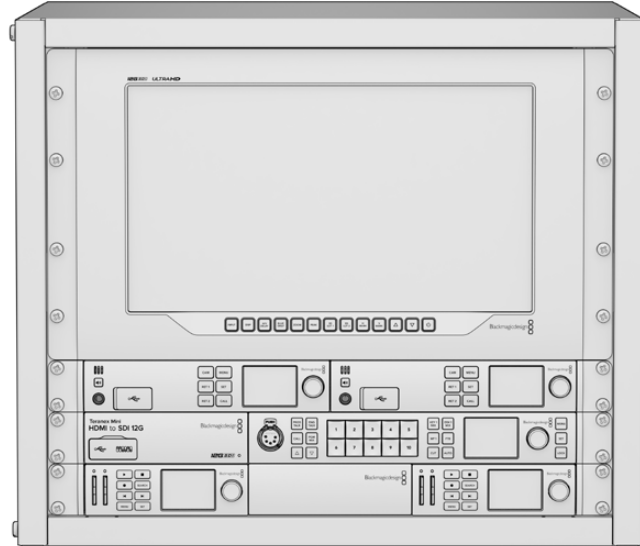
Aşağıda, Microsoft Teams uygulamasında, web kamerasının nasıl ayarlandığına dair bir örnek verilmiştir.

- 1 Bir USB-C kablosu kullanarak Blackmagic Streaming Processor cihazınızı, arka panelindeki "webcam out" portu aracılığıyla bilgisayarınıza bağlayın.
- 2 Teams menü çubuğunda "settings" yani ayarları açın ve "devices" ibareli cihazlar seçeneğini tıklayın.
- 3 "Audio" ibareli ses panelinde, "microphone" menüsünü tıklayın ve ses kaynağınız olarak "Blackmagic Design"i seçin.
- 4 "Video" ayarlarına gidin ve "camera" menüsünden Blackmagic Streaming Processor cihazınızı seçin.

Blackmagic Universal Rack Shelf

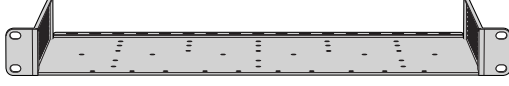
Blackmagic Universal Rack Shelf, geniş bir Blackmagic Design ekipman yelpazesini bir yayın rafına veya taşıma kasasına monte etmenizi sağlayan, 1RU boyutunda bir raftır. Modüler tasarımı sayesinde, tek raf bölmesi büyüklüğündeki cihazları kullanarak, taşınabilir ve pratik ekipman kurulumları oluşturabilirsiniz.

Aşağıdaki resimde, küçük bir ekipman kasasına monte edilmiş 3 adet Universal Rack Shelf, çeşitli uyumlu cihazlar monte edilmiş olarak gösterilmektedir. En alt rafta, cihazlar arasındaki kullanılmayan alanı doldurmak için 1/3 raf genişliğinde bir boşluk paneli kullanılmıştır.



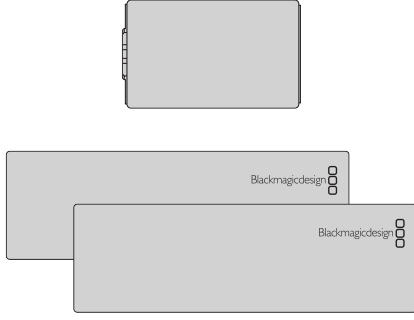
Ürün İçeriği

Universal Rack Shelf Kit, aşağıdaki parçaları içerir.



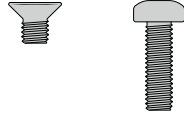
1 adet Blackmagic Universal Rack Shelf

Bir raf boyunda, Blackmagic Design ekipmanlarının kurulumu için tam genişlikte raf.



Boşluk Panelleri

Kullanılmayan raf alanını kapatmak için 1 adet 1/6 raf genişliğinde ve 2 adet 1/3 raf genişliğinde boşluk paneli.



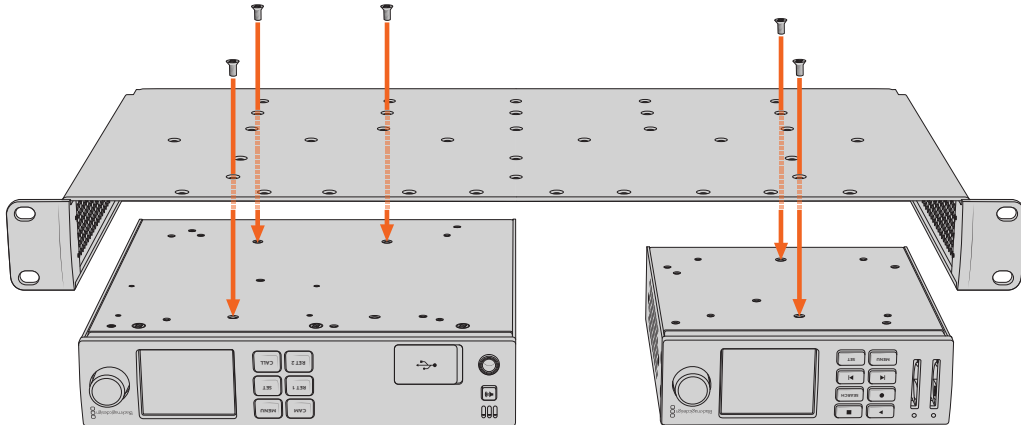
Vidalar

12 adet 5mm gömme başlı M3 montaj vidası.

2 adet 9mm düz M3 vida, 1/6 boşluk panelleri için.

Bir Cihazın Ekipman Rafına Montajı

- 1 Lastik ayaklar takılıysa, plastik kenarlı bir kazıma aleti kullanarak ayakları cihazın tabanından çıkarın.
- 2 Hem raf hem de cihaz baş aşağı olacak şekilde, rafta önceden delinmiş delikleri Blackmagic Design cihazının tabanındaki dişli montaj delikleriyle hizalayın. 1/3 raf genişliğindeki cihazlarda, iki adet merkezi montaj noktası ve daha büyük, 1/2 raf genişliğindeki cihazlarda ise üç adede kadar montaj noktası bulunur.

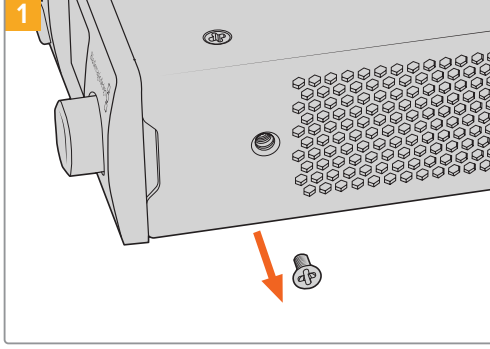


- 3 Ürünle gelen 5mm gömme başlı M3 vidaları kullanarak cihazı rafa sabitleyin.
- 4 Sabitlendikten sonra, ekipman rafını sağ tarafa çevirin ve yerleşik raf kulaklarını kullanarak rafa vidalayın.

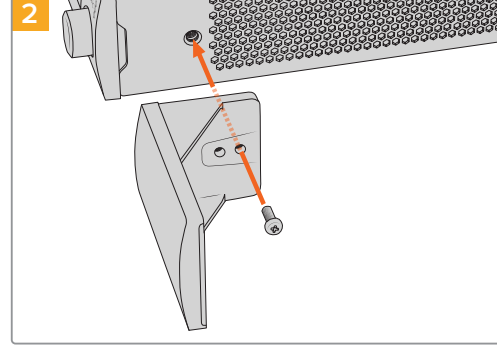
Ürünle birlikte gelen boşluk panelleri, kullanılmayan raf alanını kapatmak için kullanılabilir.

1/6 Boşluk Panelinin Takılması

1/2 ve 1/3 raf genişliğindeki cihazlar monte edilirken, kullanılmayan raf alanını doldurmak için küçük 1/6 boşluk paneli kullanılabilir. Panel, cihazlardan herhangi birinin yanlarına takılabilir. Hava akışını artırmak için paneli, cihazların arasına monte etmek iyi bir fikirdir.



Cihazın ön tarafına yakın olan 5mm M3 vidayı sökün.



Boşluk panelini hizalayın ve verilen M3 9mm naylon vidayı kullanarak takın

1/3 Genişliğindeki Yan Boşluk Panelinin Takılması

Ekipman rafına tek cihaz monte edilirken, geniş 1/3 genişlikteki boşluk panelleri, doğrudan ekipman rafında her iki tarafa takılabilir. Bir boşluk panelini monte etmek için, panelin tabanındaki vida deliklerini ve bağlantı noktasını ekipman rafıyla hizalayın ve ürünle birlikte verilen 5mm gömme başlı M3 vidalardan ikisini kullanarak yerine sabitleyin.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend	
↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: true↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: true↵
```

```
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: false↵
```

```
Static Addresses: 192.168.1.2/255.255.255.0↵
```

```
Static Gateway: 192.168.1.1↵
```

```
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: false↵
```

```
Static Addresses: 192.168.1.2/255.255.255.0↵
```

```
Static Gateway: 192.168.1.1↵
```

```
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
```

```
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
```

```
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
```

```
Current Locale: en_US.UTF-8↵
```

```
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
```

```
Current Audio Meter: PPM -20dB↵
```

```
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```


Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Yardım

Yardım İin

Yardım almanın en hızlı yolu, Blackmagic Design internet destek sayfalarına girip, Blackmagic Streaming Processor iin mevcut olan en son destek kaynaklarını incelemektir.

Blackmagic Design Online Destek Sayfaları

En gncel kılavuza, www.blackmagicdesign.com/tr/support adresindeki BlackmagicDesign destek merkezinden erişebilirsiniz.

Blackmagic Design Forumu

İnternet sitemizdeki Blackmagic Design forumu, daha fazla bilgi ve yaratıcı fikirler iin ziyaret edebileceğiniz faydalı bir kaynaktır. Burası yardım alabilmeniz iin daha hızlı bir yol olabilir, nk başka deneyimli kullanıcılar ya da Blackmagic Design alışanları tarafından sorularınıza yanıtlar bulabilir ve alışmalarınıza bu sayede devam edebilirsiniz. Foruma, <https://forum.blackmagicdesign.com> adresinden ulaşabilirsiniz.

Blackmagic Design Destek Hizmetiyle İrtibat

Aradığınız yardımı destek kaynaklarında ya da forumda bulamadığınız durumda, ltfen destek sayfamıza girerek, "bize e-posta gönderin" butonunu tıklayarak e-posta yoluyla destek talebinde bulunun. Bunun yerine, destek sayfasındaki "yerel destek ekibinizi bulun" butonunu tıklayın ve size en yakın olan Blackmagic Design destek ofisini arayın.

Mevzuata İlişkin Bildirimler



Avrupa Birliği'nin elektrikli ve elektronik cihazlara dair atık kontrol yönetmeliği.

Ürün üzerindeki sembol, bu cihazın başka atık malzemelerle bertaraf edilmemesi şartını gösterir. Atık ekipmanlarınızı bertaraf edebileniz için geri dönüşümünü sağlamak üzere, belirlenmiş toplama noktasına teslim edilmeleri şarttır. Bertaraf anında atık cihazlarınızın ayrı olarak toplanması ve geri dönüşümü, doğal kaynakların korunmasına yardımcı olur ve insan sağlığını ve çevreyi koruyucu bir şekilde geri dönüşümünü sağlar. Geri dönüşüm için atık cihazlarınızı nereye teslim edebileceğiniz konusunda daha fazla bilgi almak üzere, lütfen yerel belediyenizin geri dönüşüm şubesini ya da ürünü satın aldığınız satış bayisini arayınız.



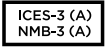
Bu cihaz, test edilmiş ve Federal İletişim Komisyonu (FCC) koşullarının 15. bölümü doğrultusunda, A Sınıfı dijital cihazların sınırlarıyla uyumlu olduğu tespit edilmiştir. İlgili sınırlar, bu cihazların ticari bir ortamda çalıştırıldığı takdirde, zararlı müdahalelere karşı makul koruma sağlamaları için tasarlanmıştır. Bu cihaz; radyo frekans enerjisi üretir, kullanır ve saçabilir ve talimatlar doğrultusunda kurulmadığı ve kullanılmadığı takdirde, radyo iletişimlerine zararlı müdahaleye yol açabilir. Bu cihazın bir meskun bölgede çalıştırılması, zararlı müdahaleye yol açabilir. Bu durumda, müdahalenin düzeltilmesi için ilgili maliyeti, kullanıcının kendisi karşılamak zorunda kalacaktır.

Bu ürünün çalıştırılması aşağıdaki şartlara bağlıdır:

- 1 Bu cihazın, zararlı müdahaleye sebebiyet vermemesi gerekir.
- 2 Bu cihaz, arzu edilmeyen bir çalışma şekline yol açacak müdahale de dahil olmak üzere maruz kaldığı her türlü müdahaleyi kabul etmelidir.



R-R-BMD-20201201001
R-R-BMD-20201201002



ISED Kanada Beyannamesi

Bu cihaz, A Sınıfı dijital cihazlar için Kanada standartlarıyla uyumludur.

Bu cihaza yapılacak herhangi bir değişiklik veya kullanım amacı dışında kullanılması, bu standartlarla uyumluluğunu hükümsüz kılabilir.

HDMI arayüzlerine bağlantı yüksek kalite ve korumalı HDMI kablolarıyla yapılmalıdır.

Bu cihaz, ticari ortamda kullanım amacına uygunluk için test edilmiştir. Cihaz ev ortamında kullanıldığında, radyo paraziti neden olabilir.

Güvenlik Bilgileri

Bu cihaz, koruyucu topraklama bağlantısı olan bir şebeke prizine takılmalıdır.

Elektrik çarpma riskini azaltmak için bu ekipmanı, damlayan veya sıçrayan suya maruz bırakmayın.

Bu cihaz, ortam sıcaklığı 40° C dereceye kadar olan tropikal bölgelerde kullanılmaya uygundur.

Saklama sıcaklığı -20°C ila 60°C'dir ve bağıl nem 0% ila 90% yoğuşmasızdır.

Cihazın çevresinde yeterli havalandırma olduğundan ve hava akımının kısıtlanmadığından emin olun.

Rafa monte ederken, bitişik cihazlardan dolayı hava akımının kısıtlanmadığından emin olun.

Ürünün içinde, kullanıcı tarafından tamir edilebilecek hiçbir parça bulunmamaktadır. Gerekli tamiratları, yerel Blackmagic Design servis merkezine yönlendirin.



Deniz seviyesinden yüksekliğin 2000m'yi aşmadığı yerlerde kullanın.

Kaliforniya Eyaleti Beyannamesi

Bu ürün; plastik parçaları dahilinde, eser miktarda polibromine bifenil gibi kimyasal maddelere sizi maruz bırakabilir. Kaliforniya eyaletinde, bu maddelerin kansere, doğum kusurlarına veya başka üreme bozukluklarına sebebiyet verdiği bilinmektedir.

Daha fazla bilgi için www.P65Warnings.ca.gov adresini ziyaret ediniz.

GARANTİ

36 Ay Sınırlı Garanti

Blackmagic Design şirketi, Blackmagic Streaming Processor cihazlarının satın alındığı tarihten itibaren malzeme ve işçilik bakımından 36 ay boyunca arızasız olacağına garanti sunmaktadır ve bu garantiye; konektörler, kablolar, fiber optik modüller, elektrik sigortaları ve bataryalar dahil değildir ve bunların, satın alma tarihinden itibaren 12 aylık süre içinde malzeme ve işçilik bakımından arızasız olacağı garantilenir. Bu garanti süresi içinde üründe bir arıza ve kusur söz konusu olursa, Blackmagic Design kendi seçimi doğrultusunda, arızalı ürünü parça ve işçilik bedeli talep etmeksizin tamir edecektir veya yenisiyle değiştirecektir.

Bu garanti kapsamındaki hizmetten yararlanmak için, kusur ve hataya ilişkin garanti süresi sona ermeden, Müşteri olarak siz, Blackmagic Design'i bilgilendirmeli ve söz konusu hizmetin sağlanması için uygun düzenlemeleri yapmalısınız. Blackmagic Design tarafından özel belirlenmiş ve yetkilendirilmiş bir hizmet merkezine arızalı ürünün ambalajlanarak nakliyesi, Müşterinin sorumluluğudur ve nakliye ücretleri, önceden ödenmiş olmalıdır. Herhangi bir sebepten dolayı bize iade edilen ürünlerin; tüm nakliye, sigorta, gümrük vergileri, vergi ve tüm diğer masrafların ödenmesi, Müşterinin sorumluluğu altındadır.

Bu garanti; yanlış kullanım ya da yanlış veya kusurlu bakımdan kaynaklanan herhangi bir arızayı, bozukluğu ya da hasarı kapsamaz. Blackmagic Design, burada açıklanan durumlarda bu garanti kapsamında hizmet sağlamak zorunda değildir: a) Blackmagic Design temsilcileri haricindeki başka personelin ürünü kurma, tamir etme ya da bakımını yapma girişimlerinden kaynaklanan hasarın tamiri, b) uygun olmayan kullanım veya uyumlu olmayan ekipmanlara bağlamaktan kaynaklanan hasarın tamiri, c) Blackmagic Design ürünü olmayan parçaların ya da malzemenin kullanımından kaynaklanan hasarın ya da arızanın tamiri ya da d) Modifiye veya başka ürünlerle entegre edilmiş bir ürünü; söz konusu modifikasyon ya da entegrasyonun, gereken tamiratın süresini uzattığı ya da ürün bakımını zorlaştırdığı durumlarda tamir edilmesi.

BU GARANTİ, BLACKMAGIC DESIGN TARAFINDAN VERİLMİŞTİR VE AÇIK YA DA ZİMNİ, HERHANGİ BİR GARANTİNİN YERİNİ TUTAR. BLACKMAGIC DESIGN VE SATICILARI, ZİMNİ TİCARİ UYGUNLUK GARANTİSİNİ YA DA ÖZEL BİR AMACA UYGUNLUK GARANTİSİNİ KABUL ETMEZ. KUSURLU BİR ÜRÜNÜN TAMİRİ VEYA DEĞİŞTİRİLMESİ, BLACKMAGIC DESIGN'IN MÜŞTERİLERİNE SUNDUĞU TAM VE MÜNHASIR ÇÖZÜMDÜR. BLACKMAGIC DESIGN YA DA SATICILARININ, OLABİLECEK HASARLAR HAKKINDA ÖNCEDEN BİLGİSİ OLMASINI GÖZETMEKSİZİN; ÜRÜNDE DOLAYLI, ÖZEL, TESADÜFİ YA DA NETİCE OLARAK ORTAYA ÇIKAN HERHANGİ BİR HASAR İÇİN, BLACKMAGIC DESIGN SORUMLU DEĞİLDİR. BLACKMAGIC DESIGN, MÜŞTERİLER TARAFINDAN EKİPMANIN YASAL OLMAYAN HERHANGİ BİR KULLANIMINDAN SORUMLU DEĞİLDİR. BLACKMAGIC DESIGN, BU ÜRÜNÜN KULLANIMINDAN KAYNAKLANAN HERHANGİ BİR HASARDAN, SORUMLU DEĞİLDİR. BU ÜRÜNÜN ÇALIŞTIRILMASINDAN DOĞAN RISK, KULLANICININ KENDİSİNE AİTTİR.

© Telif Hakkı Saklıdır 2025 Blackmagic Design. Tüm hakları saklıdır. "Blackmagic Design", "DeckLink", "HDLink", "Workgroup Videohub", "Multibridge Pro", "Multibridge Extreme", "Intensity" ve "Leading the creative video revolution" ABD ve diğer ülkelerde tescil edilmiş ticari markalardır. Diğer tüm şirket ve ürün isimleri, bağlantılı oldukları ilgili şirketlerin ticari markaları olabilir.

Thunderbolt ve Thunderbolt logosu ABD ve/ya başka ülkelerdeki Intel Corporation'un ticari markalarıdır.

Procesory strumieniowe

Blackmagic





Szanowny kliencie,

Dziękujemy za zakup procesora strumieniowego Blackmagic.

Blackmagic Streaming Encoder podłącza się bezpośrednio do dowolnego urządzenia SDI, konwertuje sygnał do formatu H.264 lub H.265 i umożliwia przesyłanie go do popularnych serwisów streamingowych, takich jak YouTube Live, Facebook Live czy Twitch. Za pomocą Blackmagic Streaming Decoder można również przesyłać z punktu do punktu sygnał wideo o jakości nadawczej. Dzięki temu przesyłanie sygnału wideo świetnej jakości do odległych lokalizacji za pośrednictwem internetu jest bardzo proste!

Blackmagic Streaming Decoder umożliwia odbieranie strumienia z urządzenia Streaming Encoder i konwertowanie go z powrotem na sygnał wideo SDI i HDMI. Dostępne są nawet takie funkcje jak tally, talkback i sterowanie kamerą, dzięki czemu idealnie nadaje się do produkcji na żywo! Plus Streaming Decoder będzie również dekodował strumienie z kamer Blackmagic i mikserów ATEM, które mają wbudowaną transmisję.

Niniejsza instrukcja obsługi zawiera wszystkie informacje potrzebne do instalacji procesora strumieniowego Blackmagic oraz rozpoczęcia pracy.

Najnowszą wersję niniejszej instrukcji oraz aktualizacje wewnętrznego oprogramowania procesora strumieniowego Blackmagic można znaleźć na stronie wsparcia technicznego pod adresem www.blackmagicdesign.com/pl. Po pobraniu oprogramowania zarejestruj się, podając swoje dane. Dzięki temu będziemy mogli Cię poinformować, gdy dostępna będzie aktualizacja.

Ciągle pracujemy nad nowymi funkcjami i unowocześnieniami, więc zależy nam, abyś podzielił się z nami swoimi wrażeniami.

Grant Petty,

dyrektor generalny Blackmagic Design.

Spis treści

Rozpoczęcie pracy	775	Korzystanie z wyjścia kamery internetowej	803
Podłączanie zasilania	775	Blackmagic Universal Rack Shelf	803
Podłączanie do sieci	776	Zawartość zestawu	804
Podłączanie źródła wideo	776	Montaż urządzenia w półce rack	804
Podłączanie monitora do urządzenia Streaming Encoder	777	Mocowanie panelu zaślepiającego 1/6	805
Podłączanie kierunków docelowych	777	Mocowanie panelu zaślepiającego 1/3	805
Zwykła transmisja przez sieć	777	Developer Information	806
Wyświetlacz LCD	780	Blackmagic Streaming Encoder	
Ikony połączenia internetowego	781	Ethernet Protocol	806
Wyjście monitora urządzenia Streaming Encoder	781	Protocol Blocks	808
Blackmagic Streaming Setup	786	Streaming Encoder Control REST API	818
Zakładka Live Stream	787	Event Control API	820
Zakładka Audio	791	Livestream Control API	820
Zakładka Setup	792	Monitor Output Control API	825
Ustawienia źródła transmisji	795	System Control API	826
Tworzenie linków nadawczych	796	Notification websocket - 1.0.0	828
Tworzenie pliku XML	797	messages	828
Eksport pliku XML	797	Device Properties	829
Import pliku XML	799	Blackmagic Streaming XML Format	831
Talkback, tally i sterowanie kamerą	799	Pomoc	838
Streaming przy użyciu smartfona	801	Wymogi prawne	839
Streaming na żywo do internetu	802	Informacje dotyczące bezpieczeństwa	840
		Gwarancja	841

Rozpoczęcie pracy

Rozpoczęcie pracy z procesorem strumieniowym Blackmagic jest bardzo proste - wystarczy podłączyć zasilanie, kabel sieciowy oraz źródło i kierunek docelowy wideo.



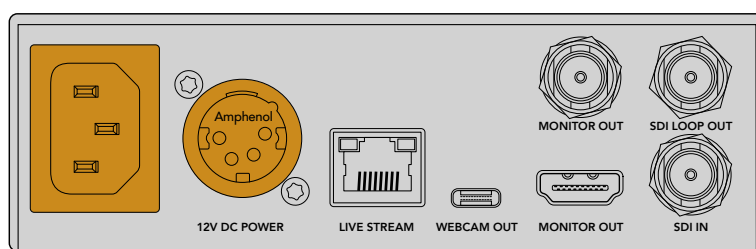
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

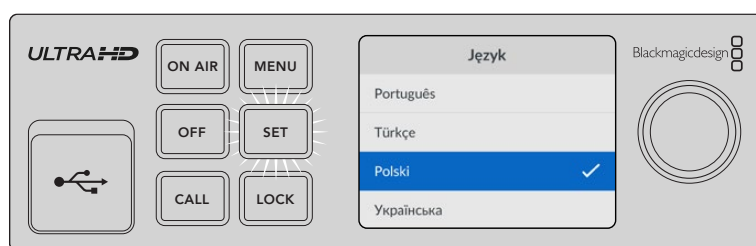
Podłączanie zasilania

Aby podłączyć zasilanie, podłącz standardowy przewód zasilający IEC do wejścia zasilania na tylnym panelu procesora strumieniowego.



Blackmagic Streaming Encoder i Streaming Decoder posiadają dodatkowe wejście zasilania 12 V DC. Wejścia tego można użyć w celu podłączenia zasilania zewnętrznego lub redundancji za pomocą zewnętrznego zasilacza, np. zasilacza UPS lub akumulatora 12 V.

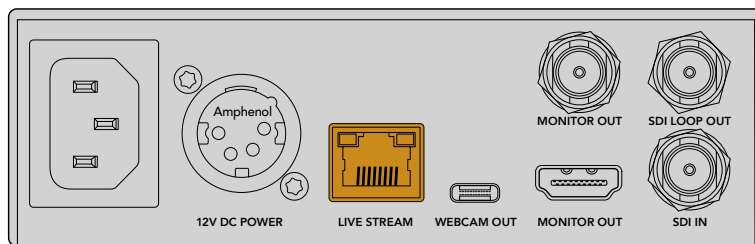
Po włączeniu zasilania wyświetlacz LCD na panelu sterowania wyświetli komunikat z prośbą o wybranie języka. Za pomocą pokrętki przewiń do wybranego języka i naciśnij migający przycisk **SET**.



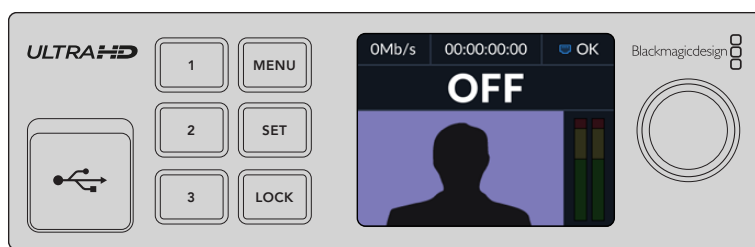
Naciśnij **SET** ponownie, aby potwierdzić swój wybór.

Podłączanie do sieci

Podłącz procesor strumieniowy Blackmagic do sieci lub internetu, podłączając kabel sieciowy z portu Ethernet **LIVE STREAM** do routera internetowego lub przełącznika sieciowego.



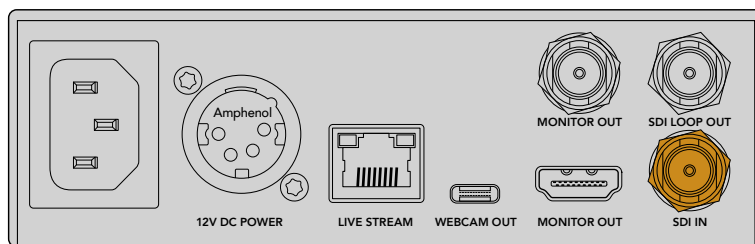
Procesor strumieniowy Blackmagic jest domyślnie ustawiony na DHCP i powinien od razu znaleźć adres IP. Po pomyślnym podłączeniu, w prawym górnym rogu ekranu głównego LCD pojawi się niebieska ikona Ethernet. Jeśli chcesz połączyć się za pomocą statycznego adresu IP, zapoznaj się z rozdziałem „Blackmagic Streaming Setup” w dalszej części tej instrukcji.



Podłączanie źródła wideo

Podłącz źródło wideo SDI, które chcesz przesyłać strumieniowo, na przykład Blackmagic URSA Mini Pro 12K lub mikser ATEM SDI do wejścia SDI Blackmagic Streaming Encoder. Blackmagic Streaming Encoder obsługuje 12G-SDI i automatycznie przełącza się między HD i Ultra HD aż do 2160p60, gdy zmienia się wejście wideo.

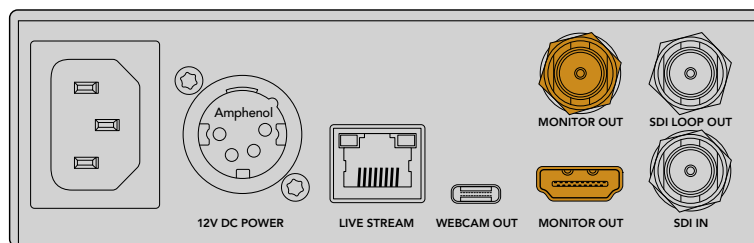
Po podłączeniu wideo będzie ono wyświetlane na wbudowanym wyświetlaczu LCD urządzenia Streaming Encoder. Dźwięk jest wbudowany w sygnał wideo SDI, co można potwierdzić, obserwując mierniki audio na ekranie LCD.



Podłącz źródło wideo SDI do wejścia SDI w Blackmagic Streaming Encoder

Podłączanie monitora do urządzenia Streaming Encoder

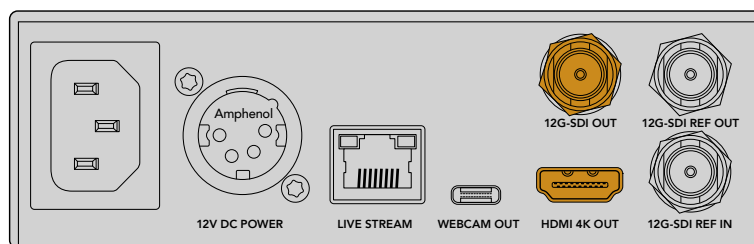
Podłącz telewizor HDMI lub monitor SDI do jednego z wyjść monitorowych na tylnym panelu Blackmagic Streaming Encoder. Wyjścia monitora umożliwiają monitorowanie transmisji i wyświetlanie istotnych informacji o transmisji wideo, takich jak stan ON AIR, prędkość transmisji danych i poziomy dźwięku. Więcej informacji na temat wyjścia monitora można znaleźć w rozdziale „Wyjście monitora urządzenia Streaming Encoder” niniejszej instrukcji.



Podłącz telewizor lub monitor do Blackmagic Streaming Encoder, aby zobaczyć istotne informacje o transmisji

Podłączanie kierunków docelowych

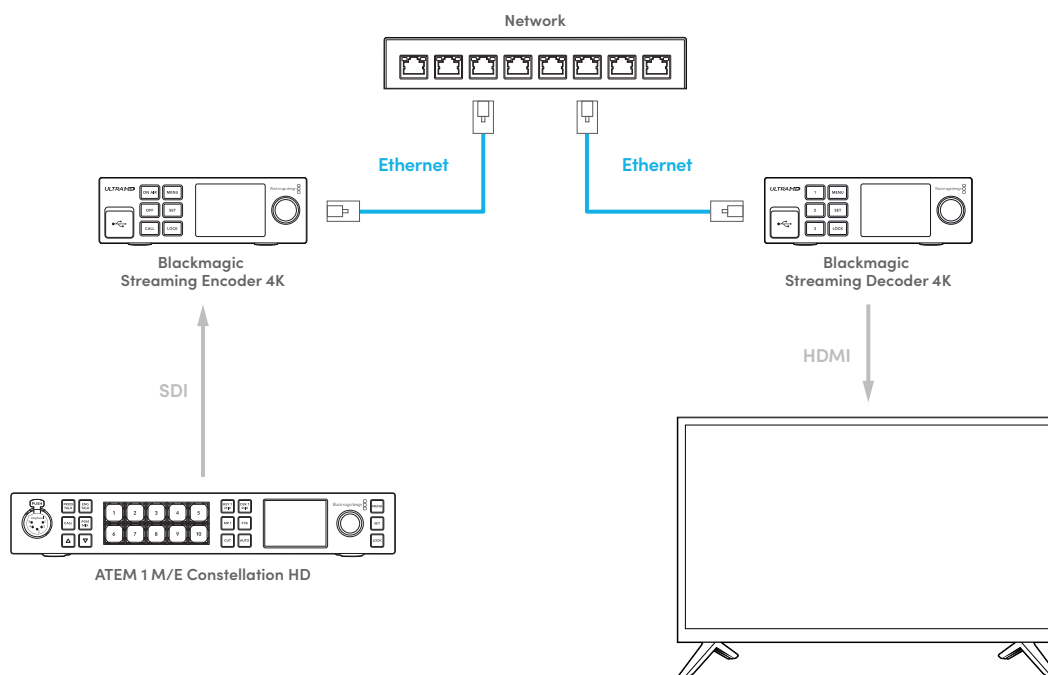
W przypadku Blackmagic Streaming Decoder konieczne może być wysłanie odkodowanego strumienia do kierunku docelowego, na przykład miksera ATEM SDI i telewizora HDMI. Wystarczy podłączyć mikser ATEM do wyjścia 12G-SDI, a telewizor do złącza HDMI.



Podłącz kierunki docelowe wideo do wyjść SDI i HDMI urządzenia Streaming Decoder

Zwykła transmisja przez sieć

Po podłączeniu dobrym sposobem na sprawdzenie, czy wszystko działa poprawnie, jest skonfigurowanie zwykłej transmisji między Blackmagic Streaming Encoder i Blackmagic Streaming Decoder w lokalnej sieci. Ta konfiguracja może być przydatna, jeśli chcesz transmitować na żywo do sali konferencyjnej lub projektora wideo w dużym budynku. Poniższy przykład przedstawia prostą konfigurację przesyłania strumieniowego z miksera ATEM do telewizora HDMI.



Panel sterowania procesora strumieniowego jest wyposażony w wyświetlacz LCD, który wyświetla istotne informacje i umożliwia monitorowanie obrazu i dźwięku. Pokrętko i przyciski menu umożliwiają szybki dostęp do ustawień menu procesora strumieniowego, dzięki czemu można skonfigurować, rozpocząć i zakończyć transmisję strumieniową bezpośrednio z panelu sterowania.

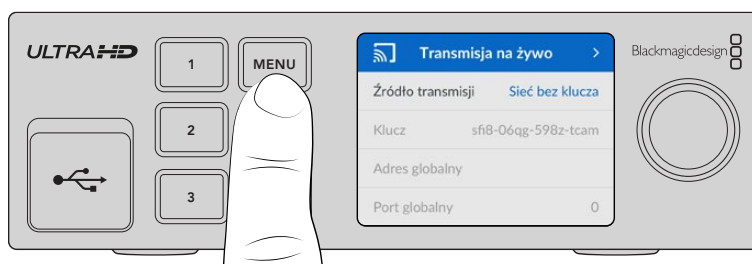
Wszystkie ustawienia dostępne w menu LCD na panelu sterowania można również zmienić za pomocą Blackmagic Streaming Setup. Szczegółowe informacje na temat poszczególnych ustawień znajdują się w rozdziale „Blackmagic Streaming Setup” w dalszej części niniejszej instrukcji.

Aby ustawić zwykłą transmisję:

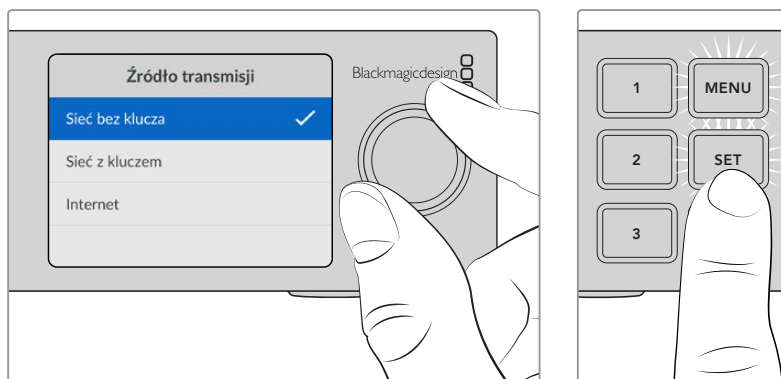
- 1 Podłącz Blackmagic Streaming Encoder i Blackmagic Streaming Decoder do tego samego przełącznika sieciowego.

WSKAZÓWKA Aby uzyskać jeszcze prostszą konfigurację punkt-punkt bez użycia przełącznika sieciowego, połącz Blackmagic Streaming Encoder i Blackmagic Streaming Decoder za pomocą jednego kabla Ethernet.

- 2 Naciśnij przycisk **MENU** na Blackmagic Streaming Decoder, aby otworzyć menu LCD, następnie naciśnij **SET** i przejdź do podmenu **Transmisja na żywo**.

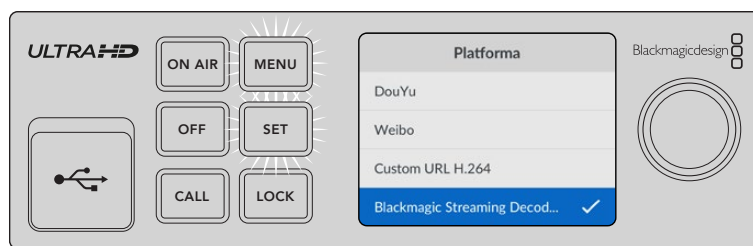


Obróć pokrętkę, aby wybrać **Źródło transmisji**, naciśnij **SET** i wybierz z listy **Sieć bez klucza**. Wciśnij **SET**, aby potwierdzić swój wybór.



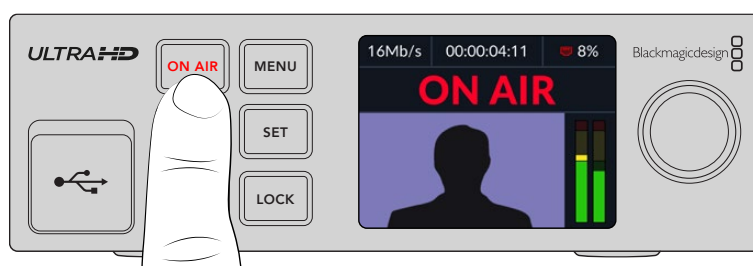
Naciśnij przycisk **MENU**, aby powrócić do ekranu głównego.

- 3 W Blackmagic Streaming Encoder naciśnij przycisk **MENU**, aby otworzyć menu **Transmisja na żywo**, naciśnij **SET** i obróć pokrętkę, aby przewinąć w dół do ustawień **Platforma**. Naciśnij **SET**, aby wybrać podmenu **Platforma**.

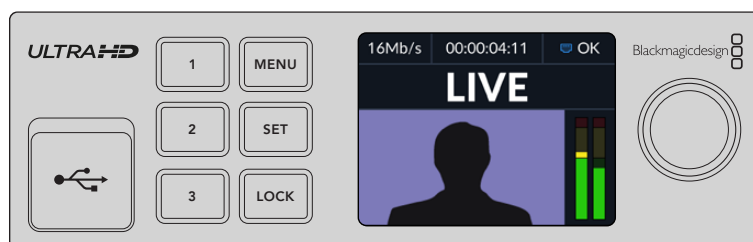


Wybierz Blackmagic Streaming Decoder z listy **Platforma** i naciśnij **SET**. Powrót do ekranu głównego, naciskając **MENU**.

- 4 Naciśnij przycisk **ON AIR** na panelu sterowania Blackmagic Streaming Encoder. Podczas przesyłania strumieniowego przycisk będzie podświetlony na czerwono, a na ekranie głównym LCD zostanie wyświetlony komunikat **ON AIR**.



Transmisja będzie widoczna na wyświetlaczu LCD Blackmagic Streaming Decoder.



Wskaźnik **LIVE** jest wyświetlany na wyświetlaczu LCD urządzenia Streaming Decoder

Aby zatrzymać transmisję, należy nacisnąć przycisk **OFF** na panelu sterowania urządzenia Streaming Encoder.

WSKAZÓWKA Migający przycisk **ON AIR** na Blackmagic Streaming Encoder oznacza, że transmisja na żywo nie została rozpoczęta lub została nieoczekiwanie zatrzymana. Może to być spowodowane problemem z połączeniem sieciowym lub ustawieniami transmisji strumieniowej. Sprawdź, czy ustawienia transmisji są prawidłowe i czy kable sieciowe są podłączone.

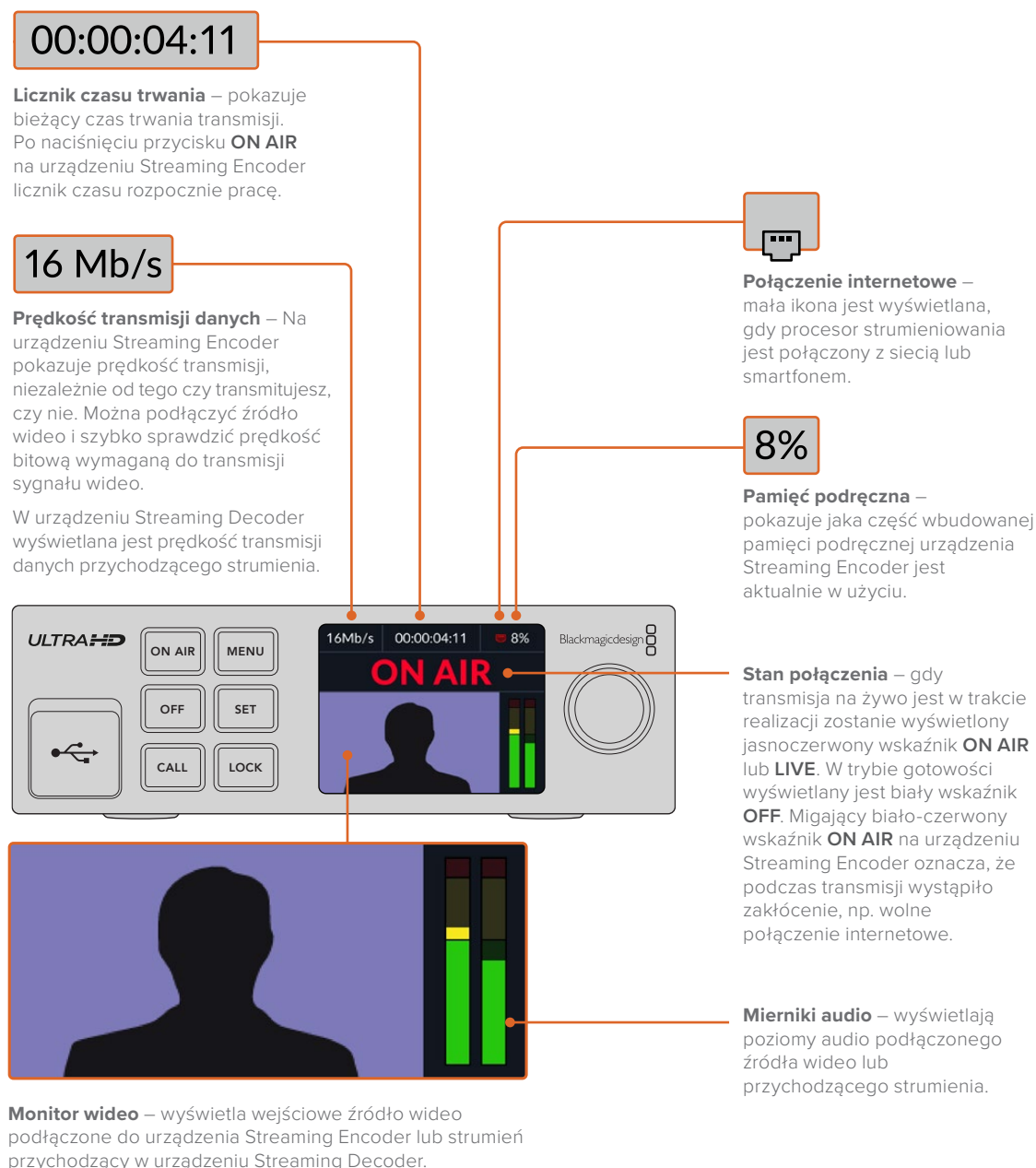
Przycisk LOCK

Aby zablokować elementy sterujące na panelu sterowania procesora strumieniowego, naciśnij i przytrzymaj przycisk **LOCK** przez 1 sekundę. Spowoduje to wyłączenie przycisków i pokrętki, uniemożliwiając przypadkowe wejście na antenę lub zatrzymanie transmisji.

Naciśnij i przytrzymaj przycisk przez 2 sekundy, aby odblokować panel.

Wyświetlacz LCD

Ekran główny LCD procesora strumieniowego Blackmagic umożliwia monitorowanie obrazu i dźwięku oraz dostarcza istotne informacje o transmisji.



Ikony połączenia internetowego

Ikona połączenia w prawym górnym rogu wyświetlacza LCD pokazuje aktualny stan połączenia z procesorem strumieniowym Blackmagic.



Niebieska ikona sieci Ethernet jest wyświetlana, gdy podłączony jest kabel Ethernet i do transmisji będzie używane połączenie Ethernet.



Na urządzeniu Blackmagic Streaming Encoder czerwona ikona sieci Ethernet jest wyświetlana podczas nadawania na antenie i transmisji strumieniowej przez sieć Ethernet.



Niebieska ikona smartfona jest wyświetlana, gdy do transmisji będzie używane połączenie internetowe podłączonego smartfona.



Na urządzeniu Blackmagic Streaming Encoder czerwona ikona smartfona jest wyświetlana podczas transmisji przez podłączony smartfon.

WSKAZÓWKA Jeśli ikona połączenia nie jest wyświetlana, oznacza to, że procesor strumieniowy Blackmagic nie jest połączony z siecią lub smartfonem. Upewnij się, że kable są prawidłowo podłączone.

Wyjście monitora urządzenia Streaming Encoder

Wyjście monitora urządzenia Blackmagic Streaming Encoder umożliwia monitorowanie sygnału wejściowego wideo, poziomów dźwięku, stanu ON AIR, prędkości transmisji danych i poziomów pamięci podręcznej oraz informacji technicznych dotyczące wejścia SDI.



Wyjście monitora dostarcza kompleksowe informacje, w tym o prędkości transmisji danych i stanie pamięci podręcznej

Wyświetlacz wyjścia monitora składa się z 8 paneli. Poniżej znajduje się opis każdego panelu i informacji, które są wyświetlane.

Widok wejścia

Na panelu głównym wyświetlane jest bieżące wejście wideo z podłączonego źródła wideo SDI.



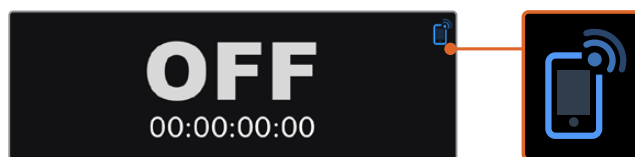
Stan ON AIR

Przed transmisją wskaźnik stanu gotowości wyświetla komunikat **OFF**, informując, że urządzenie Streaming Encoder jest gotowe do transmisji. Po rozpoczęciu nadawania wskaźnik będzie wyświetlał jasnoczerwony stan **ON AIR** do momentu zatrzymania transmisji strumieniowej.



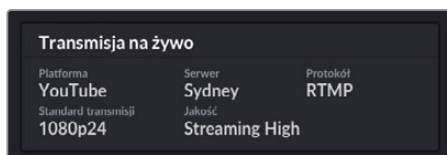
Pod wskaźnikiem **ON AIR** znajduje się licznik czasu trwania. Po naciśnięciu przycisku **ON AIR** na urządzeniu Streaming Encoder licznik czasu trwania rozpocznie pracę.

Jeśli Blackmagic Streaming Encoder nie jest na antenie, ale przesyła strumień przez podłączony smartfon, w rogu obok wskaźnika **OFF** wyświetla się niebieska ikona smartfona. Ikona świeci się na czerwono, jeśli jest na antenie.



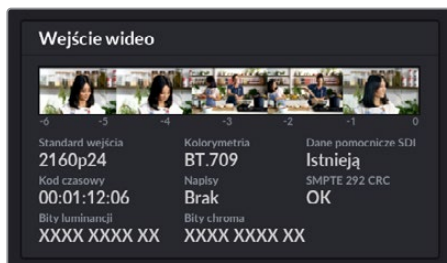
Transmisja na żywo

Panel transmisji na żywo wyświetla informacje o ustawieniach transmisji. Obejmuje to platformę streamingową, serwer i protokół. Wyświetlane są także ustawienia rozdzielczości i jakości transmisji.



Wejście wideo

5 miniaturowych okien podglądu w górnej części panelu wejściowego wideo pokazuje poprzednie 6 sekund strumienia na żywo, przy czym każde okno podglądu odpowiada 1,2 sekundy czasu transmisji.

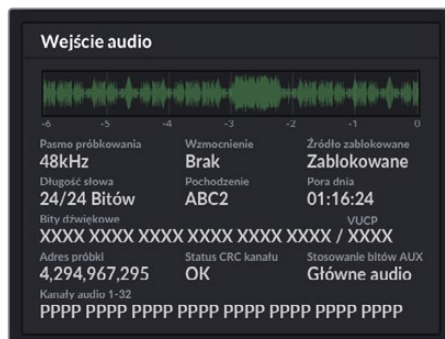


Poniżej okien podglądu można wyświetlić szczegółowe informacje techniczne dotyczące źródła sygnału wideo podłączonego do wejścia SDI urządzenia Streaming Encoder.

Standard wejścia	Wyświetla rozdzielczość i klatkaż wejścia wideo SDI. Streaming Encoder obsługuje do 2160p60.
Kolorymetria	Wyświetla przestrzeń kolorów wejścia wideo SDI. Streaming Encoder obsługuje przestrzenie kolorów Rec.601, Rec.709 i Rec.2020.
Dane pomocnicze SDI	Dane pomocnicze to dane przesyłane na wejściu wideo SDI, które stanowią dodatek do sygnału wideo. Zawierają wbudowane audio, kod czasowy i napisy. Jeśli wejście SDI zawiera dane pomocnicze, wyświetlany będzie komunikat Istnieją.
Kod czasowy	Wyświetla kod czasowy ze źródła wejścia wideo SDI.
Napisy	Jeśli wejście wideo SDI zawiera napisy, ich format zostanie wyświetlony w tym miejscu. Obsługuje formaty CEA-608 i CEA-708.
SMPTE 292 CRC	Jest to funkcja sprawdzania błędów dla sygnału wideo SDI. Jeśli urządzenie Streaming Encoder wykryje problem z wejściem wideo SDI, wyświetli błąd. Błędy CRC są zwykle spowodowane zbyt długim lub uszkodzonym kablem SDI.
Bity luminacji Y i bity chroma	Wskaźniki Bity luminacji i Bity chroma informują o aktywności sygnału wejściowego wideo SDI. Każda litera reprezentuje stan jednego bitu sygnału wideo. X – znak X oznacza stale zmieniający się bit. L – niski bit. H – wysoki bit. Aby ułatwić orientację, odejmuje się wartość offsetów SDI. Na przykład wszystkie bity są w stanie niskim, gdy obraz jest czarny. Na wszystkich 10 bitach wejścia wideo SDI pojawi się znak X, co oznacza, że wszystkie bity w strumieniu wideo ulegają ciągłym zmianom. Jeśli wejście SDI to 8-bitowy sygnał wideo, dwa bity usytuowane najbardziej w prawo zawsze będą miały wartość L, ponieważ nie zawierają żadnych danych. Jeśli bit pozostaje jako L lub H, podczas gdy oczekuje się, że będzie to X, oznacza to „zablokowany bit” i może być wynikiem błędu w strumieniu sygnału wideo.

Wejście audio

Na wyświetlaczu kształtu fali dźwiękowej w górnej części panelu wejścia audio wyświetlane są informacje o dźwięku z ostatnich 6 sekund transmisji na żywo. Są one stale aktualizowane i przewijane od prawej do lewej strony.

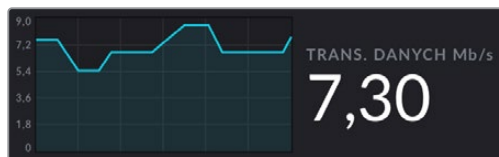


Pod wykresem fali dźwiękowej znajdują się szczegółowe informacje techniczne dotyczące wejścia audio.

Pasma próbkowania	Wyświetla częstotliwość próbkowania dźwięku wbudowanego w wejście SDI.
Wzmocnienie	Wskazuje, czy źródło dźwięku ma włączoną opcję wzmocnienia.
Źródło zablokowane	Wskazuje, czy częstotliwość źródła dźwięku jest zablokowana względem zewnętrznego źródła referencyjnego.
Długość słowa	Pokazuje głębnię bitową dźwięku wbudowanego w wejście SDI.
Pochodzenie	Te cztery znaki wskazują pochodzenie kanału.
Pora dnia	Swobodnie działający kod czasowy.
Bity dźwiękowe	Pokazuje aktywność bitową w próbkach audio wbudowanych w złącze SDI. Nawet jeśli stan kanału audio wskazuje 16-, 20- lub 24-bitowy dźwięk, aktywność bitowa audio to potwierdzi.
VUCP	Odczytywanie bitów VUCP od lewej do prawej: bit V oznacza „ważny”, U jest bitem „użytkownika”, C jest bitem „stanu kanału”, a P oznacza „parzystość”. To pole jest podobne do pola Bity dźwiękowe.
Adres próbki	Licznik próbek dźwięku.
Stosowanie bitów AUX	Wskazuje, czy bity AUX są używane do głównego dźwięku.
Kanały audio 1-32	Każda cyfra reprezentuje kanał audio wbudowany w wejście SDI. Znak P oznacza, że kanał audio jest używany, a znak - oznacza, że na tym kanale nie ma dźwięku.

Wyświetlacz prędkości transmisji danych

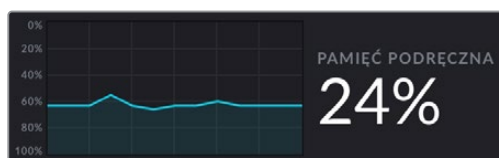
Wyświetlacz prędkości transmisji danych pokazuje aktualną prędkość transmisji danych w koderze w przeciągu ostatnich 60 sekund. Prędkość transmisji danych jest podawana w megabitach na sekundę. Ten wskaźnik działa stale, nawet gdy urządzenie nie nadaje, dzięki czemu można dokładnie zmierzyć przepustowość przed wejściem na antenę.



Wyświetlacz pamięci podręcznej

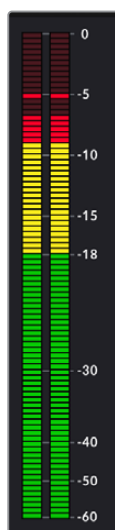
Wyświetlacz pamięci podręcznej pokazuje procent używanego bufora pamięci, wbudowanego w Blackmagic Streaming Encoder, a wykres przedstawia ilość pamięci wykorzystaną w przeciągu ostatnich 60 sekund. Pamięć podręczna (cache) to niewielka ilość pamięci wewnętrznej, która w sposób ciągły zapisuje i odtwarza dane wyjściowe programu. Działa ona jako zabezpieczenie na wypadek, gdyby prędkość transmisji danych spadła poniżej poziomu umożliwiającego podtrzymanie sygnału wideo.

Wahania połączeń internetowych są spowodowane przede wszystkim obciążeniem sieci lub siłą sygnału bezprzewodowego. Wraz ze spadkiem prędkości transmisji danych wzrasta ilość buforowanych danych. Jeśli prędkość spada poniżej prędkości wymaganej dla strumienia wideo, pamięć podręczna kompensuje to poprzez wypełnianie klatkami wideo. Jednak, gdy pamięć podręczna jest wypełniona w 100%, zmniejsza się jakość strumienia wideo. W miarę możliwości należy więc unikać wypełniania pamięci podręcznej. Można przeprowadzić test poprzez podłączenie sygnału wideo i obserwowanie wyświetlacza pamięci podręcznej na wyjściu monitorowania bez konieczności rozpoczynania transmisji. Jeśli pamięć podręczna często dochodzi do 100%, wybierz niższą jakość w ustawieniach transmisji na żywo.



Mierniki audio

Poziomy głośności można monitorować za pomocą mierników audio. Można je ustawić na wyświetlanie poziomów PPM lub VU w ustawieniach menu Blackmagic Streaming Encoder. Jeśli poziom dźwięku jest zbyt wysoki, mierniki będą świecić na czerwono. Może to oznaczać, że dźwięk w transmisji na żywo może być zniekształcony lub przycięty. Staraj się utrzymać dźwięk w górnych granicach zielonego obszaru, a rzadziej w żółtym obszarze.



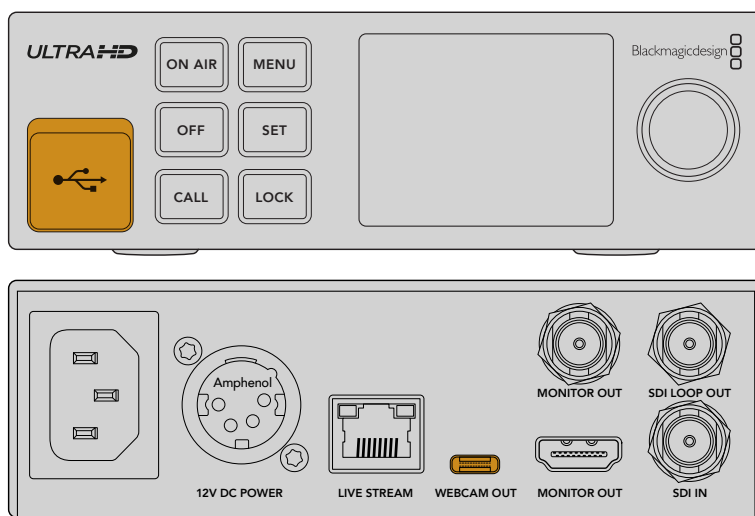
Blackmagic Streaming Setup

Blackmagic Streaming Setup to narzędzie konfiguracyjne używane do zmiany ustawień, konfiguracji sieci, aktualizacji wewnętrznego oprogramowania procesorów strumieniowych Blackmagic oraz zapisywania i przesyłania plików z ustawieniami transmisji.

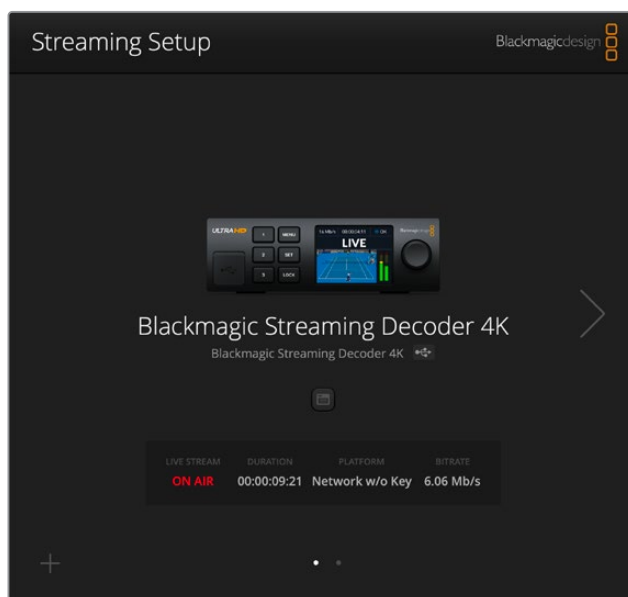
Pobierz najnowsze oprogramowanie Blackmagic Streaming Setup z centrum wsparcia technicznego Blackmagic Design pod adresem www.blackmagicdesign.com/pl/support

Aby użyć Blackmagic Streaming Setup:

- 1 Podłącz procesor strumieniowy do komputera przez port USB typu C na przednim lub tylnym panelu.



- 2 Uruchom Blackmagic Streaming Setup. Nazwa modelu procesora strumieniowego zostanie podana na stronie głównej narzędzia konfiguracyjnego.
- 3 Kliknij na kwadratową ikonę konfiguracji lub zdjęcie procesora strumieniowego Blackmagic, aby otworzyć ustawienia. Jeśli do sieci podłączony jest więcej niż jeden procesor strumieniowy, kliknij strzałki po bokach okna konfiguracji, aby przejść do urządzenia, do którego chcesz uzyskać dostęp.



Zakładka Live Stream

Zakładka **Live Stream** zawiera wszystkie ustawienia niezbędne do skonfigurowania połączenia transmisji na żywo w procesorze strumieniowym Blackmagic.

Streaming Encoder

W Blackmagic Streaming Encoder zakładka **Live Stream** zawiera ustawienia jakości strumienia, wyboru i konfiguracji platformy streamingowej oraz przesyłania pliku XML z ustawieniami transmisji.

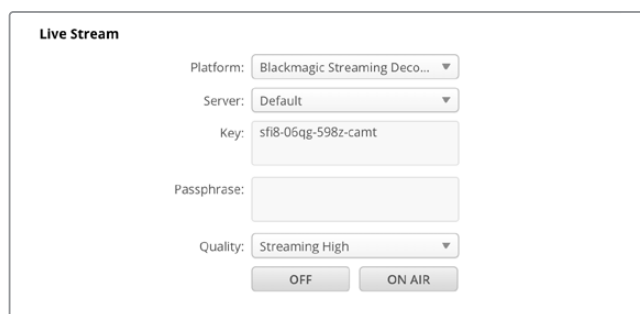
Wyjście wideo



Rozwiń menu **Stream Standard**, aby wybrać ustawienie rozdzielczości wideo dla transmisji. Do wyboru są rozdzielczości od 720p25 do 2160p60.

Zakładka Live Stream

Ustawienia **Live Stream** umożliwia wybór platformy streamingowej, konfigurację ustawień i ustawienie jakości transmisji.



Platforma streamingowa

Kliknij menu **Platform** i wybierz platformę streamingową dla Twojej transmisji. Dostępne opcje to YouTube, Facebook i Twitch. Jeśli zaimportowałeś niestandardowe ustawienia transmisji, będą one widoczne na liście platform.

Aby transmitować na niestandardowy adres URL, wybierz opcję **Custom URL** z menu **Platform**. Możesz wybrać transmisję na niestandardowy adres URL, używając H.264 lub H.265.

Serwer

Użyj serwera, który znajduje się najbliżej Twojej lokalizacji, wybierając go z listy. Lista serwerów będzie się zmieniać w zależności od wybranej platformy streamingowej.

Jeśli transmitujesz na Instagram, Microsoft Teams lub niestandardowy adres URL, lista serwerów będzie edytowalna. Wpisz URL przypisany do Twojego konta na platformie streamingowej lub dane niestandardowego adresu URL.

Klucz

Wprowadź klucz transmisji, który został przypisany do Twojej transmisji z platformy streamingowej.

Hasło

Jeśli korzystasz z usługi transmisji strumieniowej z protokołem SRT, wprowadź hasło przypisane z Twojego konta na platformie streamingowej.

Jakość

Wybierz jakość Twojej transmisji. Tabela poniżej przedstawia prędkości transmisji danych dla kodeków H.264 i H.265.

H.264	
HD	4K
HyperDeck High 45 do 70 Mb/s	HyperDeck High 95 do 220 Mb/s
HyperDeck Medium 25 do 45 Mb/s	HyperDeck Medium 66 do 150 Mb/s
HyperDeck Low 12 do 20 Mb/s	HyperDeck Low 38 do 80 Mb/s
Streaming High 6 do 9 Mb/s	Streaming High 34 do 51 Mb/s
Streaming Medium 4,5 do 7 Mb/s	Streaming Medium 23 do 35 Mb/s
Streaming Low 3 do 4,5 Mb/s	Streaming Low 13 do 20 Mb/s

H.265	
HD	4K
Streaming High 2,3 do 4,5 Mb/s	Streaming High 22,5 do 30 Mb/s
Streaming Medium 1,5 do 3 Mb/s	Streaming Medium 14 do 20 Mb/s
Streaming Low 0,8 do 2 Mb/s	Streaming Low 8 do 10 Mb/s

Prędkość transmisji danych w ustawieniu jakości zmienia się w zależności od standardu wideo używanego przez Streaming Encoder. Na przykład, jeśli wybierzesz wysoką jakość transmisji strumieniowej **Streaming High** w rozdzielczości 1080p24, prędkość transmisji danych wyniesie 6 Mb/s.

Jak widać w tabeli, prędkości transmisji danych są niższe niż prędkości HyperDeck. Pozwala to na transmisję danych przez internet, co zazwyczaj wykorzystuje mniejszą szerokość pasma niż zapis danych na dysku.

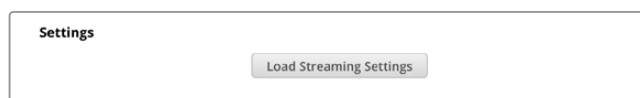
Warto zauważyć, że przy każdym ustawieniu wymienione są dwie prędkości transmisji danych. Niższa liczba jest używana w przypadku niższych klatkaży: 24p, 25p i 30p, natomiast wyższa prędkość transmisji danych jest używana w przypadku wyższych klatkaży: 50p i 60p. Warto również zauważyć, że domyślnym ustawieniem jakości transmisji jest **Streaming High**. Zapewnia bardzo wysoką jakość kanału strumieniowego.

Przyciski włączania/wyłączania transmisji na antenie

Możesz rozpocząć lub zatrzymać transmisję na żywo, używając przycisków **OFF** i **ON AIR**. Przycisk **ON AIR** świeci się na czerwono podczas transmisji na żywo.

Ustawienia

Kliknij przycisk **Load Streaming Settings** i postępuj zgodnie z komunikatami w celu przesłania pliku XML z ustawieniami transmisji z Blackmagic Streaming Decoder.

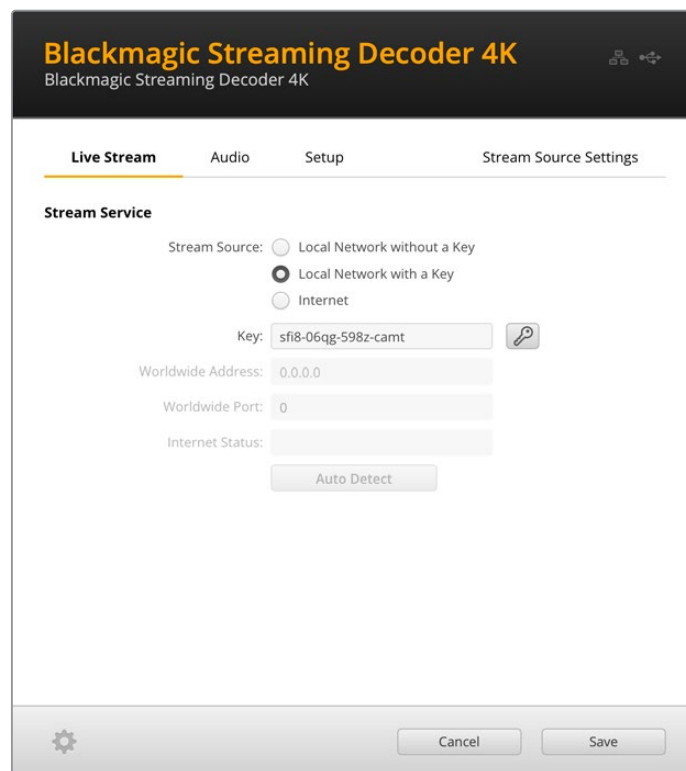


Usuwanie zaimportowanych ustawień

Aby usunąć zaimportowane ustawienia z Blackmagic Streaming Encoder, kliknij ikonę koła zębatego w lewym, dolnym rogu zakładki **Live Stream**. Kliknij **Remove**, aby potwierdzić wybór.

Streaming Decoder

W Blackmagic Streaming Decoder zakładka **Live Stream** umożliwia wybór źródła transmisji i konfigurację ustawień sieciowych dekodera.



Usługa transmisji

Opcja **Stream Service** umożliwia konfigurację ustawień w celu podłączenia urządzenia Streaming Decoder do zdalnego urządzenia Streaming Encoder, kamery Blackmagic lub miksera ATEM, które obsługują wbudowaną transmisję.

Źródło transmisji

Użyj menu **Stream Source**, aby wybrać źródło dla przychodzącej transmisji. Dostępne opcje to: **Local network without a key**, **Local network with a key** i **Internet**.

Klucz

Każdy może transmitować do dowolnego Blackmagic Streaming Decoder znajdującego się w menu. Dlatego warto ustawić klucz transmisji, aby nikt inny nie uzyskał nieautoryzowanego dostępu do Twojego linku wideo! Wybór dowolnego urządzenia Streaming Decoder w sieci jest bardzo prosty i bez klucza transmisji może dojść do pomieszania strumieni od różnych użytkowników.

Nie ma to miejsca w przypadku ustawienia klucza transmisji. Jest to hasło, które uniemożliwia innym dostęp do Twojego urządzenia Blackmagic Streaming Decoder. Gdy otworzysz Streaming Setup, zobaczysz pole tekstowe dla klucza transmisji. Wystarczy wpisać hasło. Następnie tylko użytkownicy, którzy mają ten sam klucz transmisji w swoich ustawieniach transmisji, będą mogli połączyć się z Twoim urządzeniem Blackmagic Streaming Decoder.

Możesz sam wymyślić hasło. Alternatywnie w Streaming Setup jest też przycisk generatora haseł, dzięki któremu komputer wygeneruje dobre, bezpieczne hasło. Możesz po prostu je skopiować i przekazać użytkownikowi, któremu chcesz pozwolić połączyć się z Tobą. Gdy wpisze hasło na swoim Blackmagic Streaming Encoder, kamerze Blackmagic lub mikserze ATEM, uzyska zgodę na połączenie z Twoim urządzeniem Streaming Decoder.

Połączenie internetowe

Rewelacyjną opcją jest możliwość podłączenia Blackmagic Streaming Decoder przez internet. Jest to nieco trudniejsze, ponieważ musisz się upewnić, że Streaming Encoder, kamera Blackmagic lub mikser ATEM są w stanie wyszukać Streaming Decoder z dowolnego miejsca na świecie. Świat jest duży, dlatego musisz zaktualizować jeszcze kilka dalszych ustawień, aby to zadziałało.

Wstępne wymagania

Aby połączyć się z internetem, konieczne jest nawiązanie połączenia internetowego zarówno z Blackmagic Streaming Decoder, jak i Streaming Encoder, z kamerą lub mikserem ATEM, które będą do niego nadawały. Potrzebny jest także publiczny adres IP dla Streaming Decoder, a także stały adres, który nie będzie się zmieniał z upływem czasu.

Trudność polega na tym, że Blackmagic Streaming Decoder znajduje się w lokalnej sieci Ethernet, ale musi być widoczny w internecie. Streaming Decoder wykorzystuje przekierowanie portów we wewnętrznym firewallu, aby umożliwić urządzeniu Streaming Encoder, kamerze lub mikserowi ATEM w sieci połączenie ze Streaming Decoder za pomocą Twojego połączenia internetowego. Jeśli nie jest to ustawione, Streaming Encoder, kamera lub mikser ATEM nie będą w stanie wyszukać urządzenia Streaming Decoder.

Poproś dostawcę usług internetowych lub administratora sieci o skonfigurowanie przekierowania portów na Twoim połączeniu internetowym na **TCP port 1935**. Będą wiedzieć o co chodzi. Dobra wiadomość: Blackmagic Streaming Decoder będzie próbował skonfigurować przekierowanie portów. Większość połączeń internetowych i firewalli ma protokół umożliwiający automatyczne konfigurowanie przekierowania portów. Możliwe, że Streaming Decoder skomunikuje się z urządzeniami sieciowymi i spróbuje skonfigurować przekierowanie portów podczas konfiguracji za pomocą narzędzia Streaming Setup.

Potwierdzenie dostępu do internetu

Na samym dole można zobaczyć pole stanu internetu. Blackmagic Streaming Decoder podejmie próbę nawiązania połączenia z internetem. Jeśli się uda, zostaniesz poinformowany, że wszystko działa. Jeśli wyświetli się komunikat **Connected**, jest to dobry znak. Oznacza to, że Streaming Decoder zdołał skonfigurować sprzęt sieciowy z ustawieniami przekierowania portów i połączyć się z internetem.

UWAGA Otwieranie portów w sieci na ruch zewnętrzny może zmniejszyć bezpieczeństwo sieci. Najlepiej skonsultować się z dostawcą usług internetowych lub administratorem sieci, jeśli masz jakieś obawy w tej sprawie.

Jeśli stan internetu nie wyświetla komunikatu **Visible worldwide**, może być konieczne ręczne skonfigurowanie przekierowania portów na firewallu. Nie wszystkie firewalle obsługują protokół do automatycznej konfiguracji tego typu informacji, ale wszystkie pozwalają na ręczne ustawianie.

Jeśli nie możesz uzyskać dostępu do elementów sterujących routera lub nie wiesz, jak skonfigurować przekierowanie portów, skontaktuj się z dostawcą usług internetowych. W większych sieciach najlepiej skontaktować się z administratorem sieci w celu skonfigurowania przekierowania portów, aby uniknąć konfliktów w sieci.

Stan internetu

Podczas konfiguracji połączenia sieciowego, funkcja stanu internetu może pomóc w rozwiązywaniu problemów. Niektóre z przykładowych informacji i przyczyny problemu zostały wymienione poniżej.

Widoczny globalnie	To dobry znak, ponieważ komunikat Visible Worldwide oznacza, że wszystko działa prawidłowo. Przekierowanie portów zostało pomyślnie skonfigurowane, a Blackmagic Streaming Decoder jest gotowy do odbioru transmisji wideo z internetu.
Brak dostępu do internetu	No Internet Access oznacza, że Streaming Decoder nie może połączyć się z internetem. Sprawdź ustawienia sieciowe i połączenie internetowe.
Błąd przekierowania portów	Pomimo połączenia z internetem może się zdarzyć, że za pomocą urządzenia Streaming Decoder nie udało się skonfigurować przekierowania portów w firewallu, przez co nie jest on osiągalny z internetu. Poproś administratora sieci o konfigurację.
Błąd UPnP	Komunikat UPnP error oznacza również, że Streaming Decoder nie jest w stanie skonfigurować przekierowania portów na routerze internetowym. Poproś administratora sieci o skonfigurowanie tego lub zapoznaj się z dokumentacją routera, aby skonfigurować przekierowanie portów.

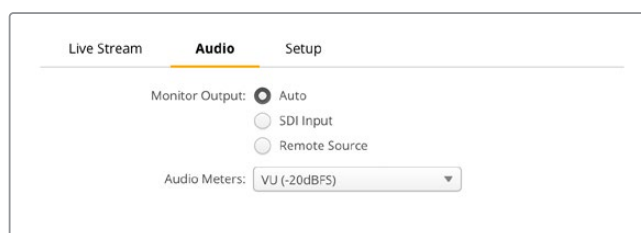
Wykrywanie automatyczne

Kliknij przycisk **Auto Detect**, aby automatycznie wykryć ustawienia połączenia internetowego.

Zakładka Audio

Zakładka **Audio** zawiera ustawienia do konfiguracji wyjścia monitorowania audio w procesorze strumieniowym, a także opcji talkback oraz miernika audio.

Streaming Encoder



Wyjście monitora

Skorzystaj z opcji wyjścia monitora, aby wybrać źródło audio używane na wyjściach monitora SDI i HDMI w Twoim urządzeniu Streaming Encoder.

Automatyczne

Gdy wyjście monitora jest ustawione na **Auto**, Streaming Encoder automatycznie wykryje i będzie monitorować dźwięk talkback przesyłany z miksera ATEM przez Blackmagic Streaming Decoder. Jeśli nie zostanie wykryty talkback, w użyciu będzie dźwięk z wejścia SDI.

Wejście SDI

Wybierz **SDI Input**, aby monitorować dźwięk ze źródła wejściowego SDI, na przykład podłączonej kamery Blackmagic Studio.

Zdalne źródło

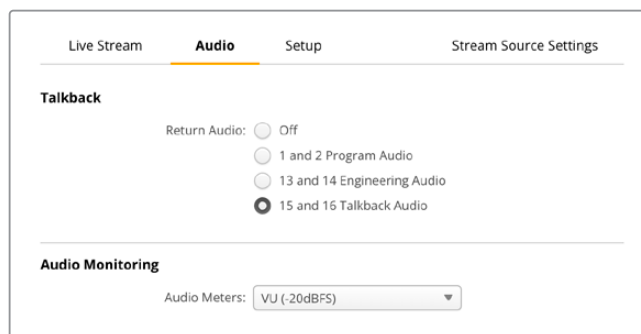
Użyj opcji **Remote Source** do monitorowania dźwięku talkback przesyłanego ze zdalnego miksera ATEM lub Streaming Decoder.

Mierniki audio

Wybierz typ miernika audio do wyświetlenia za pomocą menu mierników audio. Dostępne opcje to referencyjne poziomy VU -18dBFS, VU -20dBFS, PPM -18dBFS lub PPM -20dBFS.

Streaming Decoder

W urządzeniu Streaming Decoder zakładka **Audio** umożliwia wybór kanałów talkback i konfigurację mierników audio na panelu sterowania LCD.



Talkback

Użyj tego ustawienia, aby wybrać kanały audio, które są odsyłane do zdalnego Blackmagic Streaming Encoder. Dostępne opcje to **Off**, **1 and 2 Program Audio**, **13 and 14 Engineering Audio** i **15 and 16 Talkback Audio**.

Monitorowanie audio

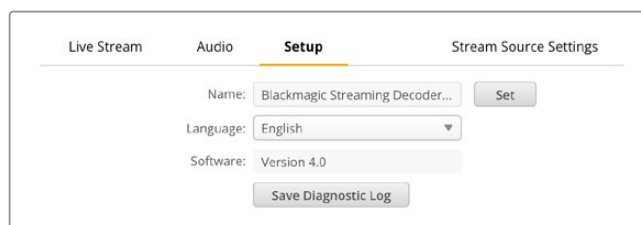
Wybierz typ miernika audio do wyświetlenia na panelu sterowania LCD za pomocą menu mierników audio. Dostępne opcje to referencyjne poziomy VU -18dBFS, VU -20dBFS, PPM -18dBFS lub PPM -20dBFS.

Zakładka Setup

Ustawienia w zakładce **Setup** pozwalają na ustawienie nazwy procesora strumieniowego, zmianę ustawień sieci oraz przywrócenie ustawień fabrycznych urządzenia. W Blackmagic Streaming Decoder zakładka **Setup** zawiera również opcje służące do ustawiania czasu referencyjnego oraz wyjścia SDI.

Ustawienia identyfikacji

Użyj ustawień identyfikacji, aby wybrać nazwę **Name** i język **Language** procesora strumieniowego.



Wpisanie własnej nazwy pomaga zidentyfikować właściwy procesor strumieniowy Blackmagic, gdy do sieci podłączonych jest więcej procesorów. Znajdziesz tu również nazwę lokalizacji sieci.

Ponadto sprawdzisz tu też aktualną wersję oprogramowania **Software**.

Ustawienia sieciowe

Lokalizacja sieci

Network Location to nazwa Twojego procesora strumieniowego Blackmagic, która wyświetli się w rejestrze. Jest oparta o nazwę identyfikacyjną u góry narzędzia konfiguracyjnego. Warto zauważyć, że prefiksy numeryczne zostaną zignorowane.

Adres MAC

Wyświetla **MAC Address** dla procesora strumieniowego. Adres MAC jest identyfikatorem sprzętowym, unikalnym dla każdego portu Ethernet. Jest istotny podczas konfiguracji systemów zabezpieczeń sieciowych, które ograniczają dostęp do urządzeń w oparciu o ich adres MAC.

Protokół

Ustawienia DHCP i statycznego IP pozwalają określić, w jaki sposób procesor strumieniowy jest podłączony do sieci.

DHCP	Procesory strumieniowe Blackmagic są domyślnie ustawione na DHCP. Protokół dynamicznej konfiguracji, w skrócie DHCP, jest usługą na serwerach sieciowych, która automatycznie wyszukuje procesor strumieniowy i przypisuje mu adres IP. DHCP to świetna usługa, która ułatwia podłączenie urządzeń przez Ethernet i dba, aby ich adresy IP nie kolidowały ze sobą. Większość komputerów i przełączników sieciowych obsługuje DHCP.
Statyczny adres IP	Po wybraniu Static IP można ręcznie wprowadzić szczegóły dotyczące sieci. W przypadku ręcznego ustawiania adresów IP i umożliwienia komunikacji wszystkich urządzeń muszą one mieć tę samą maskę podsieci i ustawienia bramki.

W przypadku korzystania ze statycznego adresu IP, gdy w sieci znajdują się inne urządzenia, które mają ten sam numer identyfikacyjny w adresie IP, wystąpi konflikt i urządzenia nie będą się łączyć. Jeśli wystąpi konflikt, wystarczy zmienić numer identyfikacyjny w adresie IP urządzenia.

Na przykład, jeśli konflikt powoduje adres 192.100.40.30, zmień ostatnie pole numeryczne na dowolną kombinację cyfr inną niż 30. Jeśli nowy numer jest również używany, zmieniaj go, aż znajdziesz unikalny numer, który nie jest używany przez inne urządzenia.

Priorytet połączenia

Gdy zarówno Ethernet, jak i telefon komórkowy są podłączone do procesora strumieniowego Blackmagic, to ustawienie pozwala wybrać, które połączenie będzie używane do transmisji. Więcej informacji na temat tetheringu mobilnego można znaleźć w rozdziale „Streaming przy użyciu smartfona” niniejszej instrukcji.

Zarządzanie narzędziem konfiguracyjnym

Włączenie ustawienia **via USB** ogranicza zmiany ustawień tylko do komputera podłączonego przez USB. Eliminuje to ryzyko przypadkowej zmiany ustawień przez któregośkolwiek użytkownika sieci.

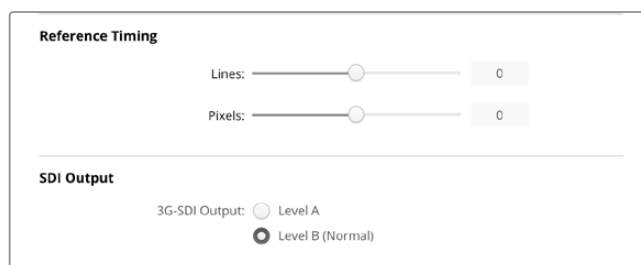
Resetowanie

Wybierz **Factory Reset**, aby przywrócić ustawienia fabryczne procesora strumieniowego Blackmagic. Po naciśnięciu **Set** pojawi się komunikat z prośbą o potwierdzenie wyboru. Aby kontynuować, kliknij **Reset**.



Streaming Decoder

Oprócz ustawień identyfikacji i sieciowych zakładka **Setup** w Blackmagic Streaming Decoder zawiera następujące ustawienia.



Czas referencyjny

Te ustawienia umożliwiają ręczną regulację czasu referencyjnego na podstawie linii lub pikseli. Blackmagic Streaming Decoder posiada zarówno analogowe wejście referencyjne tri-sync i black burst, jak i wejście SDI, które może być używane jako referencyjne. W przypadku dużych nadawców stosowane są sygnały referencyjne, ponieważ wszystkie łącza wizyjne w tych obiektach muszą być zsynchronizowane w celu dystrybucji sygnału w dużym systemie.

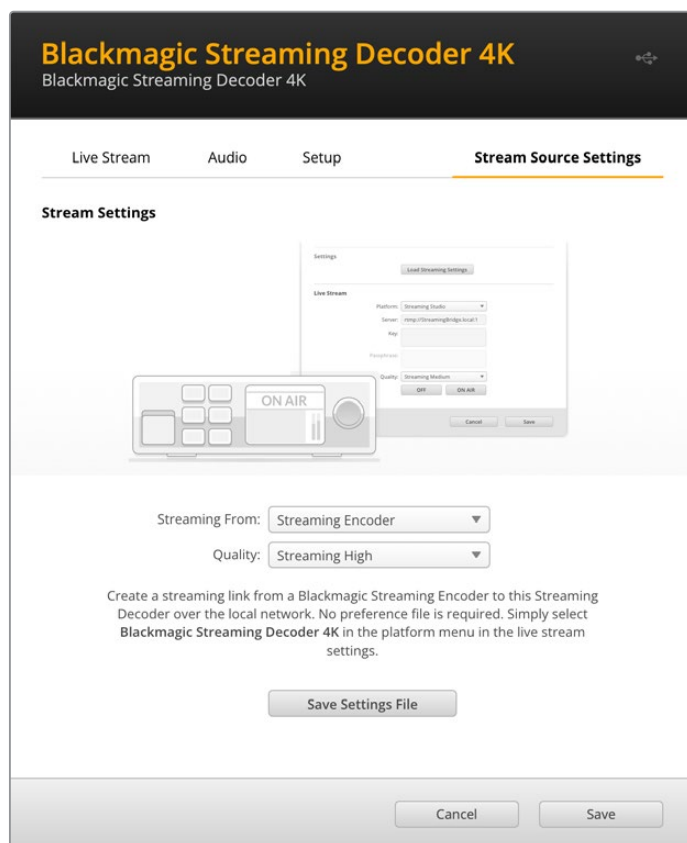
Wyjście SDI

Niektóre urządzenia nadawcze odbierają wyłącznie poziom A lub B wideo 3G-SDI. Aby zachować kompatybilność z innymi urządzeniami nadawczymi, należy wybrać odpowiedni typ 3G-SDI. Ustawienie domyślne to **Level B (Normal)**.

Ustawienia źródła transmisji

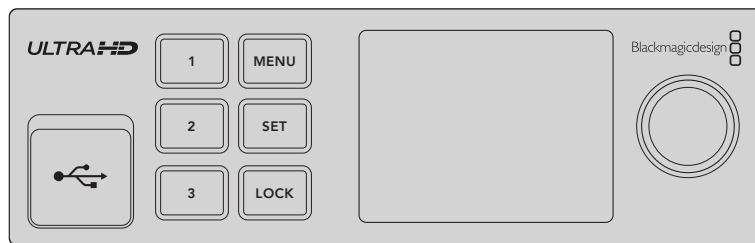
Zakładka **Stream Source Settings** w Blackmagic Streaming Decoder umożliwia tworzenie plików XML z ustawieniami transmisji, które można przesłać do zdalnego kodera strumieniowego, kamery Blackmagic lub miksera ATEM, które posiadają wbudowaną transmisję.

Więcej informacji na temat tworzenia plików XML z ustawieniami transmisji znajdziesz w rozdziale „Tworzenie linków nadawczych” w następnym rozdziale niniejszej instrukcji.



Tworzenie linków nadawczych

Dzięki procesorom strumieniowym Blackmagic możesz transmitować wideo przez lokalną sieć do dowolnego miejsca na świecie przy pomocy internetu.



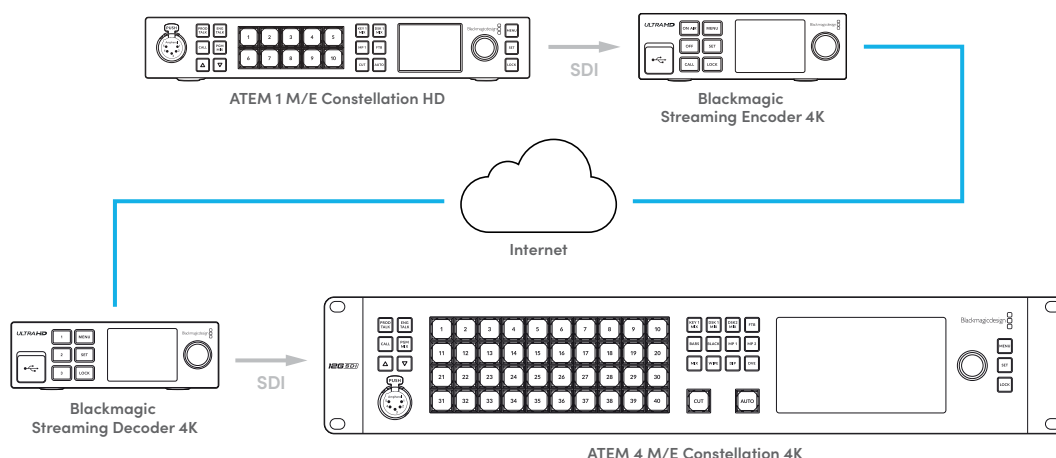
Jeśli Twój Blackmagic Streaming Decoder jest w tej samej sieci, co Twój Streaming Encoder, będzie widoczny w menu **Platform** w zakładce **Live Stream** w Blackmagic Streaming Setup. Więcej informacji na temat konfiguracji transmisji przez lokalną sieć znajdziesz w rozdziale „Rozpoczęcie pracy”.

Jeśli chcesz transmitować przez internet lub lokalną sieć przy użyciu klucza transmisji dla zwiększenia bezpieczeństwa, możesz stworzyć plik XML z ustawieniami transmisji z dekodera strumieniowego. Ten plik można przesłać do Blackmagic Streaming Encoder przy pomocy Blackmagic Streaming Setup.

WSKAZÓWKA Możesz także eksportować pliki XML z ustawieniami transmisji do kamer Blackmagic i mikserów ATEM, które obsługują wbudowaną transmisję. Więcej informacji na temat importu plików konfiguracyjnych znajdziesz w instrukcji obsługi Twojej kamery Blackmagic lub miksera ATEM.

Dobrym przykładem na to, jak procesory strumieniowe Blackmagic mogą współdziałać jest transmisja prognozy pogody do studia ze zdalnej lokalizacji. Jedyne czego potrzebujesz w celu transmisji z określonej lokalizacji, to koder strumieniowy i połączenie internetowe. W tym celu wystarczy Twój smartfon lub połączenie do sieci.

W studiu Blackmagic Streaming Decoder odbiera sygnał internetowy i konwertuje go do SDI, żeby mógł połączyć się z głównym mikserem w studiu.



Konfiguracja przepływu pracy dla tego przykładu byłaby następująca:

- 1 Blackmagic Streaming Encoder jest podłączony na planie do wyjścia SDI programu na mikserze ATEM. Na przykład ATEM 1 M/E Constellation HD.
- 2 Blackmagic Streaming Encoder jest następnie podłączany do smartfona.
- 3 Blackmagic Streaming Decoder jest również podłączony do internetu przez Ethernet w studiu.
- 4 Następnie Streaming Decoder 4K wysyła przekonwertowany sygnał wideo SDI z internetu do wejścia SDI miksera studyjnego w celu nadania głównych wiadomości.

Aby studio mogło połączyć dekodery strumieniowe z sygnałem internetowym kodera strumieniowego, należy uruchomić Blackmagic Streaming Setup i skonfigurować ustawienia internetowe. Obejmuje to generowanie pliku XML zawierającego wszystkie ustawienia transmisji strumieniowej, które są następnie przesyłane do kodera strumieniowego na planie.

Tworzenie pliku XML

Aby utworzyć plik konfiguracyjny XML, podłącz Blackmagic Streaming Decoder do internetu, podłączając kabel sieciowy z portu **LIVE STREAM** do routera internetowego lub przełącznika sieciowego.

Podłącz dekodery strumieniowe do komputera za pomocą kabla USB typu C i uruchom Blackmagic Streaming Setup. W zakładce **Live Stream** sprawdź, czy ustawienia sieciowe są prawidłowe i wybierz **Internet** z opcji **Stream Service**. W polu **Internet Status** powinien pojawić się komunikat **Visible worldwide**. Oznacza to, że wszystko działa prawidłowo. Więcej informacji na temat konfiguracji dekodera strumieniowego można znaleźć w sekcji „Usługa transmisji” w rozdziale „Blackmagic Streaming Setup”.

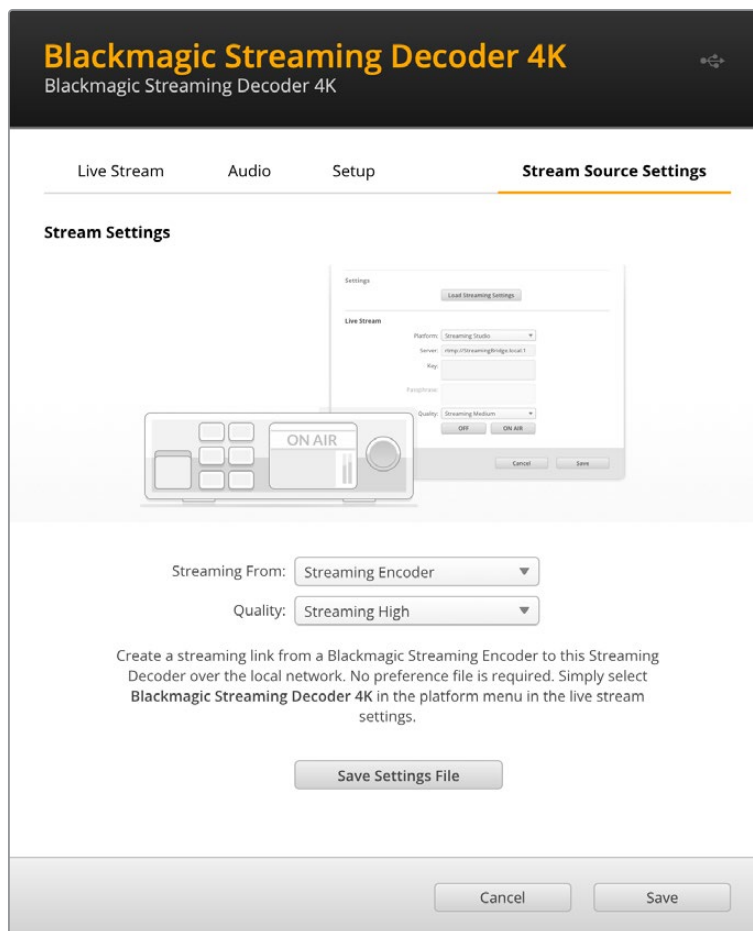
Uwaga na temat przekierowania portów

Jeśli w oknie **Internet status** wyświetlany jest błąd przekierowania portów lub UPnP, należy poprosić dostawcę internetu lub administratora sieci o skonfigurowanie przekierowania portów połączenia internetowego na **TCP port 1935**.

Eksport pliku XML

Po zatwierdzeniu ustawień w zakładce **Setup** narzędzia Blackmagic Streaming Setup i pomyślnym podłączeniu dekodera strumieniowego do sieci lub internetu można wyeksportować plik konfiguracyjny XML.

- 1 Kliknij zakładkę **Stream Source Settings** u góry okna po prawej stronie.



- 2 W menu **Streaming From** wybierz **Streaming Encoder**.

Jeśli tworzysz plik XML z ustawieniami transmisji dla kamery Blackmagic lub miksera ATEM, który obsługuje wbudowaną transmisję, wybierz **ATEM Switcher** lub **Blackmagic Camera** z menu **Streaming From**.

- 3 Wybierz pożądaną jakość transmisji. W ten sposób zostanie ustawiona jakość w zdalnym urządzeniu Blackmagic Streaming Encoder.
- 4 Kliknij przycisk **Save Settings File** i wybierz lokalizację na komputerze, w której chcesz zapisać plik.

Po zapisaniu pliku ustawień wyślij go e-mailem do zdalnego operatora Blackmagic Streaming Encoder.

WSKAZÓWKA Można użyć ustawień talkback w zakładce **Audio**, aby wybrać kanały audio, które mają być wysyłane z powrotem do zdalnego kodera strumieniowego.

Import pliku XML

Po przesłaniu pliku z ustawieniami e-mailem, ekipa na planie po prostu zaimportuje XML do Blackmagic Streaming Encoder za pomocą Blackmagic Streaming Setup, a następnie naciśnie przycisk **ON AIR**, aby rozpocząć streaming prognozy pogody do studia.

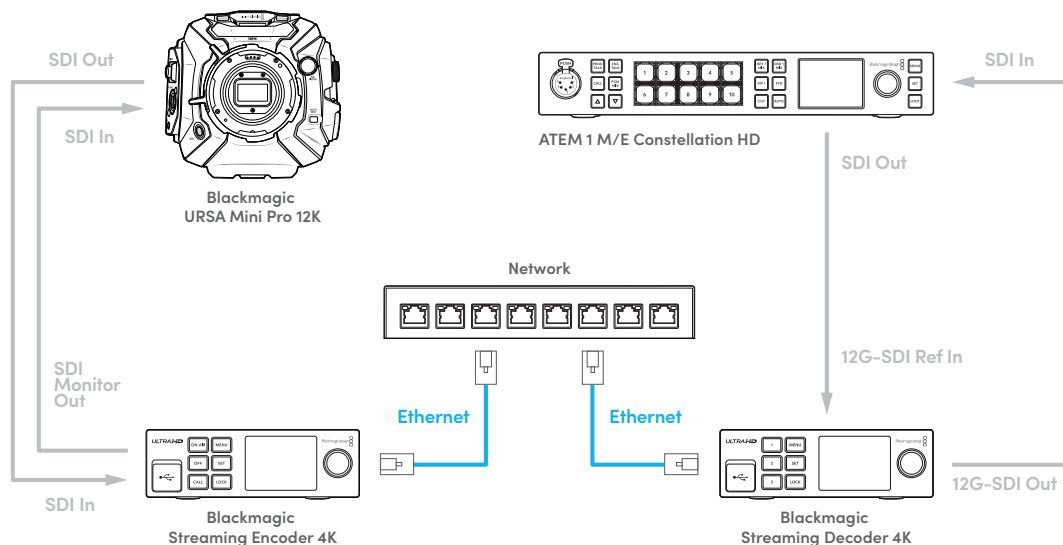
Należy jednak wspomnieć, że po zaimportowaniu pliku XML z ustawieniami transmisji można następnie rozpocząć i zatrzymać streaming bez konieczności jego ponownego zaimportowania. Ułatwia to skonfigurowanie stałego połączenia wideo między koderem a dekoderny strumieniowym.

Dopóki dekoder strumieniowy w studio nie zmieni ustawień transmisji strumieniowej i sieciowych oraz wciąż będzie szukać konkretnego kodera strumieniowego, zawsze go znajdzie, bez względu na jego lokalizację w internecie. W dowolnym miejscu można po prostu podłączyć koder transmisji strumieniowej do internetu, nacisnąć przycisk **ON AIR** i natychmiast rozpocząć transmisję strumieniową do dekodera transmisji strumieniowej w studio.

Talkback, tally i sterowanie kamerą

Procesory strumieniowe Blackmagic umożliwiają mikserom ATEM wysyłanie informacji tally, talkback i sterowania kamerą. Oznacza to, że każda kamera Blackmagic Design oparta na SDI może być umieszczona w dowolnej lokalizacji w sieci lokalnej lub w dowolnym miejscu na świecie z połączeniem internetowym i nadal może obsługiwać funkcję tally, talkback i sterowania kamerą.

Konfiguracja jest bardzo prosta. Poniższa ilustracja przedstawia, jak podłączyć URSA Mini Pro 12K do ATEM 1 M/E Constellation HD za pośrednictwem sieci lokalnej z tally, talkback i sterowaniem kamerą.



Po podłączeniu wszystkich urządzeń:

- 1 Naciśnij przycisk **MENU** na Blackmagic Streaming Encoder, aby otworzyć menu LCD i przejść do podmenu **Transmisja na żywo**.
- 2 Wybierz Blackmagic Streaming Decoder w menu **Platforma**.
- 3 Naciśnij **SET**, aby potwierdzić.

Aby funkcja tally działała, należy upewnić się, że kamera ma ustawiony ID kamery ATEM zgodny z wejściem na mikserze. Informacje na temat ustawiania ID kamery ATEM można znaleźć w instrukcji obsługi URSA Mini.

Można sprawdzić działanie tally, przełączając kamerę na wyjście programu na mikserze ATEM. Jeśli ID kamery ATEM jest prawidłowo ustawiony na kamerze, zaświeci się lampka tally, a wokół LCD kamery pojawi się czerwona ramka tally. Teraz przełącz kamerę na wyjście podglądu, a tally podświetli się na zielono.

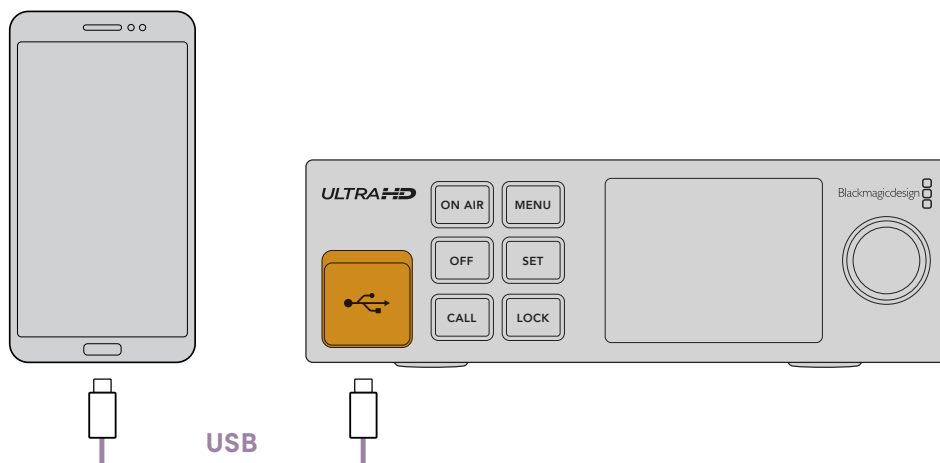
Spróbuj wyregulować przysłonę i poziomy czerni na stronie kamery w ATEM Software Control, aby przetestować sterowanie kamerą.

Wbudowane kanały audio SDI 15 i 16 są ustawione jako domyślne kanały talkback, ale można je zmienić na kanały inżynierskie 13 i 14 lub wyjście programu za pomocą Blackmagic Streaming Setup.

Podczas transmisji przez internet, przy użyciu Blackmagic Streaming Setup tworzony jest plik konfiguracyjny XML. Ten plik XML jest następnie importowany do urządzenia Blackmagic Streaming Encoder, dzięki czemu może ono znaleźć Blackmagic Streaming Decoder w internecie. Więcej informacji na temat tworzenia i importowania pliku konfiguracyjnego XML można znaleźć w poprzedniej sekcji niniejszej instrukcji.

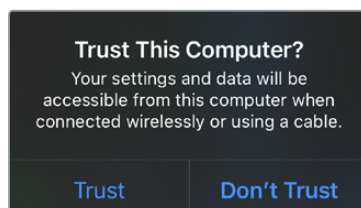
Streaming przy użyciu smartfona

Procesory strumieniowe Blackmagic mogą łączyć się z internetem poprzez tethering ze smartfona. W tym celu wystarczy podłączyć smartfon do przedniego lub tylnego portu USB typu C procesora strumieniowego. To połączenie umożliwia szybką konfigurację i nadawanie lub odbieranie transmisji strumieniowej w dowolnym miejscu, w którym smartfon korzysta z połączenia sieci 4G lub 5G.



Aby skonfigurować tethering mobilny:

- 1 Na urządzeniu z systemem iOS otwórz **Settings > Personal hotspot** i upewnij się, że opcja **Allow others to join** jest włączona.
- 2 Zobaczysz komunikat z pytaniem, czy można ufać podłączonemu komputerowi. Wybierz opcję **Trust**, a na ekranie pojawi się zielona ikona tetheringu. W ten sposób możesz sprawdzić, czy połączenie działa.



Gdy funkcja tetheringu jest włączona, zegar smartfona będzie zawsze wyświetlany na zielonej ikonie tła.

Na urządzeniach Android przesunij palcem po ekranie, aby wyświetlić szybkie menu. Naciśnij i przytrzymaj ikonę hotspotu, a następnie włącz tethering USB.

WSKAZÓWKĄ Po zakończeniu transmisji strumieniowej zalecamy wyłączenie połączeń tetheringowych w celu oszczędzenia baterii.

Streaming na żywo do internetu

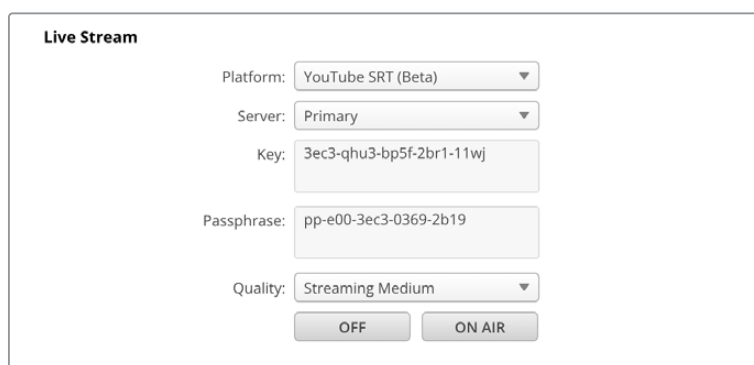
Blackmagic Streaming Encoder umożliwia strumieniowanie bezpośrednio do internetowych platform streamingowych, takich jak YouTube, Facebook, Twitch i nie tylko. Jako przykład skonfigurujemy streaming na żywo w serwisie YouTube.

- 1 Skopiuj klucz transmisji z konta YouTube Studio.
- 2 Uruchom Blackmagic Streaming Setup i przejdź do zakładki **Live Stream**.
- 3 Ustaw platformę na YouTube, a serwer na **Primary**. Wklej klucz transmisji YouTube w polu **Key** i wybierz jakość strumieniowania. Kliknij **Save**.
- 4 Jesteś teraz gotowy, aby rozpocząć globalny streaming. Kliknij przycisk **On Air** lub naciśnij przycisk **ON AIR** na panelu sterowania urządzenia. Po zakończeniu produkcji naciśnij przycisk **OFF**, aby zatrzymać transmisję.

Korzystanie z protokołu SRT

Protokół transmisji strumieniowej wideo, czyli SRT, zapewnia niższą latencję w porównaniu do RTMP. SRT poprawia również bezpieczeństwo poprzez użycie hasła, które działa jak klucz szyfrujący.

Wybierając wersję protokołu SRT serwisu strumieniowego, skopiuj hasło oraz klucz transmisji z konta transmisji strumieniowej, a następnie wklej je w polach **Key** i **Passphrase** w Blackmagic Streaming Setup.



The screenshot shows the 'Live Stream' configuration window in Blackmagic Streaming Setup. It contains the following fields and controls:

- Platform:** A dropdown menu set to 'YouTube SRT (Beta)'.
- Server:** A dropdown menu set to 'Primary'.
- Key:** A text field containing the value '3ec3-qhu3-bp5f-2br1-11wj'.
- Passphrase:** A text field containing the value 'pp-e00-3ec3-0369-2b19'.
- Quality:** A dropdown menu set to 'Streaming Medium'.
- Buttons:** Two buttons at the bottom, 'OFF' and 'ON AIR'.

Wklej hasło w polu **Passphrase** narzędzia konfiguracyjnego.

Doświadczeni technicznie nadawcy chcący dostosować ustawienia transmisji strumieniowej mogą zmienić protokoły RTMP lub SRT, jak również kodek H.264 lub H.265 w pliku XML. Więcej informacji można znaleźć w części „Blackmagic Streaming XML Format” w rozdziale „Developer Information”.

Korzystanie z wyjścia kamery internetowej

Oprogramowanie takie jak Zoom czy Microsoft Teams powinno automatycznie ustawić procesor strumieniowy Blackmagic jako kamerę internetową, więc po uruchomieniu aplikacji natychmiast zobaczysz obraz z kamery. Jeśli aplikacja nie wybierze automatycznie kodera lub dekodera strumieniowego, możesz ustawić ją ręcznie jako kamerę internetową i mikrofon.

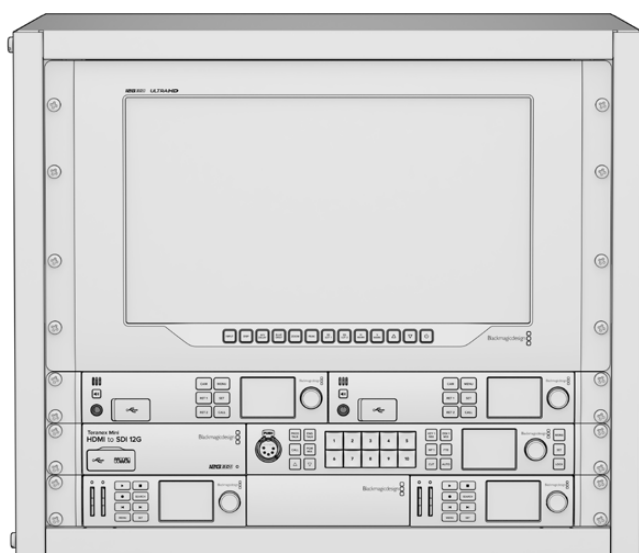
Poniższy przykład pokazuje, jak skonfigurować kamerę internetową na Microsoft Teams.

- 1 Za pomocą kabla USB typu C podłącz procesor strumieniowy Blackmagic do komputera przez port **WEBCAM OUT** na tylnym panelu.
- 2 Na pasku menu Teams otwórz **Settings** i wybierz **Devices**.
- 3 W panelu **Audio** kliknij menu **Microphone** i wybierz **Blackmagic Design** jako źródło dźwięku.
- 4 Przejdź do ustawień **Video** i wybierz procesor strumieniowy Blackmagic z menu **Camera**.

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelf to półka o wymiarze 1U, która umożliwia instalację szerokiej gamy sprzętu Blackmagic Design w racku nadawczym lub skrzyni transportowej. Modułowa konstrukcja pozwala budować przenośne i praktyczne zestawy sprzętowe przy użyciu produktów współdzielących pojedynczą półkę rack.

Poniższa ilustracja przedstawia 3 półki Universal Rack zainstalowane w małym racku, z zamontowanym zestawem kompatybilnych urządzeń. Dolna półka zawiera panel zaślepiający o szerokości 1/3 racka, który wypełnia niewykorzystaną przestrzeń między urządzeniami.



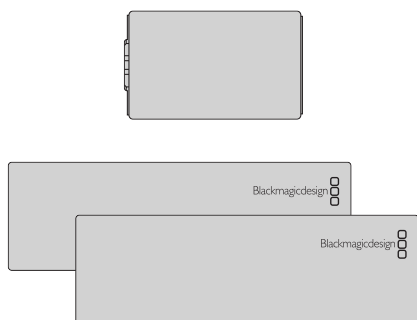
Zawartość zestawu

Universal Rack Shelf Kit zawiera poniższe elementy:



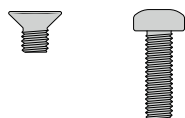
1 x Blackmagic Universal Rack Shelf

Półka o wymiarach 1U o pełnej szerokości do instalacji sprzętu Blackmagic Design.



Panele zaślepiające

1 x panel zaślepiający o szerokości 1/6 racka i 2 x panel zaślepiający o szerokości 1/3 do zakrycia niewykorzystanej przestrzeni.



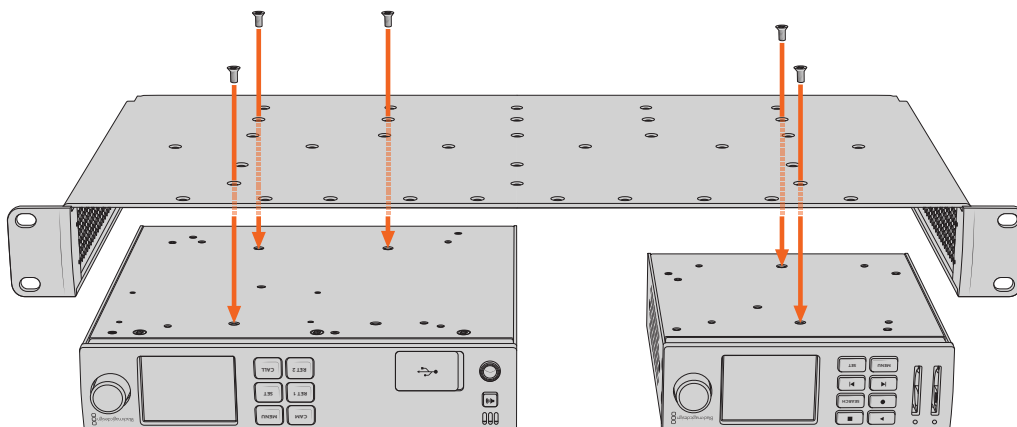
Śruby

12 x śruby montażowe z łbem stożkowym M3 5 mm.

2 x płaskie śruby M3 9 mm do paneli zaślepiających 1/6.

Montaż urządzenia w półce rack

- 1 Jeśli dołączone są gumowe nóżki, usuń je z podstawy urządzenia za pomocą narzędzia o plastikowych krawędziach.
- 2 Trzymając rack i urządzenie odwrócone do góry nogami, wyrównaj wstępnie wywiercone otwory na racku z gwintowanymi otworami montażowymi na spodzie urządzenia Blackmagic Design. Dostępne są dwa centralne punkty montażowe w urządzeniach o szerokości 1/3 i do trzech punktów montażowych w większych urządzeniach o szerokości 1/2 racka.

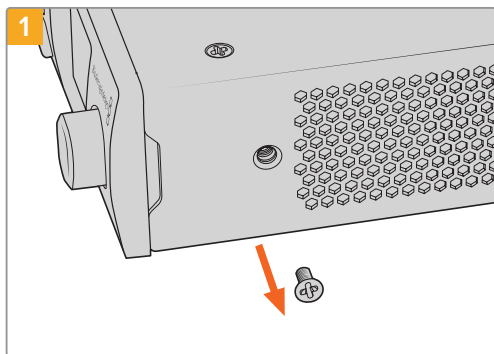


- 3 Za pomocą dostarczonych śrub z łbem stożkowym M3 5 mm zamontuj urządzenie w racku.
- 4 Po zamocowaniu obróć półkę rack prawą stroną do góry i zainstaluj w racku za pomocą wbudowanych uchwytów.

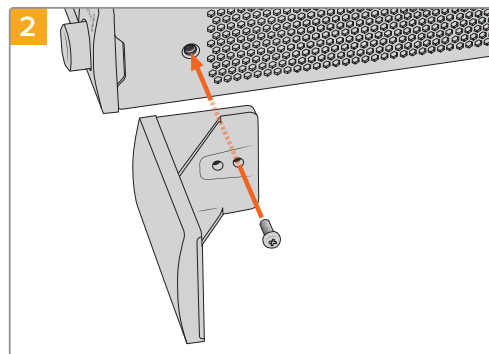
Dostarczone panele zaślepiające mogą być użyte do zakrycia niewykorzystanej przestrzeni w racku.

Mocowanie panelu zaślepiającego 1/6

Mały panel zaślepiający 1/6 może być użyty do wypełnienia pustej przestrzeni w racku podczas montażu urządzeń o szerokości 1/2 i 1/3 racka. Panel można przymocować do boków dowolnego urządzenia. Aby poprawić przepływ powietrza, warto zamontować panel między urządzeniami.



Wykręć śrubę M3 5 mm znajdującą się z przodu urządzenia



Wyrównaj panel zaślepiający i zamocuj za pomocą dostarczonej śruby nylonowej M3 9 mm

Mocowanie panelu zaślepiającego 1/3

Duże panele zaślepiające o szerokości 1/3 można przymocować bezpośrednio po obu stronach półki rack podczas montażu pojedynczych urządzeń. Aby zainstalować panel zaślepiający, wyrównaj otwory na śruby i punkt mocowania na spodzie panelu i przykręć za pomocą dwóch dostarczonych śrub z łbem stożkowym M3 5 mm.

Developer Information

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend	
↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```


Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: true↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: true↵
```

```
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: false↵
```

```
Static Addresses: 192.168.1.2/255.255.255.0↵
```

```
Static Gateway: 192.168.1.1↵
```

```
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
NETWORK INTERFACE 0:↵
```

```
Dynamic IP: false↵
```

```
Static Addresses: 192.168.1.2/255.255.255.0↵
```

```
Static Gateway: 192.168.1.1↵
```

```
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
```

```
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
```

```
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
```

```
Current Locale: en_US.UTF-8↵
```

```
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
```

```
Current Audio Meter: PPM -20dB↵
```

```
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```


Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path `/control/api/v1/` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path `/control/documentation.html` to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```


Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Pomoc

Uzyskiwanie pomocy

Najszybszym sposobem uzyskania pomocy jest wejście na strony wsparcia technicznego online Blackmagic Design i sprawdzenie najnowszych materiałów pomocniczych dostępnych dla procesora strumieniowego Blackmagic.

Strony wsparcia technicznego online Blackmagic Design

Najnowszą instrukcję obsługi można znaleźć na stronie centrum wsparcia technicznego Blackmagic Design pod adresem www.blackmagicdesign.com/pl/support

Forum Blackmagic Design

Forum Blackmagic Design na naszej stronie internetowej jest pomocnym źródłem dalszych informacji i kreatywnych pomysłów. Może to być też szybszy sposób uzyskania pomocy. Być może istnieją już odpowiedzi na podobne pytania od innych doświadczonych użytkowników i pracowników Blackmagic Design, którzy mogą Ci pomóc. Forum znajdziesz pod adresem <https://forum.blackmagicdesign.com>

Kontakt z obsługą techniczną Blackmagic Design

Jeśli nie możesz znaleźć potrzebnej pomocy w naszych materiałach na forum, użyj przycisku **Wyślij do nas e-mail** na stronie wsparcia technicznego, aby wysłać zgłoszenie dotyczące wsparcia technicznego. Alternatywnie kliknij na stronie przycisk **Znajdź lokalną pomoc techniczną** i zadzwoń do najbliższego biura wsparcia technicznego Blackmagic Design.

Wymogi prawne



Utylizacja zużytego sprzętu elektrycznego i elektronicznego na terenie Unii Europejskiej.

Symbol na produkcie oznacza, że tego urządzenia nie wolno utylizować razem z innymi odpadami. Aby zutylizować zużyty sprzęt, należy przekazać go do wyznaczonego punktu zbiórki w celu recyklingu. Oddzielna zbiórka i recykling zużytego sprzętu w czasie utylizacji pomoże oszczędzić zasoby naturalne i zapewni, że zostanie on poddany recyklingowi w sposób chroniący zdrowie ludzi i środowisko. Więcej informacji na temat miejsc, w których można oddać zużyty sprzęt do recyklingu można uzyskać w lokalnym biurze ds. recyklingu w Twoim mieście lub u sprzedawcy, od którego zakupiłeś produkt.



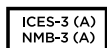
Niniejsze urządzenie zostało przetestowane i uznane za zgodne z ograniczeniami dla urządzeń cyfrowych klasy A, zgodnie z częścią 15 przepisów FCC. Ograniczenia te zostały opracowane w celu zapewnienia rozsądnej ochrony przed szkodliwymi zakłóceniami podczas pracy urządzenia w środowisku komercyjnym. Tego typu sprzęt generuje, wykorzystuje i może wypromieniować energię o częstotliwości radiowej. Jeśli nie jest zainstalowany i używany zgodnie z instrukcją, może powodować szkodliwe zakłócenia w komunikacji radiowej. Użytkowanie tego produktu na terenach zamieszkałych może powodować szkodliwe zakłócenia, w którym to przypadku użytkownik będzie zobowiązany do usunięcia zakłóceń na własny koszt.

Działanie podlega dwóm następującym warunkom:

- 1 Niniejsze urządzenie nie może powodować szkodliwych zakłóceń.
- 2 Niniejsze urządzenie musi odbierać wszelkie zakłócenia zewnętrzne, w tym zakłócenia mogące powodować niepożądane funkcjonowanie.



R-R-BMD-20201201001
R-R-BMD-20201201002



Certyfikacja ISED na rynek kanadyjski

Niniejsze urządzenie jest zgodne z kanadyjskimi normami dla urządzeń cyfrowych klasy A.

Wszelkie modyfikacje lub użycie tego produktu niezgodnie z jego przeznaczeniem może unieważnić zgodność z tymi normami.

Podłączenie do interfejsów HDMI musi być wykonane przy użyciu wysokiej jakości ekranowanych kabli HDMI.

Niniejsze urządzenie zostało przetestowane pod kątem zgodności z przeznaczeniem do użytku w środowisku komercyjnym. Jeśli urządzenie jest używane w środowisku domowym, może powodować zakłócenia radiowe.

Informacje dotyczące bezpieczeństwa

Niniejsze urządzenie musi być podłączone do gniazda sieciowego z uziemieniem ochronnym.

Aby zmniejszyć ryzyko porażenia prądem, nie należy narażać tego urządzenia na kapanie lub rozbryzgi cieczy.

Urządzenie nadaje się do użytku na obszarach tropikalnych o temperaturze otoczenia do 40°C.

Zakres temperatur przechowywania wynosi od -20°C do 60°C, a wilgotność względna od 0% do 90% bez kondensacji.

Upewnij się, że wokół produktu zapewniona jest odpowiednia, nieograniczona wentylacja.

Podczas montażu w racku należy upewnić się, że wentylacja nie jest ograniczona przez sąsiadujące urządzenia.

Produkt nie zawiera żadnych części, które mogą być naprawiane przez użytkownika. Serwisowanie należy zlecić lokalnemu centrum serwisowemu Blackmagic Design.



Stosować wyłącznie na wysokościach nie większych niż 2000 m n.p.m.

Kalifornijskie ostrzeżenie Prop 65

Niniejszy produkt może narażać użytkownika na działanie substancji chemicznych, takich jak śladowe ilości polibromowanych bifenyli w częściach plastikowych uznanych w stanie Kalifornia za powodujące raka i uszkodzenia płodu lub działające szkodliwie dla rozrodczości.

Więcej informacji na stronie www.P65Warnings.ca.gov.

Gwarancja

36 miesięcy ograniczonej gwarancji

Blackmagic Design gwarantuje, że procesor strumieniowy Blackmagic będzie wolny od wad materiałowych i wykonawczych przez okres 36 miesięcy od daty zakupu z wyłączeniem złączy, kabli, wentylatorów chłodzących, modułów światłowodowych, bezpieczników, klawiatur i akumulatorów, które będą wolne od wad materiałowych i wykonawczych przez okres 12 miesięcy od daty zakupu. Jeśli produkt okaże się wadliwy w okresie gwarancyjnym, Blackmagic Design, według własnego uznania albo naprawi wadliwy produkt bez opłat za części i koszty naprawy, albo zapewni wymianę na produkt zastępczy w zamian za wadliwy produkt.

W celu uzyskania usługi w ramach niniejszej gwarancji, klient musi powiadomić Blackmagic Design o wadzie przed upływem okresu gwarancyjnego i dokonać odpowiednich przygotowań do wykonania usługi. Klient jest odpowiedzialny za zapakowanie i opłacenie wysyłki wadliwego produktu do wyznaczonego centrum serwisowego wskazanego przez Blackmagic Design. Klient jest odpowiedzialny za opłacenie wszystkich kosztów wysyłki, ubezpieczenia, ceł, podatków i innych opłat za produkty zwrócone do nas z jakiegokolwiek powodu.

Niniejsza gwarancja nie obowiązuje w przypadku wad, awarii lub uszkodzeń spowodowanych niewłaściwym użytkowaniem lub niewłaściwą lub niedostateczną konserwacją i pielęgnacją. W ramach niniejszej gwarancji firma Blackmagic Design nie jest zobowiązana do świadczenia następujących usług serwisowych: a) naprawy uszkodzeń wynikających z prób instalacji, naprawy lub serwisowania produktu przez personel inny niż przedstawiciele Blackmagic Design, b) naprawy uszkodzeń wynikających z niewłaściwego użytkowania lub podłączenia do niekompatybilnego sprzętu, c) naprawy wszelkich uszkodzeń lub nieprawidłowego działania spowodowanego użyciem części lub materiałów eksploatacyjnych innych niż Blackmagic Design, lub d) serwisowania produktu, który został zmodyfikowany lub zintegrowany z innymi produktami, jeśli w wyniku takiej modyfikacji lub integracji zwiększa się czas lub trudność serwisowania produktu.

NINIEJSZA GWARANCJA UDZIELANA PRZEZ BLACKMAGIC DESIGN ZASTĘPUJE WSZELKIE INNE GWARANCJE, WYRAŹNIE OKREŚLONE LUB DOROZUMIANE. BLACKMAGIC DESIGN I JEJ DOSTAWCY WYŁĄCZAJĄ WSZELKIE DOROZUMIANE GWARANCJE PRZYDATNOŚCI HANDLOWEJ LUB PRZYDATNOŚCI DO OKREŚLONEGO CELU. ODPOWIEDZIALNOŚĆ BLACKMAGIC DESIGN ZA NAPRAWĘ LUB WYMIANĘ WADLIWYCH PRODUKTÓW JEST JEDYNYM I WYŁĄCZNYM ZADOŚĆUCZYNIENIEM ZAPEWNIONYM KLIENTOWI ZA WSZELKIE SZKODY POŚREDNIE, SZCZEGÓLNE, PRZYPADKOWE LUB WYNIKOWE, NIEZALEŻNIE OD TEGO, CZY BLACKMAGIC DESIGN LUB DOSTAWCA ZOSTALI WCZEŚNIEJ POWIADOMIENI O MOŻLIWOŚCI WYSTĄPIENIA TAKICH SZKÓD. BLACKMAGIC DESIGN NIE PONOSI ODPOWIEDZIALNOŚCI ZA JAKIEKOLWIEK NIELEGALNE UŻYCIE SPRZĘTU PRZEZ KLIENTA. FIRMA BLACKMAGIC NIE PONOSI ODPOWIEDZIALNOŚCI ZA JAKIEKOLWIEK SZKODY WYNIKAJĄCE Z UŻYTKOWANIA NINIEJSZEGO PRODUKTU. UŻYTKOWNIK OBSŁUGUJE TEN PRODUKT NA WŁASNE RYZYKO.

© Copyright 2025 Blackmagic Design. Wszelkie prawa zastrzeżone. „Blackmagic Design”, „DeckLink”, „HDLink”, „Workgroup Videohub”, „Multibridge Pro”, „Multibridge Extreme”, „Intensity” i „Leading the creative video revolution” są zarejestrowanymi znakami towarowymi w USA i innych krajach. Wszystkie inne nazwy firm i produktów mogą być znakami towarowymi odnośnych przedsiębiorstw, z którymi są powiązane.

Thunderbolt i logo Thunderbolt są znakami towarowymi Intel Corporation w Stanach Zjednoczonych i/lub innych krajach.

Червень 2025 р.

Посібник зі встановлення та експлуатації

Blackmagicdesign

Стрімінгові процесори

Blackmagic



Blackmagic Streaming Encoder
Blackmagic Streaming Decoder



Шановний користувачу!

Дякуємо за придбання стрімінгового процесора Blackmagic.

Blackmagic Streaming Encoder можна напряму підключати до будь-якого SDI-обладнання, використовувати для перетворення сигналу на формат H.264 або H.265 і потокової трансляції на таких популярних платформах, як YouTube Live, Facebook Live і Twitch. Крім того, для онлайн-показу відео в мовній якості допускається застосування пристрою Blackmagic Streaming Decoder. Це дозволяє передавати професійний контент через інтернет у найвіддаленіші місця.

Blackmagic Streaming Decoder може отримувати від пристрою Blackmagic Streaming Encoder потік даних і перетворювати його на SDI- чи HDMI-відео. Він також дозволяє передавати сигнали індикації стану, двостороннього зв'язку та керування камерою, що ідеально підходить для створення контенту в реальному часі. Крім того, Blackmagic Streaming Decoder здатний декодувати потоки з камер Blackmagic і відеомікшерів ATEM, що мають вбудовану функцію стрімінгу.

Цей посібник містить усю інформацію, необхідну для підключення та підготовки до роботи стрімінгового процесора Blackmagic.

Найновішу версію посібника та внутрішнього програмного забезпечення для стрімінгового процесора Blackmagic можна знайти в розділі підтримки на вебсайті www.blackmagicdesign.com/ua. Щоб дізнатися про вихід оновлень, зареєструйтеся під час завантаження ПЗ.

Ми постійно працюємо над удосконаленням наших продуктів, тому ваші відгуки допоможуть нам зробити їх ще кращими.

Грант Петті

Генеральний директор Blackmagic Design

Зміст

Підготовка до роботи	845	Потокова трансляція в інтернеті	872
Підключення живлення	845	Використання виходу WEBCAM OUT	873
Підключення до мережі	846	Blackmagic Universal Rack Shelf	873
Підключення джерела відео	846	Вміст	874
Підключення монітора до моделі Blackmagic Streaming Encoder	847	Установлення пристрою на полиці	874
Підключення приймачів відео	847	Порядок установлення заглушки 1/6 RU	875
Простий стрімінг через мережу	847	Порядок установлення заглушки 1/3 RU	875
РК-дисплей	850	Інформація для розробників	876
Піктограми підключення	851	Blackmagic Streaming Encoder Ethernet Protocol	876
Вихід для моніторингу на пристрої Blackmagic Streaming Encoder	851	Protocol Blocks	878
Blackmagic Streaming Setup	856	Streaming Encoder Control REST API	888
Live Stream («Потокова трансляція»)	857	Event Control API	890
Audio («Аудіо»)	861	Livestream Control API	890
Setup («Налаштування»)	862	Monitor Output Control API	895
Stream Source Settings («Налаштування джерела стрімінгу»)	865	System Control API	896
Створення каналу мовлення	866	Notification websocket - 1.0.0 messages	898
Створення XML-файлу	867	Device Properties	899
Експорт XML-файлу	867	Blackmagic Streaming XML Format	901
Завантаження XML-файлу	869	Допомога	908
Двосторонній зв'язок, індикація стану та керування камерою	869	Дотримання нормативних вимог	909
Стрімінг за допомогою смартфона	871	Правила безпеки	910
		Гарантія	911

Підготовка до роботи

Щоб розпочати роботу зі стрімінговим процесором Blackmagic, достатньо підключити живлення, мережевий кабель, а також джерела та приймачі відеосигналу.



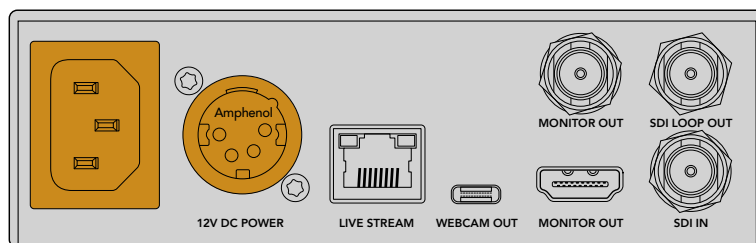
Blackmagic Streaming Encoder 4K



Blackmagic Streaming Decoder 4K

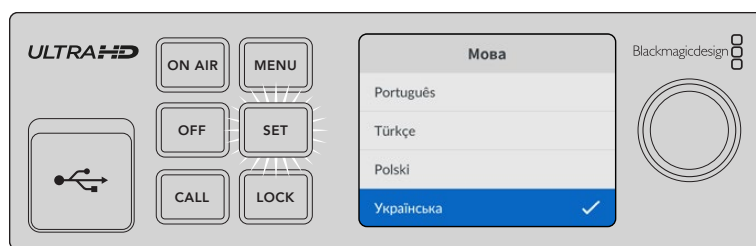
Підключення живлення

Для подачі електроенергії підключіть силовий кабель за стандартом IEC до гнізда на задній панелі стрімінгового процесора.



Blackmagic Streaming Encoder і Blackmagic Streaming Decoder мають додатковий вхід живлення постійного струму. Його можна використовувати для підключення зовнішніх джерел, наприклад батареї 12 В або блока безперебійного енергопостачання.

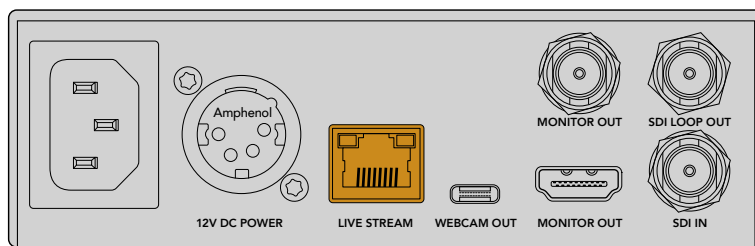
Після подачі живлення на РК-дисплеї передньої панелі відображатиметься таблиця зі списком доступних мов. За допомогою круглої ручки виберіть потрібну мову та натисніть блимаючу кнопку SET.



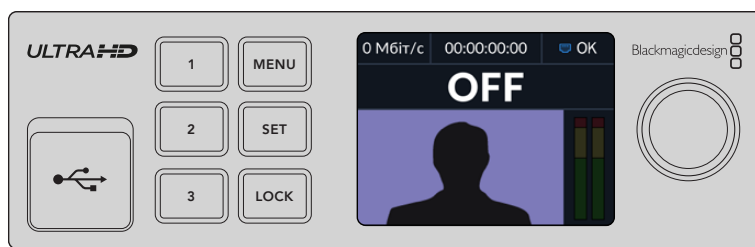
Натисніть кнопку SET, щоб підтвердити вибір мови

Підключення до мережі

Щоб отримати доступ до мережі або інтернету, підключіть стрімінговий процесор Blackmagic до мережевого маршрутизатора або комутатора через Ethernet-порт LIVE STREAM.



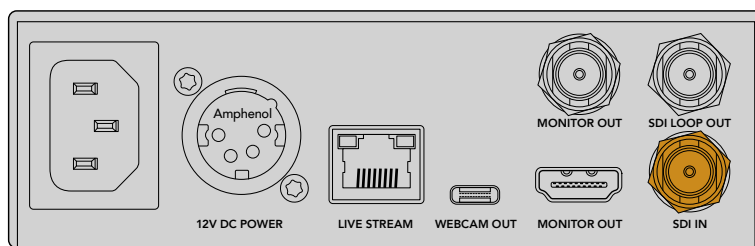
На стрімінговому процесорі Blackmagic за замовчуванням вибрано налаштування DHCP, що дозволить одразу отримати IP-адресу. Після підключення у верхньому правому кутку РК-дисплея з'явиться синя піктограма роз'єму Ethernet. Якщо необхідно під'єднатися, використовуючи статичну IP-адресу, див. розділ "Blackmagic Streaming Setup" нижче.



Підключення джерела відео

Підключіть джерело SDI-відео, наприклад Blackmagic URSA Mini Pro 12K або відеомікшер ATEM SDI до SDI-входу пристрою Blackmagic Streaming Encoder. Ця модель підтримує технологію 12G-SDI й автоматично перемикається між HD та Ultra HD до 2160p/60 при зміні вхідного відеосигналу.

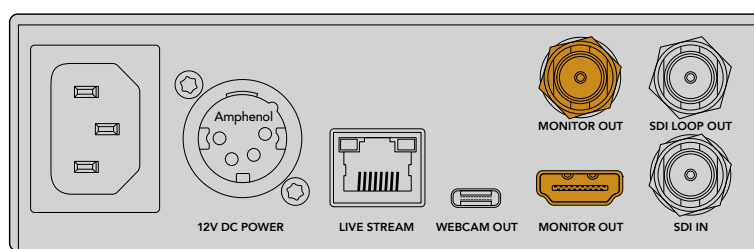
Після підключення джерела на РК-дисплеї кодера з'явиться зображення. Через SDI-вхід відео передається разом із аудіосигналом, який можна відстежувати за допомогою індикаторів звуку на РК-дисплеї.



Підключіть джерело SDI-відео до SDI-входу пристрою Blackmagic Streaming Encoder

Підключення монітора до моделі Blackmagic Streaming Encoder

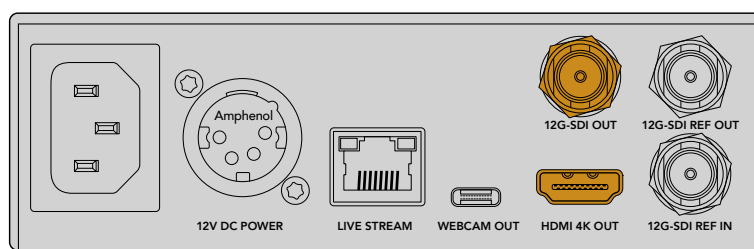
Під'єднайте HDMI-телевізор або SDI-монітор до одного з виходів для моніторингу, розташованого на задній панелі пристрою Blackmagic Streaming Encoder. Ці роз'єми дозволяють переглядати мовний контент та іншу важливу інформацію про стрімінг, наприклад індикатор ефіру, швидкість передачі даних і рівні аудіо. Докладні відомості див. в розділі «Вихід для моніторингу на пристрої Blackmagic Streaming Encoder».



Підключіть телевизор або монітор до пристрою Blackmagic Streaming Encoder, щоб переглядати важливу інформацію про стрімінг

Підключення приймачів відео

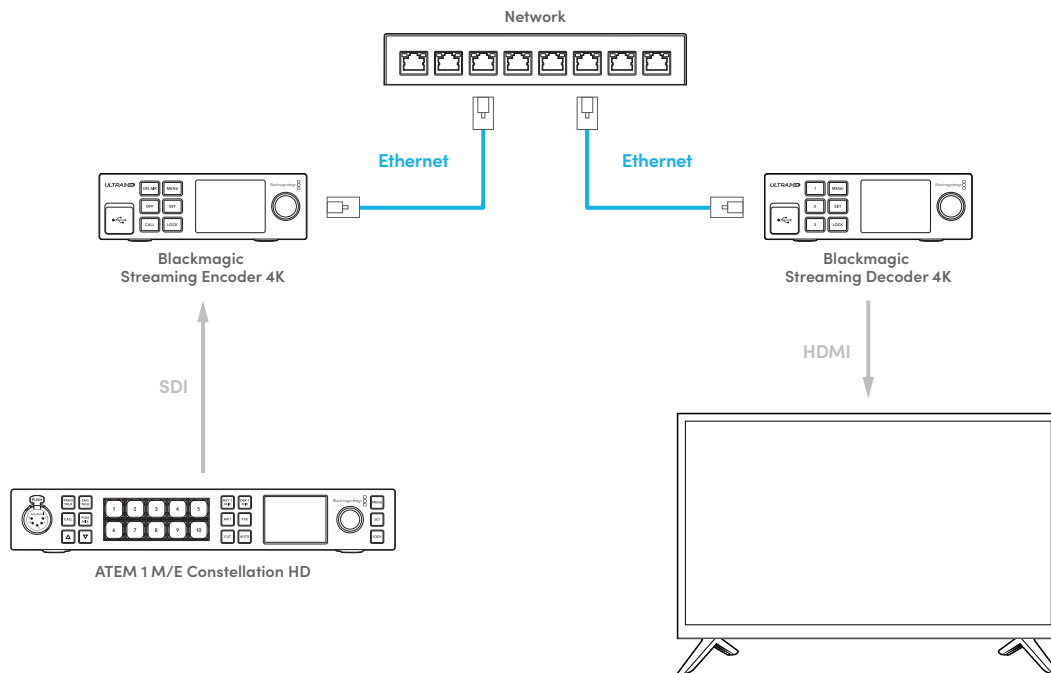
Blackmagic Streaming Decoder дозволяє передавати декодований потік на приймач, наприклад відеомікшер ATEM SDI та HDMI-телевізор. Для цього лише потрібно під'єднати відеомікшер ATEM до виходу 12G-SDI OUT, а телевизор — до роз'єму HDMI.



Підключіть приймачі відео до виходів SDI та HDMI пристрою Blackmagic Streaming Decoder

Простий стрімінг через мережу

Після підключення обладнання можна перевірити роботу системи, виконавши простий стрімінг між пристроями Blackmagic Streaming Encoder і Blackmagic Streaming Decoder через локальну мережу. Така конфігурація підійде для потокової трансляції контенту на екран конференц-залу або на відеопроєктор. На ілюстрації нижче показано систему для простого стрімінгу з відеомікшера ATEM на HDMI-телевізор.



На передній панелі стрімінгового процесора є РК-дисплей, який показує важливу інформацію та дозволяє перевіряти відео та аудіо. На ній також є кругла ручка та кнопки. За їхньою допомогою можна швидко відкривати меню та вибирати налаштування, починати й зупиняти стрімінг.

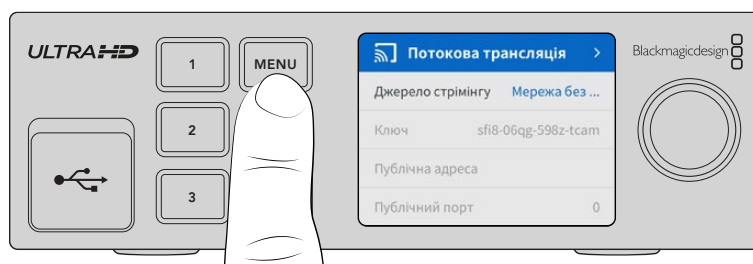
Усі налаштування також можна задавати в утиліті Blackmagic Streaming Setup. Докладні відомості див. в розділі "Blackmagic Streaming Setup" нижче.

Порядок підготовки до простого стрімінгу

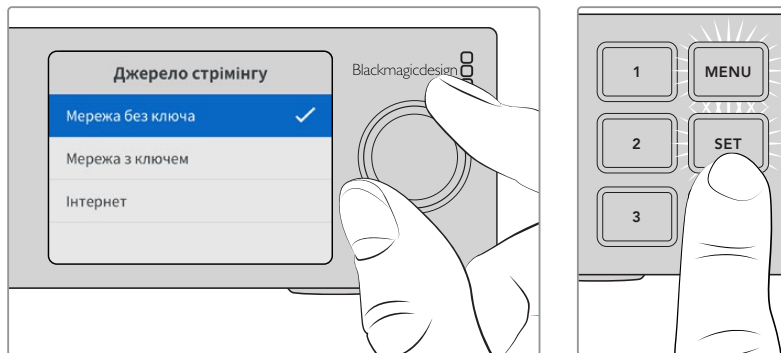
- 1 Підключіть Blackmagic Streaming Encoder і Blackmagic Streaming Decoder до мережевого комутатора.

ПОРАДА. Blackmagic Streaming Encoder також можна підключити напряму до Blackmagic Streaming Decoder одним Ethernet-кабелем, не використовуючи мережевий комутатор.

- 2 На пристрої Blackmagic Streaming Decoder натисніть кнопку MENU, щоб відкрити екранне меню на передній панелі, а потім натисніть кнопку SET, аби увійти в меню «Потокова трансляція».

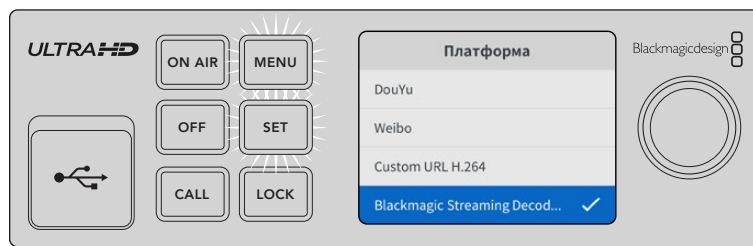


За допомогою круглої ручки виберіть «Джерело стрімінгу», натисніть кнопку SET і виберіть зі списку опцію «Мережа без ключа». Для підтвердження натисніть SET.



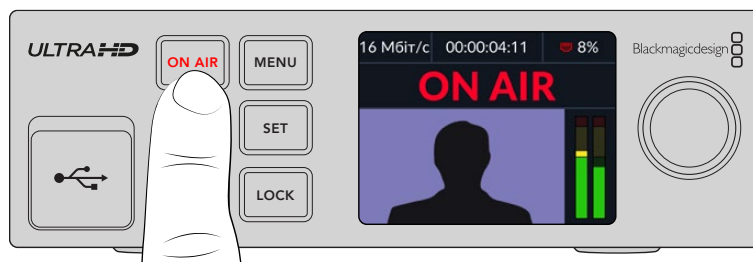
Щоб повернутися до головної сторінки, натисніть кнопку MENU.

- 3 На пристрої Blackmagic Streaming Decoder натисніть кнопку MENU, щоб відкрити меню «Потокова трансляція», а потім натисніть кнопку SET і поверніть круглу ручку, аби перейти до налаштування «Платформа». Натисніть кнопку SET, щоб вибрати підменю «Платформа».

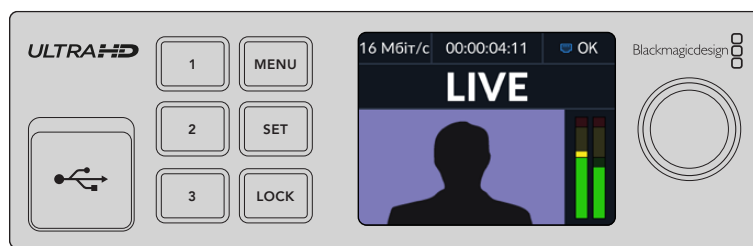


Зі списку «Платформа» виберіть Blackmagic Streaming Decoder і натисніть кнопку SET. Поверніться до головної сторінки, натиснувши кнопку MENU.

- 4 Натисніть кнопку ON AIR, розташовану на передній панелі пристрою Blackmagic Streaming Encoder. Ця кнопка світитиметься червоним під час стрімінгу, а на головній сторінці РК-дисплея відобразиться напис ON AIR.



Відео, що йде в ефір, виводитиметься на РК-дисплей пристрою Blackmagic Streaming Decoder.



На РК-дисплеї стрімінгового декодера відображається індикатор LIVE

Щоб зупинити стрімінг, натисніть кнопку OFF на передній панелі пристрою Blackmagic Streaming Encoder.

ПОРАДА. Якщо на пристрої Blackmagic Streaming Encoder блимає кнопка ON AIR, потокова трансляція не ввімкнулась або несподівано припинилась. Причиною цього можуть бути проблеми з підключенням до мережі або неправильні налаштування стрімінгу. Перевірте налаштування стрімінгу та надійність під'єднання мережових кабелів.

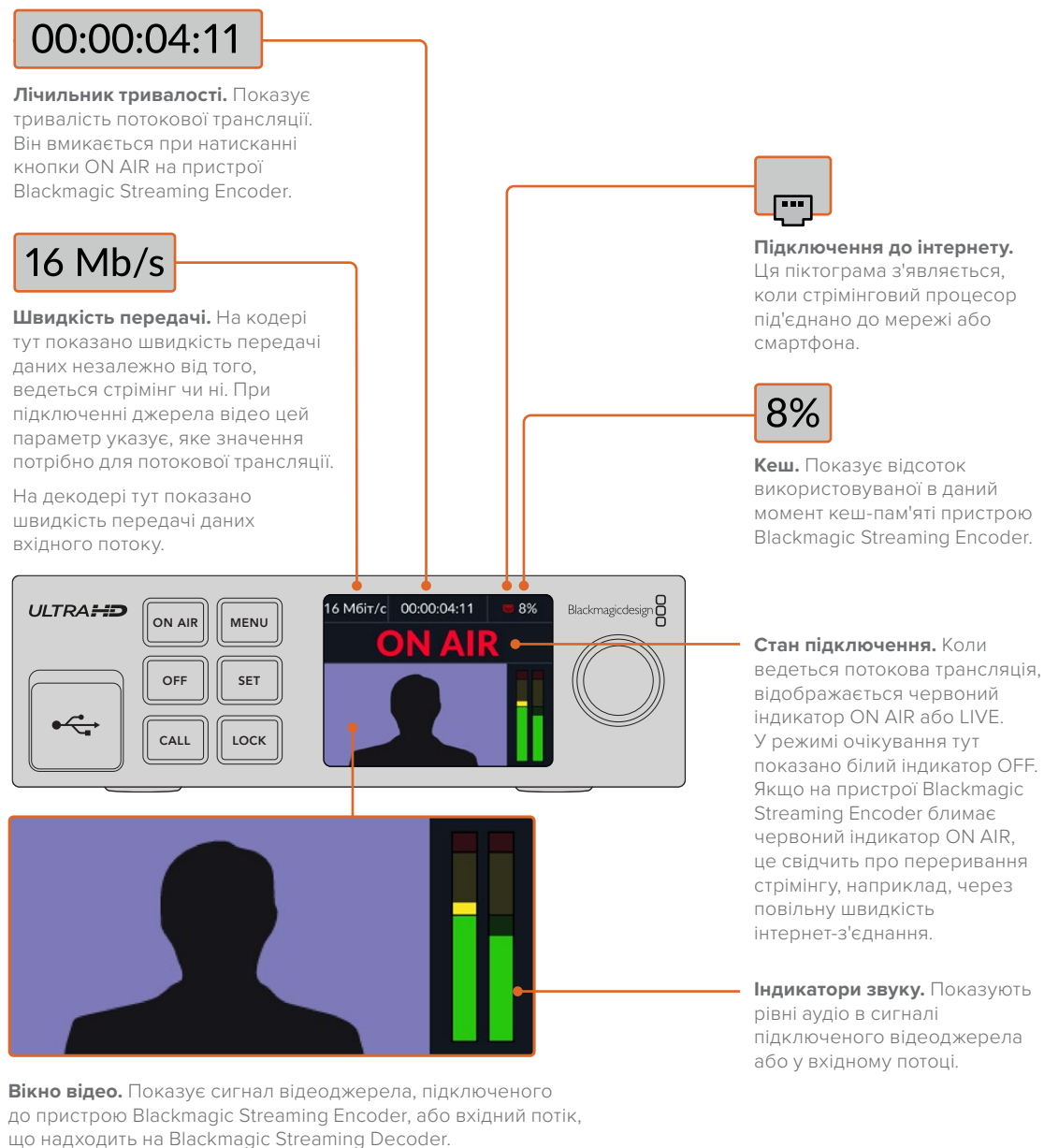
Кнопка блокування

Щоб заблокувати передню панель стрімінгового процесора, натисніть і утримуйте кнопку LOCK протягом однієї секунди. Ця функція дозволяє запобігти зміні налаштувань або перериванню стрімінгу внаслідок випадкового використання кнопок чи круглої ручки.

Щоб розблокувати панель, натисніть і утримуйте цю кнопку протягом двох секунд.

РК-дисплей

На головній сторінці РК-дисплея стрімінгового процесора Blackmagic можна здійснювати моніторинг відео та аудіо, а також переглядати важливу інформацію про потокову трансляцію.



Піктограми підключення

Піктограма, розташована у верхньому правому кутку РК-дисплея, показує поточний стан підключення стрімінгового процесора Blackmagic.



Синя піктограма роз'єму Ethernet показує, що підключено Ethernet-кабель і цей порт використовуватиметься для стрімінгу.



На пристрої Blackmagic Streaming Encoder червона піктограма роз'єму Ethernet показує, що через цей порт ведеться потокова трансляція.



Синя піктограма смартфона показує, що він використовуватиметься для підключення до інтернету та стрімінгу.



На пристрої Blackmagic Streaming Encoder червона піктограма смартфона показує, що через нього ведеться потокова трансляція.

ПОРАДА. Якщо піктограма підключення не відображається, значить стрімінговий процесор Blackmagic не під'єднано до мережі або смартфона. Переконайтеся, що кабелі правильно підключено.

Вихід для моніторингу на пристрої Blackmagic Streaming Encoder

На пристрої Blackmagic Streaming Encoder вихід для моніторингу дозволяє виводити на дисплей вхідний відеосигнал, індикатори звуку, стан ефіру та швидкість передачі даних, а також ступінь заповнення кеш-пам'яті та службову інформацію, що надходить через порт SDI.



Вихід для моніторингу забезпечує виведення всієї необхідної інформації, зокрема швидкості передачі даних і стану кеш-пам'яті

Для впорядкованого показу даних дисплей розбито на вісім секцій. Опис інформації, що відображається в кожній із них, наведено нижче.

Вікно джерела

В основному вікні відображається відео з джерела, підключеного до порту SDI.



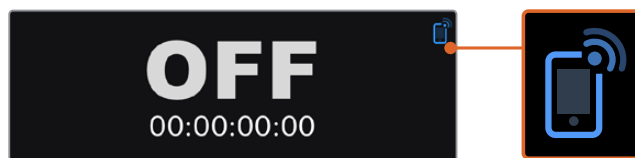
Індикатор ефіру

Коли запис вимкнено, індикатор показує OFF. Це означає, що Blackmagic Streaming Encoder перебуває в режимі очікування та готовий до трансляції. Щойно починається стрімінг, з'являється червоний напис ON AIR. Він зникає, коли мовлення припиняється.



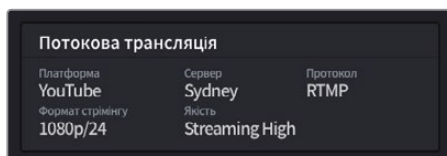
Під індикатором ефіру є лічильник тривалості. Він активується при натисканні кнопки ON AIR на пристрої Blackmagic Streaming Encoder.

Якщо Blackmagic Streaming Encoder не передає сигнал в ефір, але підключений до мережі через смартфон, у вікні відображається напис OFF, а у верхньому кутку з'являється синя піктограма смартфона. При ввімкненні стрімінгу вона стає червоною.



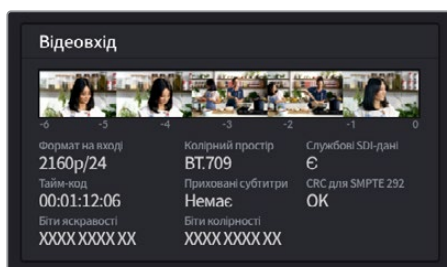
Потокова трансляція

У цьому вікні відображаються параметри потокової трансляції: стрімінгова платформа, сервер і протокол, а також роздільна здатність і якість мовлення.



Відеовхід

У верхній частині цього вікна наведено п'ять мініатюрних кадрів (1,2 секунди кожен), показаних у попередні шість секунд потокової трансляції.

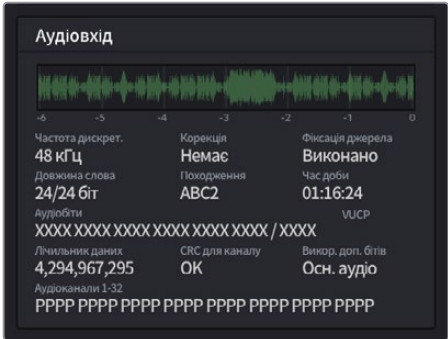


Під ними відображається докладна технічна інформація про джерело відео, підключене до SDI-входу пристрою Blackmagic Streaming Encoder.

Формат на вході	Показує роздільну здатність і кадрову частоту відео, що надходить через SDI-вхід. Blackmagic Streaming Encoder підтримує формати до 2160p/60.
Колірний простір	Відображає колірний простір відео, що надходить через SDI-вхід. Blackmagic Streaming Encoder підтримує стандарти Rec.601, Rec.709 і Rec.2020.
Службові SDI-дані	Показує додаткову інформацію, що надходить разом із SDI-відео. Сюди можуть входити звук, тайм-код і приховані субтитри. Якщо в сигналі такі дані присутні, у вікні відображатиметься «Є».
Тайм-код	Відображає тайм-код відео, що надходить через SDI-вхід.
Приховані субтитри	Якщо відеосигнал, що надходить, містить приховані субтитри, буде показано їхній формат (CEA-608 або CEA-708).
CRC для SMPTE 292	Функція для перевірки наявності порушень у відеосигналі, що надходить через SDI-вхід. Якщо Blackmagic Streaming Encoder виявляє перебії, у вікні відображається «Помилка». Це зазвичай відбувається через несправний або занадто довгий SDI-кабель.
Біти яскравості та біти колірності	Дані індикатори показують стан відеопотоку, що надходить через SDI-вхід. Кожна літера означає окремий біт сигналу. X — постійно мінливий біт. L — низький біт. H — високий біт. Щоб спростити інформацію, зсуви сигналу SDI вираховуються. Наприклад, усі біти є низькими, коли зображення чорне. Зазвичай, коли 10 бітів відеосигналу представлені літерою X, це означає, що вони всі постійно змінюються. Якщо вхідний SDI-потік є 8-бітним, два праві біти будуть показані літерою L, оскільки не несуть жодної інформації. Коли біт представлено літерою L або H, хоча очікується X, це означає, що біт «застряг». Таке може відбуватися, коли є збій у відеосигналі.

Аудіовхід

У верхній частині цього вікна розташована хвильова діаграма звуку. Вона показує дані протягом останніх шести секунд потокової трансляції. Вони постійно оновлюються та переміщуються справа наліво.

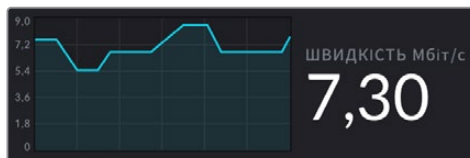


Під хвильовою діаграмою звуку наведено докладну технічну інформацію про вхідний аудіосигнал.

Частота дискретизації	Показує частоту дискретизації звуку, вбудованого в SDI-сигнал.
Корекція	Указує, чи ця опція застосовується до джерела звуку.
Фіксація джерела	Показує, чи прив'язана частота джерела звуку до зовнішнього опорного сигналу.
Довжина слова	Відображає бітову глибину звуку, вбудованого в SDI-сигнал.
Походження	Ці чотири знаки показують походження каналу.
Час доби	Незалежний тайм-код.
Аудіобіти	Показує стан бітів у звукових семплах, вбудованих в SDI-сигнал. Навіть якщо зазначено, що аудіоканал є 16-, 20- або 24-бітним, це буде підтверджено цим індикатором.
VUCP	Звукові дані за VUCP: біт достовірності відліку (V), біт даних користувача (U), біт статусу каналу (C) та біт парності (P).
Лічильник даних	Лічильник аудіоданих.
Використання допоміжних бітів	Показує, чи використовуються допоміжні біти в основному аудіоканалі.
Аудіоканали 1-32	Кожен знак є аудіоканалом, вбудованим у сигнал на SDI-вході. Літера "P" вказує на те, що цей канал використовується, а символ "-" показує, що звук відсутній.

Індикатор швидкості передачі даних

У цьому вікні відображається поточна швидкість кодування даних за останні 60 секунд. Вона вимірюється в мегабітах за секунду. Індикатор працює навіть при вимкненому ефірі, що дозволяє точно виміряти пропускну здатність перед початком мовлення.



Індикатор кеш-пам'яті

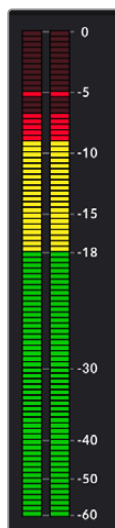
У цьому вікні відображається відсоток кеш-пам'яті пристрою Blackmagic Streaming Encoder, задіяної в даний момент, а на графіку показано обсяг, використаний за останні 60 секунд. Кеш — це невелика внутрішня пам'ять, яка постійно записує й відтворює програмний контент. Вона приходить на допомогу в тих випадках, коли швидкість передачі даних стає настільки низькою, що не в змозі забезпечити стійку трансляцію відео.

Унаслідок постійної зміни активності мережі та коливання сили бездротового сигналу передача інформації в інтернеті має змінний характер. Тому обсяг даних у буфері збільшується по мірі зменшення швидкості мовлення. Якщо швидкість з'єднання стає занадто низькою, щоб підтримувати відеопотік, обсяг даних в буфері збільшується. Щойно кеш заповниться на 100%, відеопотік послабиться, тому цього, якщо можливо, слід уникати. Щоб виконати тестування, можна підключити джерело відео та спостерігати за станом пам'яті без увімкнення стрімінгу. Якщо значення часто наближається до 100%, виберіть у налаштуваннях нижчу якість зображення.



Індикатори звуку

Моніторинг рівня вхідного аудіосигналу виконується за допомогою індикаторів звуку. Для них у налаштуваннях меню пристрою Blackmagic Streaming Encoder можна вибрати шкалу PPM або VU. Якщо рівень аудіо занадто високий, засвічуються червоні сегменти. Це може призвести до спотворення або кліпінгу звуку під час потокової трансляції. Для отримання оптимальних результатів значення мають бути в межах зеленого та жовтого сегментів.



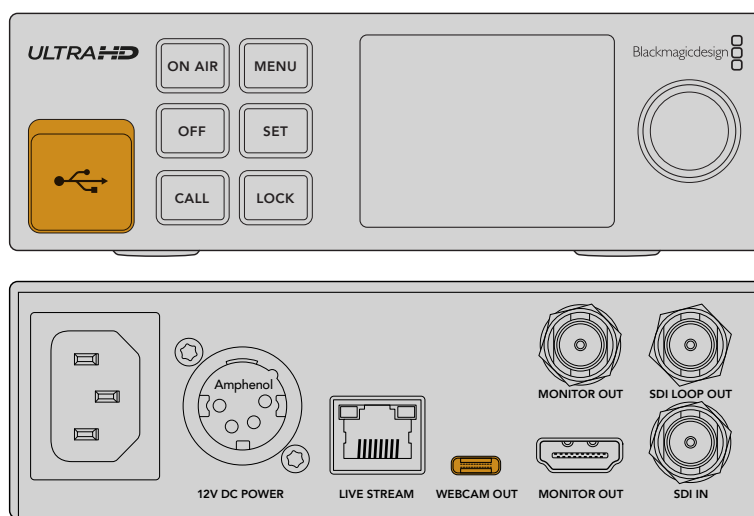
Blackmagic Streaming Setup

Утиліта Blackmagic Streaming Setup дозволяє змінювати налаштування, задавати параметри мережі та оновлювати прошивку стрімінгового процесора Blackmagic, а також зберігати й завантажувати файли налаштувань стрімінгу.

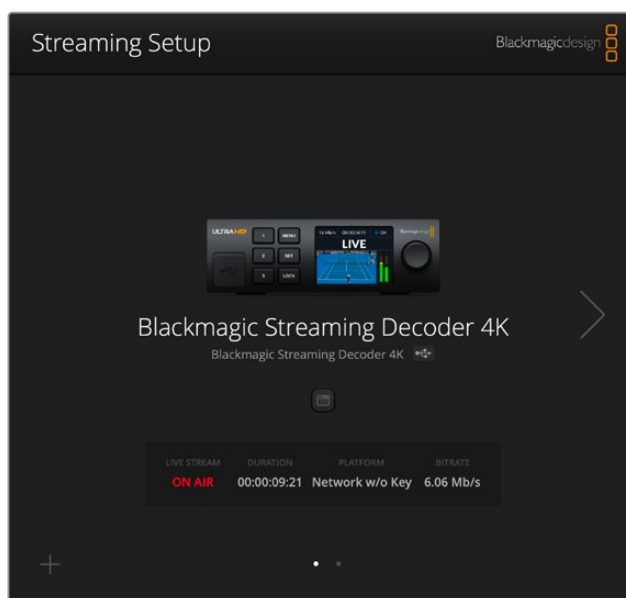
Завантажте та інсталюйте найновішу версію утиліти Blackmagic Streaming Setup із центру підтримки Blackmagic Design за адресою www.blackmagicdesign.com/ua/support

Порядок роботи з утилітою Blackmagic Streaming Setup

- 1 Підключіть стрімінговий процесор до комп'ютера через порт USB-C, розташований на передній або задній панелі.



- 2 Запустіть утиліту Blackmagic Streaming Setup. Назва підключеного стрімінгового процесора відобразиться на головній сторінці утиліти.
- 3 Щоб відкрити вкладку налаштувань, клацніть квадратну піктограму або зображення стрімінгового процесора Blackmagic. Якщо до мережі підключено кілька стрімінгових процесорів, перейдіть до потрібної моделі за допомогою бічних стрілок.



Live Stream («Потокова трансляція»)

Вкладка Live Stream містить параметри для налаштування потокової трансляції на стрімінговому процесорі.

Blackmagic Streaming Encoder

На вкладці Live Stream пристрою Blackmagic Streaming Encoder містяться параметри для налаштування якості потокової трансляції, вибору платформи та завантаження XML-файлу налаштувань стрімінгу.

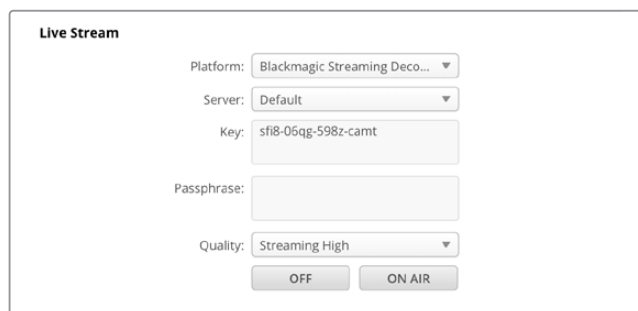
Video Output («Відеовихід»)



У полі Stream Standard можна встановити роздільну здатність відео для потокової трансляції. Доступні значення від 720p/25 до 2160p/60.

Live Stream («Потокова трансляція»)

У секції Live Stream можна вибрати платформу, а також параметри та якість стрімінгу.



Platform («Платформа»)

Це меню дозволяє вибрати стрімінгову платформу для трансляції. До списку входять Facebook, YouTube і Twitch. Якщо імпортовані додаткові користувацькі налаштування, вони також відобразяться в списку платформ.

Щоб виконати стрімінг на спеціальну URL-адресу, виберіть опцію Custom URL. Стрімінг можна вести у кодеку H.264 або H.265.

Server («Сервер»)

Укажіть найближчий до вашого розташування сервер. Список доступних серверів залежатиме від вибраної стрімінгової платформи.

Якщо стрімінг виконується на Instagram, Microsoft Teams або спеціальну URL-адресу, список доступних серверів буде в полі, яке можна редагувати. Введіть URL-адресу, отриману від стрімінгової платформи, або спеціальну URL-адресу.

Key («Ключ»)

Введіть ключ трансляції, виданий стрімінговою платформою.

Passphrase («Парольна фраза»)

Якщо використовується стрімінговий сервіс за протоколом SRT, введіть парольну фразу, отриману від стрімінгової платформи.

Quality («Якість»)

Виберіть якість стрімінгу. У таблиці нижче наведено швидкість передачі даних у кодах H.264 та H.265.

H.264	
HD	4K
HyperDeck High: від 45 до 70 Мбіт/с	HyperDeck High: від 95 до 220 Мбіт/с
HyperDeck Medium: від 25 до 45 Мбіт/с	HyperDeck Medium: від 66 до 150 Мбіт/с
HyperDeck Low: від 12 до 20 Мбіт/с	HyperDeck Low: від 38 до 80 Мбіт/с
Streaming High: від 6 до 9 Мбіт/с	Streaming High: від 34 до 51 Мбіт/с
Streaming Medium: від 4,5 до 7 Мбіт/с	Streaming Medium: від 23 до 35 Мбіт/с
Streaming Low: від 3 до 4,5 Мбіт/с	Streaming Low: від 13 до 20 Мбіт/с

H.265	
HD	4K
Streaming High: від 2,3 до 4,5 Мбіт/с	Streaming High: від 22,5 до 30 Мбіт/с
Streaming Medium: від 1,5 до 3 Мбіт/с	Streaming Medium: від 14 до 20 Мбіт/с
Streaming Low: від 0,8 до 2 Мбіт/с	Streaming Low: від 8 до 10 Мбіт/с

Швидкість передачі даних змінюється залежно від відеоформату, який використовується на пристрої Blackmagic Streaming Encoder. Наприклад, якщо вибрано опцію Streaming High і зображення виводиться в 1080p/24, швидкість становитиме 6 Мбіт/с.

Указана в таблиці швидкість передачі даних при стрімінгу нижча порівняно з показниками рекордера HyperDeck. Це пояснюється тим, що при трансляції контенту через інтернет пропускна здатність мережі не така висока, як при записі інформації на диск.

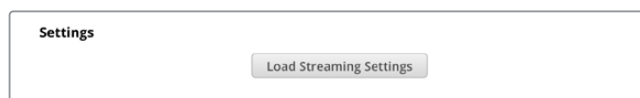
Як видно з наведених вище даних, у кожного параметра є нижня та верхня межі. Менше число використовується для кадрових частот 24p, 25p та 30p, а більше — для 50p та 60p. За замовчуванням застосовується опція Streaming High, тому що вона дозволяє вести стрімінг дуже високої якості.

Кнопки OFF і ON AIR

Кнопка ON AIR дозволяє починати стрімінг, а OFF — зупиняти. Під час потокової трансляції кнопка ON AIR світиться червоним кольором.

Settings («Налаштування»)

Для завантаження XML-файлу налаштувань стрімінгу з пристрою Blackmagic Streaming Encoder натисніть кнопку Load Streaming Settings і дотримуйтесь інструкцій на екрані.

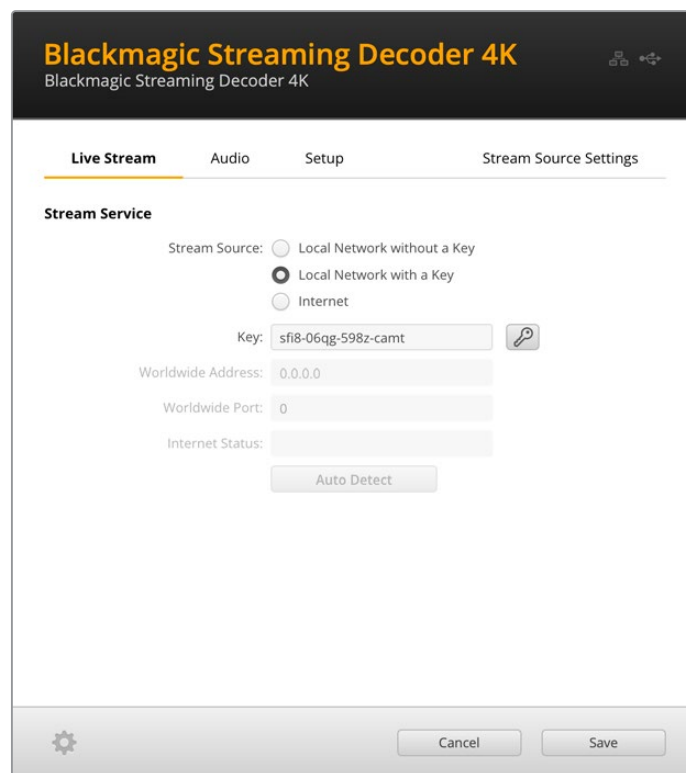


Видалення імпортованих налаштувань

Для видалення всіх імпортованих налаштувань стрімінгу з пристрою Blackmagic Streaming Encoder клацніть піктограму шестерні в нижньому лівому кутку вкладки Live Stream. Натисніть кнопку Remove, щоб підтвердити вибір.

Blackmagic Streaming Decoder

На вкладці Live Stream пристрою Blackmagic Streaming Decoder можна вибрати джерело стрімінгу й установити параметри інтернет-з'єднання декодера.



Stream Service («Стрімговий сервіс»)

У секції Stream Service можна задати параметри підключення пристрою Blackmagic Streaming Decoder до віддаленого Blackmagic Streaming Encoder, камери Blackmagic або відеомікшера ATEM із вбудованою функцією стрімінгу.

Stream Source («Джерело стрімінгу»)

Для вибору джерела стрімінгу використовують меню Stream Source. У ньому доступні опції Local Network without a Key, Local Network with a Key та Internet.

Key («Ключ»)

Оскільки для стрімінгу користувачі можуть вибирати в мережі будь-який Blackmagic Streaming Decoder, для запобігання плутанині та конфлікту потоків передбачено встановлення ключа трансляції.

Це своєрідний пароль, що блокує доступ до пристрою Blackmagic Streaming Decoder. Його можна встановити за допомогою утиліти Streaming Setup. Після введення пароля в поле ключа трансляції передача сигналу на Blackmagic Streaming Decoder буде можлива тільки з тих пристроїв, у налаштування яких додано аналогічний ключ трансляції.

Пароль можна ввести самому або використати передбачену для цього в утиліті Streaming Setup кнопку спеціального генератора. Він створить надійніший код. Потім даний пароль легко скопіювати та надіслати тим, кому дозволено доступ. Їм вдасться підключитися до моделі Blackmagic Streaming Decoder тільки після додавання ключа в налаштування пристрою Blackmagic Streaming Encoder, камери Blackmagic або відеомікшера ATEM.

Підключення до інтернету

На першому етапі необхідно підключити Blackmagic Streaming Decoder до інтернету. Це завдання ускладнюється тим, що він має бути доступним для виявлення на пристрої Blackmagic Streaming Encoder, камері Blackmagic або відеомікшері ATEM незалежно від географічного положення. Щоб установити з'єднання між двома пристроями, потрібно задати кілька додаткових налаштувань.

Що для цього потрібно

Насамперед Blackmagic Streaming Decoder, Blackmagic Streaming Encoder і камеру Blackmagic або відеомікшер ATEM, на який надходитиме стрімінговий сигнал, необхідно забезпечити виходом в інтернет. Для пристрою Blackmagic Streaming Decoder також потрібна загальнодоступна IP-адреса. Вона має бути фіксованою, тобто постійною.

Проблема полягає в тому, що Blackmagic Streaming Decoder розташований у локальній мережі Ethernet, але має бути доступним для виявлення в інтернеті. Blackmagic Streaming Decoder використовує переспрямування порту в брандмауері, щоб забезпечити підключення до пристрою Blackmagic Streaming Encoder, камери Blackmagic або відеомікшера ATEM через інтернет-з'єднання. Якщо не виконати потрібне налаштування, Blackmagic Streaming Encoder, камера або відеомікшер ATEM не зможе знайти Blackmagic Streaming Decoder.

У цьому випадку потрібно звернутися до інтернет-провайдера або адміністратора мережі, щоб вони встановили налаштування "TCP port 1935" для переспрямування порту. Blackmagic Streaming Decoder також спробує задати необхідні параметри самостійно, оскільки здебільшого брандмауери підтримують протоколи автоматичного виконання таких дій. Цілком можливо, що при початковому налаштуванні за допомогою утиліти Streaming Setup та обміну даними між декодером і мережею буде зроблено саме це.

Підтвердження доступу до інтернету

Внизу вікна налаштувань є поле Internet Status. Воно дозволяє відслідковувати стан підключення до інтернету, коли виконується спроба встановити з'єднання між пристроєм Blackmagic Streaming Decoder і глобальною мережею. Якщо відображається текст "Connected", декодер налаштовано для переспрямування порту в конфігурації використовуваного обладнання та підключено до інтернету.

ПРИМІТКА. Відкриття портів для зовнішнього трафіку може зменшити захищеність мережі. Якщо є побоювання з цього приводу, краще звернутися до служби підтримки інтернет-провайдера або до адміністратора мережі.

Якщо поле Internet Status не містить тексту "Visible Worldwide", потрібно вручну налаштувати переспрямування порту в брандмауері. Деякі брандмауери не підтримують автоматичне встановлення цього параметра, але ручний спосіб доступний у всіх випадках.

Якщо у вас немає доступу до налаштувань маршрутизатора або ви не знаєте, як задати переспрямування порту, зверніться до служби підтримки інтернет-провайдера. У системах із великою інфраструктурою вирішити це завдання та забезпечити відсутність конфліктів у мережі зможе адміністратор мережі.

Internet Status («Стан інтернету»)

Поле Internet Status дозволяє відслідковувати стан підключення до інтернету та ідентифікувати потенційні проблеми. Нижче наведено можливі варіанти та способи усунення помилок.

Visible Worldwide	Підключення виконано коректно та працює. Переспрямування порту налаштовано, а пристрій Blackmagic Streaming Decoder готовий отримувати сигнал через інтернет.
No Internet Access	Blackmagic Streaming Decoder не може виконати підключення до інтернету. Необхідно перевірити параметри мережі й інтернет-з'єднання.
Port Forwarding Error	Підключення до інтернету може бути виконане, проте переспрямування порту в брандмауері через Blackmagic Streaming Decoder не налаштовано, тому пристрій недоступний для виявлення в глобальній мережі. Необхідно звернутися по допомогу до адміністратора мережі.
UPnP error	Blackmagic Streaming Decoder не може виконати переспрямування порту на інтернет-маршрутизаторі. Необхідно звернутися по допомогу до адміністратора мережі або ознайомитися з документацією маршрутизатора для встановлення потрібних налаштувань.

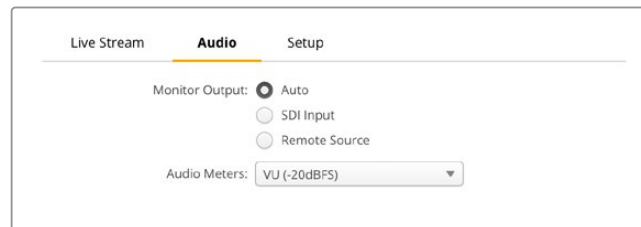
Автовизначення

Для автоматичного визначення налаштувань інтернет-з'єднання натисніть кнопку Auto Detect.

Audio («Аудіо»)

На цій вкладці можна налаштувати вихід для моніторингу аудіо, двосторонній зв'язок та індикатори звуку стрімінгового процесора.

Blackmagic Streaming Encoder



Monitor Output («Вихід для моніторингу»)

Тут можна вибрати джерело, звук із якого виводитиметься через SDI- та HDMI-виходи для моніторингу пристрою Blackmagic Streaming Encoder.

Auto («Автоматично»)

Коли для опції Monitor Output вибрано налаштування Auto, Blackmagic Streaming Encoder автоматично визначатиме та стежитиме за передачею голосових повідомлень із відеомікшера ATEM через Blackmagic Streaming Decoder. Якщо сигнал двостороннього зв'язку не виявлено, то використовуватиметься звук з SDI-входу.

SDI Input («Вхід SDI»)

Налаштування SDI Input вибирають для моніторингу аудіосигналу з входу SDI пристрою Blackmagic Streaming Encoder, наприклад, підключеної камери Blackmagic Studio.

Remote Source («Віддалене джерело»)

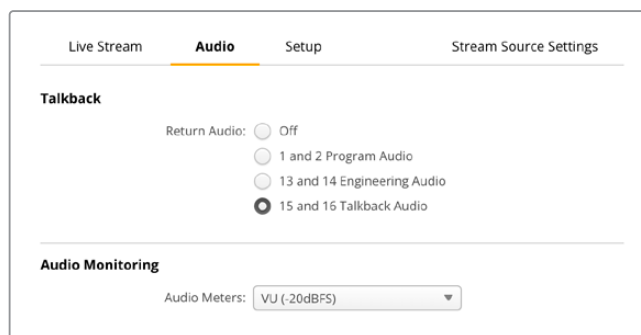
Використовуйте налаштування Remote Source для моніторингу сигналу двостороннього зв'язку, який надходить із дистанційно підключеного відеомікшера ATEM або пристрою Blackmagic Streaming Decoder.

Audio Meters («Індикатори звуку»)

Тут у меню Audio Meters можна вибрати опорну шкалу для індикаторів звуку. Доступні опції: VU -18 dBFS, VU -20 dBFS, PPM -18 dBFS або PPM -20 dBFS.

Blackmagic Streaming Decoder

На вкладці Audio пристрою Blackmagic Streaming Decoder можна вибрати канали двостороннього зв'язку та налаштувати індикатори звуку для РК-дисплея, розташованого на передній панелі.



Talkback («Двосторонній зв'язок»)

У цій секції можна вибрати зворотні звукові канали для дистанційно підключеного пристрою Blackmagic Streaming Encoder. Доступні опції: Off, 1 and 2 Program Audio, 13 and 14 Engineering Audio та 15 and 16 Talkback Audio.

Audio Monitoring («Моніторинг звуку»)

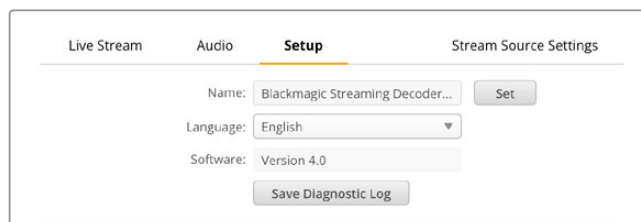
Тут у меню Audio Meters можна вибрати опорну шкалу для індикаторів звуку, що виводяться на РК-дисплей, розташований на передній панелі. Доступні опції: VU -18 dBFS, VU -20 dBFS, PPM -18 dBFS або PPM -20 dBFS.

Setup («Налаштування»)

На вкладці Setup можна перейменувати стрімінговий процесор, змінити параметри мережі та повернути пристрій до початкового стану. При роботі з моделлю Blackmagic Streaming Decoder тут також є опції для налаштування способу синхронізації та вибору типу SDI-виходу.

Налаштування ідентифікації

У цій секції можна задати ім'я стрімінгового процесора та вибрати мову інтерфейсу.



Введення користувацького імені полегшує ідентифікацію пристрою, коли до мережі підключено кілька стрімінгових процесорів Blackmagic. Це ім'я також буде скопійовано в поле Network location.

Крім того, у цій секції відображається поточна версія програмного забезпечення.

Network Settings («Параметри мережі»)

Network Location («Мережеве розташування»)

У полі Network Location вказано ім'я стрімінгового процесора Blackmagic, яке з'явиться в реєстрі. Воно відповідає імені, введеному в полі Name. Варто зазначити, що цифрові префікси не використовуватимуться.

MAC Address («MAC-адреса»)

Відображає MAC-адресу стрімінгового процесора. Вона є унікальним ідентифікатором пристрою, під'єданого до кожного Ethernet-порту. Її використовують у системах захисту мереж, щоб обмежити доступ до пристроїв.

Protocol («Протокол»)

Для підключення стрімінгового процесора до мережі можна використовувати протокол DHCP або статичну IP-адресу.

DHCP	У стрімінгових процесорах Blackmagic за замовчуванням задано протокол DHCP. DHCP — це протокол динамічного налаштування вузла, який використовується мережевими серверами для автоматичного виявлення стрімінгового процесора та присвоєння йому IP-адреси. Ця функція значно полегшує підключення обладнання через Ethernet і не допускає конфліктів IP-адрес. Більшість комп'ютерів і мережних відеомікшерів підтримують протокол DHCP.
Static IP («Статична IP-адреса»)	Коли вибрано опцію Static IP, параметри мережі можна задати вручну. Щоб між пристроями існував канал зв'язку, вони повинні мати однакові налаштування маски підмережі та шлюзу.

Якщо застосовується статична IP-адреса, а її ідентифікуючий сегмент уже використовується іншим пристроєм мережі, через конфлікт налаштувань підключення не буде здійснено. У цьому випадку необхідно змінити останнє поле в IP-адресі.

Наприклад, якщо конфліктною адресою є 192.100.40.30, змініть останній сегмент (30) на будь-яке інше число. Виконуйте цю дію, доки не знайдете цифровий ідентифікатор, який не використовується жодним іншим пристроєм.

Connection Priority («Пріоритет підключення»)

Коли стрімінговий процесор Blackmagic підключено до мережі Ethernet і до мобільного телефона, це налаштування дозволяє вибрати спосіб передачі сигналу під час стрімінгу. Докладні відомості див. в розділі «Стрімінг за допомогою смартфона».

Allow Utility Administration («Дозвіл користування утилітою»)

Щоб будь-хто в мережі випадково не вніс зміни в налаштування, можна активувати опцію via USB, яка дозволяє керувати пристроєм із комп'ютера тільки через цей інтерфейс.

Reset («Скидання»)

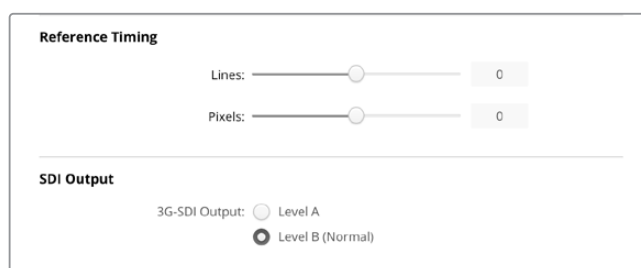
Щоб повернути стрімінговий процесор Blackmagic до початкового стану, клацніть Factory Reset. Після натискання кнопки SET з'явиться повідомлення із запитом підтвердити дію.

Щоб продовжити, клацніть Reset.



Blackmagic Streaming Decoder

Крім секцій ідентифікації та параметрів мережі, при роботі з пристроєм Blackmagic Streaming Decoder вкладка Setup має наведені нижче налаштування.



Reference Timing («Спосіб синхронізації»)

Це налаштування дозволяє вручну встановлювати спосіб синхронізації — за рядками або пікселями. Blackmagic Streaming Decoder має аналоговий синхровхід (Tri-Sync і Black burst), а також SDI-вхід, який може слугувати для прийому опорного сигналу. Синхронізація використовується великими мовними компаніями, коли необхідно забезпечити узгодженість усіх відеопотоків.

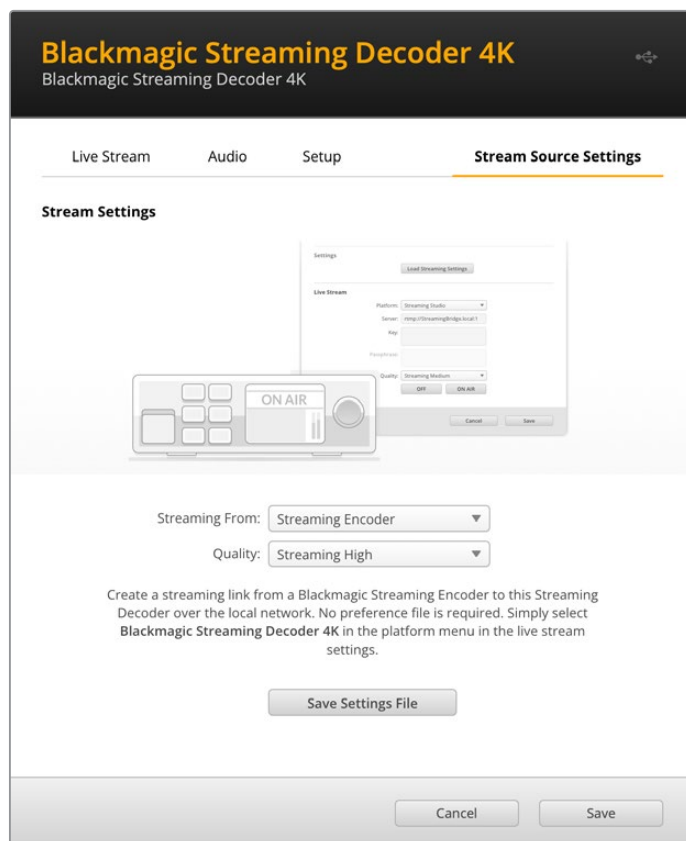
SDI Output («Вихід SDI»)

При використанні інтерфейсу 3G-SDI деяке мовне обладнання підтримує лише один рівень. Щоб забезпечити сумісність із підключеною технікою, виберіть відповідний тип виведення через вихід 3G-SDI. За замовчуванням використовується Level B.

Stream Source Settings («Налаштування джерела стрімінгу»)

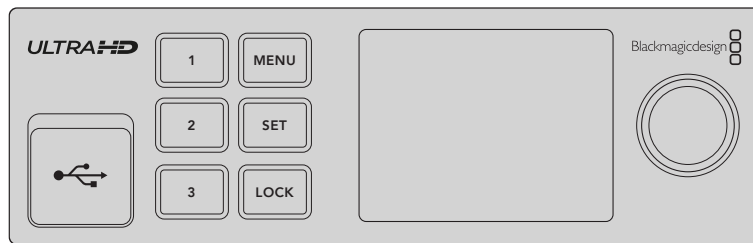
При роботі з пристроєм Blackmagic Streaming Decoder на вкладці Stream Source Settings можна створювати XML-файли налаштувань стрімінгу, а потім завантажувати їх у віддалений стрімінговий кодер, камеру Blackmagic або відеомікшер ATEM, які мають вбудовану функцію стрімінгу.

Докладні відомості про створення XML-файлів налаштувань стрімінгу див. в розділі «Створення каналу мовлення» нижче.



Створення каналу мовлення

За допомогою стрімінгового процесора Blackmagic потокову трансляцію можна виконувати як через локальну мережу, так і в будь-яку точку світу через інтернет.



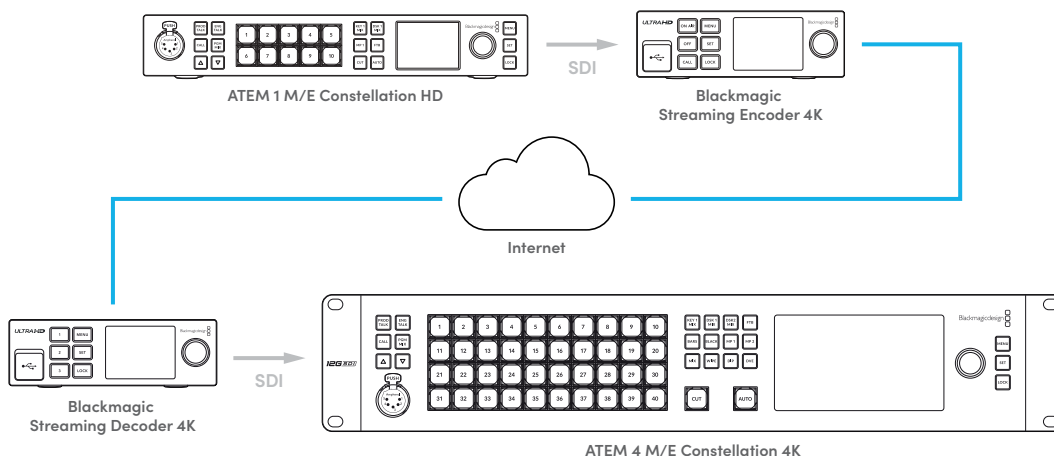
Якщо Blackmagic Streaming Decoder підключено до тієї ж локальної мережі, що й Blackmagic Streaming Encoder, він відобразиться в меню Platform вкладки Live Stream утиліти Blackmagic Streaming Setup. Докладні відомості про налаштування потокової трансляції через локальну мережу див. в розділі «Підготовка до роботи».

Для ведення стрімінгу через інтернет або через локальну мережу, використовуючи ключ трансляції для підвищеного рівня безпеки, на пристрої Blackmagic Streaming Decoder можна створити XML-файл налаштувань стрімінгу, а потім завантажити його в Blackmagic Streaming Encoder за допомогою утиліти Blackmagic Streaming Setup.

ПОРАДА. XML-файли налаштувань стрімінгу також можна експортувати для камер Blackmagic і відеомікшерів ATEM, що мають вбудовану функцію стрімінгу. Докладні відомості про імпорт файлів налаштувань див. в посібнику з експлуатації відповідної камери Blackmagic або відеомікшера ATEM.

Як приклад спільного використання стрімінгових процесорів Blackmagic наведемо передачу в студію відомостей про погоду з віддаленого місця. Для цього на локації потрібно мати Blackmagic Streaming Encoder і доступ до інтернету. До нього можна підключитися через смартфон або мережу.

Розташований у студії Blackmagic Streaming Decoder приймає потік, що надходить через інтернет, і перетворює його в SDI-сигнал для передачі на основний відеомікшер.



У цьому випадку потрібно виконати наведені нижче кроки.

- 1 Підключіть розташований на локації пристрій Blackmagic Streaming Encoder до програмного SDI-виходу на відеомікшері. Використаємо, наприклад, ATEM 1 M/E Constellation HD.
- 2 Підключіть Blackmagic Streaming Encoder до смартфона.
- 3 Підключіть розташований у студії Blackmagic Streaming Decoder до інтернету через Ethernet.
- 4 Blackmagic Streaming Decoder 4K прийматиме сигнал, що надходить через інтернет, перетворюватиме та передаватиме його на SDI-вхід студійного відеомікшера для трансляції в програмі новин.

Щоб розташований у студії стрімінговий декодер приймав через інтернет потік від стрімінгового кодера, слід установити необхідні параметри за допомогою утиліти Blackmagic Streaming Setup. Для цього також можна експортувати XML-файл налаштувань стрімінгу, який легко завантажити у стрімінговий кодер на локації.

Створення XML-файлу

Щоб створити XML-файл налаштувань, під'єднайте Blackmagic Streaming Decoder до інтернету, підключивши відповідним кабелем порт LIVE STREAM до маршрутизатора або мережевого комутатора.

З'єднайте стрімінговий декодер із комп'ютером за допомогою кабелю USB-C та запустіть утиліту Blackmagic Streaming Setup. Перевірте параметри мережі на вкладці Live Stream і в секції Stream Service виберіть опцію Internet. У полі стану підключення до інтернету має з'явитися текст Visible Worldwide. Це означає, що підключення виконано коректно та працює. Докладні відомості про налаштування стрімінгового декодера див. в розділі "Blackmagic Streaming Setup" > "Stream Service" («Стрімінговий сервіс»).

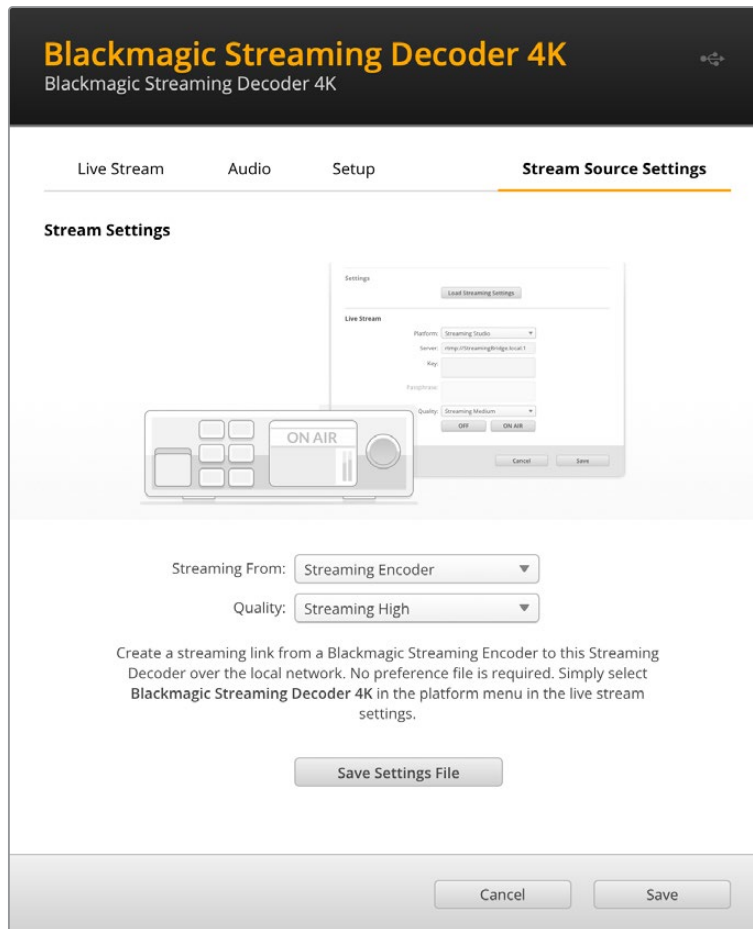
Додаткова інформація щодо переспрямування портів

Якщо в полі Internet Status відображається помилка UPnP або переспрямування портів, необхідно звернутися до інтернет-провайдера або адміністратора мережі, щоб він установив налаштування TCP port 1935.

Експорт XML-файлу

Після підтвердження налаштувань на вкладці Setup утиліти Blackmagic Streaming Setup і успішного підключення стрімінгового декодера до локальної мережі або інтернету можна експортувати XML-файл.

- 1 Виберіть вкладку Stream Source Settings у верхньому правому кутку вікна.



- 2 У меню Streaming From виберіть Streaming Encoder.

При створенні XML-файлу налаштувань стрімінгу для камери Blackmagic або відеомікшера ATEM, що має вбудовану функцію стрімінгу, у меню Streaming From виберіть ATEM Switcher або Blackmagic Camera.

- 3 Виберіть необхідну якість стрімінгу. Це налаштування задає параметри якості на віддаленому пристрої Blackmagic Streaming Encoder.
- 4 Натисніть кнопку Save Settings File і виберіть місце для зберігання файлу на комп'ютері.

Після зберігання файлу налаштувань його можна надіслати електронною поштою віддаленому оператору пристрою Blackmagic Streaming Encoder.

ПОРАДА. У налаштуваннях двостороннього зв'язку на вкладці Audio можна вибрати канали, які надсилатимуться на віддалений стрімінговий кодер.

Завантаження XML-файлу

XML-файл налаштувань стрімінгу можна отримати на локації електронною поштою та завантажити його у Blackmagic Streaming Encoder за допомогою утиліти Blackmagic Streaming Setup. Після цього для початку трансляції до студії відомостей про погоду достатньо натиснути кнопку ON AIR.

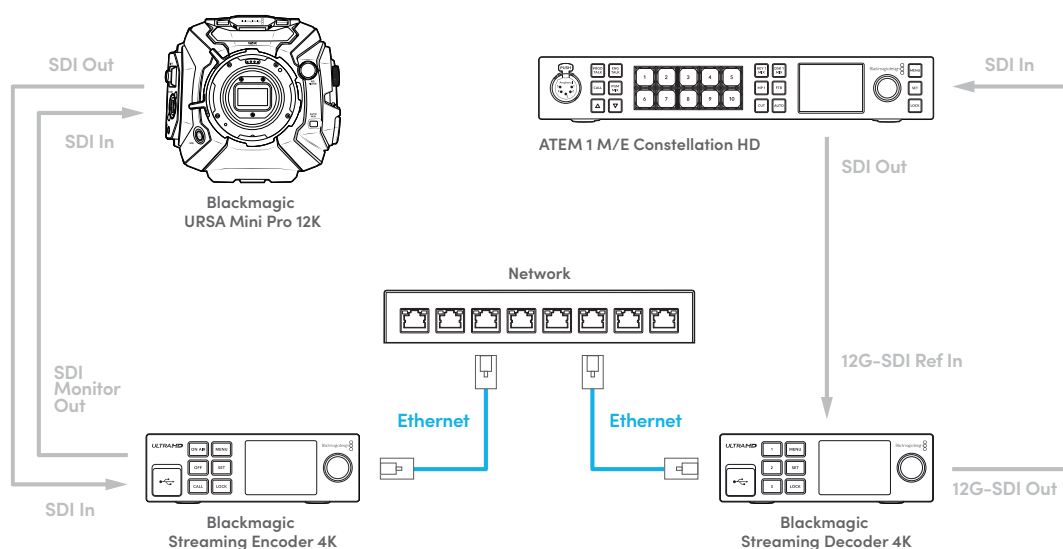
Варто зазначити, що XML-файл налаштувань стрімінгу потрібно завантажити лише один раз, після чого трансляцію можна вести багаторазово. Це значно полегшує встановлення постійного відеоканалу між стрімінговим кодером і декодером.

Якщо на розташованому в студії стрімінговому декодері не змінювати налаштування мережі, стрімінгу та виявлення стрімінгового кодера, зв'язок із ним збережеться незалежно від його місцезнаходження. Достатньо просто підключити стрімінговий кодер до інтернету, натиснути кнопку ON AIR, і рішення відразу почне транслювати сигнал на стрімінговий декодер.

Двосторонній зв'язок, індикація стану та керування камерою

Стрімінгові процесори Blackmagic також дозволяють відеомікшерам ATEM передавати сигнали індикації стану, двостороннього зв'язку та керування камерою. Таким чином, камери Blackmagic Design, що мають SDI-інтерфейс і підключені до локальної мережі або у віддаленому режимі до інтернету, зможуть отримувати всі ці сигнали.

Налаштувати зв'язок надзвичайно просто. На ілюстрації нижче показано, як підключити камеру URSA Mini Pro 12K до відеомікшера ATEM 1 M/E Constellation HD через локальну мережу для передачі сигналів індикації стану, двостороннього зв'язку та керування камерою.



Порядок дій після підключення

- 1 Натисніть кнопку MENU на пристрої Blackmagic Streaming Encoder, щоб відкрити екранне меню, і перейдіть до меню «Потокова трансляція».
- 2 Виберіть Blackmagic Streaming Decoder у меню «Платформа».
- 3 Натисніть кнопку SET, щоб підтвердити вибір.

Щоб індикація стану правильно працювала, переконайтеся, що номер камери в ATEM відповідає входу на відеомікшері, до якого її під'єднано. Докладні відомості про призначення номера камери в ATEM див. в посібнику з URSA Mini.

Щоб перевірити роботу індикації стану, на відеомікшері АТЕМ виберіть камеру джерелом програмного сигналу. Якщо на камері номер встановлено правильно, на ній засвітиться індикатор стану, а довкола РК-дисплея камери з'явиться червона рамка. При переключенні камери в режим перегляду індикатор стає зеленим.

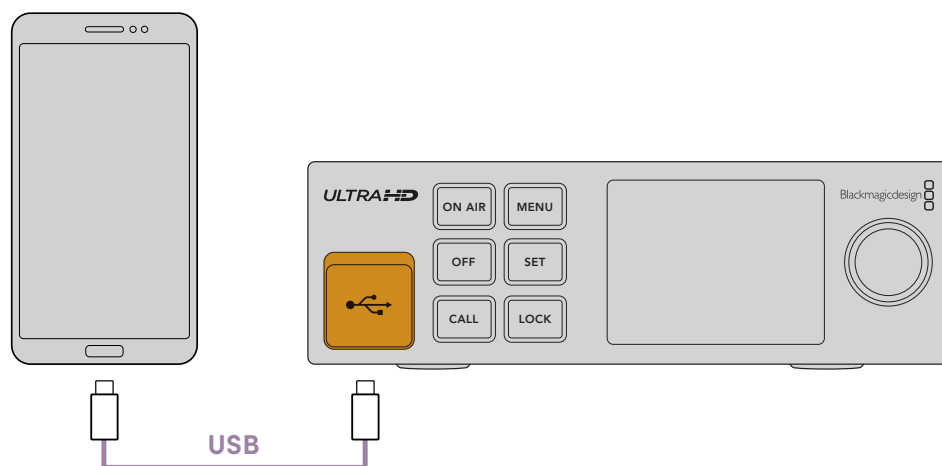
Щоб перевірити керування камерою, спробуйте змінити налаштування діафрагми та рівня чорного в додатку АТЕМ Software Control.

За замовчуванням двосторонній зв'язок для виробничої групи вбудовано в SDI-канали 15 і 16. Їх можна замінити на 13 і 14, які призначені для переговорів із технічною командою, або на програмний вихід за допомогою утиліти Blackmagic Streaming Setup.

При трансляції контенту через інтернет за допомогою утиліти Blackmagic Streaming Setup створюється XML-файл налаштувань. Потім його завантажують у Blackmagic Streaming Encoder, щоб пристрій зміг знайти Blackmagic Streaming Decoder в інтернеті. Докладні відомості про створення та імпорт XML-файлу налаштувань див. в попередньому розділі цього посібника.

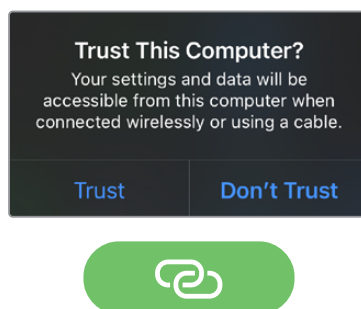
Стрімінг за допомогою смартфона

Стрімінгові процесори Blackmagic можна підключити до інтернету через модем смартфона. Для цього достатньо під'єднати смартфон до порту USB-C на передній або задній панелі рішення. Це дозволяє швидко налаштовувати та отримувати чи надсилати стрімінговий потік через смартфон на будь-якій локації, де є доступ до мобільної мережі 4G або 5G.



Підключення до інтернету за допомогою мобільного телефона

- 1 На пристрої з операційною системою iOS відкрийте «Параметри» > «Власний хот-спот» і ввімкніть опцію «Дозволити приєднуватися іншим».
- 2 З'явиться повідомлення з проханням підтвердити довіру підключеному комп'ютеру. Виберіть «Довіряти», після чого на екрані з'явиться зелена піктограма режиму модема. Це вказує на успішне встановлення зв'язку.



Коли активовано режим модема, годинник смартфона матиме зелений фон.

На пристрої з Android відкрийте швидке меню. Натисніть і утримуйте піктограму точки доступу. Потім активуйте опцію «USB-модем».

ПОРАДА. Після завершення стрімінгу радимо вимкнути режим модема, щоб зберегти заряд батареї смартфона.

Потокова трансляція в інтернеті

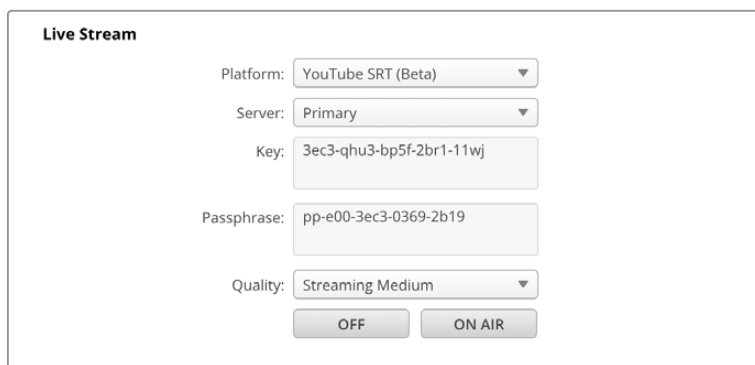
Blackmagic Streaming Encoder дозволяє вести стрімінг на таких платформах, як YouTube, Facebook і Twitch. У цьому випадку підготуємо пристрій для трансляції на сервісі YouTube Live.

- 1 Скопіюйте ключ трансляції зі свого облікового запису YouTube Studio.
- 2 Відкрийте утиліту Blackmagic Streaming Setup і перейдіть на вкладку Live Stream.
- 3 Виберіть платформу YouTube і сервер Primary. Вставте ключ трансляції YouTube у поле Key та вкажіть якість стрімінгу. Натисніть кнопку Save.
- 4 Усе готово до початку потокової трансляції. Натисніть кнопку ON AIR у діалоговому вікні або на передній панелі пристрою. Щоб зупинити мовлення, натисніть кнопку OFF.

Використання стрімінгового протоколу SRT

SRT — це протокол безпечного транспортування відео, який забезпечує меншу затримку під час стрімінгу порівняно з протоколом RTMP. SRT підвищує рівень безпеки завдяки використанню паролльної фрази, що подібно до ключа шифрування.

При виборі стрімінгового сервісу з протоколом SRT скопіюйте парольну фразу та ключ трансляції зі свого стрімінгового облікового запису та вставте їх у поля Key та Passphrase утиліти Blackmagic Streaming Setup.



Вставте парольну фразу в поле Passphrase утиліти

Протоколи RTMP та SRT, а також кодеки H.264 і H.265 можна змінити в XML-файлі. Ці операції найкраще виконувати досвідченим фахівцям. Докладні відомості див. в розділі «Інформація для розробників» > "Blackmagic Streaming XML Format".

Використання виходу WEBCAM OUT

Такі програми, як Zoom або Microsoft Teams, мають автоматично використовувати стрімінговий процесор Blackmagic як вебкамеру. При запуску додатка відразу з'явиться відео, що надходить із пристрою. Якщо стрімінговий кодер або декодер не вибирається автоматично, налаштування вебкамери та мікрофона можна задати вручну.

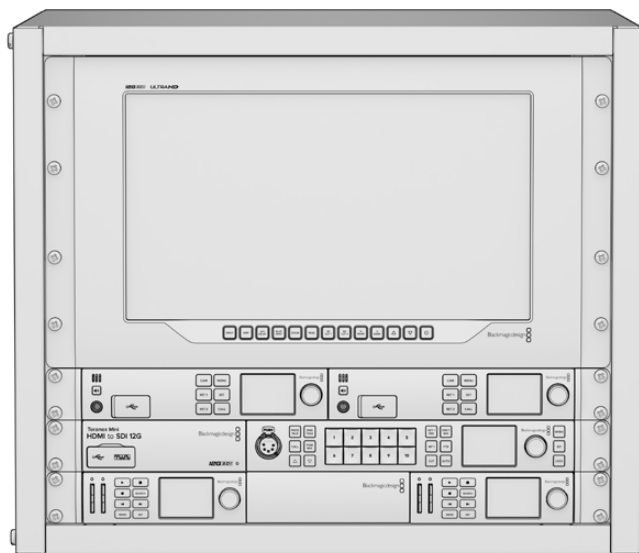
Нижче наведено порядок налаштування при роботі з додатком Microsoft Teams.

- 1 Підключіть комп'ютер до порту WEBCAM OUT на задній панелі стрімінгового процесора Blackmagic за допомогою кабелю USB-C.
- 2 У меню Microsoft Teams відкрийте «Параметри» та виберіть «Пристрої».
- 3 На панелі «Аудіо» клацніть меню «Мікрофон» і виберіть Blackmagic Design як джерело звуку.
- 4 Перейдіть до панелі «Відео» й виберіть стрімінговий процесор Blackmagic у меню «Камера».

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelf — це полиця розміром 1 RU, яка дає змогу встановлювати в стійку або мобільний кейс різноманітне обладнання Blackmagic Design. Модульний дизайн полиці дозволяє створювати з пристроїв однакового форм-фактору зручні, портативні станції.

На ілюстрації нижче показано невеличку стійку, у якій на трьох полицях Universal Rack Shelf розміщено кілька одиниць обладнання. На нижній полиці встановлено заглушку 1/3 RU для заповнення проміжку між пристроями.



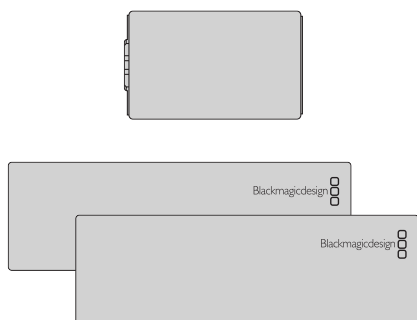
Вміст

Universal Rack Shelf Kit містить наведені нижче компоненти.



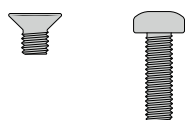
Одна полиця Blackmagic Universal Rack Shelf

Полиця розміром 1 RU для встановлення обладнання Blackmagic Design.



Заглушки

Одна заглушка 1/6 RU і дві 1/3 RU для встановлення в проміжках.



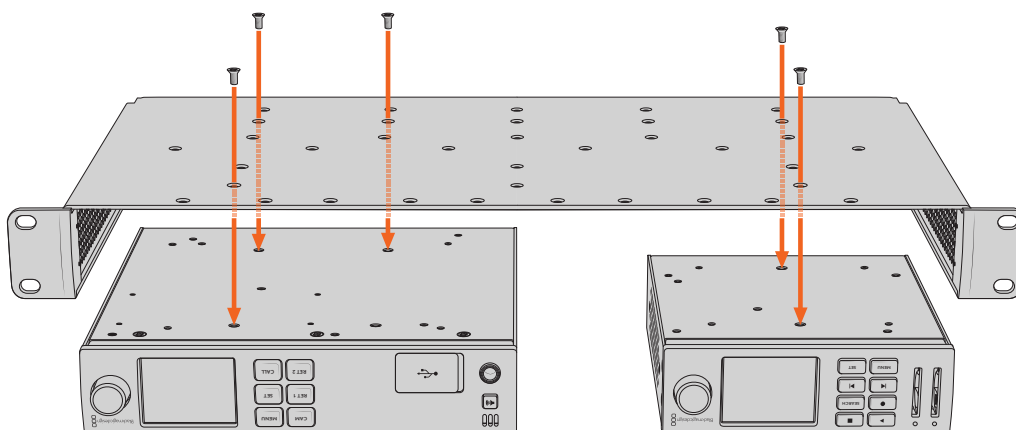
Гвинти

12 гвинтів M3 (5 мм) із потайною головкою.

Два гвинти M3 (9 мм) із плоскою головкою для заглушки 1/6 RU.

Установлення пристрою на полиці

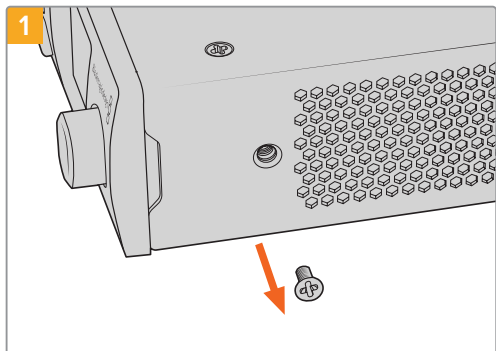
- 1 Якщо на пристрої є гумові ніжки, зніміть їх за допомогою пластикового скребка.
- 2 Перевернувши пристрій і полицю, сумістіть розташовані на них отвори для гвинтів. На устаткуванні 1/3 RU передбачено дві центральні точки кріплення, а на більших моделях 1/2 RU таких точок три.



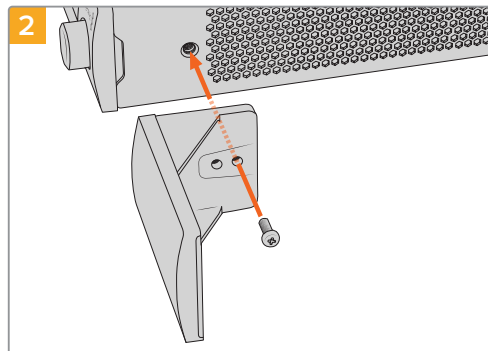
- 3 За допомогою гвинтів M3 (5 мм) із потайною головкою закріпіть пристрій на полиці.
 - 4 Переверніть полицю й установіть її в стійку, використовуючи інтегровані бокові скоби.
- На порожніх ділянках можна розмістити заглушки з комплекту постачання.

Порядок установлення заглушки 1/6 RU

Коли встановлено пристрої 1/2 RU та 1/3 RU, на порожній ділянці можна помістити невеличку заглушку 1/6 RU. Її прикріплюють до боку одного з пристроїв. Для забезпечення належної вентиляції радимо встановлювати заглушку між пристроями.



Викрутіть гвинт М3 (5 мм) збоку, поблизу передньої панелі пристрою



Сумістіть заглушку та закріпіть її за допомогою нейлонового гвинта М3 (9 мм)

Порядок установлення заглушки 1/3 RU

Велику заглушку 1/3 RU кріплять збоку від встановленого на полиці пристрою. Для цього потрібно сумістити з полицею отвори для гвинтів та анкерну точку заглушки й закріпити її за допомогою гвинтів М3 (5 мм) із потайною головкою з комплекту постачання.

Інформація для розробників

Blackmagic Streaming Encoder Ethernet Protocol

v1.2

Protocol Details

Overview

The Blackmagic Streaming Encoder Ethernet Protocol is a line-oriented, text-based protocol to control a Streaming Encoder.

Lines from the Streaming Encoder server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Streaming Encoder server is accessed by connecting to TCP port 9977 on a Streaming Encoder.

Connection Response

Upon connection, the Streaming Encoder server sends a dump of the device's state.

The Streaming Encoder server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend

↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Streaming Encoder server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Streaming Encoder server by any client, such as the Blackmagic Streaming Setup utility, the Streaming Encoder server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Streaming Encoder server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Streaming Encoder server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Streaming Encoder server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Streaming Encoder server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Streaming Encoder will respond with the existing value for the key. In both cases the Streaming Encoder server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Streaming Encoder server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Streaming Encoder server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Streaming Encoder.

Block Syntax

The following example shows the Identity Block for a Blackmagic Streaming Encoder HD.

```
IDENTITY:↵
Model: Blackmagic Streaming Encoder HD↵
Label: Blackmagic Streaming Encoder HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Streaming Encoder model name	String
Label	Read/Write	A display name for the Streaming Encoder	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Streaming Encoder can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Streaming Encoder↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Streaming Encoder↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Streaming Encoder.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 0123ABCD↵
Software Release: 3.5↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Streaming Encoder product ID	Hexadecimal ID
Hardware Version	Read only	The Streaming Encoder hardware version	Hexadecimal version
Software Version	Read only	The Streaming Encoder software version	Hexadecimal version
Software Release	Read only	The Streaming Encoder software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Streaming Encoder.

Block Syntax

This example shows the output for a connected Streaming Encoder. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
↵
NETWORK INTERFACE 0:↵
Name: Ethernet↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```



```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Streaming Encoder	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Streaming Encoder.

Block Syntax

```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Streaming Encoder	Comma separated list of locales
Current Locale	Read/Write	The current locale for Streaming Encoder	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Streaming Encoder	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, CastR, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Streaming Encoder	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Streaming Encoder	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Streaming Encoder with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Streaming Encoder.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Streaming Encoder	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Streaming Encoder by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
    <service>↵
        <name>My Custom Platform</name>↵
        ...
    </service>↵
</streaming>↵
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Streaming Encoder by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Streaming Encoder by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Streaming Encoder.

The Streaming Encoder server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
Bitrate: 161672↵
Duration: 00:00:00:00↵
Cache Used: 0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Streaming Encoder, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Streaming Encoder stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
```

```
Action: Stop↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
STREAM STATE:↵
```

```
Status: Idle↵
```

```
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Streaming Encoder.

Block syntax

This example shows the output for a connected Streaming Encoder. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵
```

```
Current Monitor Out Audio Source: Auto↵
```

```
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
```

```
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵
```

```
Current Monitor Out Audio Source: Remote Source↵
```

```
↵
```

```
ACK↵
```

```
↵
```

```
AUDIO SETTINGS:↵
```

```
Current Monitor Out Audio Source: Remote Source↵
```

```
↵
```


Shutdown Block

The Shutdown block provides power control of the Streaming Encoder. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Streaming Encoder shutdown action.	Reboot Factory Reset

Reboot

The Streaming Encoder can be rebooted by providing a Shutdown block with reboot action.

SHUTDOWN:↵

Action: Reboot↵

↵

ACK↵

↵

On reboot action, the Streaming Encoder server will be stopped and clients will be disconnected.

Factory Reset

The Streaming Encoder can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

SHUTDOWN:↵

Action: Factory Reset↵

↵

ACK↵

↵

Streaming Encoder Control REST API

If you are a software developer you can build custom applications or leverage ready to use tools such as curl or Postman to seamlessly control and interact with Streaming Encoder using the Streaming Encoder Control REST API. This API enables you to perform a wide range of operations, such as starting or stopping streaming, configuring custom streaming services, managing audio sources and much more. Whether you're developing a custom application tailored to your specific needs or utilizing existing tools, this API empowers you to unlock the full potential of your Blackmagic Streaming Encoder with ease. We look forward to seeing what you come up with!

Sending API Commands

To send an API command to your Streaming Encoder from a third party application such as Postman, add the path /control/api/v1/ to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/api/v1/>

Downloading API Documentation

You can download REST API YAML documentation from your Streaming Encoder by adding the path /control/documentation.html to the URL following the Streaming Encoder's IP address. For example, <http://192.168.1.10/control/documentation.html>

Upload Streaming XML

To define custom streaming platforms, you can upload the contents of a Streaming XML file with the REST API. Once uploaded the custom platform will be available to select as a livestream platform.

Refer to the `Blackmagic Streaming XML Format` section in this manual for a description of the Stream XML file format.

For example, to create a new custom platform with the filename Custom.xml:

```
PUT http://192.168.1.10/control/api/v1/livestreams/customPlatforms/Custom.xml
```

- In the Body insert the Streaming XML contents. Remove any blank lines to be parsed correctly.
- If XML is correctly parsed, a “204 No Content” response is received from the Streaming Encoder.

To verify that the custom platform is loaded:

```
GET http://192.168.1.10/control/api/v1/livestreams/customPlatforms
```

- The Streaming Encoder will respond with “200 OK” and the following Body content.

```
[  
    "Custom.xml"  
]
```

To set the active platform with the custom platform:

```
PUT http://192.168.1.10/control/api/v1/livestreams/0/activePlatform
```

- In the Body, send a JSON object with key/value pairs as per the Stream XML definition. For example, using the minimal example from the `Blackmagic Streaming XML Format` section.

```
{  
    "key": "",  
    "platform": "My Streaming Service",  
    "quality": "My Streaming Quality",  
    "server": "My Streaming Server"  
}
```

- On success, the Streaming Encoder will respond with “204 No Content”.

Event Control API

API For working with built-in websocket.

GET /event/list

Get the list of events that can be subscribed to using the websocket API.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
events	array		
events[i]	string	List of events that can be subscribed to using the websocket API	/livestreams/0

Livestream Control API

API for controlling Livestreams on Blackmagic Design products.

GET /livestreams/0

Get the livestream's current status.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
status (required)	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.	Idle
bitrate (required)	integer	Current bitrate (bps).	123456789
effectiveVideoFormat (required)	string	Effective video format for the livestream, serialised as a string.	1280x720p30
duration	integer	Current stream duration in seconds. Absent if livestream is idle.	1234
cache	integer	Current stream cache usage percentage.	7

GET /livestreams/0/start

Determine if the livestream is active.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is active.	True

PUT /livestreams/0/start

Start the livestream.

Response

204 - No Content

GET /livestreams/0/stop

Determine if the livestream is inactive.

Response

200 - OK

Name	Type	Description	Example
Response	boolean	True when the livestream is inactive.	True

PUT /livestreams/0/stop

Stop the livestream.

Response

204 - No Content

GET /livestreams/0/activePlatform

Get the currently selected platform configuration for the livestream.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

PUT /livestreams/0/activePlatform

Set the currently selected platform configuration for the livestream.

Parameters

Name	Type	Description	Example
platform (required)	string	Platform name.	Youtube SRT (Beta)
server (required)	string	The platform's server name, or "Custom" when the URL is customizable.	Primary
key	string	Stream key.	ABCDEF-GHIJKL-MNOPQR
passphrase	string	Passphrase. Only included for SRT streams.	pp-abcd-efgh-ijkl-mnop
quality (required)	string	Quality level name.	Streaming High
url	string	Livestream destination. Only included when URL is customizable.	rtmp://192.168.0.1/app

Response

204 - No Content

400 - Bad Request

GET /livestreams/platforms

Get the list of available platforms.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available platforms names.	
Response[i]	string	Platform name.	Facebook

GET /livestreams/platforms/{platformName}

Get the service configuration for a platform.

Parameters

Name	Type	Description	Example
{platformName} (required)	string	Name of the platform.	Facebook

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
platform (required)	string	Corresponding platform name.	YouTube
key	string	Default stream key.	exampleKey123
servers (required)	array	List of server configurations.	
servers[i]	object	Server configuration.	

Name	Type	Description	Example
servers[i].server (required)	string	Server name.	Primary
servers[i].url (required)	string	Livestream destination.	srt://a.srt.youtube.com:2010
servers[i].srtExtensions	array	Miscellaneous tags used for SRT livestreams.	
servers[i].srtExtensions[i]	object	Dictionary object mapping SRT tag strings to values.	{'copy': '1'}
servers[i].srtExtensions[i][key]	string	SRT tag value.	
servers[i].group	string	Logical grouping of the server.	Primary
profiles (required)	array	List of profile configurations.	
profiles[i]	object	Quality configuration.	
profiles[i].profile (required)	string	Quality level name.	Streaming High
profiles[i].configs (required)	array	List of video format configurations.	
profiles[i].configs[i]	object	Video format configuration for profiles.	
profiles[i].configs[i].resolution (required)	string	Video format serialised as a string.	1080p
profiles[i].configs[i].fps (required)	string	Frames per second.	60
profiles[i].configs[i].bitrate (required)	integer	Pixel bitrate (bps).	9000000
profiles[i].configs[i].audioBitrate	integer	Audio bitrate (bps).	128000
profiles[i].configs[i].keyFrameInterval	integer	How often a key frame is sent, in seconds.	2
profiles[i].configs[i].videoCodecs	array	Supported video encoding algorithm/s.	
profiles[i].configs[i].videoCodecs[i]	string	Video encoding algorithm. Possible values are: H264, H265.	H264
profiles[i].lowLatency (required)	boolean	If true, fewer frames will be buffered in the livestream.	
defaultProfile	string	Quality level name.	Streaming High
credentials	object	Credentials used for RTMP streams.	
credentials.username (required)	string	The username part of the credentials. Only used for RTMP streams.	myusername
credentials.password (required)	string	Used for RTMP streams, also used as Passphrase for SRT streams.	mypassword
customizableUrlEnabled	boolean	True when the server URL is customizable.	False

400 - Bad Request

GET /livestreams/customPlatforms

Get a list of custom platform files.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of custom platform file names.	
Response[i]	string	Custom platform file name.	Custom.xml

DELETE /livestreams/customPlatforms

Remove all custom configuration files.

Response

204 - No Content

GET /livestreams/customPlatforms/{filename}

Get a custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to get.	Custom.xml

Response

200 - OK

Name	Type	Description	Example
Response	object	Blackmagic streaming XML file format.	

404 - Not Found

PUT /livestreams/customPlatforms/{filename}

Update a custom platform file if it exists, if not, create a new file with the given file name.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to update/create.	Custom.xml

Response

204 - No Content

400 - Bad Request

DELETE /livestreams/customPlatforms/{filename}

Remove the given custom platform file.

Parameters

Name	Type	Description	Example
{filename} (required)	string	Name of the file to be removed.	Custom.xml

Response

204 - No Content

404 - Not Found

Monitor Output Control API

API for controlling Monitor Output Settings on Blackmagic Design products.

GET /monitorOutput/audioSources

List monitor output's available audio sources.

Response

200 - OK

Name	Type	Description	Example
Response	array	List of available audio sources.	
Response[i]	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

GET /monitorOutput/audioSources/active

Get active monitor output audio source.

Response

200 - OK

Name	Type	Description	Example
Response	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

PUT /monitorOutput/audioSources/active

Set active monitor output audio source.

Parameters

Name	Type	Description	Example
audioSource (required)	string	Possible values are: Auto, SDI Input, Remote Source.	SDI Input

Response

204 - No Content

400 - Bad Request

System Control API

API for controlling the System Modes on Blackmagic Design products.

GET /system

Get device system information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
videoFormat	object	Video format configuration.	
videoFormat.name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
videoFormat.height	number	Height dimension of video format.	1080
videoFormat.width	number	Width dimension of video format.	1920
videoFormat.interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

GET /system/product

Get device product information.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
deviceName	string	Name of device as displayed in Setup.	None
productName	string	Device's product name.	Blackmagic Streaming Encoder HD
softwareVersion	string	Software version running on device.	3.4

501 - This functionality is not implemented for the device in use.

GET /system/videoFormat

Get the currently selected video format.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

PUT /system/videoFormat

Set the video format.

Parameters

This parameter can be one of the following types:

Name	Type	Description	Example
frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
height	number	Height dimension of video format.	1080
width	number	Width dimension of video format.	1920
interlaced	boolean	Is the display format interlaced?	False

Name	Type	Description	Example
name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97

Response

204 - No Content

501 - This functionality is not implemented for the device in use.

GET /system/supportedVideoFormats

Get the list of supported video formats for the current system state.

Response

200 - OK

The response is a JSON object.

Name	Type	Description	Example
formats	array	List of video formats.	
formats[i]	object	Video format configuration.	
formats[i].name (required)	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.	1920x1080p29.97
formats[i].frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60	29.97
formats[i].height	number	Height dimension of video format.	1080
formats[i].width	number	Width dimension of video format.	1920
formats[i].interlaced	boolean	Is the display format interlaced?	False

501 - This functionality is not implemented for the device in use.

Notification websocket - 1.0.0

Service that notifies subscribers of device state changes.

messages

Subscribe (The messages from the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: propertyValueChanged.
.data.property	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.value	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.type	string	Possible values are: event.

Publish (The messages that user can send to the server/device)

(JSON)

Name	Type	Description
.data	object	
.data.action	string	Possible values are: subscribe, unsubscribe, listSubscriptions, listProperties.
.data.properties	array	
.data.properties[i]	string	Device property the user can subscribe to. The user can either choose a value from the predefined enum or provide a wildcard string. Possible values are: /system, /system/product, /livestreams/0, /livestreams/0/activePlatform, /livestreams/platforms. Must match the pattern: .*
.data.values	object	An object with property names as the key and a property value as json. Check the next section for a the device properties and their return values.
.data.success	boolean	
.type	string	Possible values are: response.
.id	number	Optional parameter that repeats the id in the output for tracking messages

Device Properties

/system

The value JSON returned via the eventResponse when the /system property changes on the device:

Name	Type	Description
.videoFormat	object	Currently selected video format.
.videoFormat.name	string	Video format serialised as a string, or 'Auto' to detect the SDI Input video format.
.videoFormat.frameRate	string	Possible values are: 23.98, 24.00, 24, 25.00, 25, 29.97, 30.00, 30, 47.95, 48.00, 48, 50.00, 50, 59.94, 60.00, 60.
.videoFormat.height	number	Height dimension of video format.
.videoFormat.width	number	Width dimension of video format.
.videoFormat.interlaced	boolean	Is the display format interlaced?

/system/product

Device product information.

The value JSON returned via the eventResponse when the /system/product property changes on the device:

Name	Type	Description
.deviceName	string	Name of device as displayed in Setup.
.productName	string	Device's product name.
.softwareVersion	string	Software version running on device.

/livestreams/0

Livestream's current status.

The value JSON returned via the eventResponse when the /livestreams/0 property changes on the device:

Name	Type	Description
.status	string	Possible values are: Idle, Connecting, Streaming, Flushing, Interrupted.
.bitrate	integer	Current bitrate (bps).
.effectiveVideoFormat	string	Effective video format for the livestream, serialised as a string.
.duration	integer	Current stream duration in seconds. Absent if livestream is idle.
.cache	integer	Current stream cache usage percentage.

/livestreams/0/activePlatform

Livestream's current active platform configuration.

The value JSON returned via the eventResponse when the /livestreams/0/activePlatform property changes on the device:

Name	Type	Description
.platform	string	Platform name.
.server	string	The platform's server name, or "Custom" when the URL is customizable.
.key	string	Stream key.
.passphrase	string	Passphrase. Only included for SRT streams.
.quality	string	Quality level name.
.url	string	Livestream destination. Only included when URL is customizable.

/livestreams/platforms

List of available livestream platforms.

The value JSON returned via the eventResponse when the /livestreams/platforms property changes on the device:

Name	Type	Description
[i]	string	Platform Name.

Blackmagic Streaming XML Format

Overview

The Blackmagic Streaming XML allows users to specify streaming services in addition to the default services provided by the Streaming Encoder.

The Streaming XML can be loaded into the Streaming Encoder with Blackmagic Streaming Setup. Refer to the 'Blackmagic Streaming Setup' section earlier in this manual

The Streaming XML can also be loaded by copying the contents into the Stream XML block with the Blackmagic Streaming Encoder Ethernet Protocol.

The following is a minimal example of a Streaming XML file:

```
<?xml version="1.0" encoding="UTF-8"?>
<streaming>
  <service>
    <name>My Streaming Service</name>
    <servers>
      <server>
        <name>My Streaming Server</name>
        <url>rtmp://my.streaming-server.com/live</url>
      </server>
    </servers>
    <profiles>
      <profile>
        <name>My Streaming Quality</name>
        <config resolution="1080p" fps="60" codec="H264">
          <bitrate>7500000</bitrate>
        </config>
      </profile>
    </profiles>
  </service>
</streaming>
```

Streaming XML Definition

The Streaming XML file follows standard XML format and shall begin with XML declaration.

```
<?xml version="1.0" encoding="UTF-8"?>
```

Streaming Element

The Streaming XML file shall be contained by the <streaming> element. The <streaming> element will consist of 1 or more <service> child elements.

The following is an example of a <streaming> element block that defines 2 streaming services.

```
<streaming>
  <service>
    <name>Service 1</name>
    <!-- Streaming settings for "Service 1" -->
  </service>
  <service>
    <name>Service 2</name>
    <!-- Streaming settings for "Service 2" -->
  </service>
</streaming>
```

Service Element

The <service> element provides a description of the streaming service. If multiple streaming services are used, it is possible to define multiple <service> elements within each <streaming> element block.

The following is an example of a <service> element block in the Stream XML file.

```
<streaming>
  <service customizable-url="true">
    <name>My Streaming Service</name>
    <key>abc1-def2-ghi3-jkl4-mno5</key>
    <servers>
      <!-- Streaming server settings -->
    </servers>
    <profiles default="Streaming High">
      <!-- Streaming quality settings-->
    </profiles>
    <credentials>
      <!-- Streaming username and password settings -->
    </credentials>
  </service>
  <!-- <service> elements blocks for other streaming services -->
</streaming>
```

Attributes

Attribute	Optional/Required	Description
customizable-url	Optional	The service supports specifying custom URLs - supported = "true" or unsupported = "false" (default)

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the streaming service
<key>	Optional	The stream key for the streaming service
<servers>	Optional	The RTMP/SRT server settings of the streaming service (see below). May be omitted if customizable-url is true.
<profiles>	Required	The quality settings of the streaming service (see below)
<credentials>	Optional	The username and password of the streaming service (see below)

Servers Element

The <servers> element consists of 1 or more <server> child elements for defining the streaming server(s). The <servers> element is a required child of the <service> element. Defining multiple servers allows specifying localized and/or backup servers within a single XML description

The following is an example of a <servers> element block that defines a primary and secondary URL for the SRT server.

```
<service>
  ...
  <servers>
    <server group="Primary">
      <name>My Streaming Service Server</name>
      <url>srt://srt.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <server group="Secondary">
      <name>My Streaming Service Backup Server</name>
      <url>srt://srt-backup.my-streaming-service.com:2010</url>
      <srt-extensions>
        ...
      </srt-extensions>
    </server>
    <!-- Additional <server> element blocks defining other
servers for streaming service -->
  </servers>
  ...
</service>
```


Attributes

Attribute	Optional/Required	Description
group	Optional	The logical grouping for the server

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the RTMP/SRT streaming server
<url>	Required	The URL of the RTMP/SRT streaming server
<srt-extensions>	Optional	Extended service block specific to SRT streaming server (see below)

SRT Extensions Element

The <srt-extensions> element consists of 1 or more child elements that define SRT specific parameters.

The following is an example of a <srt-extensions> element block for a primary stream identifier.

```
<service>
  ...
  <servers>
    <server group="Primary">
      ...
      <srt-extensions>
        <stream-id>
          <item key="copy" value="0"/>
        </stream-id>
      </srt-extensions>
    </server>
  </servers>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<stream-id>	Required	Provides element with custom parameters for the stream ID. Each child element of stream-id has 1 or more item elements with a key/value pair.

Profiles Element

The <profiles> element consists of 1 or more <profile> child elements that define streaming quality. The <profiles> element is a required child of the <service> element. Defining multiple profiles allows specifying custom bitrates for different streaming qualities.

The following is an example of a <profiles> element block that defines 3 profiles.

```
<service>
  ...
  <profiles default="Streaming High">
    <profile>
      <name>Streaming High</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming High profile -->
    </profile>
    <profile>
      <name>Streaming Medium</name>
      <!-- Define <config> elements to specify target
bitrates for Streaming Medium profile -->
    </profile>
  </profiles>
  ...
</service>
```

Attributes

Attribute	Optional/Required	Description
default	Optional	The name of the default profile

Child Elements

Element	Optional/Required	Description
<name>	Required	The name of the profile
<config>	Required	Video mode dependent quality settings for profile (see below)

Config Element

The <config> element defines a mapping between the video resolution and frame rate and the target bitrate for the quality level. The <config> element is a child of the <profile> element.

The following is an example of a <config> element block for setting the target bitrate for a high quality stream with 720p60 and 1080p60 video inputs.

```
<profile>
  <name>Streaming High</name>
  <config resolution="720p" fps="60" codec="H264">
    <bitrate>6000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <config resolution="1080p" fps="60" codec="H264">
    <bitrate>8000000</bitrate>
    <audio-bitrate>128000</audio-bitrate>
  </config>
  <!-- <config> elements for other resolutions and frame rates -->
</profile>
```

Attributes

Attribute	Optional/Required	Description
resolution	Required	The resolution of the streaming video mode
fps	Required	The frame rate of the streaming video mode (frames per second)
codec	Optional	The codec for encoding the streaming video - "H264" (default) or "H265"

Child Elements

Element	Optional/Required	Description
<bitrate>	Required	The target bitrate of the streaming video (bits per second)
<audio-bitrate>	Optional	The target bitrate of the streaming audio (bits per second)

The supported streaming quality bitrates can be found in the 'Blackmagic Streaming Setup' section earlier in this manual.

TIP For each <config> element block, choose a maximum resolution and fps to cover all video modes for the target bitrate. For example, defining a <config> element with resolution="1080p" and fps = "30" will apply for video modes 1080p23.98, 1080p24, 1080p25, 1080p29.97 and 1080p30.

For audio bitrate, only 128 Kb/s is supported.

Credentials Element

The <credentials> element allows specifying an RTMP session username and password if required by the service. The <credentials> element is an optional child to service element.

The following is an example of a <credentials> element block that defines a username and password for the streaming service.

```
<service>
  ...
  <credentials>
    <username>myusername</username>
    <password>abcd1234</password>
  </credentials>
  ...
</service>
```

Child Elements

Element	Optional/Required	Description
<username>	Required	RTMP session username
<password>	Required	RTMP/SRT session password

Допомога

Отримання допомоги

Найшвидший спосіб отримати допомогу — звернутися до сторінок підтримки на сайті Blackmagic Design і перевірити наявність найновіших довідкових матеріалів для стрімінгових процесорів Blackmagic.

Розділ підтримки на сайті Blackmagic Design

Останню версію посібника можна знайти в центрі підтримки Blackmagic Design на сторінці www.blackmagicdesign.com/ua/support

Форум Blackmagic Design

Відвідайте форум спільноти Blackmagic Design на нашому вебсайті, щоб отримати додаткову інформацію та дізнатися про цікаві творчі ідеї. На ньому можна поділитися своїми ідеями, а також отримати допомогу від персоналу підтримки та інших користувачів. Адреса форуму <https://forum.blackmagicdesign.com>

Звернення до Служби підтримки Blackmagic Design

Якщо за допомогою доступних довідкових матеріалів і форуму вирішити проблему не вдалося, скористайтесь формою «Надіслати імейл» на сторінці підтримки. Також можна зателефонувати до найближчого представництва Blackmagic Design, телефон якого ви знайдете на нашому вебсайті.

Дотримання нормативних вимог



Утилізація електрообладнання та електронної апаратури в країнах Європейського Союзу

Виріб має маркування, яке означає, що його забороняється утилізувати разом із побутовими відходами. Непридатне для експлуатації обладнання необхідно передати до пункту вторинної переробки. Роздільний збір відходів і їх повторне використання дозволяють зберігати природні ресурси, охороняти довкілля та захищати здоров'я людей. Щоб отримати докладну інформацію про порядок утилізації, зверніться до місцевих муніципальних органів або дилера, у якого ви придбали цей пристрій.



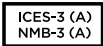
Дане обладнання протестовано за вимогами для цифрових пристроїв класу А (розділ 15 специфікацій FCC) та визнано таким, що відповідає усім критеріям. Дотримання згаданих нормативів забезпечує достатній захист від шкідливого випромінювання під час роботи обладнання в нежитлових приміщеннях. Оскільки цей виріб генерує та випромінює радіохвилі, при неправильному встановленні він може стати джерелом радіоперешкод. Якщо обладнання експлуатується в житлових приміщеннях, підвищується ймовірність виникнення перешкод, вплив яких у цьому випадку користувач повинен усунути самостійно.

До експлуатації допускаються пристрої, що відповідають двом основним вимогам.

- 1 Обладнання не повинно бути джерелом шкідливих перешкод.
- 2 Обладнання має бути стійким до перешкод, включно з тими, що можуть спричинити перебої у роботі.



R-R-BMD-20201201001
R-R-BMD-20201201002



Відповідність вимогам ISED (Канада)

Дане обладнання відповідає канадським стандартам для цифрових пристроїв класу А.

Будь-яка модифікація або використання виробу не за призначенням може анулювати заяву про відповідність цим стандартам.

Підключення до HDMI-інтерфейсу має виконуватися за допомогою якісного екранованого кабелю.

Це обладнання протестовано за вимогами, що висуваються до роботи пристроїв у нежитлових приміщеннях. При використанні в побутових умовах воно може стати джерелом перешкод для радіосигналу.

Правила безпеки

Електрична розетка для підключення цього обладнання до мережі повинна мати контакт заземлення.

Щоб мінімізувати ймовірність ураження електричним струмом, виріб необхідно захищати від попадання бризок і крапель води.

Допускається експлуатація в умовах тропічного клімату з температурою довкілля до 40 °C.

Пристрій радимо зберігати при температурі від -20 °C до 60 °C та відносній вологості від 0% до 90% (без конденсації).

Для роботи пристрою необхідно забезпечити достатню вентиляцію.

При установці в стійку переконайтеся, що не обмежено приплив повітря.

Всередині корпусу не містяться деталі, що підлягають обслуговуванню. Для виконання ремонтних робіт зверніться до місцевого сервісного центру Blackmagic Design.



Допускається експлуатація в місцях не вище 2000 метрів над рівнем моря.

Сповіщення для мешканців штату Каліфорнія

При роботі з цим обладнанням існує можливість контакту з мікродомішками багатобромистого біфеніла, що містяться в пластмасі. У штаті Каліфорнія цей елемент визнано канцерогеном, він збільшує ризик вроджених дефектів і пороків репродуктивної системи.

Додаткову інформацію див. на сайті www.P65Warnings.ca.gov

Гарантія

Обмежена гарантія терміном 36 місяців

Компанія Blackmagic Design гарантує відсутність у стрімінгових процесорах Blackmagic дефектів матеріалу та виробничого браку протягом 36 місяців із дати продажу. Для роз'ємів, кабелів, оптоволоконних модулів, запобіжників і акумуляторних батарей така гарантія діє впродовж 12 місяців із дати продажу. Якщо під час гарантійного терміну будуть виявлені дефекти, Blackmagic Design на власний розсуд виконає ремонт несправного виробу без стягування плати за запчастини та трудовитрати або замінить такий виріб на новий.

Щоб скористатися цією гарантією, споживач зобов'язаний повідомити компанію Blackmagic Design про дефект до закінчення гарантійного терміну та забезпечити умови для надання необхідних послуг. Споживач несе відповідальність за упаковку та доставку несправного виробу до відповідного сервісного центру Blackmagic Design, а також за оплату поштових витрат. Споживач зобов'язаний сплатити всі витрати на доставку, страхування, мита, податки та інші збори щодо повернення виробу незалежно від причини повернення.

Дана гарантія не поширюється на дефекти, відмови та пошкодження, що виникли через неналежне використання, неправильний догляд чи обслуговування. Компанія Blackmagic Design не зобов'язана надавати послуги за цією гарантією: а) для усунення пошкоджень, що виникли внаслідок дій із встановлення, ремонту або обслуговування виробу особами, які не є персоналом Blackmagic Design; б) для усунення пошкоджень, що виникли внаслідок неналежного використання або підключення до несумісного обладнання; в) для усунення пошкоджень або дефектів, спричинених використанням запчастин або матеріалів інших виробників; г) якщо виріб було модифіковано або інтегровано з іншим обладнанням, коли така модифікація або інтеграція збільшує час або підвищує складність обслуговування виробу.

ДАНА ГАРАНТІЯ НАДАЄТЬСЯ КОМПАНІЄЮ BLACKMAGIC DESIGN ЗАМІСТЬ БУДЬ-ЯКИХ ІНШИХ ПРЯМИХ АБО ОПОСЕРЕДКОВАНИХ ГАРАНТІЙ. КОМПАНІЯ BLACKMAGIC DESIGN І ЇЇ ДИЛЕРИ ВІДМОВЛЯЮТЬСЯ ВІД БУДЬ-ЯКИХ ОПОСЕРЕДКОВАНИХ ГАРАНТІЙ КОМЕРЦІЙНОЇ ЦІННОСТІ АБО ПРИДАТНОСТІ ДЛЯ БУДЬ-ЯКОЇ ВИЗНАЧЕНОЇ ЦІЛІ. ВІДПОВІДАЛЬНІСТЬ BLACKMAGIC DESIGN ЗА РЕМОНТ АБО ЗАМІНУ НЕСПРАВНИХ ВИРОБІВ Є ПОВНИМ І ВИНЯТКОВИМ ЗАСОБОМ ВІДШКОДУВАННЯ, ЩО НАДАЄТЬСЯ СПОЖИВАЧЕВІ У ЗВ'ЯЗКУ З НЕПРЯМИМИ, ФАКТИЧНИМИ, ВИПАДКОВИМИ АБО ПОСЛІДУЮЧИМИ ЗБИТКАМИ НЕЗАЛЕЖНО ВІД ТОГО, БУЛА КОМПАНІЯ BLACKMAGIC DESIGN (АБО ЇЇ ДИЛЕР) ПОПЕРЕДНЬО ПОВІДОМЛЕНА ПРО МОЖЛИВІСТЬ ТАКИХ ЗБИТКІВ. BLACKMAGIC DESIGN НЕ НЕСЕ ВІДПОВІДАЛЬНОСТІ ЗА ПРОТИПРАВНЕ ВИКОРИСТАННЯ ОБЛАДНАННЯ СПОЖИВАЧЕМ. BLACKMAGIC DESIGN НЕ НЕСЕ ВІДПОВІДАЛЬНОСТІ ЗА БУДЬ-ЯКІ ЗБИТКИ ВНАСЛІДОК ВИКОРИСТАННЯ ЦЬОГО ВИРОБУ. РИЗИКИ, ПОВ'ЯЗАНІ З ЙОГО ЕКСПЛУАТАЦІЄЮ, ПОКЛАДАЮТЬСЯ НА СПОЖИВАЧА.

© Copyright 2025 Blackmagic Design. Усі права захищені. Blackmagic Design, DeckLink, HDLink, Workgroup Videohub, Multibridge Pro, Multibridge Extreme, Intensity та "Leading the creative video revolution" зареєстровані як товарні знаки в США та інших країнах. Назви інших компаній і найменування продуктів можуть бути товарними знаками відповідних правовласників.

Технологія Thunderbolt і логотип Thunderbolt є товарними знаками корпорації Intel у США та інших країнах.