Welcome to Desktop Video!

We hope you share our dream for the television industry to become a truly creative industry by allowing anyone to have access to the highest quality video.

Previously high end television and post production required investment in millions of dollars of hardware, however with Blackmagic Design video hardware, even Ultra HD 60p is now easily affordable. We hope you get years of use from your new UltraStudio, DeckLink or Intensity and have fun working with some of the world’s hottest television and design software!

This instruction manual should contain all the information you’ll need on installing your Blackmagic Design video hardware. If you’re installing a PCI Express card, it’s always a good idea to ask a technical assistant for help if you have not installed hardware cards into computers before. As Blackmagic Design video hardware uses uncompressed video and the data rates are quite high, you’ll need fast disk storage and a high-end computer.

We think it should take you approximately 10 minutes to complete installation. Before you install Blackmagic Design video hardware, please check our website at www.blackmagicedesign.com and click the support page to download the latest updates to this manual and Desktop Video driver software. Lastly, please register your Blackmagic Design video hardware when downloading software updates. We would love to keep you updated on new software updates and new features. Perhaps you can even send us your latest show reel of work completed on your Blackmagic Design video hardware and any suggestions for improvements to the software. We are constantly working on new features and improvements, so we would love to hear from you!

Grant Petty
CEO Blackmagic Design
Getting Started

Introducing Desktop Video

Blackmagic Design's Desktop Video software works in conjunction with your UltraStudio, DeckLink, Intensity or Teranex hardware. The Desktop Video software includes drivers, plugins and applications like the Blackmagic Desktop Video Utility and Media Express.

This manual takes you through computer system requirements, installing hardware and software and using your favorite third party software.

System Requirements

The computer requires at least 4 GB of RAM. PCIe x1 lane cards should work in any slot. PCIe x4 lane cards require a x4 lane or faster slot. DeckLink 4K Extreme 12G requires an x8 lane or faster slot.

Mac OS X

Desktop Video software runs on the latest Mavericks and Yosemite versions of Mac OS X.

If your Blackmagic Design video hardware connects to your computer via a PCI Express slot, then a Mac Pro with suitable PCI Express slots is required.

If your Blackmagic Design video hardware connects to your computer via Thunderbolt, then a Mac with a Thunderbolt™ port is required.

Windows

Desktop Video runs exclusively on 64-bit versions of Windows, with the latest service pack installed. Windows 7, Windows 8 and Windows 10 are supported.

If your Blackmagic Design video hardware connects to your computer via Thunderbolt, a PC with a Thunderbolt port is required.

Linux

Desktop Video runs on 32-bit and 64-bit x86 computers running Linux 2.6.23 or higher. Please refer to the release notes for the latest list of supported Linux distributions, package formats and software dependencies.
Getting Started

Installing a Blackmagic PCIe Card

Step 1. Remove the power plug from your computer and ensure that you are statically discharged.

Step 2. Carefully align your Blackmagic Design PCIe card with an appropriate PCIe slot in your computer and push firmly into place.

Step 3. If your Blackmagic Design PCIe card includes an HDMI bracket, insert the bracket into a spare slot. Secure the PCIe card and HDMI bracket with screws, loop the HDMI cables around any other installed cards and plug them into the rear of the DeckLink card.

If you need to connect external power to your Decklink 4K Extreme 12G, refer to the 'connecting external power' section in this manual for instructions.

Step 4. Replace the cover of your computer, connect any supplied breakout cables and switch it on.

Step 5. If Desktop Video software has previously been installed and offers to update the internal software, click 'update' and follow any onscreen instructions. For more information about Blackmagic’s Desktop Video software, refer to the 'Blackmagic Desktop Video Utility' section in this manual.

Connecting External Power

DeckLink 4K Extreme 12G operates at extremely high speeds and may require more power than is available from a PCI Express slot. If you need to supply external power to your DeckLink 4K Extreme 12G you can easily use the supplied power adapter cable.

To connect power to your DeckLink 4K Extreme 12G:

Step 1. Remove the power plug from your computer and ensure you are statically discharged.

Step 2. Remove the side panel from your computer and check to see if your computer’s power supply unit has a spare power cable. If so, you can connect it directly to your DeckLink card.

Step 3. If you have a powered graphics card that’s already using any spare cables from the power supply, you will need to use the supplied Y shaped adapter cable to send power to both your graphics card and DeckLink card. Simply disconnect the power from your graphics card and plug it into the adapter cable. The plug will only connect to one end so there’s no way to connect it incorrectly.

Step 4. Now plug one of the two Y connectors into your graphics card and the other into your DeckLink card. The connectors are 6 and 8 pin compatible. You should now have power supplied to both your graphics card and DeckLink card.

Step 5. Secure the side panel to your computer and reconnect power.

Please be careful when installing your DeckLink PCIe card to avoid damaging delicate components on the card.
## Installing the Desktop Video Software

### Applications, Plugins and Drivers

The table below lists the applications, plugins and drivers that are included when you install the Desktop Video software.

<table>
<thead>
<tr>
<th>Mac OS X</th>
<th>Windows</th>
<th>Linux</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackmagic Desktop Video drivers</td>
<td>Blackmagic Desktop Video drivers</td>
<td>Blackmagic Desktop Video drivers</td>
</tr>
<tr>
<td>Blackmagic Design LiveKey</td>
<td>Blackmagic Design LiveKey</td>
<td>Blackmagic Media Express</td>
</tr>
<tr>
<td>Blackmagic Media Express</td>
<td>Blackmagic Media Express</td>
<td>Blackmagic AVI codecs</td>
</tr>
<tr>
<td>Blackmagic QuickTime™ codecs</td>
<td>Blackmagic AVI and QuickTime™ codecs</td>
<td></td>
</tr>
<tr>
<td>Blackmagic Disk Speed Test</td>
<td>Blackmagic Disk Speed Test</td>
<td></td>
</tr>
<tr>
<td>Adobe Premiere Pro CC, After Effects CC, Photoshop CC presets and plug-ins</td>
<td>Adobe Premiere Pro CC, After Effects CC, Photoshop CC presets and plug-ins</td>
<td></td>
</tr>
<tr>
<td>Final Cut Pro X plug-ins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avid Media Composer plug-in</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Getting Started

Linux Installation

Step 1. Download the latest Desktop Video software for Linux from www.blackmagicdesign.com/support

Step 2. Open the Desktop Video folder and navigate to the packages required for your distribution and architecture. Note that ‘amd64’ refers to Intel and AMD 64-bit processors. There are three sets of packages provided:
- The desktopvideo package provides the core drivers and API libraries.
- The desktopvideo-gui package provides the Desktop Video Utility software.
- The mediaexpress package provides a simple capture and playback utility.

Step 3. Double click the packages you wish to install and follow the onscreen instructions. If you see any messages about missing dependencies, ensure they are installed first and then rerun the Desktop Video installer.

Step 4. When the installer has finished it is recommended that you restart your computer to complete the installation process.

If you cannot find a native Desktop Video package for your Linux distribution, or if you prefer to install from a command line, refer to the ReadMe file for detailed installation instructions.

Updates

If you have installed the graphical utilities, you will be automatically notified when you need to update the internal software. When your computer restarts, the software will check the internal software version of your hardware. If the internal software version does not match the driver version, you will be prompted to update the internal software. Click ‘ok’ to start the update and restart your computer to complete the process.

If you have not installed the graphical utilities, you can check the internal software is up to date using the BlackmagicFirmwareUpdater command line tool:

# BlackmagicFirmwareUpdater status

A message similar to the following will appear:

0: /dev/blackmagic/io0 [DeckLink SDI 4K] 0x73  OK
1: /dev/blackmagic/io1 [DeckLink 4K Extreme 12G] 0x0A PLEASE_UPDATE

In this case you could update the internal software with the following command:

# BlackmagicFirmwareUpdater update 1

See the ‘man’ page for a more detailed description of the command’s usage. e.g., for more info on the internal software updater command, type “man BlackmagicFirmwareUpdater”.
Capturing H.265 Video with UltraStudio 4K Extreme

Blackmagic UltraStudio 4K Extreme has a powerful built-in H.265 hardware encoder that lets you capture the latest H.265 video in real time. This gives you the ability to capture video using encoding technology that maintains stunning video quality at the lowest possible bitrate.

To capture video using the built-in H.265 encoder:

**Step 1.** Launch the Blackmagic Media Express software. Open Media Express 'preferences' and set the 'capture file format' to MP4 H.265.

**Step 2.** Set the bitrate for your H.265 capture by clicking on the 'quality' button located next to the H.265 setting and dragging the 'encoding settings' slider left or right. Close the 'encoding settings' window to confirm your setting. Your Blackmagic UltraStudio 4K Extreme is now ready to encode H.265 video using Blackmagic Media Express. For information about how to capture and play back video using Media Express, refer to the 'Blackmagic Media Express' section of this manual.

Setting the Bitrate

The default bitrate is set to 15 Mb/s which is a good choice for high quality Ultra HD video that is streamed online, but you can set it anywhere between 3 to 50 Mb/s. For online streaming of HD video, a good choice is between 3 to 5 Mb/s.

Drag the 'encoding settings' slider to the left if you need to capture video with a smaller file size and a lower bitrate, or drag to the right if file sizes are not an issue and you want the best possible video quality. Setting the bitrate too low will result in compression artifacts in your picture, such as visible macro-blocking, pixelation or banding. However, the H.265 hardware encoder is very efficient and keeps artifacts to a minimum, so you can set the bitrate lower than you normally would for H.264 video and still retain great video quality.

When encoding H.265 video, or any type of video encoding for online streaming, it's often helpful to consider a few things, such as the bandwidth of your intended delivery system, the amount of movement and contrast between frames in your video, and the frame rate of your video. For example, if there is a large number of people streaming your video, you may need to lower the bitrate in your encoding so audience members with slower internet connections can watch without download interruptions. Higher bitrates are better for video content with lots of contrast and movement between frames, such as bright to dark, or high energy sporting events and graphics. Video with high frame rates also require higher bitrates compared to video at lower frame rates.

Choosing a bitrate for your encoding can often be an experimental process to achieve the best video quality in the smallest file size, so it's worth testing a variety of bitrate settings for the best results.
Blackmagic Desktop Video Utility

Video Settings
Video Input
Click on a connector icon to set the 'video input' connection for your Blackmagic Design hardware. Only the connectors that are built into your hardware will be shown. When a valid video signal is detected, the input and video format will be displayed on the Blackmagic Desktop Video Utility home page.

Use XLR Timecode
Select this setting to read timecode from the XLR input instead of the SDI stream.

Analog Video Input Levels
Drag the 'video' and 'chroma' sliders to adjust the analog video input levels for component or composite video. Dragging the video slider affects the luma gain and the chroma sliders decrease or increase the color saturation. When using component video, you can adjust theCb and Cr values independently. Click the 'link' icon to connect them if you want to adjust them simultaneously.

Video Output
To use broadcast monitoring with Final Cut Pro X, set the output format to match your Final Cut Pro X project.

SDI Settings: Includes adjustments to control the SDI video signal.

- **1080PsF On**: Enable the checkbox to output progressive segmented frame video.
- **Remove Field Jitter On Pause**: Enable the checkbox to eliminate field flicker when interlaced video is paused on old CRT monitors. It is not recommended for modern flat screens.
- **4:4:4 RGB**: Enable the checkbox to output 4:4:4 RGB video.
- **Use SDI Level A**: Enable the checkbox to output 3Gb/s SDI signals as SMPTE Level A direct mapping. If the box is unchecked, 3Gb/s signals will be sent with Level B mapping. This only affects the output as SDI Level A and Level B mapping is autodetected on input.

SDI Configuration: Select between single link, dual link and quad link for 3G, 6G or 12G-SDI output. Some professional color grading monitors and projectors only accept high bandwidth signals like 2160p60 or DCI 4K 4:4:4 via quad link. UltraStudio 4K Extreme can output quad link 3G-SDI and you can also get a Quad SDI add on card for DeckLink 4K Extreme 12G.
Reference Input

The reference adjustment lets you adjust the timing of the video outputs of your hardware relative to the video reference input. This is commonly used in large broadcast facilities where the video output needs to be accurately timed. The reference adjustment is in samples so you can get an extremely accurate timing adjustment down to the sample level.

A common example of how this setting would be used is where all the hardware in your facility has a stable common reference connected and then all the devices would have the timing set so the video outputs all match perfectly. This would then make it possible to switch between devices on a downstream router or production switcher and would eliminate any glitching when switching.

Connector Mapping for DeckLink Quad 2

If you have a DeckLink Quad 2 installed in your computer, you can input or output SDI signals over 8 independent mini BNC connectors. This gives you the ability to capture or play back 8 separate video streams, similar to having 8 capture and playback devices in one single product. This is why your DeckLink Quad 2 appears in Desktop Video Utility as 8 individual DeckLink Quad devices which makes it easier to configure your inputs and outputs. You can even name each device so you can keep track of which DeckLink Quad device is being used for a specific video signal.

SDI connectors can be mapped to each device using the ‘connector mapping’ settings in the Desktop Video utility, but it’s important to know that specific connectors are dedicated to specific devices. For example, SDI 1 is dedicated to DeckLink Quad (1), and SDI 2 is dedicated to DeckLink Quad (1) and DeckLink Quad (5).

It’s easy to see which SDI connectors are dedicated to each DeckLink Quad device by looking at the table below, where you can also check the mapping options for them.

| Mapping Options |
|-----------------|-----------------|
| DeckLink Quad Devices | Dedicated SDI Connectors |
| DeckLink Quad (1) | SDI 1 and 2 or SDI 1 |
| DeckLink Quad (2) | SDI 3 and 4 or SDI 3 |
Blackmagic Desktop Video Utility

Audio Settings

Audio Input
Click on a connector icon to set your 'audio input' connection for your Blackmagic Design hardware. You can select from the following inputs:

- **Embedded**: includes audio channels as part of video signals. SDI and HDMI are capable of carrying embedded audio.
- **AES/EBU**: is a digital audio signal that can carry 2 audio channels over a single connector.
- **XLR**: is a three-pin audio connector that is predominantly used by professional analog audio equipment.
- **RCA or HIFI**: is a connector used to connect unbalanced analog audio input and output from consumer audio equipment, such as HiFi systems, DVD players and televisions.
- **Microphone**: Phantom power supplies power through microphone cables and is a convenient power source for condenser microphones.

Enable the 'use +48V phantom power' option if your microphone requires phantom power. If you're unsure whether your mic needs phantom power or not, it's best to leave this box unchecked as there is a risk of causing damage to microphones that are self-powered. An LED on the front of UltraStudio 4K Extreme will illuminate when phantom power is active. Be sure to wait at least 10 seconds for phantom power to discharge after disconnecting before plugging in a self-powered microphone. Older ribbon type microphones and dynamic microphones are not suitable for phantom power usage.

AES/EBU
Drag the sliders to adjust the 'ref' level, or gain, for the AES/EBU audio inputs and outputs. Press the reset icon to reset the gain to 0 dB.

Analog Audio Input Levels
Channel 1/Channel 2: These settings adjust the gain for the analog audio inputs when capturing. Click the 'link' icon to adjust them simultaneously.

Use HiFi Audio Levels: Professional XLR connectors are standard on UltraStudio and DeckLink models. If you want to connect consumer audio equipment to the XLR connectors, make sure you enable the 'use HiFi audio levels' checkbox as the audio levels between professional and consumer equipment differ. You'll also need to use an RCA to XLR adapter.

Analog Audio Output Levels
Adjust the output channel sliders to control your analog audio output levels.

Drag the 'input level' slider to control your microphone input level.
<table>
<thead>
<tr>
<th>Down Conversion</th>
<th>Source Image</th>
<th>Converted Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letterbox</td>
<td>![Letterbox Image]</td>
<td>![Letterbox Converted Image]</td>
</tr>
<tr>
<td>Anamorphic</td>
<td>![Anamorphic Image]</td>
<td>![Anamorphic Converted Image]</td>
</tr>
<tr>
<td>Center Cut</td>
<td>![Center Cut Image]</td>
<td>![Center Cut Converted Image]</td>
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<tr>
<td>16:9 Zoom</td>
<td>![16:9 Zoom Image]</td>
<td>![16:9 Zoom Converted Image]</td>
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</tbody>
</table>
Live Grading with DaVinci Resolve

Desktop Video 10 allows simultaneous capture and playback on Blackmagic Design 4K hardware. This is great for users who want to use the live grading feature within DaVinci Resolve, as it means you don’t require two separate devices for input and output.

When using live grading on-set, simply connect the output of the camera to the input of your Blackmagic Design hardware. Then connect the hardware’s output to an on-set monitor for grading evaluation and viewing.

Setting Up

Step 1. Launch DaVinci Resolve. From the preferences menu, select the ‘video I/O and GPU’ tab and select your hardware from the ‘for Resolve Live use’ option. Save your preferences and restart DaVinci Resolve to apply your changes.

Step 2. Start a project and from within the ‘project settings’ window, set the resolution and frame rate to match your camera.

Step 3. In the ‘project settings’ window, go to the ‘capture and playback’ tab and select your desired format from the ‘video capture and playback’ menu.


Step 5. From the ‘color’ page, select color>Resolve Live. You should now see live video within the viewer and a bright red ‘Resolve Live’ button will appear above the video.

Using Resolve Live

Step 1. In Resolve Live mode, the ‘freeze’ button (snowflake icon) freezes the current incoming video frame, so you can grade it without being distracted by motion occurring during the shoot. When you’ve made the adjustment, you can unfreeze playback in preparation for grabbing a snapshot.

Step 2. Once you’re happy with a grade, clicking the ‘snapshot’ button (camera icon) saves a snapshot of the current still in the viewer, the incoming timecode value, and your grade into the timeline. Snapshots are simply one-frame clips.

Please refer to the DaVinci Resolve manual for more information on Resolve Live.
Adobe After Effects CC

How to Preview Video
To display your composition in real-time through your Blackmagic Design hardware, go to preferences > video preview. ‘Mercury transmit’ must be enabled in order to use your Blackmagic Design hardware with After Effects CC. Under ‘video devices’, select Blackmagic Playback. You can now use a broadcast monitor to view your After Effects compositions in the correct video colorspace.

If you work with unsupported or non-standard frame sizes, these can also be correctly outputted by your Blackmagic Design hardware. Go to preferences > video preview and click the ‘setup’ button next to ‘Blackmagic playback’. The ‘Blackmagic device selection’ window will appear. You can scale your image up or down to the next closest video standard supported by your hardware. For example, if you are using UltraStudio 4K and your After Effects composition is set to a resolution of 2048 x 1152, scaling down will output DCI 2K, scaling up will output Ultra HD.

Rendering
When you have completed your composition, you can render a DPX image sequence or any of the following codecs:

**QuickTime codecs on Mac OS X**
- Blackmagic RGB 10 bit (uncompressed)
- Apple Uncompressed YUV 10 bit 4:2:2
- Apple Uncompressed YUV 8 bit 4:2:2
- Apple Photo - JPEG (compressed)
- Apple DV - NTSC (compressed)
- Apple DV - PAL (compressed)

Other codecs including ProRes and DVCPRO HD will be available if you have Final Cut Pro installed.

**AVI codecs on Windows**
- Blackmagic 10 bit 4:4:4 (uncompressed)
- Blackmagic 10 bit 4:2:2 (uncompressed)
- Blackmagic HD 8 bit 4:2:2 (uncompressed)
- Blackmagic SD 8 bit 4:2:2 (uncompressed)
- Blackmagic HD 8 bit MJPEG (compressed)

Other codecs including DVCPRO HD and DVCPRO50 will be available if you have Premiere Pro CC installed.

**QuickTime codecs on Windows**
- Blackmagic RGB 10 bit (uncompressed)
- Blackmagic 10 bit (uncompressed)
- Blackmagic 8 bit (uncompressed)
- Apple Photo-JPEG (compressed)
- Apple DV - NTSC (compressed)
- Apple DV - PAL (compressed)
Using your Favorite 3rd Party Software

Adobe Premiere Pro CC

Setting Up a Blackmagic Design Project

Step 1. Create a 'new project' and set the desired 'location' and 'name' for your project.

Step 2. Click on the 'scratch disks' tab to set the locations for your captured video, captured audio, video previews and audio previews.

Step 3. If your graphics card is supported by Premiere Pro CC’s Mercury Playback Engine, the renderer option will be available and you should switch it to Mercury Playback Engine GPU acceleration.

Step 4. Set the Capture Format to Blackmagic capture and click 'settings' [Mac] or 'properties' [Win] to set the video standard and video format. Click OK and your project will open.

Step 5. To create a new sequence, click file > new > sequence. Select the desired Blackmagic preset, give the sequence a name and then click OK.

Device Control

Many Blackmagic Design capture and playback models feature RS-422 device control for controlling decks. Click preferences > device control, and check that Blackmagic device control has been selected from the 'devices' menu.

Playback

To ensure your video and audio plays back through your Blackmagic Design device, check your 'playback settings' by going to preferences > playback. Select 'Blackmagic playback' in both the 'audio device' and 'video device' menus.

If you work with unsupported or non-standard frame sizes, these can also be correctly outputted from your Blackmagic Design hardware. Go to preferences > playback, and click the 'setup' button next to 'Blackmagic playback'. The 'Blackmagic device selection' window will appear. You can scale your image up or down to the next closest video standard supported by your hardware. For example, if you are using UltraStudio 4K and your Premiere sequence is set to a resolution of 3996 x 2160, scaling down will output Ultra HD, scaling up will output DCI 4K.
Step 3. Open Premiere’s 'edit to tape’ window by clicking File > export > tape (serial device). Click on 'recorder settings’, select Blackmagic capture > settings > format and set the ‘capture format’ to match your desired output format. If the capture format does not match the output format, it can cause confusion for the deck during preroll and audio might not be exported.

Step 4. Now set your desired export type by selecting 'assemble', or 'insert’, enter the desired in point and click OK on a Mac, or ‘export’ on Windows.

When editing to tape, the software waits at the first frame of your project for the deck to drop into record at the predetermined timecode. Should you find that either the first frame of your program is repeated or lost during the edit to tape procedure, you will need to adjust the ‘playback > video device > offset’ setting to bring the deck and computer in sync. You should only need to do this once with any combination of deck and computer and the correct setting will be retained.

Your sound settings only need to be changed for the ‘export to tape’ feature. Don’t forget to go back into your computer sound settings and restore them to their earlier state or your workflow may be affected.
Capturing Video and Audio

You can use Blackmagic Media Express to capture video and audio with your Blackmagic Design video hardware. Once you have captured the clips, you can import them in to Final Cut Pro X for editing.

When capturing clips with Media Express, make sure you choose one of the video formats that is also supported by Final Cut Pro X, i.e.: Apple ProRes 4444, Apple ProRes 422 (HQ), Apple ProRes 422 or Uncompressed 10-bit 4:2:2.

Editing to Tape

Once you have completed a project in Final Cut Pro X, you can render the project to a movie file and then use Blackmagic Media Express to master the movie to tape with your Blackmagic Design video hardware.

Step 1. Select your clips from the timeline in Final Cut Pro X.

Step 2. Go to file>share>master file and the 'master file' window opens.

Step 3. Click 'settings' and select your desired video codec from the dropdown menu.

Step 4. Click 'next...' and select a location for your movie and then click 'save'.

Step 5. Open Media Express and import the clip that was exported from Final Cut Pro X.

Step 6. Refer to the Blackmagic Media Express section of this manual for 'Editing video and audio files to tape'.
Capture from Non-Controllable devices

Many video sources including all kinds of modern cameras and disk recorders, as well as old cameras and VHS tape players, do not have any device control. To capture video without deck control:

Step 1. Choose tools > capture to open the 'capture tool'.

Step 2. Click the 'toggle source' button so that the button's icon of a deck shows a red circle-slash symbol. This symbol indicates that deck control has been disabled.

Step 3. Set the 'video' and 'audio' input menus to 'Blackmagic'.

Step 4. Select the video source track (V) and the audio source tracks (A1, A2, ...) you wish to capture.

Step 5. Use the 'bin' menu to select a target bin from the list of open bins.

Step 6. From the 'res' (resolution) menu, choose which compressed or uncompressed codec you wish to use for your captured clips. For uncompressed 8-bit video, select "1:1" or "1:1 10b" for 10-bit.

Step 7. Select the disk storage for your captured video and audio. Use the 'single/dual drive mode' button to choose if video and audio will be stored together on a single drive or on separate drives. Select the target drive(s) for your captured media from the 'target drives' menu(s).

Step 8. Click the 'tape name?' button at the bottom of the window to open the 'select tape' dialog box. Select the desired tape, or alternatively add a new one and click OK.

Step 9. Ensure your video and audio source is ready or playing and then click the 'capture' button. The capture button will flash red while recording. Click the capture button again to end the capture.
Batch Capture with UltraStudio and DeckLink
To log clips for batch capture:

**Step 1.** Choose tools > capture to open the 'capture tool'.

**Step 2.** Click on the 'capture/log mode' button so it displays the log icon.

**Step 3.** Configure video and audio input, video and audio source tracks, target bin, res, target drive and tape name the same way as in 'capture from non-controllable devices'.

**Step 4.** Use the 'deck controller window', or use the standard j, k, l shortcut keys, to shuttle backwards, pause and shuttle forwards on the deck and locate the video you want to capture.

**Step 5.** Click the 'mark in/out' button, to the left of the log button. The icon will alternate between in and out so you only have to click the one button to mark all your in and out points. This can be more convenient that using the separate 'mark in' and 'mark out' buttons in the deck controller window. Alternatively use the "i" and "o" keys on the keyboard to mark in and out points.

**Step 6.** When you have finished logging in and out points, open the logging bin, select the clips you want to capture.

**Step 7.** Choose clip > batch capture, select the desired options in the resulting dialog box and click OK.

Recording to Tape with UltraStudio and DeckLink
Once you have captured your clips, dragged them in to the timeline, edited them and applied and rendered any effects, you will want to record the completed project to tape.

**Step 1.** Double-click on a sequence, in your project bin, to open it into the timeline window.

**Step 2.** Choose output > digital cut to open the 'digital cut tool'.

**Step 3.** Set 'output mode' to real-time, bit depth to 10-bit, and deck control to 'remote'.

**Step 4.** From the 'edit menu', choose to 'insert edit' or 'assemble edit' for precise edits onto a timecode striped tape. Alternatively choose 'crash record' for an easy way to record. If 'insert edit' is the only option, go to the settings tab in your project, double-click on 'deck preferences' and enable 'allow assemble edit & crash record for digital cut'.

**Step 5.** If a deck name appears in italics or 'no deck' is displayed, click the menu and select 'check decks' until the deck is listed without italics and deck control is re-established.

**Step 6.** Press the 'play digital cut' button (red triangle icon) to record your sequence to tape.
Using your Favorite 3rd Party Software

Setting Up a VTR
Before starting Autodesk Smoke, you must use a utility called Smoke setup to select the model of the VTR(s) in your facility and its appropriate timing settings.

Step 1. Go to applications>Autodesk>Smoke>utilities and open Smoke setup.

Step 2. In the 'general' tab, make sure that 'video device' and 'audio device' are set to BMD.

Step 3. In the VTR tab, enable the VTR model and the timings you want to use with Autodesk Smoke. Enable the rows with live NTSC or live PAL to enable crash-record or live output.

Step 4. Click 'apply' and close Smoke Setup.

Capture from Controllable Devices with UltraStudio and DeckLink
Autodesk Smoke can be configured to capture from controllable VTRs with RS-422 deck control.

Step 1. Select a folder in the media library where you want the captured clip to be created.

Step 2. Select file>capture from VTR. The VTR capture module appears.

Step 3. Cue the tape to the start frame of the clip you want to capture.

Step 4. Select the video and audio channels you wish to record. The buttons will turn red to let you know which tracks are enabled.

Step 5. Enter 'in' and 'out' points in the in and out fields.

Step 6. Click 'capture' to start the capture. The timecode field will turn green to indicate that capture is in progress.

Step 7. End the capture at any time by clicking anywhere over the preview window. The clip will automatically be saved to the location that you selected before entering the VTR input module.
Crash-Record and Live Output

Autodesk Smoke allows you to capture a live video signal or crash-record a clip by using a tablet pen or a mouse to start and stop the clip input or output process. When you choose this form of capture, Autodesk Smoke checks the available space on your Autodesk media storage device to determine the available space, which varies depending on your preferred intermediate format.

Also, if you are using a device that does not support remote control via RS-422, such as a camera, VCR, or any other device, use the Live NTSC or PAL option to capture, and the 'live video' option to output clips.

To crash-record a live video signal:

Step 1. Choose a folder from the 'media library' where you would like the captured clip to be created.

Step 2. Select file>capture from VTR. The VTR capture module appears.

Step 3. From the VTR device box, select 'live NTSC' or 'live PAL'. The incoming live video signal appears in the preview window.

Step 4. Select the 'start on pen' mode. End the capture by using 'stop on pen' or 'stop on frames'. Traditionally, Autodesk Smoke was operated with a tablet and pen, hence the 'start on pen' terminology.

When 'stop on pen' is selected for capture stop mode, the out point and the duration timecode fields will be updated to show the longest possible clip that can be recorded on your Autodesk Media storage device. The capture will either end when you click anywhere on the screen or when your storage fills up.

Step 5. Enter the clip name and enable the video tracks and audio channels that you want to capture.

Step 6. Make sure you are receiving the live video signal.

Step 7. Press 'play' on the video device.

Step 8. Select 'process' to begin capturing.

Step 9. Click anywhere on the screen to end capturing in 'stop on pen' mode.
Blackmagic Media Express

What is Blackmagic Media Express?

Blackmagic Media Express software is included with every UltraStudio, DeckLink and Intensity as well as every ATEM Switcher, Blackmagic Camera, H.264 Pro Recorder, Teranex Processor and Universal Videohub. Media Express is a great tool when you don’t need the complexity of NLE software but simply want to capture, play back and output clips to tape.

Capturing Video and Audio Files

Setting Up a Project

Media Express automatically detects your input video format and sets the ‘project video format’ to match. If you want to set the project video format manually:

**Step 1.** Go to Media Express>preferences on Mac, or edit>preferences on Windows or Linux. Select your ‘project video format’ from the dropdown menu at the top of the preferences window. You can choose from a range of compressed and uncompressed capture formats, or even a DPX image sequence from the ‘capture file format’ drop down menu. Video will be captured in the chosen format and saved as a QuickTime movie. You can also choose to capture an RGB source using a YUV codec or vice versa.

**Step 2.** Set the storage location for your captured video and audio. Click the ‘browse’ button to point the software to a folder on your computer.

**Step 3.** Choose whether to stop capture or playback if dropped frames are detected.

Standard definition projects use the 4:3 aspect ratio unless you enable the ‘use anamorphic SD 16:9’ checkbox.

Applications will normally stop playing video if you send them to the background. Tick the checkbox ‘continue playback when in the background’ if you want Media Express to keep playing video even if you open another application.

The final options relate to tape decks with RS-422 deck control and include pre-roll and timecode offsets.
Capture

Capturing video is easy and all you need to do is connect a video source, wait for Blackmagic Media Express to detect your input and press the 'capture' button.

Step 1. Start by connecting your video source to an input of your Blackmagic Design hardware. Launch Blackmagic Desktop Video Utility and check that the 'set video input' setting is the same as your video source, e.g., SDI, HDMI, Component, etc.

Step 2. Open Media Express and click the red 'log and capture' tab.

Step 3. Your source video will appear in the preview pane. Enter a description into the 'description' field.

Step 4. Click the '+' button next to the description to add it to the automatic 'name' field. Click the '!' button next to any of the other fields that you wish to add to the name field.
  - To increment the value in each of these fields, click the corresponding clapperboard icon. Alternatively, type directly into any field to customize its name and number.
  - The text in the automatic name field will be applied to the clip(s) about to be captured.
  - To log the clip as a favorite, click the star icon next to the name field.
  - For a clip name confirmation prompt to appear before every capture, click the '!' icon next to the name field.

Step 5. Set the desired number of audio channels to be captured.

Step 6. Click the 'capture' button to start recording. To stop the capture and keep the clip, click the 'capture' button again or press esc. The captured clips are added to the media list on the left side of Media Express.

If the video input format changes from the project video format, Media Express will automatically detect it and will prompt you to save the current project and create a new one.

Logging clips

Ensure an RS-422 serial cable is connected between your Blackmagic Design video hardware and the deck. Ensure the deck's remote/local switch is set to remote. Use the standard j, k, l shortcut keys to shuttle backwards, pause and shuttle forwards.

Click the 'time in' button to mark the in point, or use the shortcut key i.

Click the 'time out' button to mark the out point, or use the shortcut key o.

Click the 'log clip' button to log the clip, or use the shortcut key p. The entry should now appear in the media list with a red X in its icon to indicate the media is offline.
When capturing and logging dual stream 3D in Media Express, the clip name will be applied to the left eye video. The right eye video will be appended with '_right' text. For example, if you name the stereo clip “Clip 1”, the left eye clip will be called “Clip 1.mov” and the right eye clip will be called “Clip 1_right.mov”.

The Media List presents an eye-catching indication that the captured clip is a 3D clip:

- In thumbnail view, the left and right eye clips are connected by a 3D indicator and presented as a single, large icon.
- In timecode list view, the left and right eye clips are listed on two lines and linked together by a 3D indicator.

Capturing H.265 Video

To capture video using Blackmagic UltraStudio 4K Extreme's built in H.265 encoder:

**Step 1.** Open Media Express ‘preferences’ and set the ‘capture file format’ to MP4 H.265.

**Step 2.** Set the bitrate for your H.265 capture by clicking on the ‘quality’ button located next to the H.265 setting and dragging the ‘encoding settings’ slider left or right. Close the ‘encoding settings’ window to confirm your setting.

For more information about H.265 capture and bitrate settings, refer to the ‘H.265 Hardware Encoder’ section in this manual.

Set the bitrate for H.265 capture by clicking on the ‘quality’ button and dragging the ‘encoding settings’ slider left or right.
Playing back Video and Audio Files

Playing back single and multiple clips
To play back a single clip, double-click the clip in the media list. Alternatively, select the clip in the media list and press the space bar on your keyboard or the play button in the transport controls.

To play back multiple clips, select the clips in the media list and then press the space bar on your keyboard or the play button in the transport controls.

Your video will play back in the video preview pane of Media Express and on all the video outputs of your Blackmagic Design video hardware. During playback, the audio channels being monitored can be switched on or off via the track enable/disable buttons.

Importing clips
You can play back your video and audio files after importing media into Media Express in any of the following ways:

- Double-click an empty area of the media list.
- Right-click an empty area of the media list and select ‘import clip’ from the contextual menu.
- Go to the ‘file’ menu, select import and then ‘media files’.

Select the video and audio clip(s) you wish to import from the ‘open video clip’ dialog box. The clips will appear in the ‘scratch’ area of the media list. If you have created your own bins in the media list, you can drag the clips into the desired bin.

To import directly to a bin, right-click within the desired bin and select ‘import clip’ from the contextual menu.

If the files being imported do not match the frame rate and size of existing clips in the media list, you will be prompted to create a new project and to save the current project.

Media Express also supports the import of multichannel audio-only files recorded at 48kHz in the uncompressed WAVE and AIFF formats.

Another way to import media is to use an XML file exported from an NLE such as Final Cut Pro 7 or Final Cut Pro X. Go to the ‘file’ menu, select ‘import’ and then either Final Cut Pro 7 XML or Final Cut Pro X XML. Open the desired XML and all the bins and media from the Final Cut Pro project will appear in the media list.

Media Express also supports the import of CMX EDL files to batch capture clips using EDL files from other video software. Go to the ‘file’ menu, select ‘import’ and then CMX EDL. Select the EDL and open it. The logging information will appear in the media list. Select the logged clips and perform a batch capture to import the clips from your deck.
You can now play back the combined clip or master it to tape.

Deleting clips and bins
To delete clips, select the unwanted clips and press the forward delete button on your keyboard. This will only delete the clips from the media list and they will safely remain on your disk storage.

To delete bins, right-click within a bin and choose 'delete bin'. This action will delete the bin and any clips it contained. This will only delete the clips from the media list and they will safely remain on your disk storage.

Creating a 3D clip
To add a stereoscopic 3D clip to the media list:
- Select a 3D project video format that is the same frame rate as your 3D media.
- Import the 'left eye' file into the media list.
- Right-click on the left eye file and select "set right eye clip" from the contextual menu.
  If the right eye clip was previously captured by Media Express, the right eye video will be appended with '_right' text.

The media list presents a highly visible indication that the imported clip is a 3D clip. The left and right eye clips are displayed side by side in the 'video preview' window, indicating a 3D video project.

If you find the left and right eyes of a 3D stereo clip have been loaded the wrong way around:
- Right-click the 3D clip in the media list.
- Select 'swap eyes' from the contextual menu.

Searching the Media List
Clips can easily be found in a project by typing the name of your clips in the search field at the top of the media list. When used in conjunction with the favorites feature, the search will be confined to your favorite clips so you will see a shorter list of found clips.
Editing Video and Audio Files to Tape

While we usually talk about mastering or editing to “tape”, it doesn’t matter if your deck uses tapes or disks. To master your clips:

- Select the clips you want to send to tape.
- Click the blue ‘edit to tape’ tab.
- Set the in point and type of edit.
- Master to tape.

Selecting clips to master

From the media list, select the clips you wish to master to tape. You can even insert multichannel audio-only clips to replace the master audio track on a master tape. If you only want to send your favorite clips to tape, click the favorite (star) icon at the top of the media list to show your favorites and hide all other clips. Then select the favorite clips you wish to send to tape.

Insert and Assemble to tape

Click the blue ‘edit to tape’ tab. Enter the in point of the tape by entering timecode into the ‘in’ point field, or by cueing the tape to the desired point via the transport control and then clicking the ‘mark in’ button.

If no ‘out’ point is entered, Media Express will set the duration of the edit to the total length of the clips in the media list. If an out point is defined, Media Express will stop recording once the ‘out’ point timecode is reached, even if some clips have not been output.

Choose to master to tape using ‘assemble’ or ‘insert’ edit. Then press the ‘master’ button.

Preview mode mimics the edit process but does not record to tape. This mode lets you check the edit point. Preview edit operations should always be checked on monitors connected directly to the output of the deck. This lets you view the video already on tape in conjunction with the new video.

If ‘record inhibit’ is enabled either on the deck or on the tape, Media Express will report this when you click the ‘master’ button. Disable ‘record inhibit’ before trying again.

Select the video and audio channels you wish to output via the track enable/disable buttons. Deselect the video channel if you only want to output audio.
Disk Speed Test

Settings
Click this button to access the settings before running a disk speed test.

How Fast (FPS)
This panel shows results in frames per second (fps).

Will it Work?
This panel shows which video formats can be supported by your disk storage.

START
Click this button once to start the disk speed test. Click again to stop the test.
Getting Help
The quickest way to obtain help is to check the latest support material for your specific hardware at the Blackmagic Design online support pages.

Blackmagic Design Online Support Pages
The latest manual, software and support notes can be found at the Blackmagic Design support center at www.blackmagicdesign.com/support.

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

Checking the Version Currently Installed
To check which version of Blackmagic Desktop Video Utility software is installed on your computer, open Blackmagic Desktop Video Utility.

- On Windows 7, click the ‘start’ button>all programs>Blackmagic Design>Desktop Video and click the Blackmagic Desktop Video Utility application. The software version number appears by clicking on the ‘Blackmagic Desktop Video Utility’ menu heading.
- On Windows 8 and 8.1, from the ‘start’ page type “Blackmagic” and then click the Blackmagic Desktop Video Utility application. The software version number appears by clicking on the ‘about Blackmagic Desktop Video Utility’ menu heading.
- On Windows 10, click the ‘start’ button and type ‘Blackmagic’ in the search box. Click the Blackmagic Desktop Video Utility application. The software version number appears by clicking on the ‘about Blackmagic Desktop Video Utility’ menu heading.
- On Linux, go to ‘applications’ and then ‘sound and video’ and double-click the Blackmagic Desktop Video Utility application. The software version number appears by clicking on the ‘about Blackmagic Desktop Video Utility’ menu heading.

How to Get the Latest Updates
After checking the version of Blackmagic Desktop Video Utility installed on your computer, please visit the Blackmagic Design support center at www.blackmagicdesign.com/support to check for the latest updates. While it is advisable to run the latest updates, you should avoid updating software when in the middle of an important project.

To see when you last updated your driver, go to the ‘about Blackmagic Desktop Video Utility’ menu heading. You can also generate a driver status report by clicking on the status report ‘create’ button.
Caution: Risk of Electric Shock

On the UltraStudio 4K and UltraStudio 4K Extreme enclosures, you will see a warning label marked ‘Caution: Risk of Electric Shock’. This is intended to warn users that there may be the presence of uninsulated “dangerous” voltage within the enclosure which may be of sufficient magnitude to constitute a risk of electric shock to the user. Blackmagic Design advises you not to open the unit, but rather contact your nearest Blackmagic Design service center should assistance be required.

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

Any connected device must comply with clause 4.7 of AS/NZS 60950.1.

This symbol identifies Thunderbolt™ connection ports on the unit. Caution - where this symbol is not used for Thunderbolt port connections, it is a sign for dangerous voltage.