Blackmagicdesign

Mac OS X™
Windows™
October 2008

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Introducing Broadcast Converter

Broadcast Converter is a bi-directional converter which combines many of the Blackmagic Mini Converter features into a single 1 rack-unit chassis. Broadcast Converter is a complete solution for connecting analog decks, such as Betacam SP, to SDI based systems in a compact rack mount design.

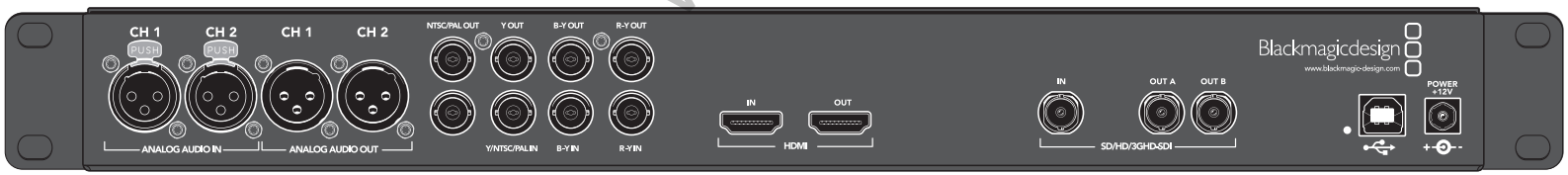
If you're already familiar with the Blackmagic Multibridge series, you'll immediately be at home with Broadcast Converter. In fact, Broadcast Converter uses the same, intuitive, Multibridge software to update and adjust its settings. Don't be alarmed when you see the name "Multibridge" appear in the software interface for your Broadcast Converter!

Connect to virtually any deck, camera or monitor

Broadcast Converter supports traditional video connections including standard and high definition SDI 4:2:2, analog YUV, S-Video and NTSC/PAL video in and out. HDMI is also included for connection to the latest video hardware. That's great for connecting to virtually any deck, camera or monitor. 16 audio channels are supported via SDI input and output. For analog audio, Broadcast Converter supports stereo XLR audio in and out. Two channel HDMI audio in and out is also supported.

Advanced digital monitoring

Broadcast Converter includes built-in HDMI input and output which is great for working with uncompressed digital video and audio without the expense associated with SDI. With HDMI, Broadcast Converter can support large LCD and Plasma monitors or TV's as well as video projectors. Digital audio can be monitored through many HDMI-equipped displays and sounds even better when connected to an HDMI-equipped amplifier and a set of speakers. That's great for low cost digital HiFi monitoring. The HDMI input means you can also convert uncompressed, digital video and audio from the latest HDMI-equipped video cameras.



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The Broadcast Converter is a standalone, bi-directional, digital-to-analog and analog-to-digital converter.

The default settings allow SDI to analog conversion while simultaneously converting analog in to SDI with both audio and video.

These defaults can be changed to various combinations of conversion options, and you can choose which SDI audio pair are de-embedded or embedded into various audio connections on the converter.

Requirements

Supported systems

- Run Mac OS X 10.4.11, Mac OS X 10.5.5, Windows XP Service Pack 3, Windows Vista Service Pack 1 or later revisions;
- USB 2.0 port

Environment

1. The intended use is for commercial and industrial controlled environments.
2. The unit should not be exposed to damaging environments including moisture, dirt, knocks, heat or sunlight.

For installation in an OBV (outside broadcast vehicle) the unit should be rack-mounted to avoid extended periods of vibration.

Note: The Power connector is located at the rear of the unit.

Warning

Do not disconnect power or USB cables while firmware is being updated. It is vital the firmware update process is completed without malfunction. Stable operating conditions should be maintained to guarantee usability.

Solid copper-core HD-SDI cables will work reliably over 300 feet or 100 meters. Cables should be shielded and installed away from power supplies, generators or other potential EMF (electromagnetic field) sources.

Installation procedure

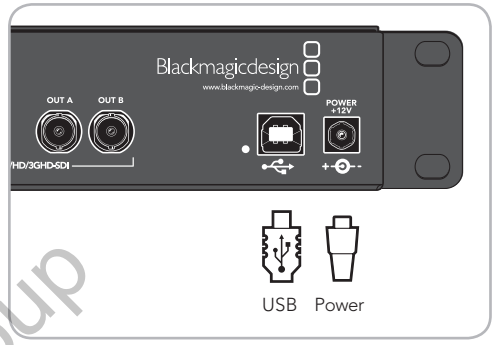
1. Install the Broadcast Converter software package by using the Multibridge software installer. This can be downloaded from www.blackmagic-design.com/support
   Reboot after installation.
2. Start Multibridge Utility by clicking on the Multibridge Utility icon.

   Mac
   `Applications > Blackmagic Multibridge Utility`

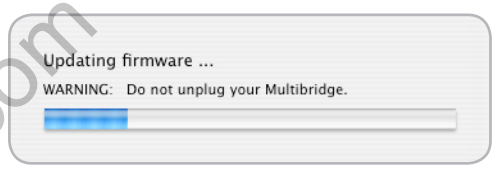
   Windows
   `Start > All Programs > Blackmagic Design > Multibridge > Blackmagic Multibridge Utility`
3. Connect power and USB cables. Broadcast Converter will be detected by the computer.
4. A system message may appear requesting that you update firmware.
   - Select `Update Firmware` (This can take a couple of minutes.)
   - Once complete, disconnect the power.
   - Wait 5 seconds and then reconnect.

   Note: If the message does not appear, your firmware is already up to date.
5. The menus of the Multibridge Utility should now be accessible and you should now be able to modify the settings. If you find any menus are grayed out and inaccessible, it may be that the menu is not relevant to the current workflow and has been automatically grayed out.

   If all menus are grayed out, you may need to download a newer version of the Multibridge Utility. Alternatively, the computer may not be connected to Broadcast Converter via USB. Sometimes older USB 1.1 cables don't work well with USB 2.0 connections and it is better to use a well shielded USB cable.



Connect USB and power cables.



Updating firmware.

Interfaces

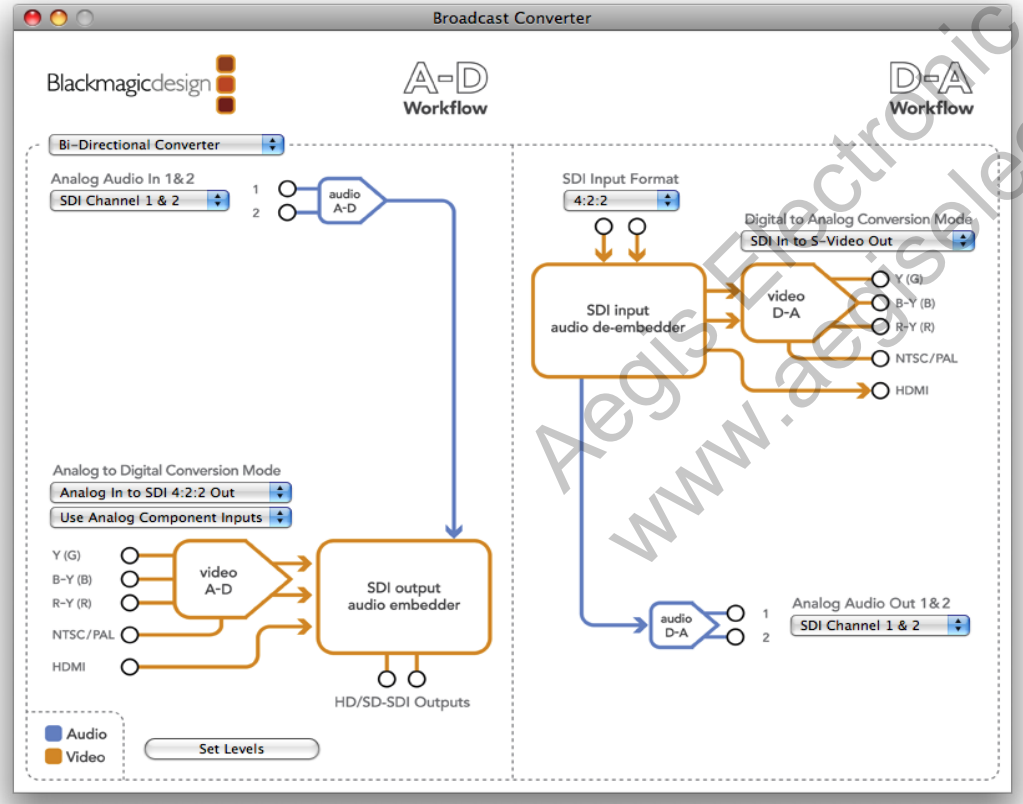
Workflow View

Workflow View enables users to graphically configure and depict analog-to-digital and digital-to analog workflows.

Select `SDI In` to obtain both Analog and HDMI output.

Select `Analog In`, or `HDMI In`, to obtain SDI output.

By connecting an SDI cable from the SDI Out to the SDI In, analog input can be converted to SDI output while simultaneously converting the SDI signal to both HDMI and analog output.



Workflow example 1 – Connecting analog deck to SDI system

This workflow example shows how to connect a Sony Betacam SP™ deck in and out, via Broadcast Converter for connection to an SDI based system. You can place Broadcast Converter right next to your analog deck to "turn it into an SDI digital device" in your system, or on your routing switcher.

To begin, power on Broadcast Converter and launch Multibridge Utility software.

Analog to digital connections

1. Connect Betacam SP analog audio out to XLR inputs 1 and 2 on your Broadcast Converter. From the pull down menus within the Multibridge Utility select:

   `Analog Audio In 1 & 2 > SDI Channel 1 & 2`

   You may be prompted to "Embed this input" if another audio source was previously configured to embed to SDI channels 1 & 2.

2. Connect Betacam SP Y,B-Y,R-Y out to Analog Y,B-Y,R-Y Broadcast Converter Video In. From the pull down menus in the Multibridge Utility select:

   `Analog to Digital Conversion Mode > Use Analog Component Inputs`

Digital to analog connections

4. Connect Broadcast Converter analog audio out to XLR inputs 1 and 2 inputs on your Betacam SP deck. From the pull down menus within the Multibridge Utility select:

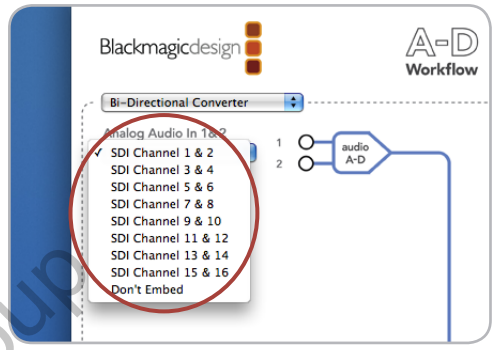
   `SDI Channel 1 & 2 > Analog Audio Out 1 & 2`

5. Connect the Broadcast Converter Y,B-Y,R-Y out to Analog Y,B-Y,R-Y Betacam SP video In. From the pull down menus in the Multibridge Utility select:

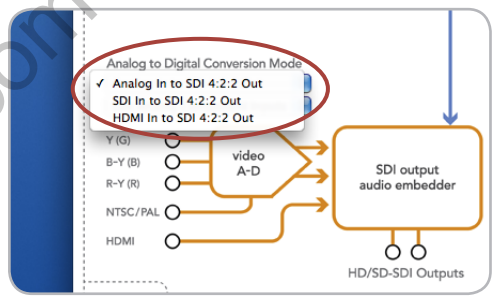
   `Digital to Analog Conversion Mode > SDI In to YUV Analog Output`

   To store this profile for later recall, select `New Profile` from the "Profiles" menu and enter a name. You can save various profiles to make setting up Broadcast Converter faster in the future.

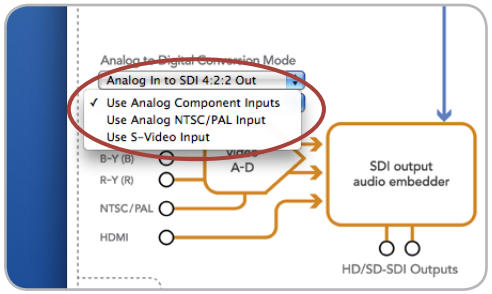
After configuring Broadcast Converter to these settings, you will now be using Broadcast Converter as a bi-directional converter, converting the audio and the video in and out of the Betacam SP™ deck. The deck can be directly connected into SDI based television systems and can be patched or routed into any other SDI based device.



Select "SDI Channel 1&2".



Select "Analog In to SDI 4:2:2 Out".



Select "Use Analog Component Inputs".

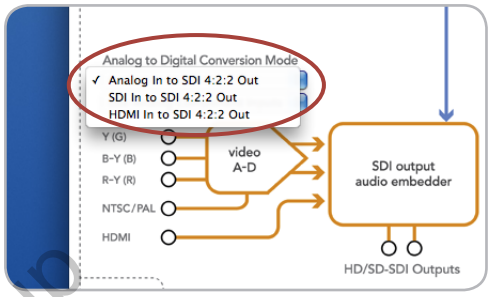
Workflow example 2 – Multiple sources to a Broadcast Converter

Destination: SDI capture device.

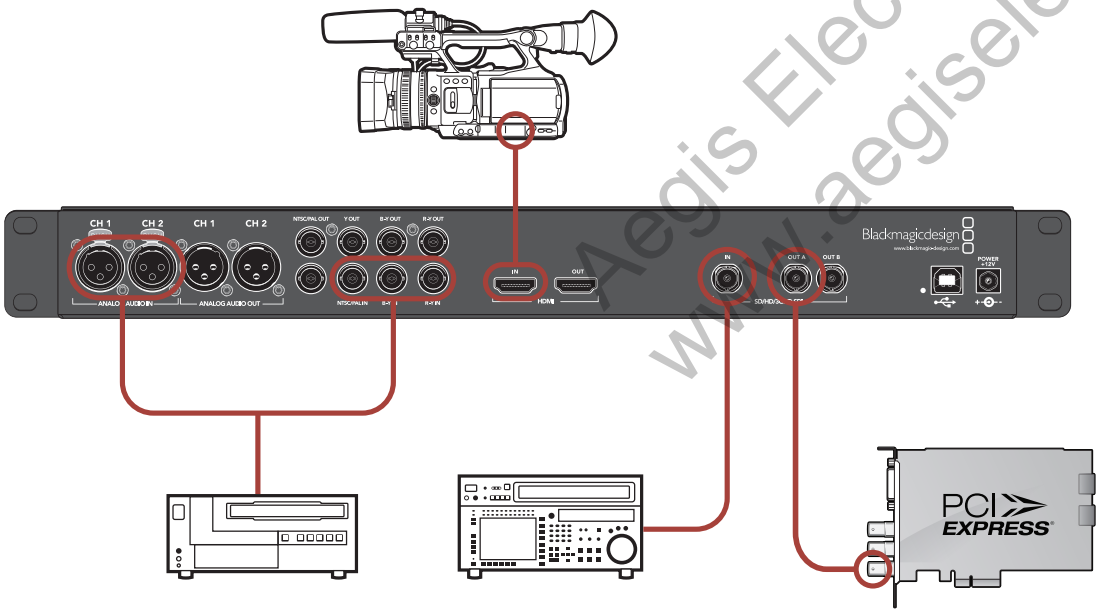
Scenario – A Video Editor has three sources for video material. A Betacam SP™ deck (analog), Digital Betacam™ deck (SDI) and a video camera with HDMI output. Using the Broadcast Converter, the SDI capture device is now able to capture video and audio from these varied sources.

1. Connect the Digital Betacam SDI output to the SDI Input on your Broadcast Converter.
2. Connect the Betacam SP component output to the component input on your Broadcast Converter.
3. Connect the HDMI output of the video camera to the HDMI input on your Broadcast Converter.
4. Connect the SDI Output on your Broadcast Converter to the SDI input of your SDI capture device, such as a DeckLink card.
5. From the Multibridge Utility select:

   `Analog to Digital Conversion Mode > Choose between Analog, SDI and HDMI video input to specify the video source.`



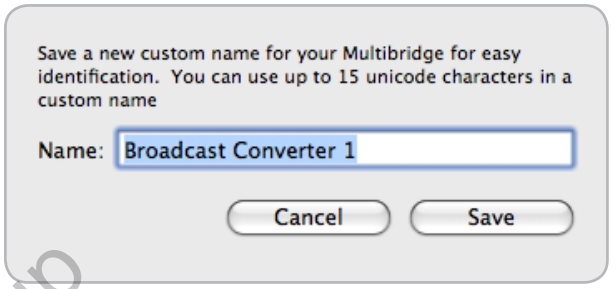
Select Analog In, SDI In or HDMI In to SDI 4:2:2 Out

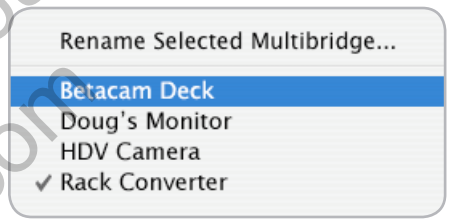


Device names

Device Names provide a naming convention for identifying Broadcast Converters. Multibridge Utility can connect to many different types of Blackmagic Design converter models on a single USB connection. Using the custom name, you can set names to make sure you select the correct unit when changing settings in complex systems.

Names can be in Unicode, so you can use non Roman character sets such as Japanese, Chinese, Korean, Thai, Arabic and many more.





Stored custom profiles

Profiles are a simple way of managing your configuration settings.

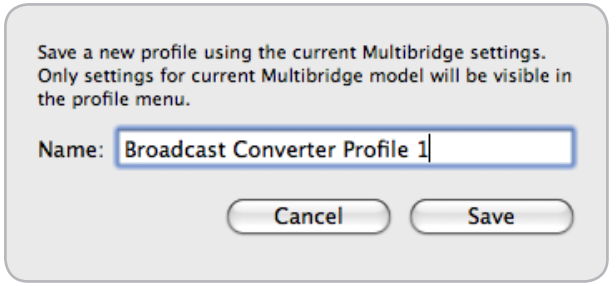
Once you have a configuration you wish to store, select:

`Profiles > New Profiles > Enter a name of profile`

The profile is now stored.

Once you have selected a profile, it remains in memory as the profile to be used. If the power is removed the current settings will be restored at power up.

You can save a profile any time you would like to change settings and want to restore a known setting state or when you want to use Broadcast Converter for different tasks in your facility, and settings can be restored quickly.

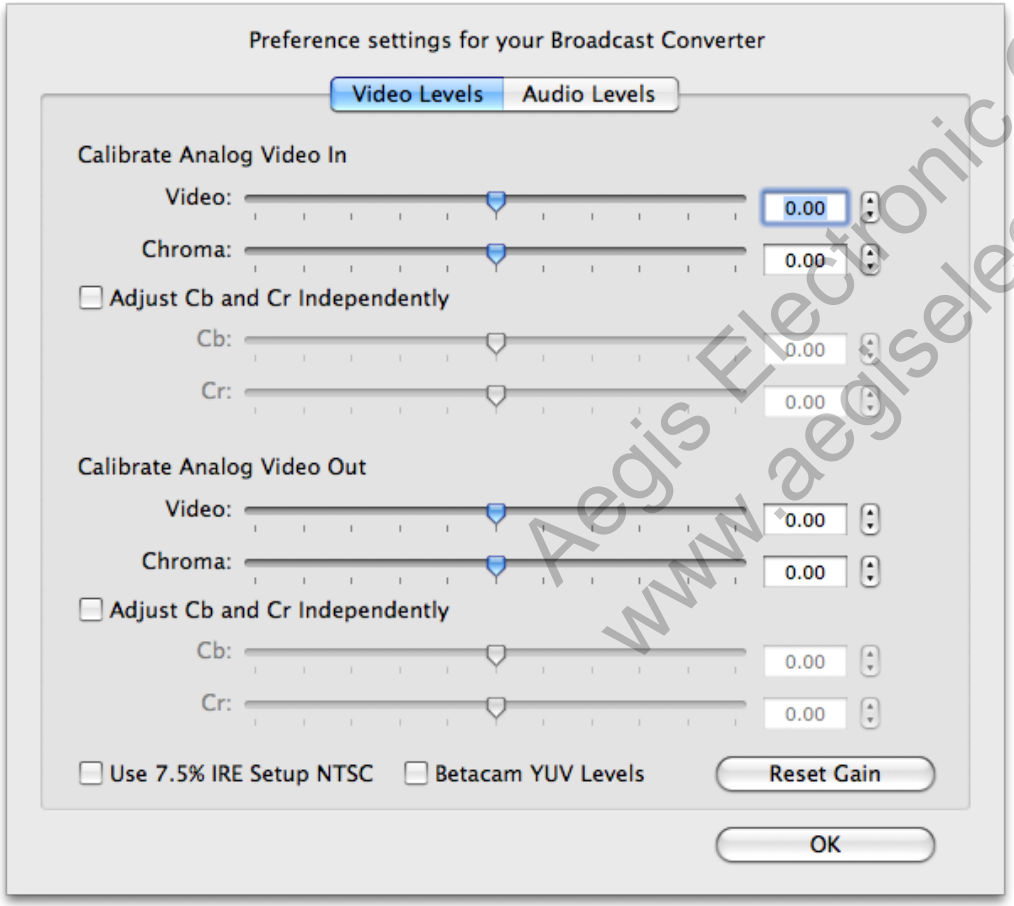


Video Levels

Although Broadcast Converter's analog outputs are automatically voltage calibrated at power on, by selecting `Set Levels` you will be able to configure and adjust the output of your Broadcast Converter to suit your equipment. This can be useful when you need to compensate for cable length to equipment connected to the Broadcast Converter analog outputs.

Analog input and output sliders allow individual color bias adjustment.

Please consult the user manuals of your decks and monitors before configuring these options.



Supported Connection Formats

Video

- SD/HD-SDI 4:2:2 input and outputs
- Analog HD or SD, YUV Component video input and output
- S-Video input and output
- Composite NTSC or PAL input and output
- HDMI input and output

HD Format support:

- 1080 lines at 23.98PsF, 24PsF, 50i, 59.94i and 60i
- 720 lines at 50p, 59.94p, 60p and VariCam

SD Format support:

- 565/60(NTSC) and 625/50(PAL)

SDI Compliance:

- SMPTE 292M, SMPTE 259M, SMPTE 296M, ITU-R BT.656 and ITU-R BT.601

Color Space support:

- 4:2:2 YUV

Audio

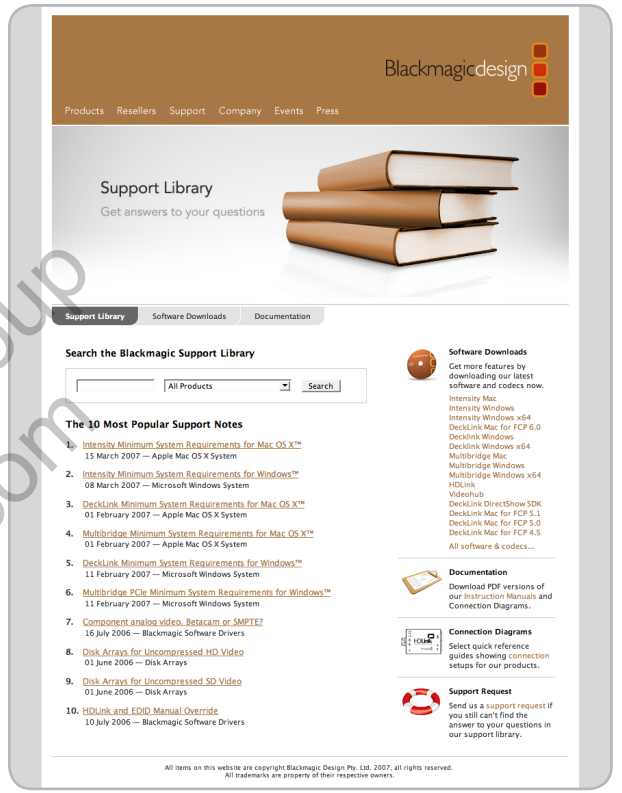
- 2 XLR balanced analog inputs and outputs
- 1 HDMI input and output

Troubleshooting

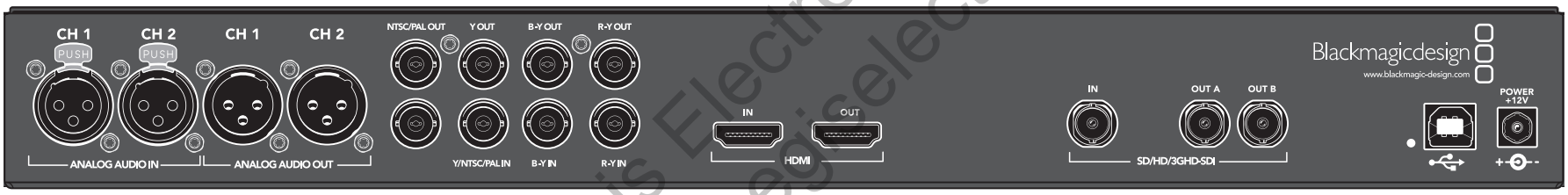
There are four steps to getting help:

1. Check out the Blackmagic Design website www.blackmagic-design.com/support for the latest support information.
2. Call your reseller. Your reseller 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.
3. The next option is to email us with your questions using the web form at http://www.blackmagic-design.com/support/contact/.
4. Phone support in North America is available on +1 408 954 0500. Please see http://www.blackmagic-design.com/company/ for support numbers in other regions.

Note: Please provide us with as much information as possible regarding your technical problem and system specifications so that we may try to reproduce your problem quickly. Also please let us know how to reproduce any problem you're having, so we can try it on our test systems before replying to your email.

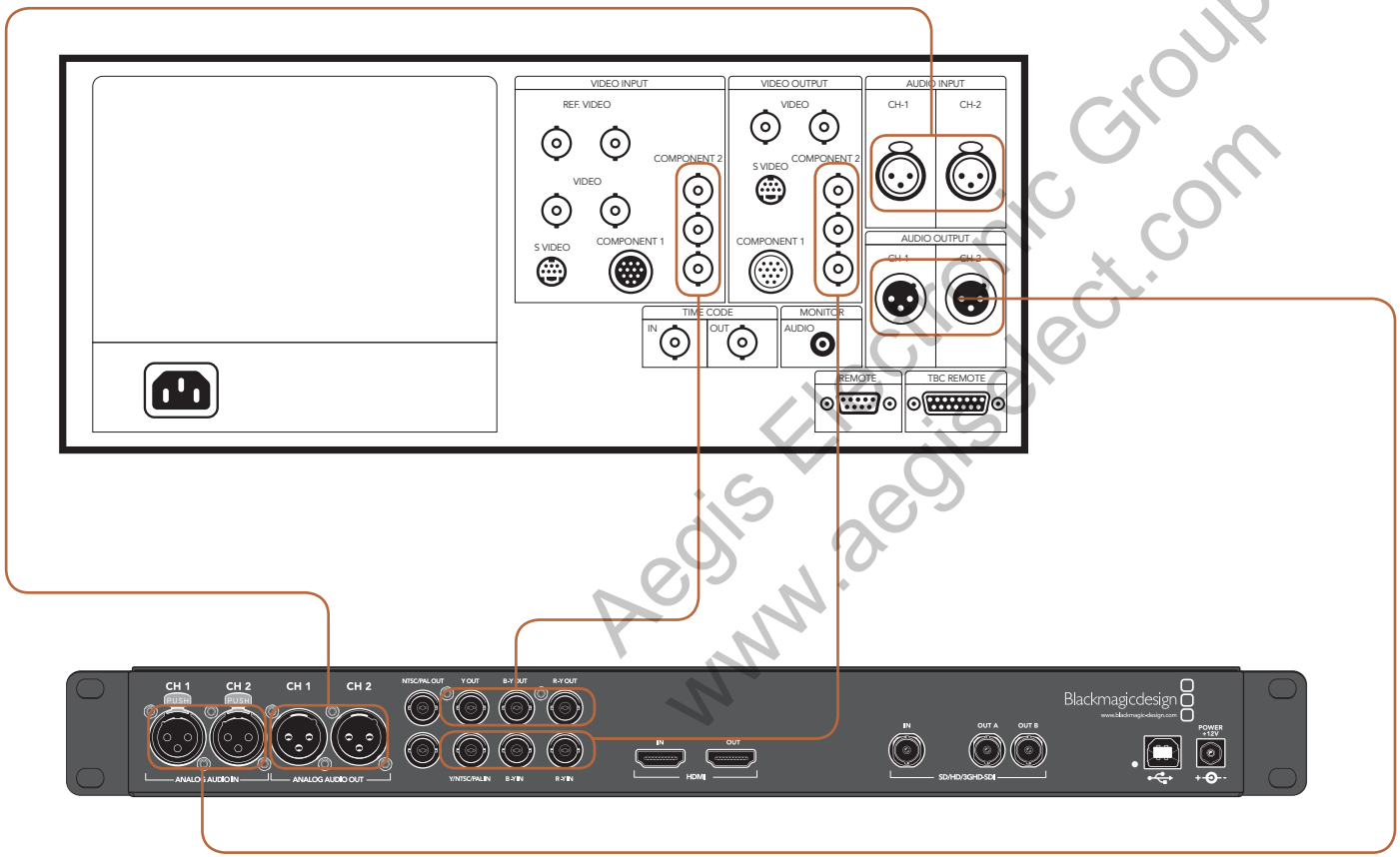


Broadcast Converter connectors overview



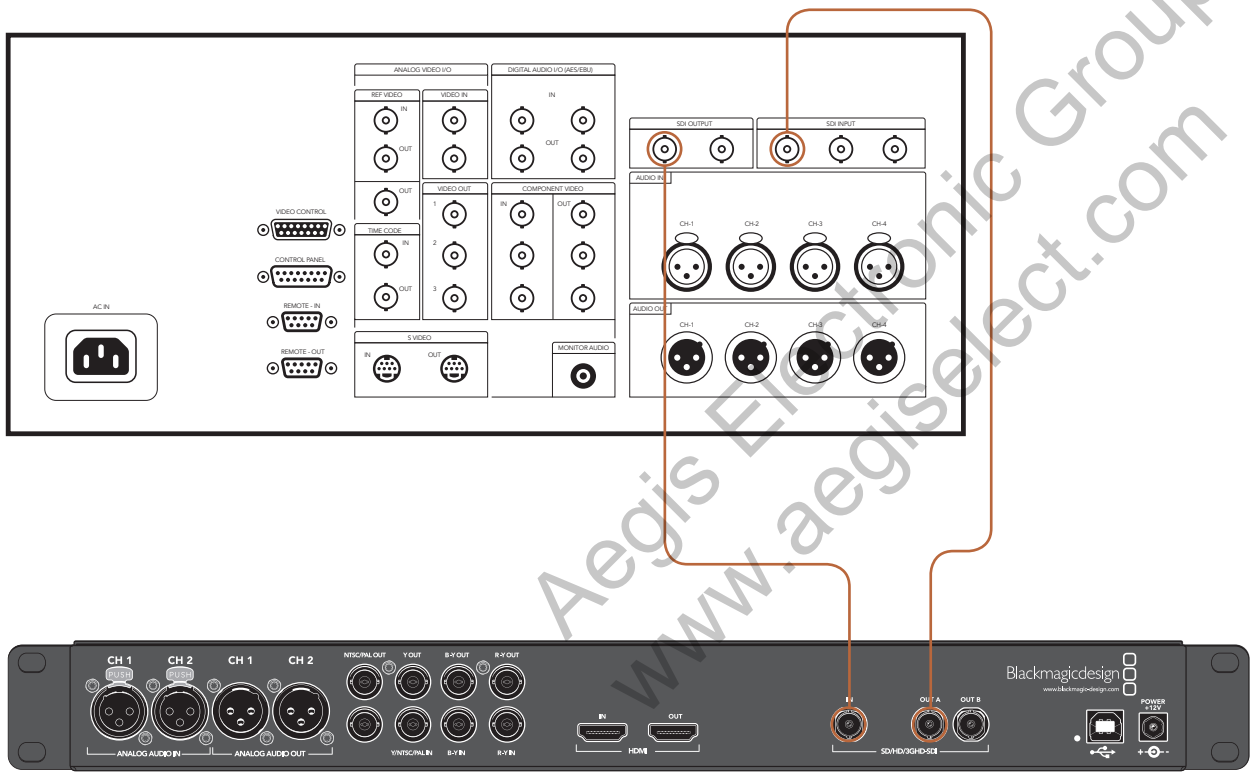
Connecting to a Betacam SP analog deck

This example shows Broadcast Converter connected to an analog deck. The SDI connections of Broadcast Videohub can be used to directly connect the analog deck to an SDI-based editing system, such as a DeckLink card. Alternatively the SDI connections could be connected to a video router, such as Broadcast Videohub, so that legacy analog equipment can be shared by multiple SDI-based users in your facility.



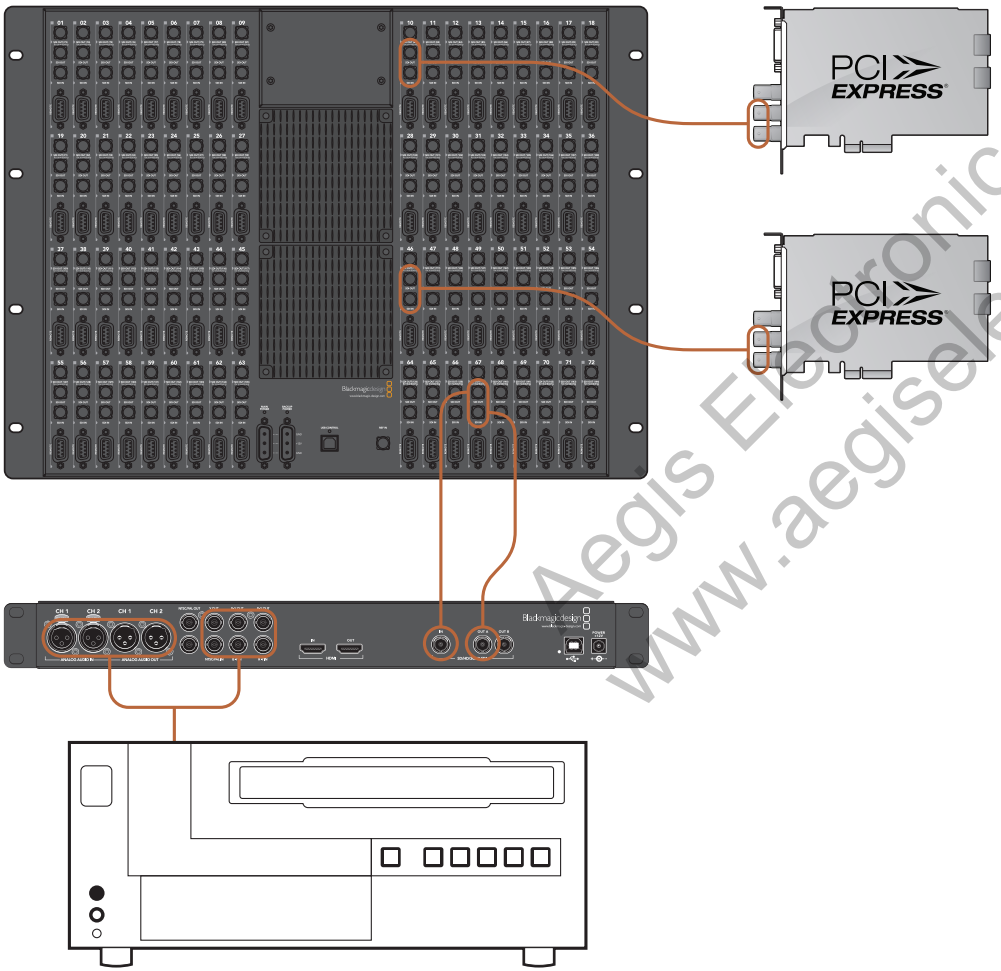
Connecting to an SDI digital deck

This example shows Broadcast Converter connected to a digital deck in 4:2:2 SD mode. The analog video connections, and the analog audio connections can be used to connect the deck to analog equipment or monitors. The HDMI output can also be used for local monitoring.



Sharing analog video in a digital facility

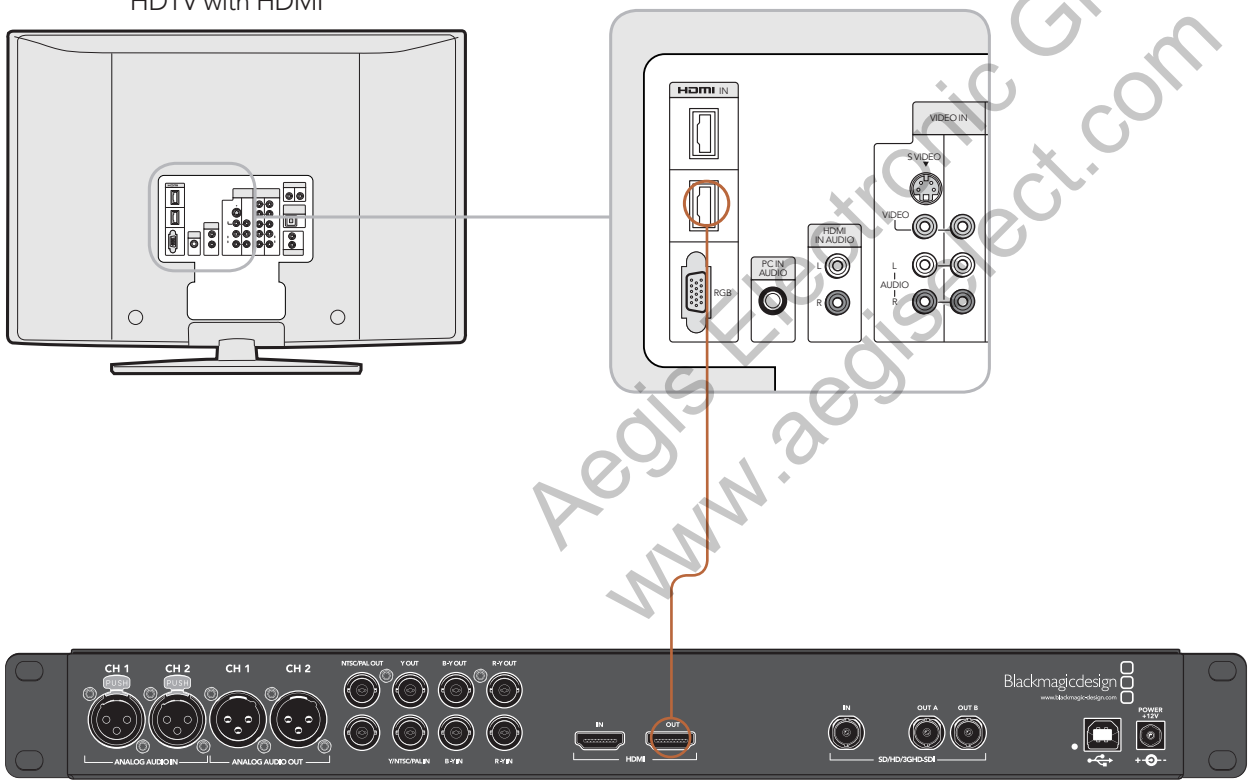
Broadcast Converter makes it easy to incorporate legacy analog equipment in an all-digital SDI facility. This example shows a Betacam SP (analog) deck connected to an SDI video router via a Broadcast Converter. Broadcast Converter provides the simultaneous component analog-to-SDI and SDI-to-component analog conversion to make this possible. The RS-422 device control is connected directly between the Betacam SP deck and the Broadcast Videohub video router. This makes it easy to connect and share the Betacam SP with any SDI workstation and equipment in the facility.



Connecting to an HDTV

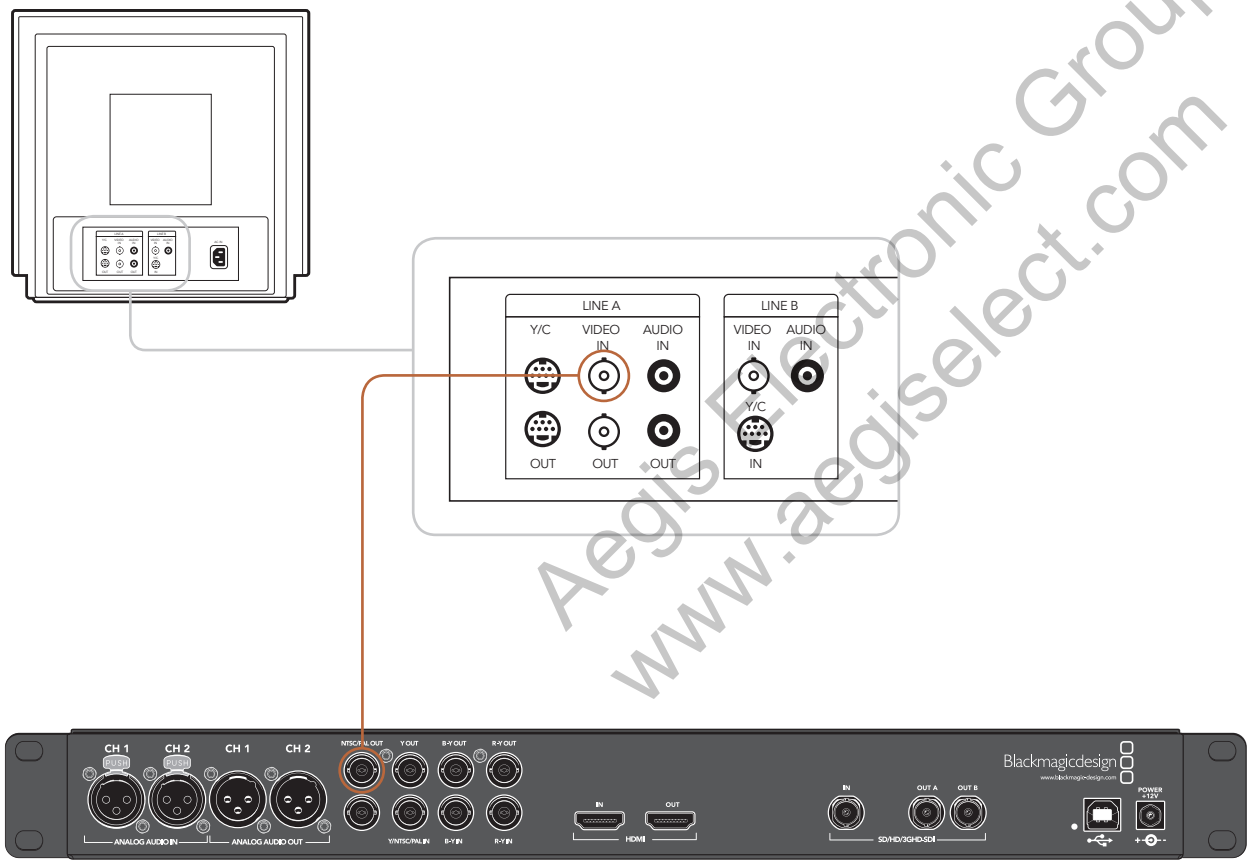
This example shows Broadcast Converter connected to a consumer HDTV via HDMI. Broadcast Converter will automatically switch between HD and SD if the analog or SDI video input is changed. Connect the HDMI cable from the HDTV to Broadcast Converter's HDMI output.

HDTV with HDMI



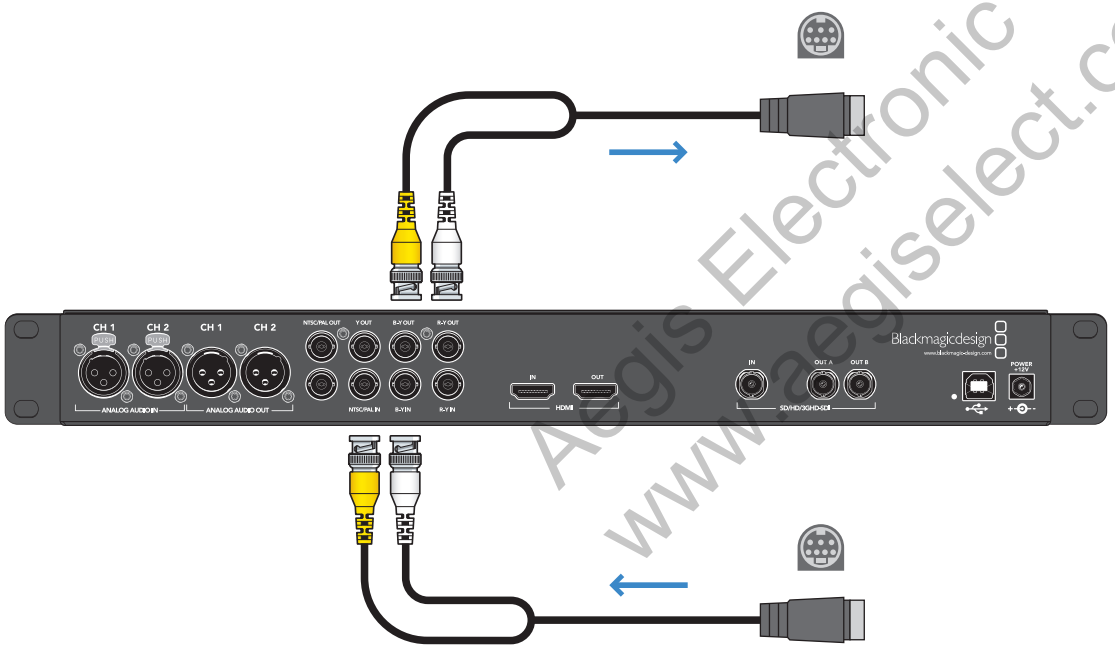
Connecting to an NTSC/PAL monitor

This example shows Broadcast Converter connected to a Sony PVM monitor via composite analog video. You can monitor the SD-SDI input on the composite output of Broadcast Converter. Broadcast Converter will automatically switch between NTSC and PAL if the SDI video input is changed. Many composite monitors only support NTSC or PAL but not both. Multiformat monitors support both standards.



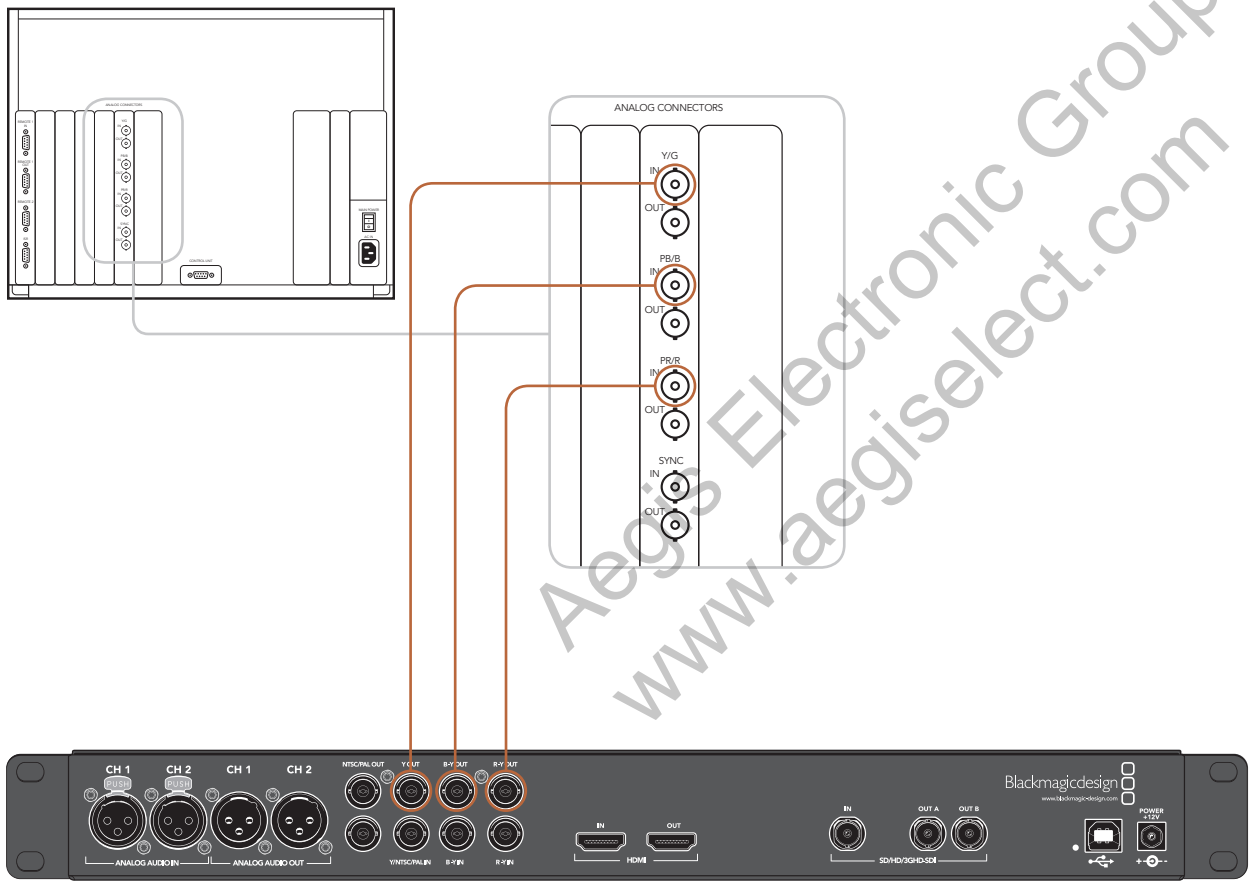
Connecting to S-Video equipment

This example shows how to connect BNC connectors, on Broadcast Converter, to mini-DIN connectors used commonly on S-Video equipment. Inexpensive S-Video to BNC cables can be used to connect to Broadcast Converter. Standard definition SDI video input can be monitored via the S-Video output of Broadcast Converter. Broadcast Converter will automatically switch between NTSC and PAL if the video input format is changed. Multiformat monitors support both NTSC and PAL but many S-Video monitors only support one standard. You can also take S-Video input and convert it to SDI video output with Broadcast Converter.



Connecting to a YUV component monitor

This example shows Broadcast Converter connected to a Sony BVM monitor via component analog video. Broadcast Converter will automatically switch between HD and SD if the SDI or HDMI video input is changed.



3 Year Limited Warranty

Blackmagic Design warrants that this product will be free from defects in materials and workmanship for a period of 36 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.

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 personal 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 WETHER 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.