

July 2025

Installation and Operation Manual

Blackmagicdesign

Blackmagic 2110 IP Converters



Blackmagic 2110 IP Mini IP to HDMI
Blackmagic 2110 IP Mini BiDirect 12G
Blackmagic 2110 IP Converter 3x3G
Blackmagic 2110 IP Converter 4x12G PWR

Blackmagic 2110 IP UpDownCross 12G
Blackmagic 2110 IP Presentation Converter
Blackmagic 2110 IP Converter 8x12G SFP

Languages

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Welcome

Thank you for purchasing your Blackmagic 2110 IP Converter!

Blackmagic 2110 IP converters can be used within SDI systems to connect equipment such as cameras, switchers, disk recorders and HDMI monitors via Ethernet using ST 2110 IP video. IP converters can be used point to point for quick conversions, or connected to a network where you can select from multiple IP video feeds and connect them to any SDI equipment anywhere in your facility.

Most models are bidirectional so you can simultaneously convert SDI to IP and IP to SDI, or use Blackmagic 2110 IP Mini IP to HDMI to monitor any IP video feed on an HDMI monitor or TV.

This instruction manual should contain all the information you'll need for installing your Blackmagic 2110 IP Converter and getting started.

Please check the support page on our web site at www.blackmagicdesign.com for the latest version of the Blackmagic Converters software. When downloading software, please register with your information so we can keep you updated when new software is released.

We are constantly working on new features and improvements, so we would love to hear from you!

A stylized, handwritten signature in black ink that reads "Grant Petty". The script is fluid and cursive.

Grant Petty

CEO Blackmagic Design

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Getting Started

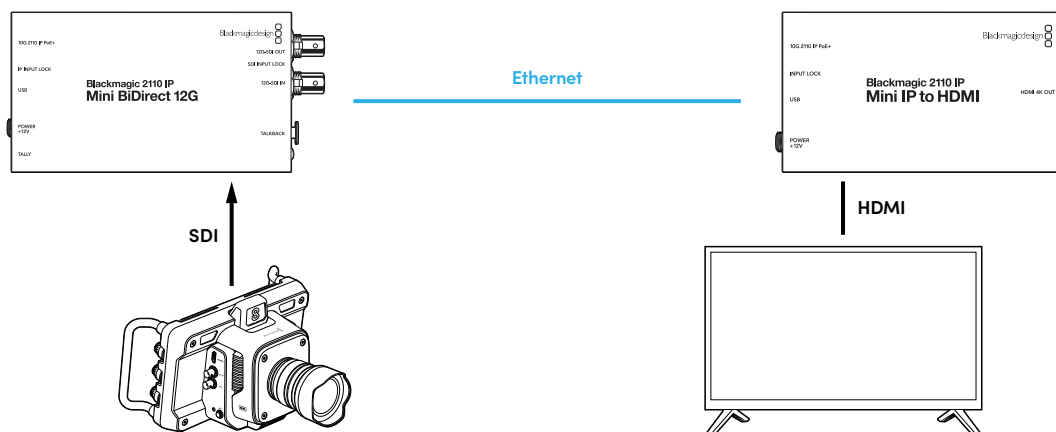
SMPTE ST 2110 IP is an Ethernet based broadcast solution that lets you stream video, audio and data signals over a network. Blackmagic 2110 IP converters are 10G converters you can use to adapt your existing SDI equipment, including cameras, switchers, monitors and disk recorders, to fit into a 2110 IP workflow. Plus, these converters can connect directly to each other, so you can start using 2110 IP without needing any prior IT or networking knowledge.

2110 IP Mini Converters

Blackmagic 2110 IP Mini Converters support PoE+ Power over Ethernet, so the easiest way to start using your converter is to simply connect an Ethernet cable. If, after a few moments, the link and activity LEDs on the Ethernet port flash then it means there is enough power available on the Ethernet cable to power the converter. A good example is when connecting to the Blackmagic 2110 IP Converter 4x12G PWR which has enough power to power the other smaller Blackmagic 2110 IP Mini Converters.

So if you see lights indicating the converter is powered on, then that's good news and now you can plug in your video connections.

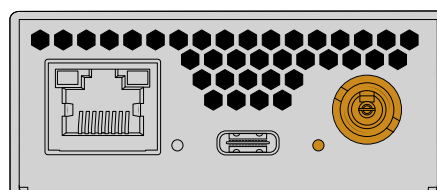
However, if there is no indication of power as the lights don't turn on, then there is no power on the Ethernet cable. In that case, just plug in the power connection or external DC plug pack to power the converter. This is common if you were direct connecting an Ethernet cable between 2 Blackmagic 2110 IP Mini Converter models as the cable won't have power.



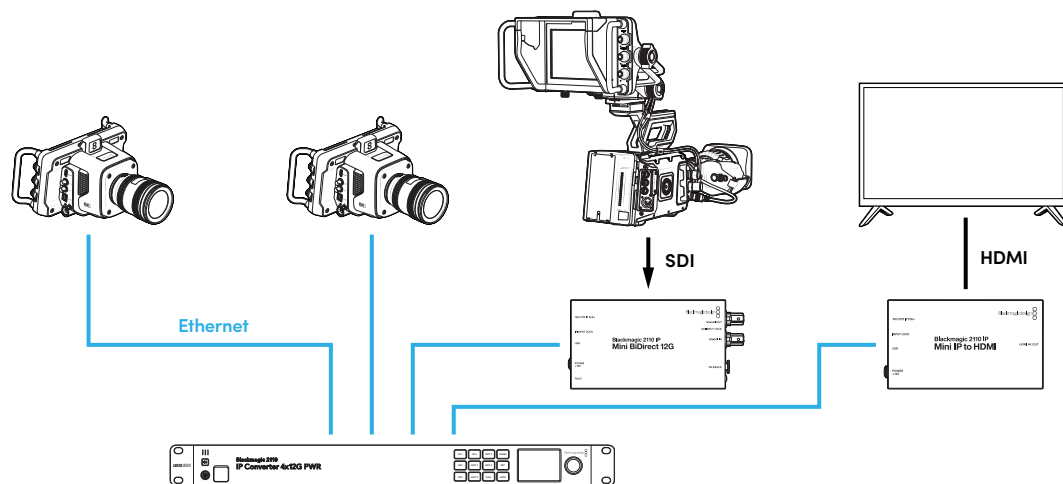
This illustration shows a point to point connection between two Blackmagic 2110 IP Mini converters. The camera SDI out is connected to the SDI in on the Blackmagic 2110 IP Mini BiDirect 12G and the Blackmagic 2110 IP Mini IP to HDMI is connected to the HDMI television. These two converters are connected point to point by a Cat 6 Ethernet cable and powered separately using their supplied power adapters.

Plugging in Power

To power your Blackmagic 2110 IP Mini converter, plug the supplied power adapter into the power input on the rear panel. Tightening the locking ring secures the power cable to prevent accidental disconnection. Once powered, the LED beside the power connector will illuminate.

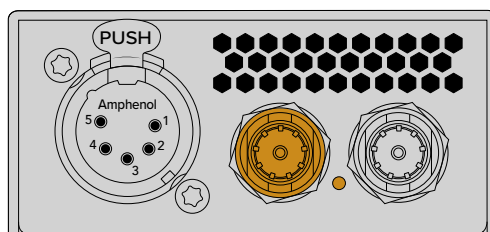


Blackmagic 2110 IP mini converters can also be powered using the Ethernet connection by a PoE+ network switch or other unit that powers the Ethernet port such as Blackmagic 2110 IP Converter 4x12G PWR.

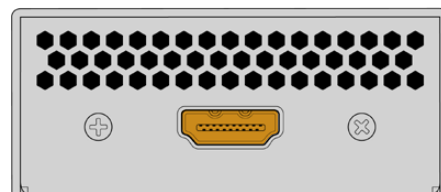


Plugging in SDI and HDMI

Connect the camera's SDI out to the 12G-SDI input on the Blackmagic 2110 IP Mini BiDirect 12G converter. Once connected, the LED to the right of the 12G-SDI input will illuminate indicating a valid input. To see the output on the HDMI television, connect an HDMI cable from the HDMI 4K out on the Blackmagic 2110 IP Mini IP to HDMI converter to the HDMI input on the television.



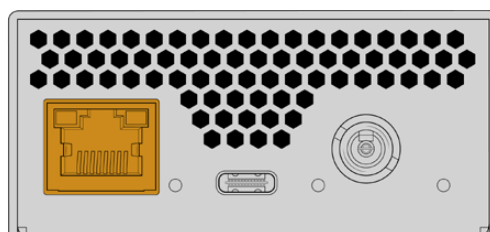
Blackmagic 2110 IP Mini BiDirect 12G



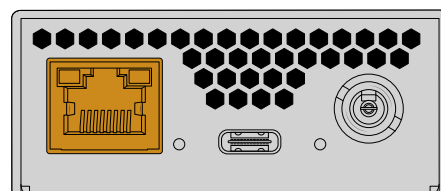
Blackmagic 2110 IP Mini IP to HDMI

Plugging in Ethernet

Now connect your two converters directly using a Cat 6 Ethernet cable.



Blackmagic 2110 IP Mini BiDirect 12G



Blackmagic 2110 IP Mini IP to HDMI

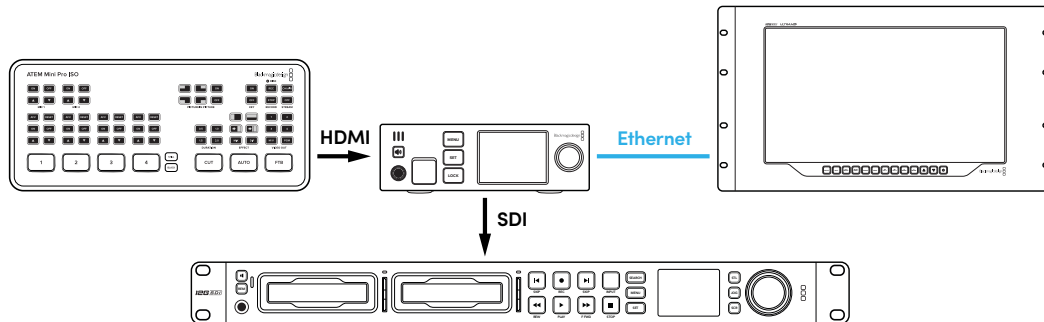
When a successful connection is made the link and activity LEDs on the Ethernet ports will flash.

Your Blackmagic 2110 IP converters are now connected. You can also connect Blackmagic 2110 IP converters to a network with other IP video equipment including Blackmagic Audio Monitor 12G G3, SmartView 4K G3 and NMOS controllers. Please keep reading this manual for information on how to connect your Blackmagic 2110 IP converter to a 10G network switch to share multiple video feeds over a network.

UpDownCross 12G

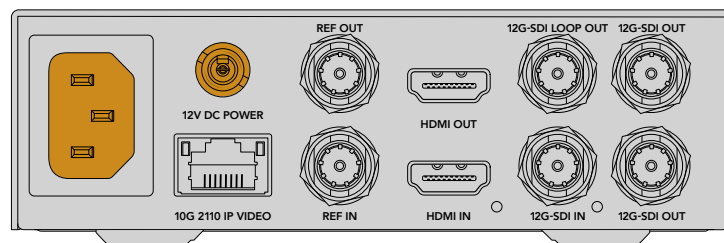
Blackmagic 2110 IP UpDownCross 12G is designed to handle video signal conversion between 2110 IP, 12G-SDI, and HDMI, supporting all SD, HD, and Ultra HD formats. It features an integrated LCD display, built-in speaker, and headphone jack for monitoring, along with a front USB port for setup utility access and webcam output functionality.

This section of the manual shows you how to get started with your Blackmagic 2110 IP UpDownCross 12G to convert a 1080p30 HDMI signal from an ATEM Mini Pro ISO to a 2160p30 2110 IP video stream displayed on a SmartView Monitor 4K G3. The 2160p30 video is output to a HyperDeck Studio 4K Pro via 12G-SDI so the converted video can be recorded.



Plugging in Power

Connect power to the converter's power input using a standard IEC power cable or via the 12V DC input using a power supply. If your power supply has a locking ring, secure the connection by tightening the connection to the unit. The LCD display will illuminate once powered.



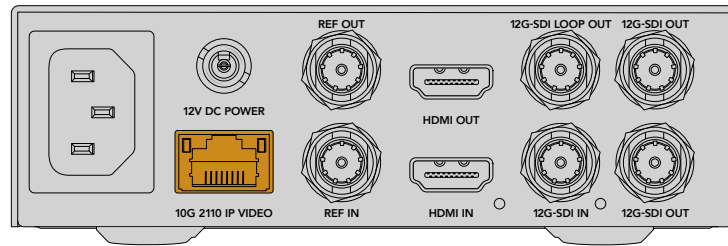
Plugging in HDMI

Connect the switcher's HDMI program out to the HDMI 4K input on the Blackmagic 2110 IP UpDownCross 12G converter. Once connected, the LED to the right of the HDMI input will illuminate indicating a valid input and the ATEM program output will appear on the LCD and 'HDMI' will appear in the upper right hand corner.



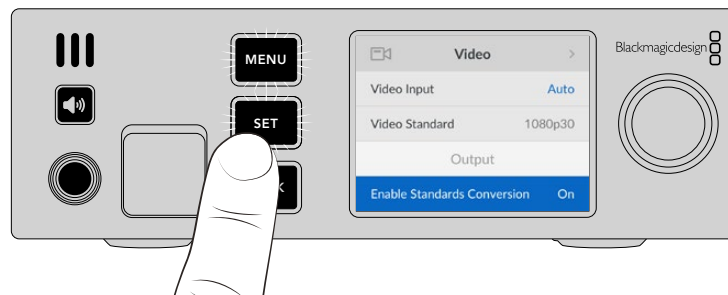
Plugging in Ethernet

Connect the converter to another IP converter or to an Ethernet Switch 360P using a CAT 6A cable plugged into the converter's Ethernet port.

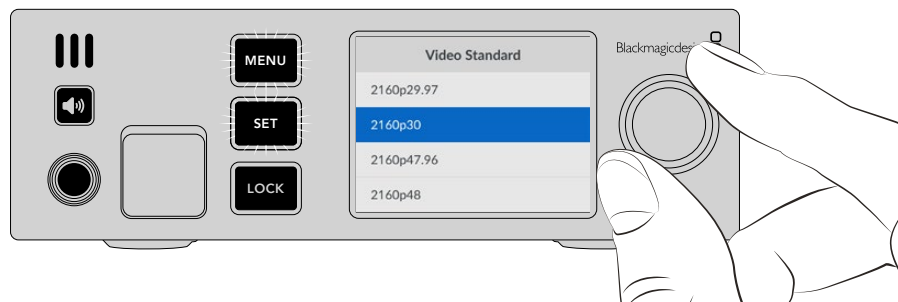


Selecting the Output Standard

Using the front panel menu you can select the desired output standard. Press the 'menu' button followed by the flashing 'set' button to enter the 'video' menu. Use the menu dial to scroll down to highlight 'enable standards conversion' and press the flashing 'set' button to toggle it to on.



Now use the menu dial to select the 'video standard' option and press 'set'. Scroll down to the 2160p30 option and press 'set' to select. Press the 'menu' button repeatedly to return to the home screen.



The video standard will now appear at the top of the home screen menu.



You can now subscribe to the converted stream using another IP Converter or through an Ethernet Switch 360P. Since all the outputs on the converter share the same converted video standard, you could also connect a HyperDeck Studio 4K Pro to the 12G-SDI output to record the output simultaneously.

Presentation Converter

Unlike the other models of Blackmagic 2110 IP converters, the Blackmagic 2110 IP Presentation Converter is designed to be very different. It does not just automatically convert the video input standard to the output. Instead, it's designed to give a specific video standard completely independent of the video input standard. If you plug in a computer and it won't do the video standard the converter is set to, then the converter will standards convert the video so it always outputs the standard you have set in the menu.

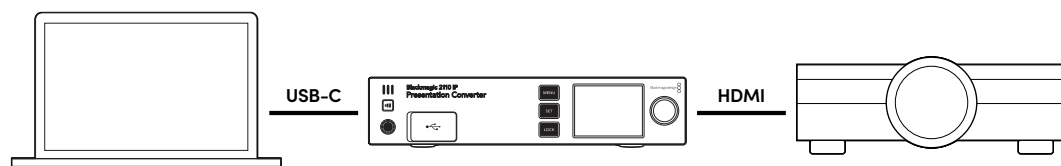
This means it can be used on a podium for a presenter's computer and no matter what computer is connected, it will always provide the video standard you want. Different presenters can plug their computers in and the converter will automatically provide the correct video standard. You can use the HDMI input, or the USB-C input for video as they are both video inputs.

However, the USB-C port is a better option for connecting video as you don't need an HDMI cable. Plus the USB-C video input will also provide power back to the computer so it will help keep the computer charged. The video and the power are both connected via a single USB-C cable.

There are both 2110 IP video and 12G-SDI video outputs so you can connect to both IP video and SDI video systems.

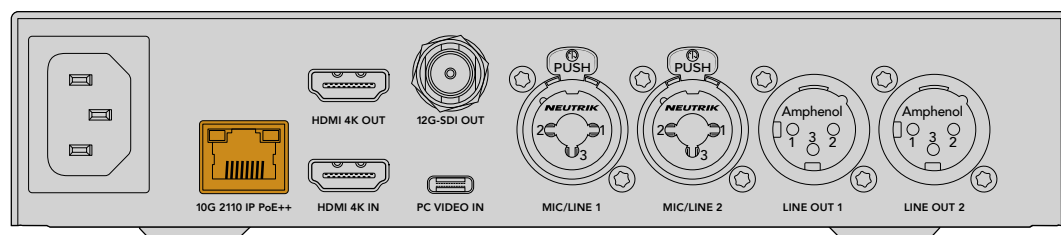
There is also an HDMI output that can be selected to be a loop out of the video input, or a 2110 IP video return feed. This is nice as the HDMI output can be connected to a video projector and the remote switcher operator can send video to the projector using an aux output of the switcher. This allows the switcher operator to output a slide to the projector while different presenters are connecting their computers.

Of course, a lot of venues have projectors that are a bit old. This is worse when they are mounted on the roof above the audience. In that case, the projector might not handle the video standard the switcher operator has selected for the converter. That's OK as the Blackmagic 2110 IP Presentation Converter has a second standards converter just on the HDMI output so the projector can get the video standard it needs. All this is done automatically.

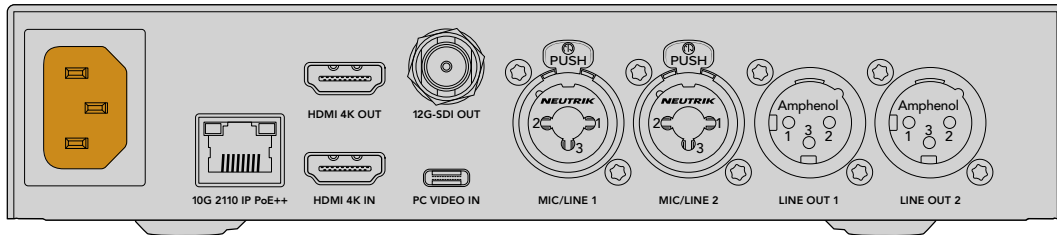


Connecting Power

Blackmagic 2110 IP Presentation Converter also supports PoE++ power, so the first step is to connect the Ethernet cable and see if the converter powers on. If it does, then the Ethernet cable has enough power to run the converter. If the Ethernet switch supports PoE++ then you will even have enough power to run the converter and the computer connected to the USB-C port. So you won't need a local power connection.

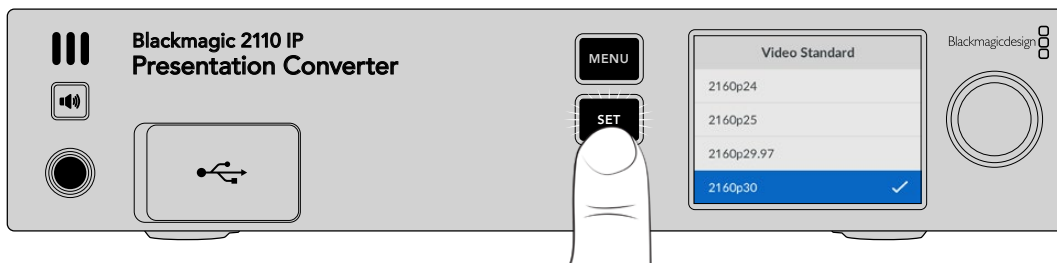


If the lights don't come on, then it means the Ethernet cable does not have PoE++. In that case, simply connect the AC power cable.



Setting the Video Standard

When the converter is powered for the first time you will be prompted to select your language. Then once you have selected the language, you will be asked for the video standard. This is the video standard the converter will use for video output and it's the standard all inputs will be converted to. You can set the standard now and if you want to change the video standard in the future, then just use the menus on the front panel or the converter utility on Mac or PC.



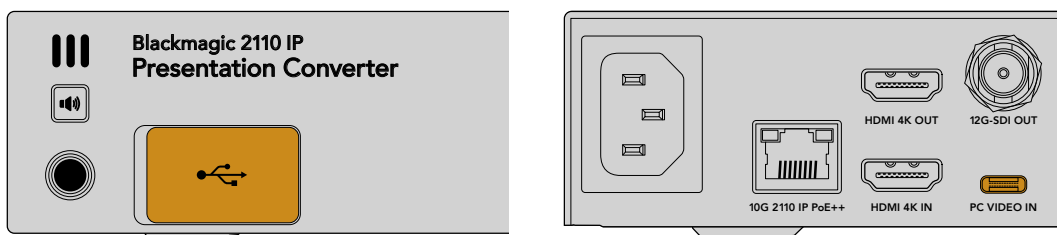
Connecting a Computer

Connect a computer or other HDMI source to the Presentation Converter using the HDMI input. The HDMI input will support unencrypted HD or Ultra HD video sources. This is most laptops and professional video products such as cameras or Blackmagic ATEM Mini.

However, you can also connect video to the Presentation Converter using USB-C. This is much better because a USB-C cable is not as stiff and bulky as an HDMI cable. Also, a lot of compact laptop computers don't have native HDMI connections, but they do have USB-C for external displays, so if you want to convert to HDMI you have to use an adapter. The Presentation Converter lets you simply connect the USB-C and the computer will output video. It even works with a phone or tablet.

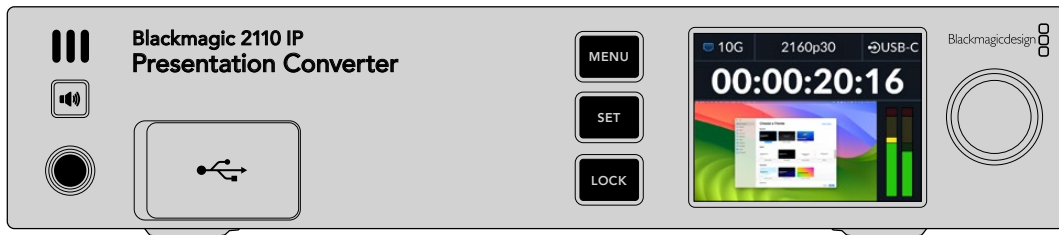
Plus, the big benefit of using USB-C is the Presentation Converter will send power back to the computer. So you won't have to worry about your laptop battery running down. Even if the Presentation Converter is powered over Ethernet, the USB-C will still power the laptop.

Plug a laptop into either the front USB-C connector, or the USB-C connector on the rear panel.



PC Video In inputs on the front and rear

Once the computer is connected, the front panel LCD will display the video input of the computer as an extended display.



Local Audio Monitoring

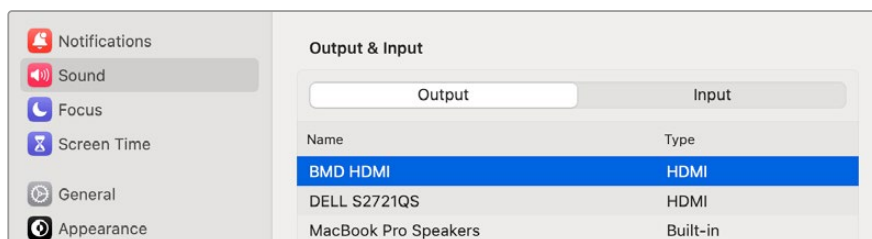
You can monitor the computer audio by pressing and holding the speaker button. If you want to lock on the speaker, simply double press the speaker button. When holding the speaker button you can set the volume by adjusting the knob. If you have headphones connected, pressing the speaker button will allow you to adjust the headphone volume independently to the speaker volume setting.



If you see audio on the LCD meters and can hear it on the speaker then everything is working well. However, on some computers the audio output will not be set to the external monitor when connected. If this happens and you still hear sound playing via the computer speaker, then you will need to change the computer's audio output setting.

To change the sound output using a Mac:

- 1 Open System Settings from the Apple menu in the toolbar and select 'sound' in the left hand column.
- 2 With the 'output' tab selected click the 'BMD HDMI' option to highlight.



Now when you play audio on the computer you should hear it through the converter's front panel speaker, and the audio meters on the LCD will move.

To change the sound output using a PC:

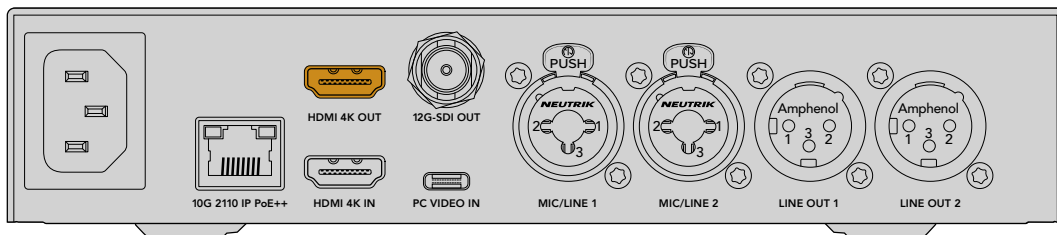
- 1 Open the settings utility and navigate to 'system' and then 'sound'.
- 2 Using the output menu select 'BMD HDMI'.

Now test the audio again to make sure it works.

Connecting a Projector

You can connect a projector to the HDMI output on the Presentation Converter. Because a lot of video projectors in venues can be old, the Presentation Converter has a second standards converter that's just used for this HDMI output. If you are running a specific video standard that the projector cannot handle, the HDMI output will talk to the projector, work out what video standard it can do, and then the HDMI output video will be standards converted to something the projector can handle.

For example, if you are working in 2160p30 and your projector also supports Ultra HD standards, then the HDMI output video will send the native 2160p30. However, if the projector is older and only handles HD video, then the Presentation Converter will automatically down convert the video to an HD compatible resolution that the projector can use. This is all totally automatic and you don't need to adjust any settings on the projector or computer.



Program Return Video Using 2110

Because SMPTE-2110 IP video is bi-directional you can actually send video back to the Presentation Converter. This is very helpful as you can switch the HDMI output for the projector to this return video. By default, the HDMI output is set to the video input, but you can change it to the 2110 return video in the menu.

This means if you have a switcher connected to the video input on a converter such as the Blackmagic 2110 IP Converter 4x12G PWR, you can send this video back down the Ethernet cable to the Presentation Converter and select it to send out of the HDMI output. This means the switcher operator would be in charge of what the projector displays. Most of the time it would just be the slides being sent back from the Presentation Converter, but the switcher operator might like to play video clips, show websites, or even put up title slides between presenters.

Your Blackmagic 2110 IP Presentation Converter can also be connected to a podium microphone and speakers with settings to mix the PC video in and mic audio inputs, as well as output a ST 2110 audio stream via the analog audio outputs.

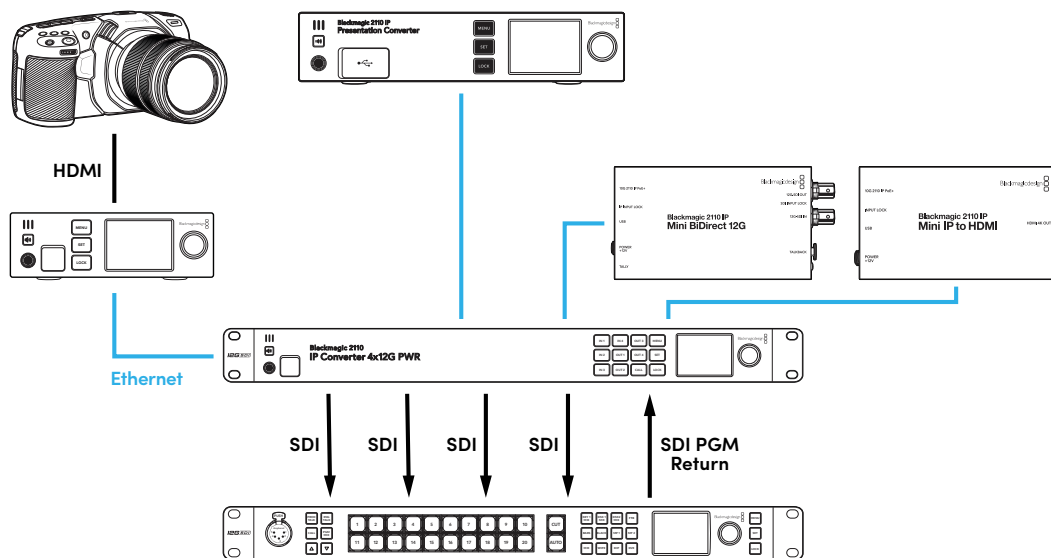
More detailed information on the Presentation Converter including settings and available inputs and outputs can be found later in this manual.

Blackmagic 2110 IP Converter 4x12G PWR

Blackmagic 2110 IP Converter 4x12G PWR lets you connect four 2110 IP converters via the four bidirectional Ethernet ports. Each connection includes program return, talkback, tally and camera control, plus enough power on each 10GbE port to power converters that support PoE. The converter's full width 1 rack unit design includes a control panel with LCD and supports HD and Ultra HD standards up to 2160p60.

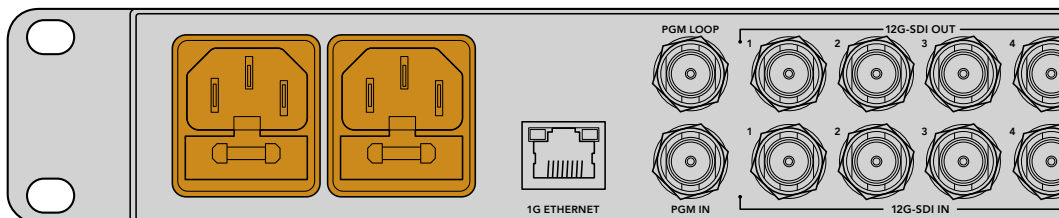
With power over Ethernet being an important part of the 2110 IP video workflow, some PoE compatible broadcast video equipment and presentation setups require more power than a standard PoE connection can provide. This is where Blackmagic 2110 IP Converter 4x12G PWR fits in as it supports the PoE++ standard for power delivery.

This section of the manual shows you how to get started with your Blackmagic 2110 IP Converter 4x12G PWR using 4 Blackmagic 2110 IP Converters.



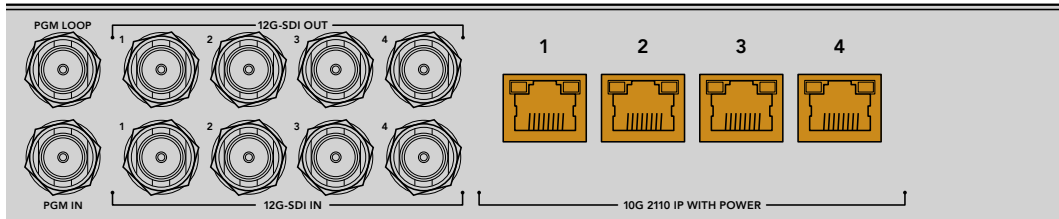
Plugging in Power

Connect power to any of your converter's AC power inputs using a standard IEC power cable. Two power inputs are provided for redundancy. The first time you power the unit, you will be asked to set your language. Use the control panel's menu dial and 'set' button to set the language.

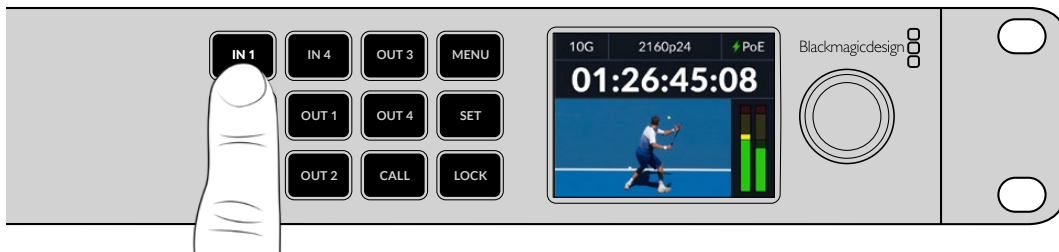


Connecting Converters

Connect the Presentation Converters and IP Mini Converters to the four Ethernet ports using CAT6A Ethernet cables. They will power on automatically as the Ethernet ports supply power to each converter.

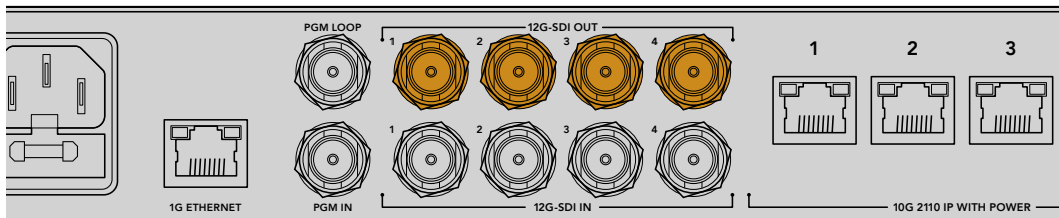


Pressing the converter's input buttons labeled IN 1 to IN 4 lets you check each converter is powered successfully and sending a picture to your IP converter. The green PoE icon in the upper right hand corner confirms the converter is powered via Ethernet.



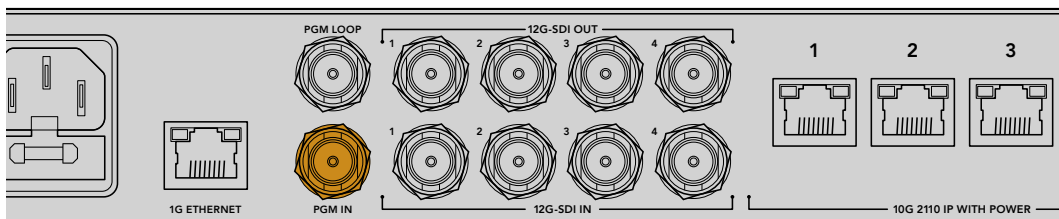
Connecting to an ATEM Switcher

Connect the 4 converted SDI outputs to the ATEM switcher's SDI inputs.

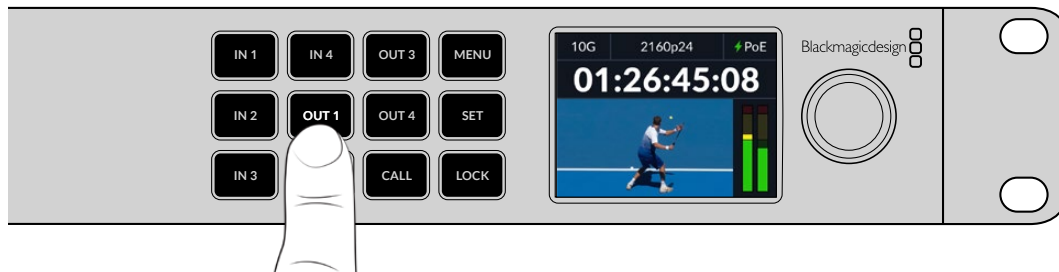


Connecting Program Return

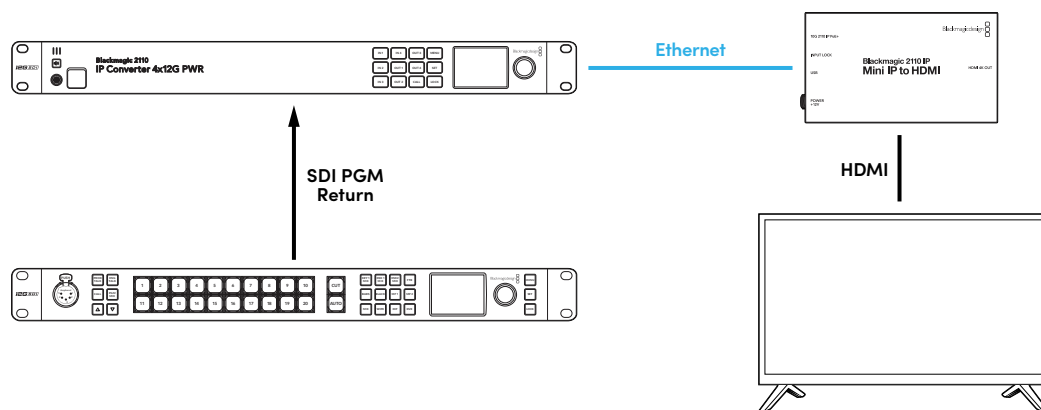
Now you can plug the ATEM switcher's SDI program output into the converter's SDI program input labeled 'PGM'. This will supply each converter with the switcher's program return including tally, talkback and camera control via their Ethernet cable.



Check the program return signal is successfully connected to your converter by pressing the 4 output buttons labeled OUT 1 to OUT 4. If you can see the program return for each output on the LCD, this means the SDI video has been converted and is now sent out to the four converters as a 2110 IP video stream.



Now you can monitor the program via the connected Blackmagic 2110 IP Mini IP to HDMI converter.



TIP When Blackmagic 2110 IP Converter 4x12G PWR is connected to a network switch and used as 4 independent bidirectional SDI to 2110 converters, pressing an output button lets you confirm that the signal connected to the corresponding SDI port has been converted to 2110 and is now available on the network as ST 2110 stream. For example, if a HyperDeck's SDI output is connected to the 12G-SDI input 1 on your converter, pressing the button labeled OUT 1 will let you see the converted output on the LCD. This lets you confirm the HyperDeck's video is now available as a stream on your network.

That's it for getting started! You have now set up a live broadcast 2110 IP video workflow to each converter using one Ethernet cable that includes power, program return, tally, talkback and camera control!

More detailed information about the Blackmagic 2110 IP Converter 4x12G PWR, including settings and available inputs and outputs, can be found later in this manual.

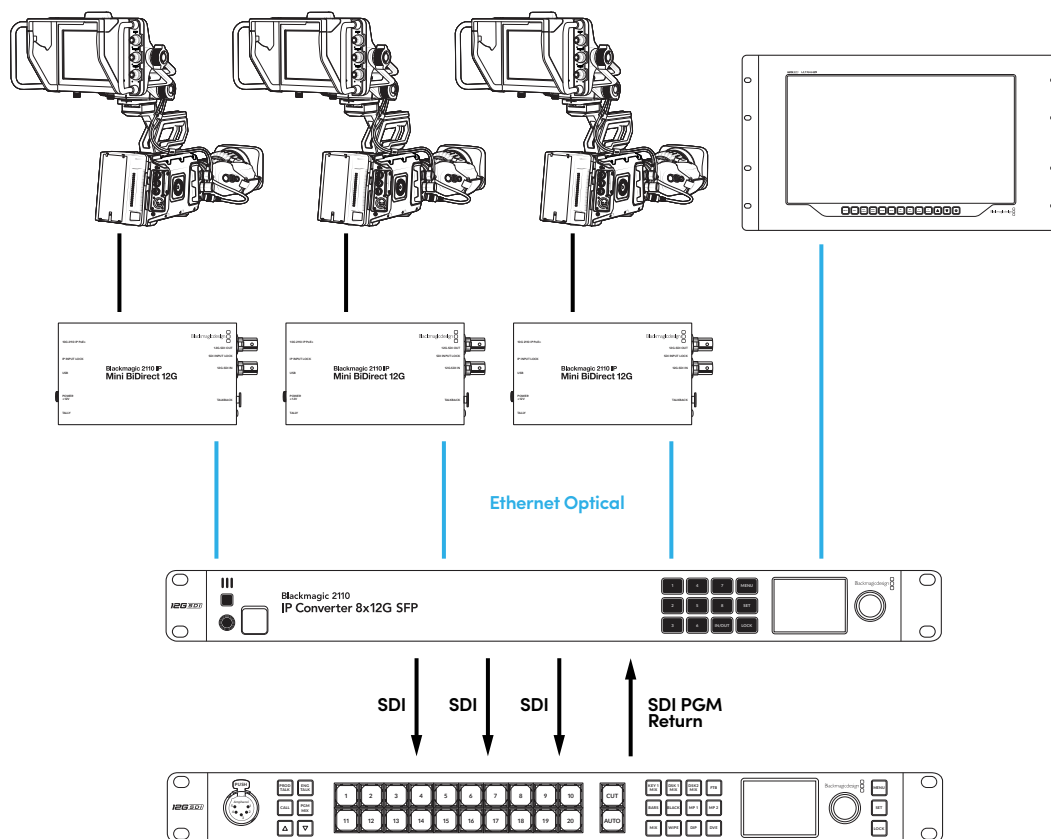
Blackmagic 2110 IP Converter 8x12G SFP

The Blackmagic 2110 IP Converter 8x12G SFP has eight standard SFP sockets that support both SMPTE 2110 IP video and regular optical SDI video. It's both types of converter in one!

To use it as a 2110 IP video converter, insert Ethernet SFP optical modules and set the 'optical module type' to Ethernet in the setup utility. If you want to use a channel as an SDI optical converter, insert a SMPTE optical fiber module and select 'SDI' in the setup utility. You can use a wide range of optical modules. For SDI, you can also use 3G, 6G or 12G-SDI modules depending on your required video standard.

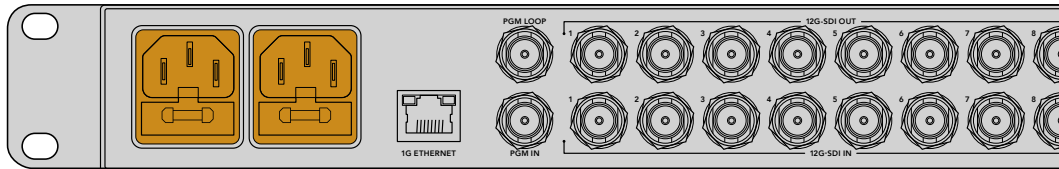
There is a tab for each channel in the utility so you can set each channel to be either SDI or Ethernet. Be sure to check these settings when setting up the converter. The converter's full width 1RU design includes a control panel with an LCD, and each connection supports program return, talkback, tally and camera control.

This section of the manual shows you how to get started with your Blackmagic 2110 IP Converter 8x12G SFP using 3 Blackmagic 2110 IP Mini SFP Converters connected to URSA Broadcast G2 cameras and a SmartView monitor for viewing the program return from the ATEM switcher.



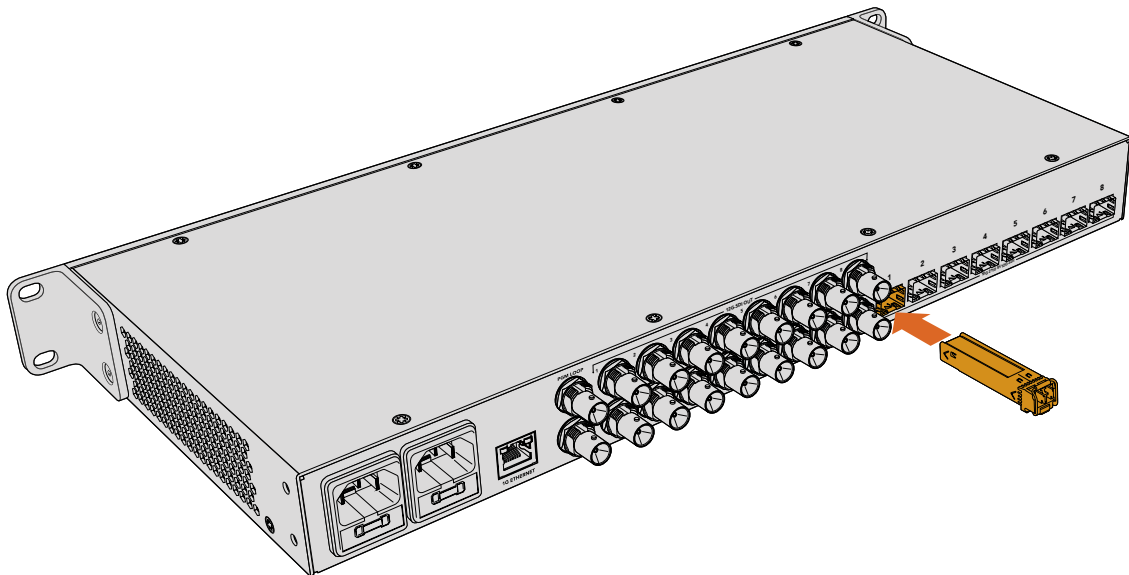
Plugging in Power

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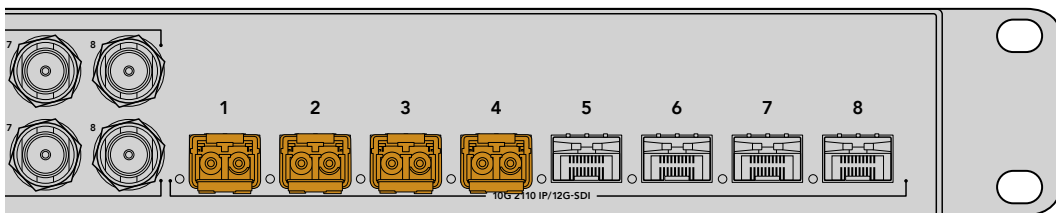


Connecting Converters

To connect Blackmagic 2110 IP Converter 8x12G SFP you will first need to insert the SFP modules. Holding the SFP module's handle, slide the module into the input cage and push until it clicks into position. Repeat for all the inputs you want to use.

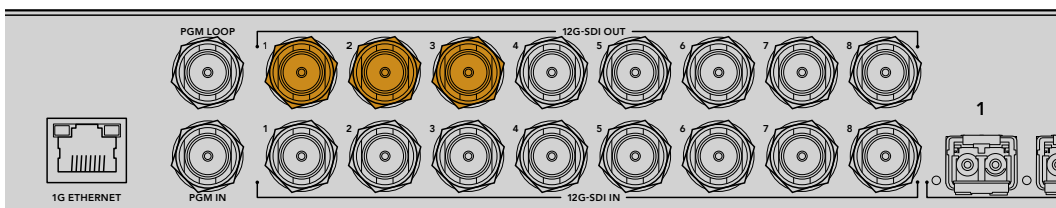


Now connect the Blackmagic 2110 IP Mini Bidirect 12G SFP converters and SmartView 4K G3 to the 10G SFP inputs using optical fiber cables.



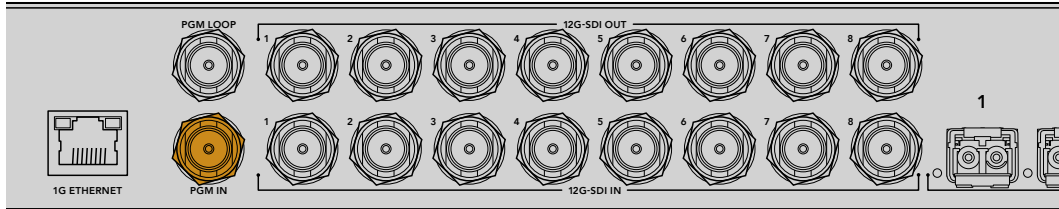
Connecting to an ATEM Switcher

Connect 3 converted SDI outputs to the ATEM switcher's SDI inputs.

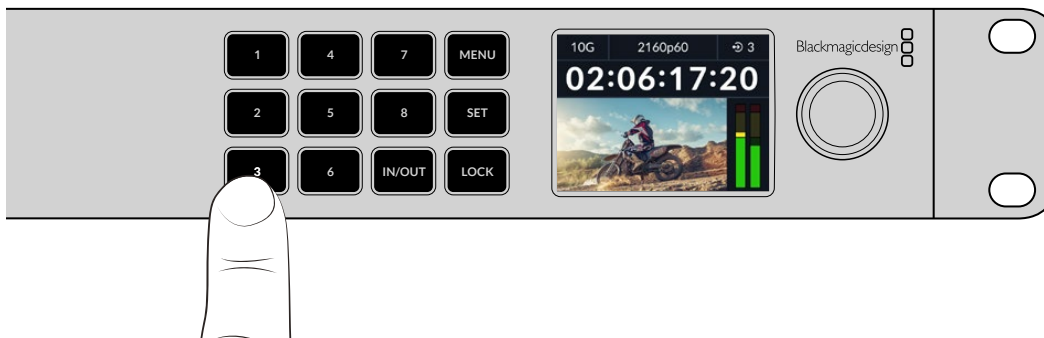


Connecting Program Return

Now you can plug the ATEM switcher's SDI program output into the converter's SDI program input labeled 'PGM'. This will supply each converter with the switcher's program return including tally, talkback and camera control via their Ethernet cable.



Check the program return signal is successfully connected to your converter by pressing one of the numbered buttons.



If the input icon appears in the upper right hand corner of the home screen, press the button labeled 'in/out' to switch to output mode. If you can see the program return for each output on the LCD, this means the SDI video has been converted and is now sent out to the three Mini BiDirect 12G SFP converters.

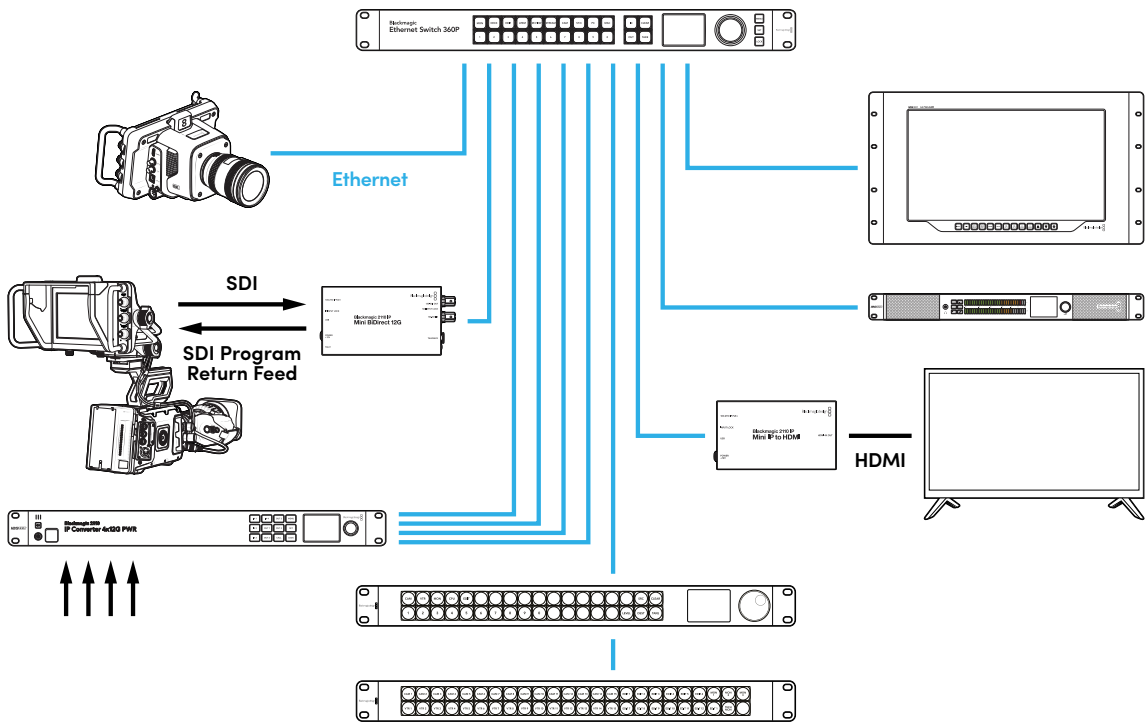


Now you can monitor the switcher's program output via the connected SmartView 4K G3 monitor by pressing the 'input' button on the monitor's front panel until you see the 10G Ethernet option.

That's it for getting started! You have now set up a live broadcast 2110 IP video workflow connecting cameras, a SmartView monitor and ATEM switcher. More detailed information on the 2110 IP Converter 8x12G SFP including its settings and connecting inputs and outputs can be found later in this manual.

Using an Ethernet Switch

If this is your first time setting up a 10G network for streaming ST 2110 IP video, there are few considerations you should take into account when getting started. IP media is sent in packets, so it's important to have a PTP aware switch to provide the timing information to synchronize the devices connected to the network. The management of the traffic flow is covered by a separate control system named NMOS that can be added to the network via either a software or hardware solution.



Connecting to a Network Switch

Your network switch needs to be a managed 10G network switch that supports IGMP version 3 snooping.

Managed switches provide monitoring and control of traffic over the network and require configuration to get started. The size of your network switch depends on how much traffic you might need. For instance, an 8 port 10G Ethernet switch has a capacity of 160Gbps and a 16 port switch will allow up to 320Gbps.

The following 10G network switches have been tested with Blackmagic 2110 IP converters:

Manufacturer	Model
Ubiquiti	Enterprise XG-24
Netgear	M4300-96X
Netgear	M4350-40X4C
Netgear	M4350-16V4C

The switch needs to be Internet Group Management Protocol, or IGMPv3 enabled. IGMP is a communication protocol that allows the switch to route multicast data.

With multicasting one stream can be subscribed to by multiple outputs while only using the bandwidth of one single stream. Each stream has its own multicast address that can be configured automatically or manually via the Converters Setup utility.

PTP Grandmaster

In order to maintain timing you need a Precision Time Protocol grandmaster or PTP clock connected to the switch. Similar to using genlock via a master sync generator for synced SDI connections, PTP generates accurate timing and frequency to maintain the packets of ST 2110 data over the network. This ensures that all streams are synchronized.

The PTP clock is the grandmaster and all other IP video devices should be set as the 'follower' to ensure no timing conflicts can occur. For more information on setting your Blackmagic 2110 IP converter as a follower, refer to the 'setup menu' later in this manual.

NMOS Controller

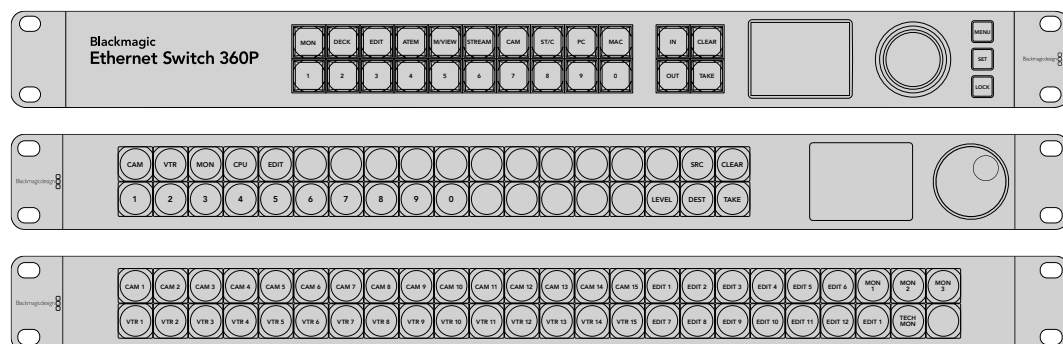
Traditional SDI connections send signals in one direction with video, audio and ancillary data such as timecode and closed captions embedded in the one signal.

With ST 2110, the signal is split into video, audio and ancillary data elementary streams. This provides flexibility to route video, audio or ancillary data streams independently whilst keeping each essence stream synchronized so they can be brought back together at the end of the workflow.

This is all achieved through timing. But how does one converter know what the other converter is doing? This is where the Networked Media Open Specifications, or NMOS for short, is important.

NMOS is a group of specifications that direct the flow of traffic in an IP network and manage communications between all the endpoint devices. Once a hardware or software NMOS controller is connected to the network you can route any or all of the elementary streams to any endpoint on the network.

Blackmagic Ethernet Switch 360P, Videohub Master Control Pro and Videohub Smart Control Pro can all be used as NMOS controllers for 2110 IP networks.



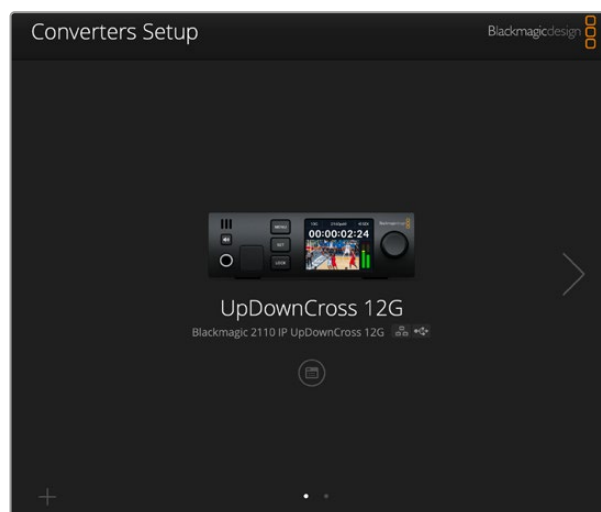
Blackmagic Converters Setup

Blackmagic Converters Setup is a software utility used to change settings, configure networks and update the internal software of your Blackmagic 2110 IP converter.

First, download and install the latest Blackmagic Converters software from the Blackmagic Design support center at www.blackmagicdesign.com/support

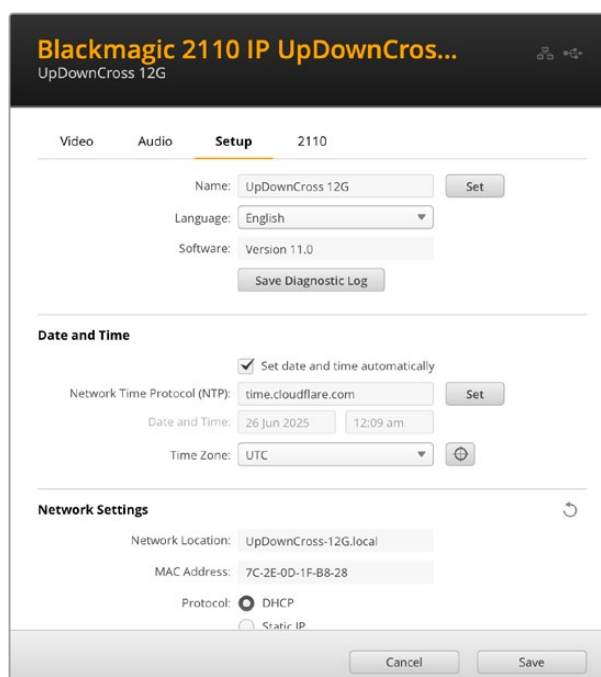
To use Blackmagic Converters Setup:

- 1 Connect your Blackmagic converter to your computer via USB.
- 2 Launch Converters Setup. Your converter model will be named in the utility home page.
- 3 Click on the circular 'setup' icon or the image of your Blackmagic 2110 IP converter to open the settings. If you have more than one converter connected to the network, use the arrows on the sides of the setup window to navigate to the converter you want to access.



Setup

Setup settings let you change the name of your converter, change network settings, displays the current version of your converter's internal software and view multicast output addresses.



Use the identification settings to enter the name and language for your converter.

The screenshot shows the 'Setup' tab of the Blackmagic 2110 IP Converter utility. It features a 'Name' field with the value 'UpDownCross 12G' and a 'Set' button. Below it, the 'Language' is set to 'English' with a dropdown arrow. The 'Software' version is 'Version 11.0'. At the bottom, there is a 'Save Diagnostic Log' button.

Entering a custom name is helpful to identify the right Blackmagic 2110 IP converter when more than one is connected to your network. It also provides the name for network location.

You can also identify the current software version.

Date and Time

Set your date and time automatically by ticking the box. When setting the date and time automatically, your converter will use the network time protocol server set in the NTP field. The default NTP server is time.cloudflare.com, but you can also manually enter an alternate NTP server and then click on 'set'.

If you are entering your date and time manually, use the fields to enter your date, time and time zone. Setting the date and time correctly ensures your recordings have the same time and date information as your network and also prevents conflicts that can occur with some network storage systems.

The screenshot shows the 'Date and Time' settings window. It has a checkbox for 'Set date and time automatically' which is checked. Below it, the 'Network Time Protocol (NTP)' field is set to 'time.cloudflare.com' with a 'Set' button. The 'Date and Time' section shows '13 Jun 2024' and '10:54 am'. The 'Time Zone' is set to 'UTC+10' with a dropdown arrow and a clock icon.

Network Settings

Network Location

The network location is the name for your Blackmagic 2110 IP Converter that will appear in the registry. This is based on the identification name at the top of the setup utility. It's worth noting that numeric prefixes will be ignored.

The screenshot shows the 'Network Settings' window. It includes fields for 'Network Location' (UpDownCross-12G.local), 'MAC Address' (7C-2E-0D-1F-B8-28), 'Protocol' (Static IP selected), 'IP Address' (10.0.0.9), 'Subnet Mask' (255.255.255.0), 'Gateway' (10.0.0.1), 'Primary DNS' (8.8.8.8), and 'Secondary DNS' (8.8.4.4). At the bottom, 'Allow Utility Administration' is set to 'via USB'.

Protocol

DHCP and static IP settings let you determine how your converter is connected to your network.

DHCP	Blackmagic 2110 IP converters are set to DHCP by default. The dynamic host configuration protocol, or DHCP, is a service on network servers that automatically finds your converter and assigns an IP address. DHCP is a great service that makes it easy to connect equipment via Ethernet and ensure their IP addresses do not conflict with each other. Most computers and network switchers support DHCP.
Static IP	When 'static IP' is selected, you can enter your network details manually. When setting IP addresses manually so all units can communicate, they must share the same subnet mask and gateway settings.

When using static IP and there are other devices on the network that have the same identifying number in their IP address there will be a conflict and the units won't connect. If you encounter a conflict, simply change the identifying number in the unit's IP address.

For example, if the conflicting address is 192.100.40.30 change the last number field to anything other than 30. If the new number is also being used, keep changing it until you find a unique number that isn't being used by other equipment.

Allow utility administration

Enabling the 'via USB' setting limits setting changes to only the computer connected via USB. This removes the risk of anyone on the network making accidental settings changes.

Reset

Click 'factory reset' to restore your Blackmagic 2110 IP Converter to factory settings. Once you press 'set', you will be prompted to confirm your selection. To proceed, click 'reset'.

Reset

Factory Reset

2110

The 2110 tab provides settings for routing SMPTE 2110 streams along with settings for PTP, multicast address and identifying ancillary data.

2110 Receiver and Sender Settings

You can route incoming sources to the 2110 IP converter using the receiver settings in the Converter Setup utility.

Inputs

Outputs

Setup

2110

2110 Receiver

Receiver 1:

None

Receiver 2:

None

Receiver 3:

None

2110 Sender

Sender 1:

SDI 1

Sender 2:

SDI 2

Sender 3:

SDI 3

To route an incoming source:

- 1
- Click on the magnifying glass to the right of the receiver field. A window will appear with all available 2110 IP streams on the network listing both the IP node details and source label.

Available Sources

Search

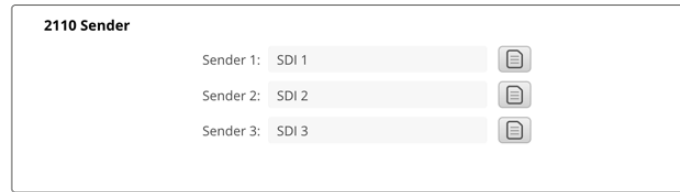
IP Node	Source Label
Converter 3x3G	CAM 1
Converter 3x3G	MON
Converter 3x3G	PODIUM

Cancel

Select

- 2
- Select an available stream from the list and click the 'select' button. The window will close and return to the 2110 tab of the setup utility. You should now see the incoming source on the front panel LCD display on the converter.

The sender details list the outgoing streams from the converter and the labels correspond to the labels in the output labels tab.



2110 Sender

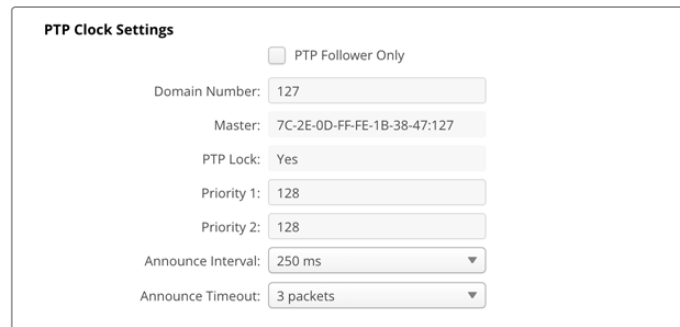
Sender 1: SDI 1 

Sender 2: SDI 2 

Sender 3: SDI 3 

PTP Clock Settings

The PTP settings let you configure the settings for the PTP grandmaster.



PTP Clock Settings

☐ PTP Follower Only

Domain Number: 127

Master: 7C-2E-0D-FF-FE-1B-38-47:127

PTP Lock: Yes

Priority 1: 128

Priority 2: 128

Announce Interval: 250 ms ▼

Announce Timeout: 3 packets ▼

When connecting Blackmagic 2110 IP Converters to a 10G network switch with a PTP grandmaster, the converter needs to be set to 'PTP follower only' mode to prevent a timing conflict. If two Blackmagic IP converters are connected directly, set one to be the follower by ticking the checkbox.

Domain Number

Enter the domain number to match that of the PTP grandmaster. This is commonly 127 but can be changed by entering a different domain number in the field.

Master

The master address field displays the MAC address of the PTP grandmaster. This is either a separate grandmaster unit, or a Blackmagic 2110 converter.

PTP Lock

The PTP lock field will acknowledge when the converter is locked to a PTP clock via Ethernet.

Priority

When a converter is not set to 'PTP follower only' it can become a PTP master. The priority of the unit to become the master is set here. The lower the number the higher the priority.

Announce Interval and Timeout

The announce interval and timeout fields need to match the specifications of the PTP grandmaster which transmits sync messages typically every two seconds or 2000 ms. To change the frequency of the message, use the menu to select a different time. The ranges available for announce interval and announce timeout will depend on your PTP grandmaster.

Ancillary Data Identifier

Blackmagic 2110 IP Converters support SMPTE-2110-40 ancillary data elementary streams. This data can include closed captions, tally, timecode and metadata. The ancillary data identifier table indicates the type of ancillary data that is present once added.

The ancillary information will be identified by a data identifier or DID and secondary data identifier, or SDID. The converter includes common timecode and caption data, but you can add up to three additional identifiers.

Ancillary Data Identifier			
Name	DID	SDID	
ST-334 Closed captioning (CEA-708)	0x161	0x101	☒
ST-334 CEA-608 data	0x161	0x102	☒
ST-334 Program description (DTV)	0x162	0x101	☒
ST-334 Data broadcast (DTV)	0x162	0x102	☒
ST-334 VBI data	0x162	0x203	☒
Timecode	0x260	0x260	☒
CCU Messaging	0x151	0x253	☒
Tally	0x151	0x152	☒

To add an additional ancillary data identifier to the list:

- 1 Click on the plus sign button to add a new row.
- 2 Enter a name for the data. This name will be visible when routing SMPTE streams using an NMOS controller.
- 3 To disable any ancillary data, deselect the corresponding box in the far right column.

Multicast Address

Each ST 2110 stream output from your Blackmagic 2110 IP converter uses a discrete multicast address that can be found via the LCD menu. If you are using Blackmagic Converters Setup you can view and modify the discrete address and port number for each elementary stream.

Multicast Address

Sending from: SDI 1

IP Configuration:

☐ Auto
 ☒ Manual

Video Address:

239.255.2.82

Port:

16388

Audio Address:

239.255.0.82

Port:

16384

Ancillary Address:

239.255.1.82

Port:

16386

To change the multicast output address:

- 1 Select the output using the 'sending from' menu.
- 2 Tick the checkbox for auto or manual IP configuration.
- 3 Enter a new IP address and port number into the fields and click the 'save' button at the lower right of the utility.

NMOS Registry

The NMOS registry IP can be entered manually or check auto to automatically discover the NMOS registry on the network.

NMOS Registry

IP Configuration:

☒ Auto
 ☐ Manual

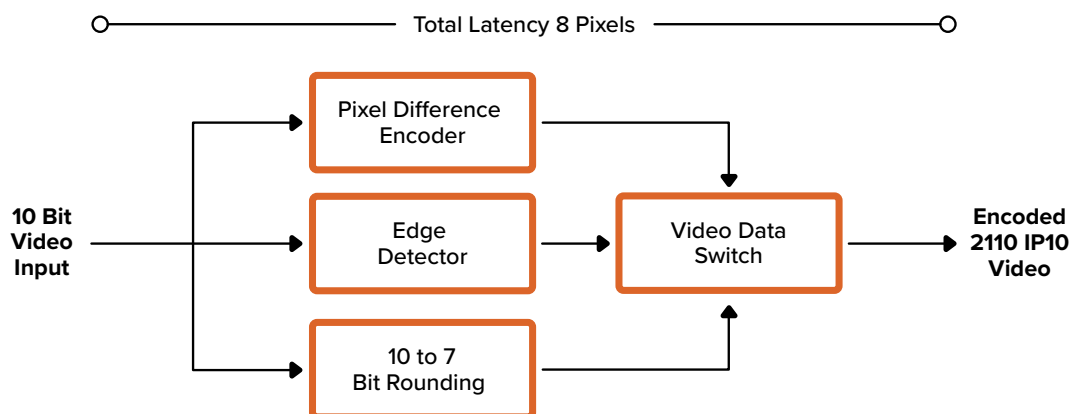
Registry Address:

Port:

Blackmagic IP10 Video Codec

You can send uncompressed ST 2110 IP video over 10G Ethernet at frame rates up to 2160p50 Ultra HD, just like on an SDI video network. For the high frame rates, like 2160p59.94 and 2160p60, you'll need to lower the data rate enough to fit down a 10G Ethernet port. This is where Blackmagic IP10 comes in. It's a simple 'codec' that changes from pixels being an absolute quantizing level as used in normal uncompressed video to a difference number that shows the difference between pixels. On hard edges in the image, it can also reduce the bit depth of these pixels because it's not visible.

The goal is to fit a 12G-SDI signal into a 10G Ethernet port, so only a little bit of image data needs to be removed. The big advantage of using 10G Ethernet for high frame rate Ultra HD video is a dramatically lower cost because products can be simple and use less power. This makes IP mini converter type products possible and the cost of Ethernet switches is also much lower as low cost 10G Ethernet switches are very common. You can also use simple 10G Ethernet copper cables that are already installed in a lot of buildings and you even have the option to remote power converters over PoE.



For detailed information on Blackmagic IP10 including the developer documents and reference software, refer to the Blackmagic 2110 IP Converters products page on the website <https://www.blackmagicdesign.com/products/blackmagic2110ipconverter#ip10codec>

This information should provide enough detail for developers to incorporate Blackmagic IP10 into other products.

Blackmagic 2110 IP Mini Converter Models

Blackmagic 2110 IP Mini Converters are small, portable, tough and lightweight so you can carry them easily and mount them onto video equipment or video trays.

Blackmagic 2110 IP Mini IP to HDMI

Blackmagic 2110 IP Mini IP to HDMI can convert SMPTE 2110 IP streams from your network to HDMI at up to Ultra HD 2160p60. This means you can receive 2110 IP video from anywhere on your network and view them on an HDMI screen such as a television or computer display.



Connectors

1 10G 2110 IP PoE+

Blackmagic 2110 IP Mini IP to HDMI can be connected point to point or via a managed 10G IGMP network switch.

2 Input Lock

The input lock LED will illuminate when receiving a SMPTE 2110 IP signal.

3 USB-C

USB-C port for configuring SMPTE 2110 streams via Blackmagic Converters Setup utility and updating the internal software.

4 Power +12V

Blackmagic 2110 IP Mini converters can be powered via an AC plug pack. The supplied power cable included features a locking connector to prevent disconnection, but you can also use any 18W 12V power cable, USB-C or PoE+ to power your converter. The LED to the left of the power connector will illuminate when the unit is powered.

5 HDMI 4K Out

HDMI connection for up to 2160p60 Ultra HD.

Blackmagic Converters Setup Settings

Additional settings available for the Blackmagic 2110 IP Mini IP to HDMI converter include the following.

Setup Tab

The setup tab has settings for HDMI levels and audio mapping.

HDMI Output

You can choose to clip the HDMI output using the setup tab. To ensure your HDMI output stays within legal broadcast levels, select 'normal levels'. To allow video levels to conform to the SDI input, select 'illegal levels'. We recommend using normal levels.

The screenshot shows the 'Setup' tab with two sections: 'HDMI Output' and 'Audio Mapping'. In the 'HDMI Output' section, 'Clip HDMI Output' has two radio buttons: 'Normal levels (16 - 235)' (unselected) and 'Illegal levels (0 - 255)' (selected). The 'Audio Mapping' section has a label 'For 5.1 Surround Use:' followed by two radio buttons: 'SMPTE standard (L, R, C, LFE, Ls, Rs)' (selected) and 'Consumer standard (L, R, LFE, C, Ls, Rs)' (unselected).

Audio Mapping

For 5.1 surround, select your desired audio mapping from either SMPTE or consumer standard.

LUTs Tab

Add a LUT to the HDMI output using the LUTs tab.

The screenshot shows the 'LUTs' tab in the setup interface. At the top, there are tabs for 'Setup', '2110', and 'LUTs', with 'LUTs' being the active tab. Below the tabs, there is a '3D LUT:' label followed by two radio buttons: 'On' (unselected) and 'Off' (selected). Below the radio buttons is a text input field. At the bottom, there are two buttons: 'Import' and 'Delete'.

To add a 3D LUT on the HDMI output:

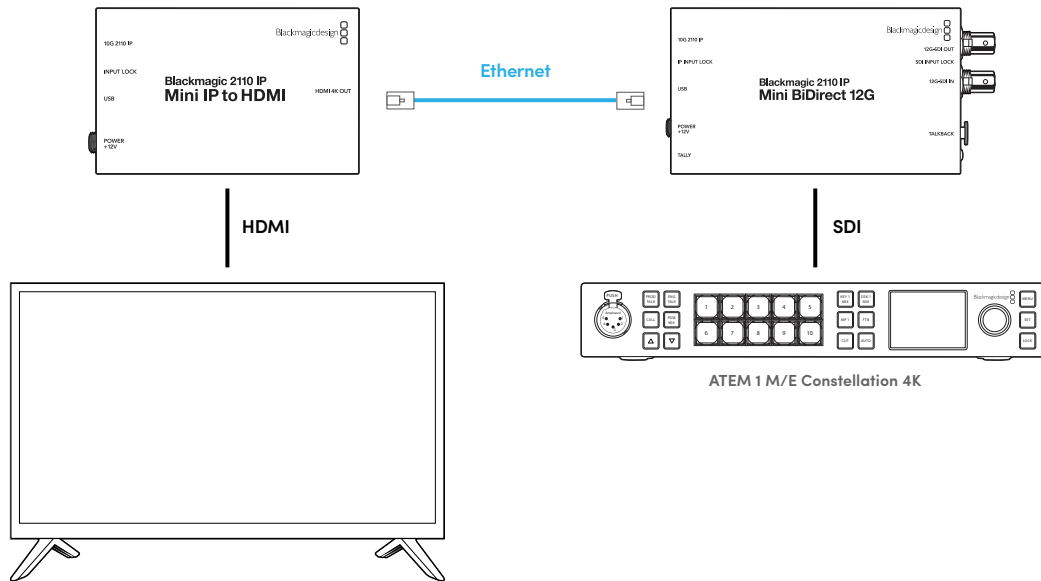
- 1 Click on the 'import' button.
- 2 Navigate to the location of the LUT you want to import and select it. Click 'save'. The name of the LUT will appear in the field.
- 3 Click the 3D LUT on checkbox to turn the LUT on the output or off to stop displaying.

To remove the loaded LUT, simply click the 'delete' button.

Connecting 2110 IP Mini to an HDMI Television

Your Blackmagic 2110 IP Mini IP to HDMI converter can be connected to projectors, large screen televisions and computer monitors via HDMI. Its small design makes it perfect to mount behind the display. You can even use PoE+ to power the unit via Ethernet so you don't need the use the DC power supply.

The following example illustrates the mini converter connected to a television. The multiview output of the ATEM is connected to a Mini BiDirect 12G converter and then the Mini IP to HDMI is subscribed to the 2110 IP multiview stream.



Blackmagic 2110 IP Mini IP to HDMI SFP

Blackmagic 2110 IP Mini IP to HDMI SFP features a standard SFP socket so you can convert SMPTE 2110 IP streams from your network or optical SDI to HDMI at up to Ultra HD 2160p60 or use 3G, 6G or 12G-SDI SFP modules for standard SDI over optical fiber. This means you can receive 2110 IP video or SDI and view them on an HDMI screen such as a television or computer display.



Connectors

1 10G 2110 IP

Optical Fiber input supporting optical modules for 2110 10G Ethernet or 3G, 6G or 12G-SDI video.

2 Input Lock

The input lock LED will illuminate when locked to an optical SDI signal and flash when receiving a SMPTE 2110 IP signal.

3 USB-C

USB-C port for configuring SMPTE 2110 streams or optical SDI via Blackmagic Converters Setup utility and updating the internal software.

4 Power +12V

Blackmagic 2110 IP Mini IP to HDMI SFP converters use optical fiber SFP modules so they need to be powered using an AC plug pack. The supplied power cable included features a locking connector to prevent disconnection. The LED to the left of the power connector will illuminate when the unit is powered.

5 HDMI 4K Out

HDMI connection for up to 2160p60 Ultra HD.

Blackmagic Converters Setup Settings

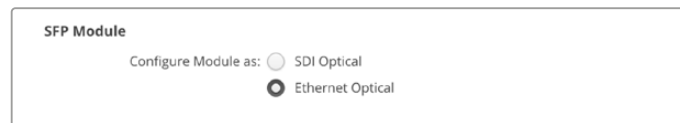
Additional settings available for the Blackmagic 2110 IP Mini IP to HDMI SFP converter include the following.

Setup Tab

The setup tab has settings for selecting the SFP module type, HDMI levels and audio mapping.

SFP Module

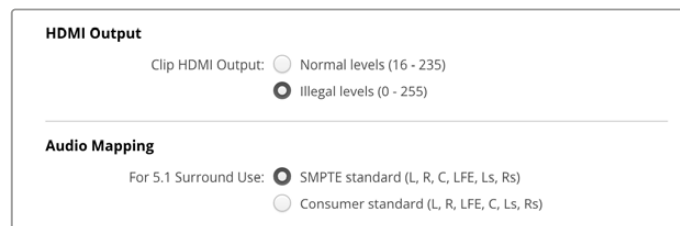
Blackmagic 2110 IP Mini IP to HDMI SFP converter is compatible with both Ethernet and SDI SFP modules. If you are using an SFP module, select between 'SDI Optical' and 'Ethernet Optical' to confirm the type of SFP in use.



The screenshot shows the 'SFP Module' settings panel. It has a title 'SFP Module' and a label 'Configure Module as:'. Below this are two radio button options: 'SDI Optical' and 'Ethernet Optical'. The 'Ethernet Optical' option is selected, indicated by a filled circle.

HDMI Output

You can choose to clip the HDMI output using the setup tab. To ensure your HDMI output stays within legal broadcast levels, select 'normal levels'. To allow video levels to conform to the SDI input, select 'illegal levels'. We recommend using normal levels.



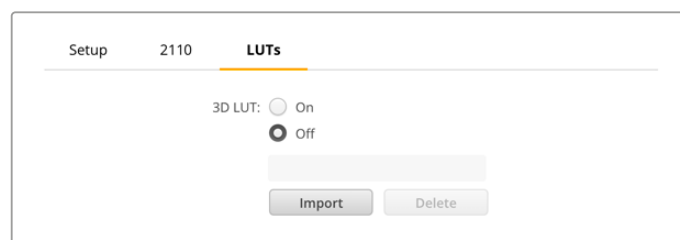
The screenshot shows two stacked settings panels. The top panel is titled 'HDMI Output' and contains a label 'Clip HDMI Output:' followed by two radio button options: 'Normal levels (16 - 235)' and 'Illegal levels (0 - 255)'. The 'Illegal levels (0 - 255)' option is selected. The bottom panel is titled 'Audio Mapping' and contains a label 'For 5.1 Surround Use:' followed by two radio button options: 'SMPTE standard (L, R, C, LFE, Ls, Rs)' and 'Consumer standard (L, R, LFE, C, Ls, Rs)'. The 'SMPTE standard (L, R, C, LFE, Ls, Rs)' option is selected.

Audio Mapping

For 5.1 surround, select your desired audio mapping from either SMPTE or consumer standard.

LUTs Tab

Add a LUT to the HDMI output using the LUTs tab.



The screenshot shows the 'LUTs' settings panel, which is part of a larger interface with tabs for 'Setup', '2110', and 'LUTs'. The 'LUTs' tab is active. It contains a label '3D LUT:' followed by two radio button options: 'On' and 'Off'. The 'Off' option is selected. Below the radio buttons are two buttons: 'Import' and 'Delete'.

To add a 3D LUT on the HDMI output:

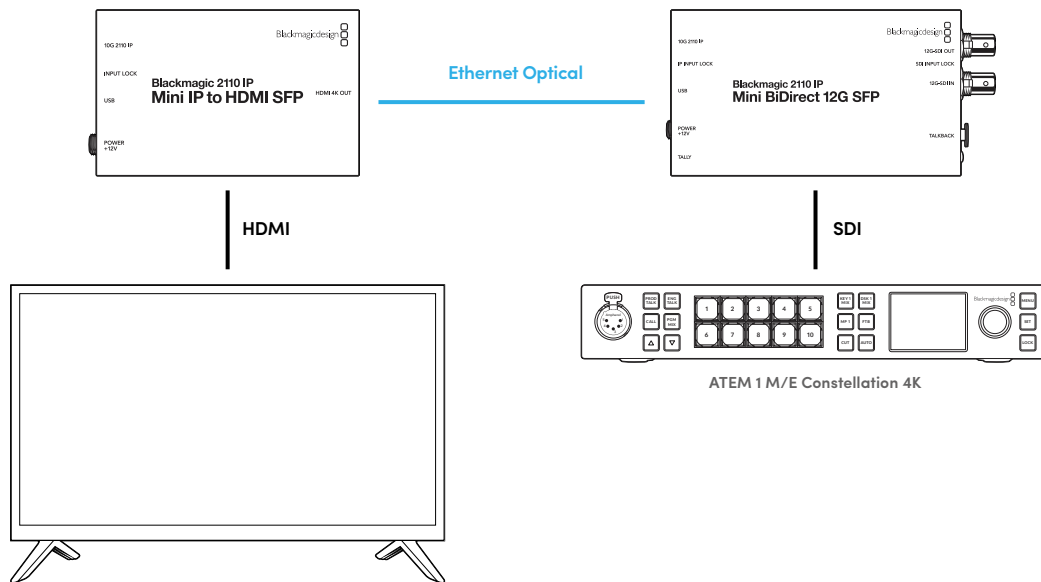
- 1 Click on the 'import' button.
- 2 Navigate to the location of the LUT you want to import and select it. Click 'save'. The name of the LUT will appear in the field.
- 3 Click the 3D LUT on checkbox to turn the LUT on the output or off to stop displaying.

To remove the loaded LUT, simply click the 'delete' button.

Connecting 2110 IP Mini to an HDMI Television

Your Blackmagic 2110 IP Mini IP to HDMI SFP converter can be connected to projectors, large screen televisions and computer monitors via HDMI. Its small design makes it perfect to mount behind the display.

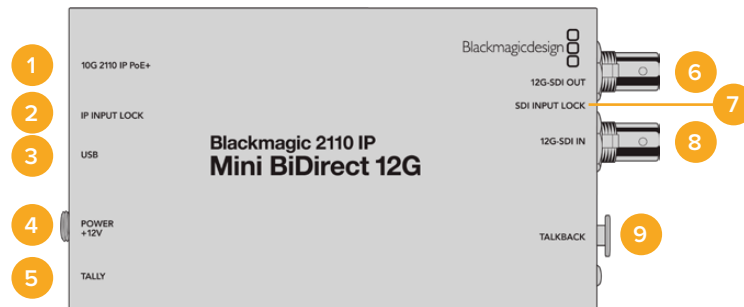
The following example illustrates the mini converter connected to a television. The multiview output of the ATEM is connected to a Mini BiDirect 12G SFP converter and then the Mini IP to HDMI SFP converter is subscribed to the 2110 IP multiview stream.



Blackmagic 2110 IP Mini BiDirect 12G

Blackmagic 2110 IP Mini BiDirect 12G converter is a bidirectional converter so you can transmit 12G-SDI to SMPTE ST 2110 IP streams and vice versa simultaneously.

Featuring tally light and talkback functions, this converter can handle both the SDI camera feed and the SDI program return in the one unit.



1 10G 2110 IP PoE+

Blackmagic 2110 IP Mini BiDirect 12G converter can be connected point to point or via a managed 10G IGMP network switch. The converter also supports PoE+ power over Ethernet.

2 IP Input Lock LED

The IP input lock LED will illuminate when locked to an incoming SMPTE 2110 IP signal.

3 USB-C

USB-C port for configuring ST 2110 streams via Blackmagic Converters Setup utility and updating the internal software.

4 Power +12V

Blackmagic 2110 IP Mini BiDirect 12G converters can be powered via an AC plug pack. The supplied power cable included features a locking connector to prevent disconnection, but you can also use any 18W 12V power cable or PoE+ to power your converter. A small white LED light next to the USB-C port will illuminate when connected to a power source.

5 Tally

The tally indicator will illuminate red when connected to an ATEM switcher to indicate on air status.

6 12G-SDI Out

12G-SDI video output BNC connector.

7 SDI Input Lock LED

The SDI input lock LED will illuminate when locked to an incoming SDI signal.

8 12G-SDI In

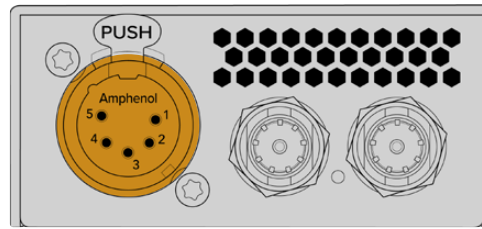
12G-SDI input BNC connector.

9 Talkback

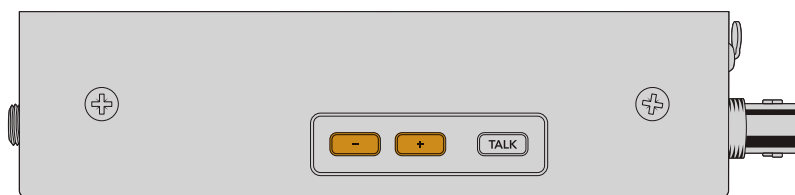
Connect an intercom headset equipped with a microphone into the 5 pin XLR socket on the side.

Talkback Controls

To use the talkback feature, plug an intercom headset equipped with a microphone into the talkback 5 pin XLR socket on the side of the converter.



Talkback controls on the side of the converter include a push to talk button and volume controls.



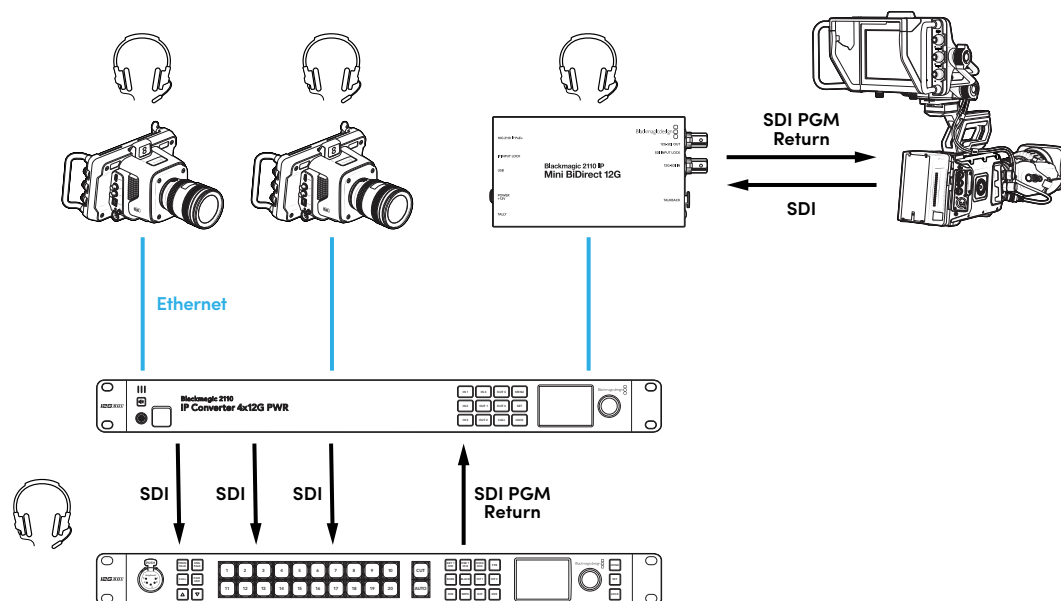
Decrease or increase the headset audio level by pressing the minus and positive volume control buttons

When using an intercom headset you can enable the microphone by pressing the 'talk' button. If you double press the 'talk' button, the mic stays on until you double press the button again.

To adjust the headset level press the plus and minus buttons. To adjust the microphone level, hold down the 'talk' button and press the plus or minus button.

Camera Control and Tally between SDI and 2110 IP

2110 IP Mini BiDirect 12G supports tally and camera control data when connected to ATEM switchers and Blackmagic cameras. The following is an example of a workflow you can use.



Blackmagic Converters Setup Settings

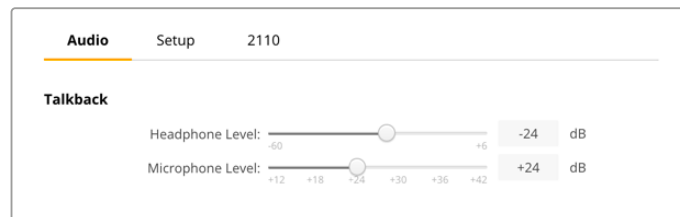
Additional settings available for the Blackmagic 2110 IP Mini BiDirect 12G converter include the following.

Audio Tab

Adjust headphone and microphone levels using the audio tab.

Talkback

Adjust the headphone and microphone levels for talkback by dragging the sliders left to decrease and right to increase. You can also adjust the volume using the buttons on the side of the converter.



Setup Tab

The setup tab has additional settings for camera control when connecting the converter to an ATEM switcher.

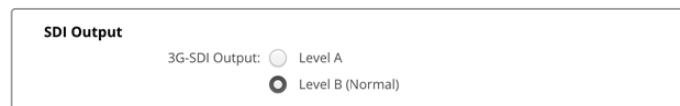
SDI Camera Control

To ensure CCU and tally data from the ATEM switcher is sent to the correct camera, the 'ATEM camera ID' number should be set to match the ATEM's input number.



2110 Tab

Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type.



Blackmagic 2110 IP Mini BiDirect 12G SFP

Blackmagic 2110 IP Mini BiDirect 12G converter is a bidirectional converter so you can transmit 12G-SDI to SMPTE ST 2110 IP streams and vice versa simultaneously. The SFP socket also supports 3G, 6G or 12G SFP modules for standard SDI over optical fiber.

Featuring tally light and talkback functions, this converter can handle both the SDI camera feed and the SDI program return in the one unit.



1 10G 2110 IP

Optical Fiber input supporting optical modules for 2110 10G Ethernet or 3G, 6G or 12G-SDI video.

2 IP Input Lock LED

The input lock LED will illuminate when locked to an optical SDI signal and flash when receiving a SMPTE 2110 IP signal.

3 USB-C

USB-C port for configuring ST 2110 streams and SFP module via Blackmagic Converters Setup utility and updating the internal software.

4 Power +12V

Blackmagic 2110 IP Mini BiDirect 12G SFP converters use optical fiber SFP modules so they need to be powered using an AC plug pack. The supplied power cable included features a locking connector to prevent disconnection. A small white LED light next to the USB-C port will illuminate when connected to a power source.

5 Tally

The tally indicator will illuminate red when connected to an ATEM switcher to indicate on air status.

6 12G-SDI Out

12G-SDI video output BNC connector.

7 SDI Input Lock LED

The SDI input lock LED will illuminate when locked to an incoming SDI signal.

8 12G-SDI In

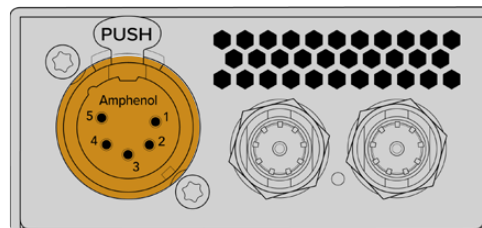
12G-SDI input BNC connector

9 Talkback

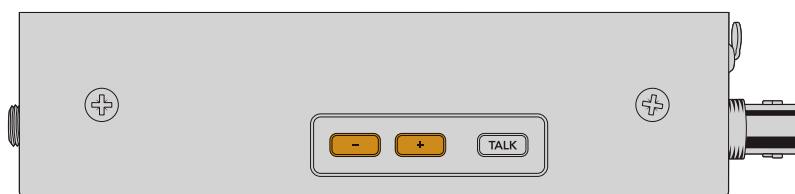
Connect an intercom headset equipped with a microphone into the 5 pin XLR socket on the side.

Talkback Controls

To use the talkback feature, plug an intercom headset equipped with a microphone into the talkback 5 pin XLR socket on the side of the converter.



Talkback controls on the side of the converter include a push to talk button and volume controls.



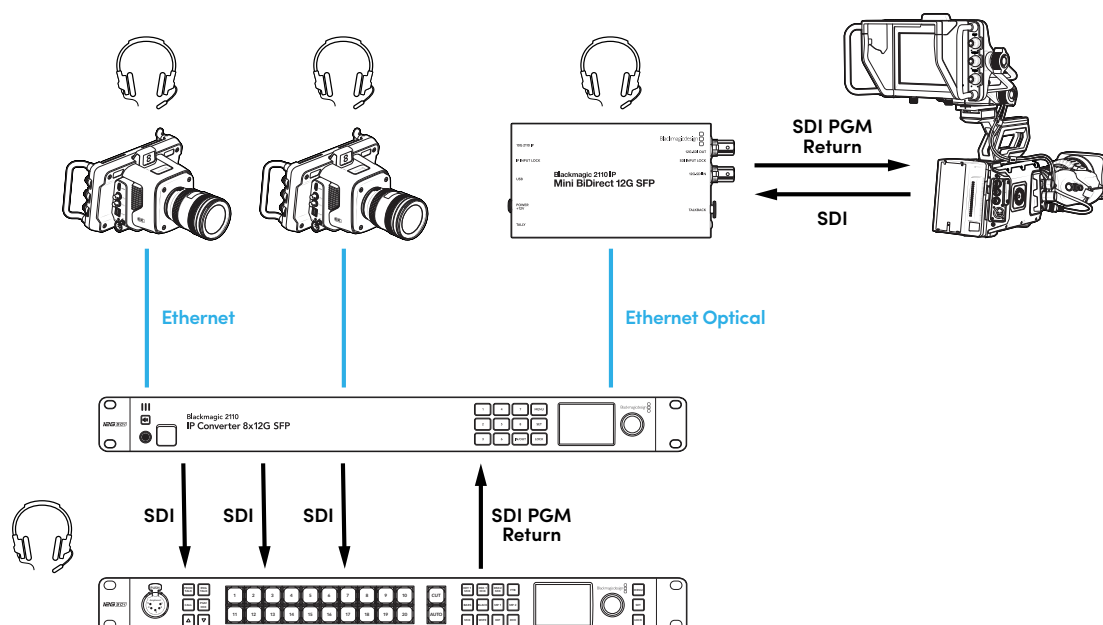
Decrease or increase the headset audio level by pressing the minus and positive volume control buttons

When using an intercom headset you can enable the microphone by pressing the 'talk' button. If you double press the 'talk' button, the mic stays on until you double press the button again.

To adjust the headset level press the plus and minus buttons. To adjust the microphone level, hold down the 'talk' button and press the plus or minus button.

Camera Control and Tally between SDI and 2110 IP

2110 IP Mini BiDirect 12G SFP supports tally and camera control data when connected to ATEM switchers and Blackmagic cameras. The following is an example of a workflow you can use.



Blackmagic Converters Setup Settings

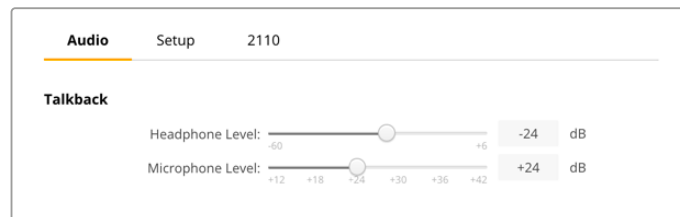
Additional settings available for the Blackmagic 2110 IP Mini BiDirect 12G SFP converter include the following.

Audio Tab

Adjust headphone and microphone levels using the audio tab.

Talkback

Adjust the headphone and microphone levels for talkback by dragging the sliders left to decrease and right to increase. You can also adjust the volume using the buttons on the side of the converter.



Setup Tab

The setup tab has additional settings for camera control when connecting the converter to an ATEM switcher.

SFP Module

Blackmagic 2110 IP Mini BiDirect 12G SFP converter is compatible with both Ethernet and SDI SFP modules. If you are using an SFP module, select between 'SDI Optical' and 'Ethernet Optical' to confirm the type of SFP in use.

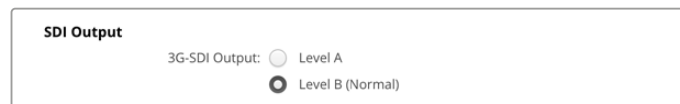
SDI Camera Control

To ensure CCU and tally data from the ATEM switcher is sent to the correct camera, the 'ATEM camera ID' number should be set to match the ATEM's input number.



2110 Tab

Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type.

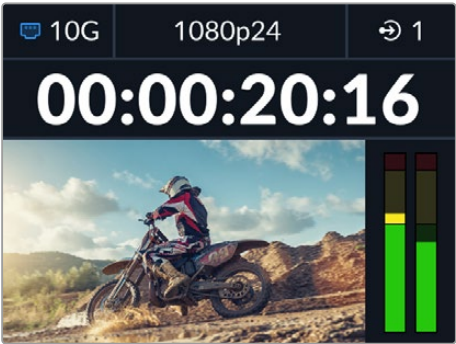


Blackmagic 2110 IP Converter Models

When using Blackmagic 2110 IP Converters any information you need to know is displayed on the unit itself via the LCD home screen and the buttons and menu dial let you quickly change settings. This section of the manual describes each feature on the front panel and what it is used for.

Home Screen

Icons displayed above the video preview indicate the current status of the Blackmagic 2110 IP Converter. Below is a description of the information displayed.



Network Status

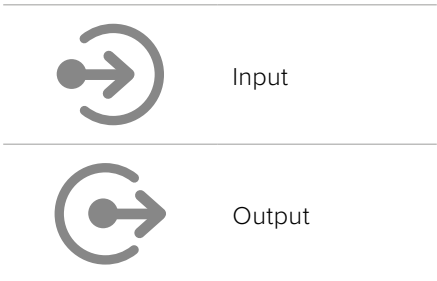
 10G	Connected via 10G Ethernet point to point or via a network switch
 N/C	Network not connected

Video Standard

Blackmagic 2110 IP Presentation Converters always displays the user configured output standard. All other models display the current input or output video standard up to 2160p60.

Input or Output Indicator

Displays the current input or output. On some converter models you can switch between input and output mode by double pressing any of the numbered buttons or pressing a dedicated ‘in/out’ button. The numbered button will also illuminate when selected. Input and output labels can be edited using the Converters Setup utility.



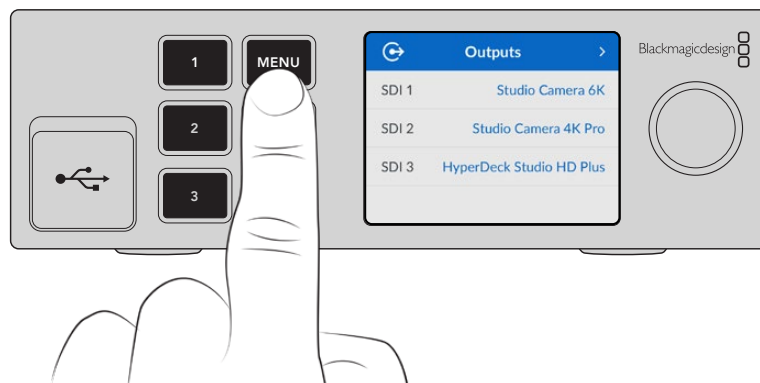
Audio Meters

Displays the audio levels of the selected input or output. Meter type can be selected via the audio menu with options including VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

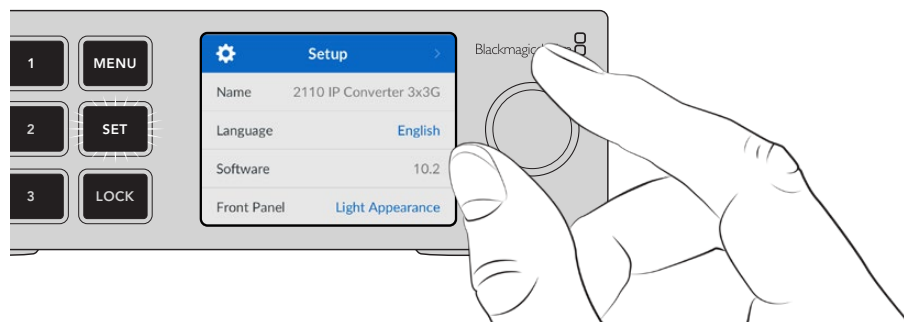
Some Blackmagic 2110 IP Converter models display additional information on the front panel specific to the model. For details on what additional information may be shown, refer to the section for your converter in this manual.

Using the LCD Menu

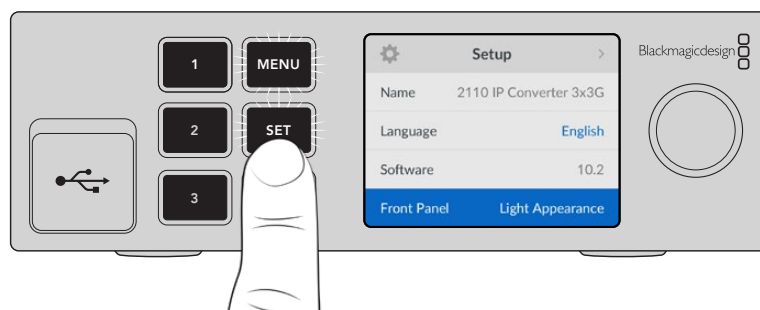
Press the 'menu' button on the front panel to open the menu settings.



Turn the menu dial to navigate between the menu options and press 'set' to select a submenu.



Using the menu dial, select the submenu option and press 'set' to confirm.



Press 'menu' to step back through the options and return to the home screen.

Settings

Blackmagic 2110 IP Converters have some common settings between models that you can select and modify using the front panel LCD menu.

Audio Menu

The built in LCD shows audio meters for embedded audio channels. You can select to display PPM or VU Meters. To change your meter type, expand the menu setting and select your preferred audio meter display from the options from VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

Audio Meters	
VU (-18dBFS)	✓
VU (-20dBFS)	
PPM (-18dBFS)	
PPM (-20dBFS)	

Setup Menu

The setup menu contains settings including language selection, date and time options, network settings and multicasting output settings.

Setup	
Name	2110 IP Converter 3x3G
Language	English
Software	10.2
Front Panel	Light Appearance

Name

When more than one Blackmagic 2110 IP Converter is on the network, you may wish to give them discrete names. This can be done via Blackmagic Converters Setup.

Language

Blackmagic 2110 IP Converters support 13 languages, including English, Chinese, Japanese, Korean, Spanish, German, French, Russian, Italian, Portuguese, Turkish, Ukrainian and Polish.

To select the language:

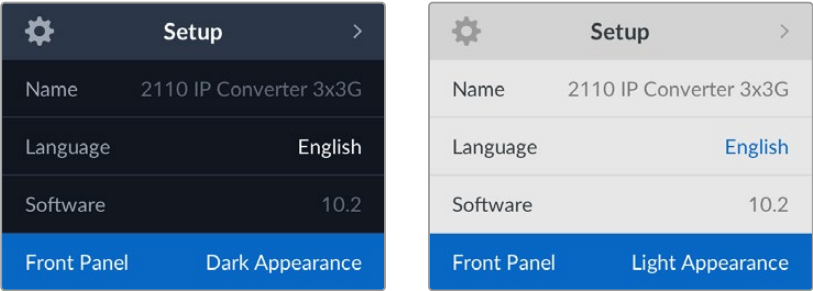
- 1 Press the 'menu' button and rotate the menu dial to the setup menu and press 'set' to select.
- 2 Rotate the menu dial to highlight your preferred language and press 'set'.
- 3 Once selected, you will automatically return to the setup menu.

Software

Displays the current software version.

Front Panel

Set your Blackmagic converter’s front panel to ‘light’ mode for a brightly illuminated LCD. Use ‘dark’ mode for dimly lit environments where a bright LCD may be distracting, for example multiple converter units mounted in a rack in a production facility.



Date and Time

Setting the date and time correctly ensures your Blackmagic 2110 IP Converter has the same time and date information as your network and also prevents conflicts that can occur with some network systems.

Date and Time	
Auto Set Date and Time	On
NTP	time.cloudflare.com
Date	08/08/2023
Time	07:06
Time Zone	GMT +10:00

Auto Set Date and Time

To set your date and time automatically select set the auto set date and time option to ‘on’. When setting the date and time automatically, the converter will use the network time protocol server set in the NTP field. To override the date and time manually, select ‘off’.

NTP

The default NTP server is time.cloudflare.com, but you can also manually enter an alternate NTP server using Blackmagic Converters Setup. For more information on setting the NTP server, refer to Blackmagic Converters Setup later in this manual.

Date

To enter the date manually, select the date field and press set. Using the menu dial you can select the day, month and year.

Time

To adjust the time, select time and press set. Use the menu dial to adjust the hours and minutes. The internal clock is a 24 hour clock.

Network Settings

Location

Displays the DNS registry name for the converter over the network. The location is based on the name set in the setup tab of the Blackmagic Converter Setup utility. It's worth noting that numeric prefixes will be ignored.

MAC Address

Displays the MAC address for the converter. The MAC address is a hardware identifier that is unique to each Ethernet port. It is important when setting up network security systems that restrict access to devices based on their MAC address.

Network	
Location	CourtSide-IP.local
MAC Address	00-1B-63-84-45-E6
Protocol	Static IP
IP Address	192.168.24.100
Subnet Mask	255.255.255.0
Gateway	192.168.24.1
Primary DNS	8.8.8.8
Secondary DNS	8.8.4.4

Protocol

Your Blackmagic 2110 IP Converter is shipped set to static IP, so once connected, you can assign an IP address. To change to DHCP, highlight the protocol option and press 'set'.

IP Address, Subnet Mask and Gateway

When Static IP is selected you need to enter your network details manually.

To change the IP address:

- 1 Rotate the menu dial to highlight 'IP address' and press the flashing 'set' button on your converter's front panel.
- 2 With a set of numbers underlined, press the 'set' button to highlight and rotate the menu dial clockwise to increase or counter clockwise to decrease.
- 3 Press 'set' to confirm the change and move to the next value.

When you have finished entering your IP address, you can repeat these steps to adjust the subnet mask and gateway. Once finished, press the flashing 'menu' button to exit and return to the home screen.

Primary and Secondary DNS

These settings display the primary and secondary domain name system servers currently being used.

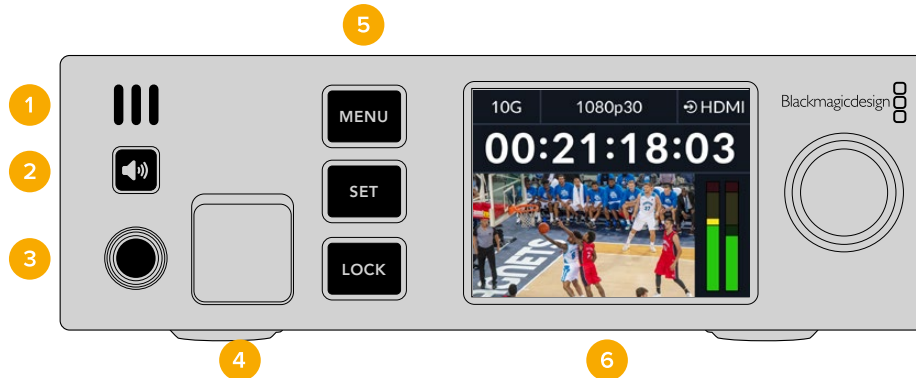
Factory Reset

Highlight 'factory reset' in the setup menu to restore your Blackmagic 2110 IP Converter to factory settings. Once you press 'set', you will be prompted to confirm your selection.

Blackmagic 2110 IP UpDownCross 12G

Blackmagic 2110 IP UpDownCross 12G is a powerful standards converter that gives you the ability to convert any SD, HD or Ultra HD video to any other video standard with up, down, or cross conversion via 12G-SDI, HDMI 4K and SMPTE-2110 IP connections.

The converter also includes an LCD, speaker and headphone connection.



1 Front Panel Speaker

The built in mono speaker on the front panel lets you check your audio levels directly from the front panel. To listen through the speaker press the speaker button.

2 Speaker Button

Blackmagic 2110 IP UpDownCross 12G features a speaker and headphone port on the front panel for easy audio monitoring. To listen through the speaker, press and hold the speaker button. Double press the speaker button to keep the speaker enabled. Press again to disable. While holding the button you can rotate the menu dial to adjust the volume.

As you adjust, a volume indicator will appear on the LCD home screen, giving you precise control over the levels. If you have headphones connected, rotating the menu dial will adjust the headphone volume instead of the speaker volume.

3 Headphone Port

Connect a set of headphones to the 1/4" headphone jack on the front panel to listen to the audio. To adjust the headphone levels press the speaker button and turn the menu dial.

4 Webcam Video Out

Front panel USB-C connection for webcam output. It is also used for updates and configuring settings via the Blackmagic Converters Setup utility.

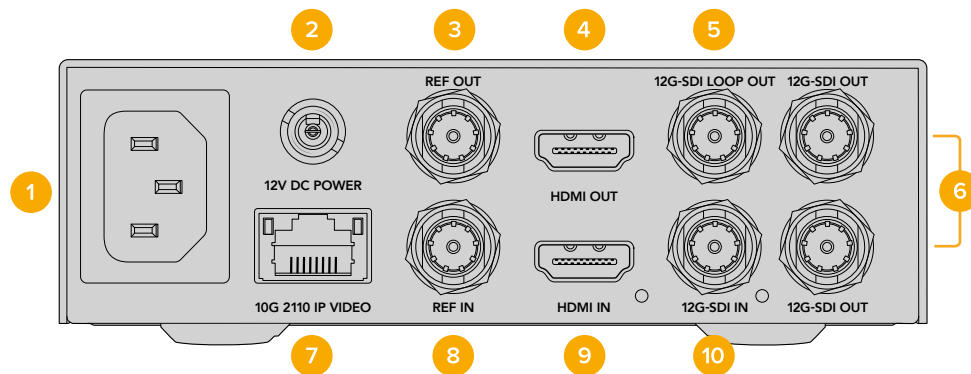
5 Menu Buttons

Use the menu and set buttons along with the menu dial to configure settings. The buttons can also be locked by holding down the lock button until the button label illuminates red. To unlock the buttons simply hold the lock button down again. Additional information on using the LCD menu including using the buttons and menu dial is earlier in this manual.

6 LCD

The LCD shows the home preview screen with status icons and LCD menu.

Rear Panel



- 1 Power**
IEC C14 connector for 90 – 240 volt AC power supply.
- 2 Power +12V**
Blackmagic 2110 IP UpDownCross 12G converters can be powered via an AC plug pack. If your power supply has a locking ring, secure the connection by tightening the connector to the converter. This locks the power cable in place to prevent accidental disconnection.
- 3 Ref Out**
Reference output BNC connector. Outputs the same rate as the reference input.
- 4 HDMI Out**
HDMI connection for up to 2160p60 Ultra HD.
- 5 Program Loop Output**
12G-SDI program loop output BNC connector. This output lets you loop the program input source to other SDI equipment, for example SmartView monitors and HyperDeck disk recorders.
- 6 12G-SDI Outputs**
Two 12G-SDI video output BNC connectors for connecting two converted SDI video outputs to other SDI equipment, for example ATEM switchers and HyperDeck disk recorders.
- 7 10G Ethernet 2110 IP Video**
Blackmagic 2110 IP UpDownCross 12G connects either point to point with another Blackmagic 2110 IP converter or through a managed 10G IGMP network switch. We recommend using CAT 6A Class E or F network cables for longer cable runs.
- 8 Ref In**
Reference input BNC connector.
- 9 HDMI In**
HDMI in connection for up to 2160p60 Ultra HD.
- 10 12G-SDI Input**
12G-SDI video input BNC connector for plugging in SDI video to be converted to 2110 IP video or HDMI. The LED light to the right of the 12G-SDI input will illuminate when a valid signal is detected.

LCD Menu Settings

Blackmagic 2110 IP UpDownCross 12G features additional settings via the front panel LCD menu for setting the input and output standards.

Video	
Input	
Video Input	Auto
Video Standard	2160p60
Output	
Enable Standards Conversion	On
Video Standard	1080p30

Video Menu

Use the video menu to select the video input and output standard along with routing 2110 streams and generating test patterns.

Input

Select which input you wish to convert from SDI, HDMI or 2110. The converter defaults to 'auto' on shipping, and will select the first input the converter detects.

Video Input	
Auto	✓
SDI	
HDMI	
2110	

Output

Using the output menu you can turn the converter on or pass through the signal without any standards conversion.

Enable Standards Conversion

To turn the output conversion on or off use the menu dial to highlight the 'enable standards conversion' setting and press the set button to toggle the setting between 'off' and 'on'.

Output	
Enable Standards Conversion	On
Video Standard	1080p30

Video Standard

Once the output converter is on, you can set the video standard for the converter. This will automatically adjust the video input to match the selected standard.

To set the video standard:

- 1 Rotate the menu dial to select 'video standard' and press the flashing 'set' button.
- 2 In the video standard menu rotate the menu dial to select the standard for your production from the list of SD, HD, 2K SDI, Ultra HD and 4K DCI options and press the 'set' button. This will select the standard and return you to the video menu.

Video Standard	
1080p24	
1080p25	
1080p29.97	
1080p30	✓

2110

Use the 2110 receiver submenu to route incoming ST 2110 sources to the SDI and HDMI outputs on the rear of the converter.

2110	
2110 Receiver	Camera 1
2110 Sender	UpDownCross

You can also route your sources and destinations using an NMOS controller. This will provide flexibility to subscribe to the video, audio or ancillary essences.

To route an ST 2110 stream to your Blackmagic 2110 IP UpDownCross 12G:

- 1 With the 2110 receiver option highlighted press the 'set' button.
- 2 Available ST 2110 streams will appear in the list. Rotate the menu dial to select a stream and press 'set'.

2110 Receiver	
None	
Camera 1	✓
Camera 2	
Edit 1	

- 3 A tick will appear confirming your selection.

To stop an incoming stream, select 'none' from the list.

Sender

The sender submenu displays the label for the 2110 output.

SDI Output

Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type.

SDI Output	
3G-SDI Output	Level A

HDMI Output

You can choose to clip the HDMI output using the video menu. To ensure your HDMI output stays within legal broadcast levels, select 'normal levels'. To allow video levels to conform to the SDI input, select 'illegal levels'. We recommend using normal levels.

HDMI Output	
Clip HDMI Output	Normal Levels

Audio Menu

Using the audio menu on the front panel LCD you can select the audio meter type, adjust the headphone and speaker levels and choose the HDMI audio output mapping.

Monitoring

The built in LCD shows PPM or VU audio meters for embedded audio channels. Click the audio meters menu setting and select your preferred audio meter display from the options including VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

Audio	
Monitoring	
Audio Meters	VU (-20dBFS)
Headphone Level	25%
Speaker Level	25%

Adjust the headphone and speaker levels via the settings. Once headphone or speaker level is selected, rotate the dial to adjust the level lower or higher. Press the 'menu' button to return to the audio menu.

HDMI Output Mapping

For 5.1 surround, select your desired audio mapping from either SMPTE or consumer standard.

HDMI Output Mapping	
5.1 Surround	SMPTE Standard

Setup Menu

Settings common to all Blackmagic 2110 IP converters can be found earlier in this manual and include name, language, date and time as well as network settings.

Blackmagic Converter Setup Settings

In Blackmagic Converters Setup, additional settings are available for the Blackmagic 2110 IP UpDownCross 12G. These settings can be changed when the unit is connected to a computer via USB. They can also be modified on a computer running the setup utility anywhere on your network. However, to enable network access, you must allow utility administration via Ethernet.

To do this, connect your converter to your computer via USB, then open Blackmagic Converters Setup and go to the 'setup' tab. Select 'via USB and Ethernet' under the 'allow utility administration' setting, then click 'save'

The 'setup' tab and '2110' tab are described in greater detail earlier in this manual.

Video Tab

The video tab features settings for configuring the video standard and selecting your input and output options.

Video Input

Click the radio button to select the input you want to convert. The current video standard of the selected input will display in the input 'video standard' field.

The screenshot shows the '2110 IP Converter UpDownCross 12G' interface. At the top, there are four tabs: 'Video', 'Audio', 'Setup', and '2110'. The 'Video' tab is selected. Under the 'Input' section, there are four radio buttons for 'Video Input': 'Auto' (selected), 'SDI', 'HDMI', and '2110'. Below these, the 'Video Standard' is displayed as '2160p59.97'.

Output

Tick the checkbox to convert the selected video input to the standard selected using the video standard menu.

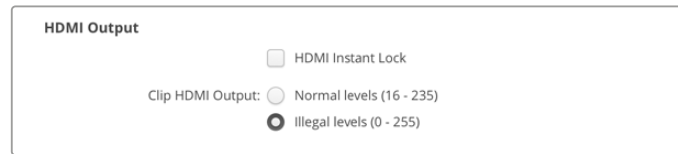
The screenshot shows the 'Output' section. There is a checkbox labeled 'Enable Standards Conversion' which is checked. Below it, the 'Video Standard' is set to '1080p60' in a dropdown menu.

SDI Output

Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type.

The screenshot shows the 'SDI Output' section. There are two radio buttons for '3G-SDI Output': 'Level A' and 'Level B (Normal)'. The 'Level B (Normal)' option is selected.

HDMI Output



The screenshot shows the 'HDMI Output' settings menu. It includes a toggle for 'HDMI Instant Lock' which is currently off. Below it, the 'Clip HDMI Output' section has two radio button options: 'Normal levels (16 - 235)' and 'Illegal levels (0 - 255)'. The 'Illegal levels' option is selected.

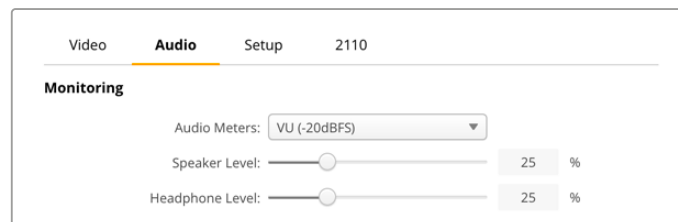
You can choose to clip the HDMI output using the video tab. To ensure your HDMI output stays within legal broadcast levels, select 'normal levels'. To allow video levels to conform to the SDI input, select 'illegal levels'. We recommend using normal levels.

Audio Tab

The audio tab features settings for monitoring audio via the converter's speaker and headphone port along with mapping the HDMI audio output.

Monitoring

The built in LCD shows audio meters for embedded audio channels. You can select to display PPM or VU Meters. Click the audio meters menu setting and select your preferred audio meter display from the options including VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

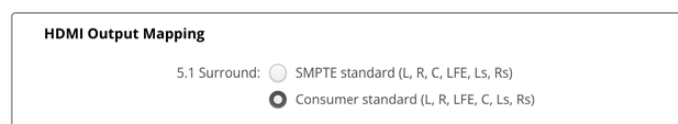


The screenshot shows the 'Audio' tab in the settings menu. At the top, there are tabs for 'Video', 'Audio' (which is selected), 'Setup', and '2110'. Under the 'Monitoring' section, there is a dropdown menu for 'Audio Meters' set to 'VU (-20dBFS)'. Below this are two sliders: 'Speaker Level' and 'Headphone Level', both set to 25%.

Adjust the front panel speaker and headphone levels using the slider.

HDMI Output Mapping

For 5.1 surround, select your desired audio mapping from either SMPTE or consumer standard.



The screenshot shows the 'HDMI Output Mapping' settings menu. It features a section for '5.1 Surround' with two radio button options: 'SMPTE standard (L, R, C, LFE, Ls, Rs)' and 'Consumer standard (L, R, LFE, C, Ls, Rs)'. The 'Consumer standard' option is selected.

2110 Tab

The 2110 tab includes a setting for selecting the number of embedded audio channels.

2110 Audio

Select the number of embedded audio channels using the menu.



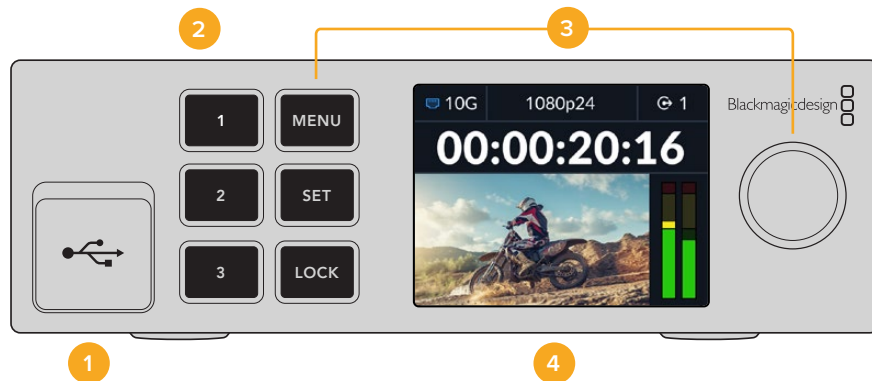
The screenshot shows the '2110 Audio' settings menu. It contains a dropdown menu for 'Embedded Audio Channels' which is currently set to '16 Channels'.

Installing into a Blackmagic Universal Rack Shelf

Your Blackmagic 2110 IP UpDownCross 12G shares a compatible form factor with many other Blackmagic Design units that can be mounted in a rack. The 'Blackmagic Universal Rack Shelf' section later in this manual shows how to install the converter into the rack shelf.

Blackmagic 2110 IP Converter 3x3G

Blackmagic 2110 IP Converter 3x3G is a bidirectional 3G-SDI converter that lets you simultaneously convert SDI to IP and IP to SDI via 3 independent 3G-SDI inputs and outputs and a fast 10G Ethernet connection. Plus each channel has independent SDI inputs and SDI outputs, so you could even connect to 6 completely different SDI devices. All 3G-SDI inputs feature loop outputs so you can install the converter in line within existing SDI systems. There's also a reference output, timed to the 2110 PTP clock! Blackmagic 2110 IP Converter 3x3G includes an elegant front panel with a color LCD for monitoring, menus and diagnostics. You can even route IP inputs from the panel.



1 USB-C

USB-C port for updates and configuring via Blackmagic Converters Setup utility.

2 Input and Output Buttons

The numbered buttons on the front panel let you select quickly between inputs and outputs. To switch between input and output mode, double press any of the numbered buttons. To see which mode you are in, check the icon on the home screen. The button will illuminate when selected.

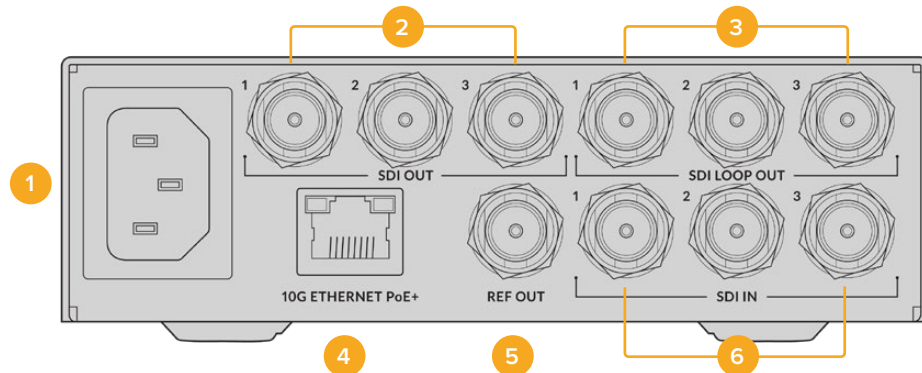
3 Menu Buttons

Use the menu and set buttons along with the menu dial to configure settings. The buttons can also be locked by holding down the lock button until the button label illuminates red. To unlock the buttons simply hold the lock button down again. More information on using the LCD menu follows.

4 LCD

The LCD shows the home preview screen with status icons and LCD menu.

Rear Panel



- 1 Power**
IEC C14 connector for 90 – 240 volt AC power supply.
- 2 SDI Out**
3G-SDI video output BNC connectors.
- 3 SDI Loop Out**
3G-SDI video loop output BNC connectors.
- 4 10G Ethernet PoE+**
Blackmagic 2110 IP Converter 3x3G can be connected point to point or via a managed 10G IGMP network switch.
- 5 Ref Out**
Your Blackmagic 2110 IP Converter 3x3G features a stabilized video reference output corresponding to standard definition black burst and high definition tri-sync standards. For more information on selecting your reference output, refer to the 'settings' section earlier in this manual.
- 6 SDI In**
3G-SDI video input BNC connectors.

LCD Menu Settings

Blackmagic 2110 IP Converter 3x3G features additional settings via the front panel LCD menu to subscribe to available ST 2110 streams.

Outputs Menu

Use the output menu to route incoming ST 2110 sources to the SDI outputs on the rear of the Blackmagic 2110 IP Converter 3x3G.

Outputs	
SDI 1	Studio Camera 6K
SDI 2	Studio Camera 4K Pro
SDI 3	HyperDeck Studio HD Plus

You can also route your sources and destinations using an NMOS controller. This will provide flexibility to subscribe to the video, audio or ancillary essences.

To route an ST 2110 stream to the SDI output on your Blackmagic 2110 IP Converter 3x3G:

- 1 With the 'outputs' menu selected press the 'set' button.
- 2 Use the menu dial to select which SDI output you want to use and press the 'set' button.
- 3 Available ST 2110 streams will appear in the list. Rotate the menu dial to select which stream you want and press 'set'.

SDI 1 Out	
None	
SDI 1	✓
SDI 2	
SDI 3	

- 4 Press the menu button repeatedly to return to the preview screen.
- 5 Now from the home screen make sure the same output is selected via the numbered buttons.

To stop an incoming stream, select 'none' from the list.

Setup Settings

2110 Multicast Output

Each streaming output is assigned a different multicast output address.

2110 Multicast Output	
Stream 1 Address	224.168.24.101
Stream 2 Address	224.168.24.102
Stream 3 Address	224.168.24.103

This setting is similar to an IP address and lets other SMPTE 2110 IP equipment identify the stream on your network. Each stream from your converter requires its own multicast output address. NMOS controllers will also display the audio and ancillary data multicast addresses associated with each source.

Reference Output

The dedicated reference out BNC connection on the rear lets you set the timing for other devices connected to your Blackmagic 2110 IP Converter 3x3G. You can set your output standard to SD or HD using the list selection.

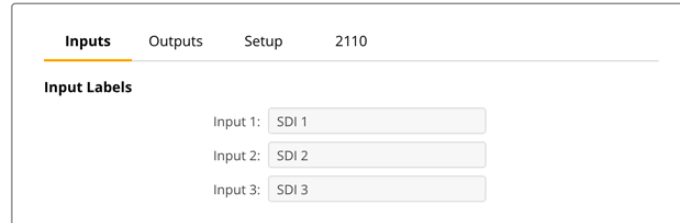
Reference Output	
Output Standard	1080p30

Blackmagic Converters Setup Settings

In Blackmagic Converters Setup there are additional settings available for Blackmagic 2110 IP Converter 3x3G models to set labels for the inputs and outputs and to save label sets.

Inputs

Use the inputs tab to label the connected SDI inputs. The NMOS protocol broadcasts these labels to make identifying them via an NMOS controller or other Blackmagic 2110 IP Converter 3x3G easy.



The screenshot shows the 'Inputs' tab selected in the utility. The 'Input Labels' section contains three input fields: 'Input 1: SDI 1', 'Input 2: SDI 2', and 'Input 3: SDI 3'.

Outputs

Use the outputs tab to label the SDI outputs. For example, if SDI output 2 is connected to a HyperDeck Studio HD Plus, enter 'HyperDeck Studio HD Plus' in the output 2 field. If you are using an NMOS controller to route your sources and destinations, you can select 'HyperDeck Studio HD Plus' from the destination selection tab.

Labels

You can also save or load label sets using the cog icon in the lower left corner of the utility.



The screenshot shows the 'Outputs' tab selected in the utility. The 'Output Labels' section contains three output fields: 'Output 1: SDI 1', 'Output 2: SDI 2', and 'Output 3: SDI 3'.

To save a label set, click on the save option and navigate to a location to save the file.

To load a label set, click on the load option and navigate to the location of your label set. Once selected, click open.

Setup Tab

Additional settings available for the Blackmagic 2110 IP UpDownCross 12G include the following.

Reference Output

To change the reference output for the ref out BNC connector on the rear of the converter, select the reference from the menu.



The screenshot shows the 'Reference Output' section with a dropdown menu labeled 'Output Standard:' set to '1080p24'.

Installing into a Blackmagic Universal Rack Shelf

Your Blackmagic 2110 IP Converter 3x3G shares a compatible form factor with many other Blackmagic Design units that can be mounted in a rack. The 'Blackmagic Universal Rack Shelf' section later in this manual shows how to install the converter into the rack shelf.

Blackmagic 2110 IP Presentation Converter

Blackmagic 2110 IP Presentation Converter has all the features you need when doing live production of a seminar or conference where you have presenters with slide shows, and you want to make their slides available as a video source into a switcher. Plus, these venues and auditoriums often have projectors installed in the ceiling so the converter also has an HDMI output that connects to the projector. The projector HDMI output can be selected to the video input, or even the program return from the 2110 video connection.

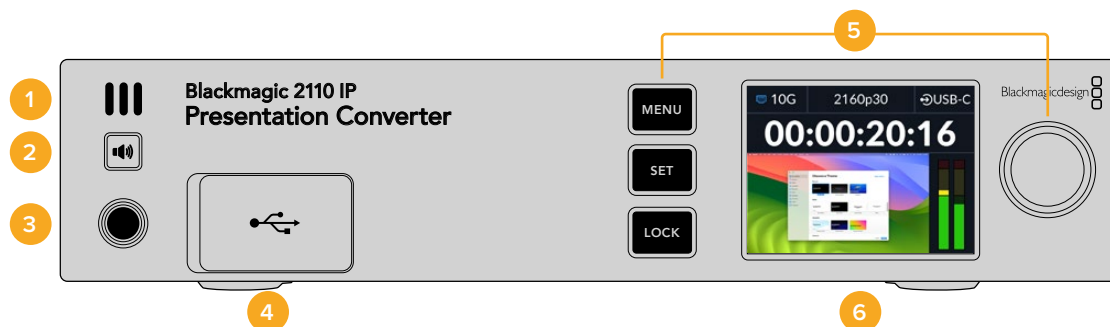
The video input features a standards converter so any computer that's connected will be converted to the video standard you set the converter to. This means you don't need to get all the presenter's slide shows to put on your own AV computer as the presenters can just walk up with their computer and plug in. No matter what crazy video standard the computer outputs, the Blackmagic 2110 IP Presentation Converter will standards convert it to the setting on the converter. You always get the right video standard.

Plus, if the presenter plugs into the USB-C connection, the Blackmagic 2110 IP Presentation Converter will get video from their computer and also trickle charge their computer so the battery does not run flat. Blackmagic 2110 IP Presentation Converter also has an HDMI input, and the first input connected will be the input selected. But you can even change this in the menu between auto, HDMI and USB-C settings.

Often projectors in auditoriums can be old and don't support the latest Ultra HD video standards. Blackmagic 2110 IP Presentation Converter has a second standards converter just for this HDMI output so you can connect to the projector and it should just work. You can also select the HDMI video output to be the 2110 IP video return feed, so this means a switcher operator can manage the projector content, such as putting up a title slide when changing between presenters and they are disconnecting and connecting a new computer. Then an aux output of the switcher can change back the slides and the audience always sees good content on the projector.

There are also XLR inputs for microphones and these include phantom power. There is also an audio mixer in the Blackmagic 2110 IP Presentation Converter so you can blend the computer audio and the XLR microphones. The XLR inputs can be selected to 2 mono inputs, or combined as a single stereo input.

If powered speakers are installed near the presenter, there are also balanced XLR audio outputs you can use to connect them. They include an audio delay setting to allow you to compensate for any video delays in projectors and televisions.



1 Front Panel Speaker

The built in mono speaker on the front panel lets you check your audio levels directly from the front panel. To listen through the speaker press the speaker button.

2 Speaker Button

Blackmagic 2110 IP Presentation Converter features a speaker and headphone port on the front panel for easy audio monitoring. To listen through the speaker, press and hold the speaker button. Double press the speaker button to keep the speaker enabled. Press again to disable. While holding the button you can rotate the menu dial to adjust the volume. As you adjust, a volume indicator will appear on the LCD home screen, giving you precise control over the levels. If you have headphones connected, rotating the menu dial will adjust the headphone volume instead of the speaker volume.

3 Headphone Port

Connect a set of headphones to the 1/4" headphone jack on the front panel to listen to the audio. To adjust the headphone levels press the speaker button and turn the menu dial.

4 PC Video In

Front panel USB-C video input port with 45W connection for charging capability. Also used for updates and configuring settings via the Blackmagic Converters Setup utility.

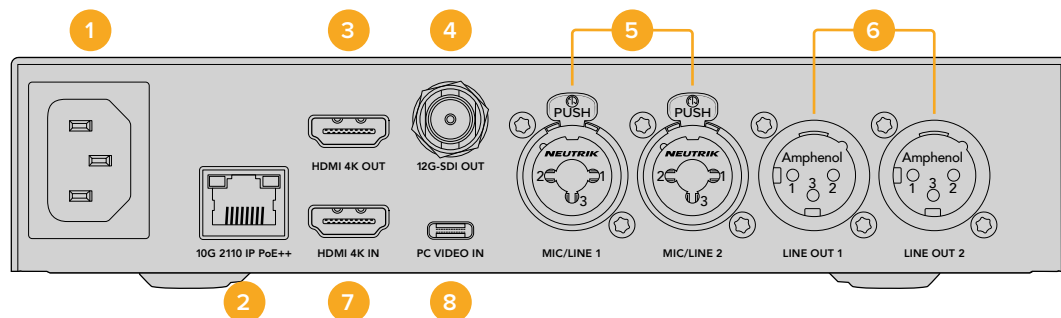
5 Menu Buttons

Use the menu and set buttons along with the menu dial to configure settings. The buttons can also be locked by holding down the lock button until the button label illuminates red. To unlock the buttons simply hold the lock button down again. Additional information on using the LCD menu including using the buttons and menu dial is earlier in this manual.

6 LCD

The LCD shows the home preview screen with status icons and LCD menu.

Rear Panel



1 Power

IEC C14 connector for 90 – 240 volt AC power supply.

2 10G Ethernet PoE++

Blackmagic 2110 IP Presentation Converter connects either point to point with another Blackmagic 2110 IP Converter or through a managed 10 IGMP network switch. With PoE++ support, connecting it to a PoE++ compatible switch or hardware like the Blackmagic 2110 IP Converter 4x12G PWR powers both the converter and any computer connected via USB-C, eliminating the need for separate power cables.

3 HDMI 4K Out

HDMI connection for up to 2160p60 Ultra HD to connect to projectors and monitors.

4 12G-SDI Out

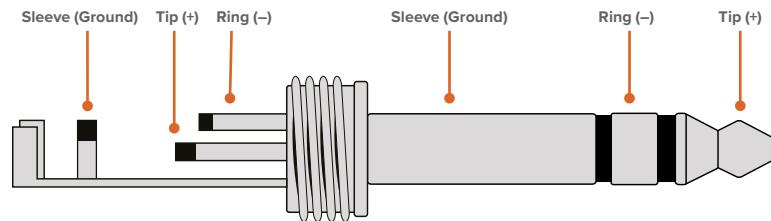
12G-SDI video output BNC connector.

5 Mic/Line In

2 x combination 3-pin XLR / TRS 1/4 inch jack connectors, switchable between line and mic level with support for +48V phantom power.

Your converter's 1/4" jacks let you connect balanced analog audio via TRS connectors. TRS stands for Tip, Ring, Sleeve which refers to the three contacts of the jack connector.

The illustration in this section displays the wiring pins inside the male 1/4" jack connector if you want to make your own cables.



The illustration shows the jack connector's positive, negative and ground wiring pins. If you need to reverse the polarity of your analog audio cable to suit your audio equipment, you can simply swap the positive and negative wiring on the tip and ring pins.

6 Line Level Analog Audio Out

2 channels of professional balanced analog audio with 3-pin XLR connectors.

7 HDMI 4K In

HDMI in connection for up to 2160p60 Ultra HD.

8 PC Video In

Rear USB-C video input with 45W connection with charging capability. Can also be used for updates and configuring settings via the Blackmagic Converters Setup utility.

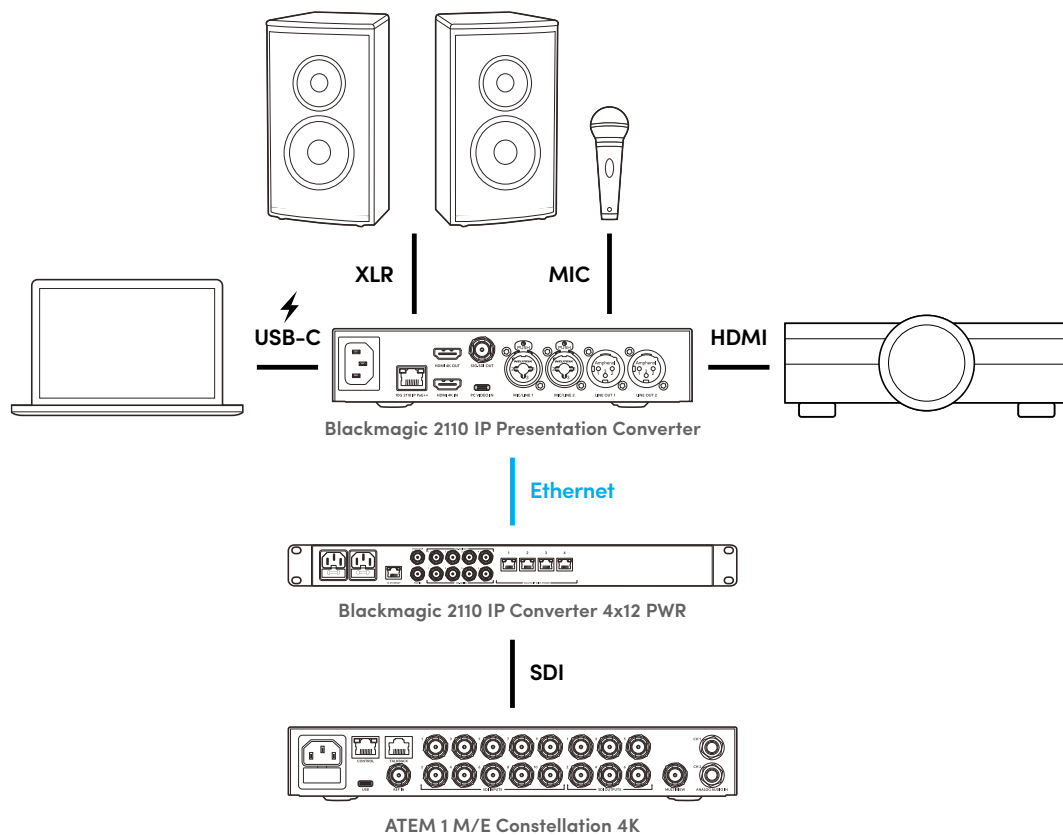
Using A Presentation Converter with Program Return

The example illustration in this section shows the connections used when using the program return feed from an ATEM switcher. As you can see, the projector would be fed from an output of the switcher via the 2110 IP video connection and Blackmagic 2110 IP Converter 4x12G PWR. The switcher is connected to the video input on channel 1 of the converter.

If you connect the switcher output to the PGM input of the Blackmagic 2110 IP Converter 4x12G PWR then all 4 2110 IP video products connected to the Ethernet connections will get the same video program return. However, any connection on the dedicated SDI inputs will override the PGM SDI input, so it's best to think of the PGM input as a distribution amplifier for SDI that's disconnected when a video input is plugged into the dedicated SDI input. It reduces the amount of cabling you need between the switcher and the converter.

Meanwhile, the video from the connected laptop computer is sent via the 2110 IP video connection to the Blackmagic 2110 IP Converter 4x12G PWR and output on the channel 1 SDI output connector. This is connected to your switcher's SDI input. It's worth noting that in this diagram we are using the USB-C cable to the computer as it's a nicer thin cable and it will power the computer, but you can also use HDMI from any HDMI source such as a computer or a camera.

In this diagram we also show some powered speakers that are connected to the XLR analog audio outputs and there is an adjustable audio delay that can be used to match any video delay on the projector. The diagram also shows a microphone that's connected to the XLR analog audio input. The analog audio inputs can be changed to mic or line level and they also support phantom power.



LCD Menu Settings

Blackmagic 2110 IP Presentation Converter’s LCD menu features additional settings for adjusting video and audio settings.

Video

Using the ‘video’ menu, you can select your input and outputs for the Presentation Converter.

 Video >	
2110 Receiver	ATEM Cons 4K
Video Standard	2160p30
Video Input	Auto
HDMI Output	USB-C
Clip HDMI Output	Normal Levels
SDI Output	2110 Receiver
3G-SDI Format	Level A

2110 Receiver

Use the 2110 receiver submenu to route incoming ST 2110 sources to the outputs on the rear of the Blackmagic 2110 IP Presentation Converter.

You can also route your sources and destinations using an NMOS controller. This will provide flexibility to subscribe to the video, audio or ancillary essences.

To route an ST 2110 stream to your Blackmagic 2110 IP Presentation Converter:

- 1 With the ‘2110 receiver’ option selected press the ‘set’ button.
- 2 Available ST 2110 streams will appear in the list. Rotate the menu dial to select a stream and press ‘set’.

2110 Receiver
None
ATEM 1 M/E Constellation ✓
Studio Camera 4K Pro
Studio Camera 6K

- 3 A tick will appear confirming your selection.

Video Standard

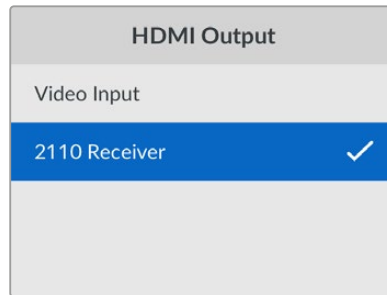
When you first start Blackmagic 2110 IP Presentation Converter you will be prompted to select your video standard. Choosing the same standard as your connected projector will set the SDI and HDMI output to match. However, the converter features two standards converters so you can match both the input and output standards without having to adjust your computer display or projector settings.

Video Input

Choose the video input connection for the connected laptop between HDMI and USB-C or set to 'auto' to allow the converter to auto detect. Using the USB-C connection via the front or rear panel will charge the laptop at the same time.

HDMI Output

You can select what you want to view on the HDMI output using the submenu to select between the video input or 2110 receiver. Selecting the video input will extend the laptop display to the HDMI output. If you select 2110 receiver you will see the subscribed ST 2110 stream.



Clip HDMI Output

To ensure your HDMI output stays within legal broadcast levels, select 'normal levels'. To allow video levels to conform to the SDI input, select 'illegal levels'. We recommend using normal levels.

SDI Output

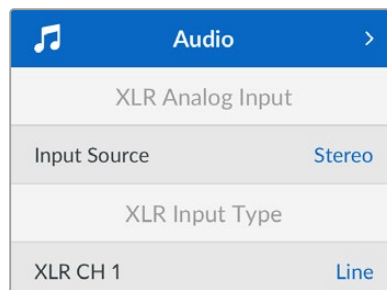
You can connect the 12G-SDI output to various equipment including switchers, recorders and monitors with the flexibility of displaying either the extended display of the connected laptop or the subscribed ST 2110 stream.

3G-SDI Format

Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type.

Audio

Using the audio menu on the front panel LCD you can select audio inputs, output levels and monitoring options.



XLR Analog Input

Select independent mono or stereo options for the analog XLR input. Use stereo if you have a single microphone or stereo microphone input, or independent mono for two microphones.

XLR Input Type

Blackmagic 2110 IP Presentation Converter features two combination XLR/TRS inputs on the rear.

XLR Input Type	
XLR CH 1	Line
Mic Gain Level	+30dB
Phantom Power	Off
XLR CH 2	Mic
Mic Gain Level	+48dB
Phantom Power	On

Select 'mic' or 'line' XLR input type for 'XLR Ch 1'. If you select 'line' there are no further settings required. If you select 'mic' you can adjust the mic gain level and turn phantom power 'on' or 'off' using the menu and set buttons and menu dial.

CH 1&2 Input Mixer

Input mixer settings let you mix the combo XLR inputs with the video input.

CH 1 & 2 Input Mixer	
Video Input	+3.0dB
XLR Input CH 1 & 2	+2.0dB
XLR CH 2	+15dB

To adjust the audio level of the video input, highlight the 'video input' setting and press the 'set' button. Turn the menu dial clockwise to raise the level or counter clockwise to lower the level. If you can't see your video input levels on the front panel LCD, you will need to check your system sound settings using your computer's operating system and select 'BMD HDMI' as the output.

Repeat the same steps with the XLR channel inputs. If you've selected a stereo XLR analog source the levels will be adjusted together.

XLR Output

Select the audio for the XLR output using the submenu. Choosing video input will allow you to share your laptop audio with connected speakers. Selecting 2110 10G Input will let you share the subscribed ST 2110 stream.

XLR Output	
Output Source	Video Input

XLR Output Levels

You can adjust the levels of the XLR outputs using the menu either independently or together.

XLR Output Levels	
Adjust Outputs	Independently
Channel 1	+15dB
Channel 2	+15dB
XLR Output Delay	
Add Delay by	Time
Delay Rate	+1 ms

To adjust the output levels together:

- 1 Turn the menu dial to highlight the 'adjust outputs' menu and press 'set'.
- 2 Turn the dial counter clockwise to highlight 'together' and press 'set'.
- 3 The level adjustment now appears as 'channel 1&2'. Highlight the setting and press 'set' to show the levels control. Press the 'set' button again to save the levels adjustment and return to the audio menu.

XLR Output Delay

You can add a delay to the XLR output in time or frames using the 'XLR output delay' menu.

Monitoring

The built in LCD shows PPM or VU audio meters for embedded audio channels. Click the audio meters menu setting and select your preferred audio meter display from the options including VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels. You can also adjust the speaker and headphone levels for the front panel.

Monitoring	
Audio Meters	VU (-20dBFS)
Headphone Level	50%
Speaker Level	50%

HDMI Output Mapping

For 5.1 surround, select your desired audio mapping from either SMPTE or consumer standard.

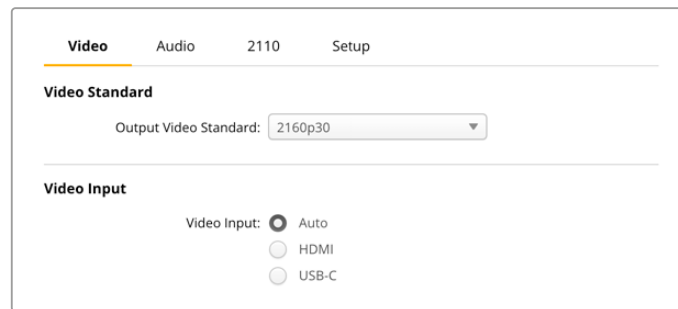
HDMI Output Mapping	
5.1 Surround	SMPTE Standard

Blackmagic Converters Setup Settings

In Blackmagic Converters Setup there are additional settings available for Blackmagic 2110 IP Presentation Converter to configure video and audio options. The 'setup' tab and '2110' tab are described in greater detail earlier in this manual.

Video Tab

The video tab features settings for configuring the video standard and selecting your input and output options.



The screenshot shows the 'Video' tab selected in the Blackmagic Converters Setup interface. The 'Video Standard' section has a dropdown menu for 'Output Video Standard' set to '2160p30'. The 'Video Input' section has three radio button options: 'Auto' (selected), 'HDMI', and 'USB-C'.

Video Standard

Set the video standard for the converter. This will automatically adjust the incoming video to match the selected standard, including laptops connected via USB-C or HDMI. If necessary, the HDMI output will downscale the video to be compatible with connected projectors.

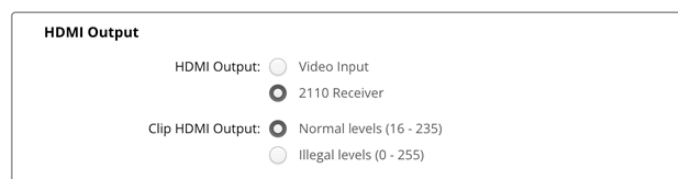
Click on the standard for your production using the output video standard menu.

Video Input

Laptops can be connected via either USB-C ports or via HDMI. Select the input type using the video input menu, or select auto to let the converter select the input based on what is connected. Using the USB-C connection via the front or rear panel will charge the laptop at the same time.

HDMI Output

You can select what you want to view on the HDMI output using the checkboxes to select between the video input or 2110 receiver. Selecting the video input will extend the laptop display to the HDMI output. If you select 2110 receiver you will see the subscribed ST 2110 stream.



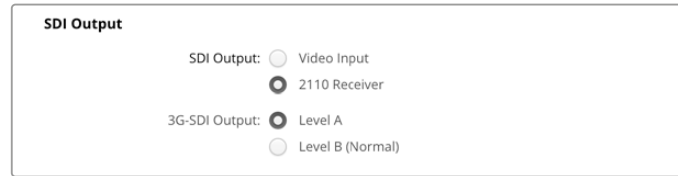
The screenshot shows the 'HDMI Output' section in the Blackmagic Converters Setup interface. It has two sections: 'HDMI Output' with radio buttons for 'Video Input' and '2110 Receiver' (selected), and 'Clip HDMI Output' with radio buttons for 'Normal levels (16 - 235)' (selected) and 'Illegal levels (0 - 255)'.

Clip HDMI Output

You can choose to clip the HDMI output using the setup tab. To ensure your HDMI output stays within legal broadcast levels, select 'normal levels'. To allow video levels to conform to the SDI input, select 'illegal levels'. We recommend using normal levels.

SDI Output

You can connect the 12G-SDI output to various equipment including switchers, recorders and monitors with the flexibility of displaying either the extended display of the connected laptop or the subscribed ST 2110 stream.



SDI Output

SDI Output: ☐ Video Input
☒ 2110 Receiver

3G-SDI Output: ☒ Level A
☐ Level B (Normal)

3G-SDI Output

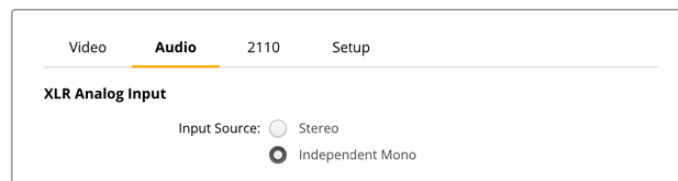
Some broadcast equipment can only receive level A or level B 3G-SDI video. To maintain compatibility with other broadcast equipment, select the corresponding 3G-SDI type.

Audio Tab

The audio tab settings include settings for selecting audio input, output levels and meter monitoring options.

XLR Analog Input

Select the audio input source for your connection between stereo or independent mono. Use stereo if you are using a single microphone or stereo microphone connection, or independent mono for two microphones.



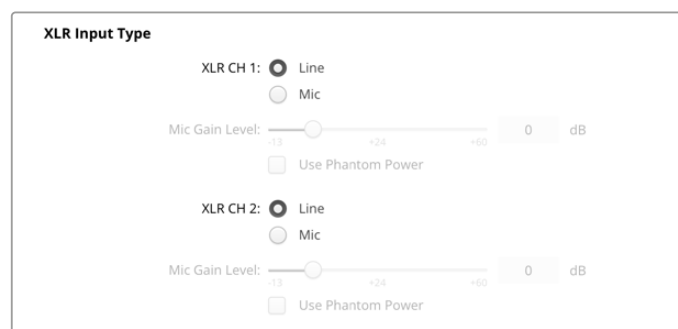
Video **Audio** 2110 Setup

XLR Analog Input

Input Source: ☐ Stereo
☒ Independent Mono

XLR Input Type

Blackmagic 2110 IP Presentation Converter features two combination XLR/TRS inputs on the rear. Using the XLR input type checkbox, select between line and mic and turn phantom power on or off.



XLR Input Type

XLR CH 1: ☒ Line
☐ Mic

Mic Gain Level: -13 +24 +60 0 dB

☐ Use Phantom Power

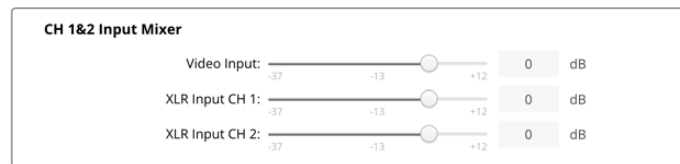
XLR CH 2: ☒ Line
☐ Mic

Mic Gain Level: -13 +24 +60 0 dB

☐ Use Phantom Power

CH1&2 Input Mixer

Channel mixer settings let you mix the combo XLR inputs with the video input. The XLR input levels will be stereo when stereo input is selected.



CH 1&2 Input Mixer

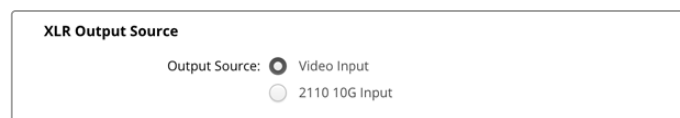
Video Input: -37 -13 +12 0 dB

XLR Input CH 1: -37 -13 +12 0 dB

XLR Input CH 2: -37 -13 +12 0 dB

XLR Output Source

Select the audio for the XLR output using the checkboxes. Choosing video input will allow you to share your laptop audio with connected speakers. Selecting 2110 10G Input will let you share the subscribed ST 2110 stream.



XLR Output Source

Output Source: ☒ Video Input ☐ 2110 10G Input

Output Levels

Use the slider to adjust the XLR output levels. To adjust each channel individually, click on the chain link icon.



XLR Output Levels

Channel 1: -37 -13 +12 0 dB 

Channel 2: -37 -13 +12 0 dB 

XLR Output Delay

Add an audio delay to the XLR output by adjusting the slider. You can adjust the delay in frames or time in milliseconds.



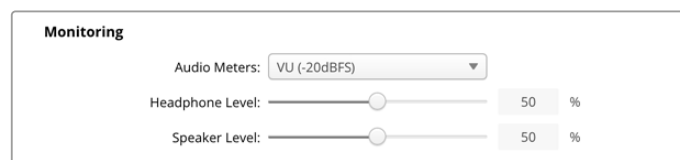
XLR Output Delay

Add Delay by: ☒ Frames ☐ Time

Delay Rate: 0 +1 +2 +3 0 Frames

Monitoring

The built in LCD shows audio meters for embedded audio channels. You can select to display PPM or VU Meters. Click the audio meters menu setting and select your preferred audio meter display from the options including VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.



Monitoring

Audio Meters:

Headphone Level: 50 %

Speaker Level: 50 %

Adjust the front panel speaker and headphone levels using the slider.

HDMI Output Mapping

For 5.1 surround, select your desired audio mapping from either SMPTE or consumer standard.

HDMI Output Mapping
5.1 Surround: ☐ SMPTE standard (L, R, C, LFE, Ls, Rs)
☒ Consumer standard (L, R, LFE, C, Ls, Rs)

2110 Tab

The 2110 tab includes a setting for selecting the number of embedded audio channels.

2110 Audio

Select the number of embedded audio channels using the menu.

2110 Audio
Embedded Audio Channels:

Installing into a Blackmagic Universal Rack Shelf

Your Blackmagic 2110 IP Presentation Converter shares a compatible form factor with many other Blackmagic Design units that can be mounted in a rack. In the next section, this manual shows how to install the converter into the rack shelf.

Blackmagic 2110 IP Converter 4x12G PWR

Blackmagic 2110 IP Converter 4x12G PWR features 4 independent bidirectional 12G-SDI to SMPTE-2110 IP video converters using RJ-45 10G Ethernet connections with up to 100 watts PoE++. The converter's full width 1 rack unit design includes a control panel with LCD and supports HD and Ultra HD standards up to 2160p60.

Blackmagic 2110 IP Converter 4x12G PWR delivers up to 100 watts making it suitable for high powered equipment as well as smaller devices like Blackmagic 2110 IP Mini Converters and Blackmagic Presentation Converter. For example, you could connect 4 Blackmagic 2110 IP Mini Converters via the 4 bidirectional Ethernet ports with program return, tally, talkback and camera control, all while powering each converter over a single Ethernet cable!



1 Front Panel Speaker

The built in mono speaker on the front panel lets you check your audio levels directly from the front panel. To listen through the speaker press the speaker button.

2 Speaker Button

Blackmagic 2110 IP Converter 4x12G PWR features a speaker and headphone port on the front panel for easy audio monitoring. To listen through the speaker, press and hold the speaker button. Double press the speaker button to keep the speaker enabled. Press again to disable. While holding the button you can rotate the menu dial to adjust the volume. As you adjust, a volume indicator will appear on the LCD home screen, giving you precise control over the levels. If you have headphones connected, rotating the menu dial will adjust the headphone volume instead of the speaker volume.

3 Headphone Port

Connect a set of headphones to the 1/4" headphone jack on the front panel to listen to the audio. To adjust the headphone levels, press the speaker button and turn the menu dial.

4 USB-C Port

USB-C port for updates and configuration via Blackmagic Converters Setup utility.

5 Menu and Control Buttons

The menu and control buttons are used to check the subscribed 2110 input and converted 2110 output streams on the LCD, configure settings and lock the front panel.

Input Buttons

These buttons labeled IN 1 to IN 4 are used to visibly check the 2110 input stream subscribed to on each Ethernet port or receiver. When you press an input button, you will see the 2110 input stream on the LCD.

Output Buttons

The buttons labeled OUT 1 to OUT 4 let you visibly check that 12G-SDI inputs 1 to 4 have been converted to 2110 and are now sent out via Ethernet as a stream that can be subscribed to. For example, if an ATEM switcher's auxiliary output is connected to your converter's 12G-SDI input 4, pressing the button labeled OUT 4 will show the switcher's converted SDI input is now available as a 2110 IP video stream sent over Ethernet port 4. If you are connected to a 10G network, other 2110 IP converters can subscribe to the stream over the network.

Call

Pressing and holding the 'call' button will flash the tally light on all connected cameras. This is helpful when you are about to go to air and you want to seek the attention of all camera operators and floor crew.

Lock

Pressing and holding the 'lock' button will lock all front panel buttons. The lock can be identified by the button's glowing 'lock' indicator. This is useful to ensure there is no risk of accidental settings changes while on air. To unlock, simply hold the button down again until the button's red 'lock' indicator disappears.

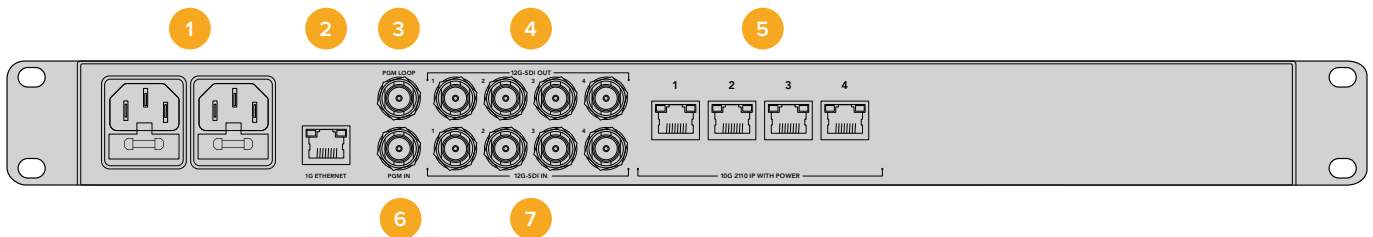
Menu

Press the 'menu' button to access the LCD menu settings. Turn the menu dial and press the 'set' button to make selections and press 'set' to confirm changes. Additional information on using the LCD menu including using the buttons and menu dial is earlier in this manual.

6 LCD

The LCD shows the home preview screen with status icons and LCD menu. More information about the details shown on the home screen is available in the following section of this manual.

Rear Panel



1 Power

IEC C14 connector for 90 to 240 volt AC power supply. Two inputs are provided for redundancy. This means you can plug in an external power supply as a back up, for example a UPS or external battery. If the main power supply is interrupted, the converter will automatically switch over to the second power input.

2 1G Ethernet Port

1G Ethernet RJ45 connector for plugging the converter into your network. This connector is used for configuring the unit and changing settings using the Blackmagic Converters Setup software. This port can also be connected to a PTP grandmaster and the converter will then derive its clock from this port.

3 Program Loop Output

12G-SDI program loop output BNC connector. This output lets you loop the program input source to other SDI equipment, for example SmartView monitors and HyperDeck disk recorders.

4 12G-SDI Outputs

4 x 12G-SDI video output BNC connectors for connecting 4 independent converted SDI video outputs to other SDI equipment, for example ATEM switchers and HyperDeck disk recorders.

5 10G Ethernet Ports

4 x 10G Ethernet RJ45 connectors for connecting Blackmagic 2110 IP Converter 4x12G PWR point to point with up to four Blackmagic 2110 IP Converters or connecting to a managed 10G IGMP network switch. We recommend using CAT 6A Class E or F network cables for longer cable runs.

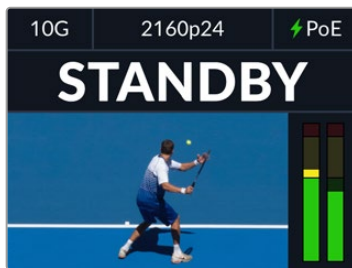
6 Program Input

12G-SDI video input BNC connector for plugging in the program SDI output from an ATEM Switcher, or any SDI source you want to include in each program return feed over Ethernet. The converter's PTP clock is derived from the PGM SDI input, unless there is a PTP clock on the 1G Ethernet port.

7 12G-SDI Inputs

4 x 12G-SDI video input BNC connectors for plugging in SDI video to be converted to 2110 IP video, for example 4 URSA Mini Pro 12K model cameras.

Home Screen



Blackmagic 2110 IP Converter 4x12G PWR Converter features additional information on the home screen allowing you to easily monitor when cameras are powered via PoE or when the input is switched to the preview or program bus.

Connection Status

Each input and output displays its network status information in the top right corner of the home screen.



Connected via 10G Ethernet point to point or via a network switch. This will appear when the connected input is not powered via Ethernet.



2110 IP Ethernet port not connected.



Power over Ethernet is working.



Problem with Power over Ethernet connection.

Tally Status

The large text on the home screen will display tally override or timecode depending on the input or output selected.

STANDBY

When the input is connected to a tally enabled source standby will appear.

PREVIEW

When the input is switched to the preview via the connected ATEM switcher 'preview' will appear in green. If you have a separate program return feed for the input 'preview' will also appear on the dedicated output.

ON AIR

'On Air' in red will appear when the input is switched to the program bus via the connected ATEM switcher.

00:00:20:16

Timecode will appear when there is no tally information on the input or output.

LCD Menu Settings

Blackmagic 2110 IP Converter 4x12G PWR features additional settings via the front panel LCD menu. This section describes how to use each of these settings.

2110 Settings

Use the 2110 menu to route incoming ST 2110 sources for each input.

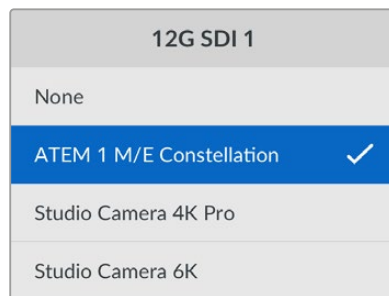
Receiver

Use the 2110 receiver submenu to route incoming ST 2110 sources to the SDI outputs on the rear of the converter.

You can also route your sources and destinations using an NMOS controller. This will provide flexibility to subscribe to the video, audio or ancillary essences.

To route an ST 2110 stream to your Blackmagic 2110 IP Converter 4x12G PWR:

- 1 With the receiver output highlighted press the 'set' button.
- 2 Available ST 2110 streams will appear in the list. Rotate the menu dial to select a stream and press 'set'.



- 3 A tick will appear confirming your selection.

Sender

The sender submenu displays the labels for each 2110 output.

Blackmagic Converters Setup Settings

In Blackmagic Converters Setup there are additional settings available for Blackmagic 2110 IP Converter 4x12G PWR. These additional settings can be changed when the unit is connected via USB. They can also be changed on a computer running the setup utility anywhere on your network, however you will need to allow utility administration via Ethernet. To enable, connect your converter to your computer via USB, then go to the 'setup' tab of Blackmagic Converters Setup. In the 'allow utility administration' setting, click 'via USB and Ethernet' and then click 'save'.

This section of the manual describes each setting.

Inputs and Outputs Tabs

The input and output labels settings let you save a name for each 12G-SDI input and output. The NMOS protocol broadcasts these labels to make identifying them via an NMOS controller or other Blackmagic 2110 IP Converter easy. To add a name click in the text field, type a name and click 'save'.



The screenshot shows the 'Inputs' tab selected in a utility interface. Below the tab headers, the 'Input Labels' section contains four input fields labeled 'Input 1' through 'Input 4'. The values entered are 'CourtSide Cam', 'Baseline Cam', 'Crowd Cam', and 'Referee Cam' respectively.

Labels

You can also save or load label sets using the cog icon in the lower left corner of the utility. To save a label set, click on the save option and navigate to a location to save the file. To load a label set, click on the load option and navigate to the location of your label set. Once selected, click open.

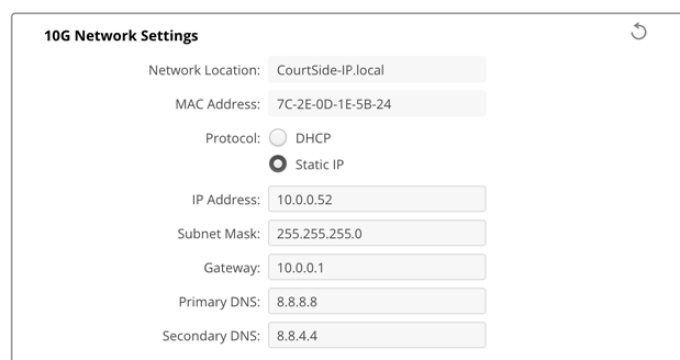
2110 Tab

10G Network Settings

The network location is the name for your Blackmagic 2110 IP Converter 4x12G PWR that will appear as the DNS name on the network. This is based on the identification name at the top of the setup settings in the utility. It's worth noting that numeric prefixes will be ignored.

The MAC address is a hardware identifier that is unique to each Ethernet port. This is important when setting up network security systems that only allow units that can be identified by their MAC address. You can easily select the MAC address for copying and pasting.

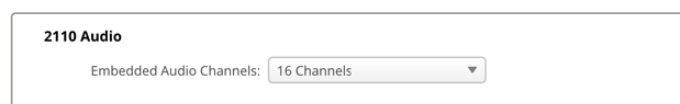
The primary and secondary DNS settings display the primary and secondary domain name system servers currently being used.



The screenshot shows the '10G Network Settings' tab. It contains several configuration fields: 'Network Location' (CourtSide-IP.local), 'MAC Address' (7C-2E-0D-1E-5B-24), 'Protocol' (Static IP selected), 'IP Address' (10.0.0.52), 'Subnet Mask' (255.255.255.0), 'Gateway' (10.0.0.1), 'Primary DNS' (8.8.8.8), and 'Secondary DNS' (8.8.4.4).

2110 Audio

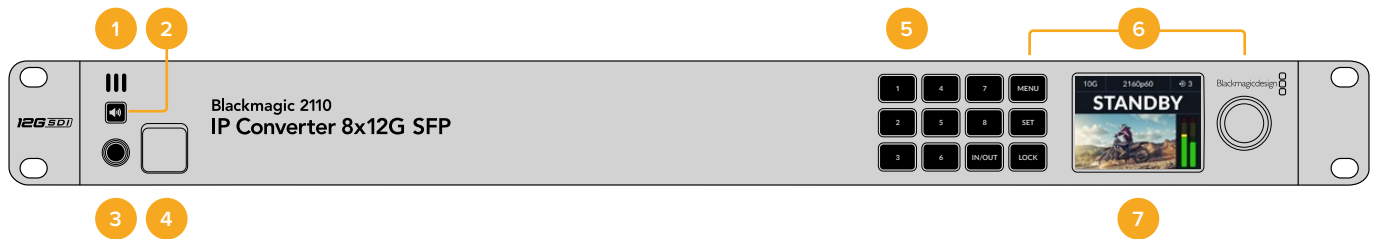
Use this setting to select the amount of audio channels embedded in the SDI input source you want to include in the program return over the Ethernet 2110 connection.



The screenshot shows the '2110 Audio' tab with a single dropdown menu labeled 'Embedded Audio Channels' set to '16 Channels'.

Blackmagic 2110 IP Converter 8x12G SFP

The Blackmagic 2110 IP Converter 8x12G SFP includes eight independent bidirectional converters that support both SMPTE ST 2110 and SDI optical SFP modules up to Ultra HD 2160p60. To use it as a 2110 IP video converter, insert Ethernet SFP optical modules and set the 'optical module type' to Ethernet in the 2110 tab of the setup utility. To configure a channel as an SDI optical converter, insert a SMPTE optical fiber module and select 'SDI' in the setup utility. You can use a wide range of optical modules. For SDI, you can use 3G, 6G or 12G SDI modules, depending on your required video standard. There is a tab for each channel in the utility so you can set each channel to be either SDI or Ethernet. Be sure to check these settings when setting up the converter.



1 Front Panel Speaker

The built in mono speaker on the front panel lets you check your audio levels directly from the front panel. To listen through the speaker press the speaker button.

2 Speaker Button

Blackmagic 2110 IP Converter 8x12G SFP features a speaker and headphone port on the front panel for easy audio monitoring. To listen through the speaker, press and hold the speaker button. Double press the speaker button to keep the speaker enabled. Press again to disable. While holding the button, rotate the menu dial to adjust the volume.

As you adjust, a volume indicator will appear on the LCD home screen, giving you precise control over the levels. If you have headphones connected, rotating the menu dial will adjust the headphone volume instead of the speaker volume.

3 Headphone Port

Connect a set of headphones to the 1/4" headphone jack on the front panel to listen to the audio. To adjust the headphone levels press the speaker button and turn the menu dial.

4 USB-C Port

USB-C port for updating the unit and configuration via Blackmagic Converters Setup utility.

5 Input and Output Buttons

The LCD can display any of the converter's inputs and outputs. To choose the display source press the 'in/out' button to toggle between modes and then select any of the numbered buttons. To confirm the current mode check the icon on the home screen.

6 Menu and Control Buttons

The menu and control buttons are used to check the subscribed 2110 input and converted 2110 output streams on the LCD, configure settings and lock the front panel. Use the menu and set buttons along with the menu dial to configure settings. The buttons can also be locked by holding down the lock button until the button label illuminates red.

To unlock the buttons simply hold the lock button down again. You can find more information about using the LCD menu including using the buttons and menu dial earlier in this manual.

Lock

Pressing and holding the 'lock' button will lock all front panel buttons. The lock can be identified by the button's glowing 'lock' indicator. This is useful to ensure there is no risk of accidental settings changes while on air. To unlock, simply hold the button down again until the button's red 'lock' indicator disappears.

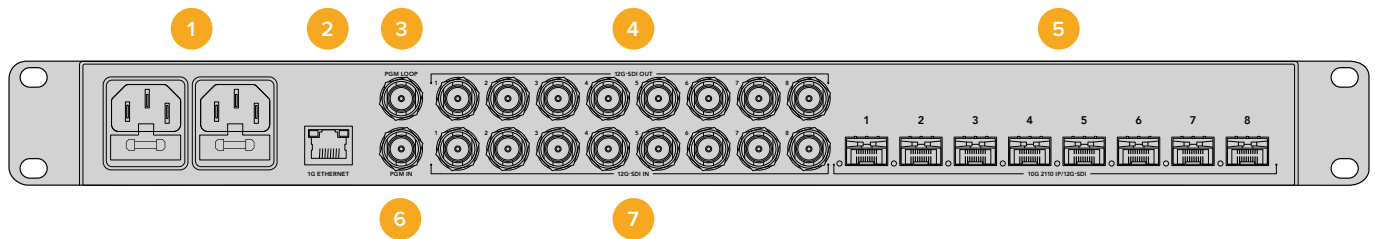
Menu

Press the 'menu' button to access the LCD menu settings. Turn the menu dial and press the 'set' button to make selections and press 'set' to confirm changes. Additional information about using the LCD menu including using the buttons and menu dial can be found earlier in this manual.

7 LCD

The LCD shows the home preview screen with status icons and LCD menu.

Rear Panel



1 Power

IEC C14 connector for 90 to 240 volt AC power supply. Two inputs are provided for redundancy. This means you can plug in an external power supply as a back up, for example a UPS or external battery. If the main power supply is interrupted, the converter will automatically switch over to the second power input.

2 1G Ethernet Port

1G Ethernet RJ45 connector for plugging the converter into your network. This connector is used for configuring the unit and changing settings using the Blackmagic Converters Setup software. This port can also be connected to a PTP grandmaster and the converter will then derive its clock from this port.

3 Program Loop Output

12G-SDI program loop output BNC connector. This output lets you loop the program input source to other SDI equipment, for example SmartView monitors and HyperDeck disk recorders.

4 12G-SDI Outputs

8 x 12G-SDI video output BNC connectors for connecting 8 independent converted SDI video outputs to other SDI equipment, for example ATEM switchers and HyperDeck disk recorders.

5 10G 2110 IP Ports

8 x optical fiber SFP inputs supporting optical modules for 2110 10G Ethernet or 3G, 6G or 12G-SDI video.

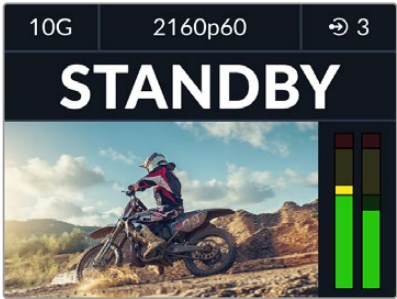
6 Program Input

12G-SDI video input BNC connector for plugging in the program SDI output from an ATEM Switcher, or any SDI source you want to include in each program return feed over optical fiber. The converter's PTP clock is derived from the PGM SDI input, unless there is a PTP clock connected to the 1G Ethernet port.

7 **12G-SDI Inputs**

8 x 12G-SDI video input BNC connectors for plugging in SDI video to be converted to 2110 IP video, for example 8 URSA Mini Pro 12K model cameras.

Home Screen



The front panel of the Blackmagic 2110 IP Converter 8x12G displays additional information including tally allowing you to see when an input is switched to the preview or program bus.

Tally Status

The large text on the home screen displays tally override or timecode depending on the input or output selected.

STANDBY	When the input is connected to a tally enabled source standby will appear.
PREVIEW	When the input is switched to the preview via the connected ATEM switcher 'preview' will appear in green. If you have a separate program return feed for the input 'preview' will also appear on the dedicated output.
ON AIR	'On Air' in red will appear when the input is switched to the program bus via the connected ATEM switcher.
00:00:20:16	Timecode will appear when there is no tally information on the input or output.

LCD Menu Settings

Blackmagic 2110 IP Converter 8x12G SFP features additional settings accessible via the LCD menu on the front panel. This section explains how to use each of these settings.

Audio Settings



Speaker Level

Adjust the speaker volume by turning the search dial. The default level is 50%.

Headphone Level

For models featuring a headphone port on the front panel you can adjust the headphone volume via the headphone level setting.

TIP Headphone and speaker volume can also be adjusted directly via the front panel. Press and hold the speaker button and turn the search dial to increase or decrease the playback volume. The volume level will appear in the upper center of the front panel.

2110 Settings

Blackmagic 2110 IP converters automatically connect to incoming 2110 signals when connected point to point. If connected to a network, use the 2110 menu to route incoming ST 2110 sources for each input.

Receiver

Use the 2110 'receiver' submenu to route incoming ST 2110 sources to the SDI outputs on the rear of the converter.

You can also route your sources and destinations using an NMOS controller. This will provide flexibility to subscribe to the video, audio or ancillary essences.

To route an ST 2110 stream to your Blackmagic 2110 IP Converter 8x12G SFP:

- 1 With the receiver output highlighted press the 'set' button.
- 2 Available ST 2110 streams will appear in the list. Rotate the menu dial to select a stream and press 'set'.



- 3 A tick will appear confirming your selection. Press the menu button twice to return to the home screen.

Sender

The sender submenu displays the labels for each 2110 output.

Blackmagic Converter Setup Settings

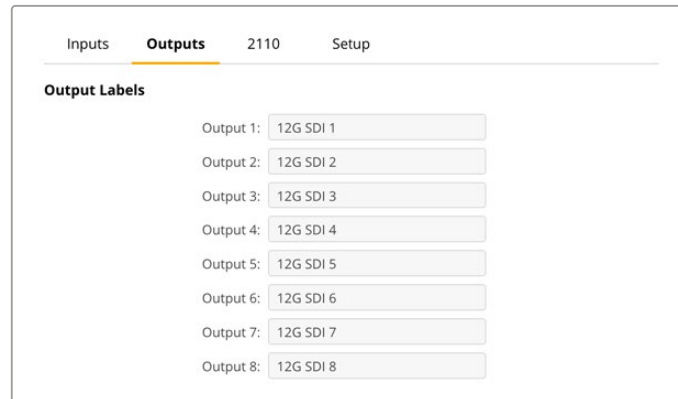
In Blackmagic Converters Setup, additional settings are available for the Blackmagic 2110 IP Converter 8x12G SFP. These settings can be changed when the unit is connected to a computer via USB. They can also be modified on a computer running the setup utility anywhere on your network. However, to enable network access, you must allow utility administration via Ethernet.

To do this, connect your converter to your computer via USB, then open Blackmagic Converters Setup and go to the 'setup' tab. Select 'via USB and Ethernet' under the 'allow utility administration' setting, then click 'save'.

The 'setup' tab and '2110' tab are described in greater detail earlier in this manual.

Inputs and Outputs Tabs

The input and output labels settings let you save a name for each 12G-SDI input and output. The NMOS protocol broadcasts these labels to make identifying them via an NMOS controller or other Blackmagic 2110 IP Converter easy. To change the label click in the text field, type a name and click 'save'.



Inputs	Outputs	2110	Setup
Output Labels			
Output 1: 12G SDI 1			
Output 2: 12G SDI 2			
Output 3: 12G SDI 3			
Output 4: 12G SDI 4			
Output 5: 12G SDI 5			
Output 6: 12G SDI 6			
Output 7: 12G SDI 7			
Output 8: 12G SDI 8			

Labels

You can also save or load label sets using the cog icon in the lower left corner of the utility. To save a label set, click on the save option and navigate to a location to save the file. To load a label set, click on the load option and navigate to the location of your label set. Once selected, click open.

2110 Tab

The 2110 setting includes a tab for each 10G SFP connection, as well as the 1G RJ45 Ethernet connection on the rear of the converter. Some settings are shared across all 2110 IP Converters and are detailed earlier in the manual in the Blackmagic Converters Setup section.

SFP Module

Blackmagic 2110 IP Converter 8x12G SFP is compatible with both Ethernet and SDI optical fiber modules. If you are using a 10G SFP module, select 'Ethernet', for 3G, 6G and 12G modules select 'SDI'. Each connection is managed independently so you can convert both Ethernet and SDI optical fiber modules at the same time by choosing Ethernet or SDI in the tab for each channel.



SFP Module

Optical Module Type: ☐ SDI ☒ Ethernet

10G Network Settings

The network location is the name for your Blackmagic 2110 IP Converter 8x12G SFP that will appear as the DNS name on the network. This is based on the identification name at the top of the setup settings in the utility. It's worth noting that numeric prefixes will be ignored.

The MAC address is a hardware identifier that is unique to each Ethernet port. This is important when setting up network security systems that only allow units that can be identified by their MAC address. You can easily select the MAC address for copying and pasting.

The primary and secondary DNS settings display the primary and secondary domain name system servers currently being used.

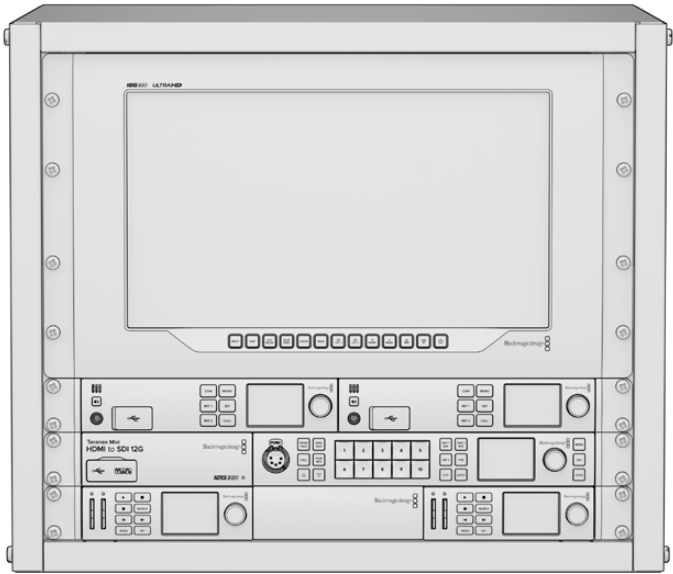
2110 Audio

Select the number of embedded audio channels using the menu.

Blackmagic Universal Rack Shelf

Blackmagic Universal Rack Shelf is a 1RU shelf that lets you install a broad range of Blackmagic Design equipment into a broadcast rack or road case. The modular design means you can build portable and practical equipment setups using products that share a single rack unit form factor.

The illustration below shows 3 Universal Rack Shelves installed in a small rack with a combination of compatible units mounted. The bottom shelf includes a 1/3 rack width blanking panel to fill unused space between units.



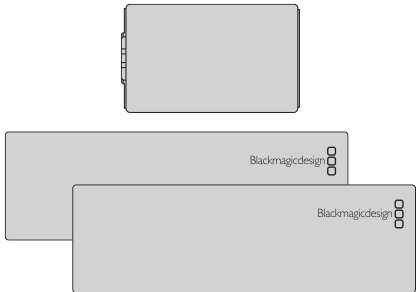
Contents

The Universal Rack Shelf Kit contains the following items.



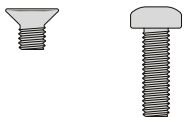
1 x Blackmagic Universal Rack Shelf

A single rack unit, full width shelf for installing Blackmagic Design equipment.



Blanking Panels

1 x 1/6 rack width and 2 x 1/3 rack width blanking panels to cover unused shelf space.



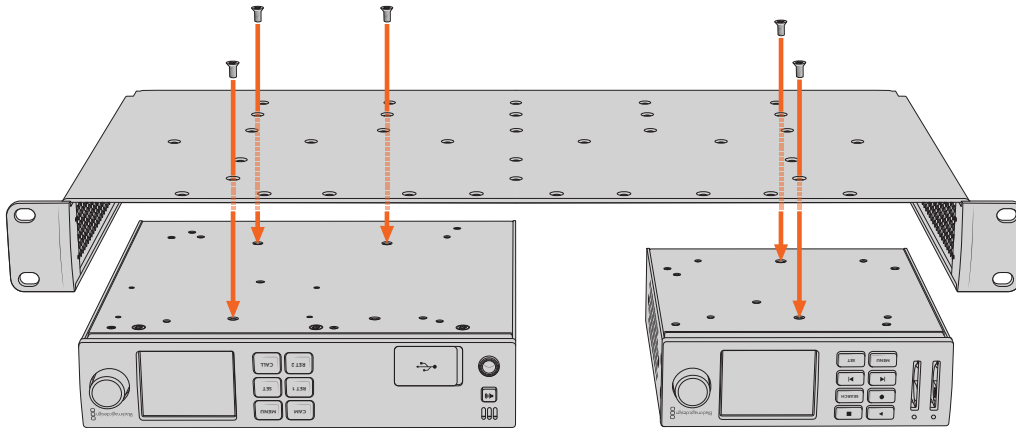
Screws

12 x M3 5mm
countersunk mounting
screws.

2 x M3 9mm flat screws
for 1/6 blanking panels.

Mounting a Unit to the Rack Shelf

- 1 If rubber feet are attached, remove the feet from the base of the unit using a plastic edged scraping tool.
- 2 With both the rack shelf and the unit upside down, line up the rack shelf's pre drilled holes with the threaded mounting holes on the base of the Blackmagic Design unit. There are two central mounting points on 1/3 width units and up to three mounting points on larger, 1/2 rack width units.

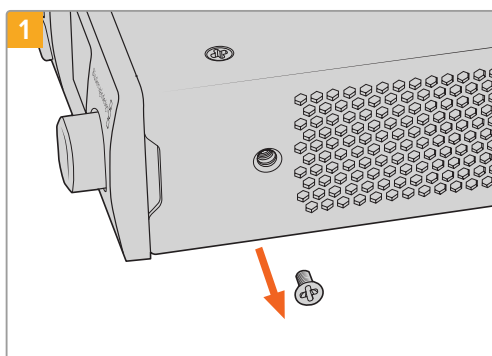


- 3 Using the supplied M3 5mm countersunk screws, fasten the unit to the rack shelf.
- 4 Once fastened, turn the rack shelf right side up and install into the rack via the built in rack ears.

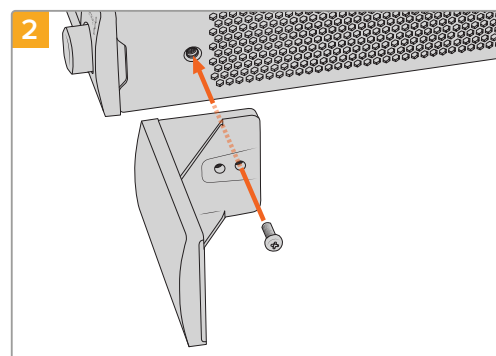
The supplied blanking panels can be used to cover unused shelf space.

Attaching the 1/6 Blanking Panel

The small 1/6 blanking panel can be used to fill unused shelf space when mounting 1/2 and 1/3 rack width units. The panel can be attached to the sides of either unit. To improve airflow it's a good idea to mount the panel between units.



Remove the 5mm M3 screw near the front of the unit



Line up the blanking panel and attach using the supplied M3 9mm nylon screw

Attaching the Side 1/3 Width Blanking Panel

The large 1/3 width blanking panels can be attached directly to either side of the rack shelf when mounting single units. To install a blanking panel, align the screw holes and anchor point at the base of the panel with the shelf and secure in place using two of the supplied M3 5mm countersunk screws.

Help

Getting Help

The fastest way to obtain help is to go to the Blackmagic Design online support pages and check the latest support material available for your Blackmagic 2110 IP Converter 3x3G.

Blackmagic Design Online Support Pages

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

Blackmagic Design Forum

The Blackmagic Design forum on our website is a helpful resource you can visit for more information and creative ideas. This can also be a faster way of getting help as there may already be answers you can find from other experienced users and Blackmagic Design staff which will keep you moving forward. You can visit the forum at <https://forum.blackmagicdesign.com>

Contacting Blackmagic Design Support

If you can't find the help you need in our support material, or on the forum, please click the "Send us an email" button on the support page to email a support request. Alternatively, click on the "Find your local support team" button and call your nearest Blackmagic Design support office.

Checking the Software Version Currently Installed

To check which version of Blackmagic Converters Setup software is installed on your computer, open the About Blackmagic Converters Setup window.

- On Mac OS, open Blackmagic Converters Setup from the Applications folder. Select About Blackmagic Converters Setup from the application menu to reveal the version number.
- On Windows, open Blackmagic Converters Setup from your Start menu. Click on the Help menu and select About Blackmagic Converters Setup to reveal the version number.

How to Get the Latest Software Updates

After checking the version of Blackmagic Converters Setup software installed on your computer, please visit the Blackmagic Design support center at www.blackmagicdesign.com/support to check for the latest updates. While it is usually a good idea to run the latest updates, it is wise to avoid updating any software if you are in the middle of an important project.

Regulatory Notices



Disposal of Waste of Electrical and Electronic Equipment Within the European Union.

The symbol on the product indicates that this equipment must not be disposed of with other waste materials. In order to dispose of your waste equipment, it must be handed over to a designated collection point for recycling. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.



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

Operation is subject to the following two conditions:

- 1 This device may not cause harmful interference.
- 2 This device must accept any interference received, including interference that may cause undesired operation.

R-R-BMD-20230419002
R-R-BMD-20240617001
R-R-BMD-20240617002
R-R-BMD-20240617003
R-R-BMD-20240617004
R-R-BMD-20240617005
R-R-BMD-20240617006
R-R-BMD-20250416001



ISED Canada Statement

This device complies with Canadian standards for Class A digital apparatus.

Any modifications or use of this product outside its intended use could void compliance to these standards.

Connection to HDMI interfaces must be made with high quality shielded HDMI cables.

This equipment has been tested for compliance with the intended use in a commercial environment. If the equipment is used in a domestic environment, it may cause radio interference.

Safety Information

For protection against electric shock, the equipment must be connected to a mains socket outlet with a protective earth connection. In case of doubt contact a qualified electrician.

To reduce the risk of electric shock, do not expose this equipment to dripping or splashing.

Product is suitable for use in tropical locations with an ambient temperature of up to 40°C.

Ensure that adequate ventilation is provided around the product and that it is not restricted.

When rack mounting, ensure that the ventilation is not restricted by adjacent equipment.

No operator serviceable parts inside product. Refer servicing to your local Blackmagic Design service center.

Some products have the facility to connect small form-factor transceiver (SFP) optical fiber modules. Only use Laser class 1 optical SFP modules.

Recommended Blackmagic Design SFP modules:

- 3G-SDI: PL-4F20-311C
- 6G-SDI: PL-8F10-311C
- 12G-SDI: PL-TG10-311C



Use only at altitudes not more than 2000m above sea level.

State of California statement

This product can expose you to chemicals such as trace amounts of polybrominated biphenyls within plastic parts, which is known to the state of California to cause cancer and birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov.

European Office

Blackmagic Design Europe B.V.
Rijnlanderweg 766, Unit D
2132 NM Hoofddorp
NL

Warning for Authorized Service Personnel



Disconnect power from both power inlets before servicing!



Caution - Double Pole/ Neutral Fusing

The power supply contained in this equipment has a fuse in both line and neutral conductors and is suitable for connection to the IT power distribution system in Norway.

Warranty

Limited Warranty

Blackmagic Design warrants that this product will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. If a product proves to be defective during this warranty period, Blackmagic Design, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, you the Customer, must notify Blackmagic Design of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. The Customer shall be responsible for packaging and shipping the defective product to a designated service center nominated by Blackmagic Design, with shipping charges pre paid. Customer shall be responsible for paying all shipping charges, insurance, duties, taxes, and any other charges for products returned to us for any reason.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Blackmagic Design shall not be obliged under this warranty: a) to repair damage resulting from attempts by personnel other than Blackmagic Design representatives to install, repair or service the product, b) to repair damage resulting from improper use or connection to incompatible equipment, c) to repair any damage or malfunction caused by the use of non Blackmagic Design parts or supplies, or d) to service a product that has been modified or integrated with other products when the effect of such a modification or integration increases the time or difficulty of servicing the product.

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