Blackmagicdesign

DAVINCI RESOLVE 11

WINDOWS OS SYSTEM CONFIGURATIONS

July 2014 Edition

Table of Contents

DaVinci Resolve for Windows

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

DaVinci Resolve combines the world's most advanced color corrector and image enhancement system with powerful multitrack online editing, so now you can edit, color correct, finish and deliver all from one application!

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

The system you select or build may be based on what you already have and can update, or a specific operational or technical requirement.

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

With the appropriate hardware and configuration, DaVinci Resolve for Windows operates on current Intel based server, desktop and laptop computers.

The hardware configuration you select has a significant impact on the performance of the overall system. To achieve the best possible experience it is essential to build your DaVinci Resolve system with high performance computer hardware including at least one high performance graphics processor (GPU).

As DaVinci Resolve will use all the available resources to provide the fastest possible processing the configuration defines not only the speed which you can edit, playback and grade but also the time to render your finished timeline.

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

Which Platform?

The secret to selecting the correct system configuration for your needs is define a few key parameters. If you are planning UHD and 4K editing and or grading with clients in attendance, you should select a more powerful multiple GPU configuration. Different configurations are detailed below to help your selection. These all use Windows 8.1 Pro and or Windows Pro 7 with SP1.

For HD work with the occasional UHD job, particularly if working in ProRes or DNxHD, a mid range configuration is suitable. You will notice some performance limitations with 4K-6K source images and when using optical flow speed changes, temporal processing and noise reduction work.

The laptops listed in this guide are supported for HD work and while they have some processing limitations, their excellent portability means they are often found in the field and used for on set work. These systems are not optimized for UHD, optical flow speed changes, temporal processing and noise reduction work.

Please review the different configurations detailed below to find the right system for your needs.

Generic Intel Pro Motherboards

If you don't need guaranteed performance and have a tight budget you can consider one of the many generic pro motherboards now available.

The key consideration when selecting a generic pro motherboard is not just how many fast PCIe Gen3 x 16 slots that are available, but how many are full speed when other slots are used. Often when you read the fine print, these motherboards only offer x16 speed when just one or two slots are used.

The ASUS motherboard listed below is however a suitable option.

You will also find below a list of suppliers who can offer a turnkey system using this or a similar motherboard.

ASUS P9X79E-WS

The ASUS P9X79E-WS motherboard is ideal for DaVinci Resolve users who want to build a powerful and yet low cost editing and color grading system, particularly for HD work.

As there is only a single CPU in this system you should use the fastest one you can buy. You should also consider that for CPU intensive operations, like decompressing 4K, 5K and 6K camera Raw files, this single CPU system will be slower than the following dual CPU systems.
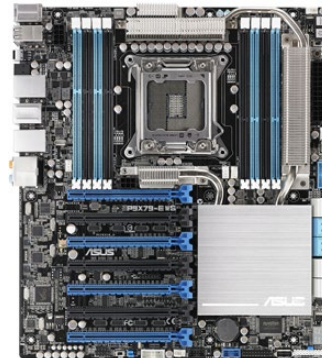
This motherboard specification includes 4 x PCIe Gen 3.0x16 slots configured as x16/x16/x16/x16 when only using the blue PCIe slots. If any black PCIe slots are used then the bandwidth of the adjacent blue slots halves, thus providing x16/x8/x8/x8/x16/x8/x8 in the full config.

It's therefore quite important to carefully consider board placement in these x16 slots and to avoid x8 slots if possible, even when using a PCIe expander. Recommendations are made in the ASUS section below.

Generic Pro Laptops

Few older laptop computers have had sufficient GPU power and screen resolution to operate DaVinci Resolve. There has however in the last year been an increasing number of systems with the new NVIDIA GPUs which are often suitable.

The Dell Precision M6800 is one such system. We recommend the larger GPU memory options, e.g. the NVIDIA Quadro K5100M with 8GB of dedicated GDDR5 memory, or at least the NVIDIA Quadro K4100M with 4GB.

Be sure to always order a laptop with sufficient screen resolution such as 1920x1080, and at least 16GB of system RAM.

512GB of SSD system disk is also recommended. Details can be found in the shopping section of this guide.

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, UHD and 4K-DCI 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.

UHD and 4K-DCI Image Processing

With the increasing use of digital cameras projects now often include camera clips at UHD, 4K-DCI or higher resolutions. 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 editing and 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 of 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.

Assuming your system has sufficient GPU RAM to play UHD and 4K-DCI images, one way to improve your editing and grading experience is to use a HD resolution timeline and displayed on a HD monitor. After you have completed your edit and grade simply change the timeline resolution for a UHD or 4K-DCI render.

There are many potential speed limits within this 4K pipeline so depending on the clip codec, CPU speed and number of cores, system RAM, the number of GPUs, their core count and GPU RAM, motherboard slot speed, disk speed, etc. each of these can affect the full 4K playback grade and display in real time.

GUI Monitor

The Resolve GUI is optimized for 2560 x 1440 screen resolution but will work down to 1920 x 1080. Dual GUI monitors are also supported and these can be different resolutions within the specs listed above.

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.

Connecting a Calibrated Edit, Client and Grading Monitor

All editors and colorists working on TV or film deliverables will need to use a proper color calibrated monitor connected to a SDI video I/O card for 2D or 3D monitoring. This device will occupy a PCIe slot on the motherboard , a USB 3.0 port or a Thunderbolt 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.

These I/O device are used for connecting your client, editing and calibrated monitor. Users can loop a single feed from the VTR to the client monitor or connect the second SDI output directly to the monitor.

If you use the DeckLink 4K Extreme video card and your facility has a UHD/4K-DCI display that accepts a single 6G SDI or two 3G SDI cables, or HDMI you can use this DeckLink card to connect directly to your monitor.

The DeckLink Studio 4K 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.

The UltraStudio 4K offers a variety of input and output connections in a rack mount chassis and is connected via Thunderbolt to the computer.

You can also use the UltraStudio Mini Recorder and Mini Monitor with DaVinci Resolve however there is no ingest or tape transport controls available with these devices.

For DaVinci Resolve to use the BMD video I/O devices you will need to install the Desktop Video drivers, which came with your I/O device or the updates 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 however almost any storage, designed for high bandwidth media and formatted in the standard Windows NTFS disk format, will be suitable for use.

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-DCI media.

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

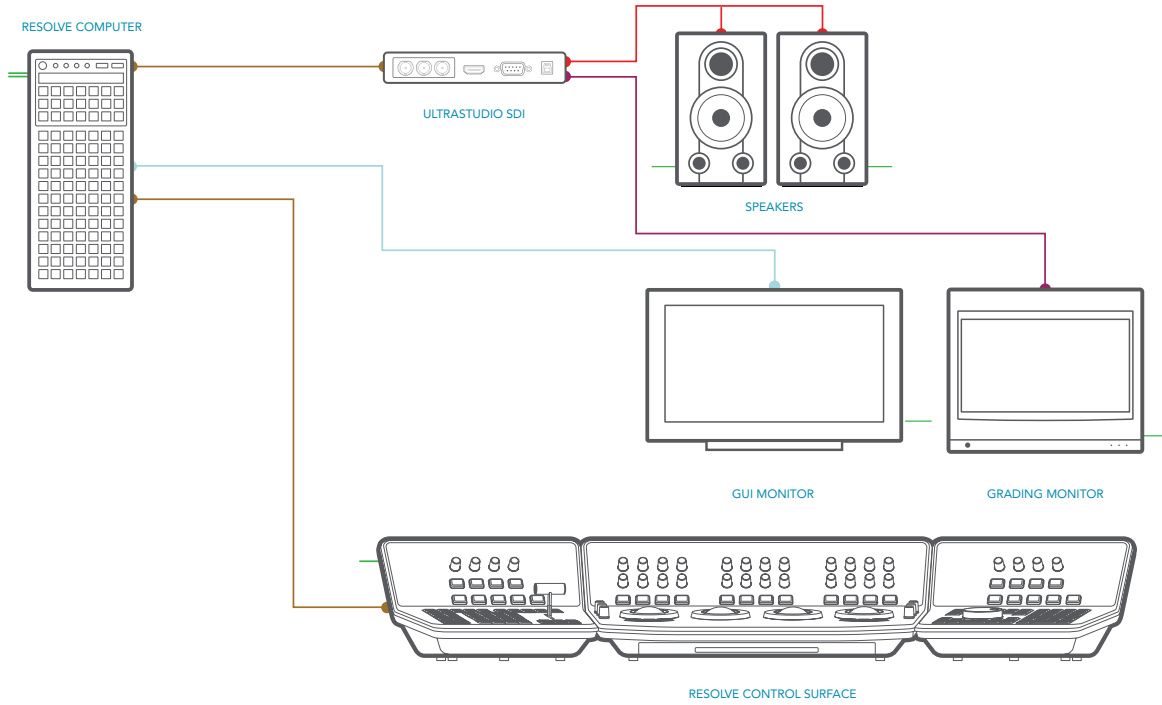The most common connection method for the SAN storage is via dual 8Gbit or single 16Gbit Fiber

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 should install and use the StorNext version as recommend by your local Quantum support office for your operation system.
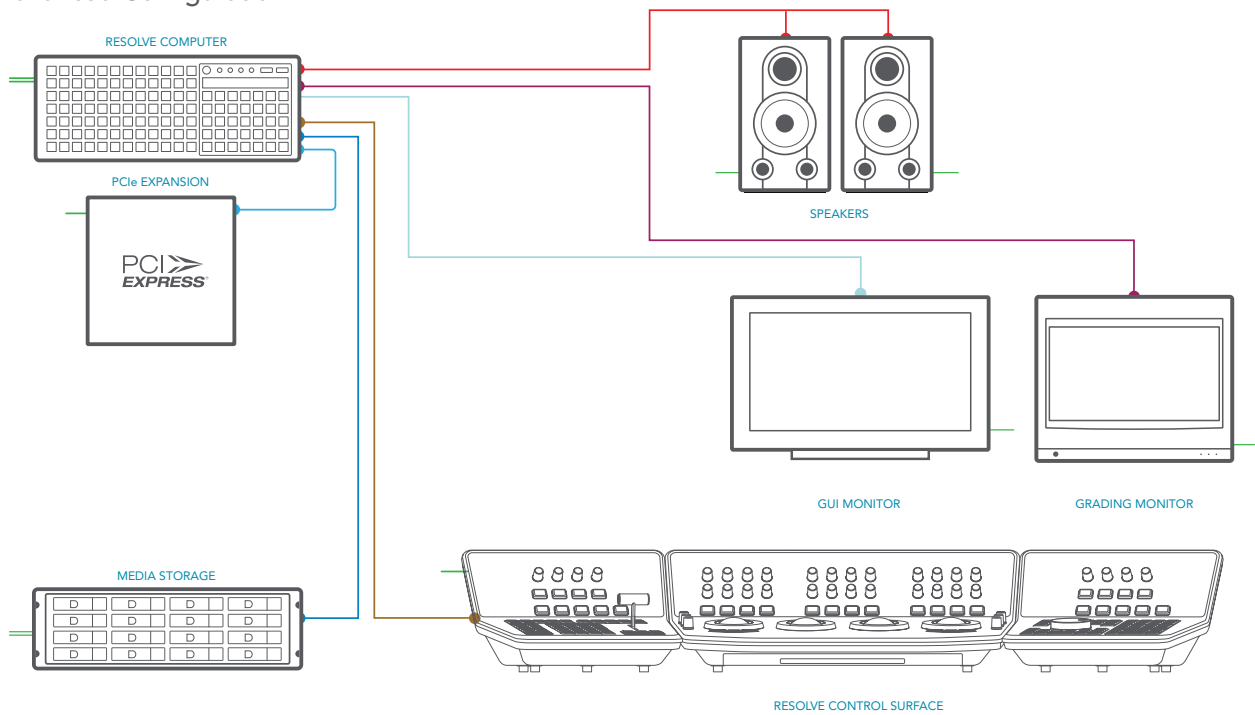
The Preferences option under the DaVinci Resolve menu is where you can add or remove internal and external disk storage for use with Resolve. The first volume in the list will be used to store gallery stills and cache files so this should be a drive that is always connected and accessible to your system.

System Connection Diagram

Basic Configuration

RESOLVE COMPUTER

ULTRASTUDIO SDI

SPEAKERS

GUI MONITOR

GRADING MONITOR

RESOLVE CONTROL SURFACE

Advanced Configuration

RESOLVE COMPUTER

PCIe EXPANSION

SPEAKERS

GUI MONITOR

GRADING MONITOR

MEDIA STORAGE

RESOLVE CONTROL SURFACE

- Thunderbolt
- DVI
- USB
- HD-SDI
- PCI-E Extender
- Storage Connection
- Reference
- Audio
- RS422
- Electrical Power

Windows Power Configuration

DaVinci Resolve is a demanding application and it is important to first 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".
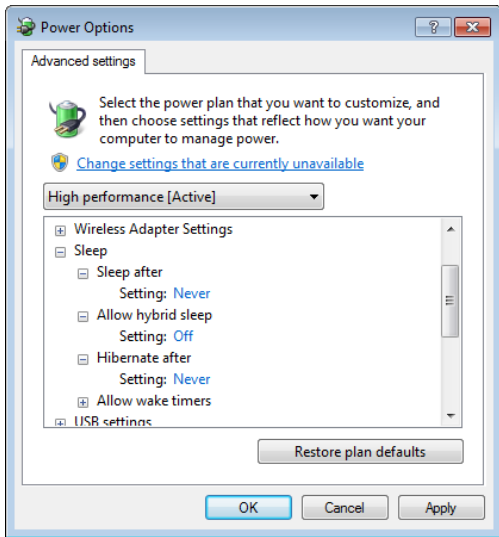

Click "Change plan settings" and ensure the computer is set to "Never" sleep.

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.
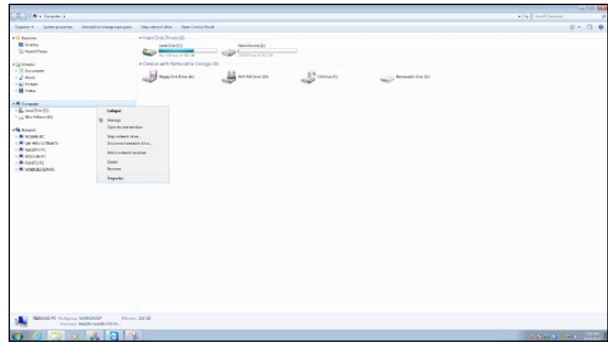
Then click Advanced System Settings and on the Advanced tab now select Settings.
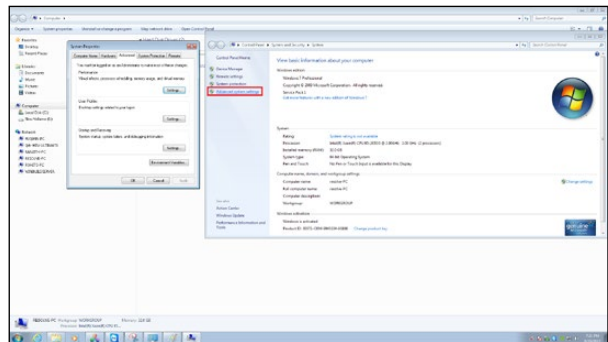
This opens the Performance Options window. In the first tab, Visual Effects, select the Custom radio button. All the checkboxes below should now be de-selected.
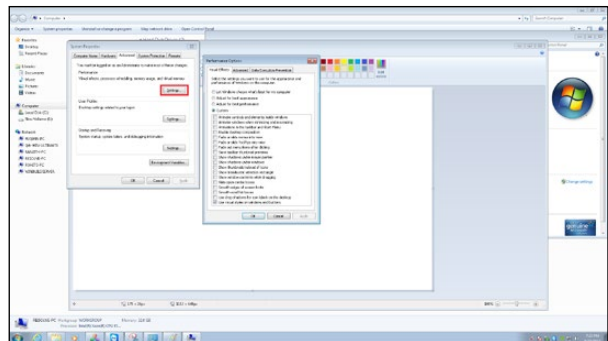
For Windows 7 Pro users, now select the last checkbox, Use visual styles on windows and buttons, then select OK and close all the windows. This selection is not required for Windows 8 Pro systems.

Installing the DaVinci Resolve Application

Installing or updating Resolve is essentially the same process.

First, 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 Applications folder on your startup hard disk.

Insert the Resolve DVD or open the downloaded executable and when the installer window 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 folder and will place a shortcut on your 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 for video I/O you will need to install the latest Desktop Video drivers. These are available from the support page at www.blackmagicdesign.com.

If you use Avid Media Composer or Adobe Premiere Pro on the same computer as Resolve, and you wish to use these applications with a DeckLink or UltraStudio, install the latest Desktop Video drivers after installing your editing applications. Blackmagic Desktop Video drivers install associated easy setup options and presets for a number of editing applications.
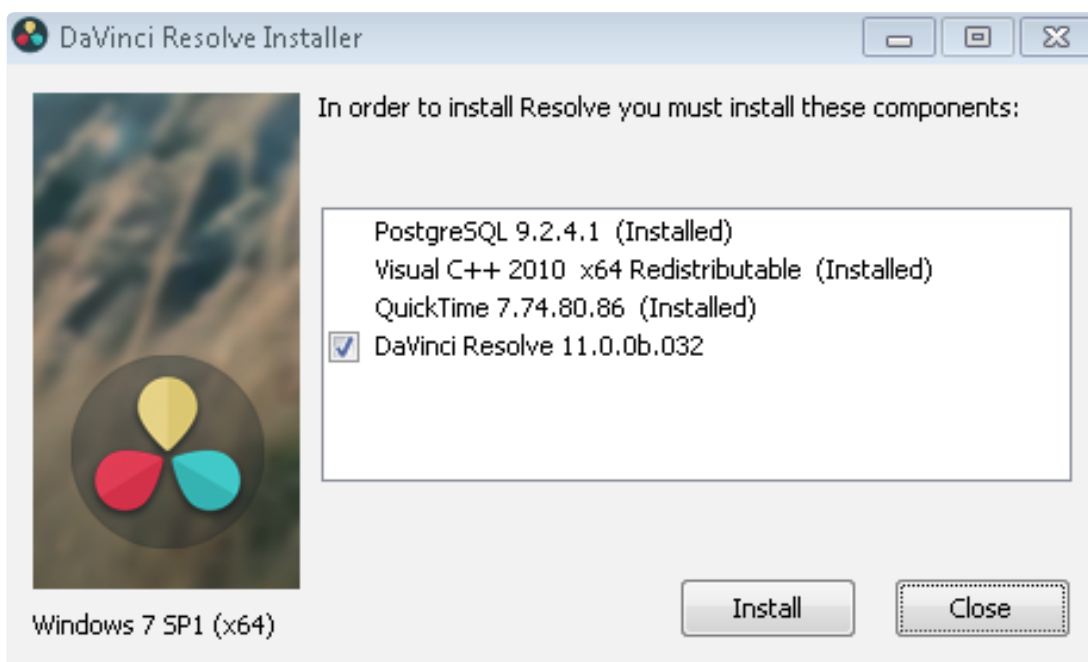
Installing or Updating Third Party Drivers

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

DaVinci Resolve 11 for Windows will use CUDA on NVIDIA hardware and OpenCL on AMD/ATI GPUs however systems running both NVIDIA and AMD/ATI hardware simultaneously are not supported on DaVinci Resolve for Windows systems.

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

NVIDIA CUDA GPUs

NVIDIA Drivers

When you install your NVIDIA GPU you will 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 Resolve and update to the recommended NVIDIA driver.

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 8.1 - 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.

In order to enable the AMD FirePro GPUs to use their entire memory they need to run in 64-bit mode.

On Windows OS, you need to perform the following steps to configure 64-bit GPU operation.

1. Right click on 'My Computer'

    > Select Properties.

2. Select the 'Advanced system settings' from the left panel.
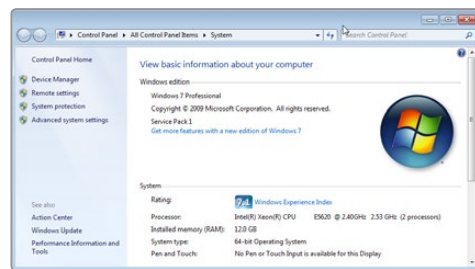
3. In the 'Advanced' tab, select the 'Environment Variables' button.

4. Then select 'New…' under user variables.
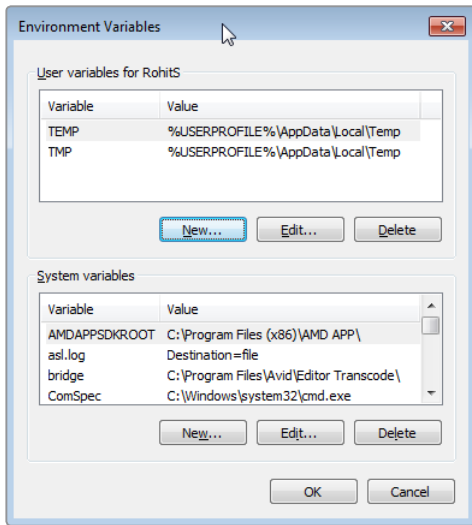
5. Enter the variable name 'GPU_FORCE_64BIT_
    PTR' and variable value as 1.
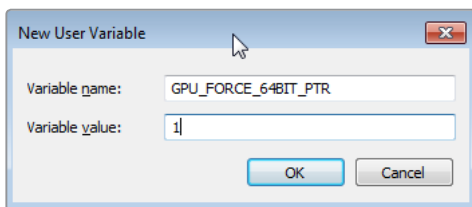
6. Select OK on all the windows one by one to
    close them.
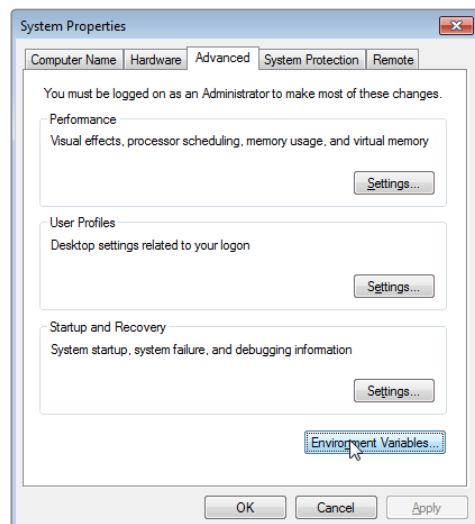
7. Start Resolve. (There is no need to restart
    the machine).

Rocket drivers and firmware

You can decode and play RED r3d files using the
CPU and GPU or if you install a Red Rocket/Rocket-X
in your workstation or 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/
Rocket-X driver and also firmware that is certified
for use with DaVinci 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.

First Time You Start DaVinci Resolve

There are three important 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.

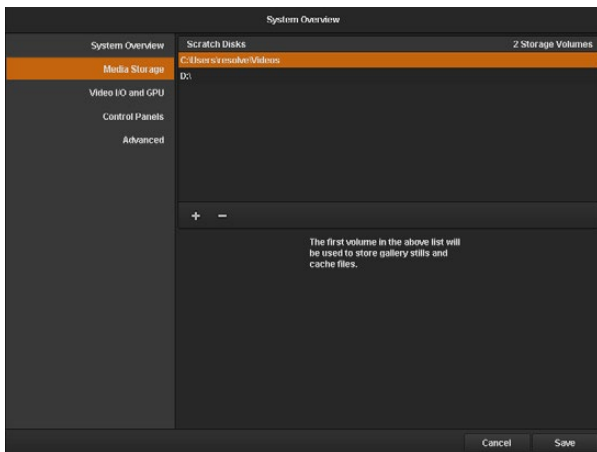The first location in the storage list will become the primary location for images, all proxies, cached files and gallery stills. This location will usually not be your system disk but a specifically installed permanent disk for media. Often it's an internal or external RAID disk array and it needs plenty 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 2.1 generation of DaVinci Resolve Control Surface but can also be used with the Avid Artist Color, JLCooper 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 its for specific system configurations. You should leave this blank unless directed otherwise.

After changing any of these preferences select save and restart the DaVinci Resolve 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, JLCooper 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 menu. 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 JLCooper 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.

System Configurations

This section describes three different system configurations so you can decide which best suits your operational needs. One uses an ASUS motherboard but is an example of a generic system which you can build yourself. The second configuration is based on the HP Z820 and supports dual CPUs. The third system is also a dual CPU system which includes the maximum number of fast PCIe slots for processing cards. All systems can use an expansion chassis for more GPUs but you should only install a single GUI GPU in your computer if you plan on using an expander. Details on where to connect the expander HBA and GPUs are shown below.

There are a number of third party vendors of turnkey computer platforms that can also configure and test a system specifically for DaVinci Resolve. A few of these vendors are listed with their web sites later in this section.

Generic PC Motherboard System

The ASUS P9X79E-WS motherboard is ideal for DaVinci Resolve users who want to build a powerful and yet low cost editing and color grading system particularly for HD work.
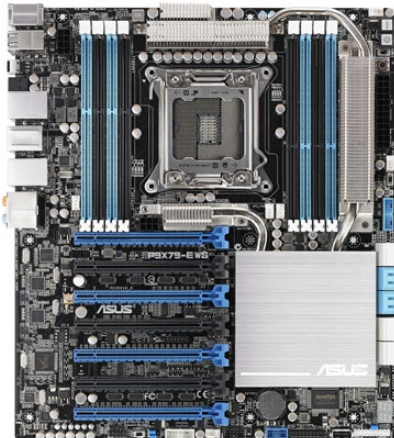
As there is only a single CPU in this system you should use the fastest one you can buy. You should also consider that for CPU intensive operations, like decompressing 4K, 5K and 6K camera Raw files, this single CPU system will be slower than the following dual CPU systems.

GPU options are listed below. We recommend using the same model GPU if multiple are used.

This motherboard specification includes 4 x PCIe Gen 3.0x16 slots (x16/x16/x16/x16) when only using the blue slots. If any black slots are used then the bandwidth of the adjacent blue slots halves, thus providing x16/x8/x8/x8/x16/x8/ x8 in the full config.

It's therefore quite important to carefully consider board placement in these x16 slots and to avoid x8 slots if possible.

Additional PCI Express cards, such as capture, storage or even an expander HBA should only be added to the slots shown in the tables below to avoid causing a slow down in the performance of the GUI and image processing GPU cards.

It is also very important you instal the latest USB 3.0 software drivers and firmware for your motherboard if you plan on using an UltraStudio SDI. Please visit the ASUS website for details.

Most ATX computer chassis provide as many as 10 disk bays for plenty of low cost, internal, SATA disk storage. Alternatively external eSATA, Fibre Channel or even USB 3.0 disk arrays can be used for media storage depending on your image resolution and number of files.

Configuration with a single or dual GPUs

ASUS P9X79E-WS Motherboard

Slot	Board	Function
1	DeckLink	Video & Audio Monitoring
2	DeckLink HDMI Bracket	HDMI Monitoring
3	GUI & Image Processing GPU	GUI Monitor
4	--Don't use this slot--	
5	Optional 2nd GPU	Do not connect
6	--Don't use this slot--	
7	Optional Storage/RAID Controller	External Storage

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

Configuration with PCIe Expander for multiple GPUs

ASUS P9X79E-WS Motherboard

Slot	Board	Function
1	DeckLink	Video & Audio Monitoring
2	DeckLink HDMI Bracket	HDMI Monitoring
3	GUI GPU	GUI Monitor
4	--Don't use this slot--	
5	Expander HBA	PCIe Expander
6	--Don't use this slot--	
7	Optional Storage/RAID Controller	External Storage

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

PCIe Expander options shown later in this guide.

HP Z820

The HP Z820 Workstation provides a flexible and simple workhorse for previewing and grading material up to and including UHD and 4K-DCI video. As this system has dual CPUs it is more suitable for decompressing hi-res files, such as 4K, 5K and 6K camera Raw.

The chassis provides fast image processing using three, single-width, PCIe Gen 3.0 x16 slots that do not share bus resources.

One of these slots is used for the GUI and the other for image processing GPUs. GPU options are listed below. We recommend using the same model GPU if multiple are used.

Additional PCI Express cards, such as capture, storage or even an expander HBA should only be added to the slots shown in the tables below to avoid causing a slow down in the performance of the GUI and image processing GPU cards.

Configuration with a single or dual GPUs

HP Z820 Workstation

Slot	Board	Function
1	DeckLink	Video & Audio Monitoring
2	GUI & Image Processing GPU	GUI Monitor
3	--blocked--	
4	Optional 2nd GPU	Do Not Connect
5	--blocked--	
6	Optional Storage/RAID Controller	External Storage
7	DeckLink HDMI Bracket	HDMI Monitoring

Note that the Motherboard slot is closest to the CPU.

Configuration with PCIe Expander for multiple GPUs

HP Z820 Workstation

Slot	Board	Function
1	DeckLink	Video & Audio Monitoring
2	GUI GPU	GUI Monitor
3	--blocked--	
4	Expander HBA	PCIe Expander
5	--Don't use this slot--	
6	Optional Storage/RAID Controller	External Storage
7	DeckLink HDMI Bracket	HDMI Monitoring

Note that the Motherboard slot is closest to the CPU.

PCIe Expander options shown later in this guide.

Supermicro SuperServer 7047GR-TRF

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

This motherboard provides very fast image processing using up to four, double-width, PCIe 3.0 x16 slots for greater throughput and flexibility.

One of these slots is used for the GUI and the other for image processing GPUs.

GPU options are listed below. We recommend using the same model GPU if multiple are used.

Additional PCI Express cards, such as capture, storage or even an expander HBA should only be added to the slots shown in the tables below to avoid causing a slow down in the performance of the GUI and image processing GPU cards.

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

Configuration with a single or dual GPUs

Supermicro SuperServer 7047GR-TRF

Slot	Board	Function
1		
2	GUI & Image Processing GPU	GUI Monitor
3		
4	Optional Storage/RAID Controller	External Storage
5	--Don't use this slot--	
6	Optional 2nd GPU	Do not connect
7	--Don't use this slot--	
8	Spare	
9	--Don't use this slot--	
10	DeckLink HDMI Bracket	HDMI Monitoring
11	DeckLink	Video & Audio Monitoring

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

Configuration with a single or dual GPUs

Supermicro SuperServer 7047GR-TRF

Slot	Board	Function
1		
2	GUI & Image Processing GPU	GUI Monitor
3		
4	Optional Storage/RAID Controller	External Storage
5	--Don't use this slot--	
6	Optional 2nd GPU	Do not connect
7	--Don't use this slot--	
8	Optional 3rd GPU	Do not connect
9	--Don't use this slot--	
10	DeckLink HDMI Bracket	HDMI Monitoring
11	DeckLink	Video & Audio Monitoring

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

Configuration with PCIe Expander for multiple GPUs

Supermicro SuperServer 7047GR-TRF

Slot	Board	Function
1		
2	GUI GPU	GUI Monitor
3		
4	Optional Storage/RAID Controller	External Storage
5	--Don't use this slot--	
6	Expander HBA	PCIe Expander
7	--Don't use this slot--	
8	Spare	
9	--Don't use this slot--	
10	DeckLink HDMI Bracket	HDMI Monitoring
11	DeckLink	Video & Audio Monitoring

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

PCIe Expansion Chassis

In all system configurations, additional image processing GPUs or even a RED Rocket card can be added using a PCIe expansion chassis.

If you use one of the chassis recommended below, install the expander HBA in the PCIe slot indicated and then your image processing GPUs in the expander. The GUI GPU should remain in the main computer as should the DeckLink and a RAID controller if installed.

Note: There are multiple PCIe expander options listed below. Not all offer Gen 3.0 x16 speed to every slot and the power supply limits on some expanders make them suitable for only one or two GPUs especially if a RED Rocket card is also installed.

The expander tables below show the ideal slot to use for the GPUs. Use the spare slots for other cards if needed.

CUBIX GPU-Xpander Desktop Elite

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Spare

CUBIX GPU-Xpander Rackmount Elite

Slot	Board
1	Spare x8 slot
2	Spare x8 slot
3	Image Processing GPU
4	Image Processing GPU
5	Image Processing GPU
6	Spare

CUBIX GPU-Xpander Rackmount 8

Slot	Board
1	Spare
2	Spare
3	Spare
4	Spare
5	Spare
6	Image Processing GPU
7	Image Processing GPU
8	Image Processing GPU

Cyclone PCIe2-2707

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Spare x8 slot
5	Spare x8 slot

NetStor NA255A

Slot	Board
1	Image Processing GPU
2	Image Processing GPU
3	Image Processing GPU
4	Spare

While this expander used x8 slots, in testing its performance has shown to be acceptable.

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

Alternative with Additional features

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.tangentwave.co.uk/products_wave.asp

Where to Buy

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

Tangent Devices Element Bundle

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

Where to Buy

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

Operating System

Microsoft Windows 8.1 Professional, 64-bit

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

Where to Buy

http://windows.microsoft.com/en-us/windows/buy

Note, the previous major release, Microsoft Windows 7.0 Professional, SP1, 64-bit, is also supported.

Capture Card

Blackmagic Design DeckLink 4K Extreme

Alternative with reduced features

Blackmagic Design DeckLink Studio 4K

(Note: HD-SDl l/O and HDMl output is supported by Resolve) http://www.blackmagicdesign.com/products/

Shopping List

Computer Option A
Generic Motherboard

Motherboard: ASUS P9X79E-WS

CPU: Intel Socket 2011 Core i7
SDRAM: 16GB (4 x 4GB RAM) DDR3-1600
http://www.asus.com/sg/Motherboards/P9X79E_WS/

Where to Buy

http://shop.asus.com/
System Drive: 512GB SSD or SATA 7200 1TB HD
DVD Drive: DVD-RW drive, SATA, Black

Where to Buy

Your local computer outlet.

Chassis: Generic ATX chassis such as Cooler Master HAF 932 Advanced http://www.coolermaster.com/case/full-tower/haf-932-advanced/

Where to Buy

http://www.coolermaster.com/service/whereToBuy.html

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

http://www.corsair.com/en-us/professional-series-hx1050-80plus-silver-certified-modular-power-supply

Where to Buy

http://www.corsair.com/en-us/products

Computer Option B
Hewlett Packard Z820

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 8.1 Pro, 64-bit

http://www8.hp.com/us/en/campaigns/workstations/z820.html

Where to Buy

http://www8.hp.com/us/en/campaigns/workstations/z820.html

Computer Option C
Laptop

Laptop Computer: Dell Precision 6800

Screen resolution: 1920x1080 minimum CPU: Intel® Core™ i5 or i7 processors RAM: 16GB minimum

GPU: NVIDIA Quadro K5100M; 8GB GDDR5 or at least NVIDIA Quadro K4100M; 4GB

Hard Disk: 512GB SSD minimum

DVD Drive: 1 x DVD-RW drive

Operating System: Windows 8.1 Pro, 64-bit

Where to Buy

http://www.dell.com/us/business/p/precision-m6800-workstation/pd?-srd+true&sk=m6800&scat=prod

Shopping List

Computer Option D

Supermicro SuperServer

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

CPU: 2 x Intel Xeon 10 Core E5-2680v2 2.8GHz or faster

RAM: 32GB (8x4GB) or more ECC DDR3-1866 SDRAM

(Note if you use more RAM, use the same size in all eight slots for maximum RAM access speed)

Hard Disk: Seagate Barracuda ES.2. 500GB or Intel 512 GB SSD

DVD Drive: DVD-RW drive, SATA, Black Operating System: Windows 8.1 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

Computer Option E

Third Party Turnkey System Vendors

There are a number of vendors who offer turnkey systems configured for operation with DaVinci Resolve. Please refer to their specific configurations and after sales support to ascertain the suitability for your needs.

The following are examples of the systems offered.

Safe Harbor Computers

https://www.sharbor.com/build-yours/Blackmagic/

JMR Electronics
http://www.jmr.com/en/products/22/atx-
workstation/

PCI Express Expansion

Multiple Options Shown

CUBIX GPU-Xpander Desktop Elite

Model: XPDT-G3-ELDHE5 (Hi-flow exhaust)
http://www.cubixgpu.com/gpu-xpander-desktop

CUBIX GPU-Xpander Rackmount Elite

Model: XPRM-G3-ELRHE

http://www.cubixgpu.com/xpander-rackmount-elite

CUBIX GPU-Xpander Rackmount 8

Model: XPRM-G3-82A

http://www.cubix.com/gpu-xpander-rackmount

Where to Buy

http://www.cubixgpu.com/catalog

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

NetStor NA255A-XGPU

http://www.netstor.com.tw/_03/03_02.php?MTEx

Where to Buy

http://www.netstor.com.tw/_06/06.php

Shopping List

GUI Monitor

HP DreamColor Z27x Professional Display

Single or Dual as required

http://www8.hp.com/us/en/campaigns/
workstations/dreamcolor-displays.html

Where to Buy

http://www8.hp.com/us/en/campaigns/
workstations/dreamcolor-displays.html

Alternatives with a different feature set

Any high quality computer monitor with a 2560x1440 screen resolution. 1920 x 1080 and higher screen resolutions are also supported.

Where to Buy

Your local computer supplier

USB 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 supplier

Alternatives with a different feature set

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

http://www.logickeyboard.com/shop/apple-
davinci-resolve-2952p.html

Where to Buy

http://www.logickeyboard.com/shop/apple-
davinci-resolve-2952p.html

USB 2.0 Extender

ICRON USB 2.0 Ranger 2204

http://www.icron.com/products/icron-brand/usb-
extenders/cat5/usb-2-0-ranger-2204/

Where to Buy

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

RED R3D Processing Card

RED Rocket

http://www.red.com/

Where to Buy

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

Shopping List

Graphics Processor

Important note for GPU selection

DaVinci Resolve performs all image processing in the GPU so selection is important based on the clip type, resolution of the clips and timeline, and of course render resolution.

Some of the image processing operations in DaVinci Resolve, for example RAW clip debayer, temporal noise reduction, optical flow speed changes, motion effects and OpenFX plugins, need large GPU memory for operation. These processes might not be available or operation could be restricted on GPUs with limited memory so consider this when selecting your GPU from the options below.

For processing UHD or 4K-DCI images we recommend 4GB or more of GPU memory (RAM). For HD image processing 3GB of GPU RAM is normally sufficient.

When selecting GPUs, they all need to be from the same supplier, either NVIDIA or AMD/ATI.

NVIDIA GPUs

NVIDIA Quadro K6000; 12GB GDDR5 SDRAM

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

NVIDIA Quadro K5000; 4GB GDDR5 SDRAM

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

Recommended for GUI GPU Only

For multiple GPU configurations, using the same model GPU allows you to share the GUI GPU for image compute. Alternatively you can use a K4000 just for the GUI monitor.

NVIDIA Quadro K4000, 3GB GDDR5 SDRAM

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

Alternative NVIDIA GPUs

NVIDIA GeForce GTX TITAN Black; 6GB GDDR5 SDRAM

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

NVIDIA GeForce GTX 780ti with 3GB GDDR5 SDRAM

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

NVIDIA GeForce GTX 780 with 3GB GDDR5 SDRAM

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

Where to Buy

http://www.nvidia.com/object/workstation-wtb.html

http://www.geforce.com/hardware/desktop-gpus/geforce-gtx-780/buy-online

(Select the GPU and then 'Compare and Buy')

Shopping List

AMD/ATI GPUs

AMD Firepro W9100; 16GB GDDR5 SDRAM

http://www.amd.com/en-us/products/graphics/
workstation/firepro-3d/9100

AMD Firepro W9000; 6GB GDDR5 SDRAM

http://www.amd.com/en-us/products/graphics/
workstation/firepro-3d/9000

AMD Firepro W8000; 4GB GDDR5 SDRAM

http://www.amd.com/en-us/products/graphics/
workstation/firepro-3d/8000

AMD Firepro W7000; 4GB GDDR5 SDRAM

http://www.amd.com/en-us/products/graphics/
workstation/firepro-3d/7000

Where to Buy

http://shop.amd.com/en-us

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

Direct Attached External Image Storage

Multiple alternative options shown

Accusys A08S-PS, 8 Bay RAID

http://www.accusys.com.tw/products/storage/
a08s3-ps-new.html

Accusys A12S2-PS, 12 Bay RAID

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

Accusys SWF16, PCIe Switch

http://www.accusys.com.tw/products/switch/
swf16-v2.html

Where to Buy

http://www.accusys.com.tw/where-to-buy/reseller-
agent.html

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://facilis.com/product/terrablock/

Where to Buy

http://facilis.com/sales/

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

ATTO 16Gbps Single Channel PCIe Fiber Channel HBA

Model: CTFC-162E-000

http://www.attotech.com/products/product.php?ca
t=1&scat=33&prod=109&sku=CTFC-161E-000

Where to Buy

http://www.attotech.com/store/

Shopping List

Fiber Channel SAN External Storage

Multiple alternative options shown

Scale Logic Genesis RX RAID Series

Genesis RX 12

http://www.scalelogicinc.com/images/pdf/2014/
SLI%20Genesis%20RX%2012Bay%2001-25-14.pdf

Genesis RX 24

http://www.scalelogicinc.com/images/pdf/2014/
SLI%20Genesis%20RX%2024Bay%2001-25-14.pdf

Genesis RX 36

http://www.scalelogicinc.com/images/pdf/2014/
SLI%20Genesis%20RX%2036Bay%2001-25-14.pdf

Note: Scale Logic offer OS agnostic SAN operation
and support for StorNext or the HyperFS file
system.

http://www.scalelogicinc.com/html/san.php

Where to Buy

sales@scalelogicinc.com

Oxygen Tec O2 24 bay enclosure
Model: 4K24FS

http://www.oxygentec.com/products/250/node

Where to Buy

http://oxygentec.com/foot/contactus/finden

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)

195.5mm [7.69in]

1238mm [48.75in]

590.57mm [23.25in]

470mm [18.49in]

373.93mm [14.72in]
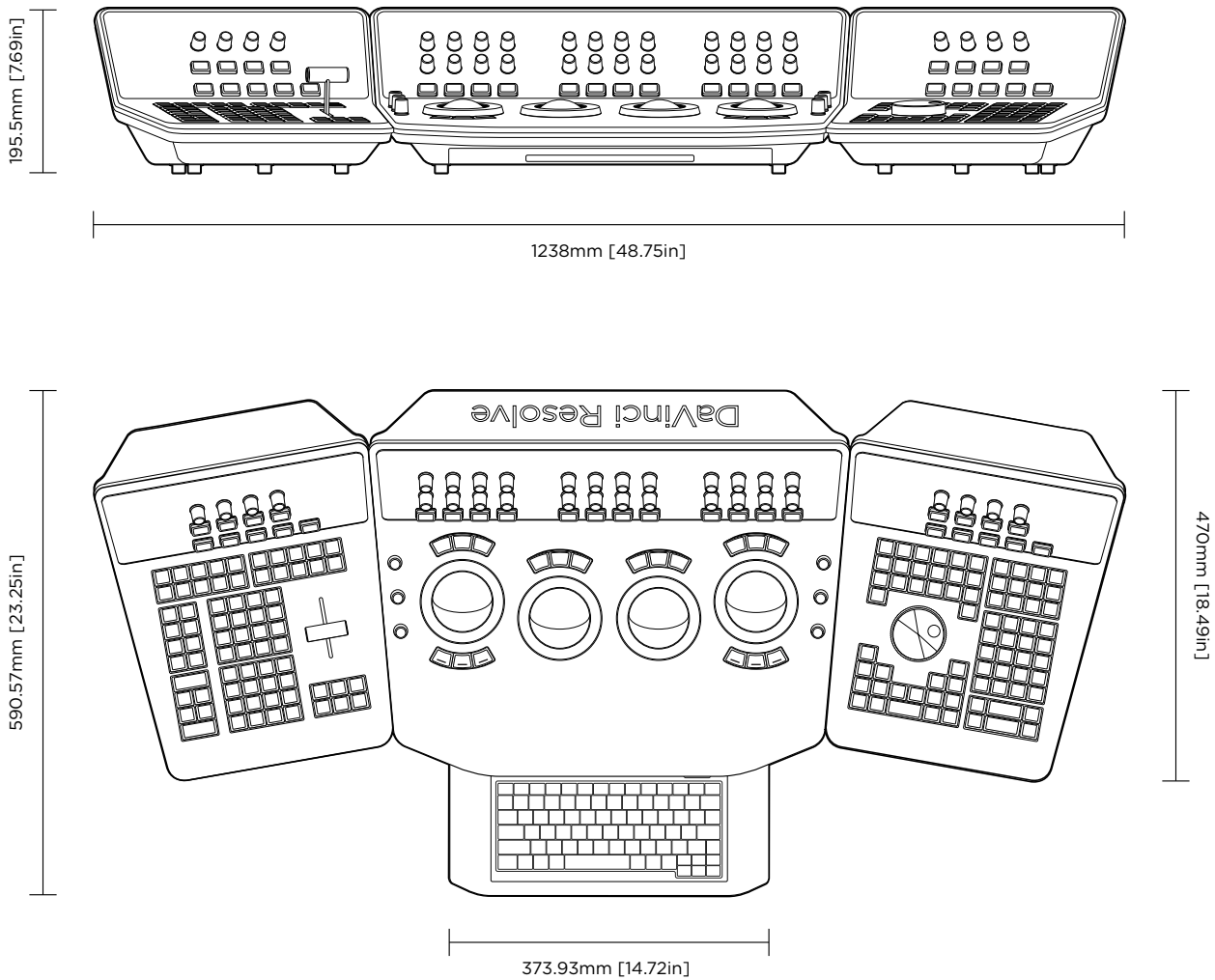
Warranty

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 changes, 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.

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