

Instruction Guide

DVI Extender

Blackmagicdesign 



Mac OS X™

Windows™

August 2009

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3 Welcome



Welcome to DVI Extender!

Welcome to DVI Extender, the easy way to extend your computer display using 3 Gb/s SDI video connections so you can route your computer display anywhere in your facility!

DVI Extender simply plugs into the DVI-D monitor connector on your computer, and powers from the USB port. A short USB and DVI cable is included so you keep the cable mess behind your computer to a minimum! DVI Extender also includes an audio input using the same mini jack connector common on computer audio outputs!

DVI Extender is compatible with HDLink Pro and HDLink Optical Fiber models for the monitor end of the computer display connection. The advantage of using HDLink Pro for the SDI to DVI extensions is you can route either DVI Extender or regular SDI video to your monitor, and the display will automatically change!

If you want to convert computer graphics to SDI video, then DVI Extender can be switched to video mode using Blackmagic Design's Converter Utility software. This software lets you change between Extender and Video modes, and then your computer will be able to select from a range of video resolutions. Please note that not all operating systems and display drivers support all video formats.

We think it should take only a few minutes to connect DVI Extender! Before you install, please check for the latest version of the Converter Utility software on the support page of our website at www.blackmagic-design.com

Lastly, please register your DVI Extender when downloading software updates. We would love to keep you updated on new software updates and new features for your DVI Extender. Please send us any suggestions for improvements to the software as we are constantly working on new features and improvements, so we would love to hear from you!

Grant Petty
CEO Blackmagic Design

4 Welcome

DVI Extender at a Glance



6 Installation

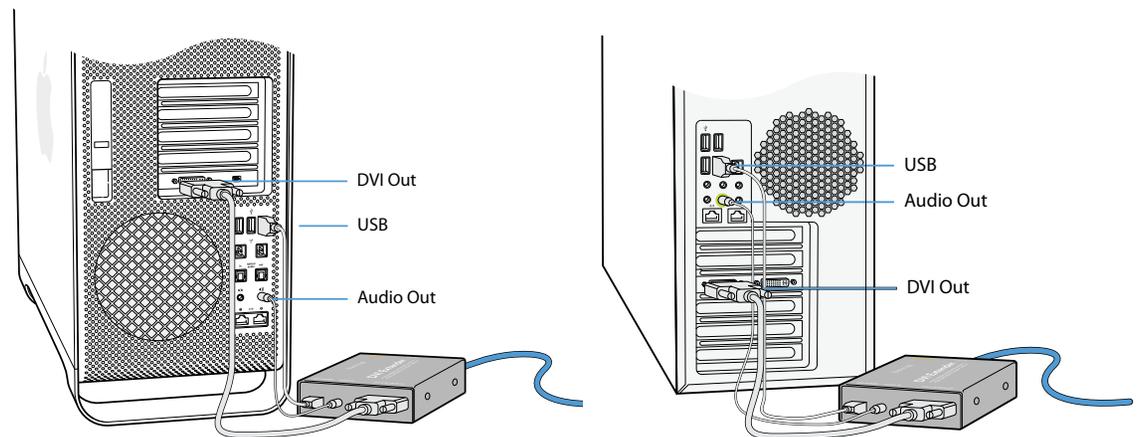
Hardware Installation

The DVI Extender package includes cables for USB, audio and DVI-D so there is nothing extra to buy. You can use longer cables if you wish, particularly if you have a computer where the DVI, USB and audio ports are not close to each other. DVI-D cables should be no longer than 6 feet, or 2 meters, in length.

Firstly connect DVI Extender to a USB 2.0 port on your computer using a USB cable. The power lamp should illuminate. We recommend DVI Extender be directly connected to a dedicated USB 2.0 port on your computer for reliable operation. If you work in a secure computing environment, where USB ports are unavailable, DVI Extender can be powered using a third-party, AC-to-USB power adapter.

Connect the regular analog audio output of your computer to the "AUDIO IN" port of DVI Extender using an audio cable. On most computers, the regular analog audio output will show a headphone icon and and/or be colored lime green.

Connect the DVI output of your computer to the "DVI-D IN FROM PC" port of DVI Extender using a DVI-D cable.



Connection to Mac

Connection to PC

7 Installation

Installation and Removal on Mac OS X

After downloading the Converter Utility software and unzipping the downloaded file, open the resulting disk image to reveal its contents.

Drag the Blackmagic Converter Utility icon and drop it on to the Applications icon. Blackmagic Converter Utility is now installed.

To remove Blackmagic Converter Utility from your Mac, simply drag its icon from the Applications folder to the Trash and then choose to Empty Trash.

Installation and Removal on Windows

After downloading the Converter Utility software and unzipping the downloaded file, you should see a Converter Utility folder containing this PDF manual and the Converter Utility installer.

Double-click the installer and follow the onscreen prompts to complete the installation. When the installation has finished, it will prompt you to restart the computer. The restart will load a USB driver for Converter Utility so that it can communicate with any Blackmagic Design Mini Converter. Click "restart" to complete the installation process. Once the computer has restarted, Blackmagic Converter Utility will be fully installed and ready to use.

To remove Blackmagic Converter Utility from Windows XP, go to the Add or Remove Programs control panel, select Blackmagic Converter Utility and click on Remove.

To remove Blackmagic Converter Utility from Windows Vista, go to the Programs and Features control panel, select Blackmagic Converter Utility and click on Uninstall.

8 Using Blackmagic Converter Utility

Using Blackmagic Converter Utility

It does not matter whether you launch Blackmagic Converter Utility before or after connecting the DVI Extender to your computer with a USB cable. If DVI Extender is missing or is not detected for some reason, the Converter Utility will report, "No converter connected" in its title bar. Otherwise it will report the name of "DVI Extender" in the title bar.



If Converter Utility contains newer firmware than that currently installed in your DVI Extender, it will prompt you to update the firmware. Just follow the on screen instructions to complete the firmware update. Once the firmware update is complete, or if no firmware update is required, you will be able to make adjustments to your DVI Extender using the Converter Utility.

Any adjustments made through the Converter Utility interface will immediately be saved to the DVI Extender itself. This means that if power is lost to the DVI Extender, the new settings will be re-established as soon as power is restored to the DVI Extender. This means you never need to worry about losing your settings on the DVI Extender.

The Converter Utility interface is the same as that used with Blackmagic Design's range of Mini Converter and OpenGear Converter products, and is the same on both Mac OS X and Windows. Any features that are not applicable to your DVI Extender will be grayed out and inactive. For example, DVI Extender does not include any analog video and so all the adjustments for Video Levels are grayed out and inactive. DVI Extender does not include AES/EBU audio and so those settings are also grayed out.

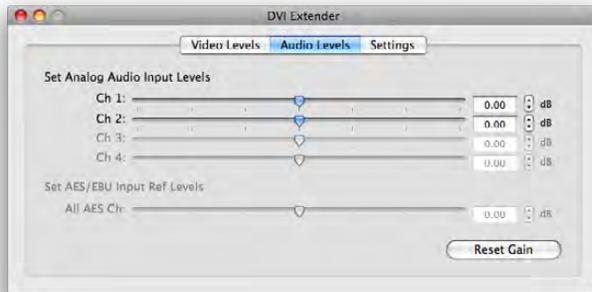
9 Using Blackmagic Converter Utility

The Converter Utility Interface

The Converter Utility interface is composed of three panes for Video Levels, Audio Levels and Settings. Click these tabs in order to reveal any adjustable options for DVI Extender. Most of the settings are self-explanatory but there are a couple of points worth mentioning.

The Video Levels pane is grayed out as there are no analog video adjustments to be made. DVI Extender uses an all-digital video path from DVI to SDI. This means that your video output will be perfect and no adjustments are necessary.

In the Audio Levels pane, two analog audio input channels can be adjusted independently as analog audio levels may vary between channels because analog is not perfect. The other two analog audio channels are grayed out as they are used by other Blackmagic Design products and are not applicable to DVI Extender. Similarly, the 8 channels of AES/EBU digital audio are grayed out as they are not applicable to DVI Extender.



The Settings pane provides two options for DVI Extender.

Extender mode supports most regular computer display resolutions up to 1920 x 1200. It requires the use of a Blackmagic Design HDLink Pro (or newer HDLink model) at the other end of the SDI cable. HDLink products support connection to digital displays including DVI and HDMI.

Video mode configures DVI Extender to output SMPTE compliant SDI video and audio which can be used with virtually any other SDI hardware from Blackmagic Design and other companies including Sony™, Panasonic™ and many more. Video resolutions supported by this mode are: 720 x 480, 720 x 576, 1280 x 720 and 1920 x 1080.

10 Using DVI Extender



After connecting DVI Extender to a second DVI graphics output of your computer, and plugging in the USB cable to provide power, the primary display on your computer is likely to blink off and on as the computer detects the new DVI display. This is normal computer display behavior and does not indicate a problem.

If you have not already chosen between the Extender and Video modes, launch Blackmagic Converter Utility on a Windows or Mac OS X computer, click on the Settings tab and select the desired mode.

Extender mode should be chosen if you wish to work with computer display resolutions. It assumes that you have a Blackmagic Design HDLink Pro or HDLink Optical Fiber, at the other end of the SDI cable, and also a DVI-D display.

Video mode should be chosen if you wish to work with video resolutions, i.e. NTSC, PAL and HDTV. By working at video resolutions, you will be able to connect the SDI output of DVI Extender to almost any other SDI hardware such as SDI tape decks, SDI video capture cards, SDI waveform monitors and SDI broadcast monitors.

Your choice of mode will take immediate effect and might cause your primary graphics display to blink off and on as the computer detects the new DVI setting.

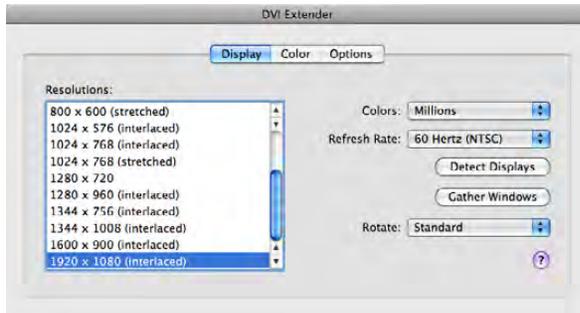
While Blackmagic Converter Utility only runs on Mac OS X and Windows, DVI Extender should work with the DVI output of computers running almost any operating system, such as Linux.

11 Using DVI Extender

Using DVI Extender with a Mac OS X computer

In Mac OS X, go to the Apple menu, click on System Preferences and then click on Displays. Click on the Gather Windows button to move the display settings for DVI Extender on to your main computer display. This window might be partially obscured, by the display settings window for your primary computer display, and in which case clicking on the obscured window will bring it to the foreground. Select the Resolution you wish to use and the Refresh Rate, e.g. 1920 x 1080 (interlaced) and 60 Hz (NTSC).

The display settings window shows many resolutions including those supported by DVI Extender.



When working in Video mode, the following video resolutions are supported:

1920 x 1080

1280 x 720

720 x 576

720 x 480

“(interlaced)” must appear next to any supported video resolution with the exception of 720p and 1080p24 video. Many other resolutions and non-interlaced formats might appear in the list and it is important to choose from one of the supported video resolutions listed above.



When working in Extender mode, the following computer resolutions are supported at 60 Hz:

1024 x 768

1280 x 1024

1360 x 768

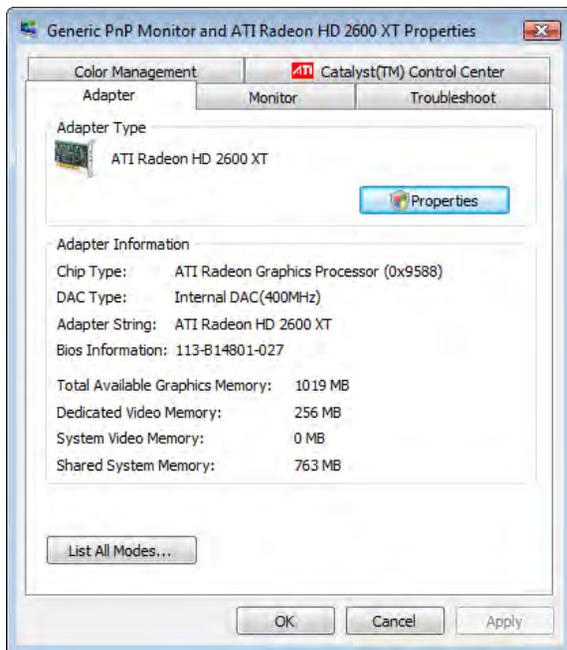
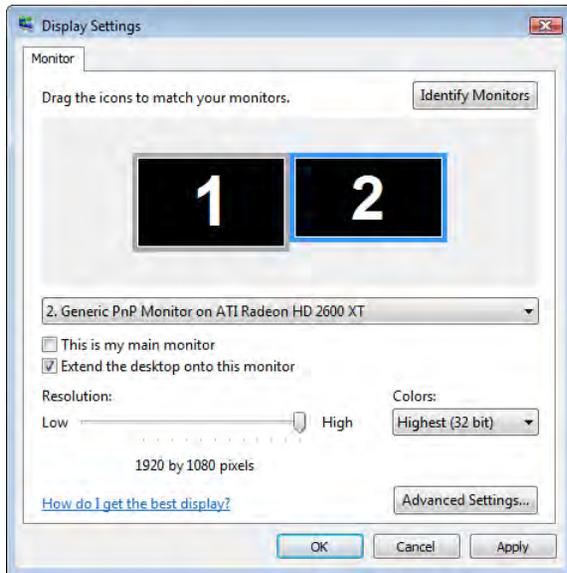
1600 x 1200

1680 x 1050

1920 x 1200

Many other resolutions may appear in the list and it is important to choose from one of the supported video resolutions listed above.

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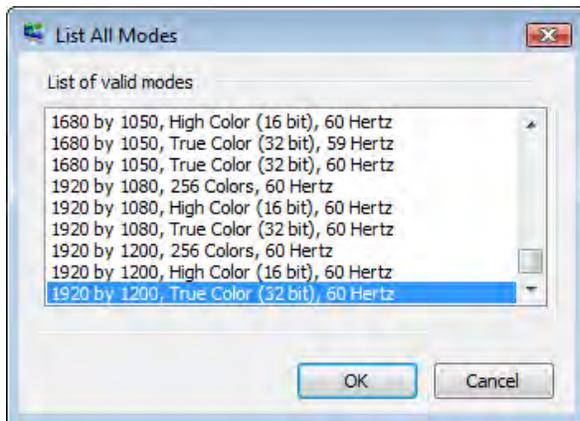
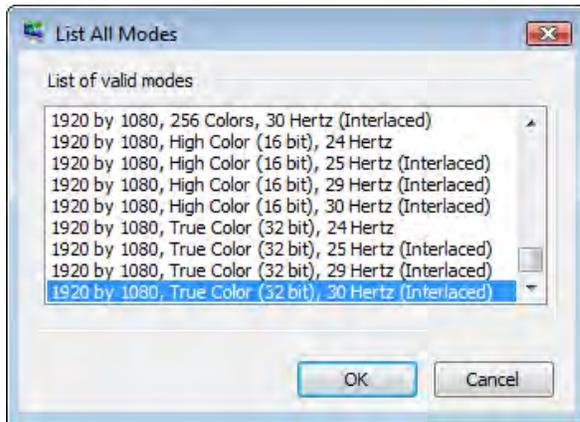
Using DVI Extender with a Windows computer

In Windows XP, go to choose **Start Menu>Control Panel** and open **Display**. Click on the Settings tab. You should see an extra display which represents the DVI Extender. Select the second display and then enable **Extend my Windows desktop onto this monitor**.

In Windows Vista and Windows 7, go to choose **Start Menu>Control Panel>Personalization** and click on **Display Settings**. You should see an extra display which represents the DVI Extender. Select the second display and then enable **Extend the desktop onto this monitor**.

Click on the **Advanced** or **Advanced Settings** button and then click the **List All Modes** button. This will display all the modes supported by your graphics card. **List All Modes** shows many resolutions including those supported by DVI Extender. Select the desired setting and click **OK** to return to the Display Settings window. Click **OK** to apply the new settings and close the Display Settings window.

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Using DVI Extender with a Windows computer

When working in Video mode, the following video resolutions are supported:

1920 x 1080
1280 x 720
720 x 576
720 x 480

“(interlaced)” must appear next to any supported video resolution with the exception of 720p and 1080p24 video. Many other resolutions and non-interlaced formats might appear in the list and it is important to choose from one of the supported video resolutions listed above.

When working in Extender mode, the following computer resolutions are supported at 60 Hz:

1024 x 768
1280 x 1024
1360 x 768
1600 x 1200
1680 x 1050
1920 x 1200

Many other resolutions may appear in the list and it is important to choose from one of the supported video resolutions listed above.

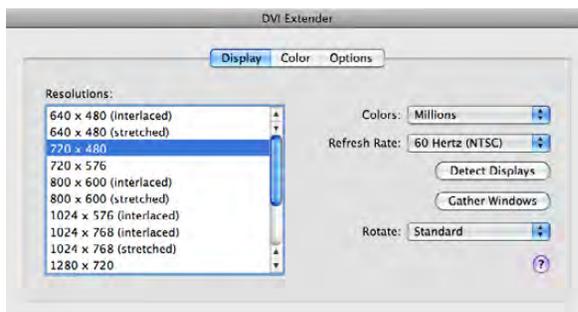
14 Troubleshooting

Q. DVI Extender does not seem to work with the DVI output of my graphics card. What's wrong?

A. DVI Extender is designed to be connected to the DVI-D output of your computer graphics card using a DVI-D cable. Some older graphics cards only have one DVI port but most have two. Occasionally there might be a subtle difference between the two DVI ports on a graphics card so if DVI Extender doesn't work properly with one port, try the other one. If you choose to use a DVI cable other than the one supplied, ensure it is a single-link DVI-D cable and preferably no longer than 6 feet or 2 meters. It is also essential to connect Extender to a USB 2.0 port on your computer. If the lamp next to DVI Extender's USB port fails to illuminate, there is not enough power for the unit to operate. Another USB port should be tried or else an AC to USB adapter can be used to supply power.

Q. Why does my Windows graphics driver sometimes report that an HDMI-to-DVI display connection has been detected even though I'm not using a HDMI connection? Does it matter?

A. This message is just for your information and there is no problem. Your graphics card has detected that DVI Extender is using a HDMI function to support both DVI video and computer audio. You may wish to enable the option "Don't display this message again" before clicking OK to dismiss the message.



Q. Why can't I output NTSC or PAL video through DVI Extender?

A. DVI Extender supports interlaced NTSC or PAL video via SDI. If your graphics card only supports progressive NTSC and PAL video, you will be unable to output standard definition video via DVI Extender. It is difficult to predict whether a graphics card will support interlaced or progressive standard definition video as this is dictated by a confusing combination of factors including: version of operating system, model of graphics card and the version of graphics driver. For example, the update from Mac OS X 10.5.6 to 10.5.7 replaced the interlaced NTSC and PAL video modes with progressive NTSC and PAL video modes on some or all models of Macintosh computers. They are no longer able to output interlaced standard definition video but it is possible that a future update might reinstate these modes. Please check the specifications of your graphics card.

15 Troubleshooting

Q. Why can't I find a particular video mode listed for my graphics card, e.g. 1920 x 1080 at 59 Hz, even though other video modes are listed?

A. Your graphics card might not support this mode. Graphics cards have traditionally been created to support computer resolutions and frequencies. More recent graphics cards have added some support for television video modes but might not support all video modes. In particular, we have noticed the lack of support for 1920 x 1080 at 59 Hz (HDTV 1080i59.94) on a considerable number of computers. Please check the specifications of your graphics card and check for updated graphics drivers.

Q. Why can't I output 1920 x 1080 at 59 Hz (HDTV 1080i59.94) when using Video Mode with Windows 7RC and an NVIDIA graphics card?

A. When attempting to set the DVI Extender display to 1920 x 1080 at 59.94 Hz, NVIDIA drivers for Windows 7RC may display 59 Hz but are really outputting at 60 Hz. There appears to be no way to output HDTV 1080i59.94 with the NVIDIA drivers for Windows 7RC. Please check the NVIDIA website for updated drivers, to resolve this problem, once Windows 7 has been released by Microsoft.

Q. Why does my video appear jerky through DVI Extender even though it looks fine on my primary computer monitor?

A. If movement, such as the movement of a mouse, looks smooth on your primary computer monitor but appears jerky via DVI Extender, then your graphics card is not performing fast enough to support a second display at full frame rate. Choosing to mirror your primary and secondary displays should ensure smooth output via DVI Extender and the primary computer monitor. Alternatively remove the primary computer display so that DVI Extender is the only display output. Either of these methods should help your graphics card to output video at full frame rate so that all video movement is smooth. Sometimes it helps to restart the computer after using one of these methods to ensure the computer provides smooth video output. Alternatively a more powerful graphics card may solve this problem. Expensive graphics cards do not necessarily help provide full frame rate support for two displays and it is best to ask your reseller for advice as to which graphics card is best for your computer. Typically a suitable graphics card should cost under US\$100.



16 Frequently Asked Questions

Q. Can I use DVI Extender with the VGA output of my graphics card?

A. No, VGA is an old analog graphics format and is not supported.

Q. Can I use DVI Extender with the HDMI output of my graphics card?

A. This is not a supported configuration but DVI Extender may well work with the HDMI output of graphics cards so long as a single-link DVI-D adapter is used.

Q. Can I use DVI Extender with the DisplayPort output of my graphics card?

A. This is not a supported configuration but DVI Extender may well work with the DisplayPort or Mini DisplayPort output of graphics cards so long as a single-link DVI-D adapter is used.

Q. On Mac OS X, can I use the Displays menu to switch between DVI Extender display settings?

A. The graphics card in your Mac supports a large number of display settings but the Displays menu only shows up to 10 most recently used settings. To ensure that the maximum range of settings is available to you, it is necessary to open the Display Preferences window in the System Preferences.

Q. On Windows, can I use the Resolution slider in the Display Settings control panel to switch between DVI Extender display settings?

A. The graphics card in your PC supports a large number of resolutions and frequencies but the Resolution slider only shows you the resolution. To ensure that the correct frequency has been chosen for a particular video format, such as 50 Hz or 60 Hz, it is essential to select the correct setting from the List All Modes window.

Q. How compatible is the SDI signal, from DVI Extender, with regular SDI equipment such as decks and monitors?

A. The SDI output of DVI Extender conforms to SMPTE specifications when working in Video mode. It always outputs legal video levels and has low SDI jitter performance so it should work with almost any SDI hardware. SMPTE specifications do not cover using computer resolutions via SDI and so the Extender mode must be used with Blackmagic Design's HDLink Pro or HDLink Optical Fiber monitoring products.

17 Frequently Asked Questions

Q. Can I output a computer display resolution to regular SDI hardware?

A. In theory it is not possible to output a computer display resolution, such as 1440 x 900, to regular SDI hardware as computer resolutions do not usually match standard TV resolutions. However in many cases, you may find that such a resolution will successfully output as 1920 x 1080 at 60 Hz interlaced. We cannot guarantee this will work with all computer modes as success is entirely dependent upon the way the graphics card works. Some graphics cards will scale the video to fill a 1920 x 1080 display while others will place a black border around the lower resolution image to fill a 1920 x 1080 display.

Q. Does DVI Extender support audio when using Extender mode?

A. Yes, you can use the Channel 1 & 2 outputs of a Blackmagic Design HDLink Pro to monitor your computer audio.

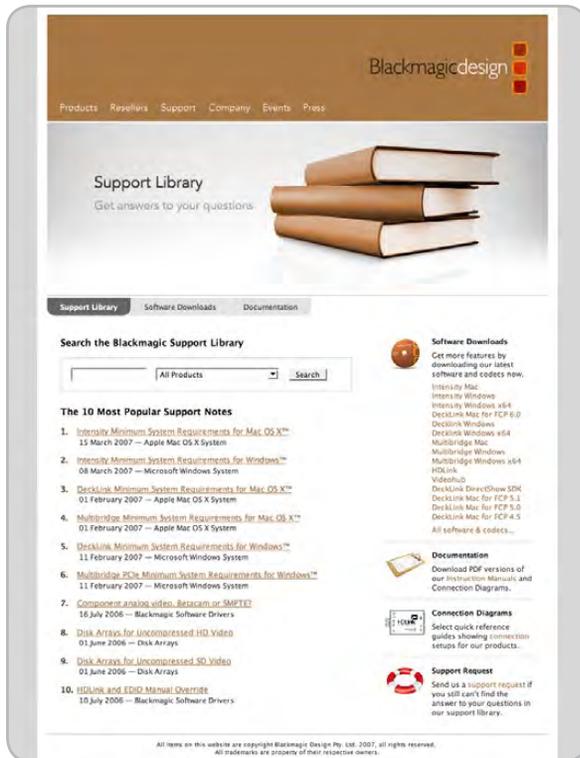
Q. Can I use a 30" dual-link DVI-D monitor with HDLink Pro to monitor the Extender mode output of DVI Extender?

A. No, when using Extender mode, a single-link DVI-D monitor should be used with HDLink Pro and its resolution should be a maximum of 1920 x 1200 pixels. All current 30" DVI monitors are dual-link DVI-D monitors and have a much higher resolution of 2560 x 1600 which means they cannot be used in conjunction with Extender mode.

A DVI or HDMI display can be used when working in Video mode. However if you intend to switch between Extender and Video modes, you will need a DVI display.

Q. Can I power DVI Extender using a USB 1 port?

A. No, there is not enough power supplied by the old USB 1 ports. DVI Extender must be powered either from a USB 2.0 port or from an AC to USB adapter.



If things go wrong

There are four steps to getting help.

Step 1. Check out the Blackmagic Design web site www.blackmagic-design.com and click on the "Support" page for the latest support information.

Step 2. Call your dealer.

Your dealer will have the latest technical updates from Blackmagic Design and should be able to give you immediate assistance. We also recommend you check out the support options your dealer offers as they can arrange various support plans based on your workflow requirements.

Step 3. The next option is to email us with your questions using the web form at www.blackmagic-design.com/support/contact

Step 4. Phone a Blackmagic Design support office. Check our web site for current support phone numbers in your area. www.blackmagic-design.com/company.

Please provide us with as much information as possible regarding your technical problem and system specifications so that we may try to respond to your problem as quickly as possible.