



DaVinci Resolve 10

Configuration Guide for Windows

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DaVinci Resolve for Windows



Building the world's highest performing color grading system is simple with this easy to follow guide.

DaVinci Resolve features the Emmy™ award winning color correction technology that uses 32 bit float based YRGB image paths for the highest quality possible. So it is essential to build a Resolve system with high performance computer hardware.

All Resolve systems require at least one high performance graphics processing unit (GPU). Resolve can utilize multiple GPUs within the one system.

For your grading monitor or projector Resolve also supports the range of Blackmagic Design video I/O cards to provide a SDI output to your calibrated grading display.

Whether you are just starting your grading career, building a post production facility or upgrading your existing Resolve suite, this guide contains important information which will help you buy and configure your DaVinci Resolve system.

Selecting Hardware Configurations

DaVinci Resolve is configurable for different operational requirements based around the performance you need and the available hardware options:

DaVinci Resolve for Windows operates on current generation Intel based computers. The system you select or build may be based on what you already have and can update, or a specific operational or technical requirement. Either way, the hardware configuration you select has a significant impact on the performance of the overall system, as Resolve will use all the available resources to provide the fastest possible processing.

As it is essential to build a Resolve system with high performance computer hardware, this document lists certified hardware models and general hardware criteria so you choose between a certified and supported system or build one to fit your own, specific needs and budget.

If your projects are SD or low resolution for the web, you could use a lower powered system compared to the needs of a client supervised 2K or UHD or 4K grading session for a TVC or feature film. For low to mid budget HD projects quite often the mid powered systems are sufficient.

Resolve offers a number of user settings, which will optimize playback performance on lower powered systems, or for timelines that have many color grading layers, known as nodes. When you finish your grade you can force these to the highest quality before you start your render. This may take longer than real time but give you the best finishing image quality. So selecting your platform defines not only the speed which can playback and grade but also the time to render your timeline.

The Blackmagic Design support team will most likely be able to help you if the Resolve system is one of the certified configurations documented in

this guide. They are less likely to be able to help should alternative configurations be used.

Which Platform?

This guide defines a number of certified configurations and also lists components you may consider if you dont need guaranteed performance but have a tight budget.

ASUS P9X79 PRO Motherboard



The ASUS P9X79 PRO motherboard is perfect for Resolve users who want to build a powerful 2D color grading system for SD and HD at the lowest possible cost. This motherboard is designed to fit in a standard ATX chassis which is widely available in desktop and rackmount models worldwide. It provides fast image processing using two, single-width, PCIe3.0 x16 slots on a shared PCIe bus. One of these slots is used for the GUI and the other for image processing. This motherboard is widely available from resellers worldwide.

Resolve users who want to build a system that can be upgraded for 2K, 4K or 3D in the future should not choose this configuration.

HP Z820 Workstation

The HP Z820 Workstation provides a flexible and simple workhorse for previewing and grading material up to and including 4K video. It can be used as a desktop tower or rack-mounted and contains a single power supply. It provides fast image processing using three, single-width, PCIe3 x16 slots that do not share bus resources. One of these slots is used for the GUI and the other for image processing.



Additional image processing power can be added using a PCIe expansion chassis. This computer is widely available from resellers worldwide.

Supermicro SuperServer 7047GR-TRF

The Supermicro SuperServer 7047GR-TRF is a more powerful configuration suitable for stereoscopic grading and 4K video. It can be used as a desktop tower or rack-mounted and contains redundant power supplies.

It provides very fast image processing using up to four, double-width, PCIe3.0 x16 slots for greater throughput and flexibility. One of these slots is used for the GUI and the remainder can be used for image processing.

Additional image processing power can be added using a PCIe expansion chassis. This computer is generally available from resellers who specialize in server computers.

The Supermicro SuperServer is also the certified platform for Linux configurations should you wish to upgrade in the future.





Generic Windows Workstation

If you don't need guaranteed performance and don't need a tested and recommended system you can build a generic Resolve for Windows system.

A key consideration will be the number of PCIe Gen 2.0 or Gen 3.0 x16 slots that you have available that do not share bus resources. Having 3 PCIe Gen 3.0 x16 slots that become x8 or x4 speed slots when other slots are used will significantly reduce your systems suitability for DaVinci Resolve.

Your system must meet the following criteria:

- Windows 8 Pro, 64-bit.
- 12 GB RAM or higher.
- Two x16 lane PCIe 2.0 slots are required for GPU cards. Some GPU cards require double width slots and some may require auxiliary power connections. PCIe 3.0 slots are preferred.
- x8 lane PCIe 3.0 slots are preferred for RED Rocket cards or a host bus adapter (HBA) card. However x4 lane PCIe 2.0 slots can be used.
- A x4 lane PCIe or faster slot is required for the DeckLink 4K Extreme card. An additional port is required if you choose to install its HDMI bracket for HDMI monitoring.
- Fast storage connected by SATA, SAS or Fiber Channel.

- If you are building a system with only a single GPU we recommend the fastest one you can justify such as the GeForce GTX 780 with 3GB RAM, or the GTX TITAN with 6GB RAM.
- For the image processing GPUs, one or more NVIDIA CUDA capable cards can be used. Select from the Image Processing GPU options which you can find in any of the system configurations listed later in this guide.
- You will need to install the NVIDIA driver for your specific GPU card. It is important to use the version of the NVIDIA driver that is certified for use with Resolve. Please refer to the Resolve Readme corresponding to the version of Resolve for the specific certified NVIDIA driver.
- DeckLink 4K Extreme card or UltraStudio SDI for monitoring. If using an UltraStudio SDI, your computer needs a USB 3.0 host controller uPD720200 with the latest Renesas Electronics USB 3.0 drivers and firmware installed.
- A hardware control panel from the following list:
 - DaVinci Resolve Control Surface
 - Avid Artist Color
 - JLCooper Eclipse CX
 - Tangent Devices Element
 - Tangent Devices WAVE.

GUI Monitor

The Resolve GUI is optimized for 2560x1440 screen resolution but will work with 1920 x 1080 and higher screen resolutions.

Graphics Processors

The Graphics Processing Unit (GPU) provide the backbone for Resolves industry leading performance. Resolve requires a powerful GPU as all image processing is performed in 32 bit floating point precision. You can use the same GPU for the GUI but this will limit the GPU ability to process images in real time.

We generally recommend the fastest GPU or GPUs with the most GPU RAM that you can afford within the limits of the supported hardware. DaVinci Resolve 10 for Windows will use CUDA on NVIDIA hardware and OpenCL on AMD/ATI GPUs. However devices running both NVIDIA and ATI hardware simultaneously is not supported on Windows Resolve systems.

PCIe and Thunderbolt Expanders

Windows desktop or rack mount computers offer connection to an external expander chassis via its PCIe motherboard connector. This permits extra GPUs to be installed for use by the unique processing controller in DaVinci Resolve. While there are a number of expanders available in the market only a few have been tested and certified for use with DaVinci Resolve.

Please refer to the PCIe Expander details later in this guide.

At this time there are no Thunderbolt expanders certified for use with GPUs however you can use a Thunderbolt expander for a fibre channel adapter, storage interface or raid controller, video card or even a Red Rocket. The shopping list later in this guide details tested models and configurations.

UHD and 4K-DCI Image Processing

With the increasing use of digital cameras, many colorists want to grade UHD, 4K-DCI or higher resolutions in real time. While some cameras provide UHD or 4K or higher capture resolutions they usually store the images as compressed data as this takes less storage space and bandwidth.

However for grading, the compressed data needs to be decompressed to the full RGB per pixel bit depth which will use four or more times the processing power as a HD image for the same real time grading performance. The GPU RAM therefore becomes a very important factor when dealing with UHD and 4K-DCI timelines.

A certified Windows system with a current model GPU and 3GB or more of GPU RAM can play UHD and 4K-DCI resolution images using a HD resolution timeline and displayed on a HD monitor. After you have completed your grade simply change the timeline resolution for a UHD or 4K-DCI render.

You can also grade and display UHD/4K-DCI images if you connect a PCIe expander to your computer, with extra image processing GPUs, and use either the card to connect to your 4K-DCI grading monitor. DeckLink 4K Extreme or UltraStudio 4K video I/O

Connecting a Calibrated Grading Monitor

All colorists grading for TV or film deliverables will need to use a proper calibrated grading monitor connected to a SDI video I/O card for 2D or 3D monitoring. This device will occupy a PCIe slot on the motherboard or a USB 3.0 port depending on the video card you select.

DaVinci Resolve supports the Blackmagic Design range of DeckLink and UltraStudio video I/O devices for SDI video and embedded audio ingest and playback. The same device is used for connecting your calibrated grading monitor. Users can loop a single feed from the VTR to the grading monitor or connect the second SDI output directly to the grading monitor.

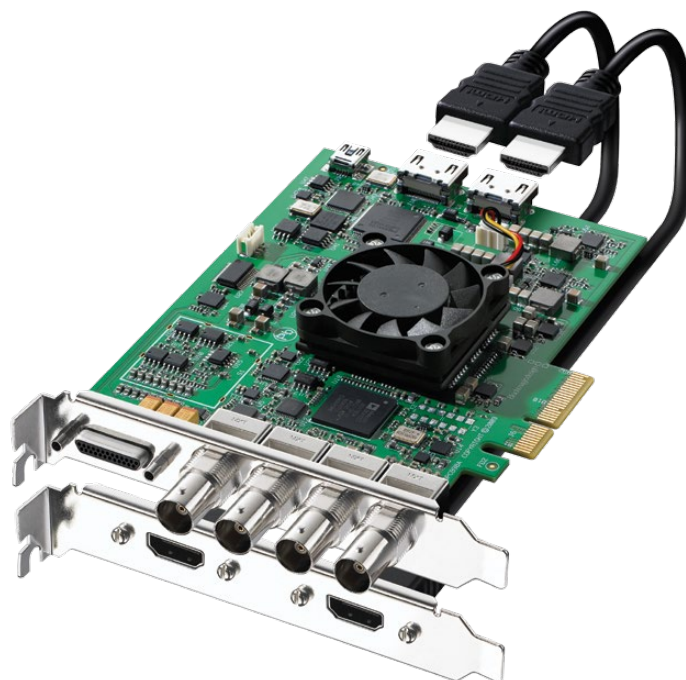
DaVinci Resolve also supports the DeckLink 4K Extreme video card and if your facility has a UHD/4K display that accepts a single 6G SDI or two 3G SDI cables you can use this DeckLink card to connect to your monitor.

Alternatively you can use the BMD demultiplexer to convert these 3G SDI connections to four 1.5G SDI feeds.

These DeckLink and UltraStudio capture and playback devices support SD, HD, 2K, UHD and 4K SDI video with up to 16 channels of audio. Many also feature HDMI and analog audio and video outputs, external sync and VTR control via a RS-422 connection.

The UltraStudio SDI connects via USB 3.0 and supports SDI and HD-SDI video with 8 channels of audio. It also features HDMI audio and video monitoring, external sync and VTR control via a RS-422 connection. All features are included as standard.

For DaVinci Resolve to use the DeckLink or UltraStudio you will need to install the latest Desktop Video drivers, which are available from the support page at www.blackmagicdesign.com.



File System and Media Storage

DaVinci Resolve for Windows supports a number of internal and external storage systems. Almost any storage, designed for Windows and high bandwidth media, will be suitable for use with DaVinci Resolve.

For speed, replacing the internal hard drive with the biggest SSD you can afford will make a substantial improvement to Resolve's performance. Please read the "Important note about Solid State Disk (SSD) speeds" on the following page

Media storage should be formatted in the standard Windows NTFS disk format.

While external disk arrays can provide much higher performance by using more disks, the internal disk bays in the chassis can provide adequate performance for SD and HD video.

An external disk array and a RAID or HBA card could be used for additional disk performance and storage, especially for 2K, UHD and 4K media.

There are a number of vendors that offer SATA HBA's direct attached storage and DaVinci Resolve supports these type of systems.

Facilities with SAN based shared storage can work concurrently with projects that are being graded in other Mac, Windows or Linux suites.

The most common connection method for the SAN storage is via dual 8Gbit Fiber Channel connections to a FC card in the Resolve workstation. This can be direct or via a FC switch.

Resolve supports the Quantum StorNext file system so you can connect the DaVinci Resolve system to a Storage Area Network (SAN). We have certified the standard StorNext system version 4.3 and legacy 3.5.2. Please seek guidance from your local Quantum support office.

If you plan on using a SAN please do so in conjunction with your local distributor and/or your storage subsystem vendor.

10 gigabit Ethernet (10GbE) connections to NAS storage are also possible. Please discuss specific configurations with your storage vendor.

The Preferences option under the Resolve menu is where you can add or remove internal and external disk storage for use with Resolve. The first volume in the list will be used to store gallery stills and cache files so this should be a drive that is always on your Resolve system.





Important note about Solid State Disk (SSD) speeds

Some models of SSD cannot save video data at the speed indicated by the manufacturer because the disk uses hidden data compression to reach these higher write speeds. This data compression technique can only save data at the manufacturer's claimed speed when storing simple files or simple data, such as blank data.

Video data includes video noise, and more random pixel data which does not compress much, so the true speed of the disk is seen.

Some SSDs can have up to 50% lower write speed than the manufacturer's claimed speed, so even though the disk specifications claim an SSD is fast enough to handle video, in reality the disk is not fast enough for real time video data capture.

Hidden data compression mostly affects capture and often these disks can still be used for real time playback.

Use Blackmagic Disk Speed Test to measure accurately if your SSD will be able to handle uncompressed video capture and playback.

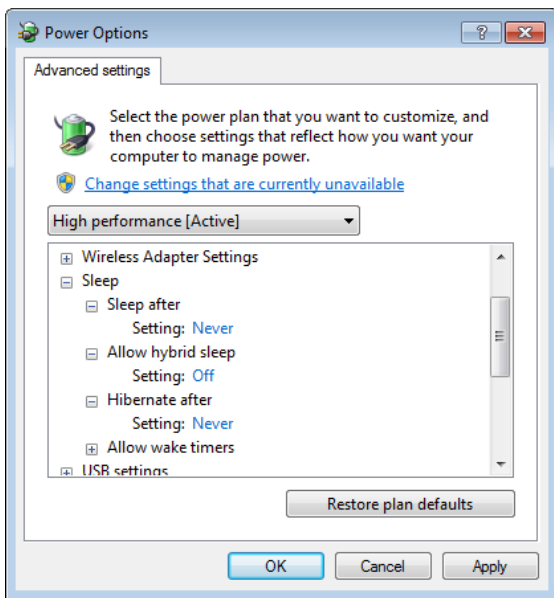
Blackmagic Disk Speed Test uses data to simulate the storage of video so you get results similar to what you will see when capturing video to a disk. This will let you find models of SSD that work well for video capture. In our testing, we have found larger newer models of SSD, and larger capacity SSDs are generally faster. Blackmagic Disk Speed Test also tests the speed of disks connected to eSATA docks and other interfaces, which can affect disk performance.

Disk Speed Test is installed when you install the latest Desktop Video drivers for your Blackmagic Design capture hardware. Disk Speed Test can also be used even if no capture hardware is present.

Windows Power Configuration

Resolve is a demanding application and it is important to ensure your workstation is configured to avoid going in to sleep mode or hibernation.

From the Control Panel click on Power Options. Under "Select a power plan", click "Show additional plans" and then click "High Performance".

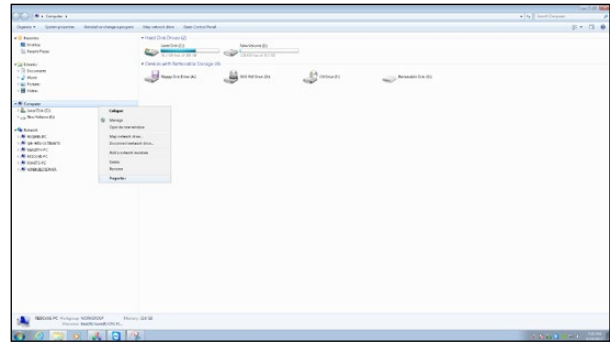


Click "Change plan settings" and ensure the computer is set to "Never" sleep.

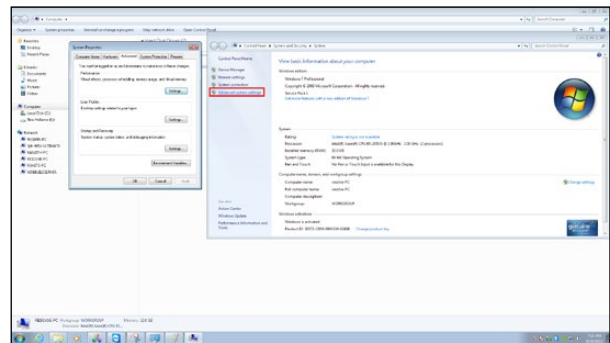
Click "Change advanced power settings" and ensure all the "Sleep" settings are set to "Never" or "Off". Click "Apply", "OK", "Save changes" and close out of the control panel.

Performance Configuration

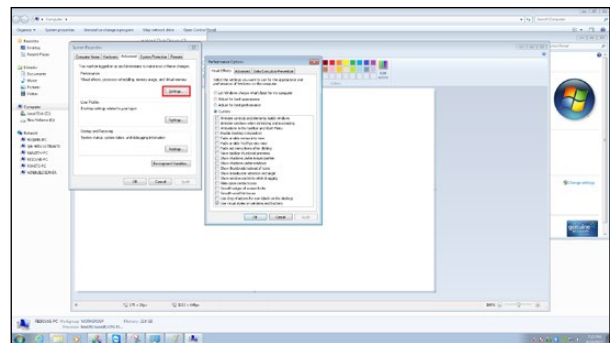
You will need to configure your windows system for maximum performance. Right click Computer and select the Properties option.



Then click Advanced System Settings and on the Advanced tab now select Settings.



This opens the Performance Options window. In the first tab, Visual Effects, select the Custom radio button. All the checkboxes below should now be de-selected.



For Windows 7 Pro users, now select the last checkbox, Use visual styles on windows and buttons, then select OK and close all the windows. This selection is not required for Windows 8 Pro systems.

Installing the DaVinci Resolve Application

After selecting and configuring your hardware there are just a few remaining steps starting with the DaVinci Resolve Installer:

Installing or updating Resolve is essentially the same process. Login as the user that will be operating Resolve.

You will need an Administrator password to install the software on your system and we recommend that DaVinci Resolve be installed into the standard Programs folder on your startup hard disk. Insert the Resolve DVD or open the downloaded executable and when the installer window will opens, doubleclick the 'DaVinci Resolve Executable' and follow the onscreen prompts to install the software.

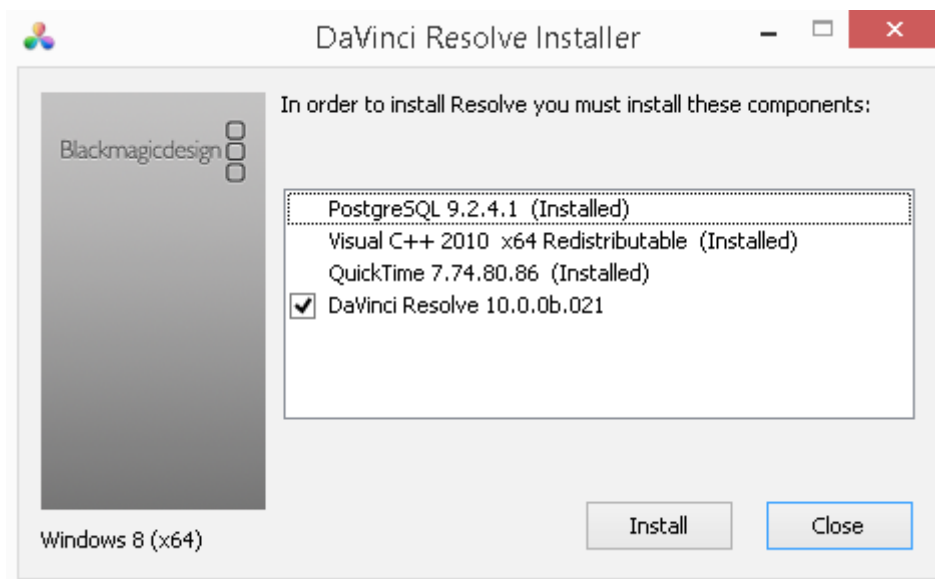
The installation process takes just a couple of minutes. When the installation has been completed, you will be prompted to restart your workstation. The installer will add the application to the program files and Desktop making it easy to launch DaVinci Resolve.

For the full version of DaVinci Resolve, the included USB dongle contains the software license and must be connected to your computer before launching the Resolve software.

For Resolve to use the DeckLink card or UltraStudio 3D for video I/O you will need to install the latest Desktop Video drivers, which are available from the support page at www.blackmagicdesign.com.

If you use Avid Media Composer or Adobe Premiere Pro on the same machine as Resolve, and wish to use these applications with a DeckLink card or UltraStudio SDI, install the latest Desktop Video drivers after installing your video editing applications.

Blackmagic Desktop Video drivers install associated easy setup options and presets for a number of editing applications.



Updating Third Party Drivers for Resolve

DaVinci Resolve uses a number of third party drivers which you may need to install or update depending on the OS version and hardware configuration you are using.

DaVinci Resolve 10 for Windows will use CUDA on NVIDIA hardware and OpenCL on AMD/ATI GPUs. However devices running both NVIDIA and AMD/ATI hardware simultaneously is not supported on Windows Resolve systems.

For systems using AMD/ATI GPUs, you will need to install the correct drivers from the AMD support web site.

All NVIDIA GPU based systems will need to have both the correct NVIDIA and CUDA driver to operate the GPUs. The CUDA drivers are installed with the OS and while Resolve will check the CUDA version installed you may have to update it after any OS updates.

You should however avoid updating beyond the recommended CUDA driver version. You should also avoid updating beyond Windows 8 Pro until a new version of this guide is made available on the Blackmagic Design website.

If you install a RED Rocket card you will need the correct card firmware and drivers for the card to operate correctly. Details follow on the next page of this guide.

NVIDIA CUDA GPUs

NVIDIA Drivers

When you install your NVIDIA GPU you may need to download and install the NVIDIA driver for that specific GPU. Usually it's the latest driver for the most powerful GPU in your system that's required. If the message, "WARNING: No CUDA Acceleration Hardware Detected," appears when you launch Resolve and your workstation contains the recommended NVIDIA GPUs, you will need to quit out of Resolve and update the correct NVIDIA drivers.

Verify the correct version from the Readme file that came with the Resolve installer and go to the NVIDIA support web site. Visit www.nvidia.com/drivers to download the certified drivers.

AMD/ATI GPUs

AMD provides a driver installer which you can use to automatically install and configure the appropriate drivers for your AMD/ATI GPU.

Go to <http://support.amd.com/us/gpudownload/Pages/index.aspx> and follow the steps 1 through 5 to select the Workstation Graphics, GPU series and model and finally Windows 8 - 64 bit to then request the results from your query.

The query should provide an AMD Software suite to download and run which will install the drivers for your GPU.

Systems with RED Rocket

DaVinci Resolve and DaVinci Resolve Lite can perform RED R3D decoding at various resolutions and debayer qualities based on the performance of your computer hardware, particularly the CPU speed and number of cores. Real time R3D decoding can be performed without a RED Rocket card but at reduced resolution and debayer quality. As newer generations of faster computers become available, the real time R3D CPU based decoding performance will increase.

If a single RED Rocket card is installed in your system, playback of full resolution and premium debayer quality of 2K files can be achieved as can premium debayer quality of 4K files at half resolution.

With the full version of Resolve multiple RED Rockets can be used.

Rocket drivers and firmware

For Red Rocket operation in your workstation or via an expander you will need to manually install the RED Rocket drivers and firmware from the RED website for use with Resolve .

It is important to use the version of the Red Rocket driver and also the Red Rocket firmware that is certified for use with Resolve.

Please refer to Readme file that is supplied with each version of Resolve for the specific certified drivers and Rocket firmware that is correct for that version of DaVinci Resolve.

The drivers and firmware are available for download from www.red.com/downloads.

You can verify operation of the RED Rocket by selecting and deselecting the card in Preferences Page in the System Overview tab.

When decoding R3D images using premium debayer and half resolution decode compare the playback speed with the Rocket enabled and disabled.

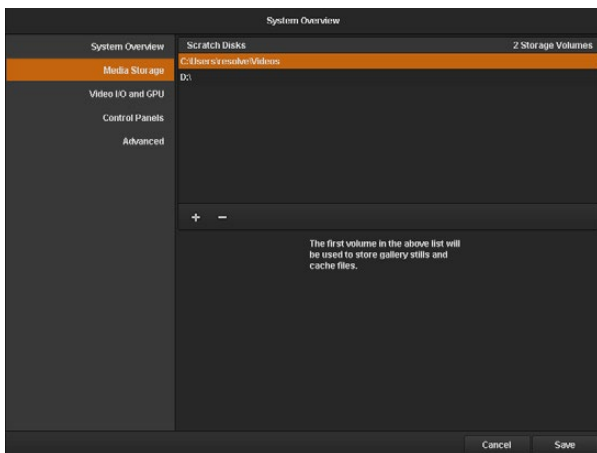
With the Rocket disabled DaVinci Resolve will use the CPUs to perform the software decompression and debayer. The CPU performance is usually slower but often provides pleasing image quality results so you can select the appropriate mode as you need.

First Time You Start Resolve

There are three hardware items to configure when you first start the Resolve application. Open the Hardware Setup by selecting the Preferences window from the DaVinci Resolve application menu.

The first tab shows the System Overview where you can verify that Resolve has found your GPUs and any Red Rocket cards if installed.

The first location in the storage list will become the default location for images, all proxies, cached files and gallery stills. This location will usually not be your system disk but a specially installed permanent disk for media. Often it's an internal or external RAID disk array and it needs plenty of storage capacity.



Click on the "+" (add) button to add a volume, folder or mount point to the list of disk storage for your media. Click on the "-" (remove) button to remove a volume, folder or mount point from the list of disk storage.

We recommend you identify your primary drive now and then add and remove other drives as needed but don't change the primary drive until you have considered how to back up and restore your stills.

In the Video I/O and GPU tab select which capture and playback device you will use for SDI monitoring. Depending on your workflow, this device may also be connected to a VTR or camera.

If you are using Resolve Live, the Video I/O and GPU tab includes the option to select the video input capture device.

In the Control Panel tab choose which control panel hardware you have connected to your computer. DaVinci Resolve for Windows supports the current USB 2.0 generation of DaVinci Resolve Control Surface but can also be used with the Avid Artist Color, JLC Cooper Eclipse CX and Tangent Devices WAVE and Element control panels. Details on connection follow this section.

The Advanced tab is generally not required by most facilities as it's for specific system configurations. You should leave this blank unless directed otherwise.

After changing any of these preferences select save and restart the application.

Configuring Third Party Control Panels

You can use DaVinci Resolve with your mouse and keyboard, with a pen and tablet and also with one of the supported third party control panels. DaVinci Resolve supports the Avid Artist Color, JLCoooper Eclipse CX, or either of the Tangent Devices WAVE or Element control panels.

Refer to the instructions from the panel vendor and review with the directions below to configure the panel to work with DaVinci Resolve.

After first starting the Resolve application, open the Hardware Setup by selecting 'Preferences' from the DaVinci Resolve application. In the Preferences window, select the Control Panel tab and choose which control panel hardware you have connected to your workstation. Save the updated preferences and restart the DaVinci Resolve application.

The Tangent Devices WAVE is a USB device and requires no special configuration for use with DaVinci Resolve. Just plug it in to your workstation and it will work. The Tangent Devices Element Bundle is a set of four USB panels that connect to your workstation via a 4-port USB 2.0 hub.

You will need to download and install the 'Tangent Hub support pack' to use the panels with DaVinci Resolve. Once the Tangent Hub is installed, plug the panels into your workstation and they will work with Resolve. The Tangent Hub installer for Windows can be downloaded from <http://www.tangentdevices.co.uk/support.asp>.

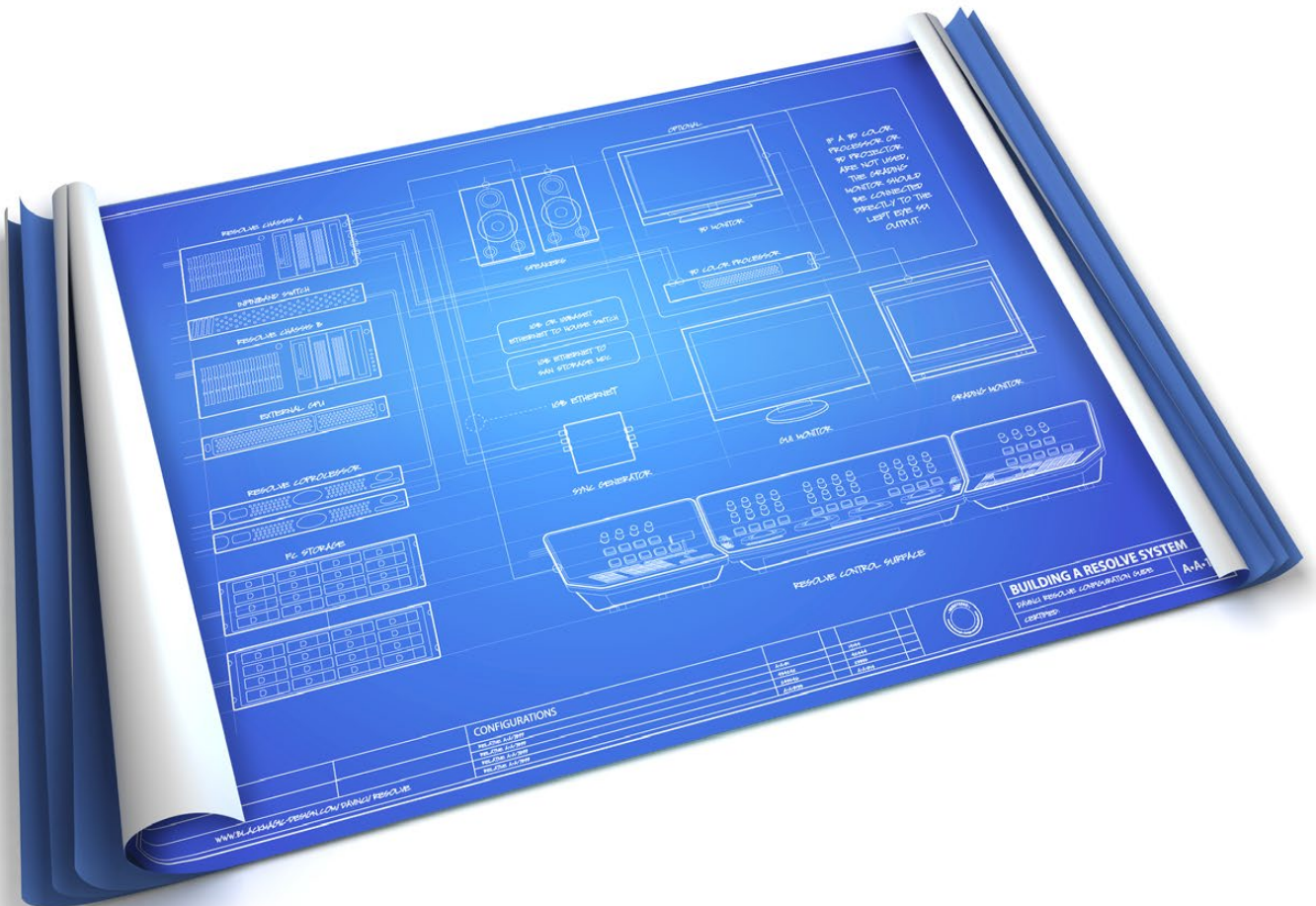
If using a JLCoooper Eclipse CX, follow the Eclipse CX documentation to connect and configure it with an Ethernet port on your workstation. Then launch Resolve, use the Preferences to select the Eclipse CX panel and click "Save." If you have changed the IP address or port from the default panel settings, enter the IP address and port number for your panel and then click "Save." Restart the DaVinci Resolve application and you will see the panel menus as soon as the application starts.

The Avid Artist Color panels installation is generally quite straight forward. If your workstation is connected to a network with a DHCP server, just connect an Ethernet cable from the panel to the same network switch. Install the EUcontrol application that comes with the panel, or download it from the Avid support site.

Launch the application and you will notice the E icon towards the right side of the top menu bar. When the icon is solid, the panel is communicating with the EU control application and, once selected in the DaVinci Resolve preferences, the panel will display Resolve menus at the next restart of the Resolve application.

If you are not using a DHCP server, refer to the Avid Artist Color installation instructions for setting the IP address of the panel and workstation. It should take just 30 seconds to set.

Assembling Hardware for DaVinci Resolve



Building a DaVinci Resolve is as simple as knowing where to find the certified parts and configuring them for Resolve. To help make it easy to start, we have listed all of the parts you need and where to find a supplier.

DaVinci Resolve with 1 Shared GPU

Suitable for HD

- ✓ Good for SD, HD in realtime
- ✓ Lowest cost hardware

DaVinci Resolve with 1 shared GPU is suitable for work in SD and HD in real time. It is perfect for Resolve users who need a color grading system for SD and HD at the lowest possible cost. This Resolve configuration supports real time, uncompressed, video image processing in 2D up to 1080i60.

The Blackmagic Design UltraStudio SDI is certified for SDI video and audio ingest and playback with the Resolve with single Shared GPU. UltraStudio SDI also provides low cost HDMI monitoring and connects to the computer's USB 3.0 port.

Some of the image processing operations like temporal noise reduction need high GPU RAM and so these operations might not be available or operation could be restricted on GPUs with limited RAM so consider this when selecting your GPU.

Compressed and raw media from digital cameras can also be used in realtime. Resolve can perform realtime RED R3D decoding at full 2K resolution and premium de-bayer quality, when RED Rocket hardware is installed, or at a lower resolution and de-bayer quality without additional hardware.

As with other Resolve configurations, the Resolve with 1 Shared GPU benefits from being used with the DaVinci Resolve Control Surface but can also be used with any of the certified third party control panels.

Setup

The computer currently certified for this configuration uses the ASUS P9X79 PRO motherboard and an Intel Core i7 processor. Some ATX computer chassis provide as many as 10 disk bays for plenty of low cost, internal, SATA disk storage. Alternatively, external eSATA and USB 3.0 disk arrays can be used.

Additional PCI Express cards, such as capture, storage and RED Rocket cards, must not be added to slot 3 as they will slow down the performance of the GUI and GPU cards.

It is very important you have installed the latest USB 3.0 software drivers and firmware for your motherboard before installing your UltraStudio SDI. Please visit the ASUS website for details.

Where to install your hardware

ASUS P9X79 PRO Motherboard

Slot	Board	Function
1	Optional GPU or 2nd RED Rocket card	Image or RED r3d processing
2		
3	--Don't use this slot--	
4	RED Rocket card or spare	Optional RED r3d processing
5	GPU	GUI & Image Processing
6	--blocked--	

Note that the Motherboard slot 1 is closest to the CPU.

DaVinci Resolve with 1 Shared GPU

Shopping List

Software

DaVinci Resolve for Windows

<http://www.blackmagicdesign.com>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Control Panel

DaVinci Resolve Control Surface

(Note: includes the DaVinci Resolve software)

<http://www.blackmagicdesign.com/davinciresolve>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Alternatives with a different feature set

Avid Artist Color

<http://www.avid.com/products/Artist-Color>

Where to Buy

http://euphonix.avid.com/artist/ux/euphonix/artist_sales.php

JLCooper's Eclipse CX

http://www.jlcooper.com/_php/family.php?fam=eclipseseries

Where to Buy

https://jlcooper.com/secure/_php/store.php?view=info&store=retail

Tangent Devices WAVE

http://www.tangentdevices.co.uk/products_wave.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

Tangent Devices Element Bundle

http://www.tangentdevices.co.uk/products_element.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

DaVinci Resolve with 1 Shared GPU

Shopping List

Capture Card

Blackmagic Design UltraStudio SDI

Alternative with Additional features

Blackmagic Design UltraStudio Pro

(Note: HD-SDI I/O and HDMI output is supported by Resolve)

<http://www.blackmagicdesign.com/products/>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Computers and Chassis

Chassis: Generic ATX chassis such as Cooler Master HAF 932 Advanced

http://www.coolermaster.com/product.php?product_id=6693

Where to Buy

<http://www.coolermaster.com/where.php>

Power Supply: 1000W or greater ATX PSU such as Corsair Professional Series HX1050

<http://www.corsair.com/professional-series-hx1050-80plus-silver-certified-modular-power-supply.html>

Where to Buy

<http://www.corsair.com/wheretobuy/>

Motherboard: ASUS P9X79 PRO

CPU: Intel Core i7-3960X 3.3 GHz RAM: 16GB (4 x 4GB RAM) PC3-12800 DDR3-1600 SDRAM

http://www.asus.com/Motherboards/Intel_Socket_2011/P9X79_PRO/

Where to Buy

<http://shop.asus.com/>

Additional items to purchase with Computer

System Drive: 512GB SSD or SATA 7200 1TB

HD DVD Drive: DVD-RW drive, SATA, Black

Where to Buy

Your local computer outlet

DaVinci Resolve with 1 Shared GPU

Shopping List

Operating System: Microsoft Windows 8 Professional, 64-bit

<http://windows.microsoft.com/en-us/windows-8/meet/>

Where to Buy

<http://www.microsoftstore.com/store/msstore/home>

GUI Monitor

Any 24" to 29" monitor meeting the following criteria:

- DVI-D or Mini DisplayPort input
 - IPS or TFT LCD flat panel with black bezel
 - 2560x1440 is the preferred screen resolution however 1920 x 1080 and higher screen resolutions are also supported
-

Optional DVI Extension

GEFEN DVI Extender

Model: CAB-HDTV-100MM

(for up to 1920 x 1200 resolution monitors)

http://www.gefen.com/kvm/dcable.jsp?prod_id=5403

Where to Buy

<http://www.gefen.com/dealers/worldmap.jsp>

Optional USB 2.0 Keyboard and Mouse

Microsoft Model: APB-00018 USB Desktop 600 KB & Mouse

<http://www.microsoft.com/hardware/en-us/p/wired-desktop-600>

Where to Buy

Your local computer outlet

DaVinci Resolve with 1 Shared GPU

Shopping List

Optional Apple Style USB 2.0 Keyboard*

Apple DaVinci Resolve Model: LKBU-RESOLVE-AM89-US

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

Where to Buy

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

*Note: some workstation motherboards may not recognise this keyboard

Optional USB 2.0 Extender

USB 2.0 Extender for the Resolve Control Surface

Model: ICRON USB 2.0 Ranger 2204

http://www.icron.com/products/usb_new/usb20-ranger-2204-cat5-extender.php

Where to Buy

<http://www.icron.com/where-to-buy/>

Internal Graphics Processor for Shared GUI and Image Processing

Multiple options shown below for installation within the workstation as a single shared GPU

NVIDIA Quadro K6000 with 12GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX TITAN with 6GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-titan>

NVIDIA GeForce GTX 780 with 3GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780>

NVIDIA GeForce GTX 690 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-690>

NVIDIA Quadro K5000 with 4GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX 680 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-680>

DaVinci Resolve with 1 Shared GPU Shopping List

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

<http://www.geforce.com/hardware/desktop-gpus> (Select the GPU and then 'Compare and Buy')

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

Optional Internal Image Storage

4 x SSD or 4x7200rpm SATA hard disks with cables connected to the motherboard SATA controller

Where to Buy

Your local computer outlet

Optional Direct Attached External Image Storage

Multiple alternative options shown

Accusys A08S-PS, 8 Bay RAID

<http://www.accusys.com.tw/A08/A08/Overview.html>

Accusys A12S2-PS, 12 Bay RAID

<http://www.accusys.com.tw/products/storage/a12s2-ps.html>

Where to Buy

<http://www.accusys.com.tw/where/index.htm>

CalDigit HDPro2, 8 Bay RAID

<http://www.CalDigit.com/HDPro2/>

DaVinci Resolve with 1 Shared GPU

Shopping List

Where to Buy

<http://www.caldigit.com/store.asp#HDPro2>

Facilis Technology TerraBlock, 24 Bay RAID

<http://www.facilis.com/products.html>

Where to Buy

<http://www.facilis.com/howtobuy.html>

Optional RED R3D Processing Card

RED Rocket

<http://www.red.com/>

Where to Buy

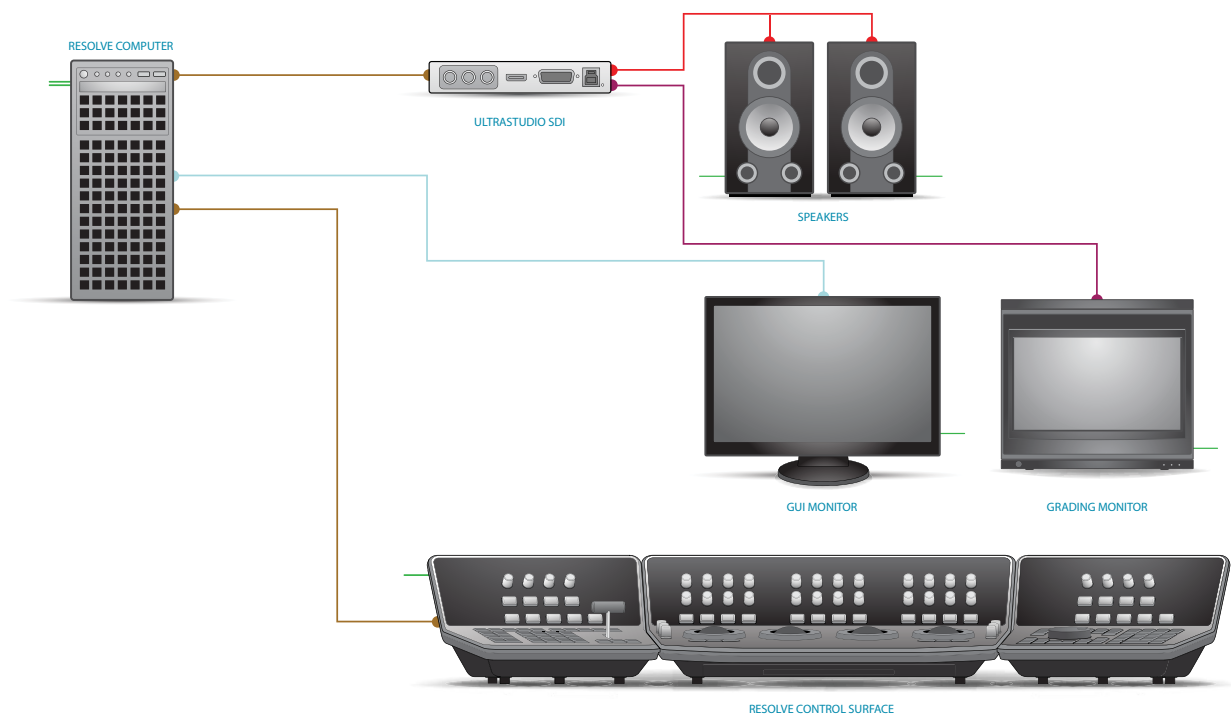
<http://www.red.com/store/775-0001>

DaVinci Resolve with 1 Shared GPU

Connection Diagram



Connections for a DaVinci Resolve Control Surface with USB



- HDMI
- DVI
- USB
- HD-SDI
- PCI-E Extender
- InfiniBand
- Storage Connection
- Ethernet
- Reference
- Audio
- RS422
- Electrical Power

DaVinci Resolve with 1 Dedicated Processing GPU

Good for SD, HD, 2K.

- ✓ Good for SD, HD, 2K in realtime
- ✓ Good for HD 3D in realtime
- ✓ YUV 4:2:2 HD Stereoscopic 3D output for each eye

DaVinci Resolve with a single dedicated processing GPU is suitable for work in SD, HD and 2K in real time. This Resolve configuration also supports basic HD Stereoscopic grading. With the DeckLink 4K Extreme video card you can also grade 4K material and display on a 4K monitor however performance may not be real time.

Some of the image processing operations like temporal noise reduction need high GPU RAM and so these operations might not be available or operation could be restricted on GPUs with limited RAM so consider this when selecting your GPU.

Compressed and raw media from digital cameras can also be used in realtime. Resolve can perform realtime RED R3D decoding at full 2K resolution and premium de-bayer quality, when RED Rocket hardware is installed, or at a lower resolution and de-bayer quality without additional hardware.

As with other Resolve configurations, the Resolve with

1 processing GPU benefits from being used with the DaVinci Resolve Control Surface but can also be used with any of the certified third party control panels.

Setup

The two computers currently certified for the 1 GPU configuration are the HP Z820 Workstation and the Supermicro SuperServer 7047GR-TRF. The SuperMicro offers a greater number of PCIe 3.0 x16 slots and redundant power supplies.

Davinci Resolve 10 for Windows will use CUDA on NVIDIA hardware and on OpenCL on ATI hardware. However devices running both NVIDIA and AMD/ATI hardware simultaneously is not supported on Windows Resolve systems.

The NVIDIA Quadro K4000 or a GPU matching your selection for image processing is recommended for GUI when you select a NVIDIA CUDA processing GPU. If you have selected AMD/ATI, use two of the same model FirePro GPUs from the list below.

Where to install your hardware

HP Z820 Workstation

Slot	Board	Function
1	DeckLink 4K Extreme	Video & Audio I/O
2	NVIDIA or AMD/ATI GUI GPU	GUI
3	RED Rocket card or spare	Optional RED r3d processing
4	NVIDIA or AMD/ATI Processing GPU	Image processing
5	--blocked--	
6	HBA or RAID card	Storage interface
7	DeckLink HDMI Bracket	Optional HDMI output

Note that the Motherboard slot 1 is closest to the CPU.

Supermicro SuperServer 7047GT-TRF

Slot	Board	Function
1		
2	NVIDIA or AMD/ATI GUI GPU	GUI
3		
4	RED Rocket card 1 or spare	Optional RED r3d processing
5	--blocked--	
6	NVIDIA or AMD/ATI Processing GPU	Image processing
7	--blocked--	
8	RED Rocket card 2 or spare	Optional RED r3d processing
9	HBA OR RAID CARD	Storage interface
10	--spare--	
11	DeckLink 4K Extreme	Video and Audio I/O

Note that the Motherboard slot 11 is closest to the CPU.

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

Software

DaVinci Resolve for Windows

<http://www.blackmagicdesign.com>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Control Panel

DaVinci Resolve Control Surface

(Note: includes the DaVinci Resolve software)

<http://www.blackmagicdesign.com/davinciresolve>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Alternatives with reduced features

Avid Artist Color

<http://www.avid.com/products/Artist-Color>

Where to Buy

http://euphonix.avid.com/artist/ux/euphonix/artist_sales.php

JLCooper's Eclipse CX

http://www.jlcooper.com/_php/family.php?fam=eclipseseries

Where to Buy

https://jlcooper.com/secure/_php/store.php?view=info&store=retail

Tangent Devices WAVE

http://www.tangentdevices.co.uk/products_wave.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

Tangent Devices Element Bundle

http://www.tangentdevices.co.uk/products_element.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

Capture Card

Blackmagic Design DeckLink 4K Extreme

Alternative with reduced features

Blackmagic Design DeckLink HD Extreme 3D+

Blackmagic Design DeckLink Studio

(Note: HD-SDI I/O and HDMI output is supported by Resolve)

<http://www.blackmagicdesign.com/products/>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Computers and Chassis

HEWLETT-PACKARD COMPUTER:

Computer: HP Z820 Workstation

CPU: 2x Intel Xeon X5660 2.8 GHz, or faster

RAM: 16GB (8 x 2GB) or more DDR3-1333 ECC RAM

Hard Disk: 1 x SATA 7200 1TB

DVD Drive: 1 x DVD-RW drive, SATA, Black

Operating System: Windows 8 Pro, 64-bit

<http://h10010.www1.hp.com/wwpc/pscmisc/vac/us/en/sm/workstations/z820>

Where to Buy

http://www.hp.com/sbso/buyguides/pg_workstations/workstation-finder.html?jumpid=re_r2910_workstationfinder/4Q08workstationFinderTool/1-57H2D/100708|smbstore

Alternative with a different feature set

SUPERMICRO COMPUTER:

Computer: Supermicro SuperServer 7047GR- TRF Black 4RU Rackmountable/Tower

CPU: 2x Intel Xeon 6C E5-2620 2.0 GHz 2 15M 7.2GT/s QPI, or faster

RAM: 32GB (8 x 4GB) or more ECC DDR3-1333 SDRAM

Hard Disk: Seagate Barracuda ES.2. 500GB or Intel 520 SSD, 240GB

DVD Drive: DVD-RW drive, SATA, Black

Operating System: Windows 8 Pro, 64-bit

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

<http://www.supermicro.com/products/system/4U/7047/SYS-7047GR-TRF.cfm>

Where to Buy

<http://www.supermicro.com.tw/wheretobuy/index.cfm>

GUI Monitor

Any 24" to 29" monitor meeting the following criteria:

- DVI-D or Mini DisplayPort input
 - IPS or TFT LCD flat panel with black bezel
 - 2560x1440 is the preferred screen resolution however 1920 x 1080 and higher screen resolutions are also supported
-

Optional DVI Extension

GEFEN DVI Extender

Model: CAB-HDTV-100MM

(for up to 1920 x 1200 resolution monitors)

http://www.gefen.com/kvm/dcable.jsp?prod_id=5403

Where to Buy

<http://www.gefen.com/dealers/worldmap.jsp>

Optional USB 2.0 Keyboard and Mouse

Microsoft Model: APB-00018 USB Desktop 600 KB & Mouse

<http://www.microsoft.com/hardware/en-us/p/wired-desktop-600>

Where to Buy

Your local computer outlet

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

Optional Apple Style USB 2.0 Keyboard*

Apple DaVinci Resolve Model: LKBU-RESOLVE-AM89-US

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

Where to Buy

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

*Note: some workstation motherboards may not recognise this keyboard

Optional USB 2.0 Extender

USB 2.0 Extender for the Resolve Control Surface

Model: ICRON USB 2.0 Ranger 2204

http://www.icron.com/products/usb_new/usb20-ranger-2204-cat5-extender.php

Where to Buy

http://www.icron.com/products/usb/how_to_buy_a.php

Graphics Processor for GUI

NVIDIA Quadro K4000 with 2GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

For 3D Stereoscopic systems the Quadro K4000 is the minimum recommended

Alternatives with reduced features

NVIDIA Quadro K2000 with 2GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA Quadro K600 with 1GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

Graphics Processor for Image Processing

Multiple options shown

NVIDIA Quadro K6000 with 12GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX TITAN with 6GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-titan>

NVIDIA GeForce GTX 780 with 3GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780>

NVIDIA GeForce GTX 690 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-690>

NVIDIA Quadro K5000 with 4GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX 680 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-680>

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

<http://www.geforce.com/hardware/desktop-gpus> (Select the GPU and then 'Compare and Buy')

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

Optional Direct Attached External Image Storage

Multiple alternative options shown

Accusys A08S-PS, 8 Bay RAID

<http://www.accusys.com.tw/A08/A08/Overview.html>

Accusys A12S2-PS, 12 Bay RAID

<http://www.accusys.com.tw/products/storage/a12s2-ps.html>

Where to Buy

<http://www.accusys.com.tw/where/index.htm>

CalDigit HDPro2, 8 Bay RAID

<http://www.CalDigit.com/HDPro2/>

Where to Buy

<http://www.caldigit.com/store.asp#HDPro2>

Facilis Technology TerraBlock, 24 Bay RAID

<http://www.facilis.com/products.html>

Where to Buy

<http://www.facilis.com/howtobuy.html>

DaVinci Resolve with 1 Dedicated Processing GPU

Shopping List

Optional Fiber Channel SAN External Storage

Multiple alternative options shown

Rorke Data Galaxy Aurora, 36 Bay RAID

<http://www.rorke.com/solutions/galaxy/aurora>

Where to Buy

<http://www.rorke.com/about/contact>

Alternative

Oxygen Tec O2 24 bay enclosure

Model: 4K24FS http://www.oxygentec.com/newWeb/pro/display.asp?id=232&chanpin=true&type=cp_jieshao&name_cn=%B2%FA%C6%B7%BD%E9%C9%DC&shuxingid=12&daili=

Where to Buy

http://www.oxygentec.com/newWeb/news/display_about.asp?id=95

Optional HBA for Fiber Channel SAN External Storage

ATTO 8Gbps Dual Channel PCIe Fiber Channel HBA

Model: CTFC-82EN-000

<http://www.attotech.com/products/product.php?cat=1&scat=1&prod=2&sku=CTFC-82EN-000>

Where to Buy

<http://www.attotech.com/howtobuy/find-reseller.php>

Optional RED R3D Processing Card

RED Rocket

<http://www.red.com/>

Where to Buy

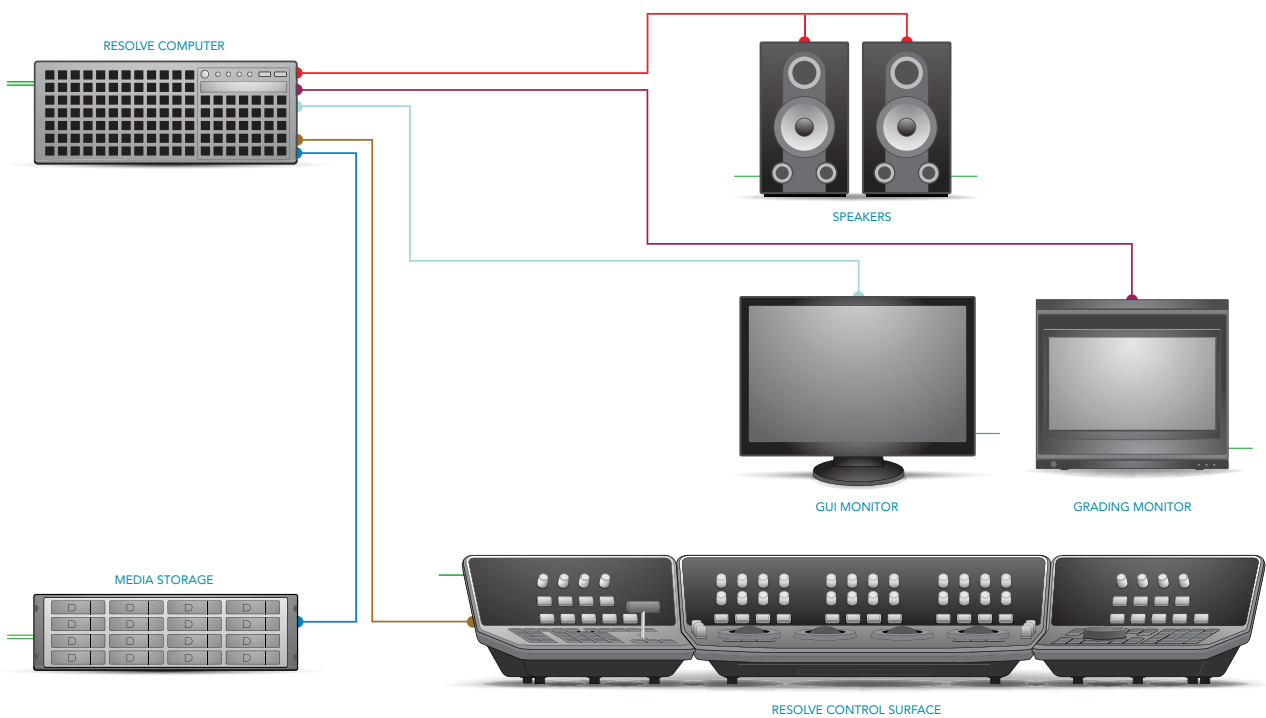
<http://www.red.com/store/775-0001>

DaVinci Resolve with 1 Dedicated Processing GPU

Connection Diagram



Connections for a DaVinci Resolve Control Surface with USB



- HDMI
- DVI
- USB
- HD-SDI
- PCI-E Extender
- InfiniBand
- Storage Connection
- Ethernet
- Reference
- Audio
- RS422
- Electrical Power

DaVinci Resolve with 2 Processing GPUs

Better for SD, HD, 2K

- ✓ Better for SD, HD, 2K in realtime
- ✓ Good for UHD/4K in realtime
- ✓ Better for 3D in HD, 2K in realtime
- ✓ YUV 4:2:2 HD Stereoscopic 3D output for each eye

DaVinci Resolve with 2 GPUs is better for work in SD, HD and 2K in realtime and provides twice the grading performance of the single dedicated GPU configuration. This Resolve configuration also supports HD Stereoscopic grading. With the DeckLink 4K Extreme video card you can grade and monitor in UHD/4K but depending on your GPUs playback may not be real time. With the faster GPUs listed below you can use a UHD/4K timeline and monitor in UHD/4K in realtime.

Some of the image processing operations like temporal noise reduction need high GPU RAM and so these operations might not be available or operation could be restricted on GPUs with limited RAM so consider this when selecting your GPU.

Compressed and raw media from digital cameras can also be used in realtime. Resolve can perform realtime RED R3D decoding at full 2K resolution and premium de-bayer quality, when RED Rocket hardware is installed, or at a lower resolution and de-bayer quality without additional hardware. A second RED Rocket is required for 5K images and three for stereoscopic 5K projects.

As with other Resolve configurations, the Resolve with 2 processing GPU benefits from being used with the DaVinci Resolve Control Surface but can also be used with any of the certified third party control panels.

Setup

The Supermicro SuperServer 7047GR-TRF is the only computer currently certified for the 2 GPU configuration as it has sufficient, high speed, double-width slots for all necessary cards.

DaVinci Resolve 10 for Windows will use CUDA on NVIDIA hardware and OpenCL on AMD/ATI GPUs. However devices running both NVIDIA and ATI hardware simultaneously is not supported on Windows Resolve systems.

The NVIDIA Quadro K4000 or a GPU matching your selection for image processing is recommended for GUI when you select a NVIDIA CUDA processing GPU. If you have selected AMD/ATI, use three of the same model FirePro GPUs from the list below.

The NVIDIA GeForce GTX 680 4GB is the lowest cost GPU card for image processing in Resolve. Other card options, like the GTX TITAN will have considerably higher performance and we recommend this card for image processing not only for its speed but also its 6GB of RAM.

While the NVIDIA Quadro K5000 provides lower performance it may be appropriate if other software on the same computer requires a Quadro card. The NVIDIA Quadro K6000 with 12GB RAM is the top Quadro model supported.

Where to install your hardware

Supermicro SuperServer 7047GR-TRF

Slot	Board	Function
1		
2	NVIDIA or AMD/ATI GUI GPU	GUI
3		
4	RED Rocket card 1, or spare	Optional RED r3d processing
5	--blocked--	
6	NVIDIA or AMD/ATI Processing GPU	Image processing
7	--blocked--	
8	NVIDIA or AMD/ATI Processing GPU	Image processing
9	HBA or RAID card	Storage interface
10	--spare--	
11	DeckLink HD Extreme 3D	Video and Audio I/O

Note that the Motherboard slot 11 is closest to the CPU.

DaVinci Resolve with 2 Processing GPUs

Shopping List

Software

DaVinci Resolve for Windows

<http://www.blackmagicdesign.com>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Control Panel

DaVinci Resolve Control Surface

(Note: includes the DaVinci Resolve software)

<http://www.blackmagicdesign.com/davinciresolve>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Alternatives with reduced features

Avid Artist Color

<http://www.avid.com/products/Artist-Color>

Where to Buy

http://euphonix.avid.com/artist/ux/euphonix/artist_sales.php

JLCooper's Eclipse CX

http://www.jlcooper.com/_php/family.php?fam=eclipseseries

Where to Buy

https://jlcooper.com/secure/_php/store.php?view=info&store=retail

Tangent Devices WAVE

http://www.tangentdevices.co.uk/products_wave.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

Tangent Devices Element Bundle

http://www.tangentdevices.co.uk/products_element.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

DaVinci Resolve with 2 Processing GPUs

Shopping List

Capture Card

Blackmagic Design DeckLink 4K Extreme

Alternative with reduced features

Blackmagic Design DeckLink HD Extreme 3D+
(Note: HD-SDI I/O and HDMI output is supported by Resolve)

<http://www.blackmagicdesign.com/products/>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Computers and Chassis

SUPERMICRO COMPUTER:

Computer: Supermicro SuperServer 7047GR- TRF Black 4RU Rackmountable/Tower

CPU: 2x Intel Xeon 6C E5-2620 2.0 GHz 2 15M 7.2GT/s QPI, or faster

RAM: 32GB (8 x 4GB) or more ECC DDR3-1333 SDRAM

Hard Disk: Seagate Barracuda ES.2. 500GB or Intel 520 SSD, 240GB

DVD Drive: DVD-RW drive, SATA, Black

Operating System: Windows 8 Pro, 64-bit

<http://www.supermicro.com/products/system/4U/7047/SYS-7047GR-TRF.cfm>

Where to Buy

<http://www.supermicro.com.tw/wheretobuy/index.cfm>

GUI Monitor

Any 24" to 29" monitor meeting the following criteria:

- DVI-D or Mini DisplayPort input
- IPS or TFT LCD flat panel with black bezel
- 2560x1440 is the preferred screen resolution however
1920 x 1080 and higher screen resolutions are also supported

DaVinci Resolve with 2 Processing GPUs

Shopping List

Optional DVI Extension

GEFEN DVI Extender

Model: CAB-HDTV-100MM

(for up to 1920 x 1200 resolution monitors)

http://www.gefen.com/kvm/dcable.jsp?prod_id=5403

Where to Buy

<http://www.gefen.com/dealers/worldmap.jsp>

Optional USB 2.0 Keyboard and Mouse

Microsoft Model: APB-00018 USB Desktop 600 KB & Mouse

<http://www.microsoft.com/hardware/en-us/p/wired-desktop-600>

Where to Buy

Your local computer outlet

Optional Apple Style USB 2.0 Keyboard*

Apple DaVinci Resolve Model: LKBU-RESOLVE-AM89-US

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

Where to Buy

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

*Note: some workstation motherboards may not recognise this keyboard

DaVinci Resolve with 2 Processing GPUs

Shopping List

Optional USB 2.0 Extender

USB 2.0 Extender for the Resolve Control Surface

Model: ICRON USB 2.0 Ranger 2204

http://www.icron.com/products/usb_new/usb20-ranger-2204-cat5-extender.php

Where to Buy

http://www.icron.com/products/usb/how_to_buy_a.php

Graphics Processor for GUI

NVIDIA Quadro K4000 with 2GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

For 3D Stereoscopic systems the Quadro K4000 is the minimum recommended

Alternatives with reduced features

NVIDIA Quadro K2000 with 2GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA Quadro K600 with 1GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

DaVinci Resolve with 2 Processing GPUs

Shopping List

Graphics Processor for Image Processing

Multiple options shown

NVIDIA Quadro K6000 with 12GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX TITAN with 6GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-titan>

NVIDIA GeForce GTX 780 with 3GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780>

NVIDIA GeForce GTX 690 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-690>

NVIDIA Quadro K5000 with 4GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX 680 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-680>

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

<http://www.geforce.com/hardware/desktop-gpus> (Select the GPU and then 'Compare and Buy')

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

DaVinci Resolve with 2 Processing GPUs

Shopping List

Optional Direct Attached External Image Storage

Multiple alternative options shown

Accusys A08S-PS, 8 Bay RAID

<http://www.accusys.com.tw/A08/A08/Overview.html>

Accusys A12S2-PS, 12 Bay RAID

<http://www.accusys.com.tw/products/storage/a12s2-ps.html>

Where to Buy

<http://www.accusys.com.tw/where/index.htm>

CalDigit HDPro2, 8 Bay RAID

<http://www.CalDigit.com/HDPro2/>

Where to Buy

<http://www.caldigit.com/store.asp#HDPro2>

Facilis Technology TerraBlock, 24 Bay RAID

<http://www.facilis.com/products.html>

Where to Buy

<http://www.facilis.com/howtobuy.html>

Optional Fiber Channel SAN External Storage

Multiple alternative options shown

Rorke Data Galaxy Aurora, 36 Bay RAID

<http://www.rorke.com/solutions/galaxy/aurora>

Where to Buy

<http://www.rorke.com/about/contact>

Alternative

Oxygen Tec O2 24 bay enclosure

Model: 4K24FS http://www.oxygentec.com/newWeb/pro/display.asp?id=232&chanpin=true&type=cp_jieshao&name_cn=%B2%FA%C6%B7%BD%E9%C9%DC&shuxingid=12&daili=

Where to Buy

http://www.oxygentec.com/newWeb/news/display_about.asp?id=95

DaVinci Resolve with 2 Processing GPUs

Shopping List

Optional HBA for Fiber Channel SAN External Storage

ATTO 8Gbps Dual Channel PCIe Fiber Channel HBA

Model: CTFC-82EN-000

<http://www.attotech.com/products/product.php?cat=1&scat=1&prod=2&sku=CTFC-82EN-000>

Where to Buy

<http://www.attotech.com/howtobuy/find-reseller.php>

Optional RED R3D Processing Card

RED Rocket

<http://www.red.com/>

Where to Buy

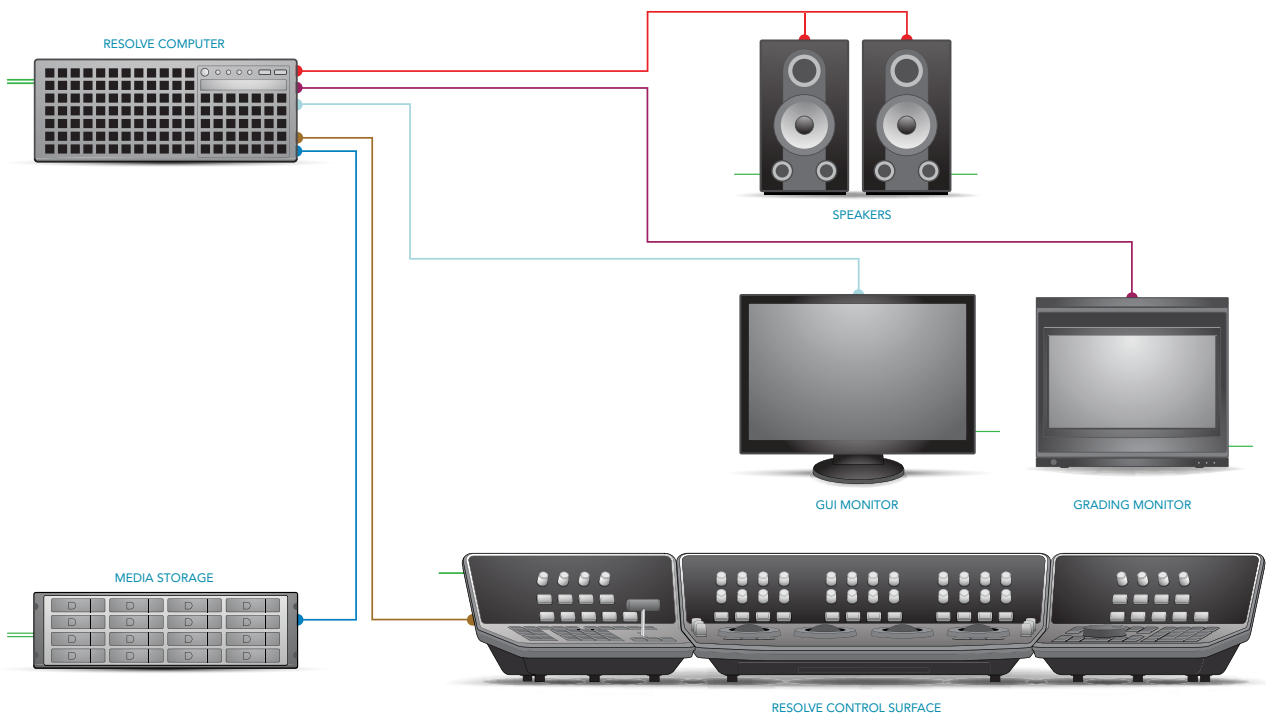
<http://www.red.com/store/775-0001>

DaVinci Resolve with 2 Processing GPUs

Connection Diagram



Connections for a DaVinci Resolve Control Surface with USB



- HDMI
- DVI
- USB
- HD-SDI
- PCI-E Extender
- InfiniBand
- Storage Connection
- Ethernet
- Reference
- Audio
- RS422
- Electrical Power

DaVinci Resolve with 4 Processing GPUs

Best for SD, HD, 2K and UHD/4K.

- ✓ Best for SD, HD, 2K, UHD/4K in realtime
- ✓ Best for 3D in HD, 2K in realtime
- ✓ YUV 4:2:2 HD Stereoscopic 3D output for each eye

Resolve with 4 GPUs is recommended for heavy realtime work in SD, HD, 2K and even UHD and 4K. It includes four dedicated GPUs which provide plenty of power for lots of windows, defocus and blurs in realtime.

With the DeckLink 4K Extreme video card and the faster GPUs listed below you can use a UHD/4K timeline and monitor in UHD/4K in realtime. This Resolve configuration also supports 2K Stereoscopic grading.

Some of the image processing operations like temporal noise reduction need high GPU RAM and so these operations might not be available or operation could be restricted on GPUs with limited RAM so consider this when selecting your GPU.

Compressed and raw media from digital cameras can also be used in realtime. Resolve can perform realtime RED R3D decoding at full 2K resolution and premium de-bayer quality, when RED Rocket hardware is installed, or at a lower resolution and de-bayer quality without additional hardware. A second RED Rocket is required for 5K images and three for stereoscopic 5K projects.

As with other Resolve configurations, the Resolve with 4 processing GPU benefits from being used with the DaVinci Resolve Control Surface but can also be used with any of the certified third party control panels.

Setup

The two computers currently certified for the 4 GPU configuration are the HP Z820 Workstation and the Supermicro SuperServer 7047GR-TRF. Both computers use an external PCIe expansion chassis to house the image processing GPUs. The SuperMicro offers a greater number of PCIe 3.0 x16 slots and redundant power supplies.

DaVinci Resolve 10 for Windows will use CUDA on NVIDIA hardware and OpenCL on AMD/ATI GPUs. However devices running both NVIDIA and ATI hardware simultaneously is not supported on Windows Resolve systems.

The NVIDIA Quadro K4000 or a GPU matching your selection for image processing is recommended for GUI when you select a NVIDIA CUDA processing GPU. If you have selected AMD/ATI, use five of the same model FirePro GPUs from the list below.

The NVIDIA GeForce GTX 680 4GB is the lowest cost GPU card for image processing in Resolve. Other card options, like the GTX TITAN will have considerably higher performance and we recommend this card for image processing not only for its speed but also its 6GB of RAM.

While the NVIDIA Quadro K5000 provides lower performance it may be appropriate if other software on the same computer requires a Quadro card. The NVIDIA Quadro K6000 with 12GB RAM is the top Quadro model supported.

Where to install your hardware

HP Z820 Workstation

Slot	Board	Function
1	DeckLink 4K Extreme	Video & Audio I/O
2	NVIDIA or AMD/ATI GUI GPU	GUI
3	RED Rocket card or spare	Optional RED r3d processing
4	PCIe expander HIC	Connect to PCIe expansion chassis
5	--blocked--	
6	HBA or RAID card	Storage interface
7	DeckLink HDMI Bracket	Optional HDMI output

Slot	CUBIX GPU-Xpander Desktop 4		
4	NVIDIA or AMD/ATI Processing GPU	2	NVIDIA or AMD/ATI Processing GPU
3	NVIDIA or AMD/ATI Processing GPU	1	NVIDIA or AMD/ATI Processing GPU

Supermicro SuperServer 7047GR-TRF

Slot	Board	Function
1		
2	NVIDIA or AMD/ATI GUI GPU	GUI
3		
4	RED Rocket card 1 or spare	Optional RED r3d processing
5		
6	PCIe expander HIC	Connect to PCIe expansion chassis
7		
8	RED Rocket card 2 or spare	Optional RED r3d processing
9	HBA or RAID card	Storage interface
10	spare	
11	DeckLink 4K Extreme	Video and Audio I/O

Slot	CUBIX GPU-Xpander Desktop 4		
4	NVIDIA or AMD/ATI Processing GPU	2	NVIDIA or AMD/ATI Processing GPU
3	NVIDIA or AMD/ATI Processing GPU	1	NVIDIA or AMD/ATI Processing GPU

DaVinci Resolve with 4 Processing GPUs

Shopping List

Software

DaVinci Resolve for Windows

<http://www.blackmagicdesign.com>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Control Panel

DaVinci Resolve Control Surface

(Note: includes the DaVinci Resolve software)

<http://www.blackmagicdesign.com/davinciresolve>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Alternatives with reduced features

Avid Artist Color

<http://www.avid.com/products/Artist-Color>

Where to Buy

http://euphonix.avid.com/artist/ux/euphonix/artist_sales.php

JLCooper's Eclipse CX

http://www.jlcooper.com/_php/family.php?fam=eclipseseries

Where to Buy

https://jlcooper.com/secure/_php/store.php?view=info&store=retail

Tangent Devices WAVE

http://www.tangentdevices.co.uk/products_wave.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

Tangent Devices Element Bundle

http://www.tangentdevices.co.uk/products_element.asp

Where to Buy

http://www.tangentdevices.co.uk/reseller_list.asp

DaVinci Resolve with 4 Processing GPUs

Shopping List

Capture Card

Blackmagic Design DeckLink 4K Extreme

Alternative with reduced features

Blackmagic Design DeckLink HD Extreme 3D+
(Note: HD-SDI I/O and HDMI output is supported by Resolve)

<http://www.blackmagicdesign.com/products/>

Where to Buy

<http://www.blackmagicdesign.com/resellers/>

Computers and Chassis

HEWLETT-PACKARD COMPUTER:

Computer: HP Z820 Workstation

CPU: 2x Intel Xeon X5660 2.8 GHz, or faster

RAM: 16GB (8 x 2GB) or more DDR3-1333 ECC RAM

Hard Disk: 1 x SATA 7200 1TB

DVD Drive: 1 x DVD-RW drive, SATA, Black

Operating System: Windows 8 Pro, 64-bit

<http://h10010.www1.hp.com/wwpc/pscmisc/vac/us/en/sm/workstations/z820>

Where to Buy

http://www.hp.com/sbso/buyguides/pg_workstations/workstation-finder.html?jumpid=re_r2910_workstationfinder/4Q08workstationFinderTool/1-57H2D/100708|smbstore

Alternative with a different feature set

SUPERMICRO COMPUTER:

Computer: Supermicro SuperServer 7047GR- TRF Black 4RU Rackmountable/Tower

CPU: 2x Intel Xeon 6C E5-2620 2.0 GHz 2 15M 7.2GT/s QPI, or faster

RAM: 32GB (8 x 4GB) or more ECC DDR3-1333 SDRAM

Hard Disk: Seagate Barracuda ES.2. 500GB or Intel 520 SSD, 240GB

DVD Drive: DVD-RW drive, SATA, Black

Operating System: Windows 8 Pro, 64-bit

<http://www.supermicro.com/products/system/4U/7047/SYS-7047GR-TRF.cfm>

Where to Buy

<http://www.supermicro.com.tw/wheretobuy/index.cfm>

DaVinci Resolve with 4 Processing GPUs

Shopping List

GUI Monitor

Any 24" to 29" monitor meeting the following criteria:

- DVI-D or Mini DisplayPort input
 - IPS or TFT LCD flat panel with black bezel
 - 2560x1440 is the preferred screen resolution however 1920 x 1080 and higher screen resolutions are also supported
-

Optional DVI Extension

GEFEN DVI Extender

Model: CAB-HDTV-100MM (for up to 1920 x 1200 resolution monitors)

http://www.gefen.com/kvm/dcable.jsp?prod_id=5403

Where to Buy

<http://www.gefen.com/dealers/worldmap.jsp>

Optional USB 2.0 Keyboard and Mouse

Microsoft Model: APB-00018 USB Desktop 600 KB & Mouse

<http://www.microsoft.com/hardware/en-us/p/wired-desktop-600>

Where to Buy

Your local computer outlet

Optional Apple Style USB 2.0 Keyboard*

Apple DaVinci Resolve Model: LKBU-RESOLVE-AM89-US

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

Where to Buy

<http://www.logickeyboard.com/shop/advance-line-apple-2020p.html>

*Note: some workstation motherboards may not recognise this keyboard

DaVinci Resolve with 4 Processing GPUs

Shopping List

Optional USB 2.0 Extender

USB 2.0 Extender for the Resolve Control Surface

Model: ICRON USB 2.0 Ranger 2204

http://www.icron.com/products/usb_new/usb20-ranger-2204-cat5-extender.php

Where to Buy

http://www.icron.com/products/usb/how_to_buy_a.php

Graphics Processor for GUI

NVIDIA Quadro K4000 with 2GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

For 3D Stereoscopic systems the Quadro K4000 is the minimum recommended

Alternatives with reduced features

NVIDIA Quadro K2000 with 2GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA Quadro K600 with 1GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

DaVinci Resolve with 4 Processing GPUs

Shopping List

Graphics Processor for Image Processing

Multiple options shown

NVIDIA Quadro K6000 with 12GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX TITAN with 6GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-titan>

NVIDIA GeForce GTX 780 with 3GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780>

NVIDIA GeForce GTX 690 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-690>

NVIDIA Quadro K5000 with 4GB GDDR5 SDRAM

<http://www.nvidia.com/object/quadro-desktop-gpus.html>

NVIDIA GeForce GTX 680 with 4GB GDDR5 SDRAM

<http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-680>

Where to Buy

http://www.nvidia.com/object/workstation_wtb_channel.html

<http://www.geforce.com/hardware/desktop-gpus> (Select the GPU and then 'Compare and Buy')

Alternatives with a different feature set

AMD Firepro W9000 with 6GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W9000/Pages/w9000.aspx>

AMD Firepro W8000 with 4GB GDDR5 SDRAM

<http://www.amd.com/US/PRODUCTS/WORKSTATION/GRAPHICS/ATI-FIREPRO-3D/W8000/Pages/w8000.aspx>

Where to Buy

<http://www.amd.com/us/partners/reseller-store-locator/Pages/reseller-store-locator.aspx>

DaVinci Resolve with 4 Processing GPUs

Shopping List

PCI Express Expansion

CUBIX GPU-Xpander Desktop ELITED

Model: XPDT-X16-ELITED-HE (Hi-flow exhaust)

<http://www.cubixgpu.com/Products/Desktop/>

or

CUBIX GPU-Xpander Rackmount 8 (eight slot)

Model: XPRM-X16-82-INT (International)

Model: XPRM-X16-82-OSV (North America)

Where to Buy

<https://www.cubixgpu.com/Online-Store>

Alternative with a different feature set

Cyclone PCIe2-2707 (five slot)

http://www.cyclone.com/products/expansion_systems/600-2707.php

Where to Buy

<http://www.cyclone.com/purchase/process.php>

Optional Direct Attached External Image Storage

Multiple alternative options shown

Accusys A08S-PS, 8 Bay RAID

<http://www.accusys.com.tw/A08/A08/Overview.html>

Accusys A08S-PS, 8 Bay RAID

<http://www.accusys.com.tw/products/storage/a12s2-ps.html>

Where to Buy

<http://www.accusys.com.tw/where/index.htm>

CalDigit HDPro2, 8 Bay RAID

<http://www.CalDigit.com/HDPro2/>

Where to Buy

<http://www.caldigit.com/store.asp#HDPro2>

DaVinci Resolve with 4 Processing GPUs

Shopping List

Facilis Technology TerraBlock, 24 Bay RAID

<http://www.facilis.com/products.html>

Where to Buy

<http://www.facilis.com/howtobuy.html>

Optional Fiber Channel SAN External Storage

Multiple alternative options shown

Rorke Data Galaxy Aurora, 36 Bay RAID

<http://www.rorke.com/solutions/galaxy/aurora>

Where to Buy

<http://www.rorke.com/about/contact>

Alternative

Oxygen Tec O2 24 bay enclosure

Model: 4K24FS

http://www.oxygentec.com/newWeb/pro/display.asp?id=232&chanpin=true&type=cp_jieshao&name_cn=%B2%FA%C6%B7%BD%E9%C9%DC&shuxingid=12&daili=

Where to Buy

http://www.oxygentec.com/newWeb/news/display_about.asp?id=95

Optional HBA for Fiber Channel SAN External Storage

ATTO 8Gbps Dual Channel PCIe Fiber Channel HBA

Model: CTFC-82EN-000

<http://www.attotech.com/products/product.php?cat=1&scat=1&prod=2&sku=CTFC-82EN-000>

Where to Buy

<http://www.attotech.com/howtobuy/find-reseller.php>

DaVinci Resolve with 4 Processing GPUs

Shopping List

Optional RED R3D Processing Card

RED Rocket

<http://www.red.com/>

Where to Buy

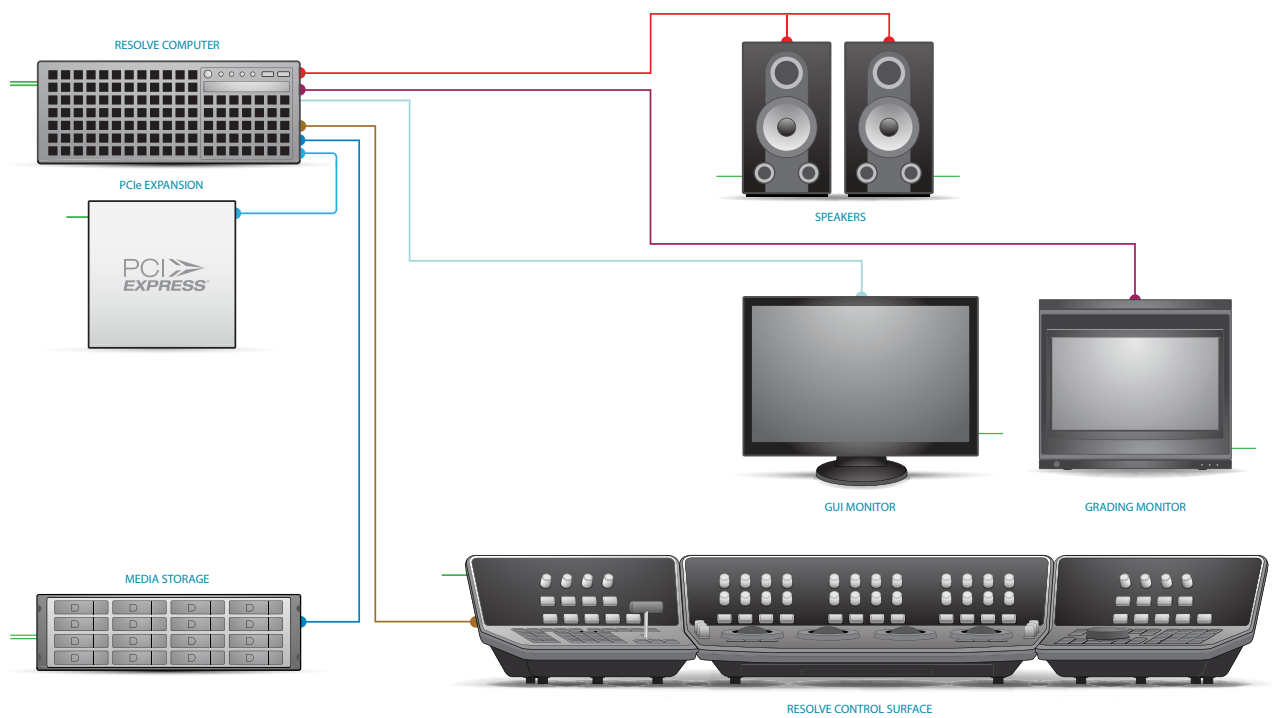
<http://www.red.com/store/775-0001>

DaVinci Resolve with 4 Processing GPUs

Connection Diagram



Connections for a DaVinci Resolve Control Surface with USB

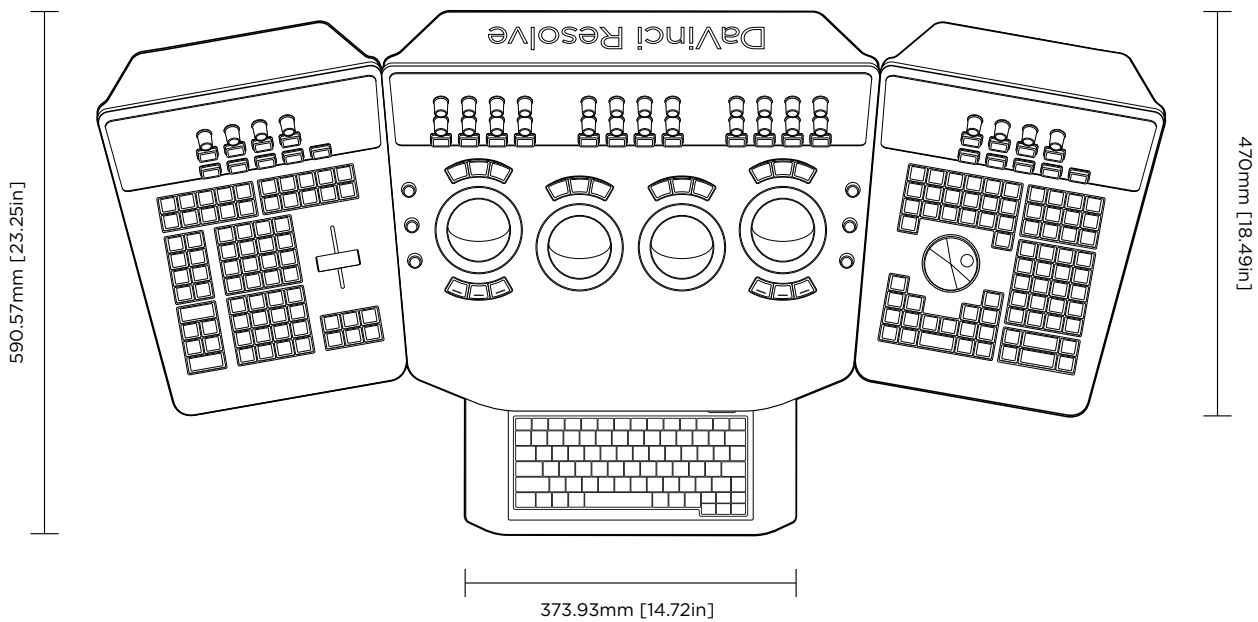
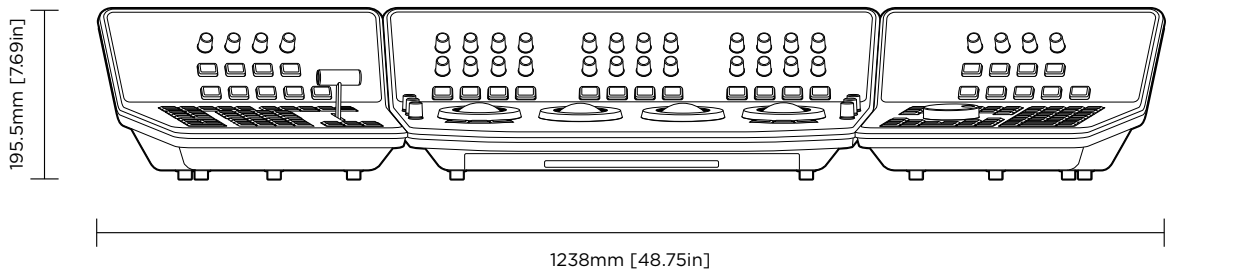


- HDMI
- DVI
- USB
- HD-SDI
- PCI-E Extender
- InfiniBand
- Storage Connection
- Ethernet
- Reference
- Audio
- RS422
- Electrical Power

DaVinci Resolve Control Surface

Dimensions and Weights

	HEIGHT	WIDTH	DEPTH	WEIGHT
CENTER PANEL	195.5mm (7.69in)	574.1mm (22.60in)	460.7mm (18.14in)	12.2kg (26.9lb)
LEFT PANEL	195.5mm (7.69in)	333.5mm (13.13in)	421.8mm (16.60in)	4.8kg (10.6lb)
RIGHT PANEL	195.5mm (7.69in)	333.5mm (13.13in)	421.8mm (16.60in)	4.8kg (10.6lb)



Warranty

12 Months Limited Warranty

Blackmagic Design warrants that DaVinci Resolve control surface will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. If a 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. Periodical updates to the operational software are not included under this warranty.

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.

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