

Installation and Operation Manual

Blackmagic Converters



Mac OS X™

Windows™

November 2013

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4 Getting Started



Mini Converter



Mini Converter Heavy Duty



Battery Converter

Introducing Blackmagic Converters

Blackmagic Converters are compact and affordable SDI converters for broadcast, studio and video production environments. Converters provide automatic switching between SD, HD and even Ultra HD 4K on relevant models. Low SDI jitter and SDI re-clocking allows the longest SDI cable lengths.

Blackmagic Converters are available in 3 designs. Mini Converter, Mini Converter Heavy Duty and Battery Converter.

Mini Converter is a sturdy and lightweight design.

Mini Converter Heavy Duty is robust, ultra strong, and capable of withstanding the harshest environments.

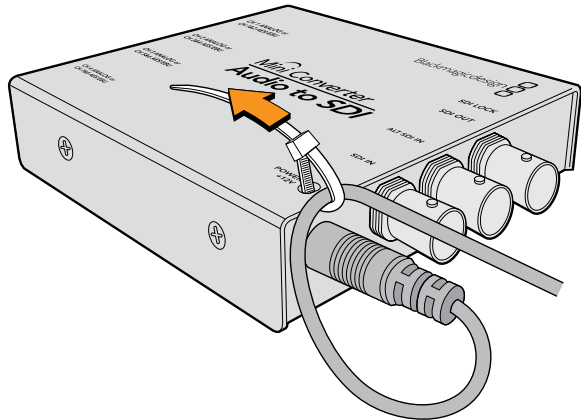
Battery Converter is ultra strong with an internal rechargeable battery for operating in the field without external power.

Simple mini switches select input and output settings. The mini switch legend printed on the back of your converter provides all the information you need.

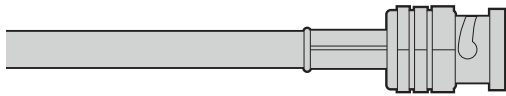
A 12V power supply is included with international socket adapters. Specified models can also be battery operated using your own 12 - 31 V DC power supply and software updates are installed via the converter's USB port. Blackmagic Converters provide the following conversions:

| Conversion | Mini Converter | Mini Converter Heavy Duty | Battery Converter |
|------------------|----------------|---------------------------|-------------------|
| SDI to Analog | • | • | |
| Analog to SDI | • | • | |
| HDMI to SDI | • | • | • |
| SDI to HDMI | • | • | • |
| SDI to HDMI 4K | • | | |
| SDI to Audio | • | | |
| Audio to SDI | • | | |
| Optical Fiber | • | | |
| Optical Fiber 4K | • | | |
| UpDownCross | • | | |
| Sync Generator | • | | |
| SDI Distribution | • | | |
| SDI Multiplex 4K | • | | |

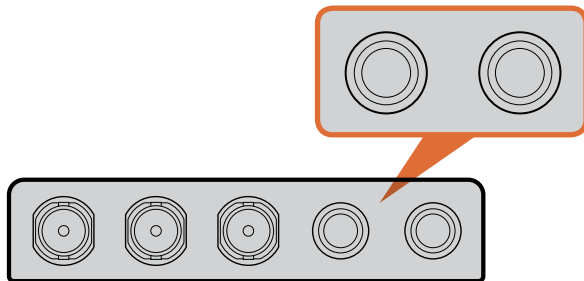
5 Getting Started



Locking the power cable to the converter's cable tie point prevents accidental disconnection.



BNC connectors carry SDI video signals with embedded audio.



Connect external analog or digital audio to your converter's TRS audio connectors.

Plugging in Power

Plug in the 12 volt power supply using the socket adapter for your country. The cable tie point is for securing the power connection to your converter.

If you are using a Battery Converter with access to external power, we recommend using external power unless you need to use the built in battery. This will maximize the life of the battery and ensure your Battery Converter is fully charged when you need it.

Plugging in Video

Plug your source video into your converter's video input and plug the video output into your destination equipment. Third party adapters are commonly available to connect any video equipment using alternative connectors such as RCA.

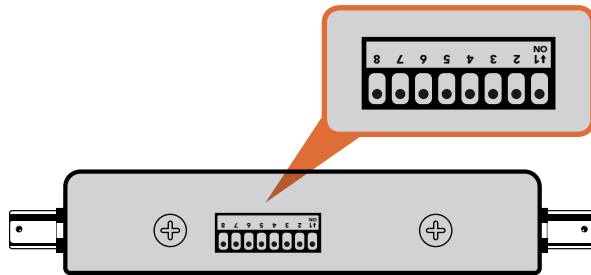
The next step is to plug in audio.

Plugging in Audio

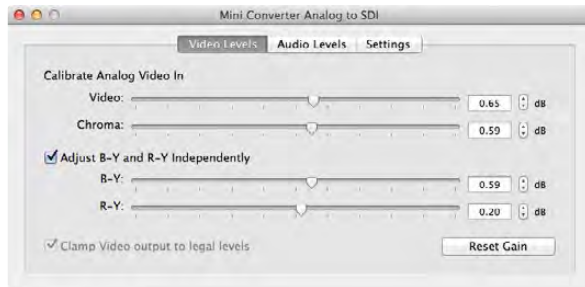
If you're using embedded audio in SDI, optical fiber SDI or HDMI, audio is already connected via the video input. If using external analog or digital audio, plug into your converter's TRS audio inputs or outputs. Third party adapters are commonly available to connect any audio equipment using alternative connectors such as XLR.

Now configure any required settings using the mini switches.

6 Getting Started



Internal settings are applied by adjusting mini switches with a pen.



Blackmagic Converter Utility lets you adjust analog video levels, audio levels and conversion settings.

Applying Settings using Mini Switches

Many models of Mini Converter and Mini Converter Heavy Duty have mini switches used to configure internal settings. Change your settings using the tip of a pen.

On models with mini switches, you'll find a switch settings diagram printed on their base. Ensure your switch settings correspond to the legend by observing the mini switch numbers from 8 to 1, left to right. The numbers on the switches will appear upside down.

For a comprehensive description of the mini switches and their settings, refer to your converter model in this manual.

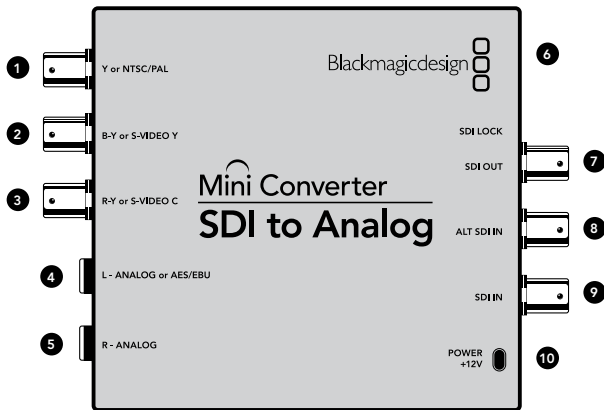
Applying Settings using Blackmagic Converter Utility

Similar to mini switches, the included Converter Utility software for Mac OS X and Windows provides adjustment settings.

The Converter Utility interface is composed of three panes for Video Levels, Audio Levels and Settings. Settings not relevant to your converter model will be grayed out and inactive.

Analog video and audio levels, plus AES/EBU audio levels can be adjusted. Any adjustments will immediately be saved to your Blackmagic Converter. This means that if power is lost, the new settings will be re-established as soon as power is restored.

7 Mini Converter SDI to Analog



Blackmagic Mini Converter SDI to Analog

Convert from SD/HD-SDI to analog component, NTSC and PAL video out, plus balanced AES/EBU and analog audio out. Your converter easily connects to analog video monitors and decks such as Betacam SP and VHS. A hardware down converter lets you connect HD-SDI video to SD analog equipment. You can even output pairs of analog audio from 16 de-embedded SDI audio channels.

Connectors

1. Y or NTSC/PAL

Analog component Y, or composite NTSC/PAL output on a BNC connector.

2. B-Y or S-VIDEO Y

Analog component B-Y, or S-Video Y output BNC connector.

3. R-Y or S-VIDEO C

Analog component R-Y, or S-Video C output BNC connector.

4. L - ANALOG or AES/EBU

Balanced left channel analog audio, or AES/EBU digital audio output on a 1/4" TRS connector.

5. R - ANALOG

Balanced right channel analog audio output 1/4" TRS connector.

6. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

7. SDI OUT

SDI video output on a BNC connector.

8. ALT SDI IN

Redundant SDI input is provided as an optional back up.

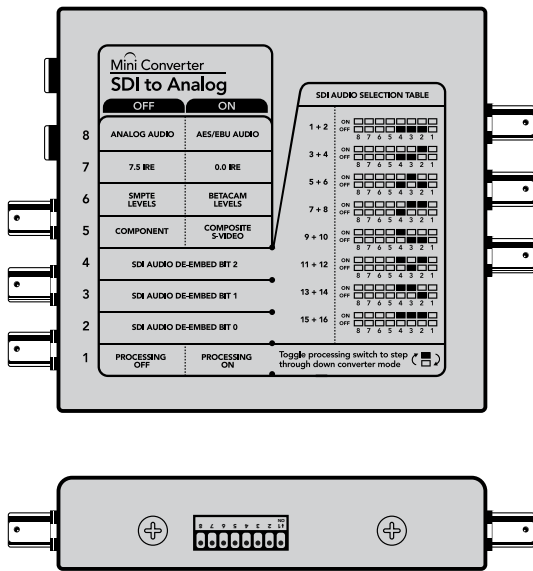
9. SDI IN

Primary SDI input.

10. POWER +12V

12 volt power supply input.

8 Mini Converter SDI to Analog



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter SDI to Analog's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio output.

Switch 7 - 7.5 IRE - 0.0 IRE

The USA and countries using NTSC with 7.5 setup should set switch 7 to OFF. If you're working in countries not using 7.5 setup, set switch 7 to ON. This setting only affects composite or S-Video outputs.

Switch 6 - SMPTE Levels - Betacam Levels

Set switch 6 to OFF for SMPTE levels, or ON for Betacam levels. SMPTE levels are more common and even Betacam SP decks can use SMPTE levels, so only switch this to Betacam if you are sure that Betacam levels are being used.

Switch 5 - Component, Composite or S-Video

Set switch 5 to OFF to select analog component video output, or ON for composite and S-Video outputs.

To display the HD video input on the S-Video and composite outputs, down conversion must be set to ON. Component analog video supports both HD and SD video.

Switch 4 - SDI Audio De-Embed Bit 2

Switches 4, 3 and 2 are grouped together to provide 8 ON/OFF combinations. Having eight different combinations allows eight independent pairs of audio channels to be de-embedded from your SDI input.

Switch 3 - SDI Audio De-Embed Bit 1

See switch 4 description.

Switch 2 - SDI Audio De-Embed Bit 0

See switch 4 description.

Switch 1 - Processing Off - Processing On

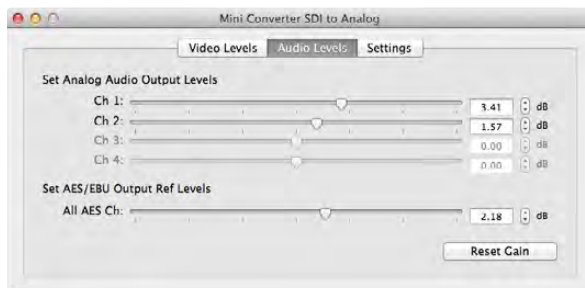
Down convert HD to SD with 3 types of aspect ratios by cycling through switch 1. For example, each time you cycle between Off and On you apply anamorphic, center cut or letterbox aspect ratios. Leaving switch 1 set to OFF bypasses the down converter and outputs in HD.

When connected to the Blackmagic Converter Utility via USB, your down conversion settings are controlled by the software. If you want the converter to remember your software settings, disconnect from the computer, power cycle your converter and set your down conversion using mini switch 1.

9 Mini Converter SDI to Analog



Adjust analog video levels using Blackmagic Converter Utility. The Clamp Video output to legal levels setting is checked by default. This setting ensures your analog output is a true representation of the SDI input. Adjusting video levels may result in illegal colors.



Adjust audio levels using Blackmagic Converter Utility.



Adjust down conversion settings using Blackmagic Converter Utility.

Mini Switch Settings Example:

Experiment with the mini switches by setting your Blackmagic Mini Converter to output high definition component video and analog audio channels 1 and 2 by setting switches 8, 5, 4, 3 and 2 to the OFF position

SDI Audio Selection Table

| Audio Channels | Switch 4 | Switch 3 | Switch 2 | Switch Diagram |
|----------------|----------|----------|----------|---|
| 1 and 2 | OFF | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 and 4 | OFF | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 and 6 | OFF | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 and 8 | OFF | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 and 10 | ON | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 11 and 12 | ON | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 13 and 14 | ON | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 15 and 16 | ON | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Blackmagic Converter Utility Settings

The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

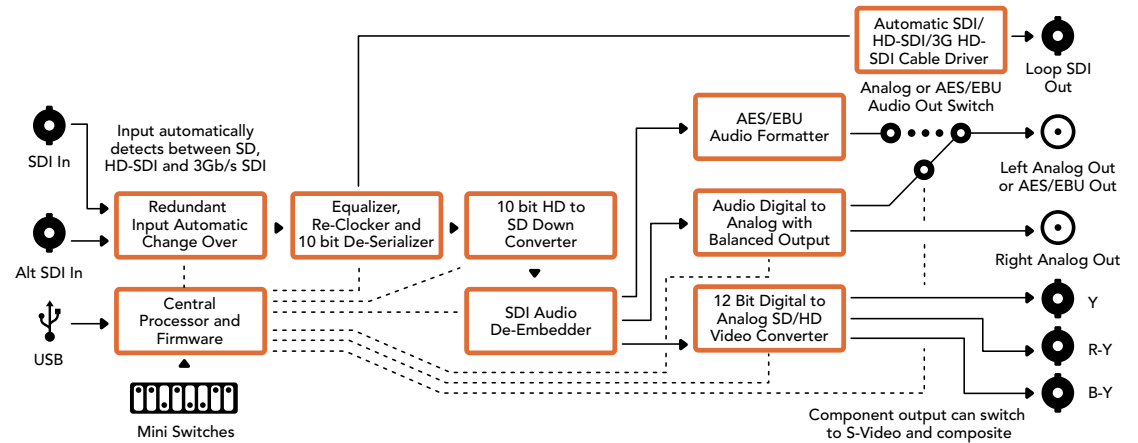
The Video Levels pane lets you adjust the analog video luminance and chroma levels, and the B-Y and R-Y component chroma levels independently.

The Audio Levels pane lets you adjust audio levels for your selected analog channels or AES/EBU audio reference levels.

The Settings pane lets you select down conversion aspect ratio options. When your converter is not connected to Converter Utility software, the mini switches take priority. You will need to set mini switch 1 if you want to retain your aspect ratio settings after disconnecting from the Converter Utility software.

10 Mini Converter SDI to Analog

Mini Converter SDI to Analog Block Diagram



11 Mini Converter Analog to SDI



Blackmagic Mini Converter Analog to SDI

Convert video and audio from analog equipment such as Betacam SP decks, HDV cameras and game consoles to SD/HD-SDI video. A choice of analog and digital formats is supported, including component SD/HD, S-Video, or composite NTSC and PAL. The converter's HD-SDI outputs include the option to embed digital AES/EBU or analog audio.

Connectors

1. Y or NTSC/PAL

Analog component Y, or composite NTSC/PAL input on a BNC connector.

2. B-Y or S-VIDEO Y

Analog component B-Y, or S-Video Y input BNC connector.

3. R-Y or S-VIDEO C

Analog component R-Y, or S-Video C input BNC connector.

4. L - ANALOG or AES/EBU

Balanced left channel analog audio, or AES/EBU digital audio input on a 1/4" TRS connector.

5. R - ANALOG

Balanced right channel analog audio input 1/4" TRS connector.

6. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

7. SDI OUT

SDI video output on a BNC connector.

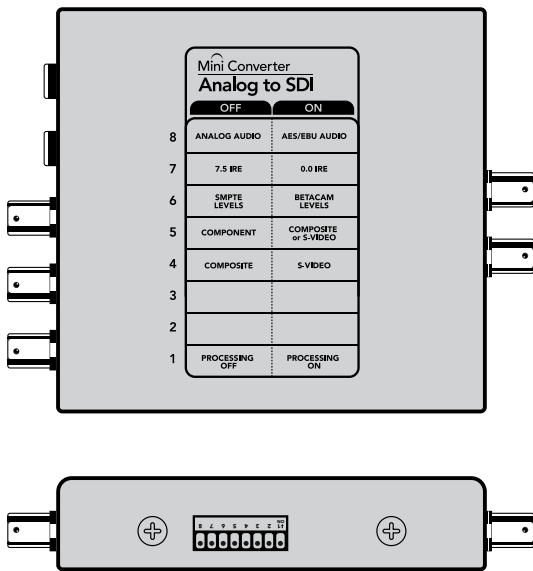
8. SDI OUT

Secondary SDI output.

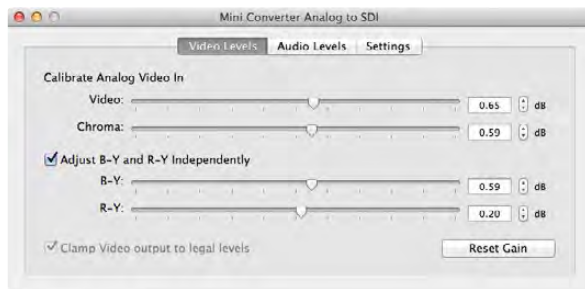
9. POWER +12V

12 volt power supply input.

12 Mini Converter Analog to SDI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.



Adjust analog video levels using Blackmagic Converter Utility.

Mini Switches

Mini Converter Analog to SDI's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio input.

Switch 7 - 7.5 IRE - 0.0 IRE

The USA and countries using NTSC with 7.5 setup should set switch 7 to OFF. If you're working in countries not using 7.5 setup, set switch 7 to ON. This setting only affects composite or S-Video outputs.

Switch 6 - SMPTE Levels - Betacam Levels

This setting selects between SMPTE or Betacam video levels. Set switch 6 to OFF for SMPTE levels, or to ON for Betacam levels. SMPTE levels are more common and even Betacam SP decks can use SMPTE levels so only switch this to Betacam if you are sure that Betacam levels are being used.

Switch 5 - Component, Composite or S-Video

Set switch 5 to OFF to select analog component video input, or to ON for composite video and S-Video analog inputs.

Switch 4 - Composite - S-Video

Set switch 4 to OFF to select composite video input, or to ON for S-Video input.

Switch 1 - Processing Off - Processing On

This switch is not used.

Mini Switch Settings Example: Experiment with the mini switches by setting your Blackmagic Mini Converter to Component Video and Analog Audio output by setting switches 8 and 5 to the OFF position.

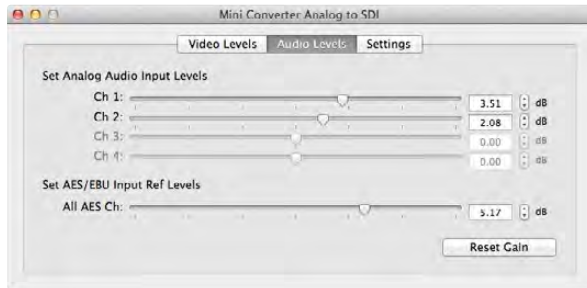
Blackmagic Converter Utility Settings

The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

The Video Levels pane lets you adjust the analog video luminance and chroma levels, and the B-Y and R-Y component chroma levels independently.

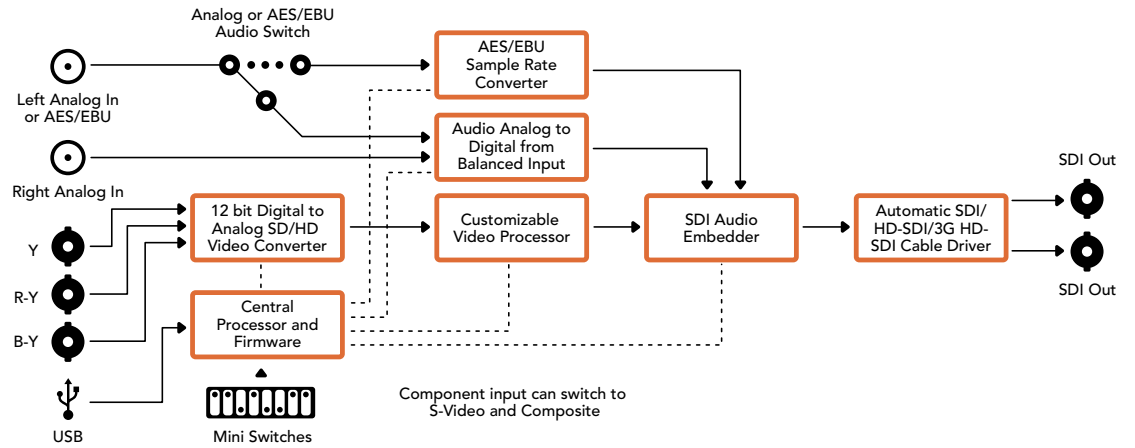
The Audio Levels pane lets you adjust audio levels for analog channels or AES/EBU reference levels.

13 Mini Converter Analog to SDI

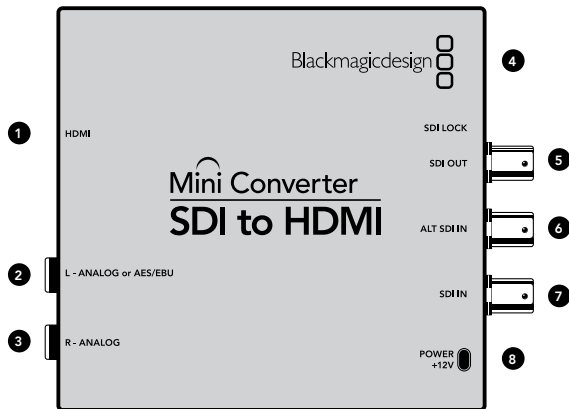


Adjust audio levels using Blackmagic Converter Utility.

Mini Converter Analog to SDI Block Diagram



14 Mini Converter SDI to HDMI



Blackmagic Mini Converter SDI to HDMI

Connect a huge range of HDMI displays and video projectors to SDI based equipment. Your Mini Converter SDI to HDMI automatically detects between SD/HD/3G-SDI and converts to HDMI with embedded audio, plus balanced AES/EBU or analog audio out.

Connectors

1. HDMI

HDMI type A video output.

2. L - ANALOG or AES/EBU

Balanced left channel analog audio, or AES/EBU digital audio output on a 1/4" TRS connector.

3. R - ANALOG

Balanced right channel analog audio output 1/4" TRS connector.

4. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

5. SDI OUT

SDI video output on a BNC connector.

6. ALT SDI IN

Redundant SDI input is provided as an optional back up.

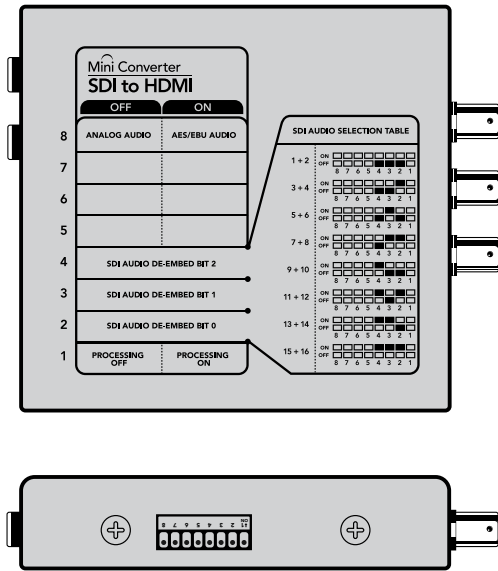
7. SDI IN

Primary SDI input.

8. POWER +12V

12 volt power supply input.

15 Mini Converter SDI to HDMI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter SDI to HDMI's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio output.

Switch 4 - SDI Audio De-Embed Bit 2

Switches 4, 3 and 2 are grouped together to provide 8 ON/OFF combinations. Having eight different combinations allows eight independent pairs of audio channels to be de-embedded from your SDI input and output to HDMI, analog or AES/EBU audio.

Switch 3 - SDI Audio De-Embed Bit 1

See switch 4 description.

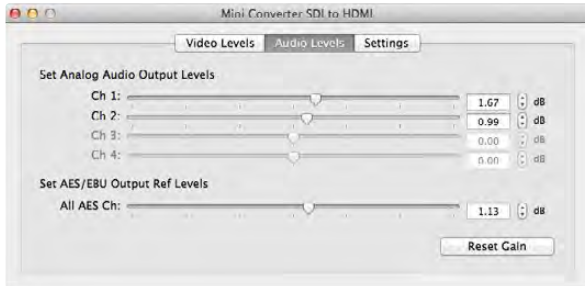
Switch 2 - SDI Audio De-Embed Bit 0

See switch 4 description.

SDI Audio Selection Table

| Audio Channels | Switch 4 | Switch 3 | Switch 2 | Switch Diagram |
|----------------|----------|----------|----------|--|
| 1 and 2 | OFF | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 3 and 4 | OFF | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 5 and 6 | OFF | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 7 and 8 | OFF | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 and 10 | ON | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 11 and 12 | ON | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 13 and 14 | ON | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 15 and 16 | ON | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |

16 Mini Converter SDI to HDMI



Adjust audio levels using Blackmagic Converter Utility.



The Clamp Video output to legal levels setting is checked by default. This setting ensures your analog output is a true representation of the SDI input. Adjusting video levels may result in illegal colors.

SDI Audio Selection Table

Switch 1 - Processing Off - Processing On

This switch is not used.

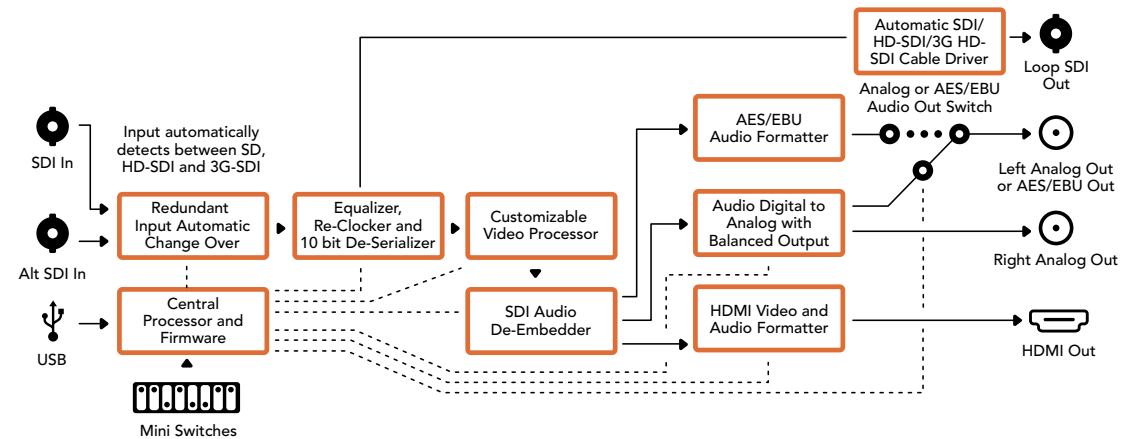
Mini Switch Settings Example: Experiment with the mini switches by setting your Blackmagic Mini Converter to de-embed SDI audio channels 1 and 2 and output to analog by setting switches 8, 4, 3 and 2 to the OFF position.

Blackmagic Converter Utility Settings

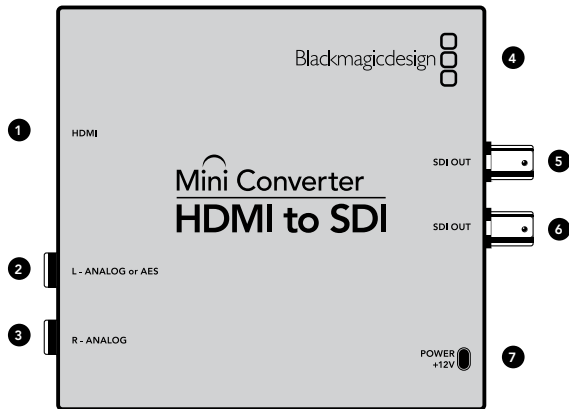
The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

The Audio Levels pane lets you adjust audio levels for the selected analog channels or AES/EBU reference levels.

Mini Converter SDI to HDMI Block Diagram



17 Mini Converter HDMI to SDI



Blackmagic Mini Converter HDMI to SDI

Convert HDMI outputs from devices such as HDV cameras and game consoles to SDI with the choice to embed audio from HDMI, AES/EBU or balanced analog audio inputs. This means you can send video signals from HDMI over SDI using the longest SDI cables. You can even add SDI outputs to computers with HDMI compatibility. This converter also includes HD to SD down conversion.

Connectors

1. HDMI

HDMI type A video input.

2. L - ANALOG or AES/EBU

Balanced left channel analog audio or AES/EBU digital audio input on a 1/4" TRS connector.

3. R - ANALOG

Balanced right channel analog audio output 1/4" TRS connector.

4. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

5. SDI OUT

SDI video output on a BNC connector.

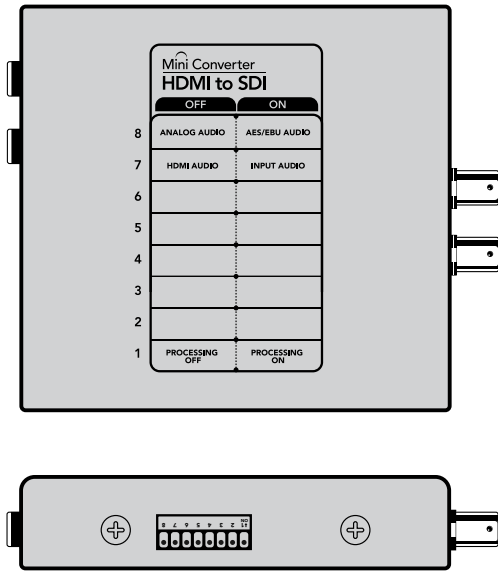
6. SDI OUT

Secondary SDI output.

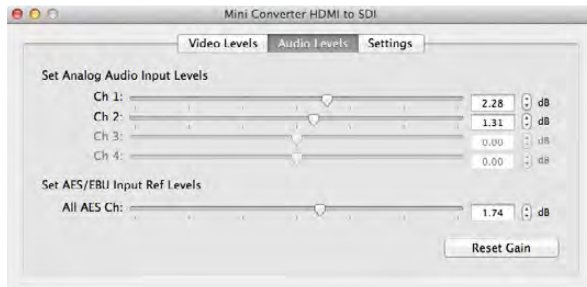
7. POWER +12V

12 volt power supply input.

18 Mini Converter HDMI to SDI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.



Converter Utility can be used to adjust audio levels.

Mini Switches

Mini Converter HDMI to SDI's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio input. To use these inputs Switch 7 must also be set to ON.

Switch 7 - HDMI Audio - Input Audio

Set switch 7 to OFF to select embedded HDMI audio, or to ON for analog or AES/EBU audio.

Switch 1 - Processing Off - Processing On

Down convert HD to SD with 3 types of aspect ratios by cycling through switch 1. For example, each time you cycle between OFF and On you apply anamorphic, center cut or letterbox aspect ratios. Leaving switch 1 set to OFF bypasses the down converter and outputs in HD.

When connected to the Blackmagic Converter Utility via USB, your down conversion settings are controlled by the software. If you want the converter to remember your software settings, disconnect from the computer, power cycle your converter and set your down conversion using mini switch 1.

Blackmagic Converter Utility Settings

The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

The Audio Levels pane lets you adjust audio levels for analog channels or AES/EBU audio reference levels.

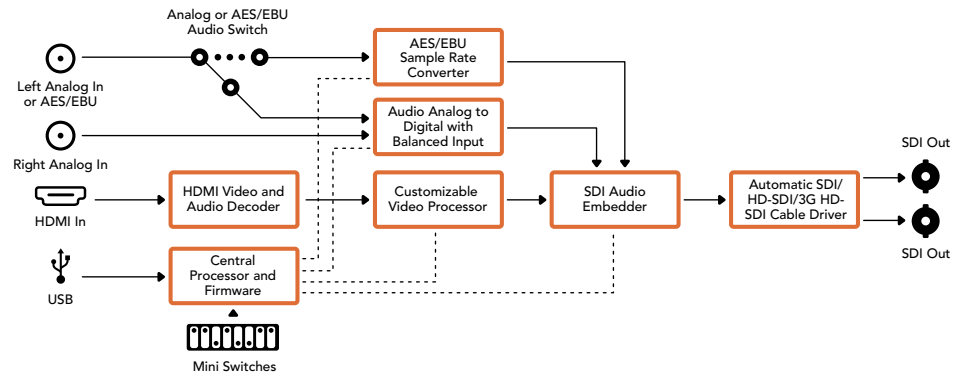
19 Mini Converter HDMI to SDI



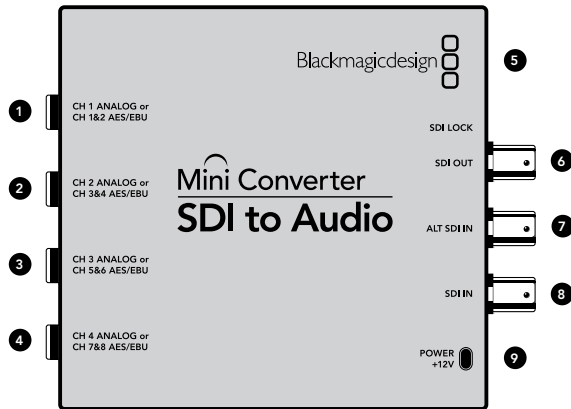
Adjust down conversion settings using Blackmagic Converter Utility.

The Settings pane lets you select down conversion aspect ratio options. However, your settings will need to be set by mini switch 1 if you want to retain them after disconnecting your converter from the Converter Utility software.

Mini Converter HDMI to SDI Block Diagram



20 Mini Converter SDI to Audio



Blackmagic Mini Converter SDI to Audio

De-embed 4 channels of audio from any SDI video connection and output to 4 channels of analog audio or 8 channels of AES/EBU digital. Output to audio equipment such as audio mixers, analog decks and reference monitors. Additional SDI audio channels can be de-embedded by daisy chaining another Mini Converter SDI to Audio to your converter's SDI output.

Connectors

1. CH 1 ANALOG or CH 1 & 2 AES/EBU

Balanced analog audio channel 1, or AES/EBU digital audio channels 1 and 2 output on a 1/4" TRS connector.

2. CH 2 ANALOG or CH 3 & 4 AES/EBU

Balanced analog audio channel 2, or AES/EBU digital audio channels 3 and 4 output 1/4" TRS connector.

3. CH 3 ANALOG or CH 5 & 6 AES/EBU

Balanced analog audio channel 3, or AES/EBU digital audio channels 5 and 6 output 1/4" TRS connector.

4. CH 4 ANALOG or CH 7 & 8 AES/EBU

Balanced analog audio channel 4, or AES/EBU digital audio channels 7 and 8 output 1/4" TRS connector.

5. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

6. SDI OUT

Loop through SDI video output on a BNC connector.

7. ALT SDI IN

Redundant SDI input provided as an optional back up.

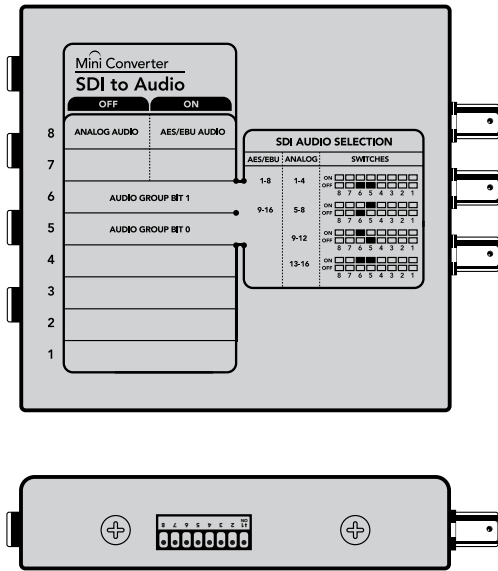
8. SDI IN

Primary SDI input.

9. POWER +12V

12 volt power supply input.

21 Mini Converter SDI to Audio



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter SDI to Audio's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio output.

Switch 6 - Audio Group Bit 1

Switches 6 and 5 are grouped together to provide four ON/OFF combinations. This allows up to 4 quadruplets of analog audio channels, or 2 sets of 8 AES/EBU audio channels, to be de-embedded from your SDI input.

Audio Selection Tables

| Analog Audio Channels | Switch 6 | Switch 5 | Switch Diagram |
|-----------------------|----------|----------|---|
| 1 to 4 | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 5 to 8 | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 to 12 | ON | OFF | ON <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 13 to 16 | ON | ON | ON <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| AES/EBU Channels | Switch 6 | Switch 5 | Switch Diagram |
| 1 to 8 | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 to 16 | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |

Switch 5 - Audio Group Bit 0

See switch 6 description.

Mini Switch Settings Example: Try experimenting with the mini switches. Select analog audio channels 1 to 4 by setting switches 8, 6 and 5 to the OFF position.

22 Mini Converter SDI to Audio



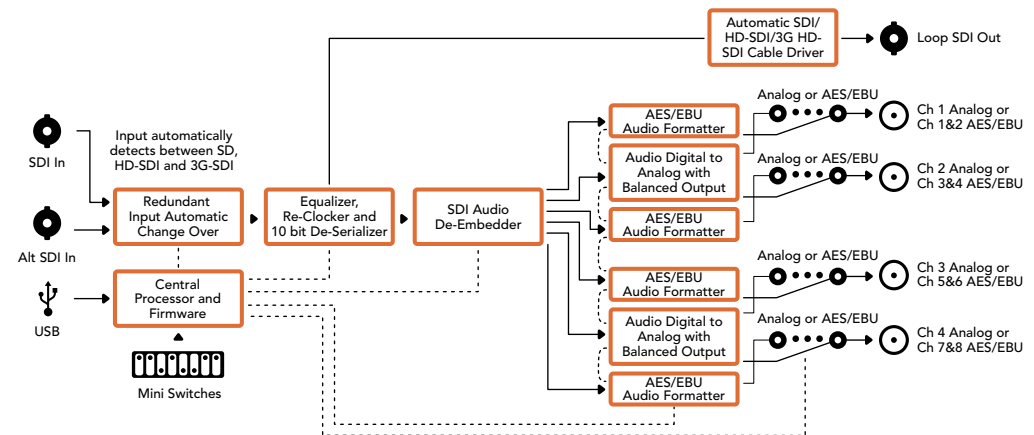
Adjust audio levels using Blackmagic Converter Utility.

Blackmagic Converter Utility Settings

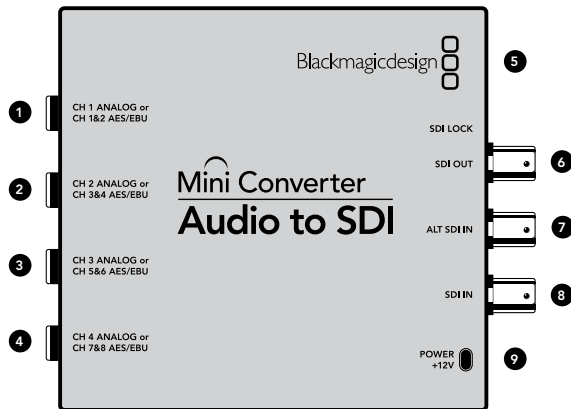
The Converter Utility software complements your mini switch settings by providing additional adjustment options.

The Audio Levels pane lets you adjust audio levels for the selected analog channels or AES/EBU audio reference levels.

Mini Converter SDI to Audio Block Diagram



23 Mini Converter Audio to SDI



Blackmagic Mini Converter Audio to SDI

Embed four channels of analog audio, or eight channels of AES/EBU digital audio into any SDI video connection. You can use this Mini Converter to embed audio from equipment, such as audio mixers and analog decks, into SDI video connections for use with SDI routers and decks. Additional SDI audio channels can be embedded by daisy chaining another Mini Converter Audio to SDI to your converter's SDI output.

Connectors

1. CH 1 ANALOG or CH 1 & 2 AES/EBU

Balanced analog audio channel 1, or AES/EBU digital audio channels 1 and 2 input on a 1/4" TRS connector.

2. CH 2 ANALOG or CH 3 & 4 AES/EBU

Balanced analog audio channel 2, or AES/EBU digital audio channels 3 and 4 input 1/4" TRS connector.

3. CH 3 ANALOG or CH 5 & 6 AES/EBU

Balanced analog audio channel 3, or AES/EBU digital audio channels 5 and 6 input 1/4" TRS connector.

4. CH 4 ANALOG or CH 7 & 8 AES/EBU

Balanced analog audio channel 4, or AES/EBU digital audio channels 7 and 8 input 1/4" TRS connector.

5. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

6. SDI OUT

Loop through SDI video output on a BNC connector.

7. ALT SDI IN

Redundant SDI input provided as an optional back up.

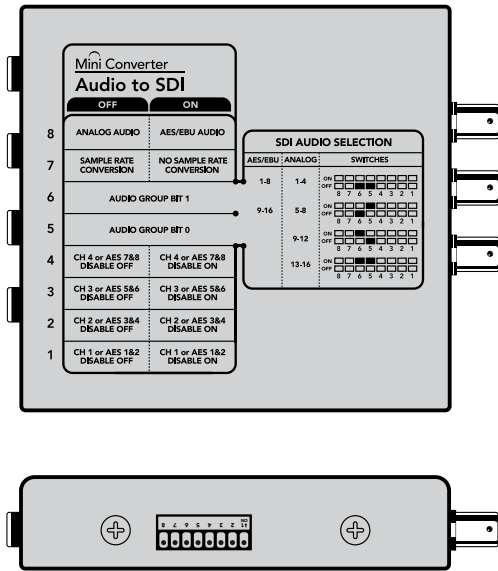
8. SDI IN

Primary SDI input.

9. POWER +12V

12 volt power supply input.

24 Mini Converter Audio to SDI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter Audio to SDI's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio input.

Switch 7 - Sample Rate Conversion, No Sample Rate Conversion

Set switch 7 to OFF to enable sample rate conversion, or ON to disable sample rate conversion. This switch should almost always be set to OFF to ensure audio is embedded at the correct sample rate for television.

When switch 7 is set to OFF this setting converts the sample rate of your analog or AES/EBU audio and embeds audio into the SDI output at a sample rate of 48 kHz. When switch 7 is set to ON, sample rate conversion is disabled and audio is output at the original sample rate of your input audio.

Switch 6 - Audio Group Bit 1

Switches 6 and 5 are grouped together to provide four ON/OFF combinations. Having four different combinations allows up to four analog audio channels, or eight AES/EBU audio channels to be embedded in your SDI output.

Audio Selection Tables

| Analog Audio Channels | Switch 6 | Switch 5 | Switch Diagram |
|-----------------------|----------|----------|---|
| 1 to 4 | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 5 to 8 | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 to 12 | ON | OFF | ON <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 13 to 16 | ON | ON | ON <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| AES/EBU Channels | Switch 6 | Switch 5 | Switch Diagram |
| 1 to 8 | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 to 16 | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |

25 Mini Converter Audio to SDI



Adjust audio levels for the selected analog channels or AES/EBU audio reference levels using Blackmagic Converter Utility.

Switch 5 - Audio Group Bit 0

See switch 6 description.

Switch 4 - CH 4 or AES 7&8 Embed or Disable

Once you have selected your audio channels, use switches 4, 3, 2 and 1 to select which channels to disable or embed. The disable setting lets you avoid overwriting audio channels you wish to keep in the SDI signal.

For example, you can disable analog audio channel 1 or AES/EBU channels 1 and 2 by setting switch 1 to the ON position. Alternatively, you can embed the audio channels by setting switch 1 to the OFF position.

Audio Selection Tables

| Switch | Setting | Audio Channels |
|--------|---------|---|
| 4 | ON | Disable analog CH 4, AES/EBU CH 7 and 8 |
| | OFF | Embed analog CH 4, AES/EBU CH 7 and 8 |
| 3 | ON | Disable analog CH 3, AES/EBU CH 5 and 6 |
| | OFF | Embed analog CH 3, AES/EBU CH 5 and 6 |
| 2 | ON | Disable analog CH 2, AES/EBU CH 3 and 4 |
| | OFF | Embed analog CH 2, AES/EBU CH 3 and 4 |
| 1 | ON | Disable analog CH 1, AES/EBU CH 1 and 2 |
| | OFF | Embed analog CH 1, AES/EBU CH 1 and 2 |

Mini Switch Settings Example: Try experimenting with the mini switches. Select analog audio channels 1 to 4 by setting switches 8, 6 and 5 to the OFF position.

Embed analog audio channels 1 to 4 by setting switches 8, 6, 5, 4, 3, 2 and 1 to the OFF position.

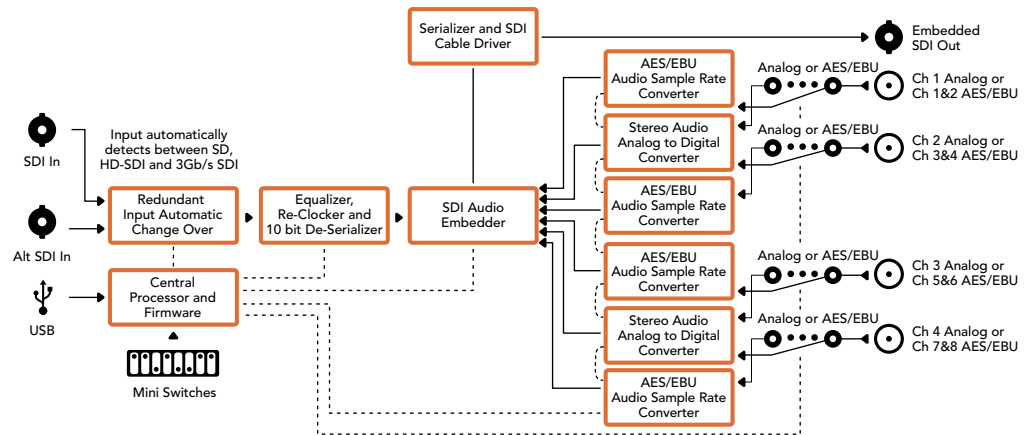
Blackmagic Converter Utility Settings

The Converter Utility software complements your mini switch settings by providing additional adjustment options.

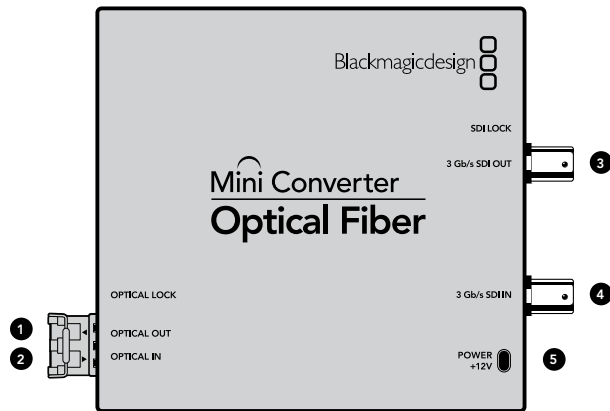
The Audio Levels pane lets you adjust audio levels for the selected analog channels or AES/EBU audio reference levels.

26 Mini Converter Audio to SDI

Mini Converter Audio to SDI Block Diagram



27 Mini Converter Optical Fiber



Blackmagic Mini Converter Optical Fiber

Convert SDI to Optical Fiber and Optical Fiber to SDI simultaneously. Mini Converter Optical Fiber automatically switches between SD/HD/3G-SDI video standards and both directions are completely independent. Use this converter if you need to send and receive SDI signals over longer distances than traditional SDI cables will support. SD video can be sent up to 45 km or 147000 feet using optical fiber, compared to just 300 feet with copper SDI cables. 3G-SDI can be sent up to 25 km away!

Connectors

1. OPTICAL OUT

Optical fiber output supports a single mode optical fiber cable with LC connector.

2. OPTICAL IN

Optical fiber input supports a single mode optical fiber cable with LC connector.

3. 3G-SDI OUT

SDI video output on a BNC connector for connection to traditional SDI equipment.

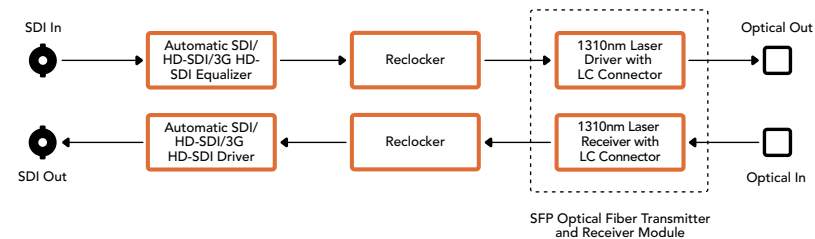
4. 3G-SDI IN

SDI input on a BNC connector for connection to traditional SDI equipment.

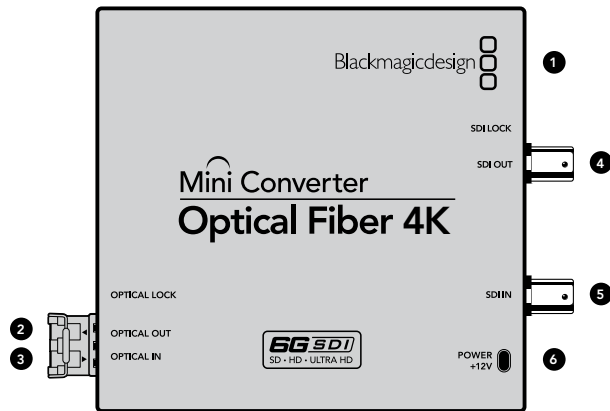
5. POWER +12V

12 volt power supply input.

Mini Converter Optical Fiber Block Diagram



28 Mini Converter Optical Fiber 4K



Blackmagic Mini Converter Optical Fiber 4K

Convert SD/HD and single link 6G-SDI to Optical Fiber and Optical Fiber to SD/HD and single link 6G-SDI simultaneously. Mini Converter Optical Fiber automatically switches between SD/HD/3G/6G-SDI video standards and both directions are completely independent. Use this converter if you need to send and receive SDI signals over longer distances than traditional SDI cables will support. SD video can be sent up to 45 km or 147000 feet using optical fiber, compared to just 300 feet with copper SDI cables. 6G-SDI can be sent up to 25 km away!

Connectors

1. MINI-B USB PORT.

The Mini Converter's internal software is updated using the USB port.

2. OPTICAL OUT

Optical fiber output supports a single mode optical fiber cable with LC connector.

3. OPTICAL IN

Optical fiber input supports a single mode optical fiber cable with LC connector.

4. SDI OUT

SDI video output on a BNC connector for connection to traditional SDI equipment.

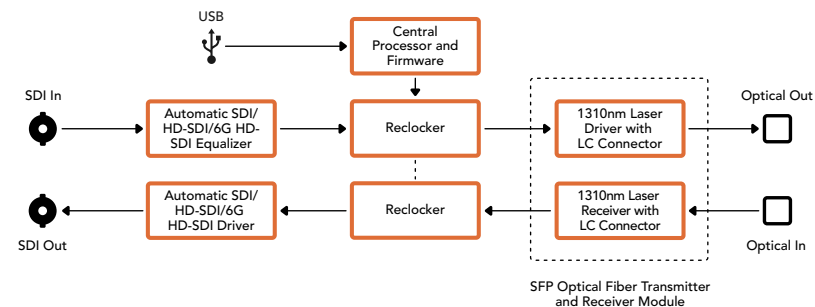
5. SDI IN

SDI input on a BNC connector for connection to traditional SDI equipment.

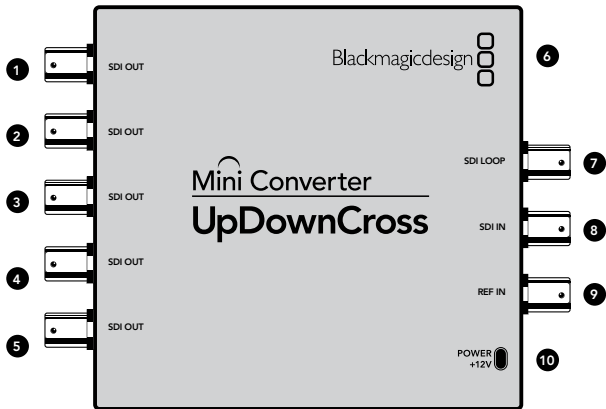
6. POWER +12V

12 volt power supply input.

Mini Converter Optical Fiber Block Diagram



29 Mini Converter UpDownCross



Blackmagic Mini Converter UpDownCross

Perform up, down and cross conversions as well as NTSC/PAL standards conversion and format conversion. Mini Converter UpDownCross can convert between video formats such as 720p to 1080i and PAL and NTSC video standards. It also provides up conversions with aspect ratios such as 4:3 Pillarbox and 16:9 zoom, and down conversion options such as letterbox 4:3 and anamorphic 16:9.

When conversion processing is set to OFF, the Mini Converter acts as an SDI distribution amplifier.

Connectors

1, 2, 3, 4 and 5. SDI OUT

SDI video outputs on BNC connectors.

6. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

7. SDI LOOP

Direct output of your input video.

8. SDI IN

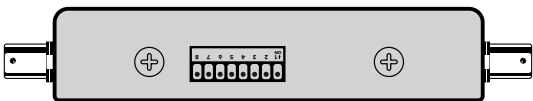
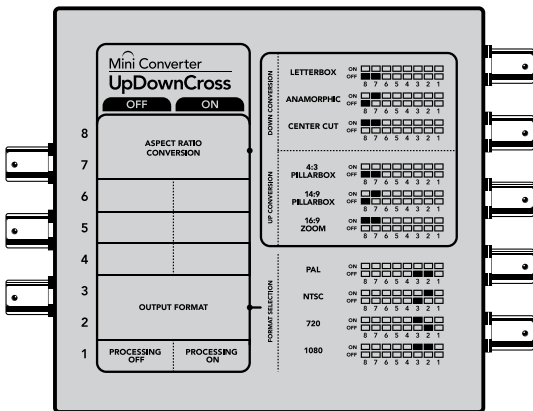
SDI Input.

9. REF IN

Reference video input.

10. POWER +12V

12 volt power supply input.



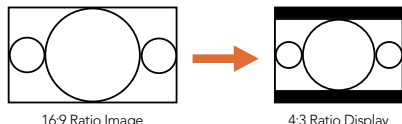
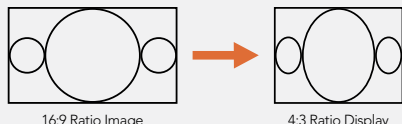
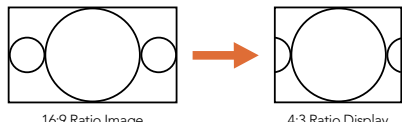
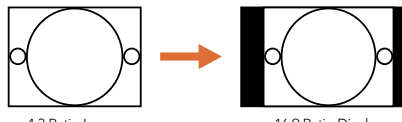
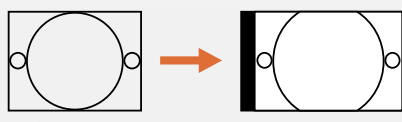
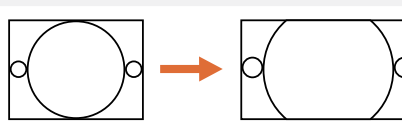
Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter UpDownCross' mini switches provide the following settings:

Switch 8 - Aspect Ratio Conversion

Combinations of switches 8 and 7 set the video aspect ratio when up or down converting. For example, when down converting, the letterbox aspect ratio is applied by setting switches 8 and 7 to the OFF position.

| Down conversion | | Switch 8 | Switch 7 | Switch Diagram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|----------|----------|---|----|---|---|---|---|---|---|---|---|---|---|-----|---|---|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|---|---|--|--|
| Letterbox |  <p>16:9 Ratio Image → 4:3 Ratio Display</p> | OFF | OFF | <table border="1"> <tr><td>ON</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>OFF</td><td>■</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td></td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td><td></td></tr> </table> | ON | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| ON | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Anamorphic |  <p>16:9 Ratio Image → 4:3 Ratio Display</p> | OFF | ON | <table border="1"> <tr><td>ON</td><td>□</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>OFF</td><td>■</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td></td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td><td></td></tr> </table> | ON | □ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| ON | □ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Center Cut |  <p>16:9 Ratio Image → 4:3 Ratio Display</p> | ON | ON | <table border="1"> <tr><td>ON</td><td>■</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>OFF</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td></td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td><td></td></tr> </table> | ON | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | OFF | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| ON | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OFF | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Up conversion | | Switch 8 | Switch 7 | Switch Diagram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4:3 Pillarbox |  <p>4:3 Ratio Image → 16:9 Ratio Display</p> | OFF | OFF | <table border="1"> <tr><td>ON</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>OFF</td><td>■</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td></td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td><td></td></tr> </table> | ON | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| ON | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14:9 Pillarbox |  <p>4:3 Ratio Image → 16:9 Ratio Display</p> | OFF | ON | <table border="1"> <tr><td>ON</td><td>□</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>OFF</td><td>■</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td></td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td><td></td></tr> </table> | ON | □ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| ON | □ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OFF | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16:9 Zoom |  <p>4:3 Ratio Image → 16:9 Ratio Display</p> | ON | ON | <table border="1"> <tr><td>ON</td><td>■</td><td>■</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>OFF</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td></td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td></td><td></td></tr> </table> | ON | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | OFF | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | |
| ON | ■ | ■ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OFF | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

31 Mini Converter UpDownCross

You've probably noticed switches 8 and 7 share settings for up and down conversions. This is because aspect ratio settings are determined by the output settings. For example, if you have switches 3 and 2 set for 1080i50 HD output, and processing switch 1 set to ON, Mini Converter UpDownCross will automatically set switches 8 and 7 for down conversion.

Below is a description for each aspect ratio conversion:

Down conversion:

Letterbox: This setting scales the entire 16:9 HD image into a 4:3 SD frame without squeezing, leaving black bars on the top and bottom.

Anamorphic: This setting horizontally squeezes the 16:9 HD image into a 4:3 SD frame.

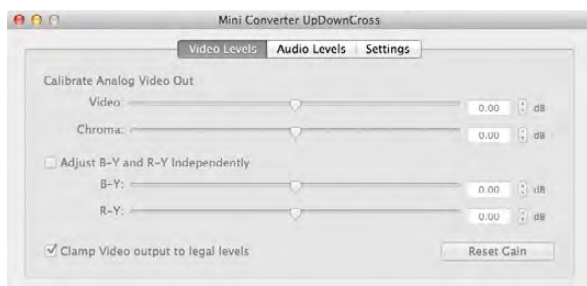
Center Cut: This setting cuts a 4:3 SD frame from the 16:9 HD image. This aspect ratio setting discards a portion from each side of the 16:9 image.

Up conversion:

4:3 Pillarbox: This setting displays 4:3 standard definition inside a high definition 16:9 frame. Black bars feature on the sides.

14:9 Pillarbox: This setting is a compromise between 4:3 pillarbox and 16:9 zoom. The standard definition 4:3 image is slightly zoomed into, allowing more image in the 16:9 frame and reducing the amount of black bars on the sides, but slightly losing the top and bottom.

16:9 Zoom: This setting zooms into the standard definition 4:3 image until it completely fills the 16:9 frame. A portion of the 4:3 frame's top and bottom is lost.



Blackmagic Converter Utility Settings

The Clamp Video output to legal levels setting is permanently selected to ensure your SDI conversion provides legal levels and an accurate representation of the SDI input.

Switches 3 and 2 - Output Format

Combinations of switches 3 and 2 set your up, down or cross conversion output format or standard. For example, if you input 625i50 SD PAL video, setting switches 3, 2 and 1 to the ON position will output 1080i50 HD video. A conversion table is provided below.

32 Mini Converter UpDownCross

Switch 1 - Processing Off - Processing On

When switch 1 is set to OFF all conversions are bypassed and the Mini Converter can be used to distribute your video to six SDI devices.

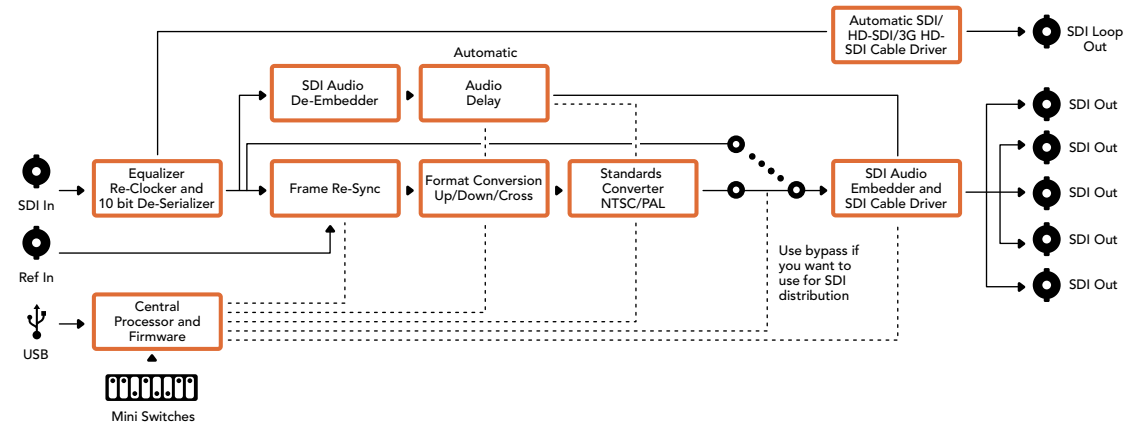
Mini Switch Settings Example: Set the converter to up convert 4:3 625i50 video to 1080i50 with the 4:3 Pillarbox aspect ratio by setting switches 8 and 7 to the OFF position and switches 3, 2 and 1 to the ON position.

Mini Converter UpDownCross Conversion Table

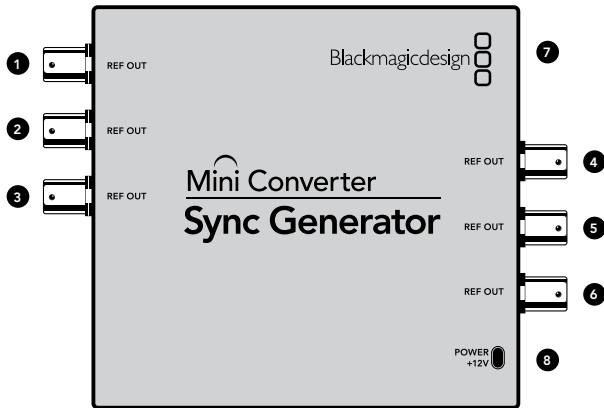
| Input Video | NTSC (Switches 1 and 2 ON) | PAL (Switch 1 ON) | 720p (Switches 1 and 3 ON) | 1080 (Switches 1, 2 and 3 ON) |
|-------------------|----------------------------|-------------------|----------------------------|-------------------------------|
| 525i59.94 | 525i59.94 | 625i50 | 720p59.94 | 1080i59.94 |
| 625i50 | 525i59.94 | 625i50 | 720p50 | 1080i50 |
| 720p50 | 525i59.94 | 625i50 | 720p50 | 1080i50 |
| 720p59.94 | 525i59.94 | 625i50 | 720p59.94 | 1080i59.94 |
| 720p60 | 525i59.94 | 625i50 | 720p60 | 1080i60 |
| 1080PsF23.98 | 525i59.94 | 625i50 | 720p59.94 | 1080PsF23.98 |
| 1080p23.98 | 525i59.94 | 625i50 | 720p59.94 | 1080p23.98 |
| 1080PsF24 | 525i59.94 | 625i50 | 720p50 | 1080PsF24 |
| 1080p24 | 525i59.94 | 625i50 | 720p50 | 1080p24 |
| 1080p25 | 525i59.94 | 625i50 | 720p50 | 1080p25 |
| 1080p29.97 | 525i59.94 | 625i50 | 720p59.94 | 1080p29.97 |
| 1080p30 | 525i59.94 | 625i50 | 720p60 | 1080p30 |
| 1080i50 | 525i59.94 | 625i50 | 720p50 | 1080i50 |
| 1080i59.94 | 525i59.94 | 625i50 | 720p59.94 | 1080i59.94 |
| 1080i60 | 525i59.94 | 625i50 | 720p60 | 1080i60 |
| 1080p50 | 525i59.94 | 625i50 | 720p50 | 1080p50 |
| 1080p59.94 | 525i59.94 | 625i50 | 720p59.94 | 1080p59.94 |
| 1080p60 | 525i59.94 | 625i50 | 720p60 | 1080p60 |
| 2048x1556PsF23.98 | 525i59.94 | 625i50 | 2048x1556PsF23.98 | 2048x1556PsF23.98 |
| 2048x1556PsF24 | 525i59.94 | 625i50 | 2048x1556PsF24 | 2048x1556PsF24 |
| 2048x1556PsF25 | 525i59.94 | 625i50 | 2048x1556PsF25 | 2048x1556PsF25 |

33 Mini Converter UpDownCross

Mini Converter UpDownCross Block Diagram



34 Mini Converter Sync Generator



Blackmagic Mini Converter Sync Generator

Mini Converter Sync Generator includes 6 crystal stabilized video reference outputs for locking your video equipment to a common reference signal. Sync Generator produces high definition tri-sync or standard definition blackburst signals and is perfect for small studios and outside broadcasts.

Connectors

1, 2, 3, 4, 5 and 6. REF OUT

Reference video outputs on BNC connectors.

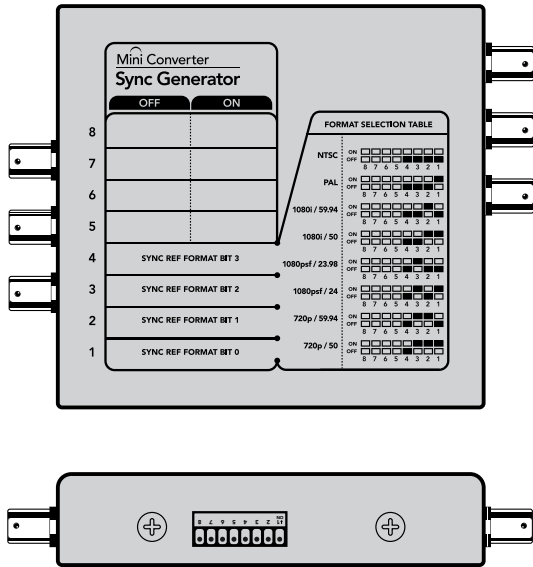
7. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

8. POWER +12V

12 volt power supply input.

35 Mini Converter Sync Generator



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter Sync Generator's mini switches provide the following settings:

Switch 4 - SYNC REF FORMAT BIT 3

Switches 4, 3, 2 and 1 are grouped together to select from many reference video formats, including:

| Video Format | Switch 4 | Switch 3 | Switch 2 | Switch 1 | Switch Diagram |
|--------------|----------|----------|----------|----------|---|
| NTSC | OFF | OFF | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| PAL | OFF | OFF | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 720p50 | OFF | ON | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 720p59.94 | OFF | ON | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 720p60 | ON | ON | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080i50 | OFF | OFF | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080i59.94 | OFF | OFF | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080i60 | ON | OFF | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080PsF23.98 | OFF | ON | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080PsF24 | OFF | ON | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080p23.98 | ON | ON | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080p24 | ON | ON | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 1080p25 | ON | OFF | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |

36 Mini Converter Sync Generator

| Video Format | Switch 4 | Switch 3 | Switch 2 | Switch 1 | Switch Diagram |
|--------------|----------|----------|----------|----------|---------------------------|
| 1080p29.97 | ON | OFF | ON | OFF | ON OFF 8 7 6 5 4 3 2 1 |
| 1080p30 | ON | OFF | OFF | ON | ON OFF 8 7 6 5 4 3 2 1 |

Switch 3 - Sync Ref Format Bit 2

See switch 4 description.

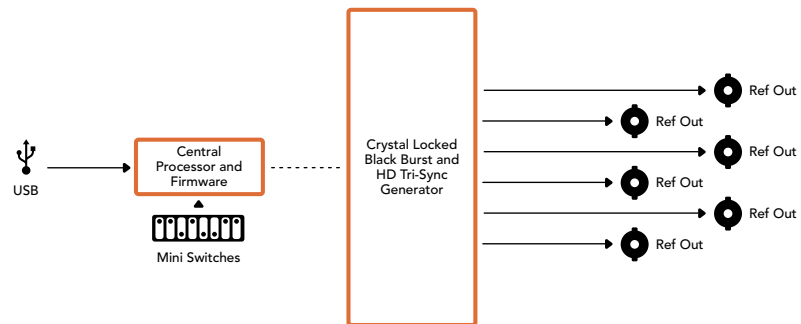
Switch 2 - Sync Ref Format Bit 1

See switch 4 description.

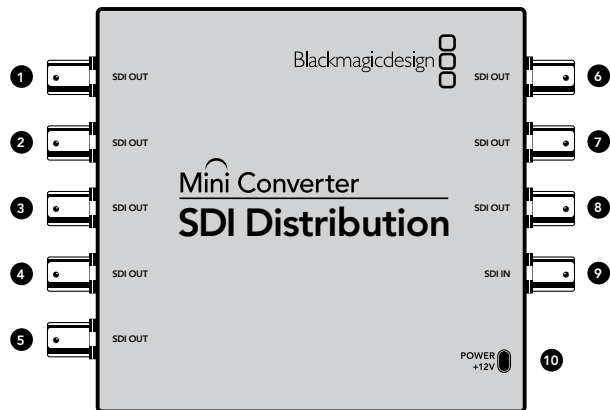
Switch 1 - Sync Ref Format Bit 0

See switch 4 description.

Mini Converter Sync Generator Block Diagram



37 Mini Converter SDI Distribution



Blackmagic Mini Converter SDI Distribution

Output your SDI signal to eight SDI devices simultaneously, such as decks, monitor walls and switchers. Whenever the video input changes between SD-SDI, HD-SDI and 3G-SDI video formats, Mini Converter SDI Distribution automatically switches the 8 re-clocked outputs to match with support for ASI, ancillary data and embedded audio formats.

Connectors

1, 2, 3, 4, 5, 6, 7 and 8. SDI OUT

SDI video outputs on BNC connectors.

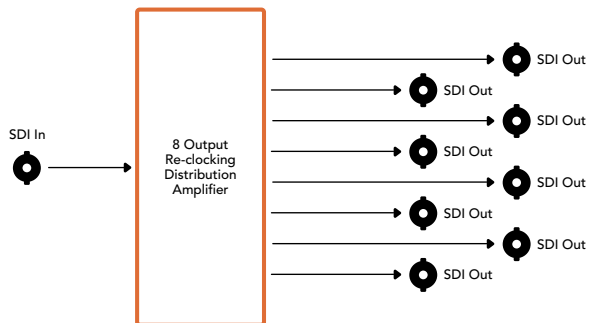
9. SDI IN

SDI input.

10. POWER +12V

12 volt power supply input.

Mini Converter SDI Distribution Block Diagram



38 Mini Converter SDI Multiplex 4K



Blackmagic Mini Converter SDI Multiplex 4K

Your Mini Converter SDI Multiplex 4K can perform the following conversions:

- Distribute an SD/HD and 6G-SDI signal to all four outputs.
- Distribute a dual link HD-SDI signal to all four 3G-SDI outputs.
- Single link 3G-SDI to dual link HD-SDI. The dual link output is distributed on both pairs of outputs.
- Single link 6G-SDI to dual link 3G-SDI or Quad link 1.5G SDI.
- Quad link HD-SDI 4K to single link 6G-SDI, or dual link 3G-SDI 4K so you can connect existing Ultra HD 4K sources to dual link Ultra HD 4K displays. The dual link output is distributed on both pairs of outputs.
- Dual link 3G-SDI to single link 6G-SDI.
- Dual link 3G-SDI 4K to quad link HD-SDI 4K so you can connect the latest dual link Ultra HD 4K sources to existing quad link Ultra HD 4K displays.

Connectors

1. POWER +12V

12 volt power supply input.

Supported formats for each SDI input:

2. SDI IN 1

- SD/HD-SDI
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI channel A
- Dual link 3G-SDI 4K channel A
- Quad link HD-SDI 4K channel A

3. SDI IN 2

- Dual link HD-SDI channel B
- Dual link 3G-SDI 4K channel B
- Quad link HD-SDI 4K channel B

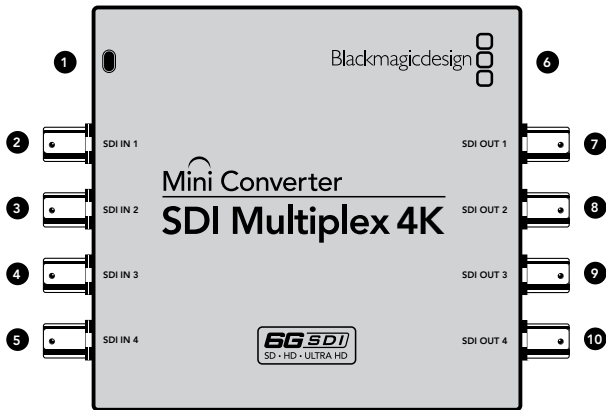
4. SDI IN 3

- Quad link HD-SDI 4K channel C

5. SDI IN 4

- Quad link HD-SDI 4K channel D

39 Mini Converter SDI Multiplex 4K



6. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software can also be updated using the USB port.

Supported formats are listed under each SDI output:

7. SDI OUT 1

- SD/HD-SDI
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI channel A
- Dual link 3G-SDI 4K channel A
- Quad link HD-SDI 4K channel A

8. SDI OUT 2

- SD/HD-SDI
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI channel B
- Dual link 3G-SDI 4K channel B
- Quad link HD-SDI 4K channel B

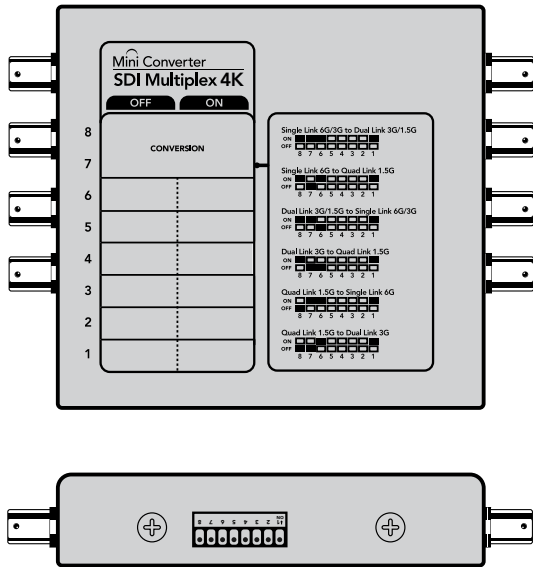
9. SDI OUT 3

- SD/HD-SDI
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI channel A
- Dual link 3G-SDI 4K channel A
- Quad link HD-SDI 4K channel C

10. SDI OUT 4

- SD/HD-SDI
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI channel B
- Dual link 3G-SDI 4K channel B
- Quad link HD-SDI 4K channel D

40 Mini Converter SDI Multiplex 4K



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter SDI Multiplex 4K's mini switches provide the following settings:

Switches 8, 7 and 6 - Format Conversion

Combinations of switches 8, 7 and 6 set conversions such as dual link HD-SDI to single link HD-SDI, or quad link 4K to single link 4K.

| Conversion | Switch 8 | Switch 7 | Switch 6 | Switch 1 | Switch Diagram |
|--|----------|----------|----------|----------|---------------------------|
| Single Link 6G/3G-SDI to Dual Link 3G/1.5G-SDI | ON | ON | ON | ON | ON OFF 8 7 6 5 4 3 2 1 |
| Single Link 6G-SDI to Quad Link 1.5G-SDI | ON | OFF | ON | ON | ON OFF 8 7 6 5 4 3 2 1 |
| Dual Link 3G/1.5G-SDI to Single Link 6G/3G-SDI | ON | ON | OFF | ON | ON OFF 8 7 6 5 4 3 2 1 |
| Dual Link 3G-SDI to Quad Link 1.5G-SDI | ON | OFF | OFF | ON | ON OFF 8 7 6 5 4 3 2 1 |
| Quad Link 1.5G-SDI to Single Link 6G-SDI | OFF | ON | ON | ON | ON OFF 8 7 6 5 4 3 2 1 |
| Quad Link 1.5G-SDI to Dual Link 3G-SDI | OFF | OFF | ON | ON | ON OFF 8 7 6 5 4 3 2 1 |

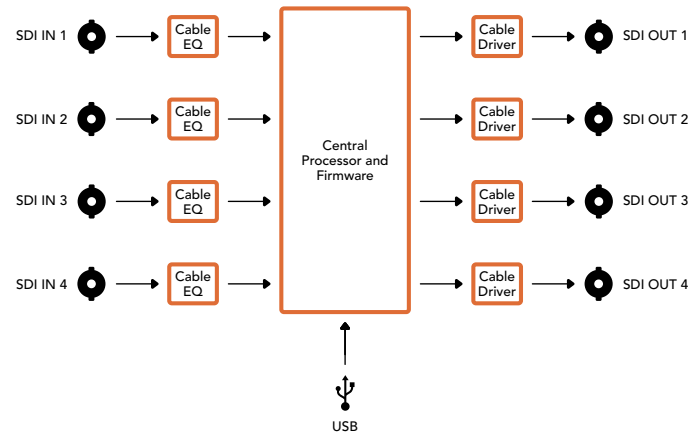
Switch 1 - Processing ON/OFF

When switch 1 is set to OFF, Mini Converter SDI Multiplex 4K acts as a 4 output SD/HD/6G-SDI distribution amplifier.

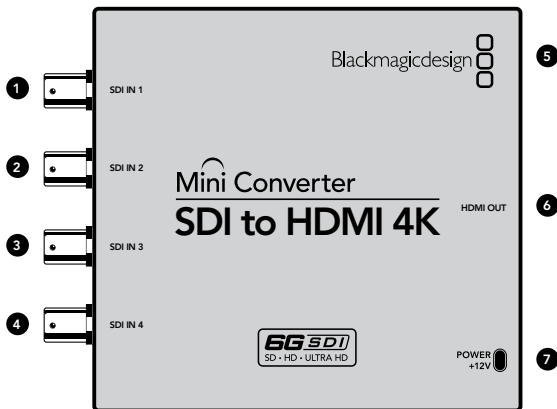
Mini Switch Settings Example: Convert quad link 4K to dual link 4K by setting switch 8 to ON, and switch 7 to OFF.

41 Mini Converter SDI Multiplex 4K

Mini Converter SDI Multiplex 4K Block Diagram



42 Mini Converter SDI to HDMI 4K



Blackmagic Mini Converter SDI to HDMI 4K

Connect single link, dual link and quad link SDI 4K to the latest Ultra HD projectors and televisions that support 4K over a single HDMI link. You can also convert any of the following inputs to HDMI:

- SD-SDI to SDTV.
- HD-SDI to HDTV.
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI
- Dual link 3G-SDI 4K to Ultra HD 4K.
- Quad link HD-SDI 4K to Ultra HD 4K.

If the HDMI output detects an HD monitor or HDTV, the output signal is automatically downconverted. Only use inputs 1 and 2 with a valid dual link signal.

Connectors

Supported formats are listed under each SDI input:

1. SDI IN 1

- SD/HD-SDI
- Single link 3G-SDI
- Single link 6G-SDI
- Dual link HD-SDI channel A
- Dual link 3G-SDI 4K channel A
- Quad link HD-SDI 4K channel A

2. SDI IN 2

- Dual link HD-SDI channel B
- Dual link 3G-SDI 4K channel B
- Quad link HD-SDI 4K channel B

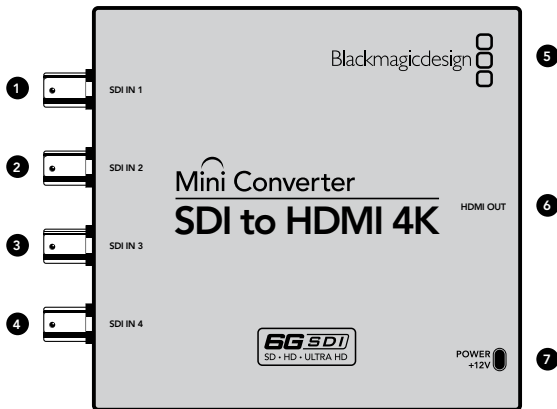
3. SDI IN 3

- Quad link HD-SDI 4K channel C

4. SDI IN 4

- Quad link HD-SDI 4K channel D

43 Mini Converter SDI to HDMI 4K



5. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

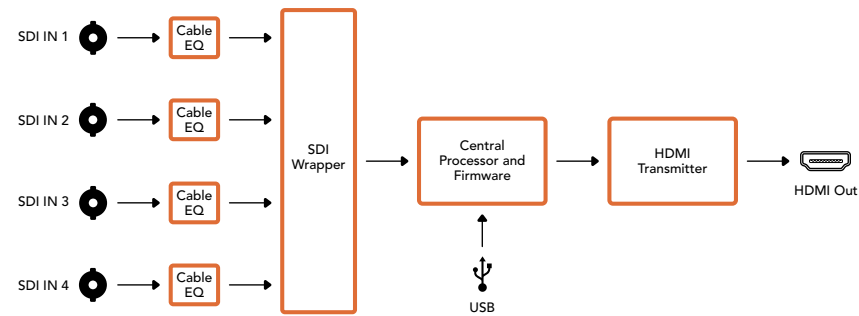
6. HDMI

HDMI type A video output.

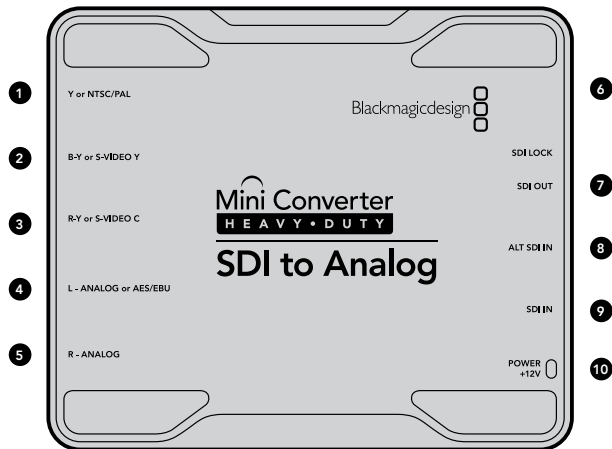
7. POWER +12V

12 volt power supply input.

Mini Converter SDI to HDMI 4K Block Diagram



44 Mini Converter Heavy Duty SDI to Analog



Blackmagic Mini Converter Heavy Duty SDI to Analog

Convert from SD/HD-SDI to analog component, NTSC and PAL video out, plus balanced AES/EBU and analog audio out. Your converter easily connects to analog video monitors and decks such as Betacam SP and VHS. A hardware down converter lets you connect HD-SDI video to SD analog equipment. You can even output pairs of analog audio from 16 de-embedded SDI audio channels. All connectors are recessed and protected by a tough aircraft grade aluminum chassis.

Connectors

1. Y or NTSC/PAL

Analog component Y, or composite NTSC/PAL output on a BNC connector.

2. B-Y or S-VIDEO Y

Analog component B-Y, or S-Video Y output BNC connector.

3. R-Y or S-VIDEO C

Analog component R-Y, or S-Video C output BNC connector.

4. L - ANALOG or AES/EBU

Balanced left channel analog audio or AES/EBU digital audio output on a 1/4" TRS connector.

5. R - ANALOG

Balanced right channel analog audio output 1/4" TRS connector.

6. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

7. SDI OUT

SDI video output on a BNC connector.

8. ALT SDI IN

Redundant SDI input provided as an optional back up.

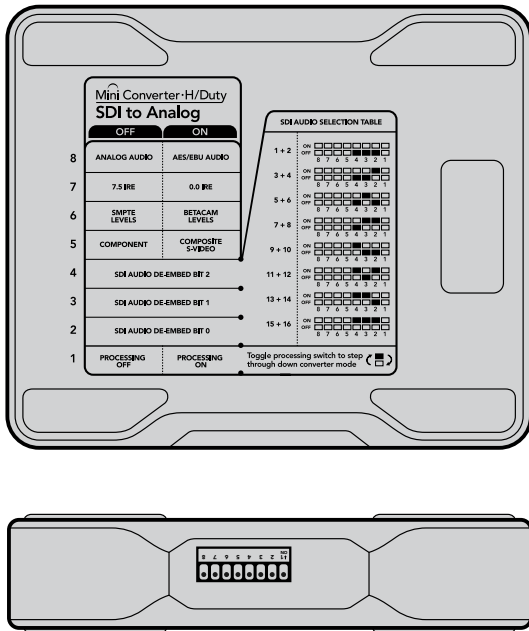
9. SDI IN

Primary SDI input.

10. POWER +12V

12 volt power supply input.

45 Mini Converter Heavy Duty SDI to Analog



Mini Switches

Mini Converter Heavy Duty SDI to Analog's mini switches are protected by a rubber hood. Open the hood by lifting the edges with your fingernails. The mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio output.

Switch 7 - 7.5 IRE - 0.0 IRE

The USA and countries using NTSC with 7.5 setup should set switch 7 to OFF. If you're working in countries not using 7.5 setup, set switch 7 to ON. This setting only affects composite or S-Video outputs.

Switch 6 - SMPTE Levels - Betacam Levels

Set switch 6 to OFF for SMPTE levels, or ON for Betacam levels. SMPTE levels are more common and even Betacam SP decks can use SMPTE levels, so only switch this to Betacam if you are sure that Betacam levels are being used.

Switch 5 - Component, Composite or S-Video

Set switch 5 to OFF to select analog component video output, or to ON for composite video and S-Video outputs.

To display the HD video input on the S-Video and composite outputs, down conversion must be set to ON. Component analog video supports both HD and SD video.

Switch 4 - SDI Audio De-Embed Bit 2

Switches 4, 3 and 2 are grouped together to provide eight ON/OFF combinations. Having eight different combinations allows eight independent pairs of audio channels to be de-embedded from your SDI input.

Switch 3 - SDI Audio De-Embed Bit 1

See switch 4 description.

Switch 2 - SDI Audio De-Embed Bit 0

See switch 4 description.

46 Mini Converter Heavy Duty SDI to Analog

Switch 1 - Processing Off - Processing On

Down convert HD to SD with 3 types of aspect ratios by cycling through switch 1. For example, each time you cycle between OFF and ON you apply anamorphic, center cut or letterbox aspect ratios. Leaving switch 1 set to OFF bypasses the down converter and outputs in HD.

When connected to the Blackmagic Converter Utility via USB, your down conversion settings are controlled by the software. If you want the converter to remember your software settings, disconnect from the computer, power cycle your converter and set your down conversion using mini switch 1.

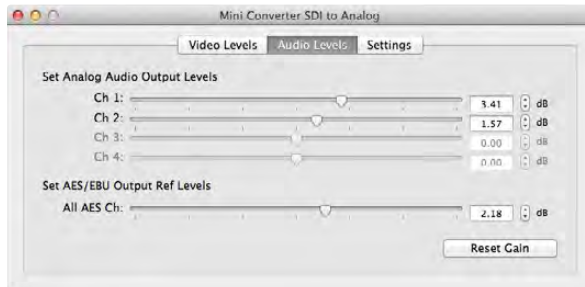
Mini Switch Settings Example: Experiment with the mini switches. Set your Blackmagic Mini Converter to output high definition component video and analog audio channels 1 and 2 by setting switches 8, 5, 4, 3 and 2 to the OFF position.

| Audio Channels | Switch 4 | Switch 3 | Switch 2 | Switch Diagram |
|----------------|----------|----------|----------|---|
| 1 and 2 | OFF | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 3 and 4 | OFF | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 5 and 6 | OFF | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 7 and 8 | OFF | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 and 10 | ON | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 11 and 12 | ON | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 13 and 14 | ON | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 15 and 16 | ON | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |

Mini Converter Heavy Duty SDI to Analog



Adjust analog video levels using Blackmagic Converter Utility. The Clamp Video output to legal levels setting is checked by default. This setting ensures your analog output is a true representation of the SDI input. Adjusting video levels may result in illegal colors.



Adjust audio levels using Blackmagic Converter Utility.



Adjust down conversion settings using Blackmagic Converter Utility.

Blackmagic Converter Utility Settings

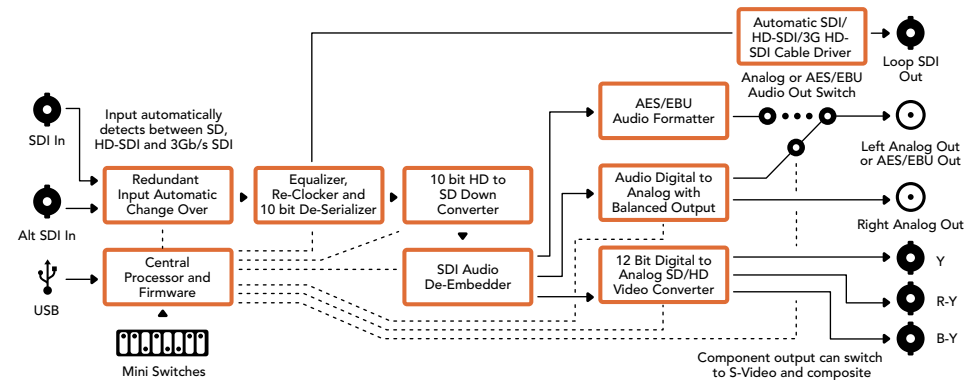
The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

The Video Levels pane lets you adjust the analog video luminance and chroma levels, and the B-Y and R-Y component chroma levels independently.

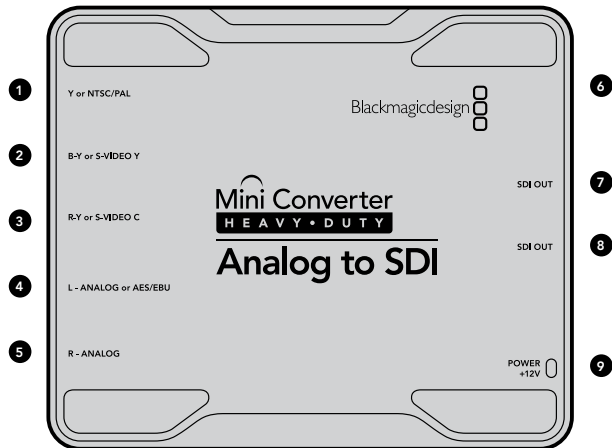
The Audio Levels pane lets you adjust audio levels for your selected analog channels or AES/EBU audio reference levels.

The Settings pane lets you select down conversion aspect ratio options. When your converter is not connected to Converter Utility software, the mini switches take priority. You will need to set mini switch 1 if you want to retain your aspect ratio settings after disconnecting from the Converter Utility software.

Mini Converter Heavy Duty SDI to Analog Block Diagram



48 Mini Converter Heavy Duty Analog to SDI



Blackmagic Mini Converter Heavy Duty Analog to SDI

Convert video and audio from analog equipment such as Betacam SP decks, HDV cameras and game consoles to SD/HD-SDI video. A choice of analog and digital formats is supported, including component SD/HD, S-Video, or composite NTSC and PAL. The converter's HD-SDI outputs include the option to embed digital AES/EBU or analog audio.

Connectors

1. Y or NTSC/PAL

Analog component Y, or composite NTSC/PAL input on a BNC connector.

2. B-Y or S-VIDEO Y

Analog component B-Y, or S-Video Y input BNC connector.

3. R-Y or S-VIDEO C

Analog component R-Y, or S-Video C input BNC connector.

4. L - ANALOG or AES/EBU

Balanced left channel analog audio, or AES/EBU digital audio input on a 1/4" TRS connector.

5. R - ANALOG

Balanced right channel analog audio input 1/4" TRS connector.

6. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

7. SDI OUT

SDI video output on a BNC connector.

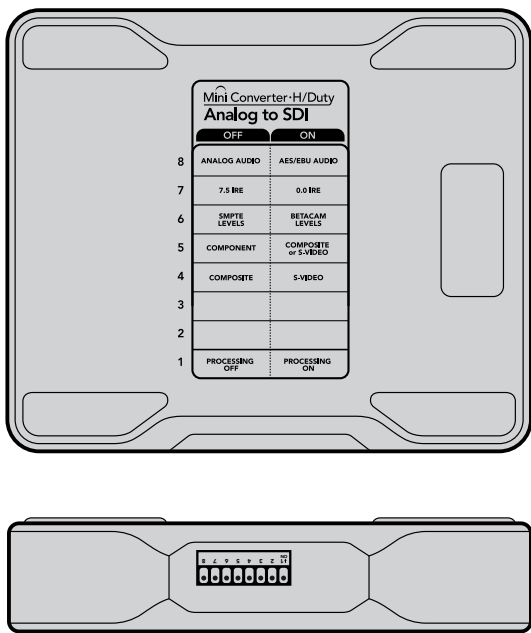
8. SDI OUT

Secondary SDI output.

9. POWER +12V

12 volt power supply input.

49 Mini Converter Heavy Duty Analog to SDI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter Heavy Duty Analog to SDI's mini switches are protected by a rubber hood. Open the hood by lifting the edges with your fingernails. The mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or ON for digital AES/EBU audio input.

Switch 7 - 7.5 IRE - 0.0 IRE

The USA and countries using NTSC with 7.5 setup should set switch 7 to OFF. If you're working in countries not using 7.5 setup, set switch 7 to ON. This setting only affects composite or S-Video outputs.

Switch 6 - SMPTE Levels - Betacam Levels

This setting selects between SMPTE or Betacam video levels. Set switch 6 to OFF for SMPTE levels, or to ON for Betacam levels. SMPTE levels are more common and even Betacam SP decks can use SMPTE levels so only switch this to Betacam if you are sure that Betacam levels are being used.

Switch 5 - Component, Composite or S-Video

Set switch 5 to OFF to select analog component video input, or to ON for composite video and S-Video analog inputs.

Switch 4 - Composite - S-Video

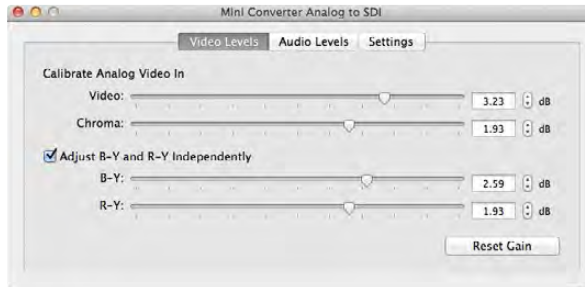
Set switch 4 to OFF to select composite video input, or to ON for S-Video input.

Switch 1 - Processing Off - Processing On

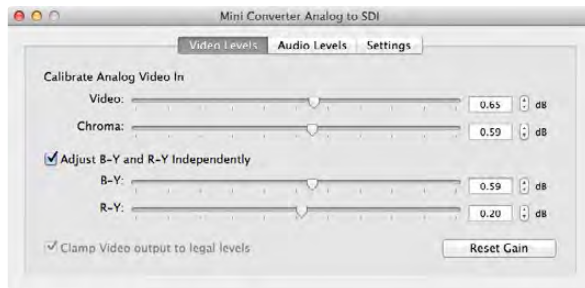
This switch is not used.

Mini Switch Settings Example: Experiment with the mini switches by setting your Blackmagic Mini Converter to Component Video and Analog Audio output by setting switches 8 and 5 to the OFF position.

50 Mini Converter Heavy Duty Analog to SDI



Adjust analog video levels using Blackmagic Converter Utility.



Adjust audio levels using Blackmagic Converter Utility.

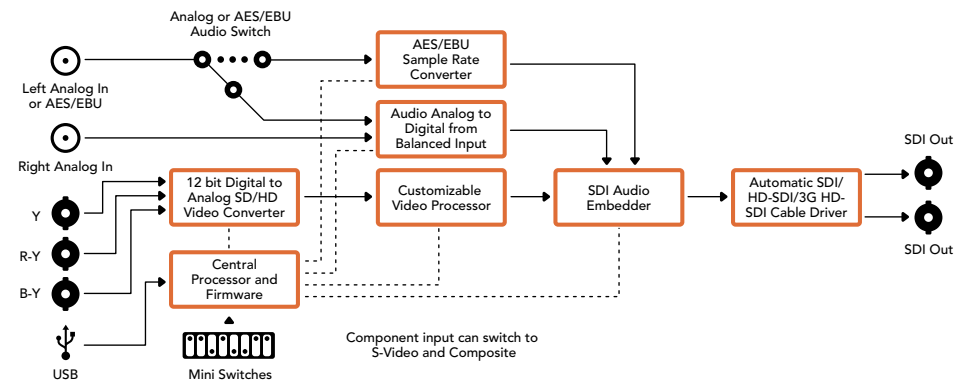
Blackmagic Converter Utility Settings

The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

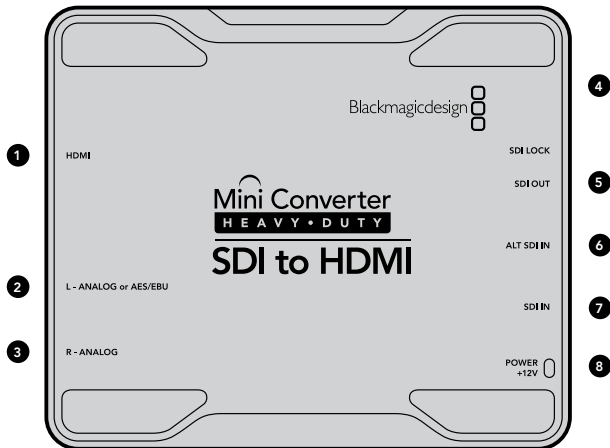
The Video Levels pane lets you adjust the analog video luminance and chroma levels, and the B-Y and R-Y component chroma levels independently.

The Audio Levels pane lets you adjust audio levels for analog channels or AES/EBU reference levels.

Mini Converter Heavy Duty Analog to SDI Block Diagram



51 Mini Converter Heavy Duty SDI to HDMI



Blackmagic Mini Converter Heavy Duty SDI to HDMI

Connect a huge range of HDMI displays and video projectors to SDI based equipment. Your Mini Converter SDI to HDMI automatically detects between SD/HD/3G-SDI and converts to HDMI with embedded audio, plus balanced AES/EBU or analog audio out.

Connectors

1. HDMI

HDMI type A video output.

2. L - ANALOG or AES/EBU

Balanced left channel analog audio, or AES/EBU digital audio output on a 1/4" TRS connector.

3. R - ANALOG

Balanced right channel analog audio output 1/4" TRS connector.

4. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

5. SDI OUT

SDI video output on a BNC connector.

6. ALT SDI IN

Redundant SDI input is provided as an optional back up.

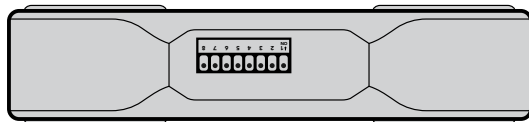
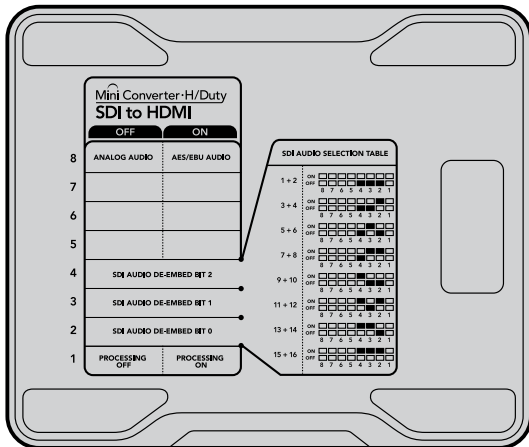
7. SDI IN

Primary SDI input.

8. POWER +12V

12 volt power supply input.

52 Mini Converter Heavy Duty SDI to HDMI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.

Mini Switches

Mini Converter Heavy Duty SDI to HDMI's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio output.

Switch 4 - SDI Audio De-Embed Bit 2

Switches 4, 3 and 2 are grouped together to provide 8 ON/OFF combinations. Having eight different combinations allows eight independent pairs of audio channels to be de-embedded from your SDI input and output to HDMI, analog or AES/EBU audio.

Switch 3 - SDI Audio De-Embed Bit 1

See switch 4 description.

Switch 2 - SDI Audio De-Embed Bit 0

See switch 4 description.

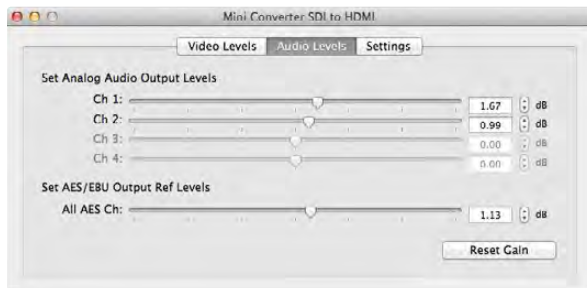
SDI Audio Selection Table

| Audio Channels | Switch 4 | Switch 3 | Switch 2 | Switch Diagram |
|----------------|----------|----------|----------|--|
| 1 and 2 | OFF | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 3 and 4 | OFF | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 5 and 6 | OFF | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 7 and 8 | OFF | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 9 and 10 | ON | OFF | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 11 and 12 | ON | OFF | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 13 and 14 | ON | ON | OFF | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |
| 15 and 16 | ON | ON | ON | ON <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> OFF <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> 8 7 6 5 4 3 2 1 |

53 Mini Converter Heavy Duty SDI to HDMI



The Clamp Video output to legal levels setting is checked by default. This setting ensures your analog output is a true representation of the SDI input. Adjusting video levels may result in illegal colors.



Adjust audio levels using Blackmagic Converter Utility.

Switch 1 - Processing Off - Processing On

This switch is not used.

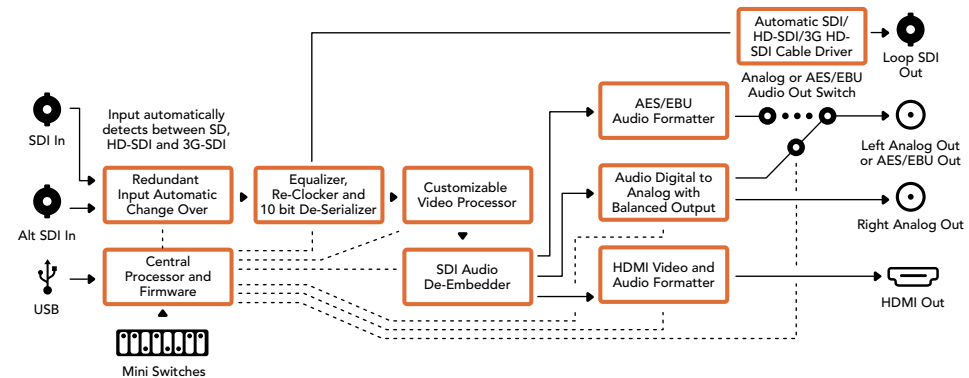
Mini Switch Settings Example: Experiment with the mini switches by setting your Blackmagic Converter to de-embed SDI audio channels 1 and 2 and output to analog by setting switches 8, 4, 3 and 2 to the OFF position.

Blackmagic Converter Utility Settings

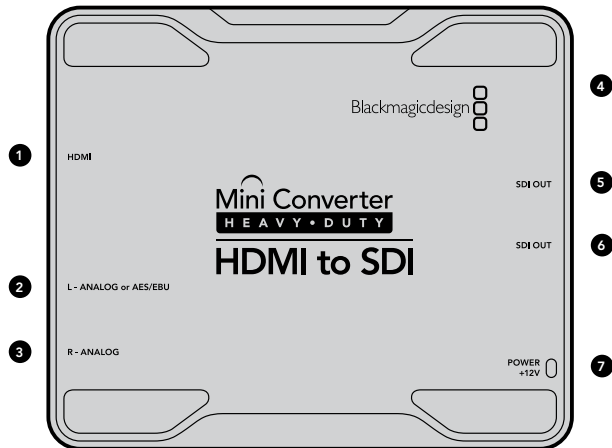
The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

The Audio Levels pane lets you adjust audio levels for the selected analog channels or AES/EBU reference levels.

Mini Converter Heavy Duty SDI to HDMI Block Diagram



54 Mini Converter Heavy Duty HDMI to SDI



Blackmagic Mini Converter Heavy Duty HDMI to SDI

Convert HDMI outputs from devices such as HDV cameras and game consoles to SDI with the choice to embed audio from HDMI, AES/EBU or balanced analog audio inputs. This means you can send video signals from HDMI over SDI using the longest SDI cables. You can even add SDI outputs to computers with HDMI compatibility. This converter also includes HD to SD down conversion.

Connectors

1. HDMI

HDMI type A video input.

2. L - ANALOG or AES/EBU

Balanced left channel analog audio or AES/EBU digital audio input on a 1/4" TRS connector.

3. R - ANALOG

Balanced right channel analog audio output 1/4" TRS connector.

4. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

5. SDI OUT

SDI video output on a BNC connector.

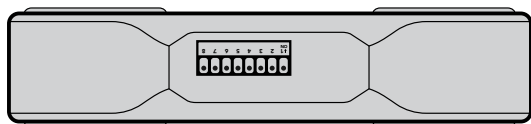
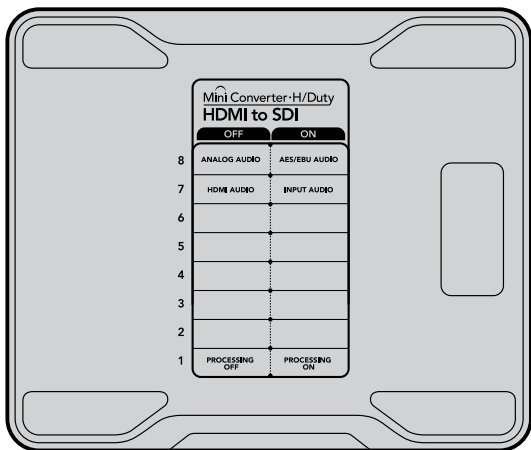
6. SDI OUT

Secondary SDI output.

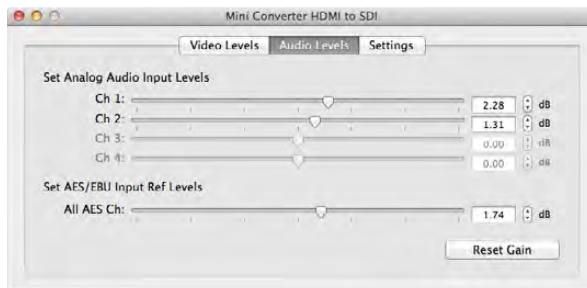
7. POWER +12V

12 volt power supply input.

55 Mini Converter Heavy Duty HDMI to SDI



Change your converter's internal settings by adjusting the mini switches using the tip of a pen.



Converter Utility can be used to adjust audio levels.

Mini Switches

Mini Converter HDMI to SDI's mini switches provide the following settings:

Switch 8 - Analog Audio, AES/EBU Audio

Set switch 8 to OFF to select balanced analog audio, or to ON for digital AES/EBU audio input. To use these inputs Switch 7 must also be set to ON.

Switch 7 - HDMI Audio - Input Audio

Set switch 7 to OFF to select embedded HDMI audio, or to ON for analog or AES/EBU audio.

Switch 1 - Processing Off - Processing On

Down convert HD to SD with 3 types of aspect ratios by cycling through switch 1. For example, each time you cycle between OFF and ON you apply anamorphic, center cut or letterbox aspect ratios. Leaving switch 1 set to OFF bypasses the down converter and outputs in HD.

When connected to the Blackmagic Converter Utility via USB, your down conversion settings are controlled by the software. If you want the converter to remember your software settings, disconnect from the computer, power cycle your converter and set your down conversion using mini switch 1.

Blackmagic Converter Utility Settings

The Converter Utility software complements your mini switch settings by providing supplementary adjustment options.

The Audio Levels pane lets you adjust audio levels for analog channels or AES/EBU audio reference levels.

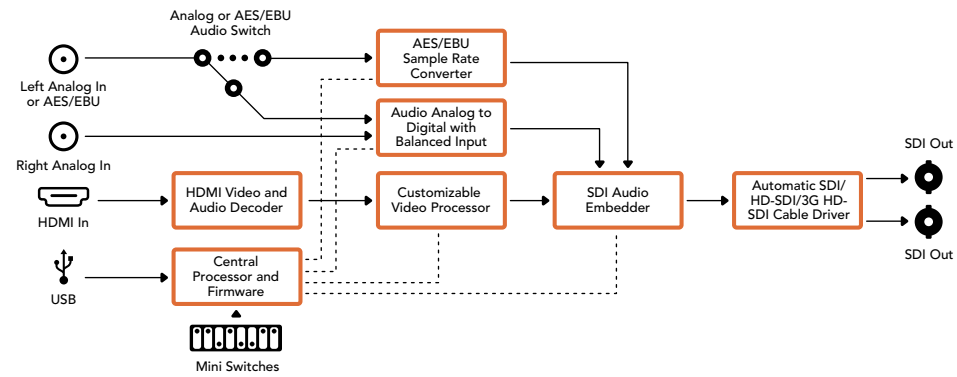
56 Mini Converter Heavy Duty HDMI to SDI



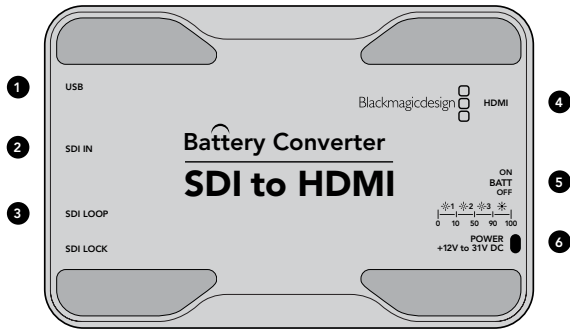
Converter Utility can be used to adjust down conversion settings.

The Settings pane lets you select down conversion aspect ratio options. However, your settings will need to be set by mini switch 1 if you want to retain them after disconnecting your converter from the Converter Utility software.

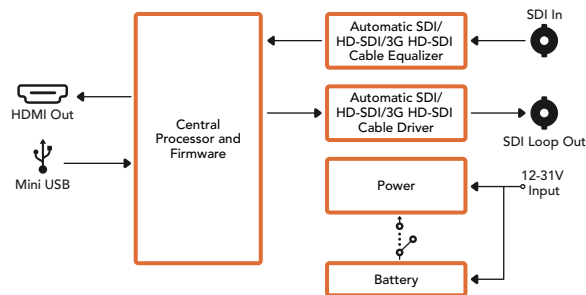
Mini Converter Heavy Duty HDMI to SDI Block Diagram



57 Battery Converter SDI to HDMI



Battery Converter SDI to HDMI Block Diagram



Blackmagic Battery Converter SDI to HDMI

Connect a huge range of HDMI displays and video projectors to SDI based equipment. Your Battery Converter SDI to HDMI automatically detects between SD/HD/3G-SDI and converts to HDMI with embedded audio. Battery Converter SDI to HDMI includes a built in rechargeable battery and recessed connectors protected by an aircraft grade aluminum chassis.

Connectors

1. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

2. SDI IN

Primary SDI input on a BNC connector.

3. SDI LOOP

Loop through output of your SDI input on a BNC connector.

4. HDMI

HDMI type A video output.

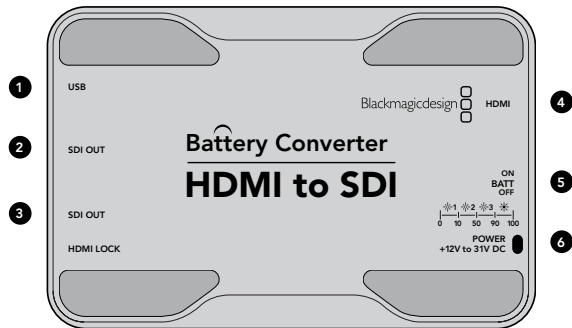
5. ON BATT OFF

Switches battery power On or Off. When set to On, the Battery Converter will keep working even if external power is lost. When set to Off, only external power is used to ensure built in battery power is saved. The LED near the switch indicates the battery charge level by a continuous illumination for 100 percent charge, three flashes for 50 to 90 percent charge, two flashes for 10 to 50 percent charge and a single flash if less than 10 percent charge is remaining.

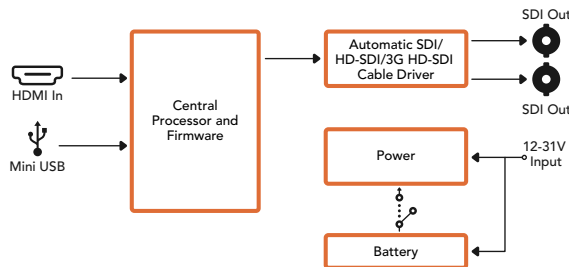
6. POWER +12V

12 volt power supply input.

58 Battery Converter HDMI to SDI



Battery Converter HDMI to SDI Block Diagram



Blackmagic Battery Converter HDMI to SDI

Convert HDMI outputs from devices such as HDV cameras and game consoles to SDI. This means you can send video signals from HDMI over SDI using the longest SDI cables. You can even add SDI outputs to computers with HDMI compatibility. Battery Converter HDMI to SDI includes a built in rechargeable battery. Connectors are recessed and protected by an aircraft grade aluminum chassis.

Connectors

1. MINI-B USB PORT

Connects to the Converter Utility software via your Mac OS X or Windows computer. The Mini Converter's internal software is also updated using the USB port.

2. SDI OUT

SDI video output on a BNC connector.

3. SDI OUT

Secondary SDI output.

4. HDMI

HDMI type A video input.

5. ON BATT OFF

Switches battery power On or Off. When set to On, the Battery Converter will keep working even if external power is lost. When set to Off, only external power is used to ensure built in battery power is saved. The LED near the switch indicates the battery charge level by a continuous illumination for 100 percent charge, three flashes for 50 to 90 percent charge, two flashes for 10 to 50 percent charge and a single flash if less than 10 percent charge is remaining.

6. POWER +12V

12 volt power supply input.

59 Using Blackmagic Converter Utility



Installing the Blackmagic Converter Utility Software

Converter Utility software can be used to update your converter to new video standards, add compatibility with new hardware or adjust video and audio levels.

Installation on Mac OS X

After downloading the Converter Utility software from www.blackmagicdesign.com 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.

Installation 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 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 the converter's internal settings. Click "restart" to complete the installation. Once the computer has restarted, Blackmagic Converter Utility will be ready to use.

Updating the Internal Software

It is important to ensure that power is connected to the Blackmagic Converter before connecting a USB cable between the computer and converter.

Step 1. Power your converter.

Step 2. Attach a USB cable from the computer to the converter and launch the Blackmagic Converter Utility.

If the converter is missing or not detected, Converter Utility will report, "No converter connected" in the title bar. Otherwise, it will report the model name of your Blackmagic Converter.

If Converter Utility contains newer internal software than that currently installed in your Blackmagic Converter, it will prompt you to update. Just follow the on screen instructions to complete the update. Once the internal software update is complete, you will be able to make adjustments to your Blackmagic Converter using the Converter Utility.

