Blackmagicdesign

Blackmagic
Web
Presenter HD

Blackmagic Web Presenter HD

Welcome

Thank you for purchasing your Blackmagic Web Presenter HD!

Blackmagic Web Presenter plugs directly into any SDI equipment, converts the signal into H.264 and lets you stream it on popular streaming services such as YouTube Live, Facebook Live and Twitch. You can also transmit broadcast quality video point to point using an optional ATEM Streaming Bridge. This makes transmission of professional video to remote locations easy using the internet!

This instruction manual shows you everything you need to know to get started with Blackmagic Web Presenter and how to use all the features and controls, including how to set everything up for YouTube Live, Facebook Live, Twitch, Zoom, Skype and more.

Check the support page on our website at www.blackmagicdesign.com for the latest version of this manual and for updates to your Blackmagic Web Presenter HD's internal software. When downloading the software, be sure to register with your information so we can keep you updated when new software is released.

We are continually working on new features and improvements, so we are keen hear from you!

Grant Petty

Grant Petty
CEO Blackmagic Design

Contents

Getting Started

Getting started with your Blackmagic Web Presenter HD is quick and easy! All you need to do is connect power, connect video and audio, connect the unit to your computer, then connect to the internet.
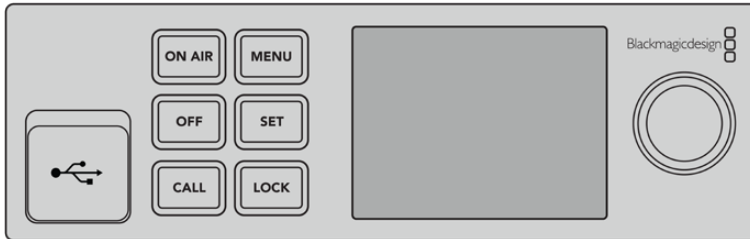
Blackmagic Web Presenter HD front panel

Connecting Power

Plug a standard IEC power cable into your Blackmagic Web Presenter HD's power input on the rear panel.
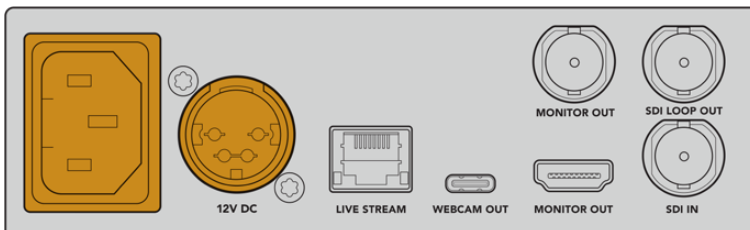
Web Presenter HD can be powered using the IEC or 12V DC power input

Web Presenter HD also has an additional 12V DC power input. You can use this input if you want to connect external power or redundancy via an external power supply, for example a UPS or external 12V battery.

Connecting Video and Audio

Plug your video source into Blackmagic Web Presenter HD's SDI input. When video is connected it will be displayed on your web presenter's built in LCD. Audio is embedded with the video on the SDI video signal and you can confirm it by observing the audio meters on the LCD.
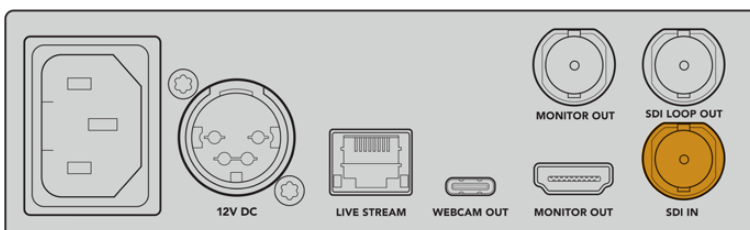
Connect video to your Blackmagic Web Presenter's SDI input

Blackmagic Web Presenter HD supports 12G-SDI and will automatically switch between HD and Ultra HD all the way up to 2160p60 when the video input changes. This means you can input virtually any video signal and it will convert down to 1080p.

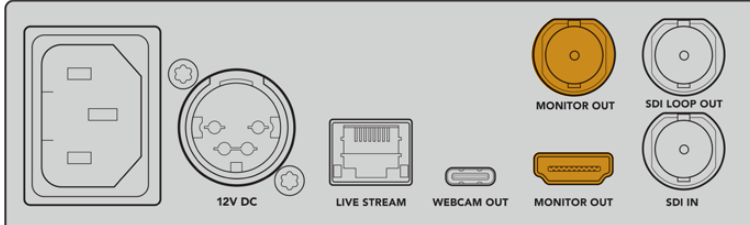### Connecting a Monitor

Plug your HDMI television or SDI monitor into one of the monitor outputs. This lets you monitor your broadcast and observe important status information that updates constantly with your video stream. For more information on how to use the monitor output, refer to the 'Using the Monitor Output' section.

Connect a monitor to your web presenter's monitor output

Connecting to a Computer via USB

Connect your Web Presenter HD to your computer using the USB-C port on the front or rear panel. These USB ports are used for updating the unit and configuring it with the Blackmagic Web Presenter Setup utility. Once you have configured your Web Presenter for the first time, you can then disconnect the unit from the computer.
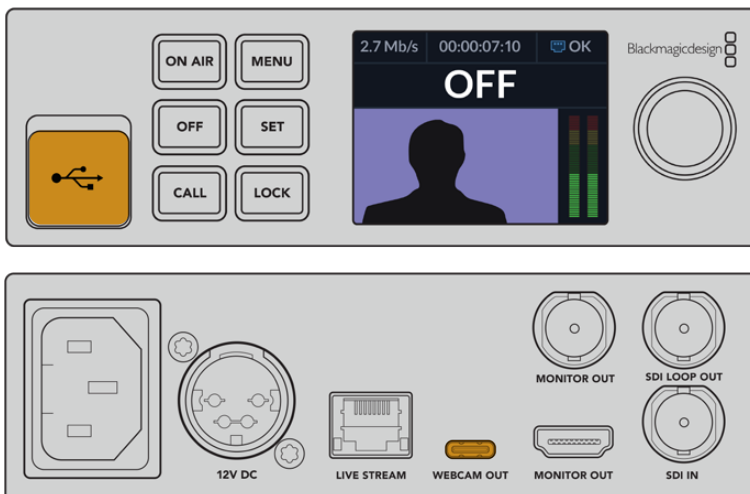
Connect your Blackmagic Web Presenter HD to your computer using the USB port on the front or rear panel

Connecting to the Internet

Connect your Blackmagic Web Presenter HD to the internet by plugging a network cable from the 'live stream' Ethernet port to an internet router or a network switch.
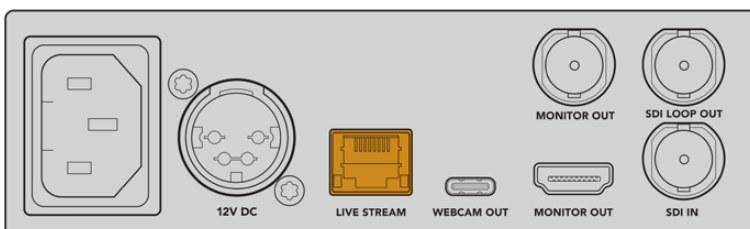
Connect your Blackmagic Web Presenter HD to your network via the Ethernet port on the rear panel

**Setting up a Live Stream**

You can now setup your Web Presenter HD to stream via any streaming platform such as YouTube Live, Facebook Live, Twitch and more. For this example, we will set up for a YouTube Live stream.

1 Copy your stream key from your YouTube Studio account.

2 Download the Blackmagic Web Presenter Setup utility from www.blackmagicdesign.com/support and install it on your computer. This software lets you configure streaming settings for the first time.

3 Launch the Blackmagic Web Presenter Setup utility and go to the 'live stream' page.

4 Set the platform to YouTube and the server to 'primary'. Paste your YouTube stream key into the 'key' field and select a streaming quality. Click 'save'.

5 You're now ready to start streaming to the world! Click the 'on air' button or press the 'on air' button on the unit's front panel. When your production has finished, press the 'off' button to stop your broadcast.

For information setting up a live stream on a different service such as Facebook Live or Twitch, see the 'Using a Live Streaming Service' section.

Using Web Presenter HD's Front Panel

Use Blackmagic Web Presenter's front panel controls to start and stop streaming and change settings.
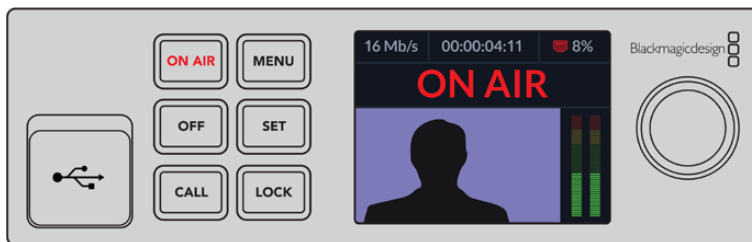
On Air - To start and stop streaming, simply press the 'on air' button. The button will highlight red while streaming on air.

If the on air button flashes, it means a live stream has failed to start, or has stopped unexpectedly. This might be due to a problem with your internet connection or streaming settings. Check that your internet connection is working and your streaming settings are correct.

Off - To stop streaming, press the 'off' button.

Menu - Press the menu button to open the settings on the LCD.
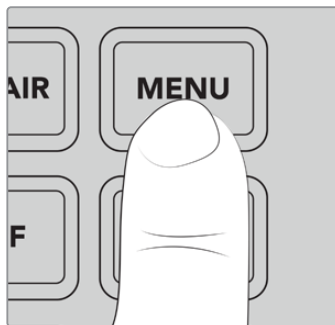
To change a setting:

1   Rotate the knob to select the setting you want to change, then press 'set'.
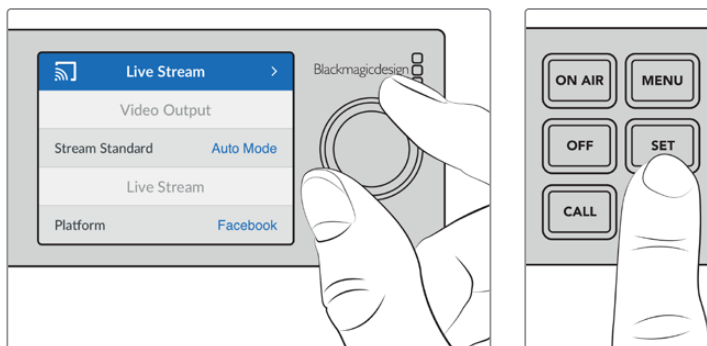
2   Rotate the knob to change your setting.

3   Press 'set' again to confirm the change.

Press the menu button to step back through the menu items and return to the home screen.

Call - This feature will be enabled in a future update.

Lock - Press and hold this button for 1 second to lock the panel. This disables the buttons, preventing anyone from accidentally going on air or stopping a stream. The button will illuminate red when active.

Press and hold for 2 seconds to unlock the panel.

LCD Display

The home screen is the first feature you'll see when you power up your Web Presenter HD. The home screen displays important information, including:

00:00:04:11

Duration Counter – Shows the current duration of your live stream. The counter will start when you press the 'on air' button.

16 Mb/s

Data Rate – Shows the data rate of the encoder whether or not your Presenter HD is streaming. You can connect your video source to an input and quickly see the bit rate required to stream your live video feed.

Internet Connection – A small icon is displayed when your Web Presenter HD is connected to the network.

8%

Cache – Shows the percentage of Web Presenter HD's built in memory cache that is currently in use.

On Air Status – A bright red on air indicator will be displayed when your live stream is running. When the unit is standing by ready to start streaming 'off air' will be displayed. A flashing red and white on air indicator means that there has been an interruption during the stream, such as a slow internet connection.

Audio Meters – Displays the audio levels of the video source connected to Web Presenter HD.

Video Monitor – Displays the input video source that is connected to Web Presenter HD.

Internet Connection Icons

	A blue Ethernet icon is displayed when an Ethernet cable is connected and the Ethernet connection will be used for streaming.
	A red Ethernet icon is displayed when on air and streaming via Ethernet.
	A blue smartphone icon is displayed when a tethered smartphone's internet connection will be used for streaming.
	A red smartphone icon is displayed when on air and streaming via a tethered smartphone.

TIP If no icon is displayed then your Web Presenter HD is not connected to the network.

Using the Monitor Output

The monitor output lets you monitor the video input, audio levels, on air status, data rate and cache levels, plus technical information about the SDI input.

The monitor out on Web Presenter HD provides comprehensive information including data rate and cache status.

The monitor output display is made up of 8 panels. Below is a description of each panel and the information it displays.
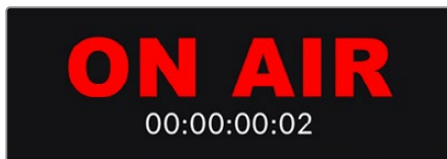
Input View

The main panel displays your current video input from the connected SDI video source.

**On Air Status**

Prior to streaming, the on air status indicator will display 'off' to let you know Web Presenter HD is standing by and ready to broadcast. When streaming begins, the indicator will display a bright red 'on air' status until streaming is stopped.

Underneath the on air indicator is the duration counter. When you press the on air button on the Web Presenter HD, the duration counter will start running.

If your Web Presenter HD is off air but will stream via a tethered smartphone, the 'off' indicator includes a blue smartphone icon in the corner. When on air, the smartphone icon will illuminate red.
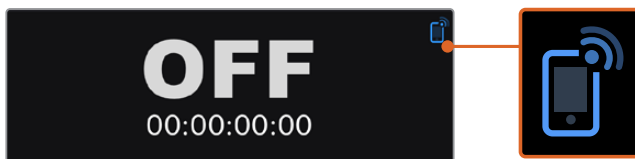
Live Stream

The live stream panel displays information about your live stream settings. This includes the streaming platform, server and the first 10 digits of your streaming key. It also displays the stream resolution and quality settings.
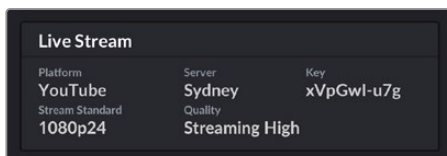
Video Input

The 5 mini viewers at the top of the video input panel show the previous 6 seconds of your live stream, each mini viewer represents 1.2 seconds of streaming time.

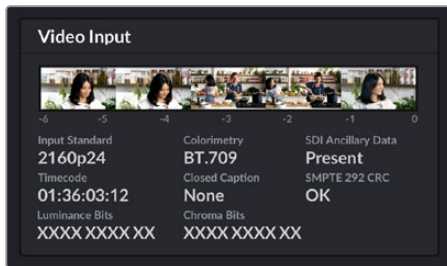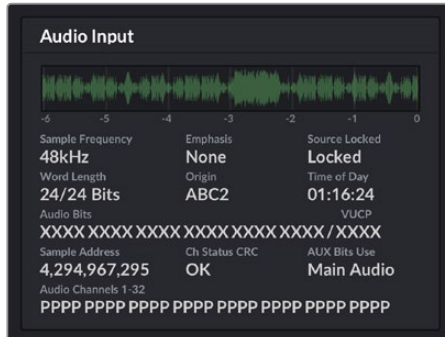Below the mini viewers you can view detailed technical information about the video input source connected to your Web Presenter HD's SDI input.

Input Standard	Displays the resolution and frame rate of the SDI video input. Web Presenter HD supports up to 2160p60.
Colorimetry	Shows the color space of the SDI video input. Web Presenter HD supports Rec.601, Rec.709 and Rec.2020 color spaces.
SDI Ancillary Data	Ancillary data is data carried in the SDI video input that is in addition to video. This includes embedded audio, timecode and closed captions. If your SDI input includes ancillary data then 'Present' will be displayed.

Timecode	Displays the timecode from the SDI video input source.
Closed Captions	If your SDI video input includes Closed Captions the format will be displayed here. CEA-608 and CEA-708 formats are supported.
SMPTE 292 CRC	This is an error checking function for SDI video. If your Web Presenter HD detects a problem in the SDI video input it will display an error. CRC errors are usually caused by a faulty SDI cable or a cable that is too long.
Luminance Y Bits and Chroma Bits	The indicators for 'luminance y bits' and 'chroma bits' show you the activity of the SDI video input signal. Each letter represents the state of one bit of the video signal. **X -** An 'X' indicates a constantly changing bit. **L -** A low bit. **H -** A high bit. SDI offsets are subtracted to make it easy to understand. For example, all bits are low when video is black. Generally, all 10 bits for your SDI video input will show 'X' to mean all the bits on your video stream are changing constantly. If your SDI input is 8 bit video, the two rightmost bits will always be 'L' as they don't have any data. If a bit stays 'L' or 'H' when you expect it to be 'X', this indicates a 'stuck bit' and could be the result of a fault in the upstream video.

Audio Input

The audio waveform display at the top of the audio input panel shows the audio information for the past 6 seconds of your live stream. This is continually updated and scrolls from right to left.


Below the audio waveform display you can view detailed technical information about the audio input.

Sample Frequency	Displays the sample frequency rate of the audio embedded in the SDI input.
Emphasis	Indicates if your audio source has its emphasis option enabled.
Audio Source Lock	Indicates whether the audio source frequency is locked to an external reference source.
Word Length	Shows the bit depth of the audio embedded in the SDI input.
Origin	These four characters indicate the channel origin.
Time of Day	Free run timecode.
Audio Bits	Similar to 'luminance y bits' and 'chroma bits'. An 'X' means a constantly changing bit. If a 'L' or 'H' is displayed this indicates a 'stuck bit' and may mean the the audio signal bit depth is less than expected.

VUCP	Reading VUCP bits from left to right: the 'V' bit indicates 'valid', 'U' is the 'user' bit, 'C' is the 'checksum' bit, and 'P' is for 'parity'. This field is like 'audio bits'.
Sample Address	Audio sample counter.
AUX Bits Use	Indicates whether AUX bits are used for main audio.
Audio Channels 1-32	Each digit represents an embedded audio channel on the SDI input. A 'P' shows that an audio channel is in use and a '-' means that there is no audio on that channel.

Data Rate Display

The data rate display shows the current data rate of of the encoder over the past 60 seconds. The data rate is measured in megabits per second. This indicator runs consistently, even when off air, so you can accurately gauge your bandwidth before going on air.
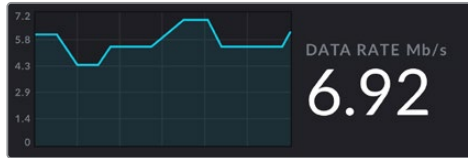

Cache Display

The cache display shows the percentage of Web Presenter HD's built in memory buffer that is currently in use and the graph shows the amount used over the past 60 seconds. The cache is a small amount of internal memory that continuously records and plays the program output. It acts as a safety measure if the streaming data rate decreases below a level able to sustain video.

The variable nature of the internet is mostly due to network activity or wireless signal strength, so if the broadcast data rate decreases, the buffer data will increase accordingly. If the connection speed becomes slow enough that it cannot support the video stream, the cache will fill with video frames to compensate. However, once the cache is 100% full, the video stream will be compromised, so you will want to avoid a full cache where possible. You can run a test by connecting a video feed and watching the cache display in the monitor output without having to start the stream. If the cache frequently approaches 100%, choose a lower quality in the live stream settings.

Audio Meters

You can monitor the levels of your audio source using the audio meters. These can be set to display either PPM or VU levels in the Web Presenter HD's menu settings. If your audio levels are too high the meters will illuminate red and may mean that the audio in your live stream could become distorted or clipped. Ideally try to keep your audio towards the top of the green section and occasionally in to the yellow section.
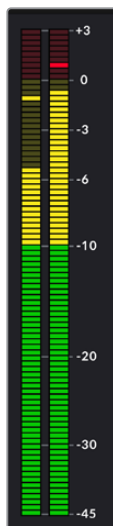
Using Web Presenter Setup

When your Blackmagic Web Presenter is connected to a network, any computer connected to the same network can be used to control your Web Presenter remotely. With Blackmagic Web Presenter Setup, you can access the same controls and settings that are available on the unit's front panel.
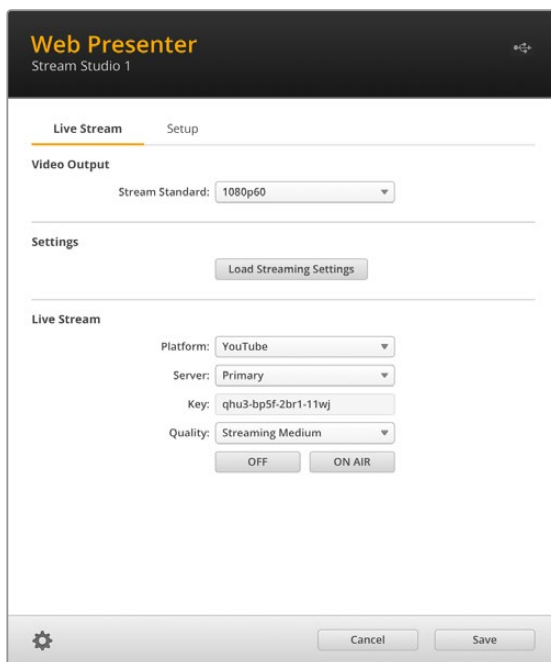
Live Stream Tab

Video Output

Stream Standard

Click on the 'stream standard' menu to select the video resolution setting for your stream. You can choose from 720p25 up to 1080p60.

Settings

If you have custom streaming settings, for example an XML file from a Blackmagic ATEM Streaming Bridge, you can import them by clicking the 'load streaming settings' button.

For more information on creating custom settings and connecting to ATEM Streaming Bridge, refer to the 'Creating Video Links with ATEM Streaming Bridge' section later in this manual.

Live Stream

Platform

Click the 'Platform' menu to select the streaming platform for your broadcast. Options include YouTube, Facebook and Twitch. If you have imported custom streaming settings they will also appear in the platform list.

Server

Select the server that is closest to your location by selecting it from the list. The server list will vary depending on your chosen streaming platform.

Key

Enter the streaming key that has been assigned to your broadcast from the streaming platform. For more information on obtaining a streaming key, see the 'Getting a Stream Key' section.

Quality

Select the streaming quality:
- HyperDeck High 45 to 70 Mb/s
- HyperDeck Medium 25 to 45 Mb/s
- HyperDeck Low 12 to 20 Mb/s
- Streaming High 6 to 9 Mb/s
- Streaming Medium 4.5 to 7 Mb/s
- Streaming Low 3 to 4.5 Mb/s

The data rate used by the quality setting will change depending on the video standard Web Presenter HD is using. For example, if you select 'streaming high' quality and are running at 1080p24 then it would use the 6 Mb/s data rate.

The data rates used on HyperDeck High are 45 to 70 Mb/s, the rates for HyperDeck Medium are 25 to 45 Mb/s and the data rates used for HyperDeck Low are 12 to 20 Mb/s. The streaming data rates are lower to allow for transmitting the data over the internet, so the data rate for Streaming High is 6 to 9 Mb/s, the data rate for Streaming Medium is 4.5 to 7 Mb/s and the data rate for Streaming Low is 3 to 4.5 Mb/s.

You will notice that each setting has 2 data rates mentioned. The lower number is used for the lower frame rates of 24p, 25p and 30p, while the higher data rates are used when you are running higher frame rates of 50p and 60p. It's also worth noting that the default setting for the streaming quality is Streaming High 6 to 9 Mb/s, as this gives a very high quality streaming channel.

Off and On Air buttons

You can start or stop a live stream by using the 'off' and 'on air' buttons. The 'on air' button illuminates red when a live stream is in progress.

Setup Tab

Name

If you want to rename your Web Presenter HD, type a new name into the box and click 'save'.

Language

Lets you change the unit's language setting.

Software

Displays Web Presenter HD's current software version.

Audio Meters

Use the menu to choose the type of audio meter to display. Choose from VU -18dBFS, VU -20dBFS, PPM -18dBFS or PPM -20dBFS reference levels.

Network

These settings allow you to configure options such as choosing between connecting to a network over DHCP or using a static IP address. For more information on connecting your Web Presenter HD to a network, refer to the 'network settings' section.

> **Connection Priority -** When Ethernet and a mobile phone are both connected to the Web Presenter, this setting lets you choose which connection will be used for streaming. For more information on mobile tethering, refer to the 'streaming using your smartphone' section

Reset

Reset your Web Presenter HD by clicking the 'factory reset' button.

Network Settings

Your Web Presenter HD can connect to the network using a static IP address or by using DHCP.

DHCP - will automatically set an IP address for your unit and connect it to your network without any settings changed.

The dynamic host configuration protocol, or DHCP, is a service on network servers and routers that automatically finds your Web Presenter HD and assigns an IP address. DHCP makes it easy to connect equipment via Ethernet and make sure that IP addresses do not conflict with each other. Most computers and network switches support DHCP.

Static IP - If you want to set the IP address yourself, simply set the protocol setting to 'static IP' and change the IP settings manually.

A static IP address is one that won't change even if your Web Presenter HD is rebooted.

Using a static IP address might be necessary if your connecting your Web Presenter HD to a corporate network. If you have a network administrator, it's possible your network might have custom IP addresses for all the equipment connected to it. It's best to check with your network administrator if they are managing your computers and network in your company.

Setting Internet Sharing for Direct Streaming

If you are unable to plug Web Presenter HD directly into a network switch or internet router, you can share your computer's internet connection with Web Presenter HD through its Ethernet port.

To set up Blackmagic Web Presenter HD for direct streaming:

1   Set your Web Presenter HD to use DHCP.

2   Configure your computer to share its internet connection through its Ethernet port.

Mac: in System Preferences, click 'sharing' then select 'internet sharing' from the 'service' list. In the 'share your connection from' menu, choose 'wi-fi' if your Mac is connected to the internet over wifi. In the 'to computers using' list, select 'ethernet'. In the 'service' list, tick the 'internet sharing' checkbox. When you are asked if you are sure you want to turn on internet sharing, click 'start'.

Windows: in the Windows search box, type 'view network connections' and press enter. Right click on the internet connection and select 'properties'. On the 'sharing' tab, tick 'allow other network users to connect through this computer's internet connection'. Select a network connection in the menu then click 'OK'.

3   Plug Web Presenter HD into your computer's Ethernet port. After a few seconds, DHCP assigns an IP address to Web Presenter HD.

4   Confirm your Web Presenter HD is connected to the internet via Ethernet by observing Ethernet icon in the top right corner on the unit's LCD screen.

Streaming Using Your Smartphone

Blackmagic Web Presenter is able to stream by tethering to your smartphone. This means you can stream to the world from any location where your smartphone has a cellular connection.

To set up mobile tethering:

1   Connect your smartphone to Blackmagic Web Presenter HD using a USB-C cable. You can use the USB-C connector on the front or back panel.

2   Enable your smartphone's internet hotspot.

On your iOS device open settings > personal hotspot and make sure 'allow others to join' option is on. On your Android device swipe the screen to display the quick menu. Press and hold the hotspot icon and then turn on USB tethering.

Now you can press the 'on air' button on your Blackmagic Web Presenter HD to go live.

> **TIP** Once you've finished streaming, we recommend you switch off tethering connections to save your smartphone's battery life.

If your Web Presenter HD had an Ethernet cable connected, you are advised to confirm it is configured to use mobile internet tethering. Open the Web Presenter Setup utility and go to the 'setup' tab. In the 'network' section, set the connection priority to 'mobile'.

Using Blackmagic Web Presenter HD as a Webcam

Software such as Skype or Zoom should automatically set Web Presenter HD as the webcam, so when you launch the application you will see video from your Web Presenter HD immediately. If the application doesn't select Web Presenter HD automatically, manually set it to use Web Presenter HD as the webcam and microphone.

Below is an example of how to set the webcam settings on Skype.

1   In Skype's menu bar, open the 'video and audio settings'.

2   Click on the 'Camera' menu and select your Web Presenter HD from the list. You will see the video from Web Presenter HD appear in the preview window.

3   Go to the 'Microphone' menu and select your Web Presenter HD as your audio source.

Setting up Open Broadcaster

Open Broadcaster is an open source application that works as a streaming platform between your Web Presenter HD and your favorite streaming software like YouTube, Twitch, Facebook Live and others. Broadcaster compresses your video to a bit rate that is easily managed by your streaming app.

Below is a demonstration of how to set up Open Broadcaster to stream the webcam output from your Web Presenter HD using YouTube Live as the streaming service.
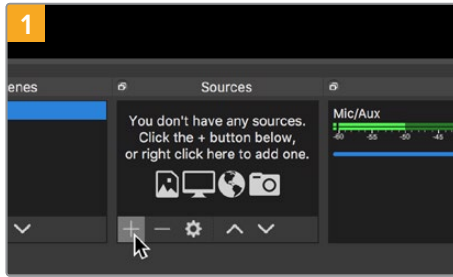
Launch Open Broadcaster and click on the plus symbol in the 'sources' box.
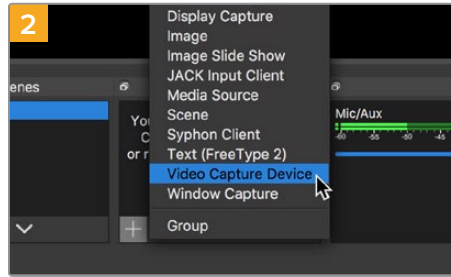
Select 'Video Capture Device'.
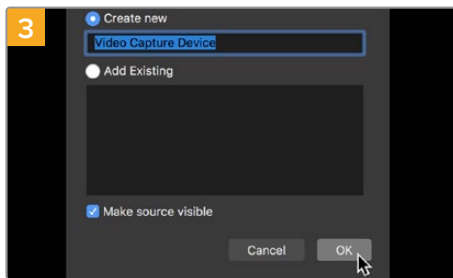
Name the new source and click 'OK'.
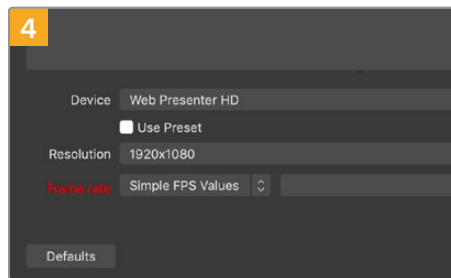
In the device menu, select your Web Presenter HD model and click 'OK'.
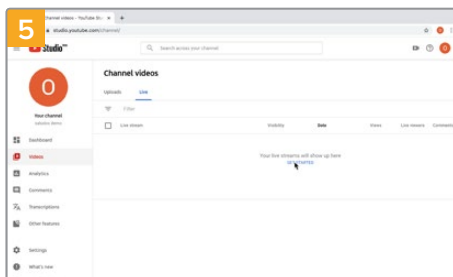
Now go to your YouTube account. Click on the 'go live' button then click 'stream'.
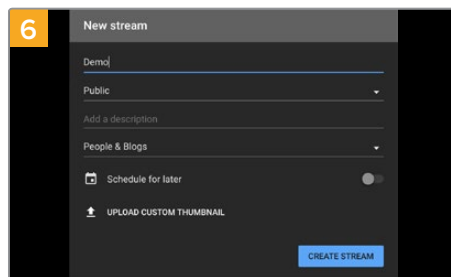
In the YouTube 'stream' options, enter your broadcast details and click 'create stream'.
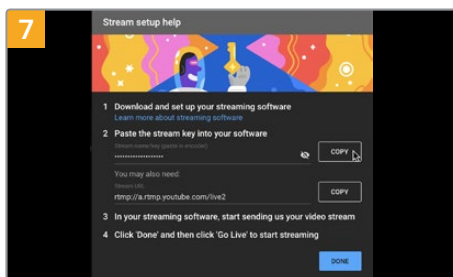
YouTube will now generate a stream key that will direct Open Broadcaster to your YouTube account.

Click the 'copy' button next to the stream key. Copy the stream key that you will now paste into Open Broadcaster.
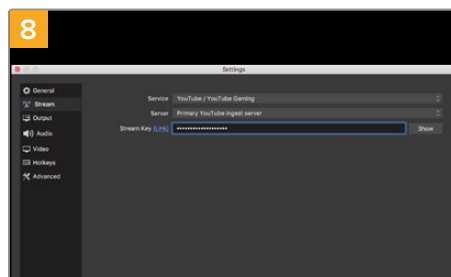
Return to Open Broadcaster and open the preferences by clicking on 'OBS/preferences' in the menu bar. Select 'stream'. Now paste in the stream key you copied from YouTube and click 'OK'.

You will now see the video from your Web Presenter HD in the Open Broadcaster streaming preview window.
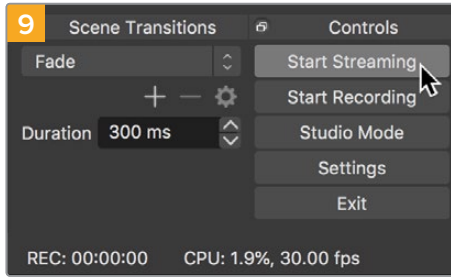
To connect Open Broadcaster's broadcast link to YouTube, click 'start streaming' in the bottom right corner of the screen. This establishes the link to YouTube from Open Broadcaster and from here everything will now be set using YouTube Live.
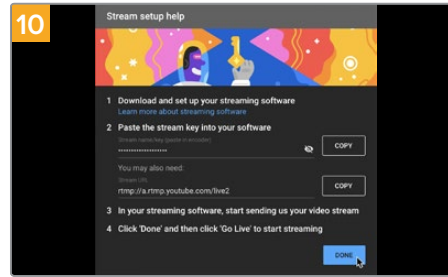
Go back to YouTube Live and you will see the webcam program output from your Web Presenter HD in the background. Click 'done'.
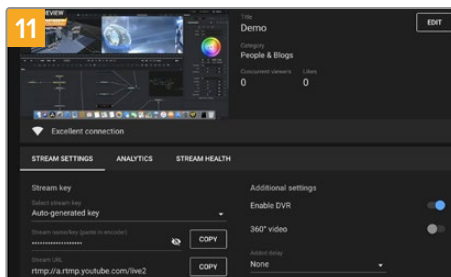
With Open Broadcaster now communicating with YouTube Live, you are ready to begin your broadcast. Now it's time to perform your final checks and make sure everything is good.
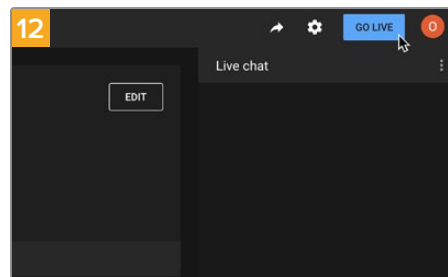
If you are all set, you can now begin your broadcast by clicking 'go live'.

You are now broadcasting live on YouTube with Open Broadcaster.

NOTE Due to the nature of internet streaming there can often be a delay, so it's important to watch the stream on YouTube and confirm your program has finished before clicking 'end stream' to make sure you don't accidentally cut the end of your broadcast short.

Creating Video Links with ATEM Streaming Bridge

The ATEM Streaming Bridge allows you to decode the streaming video from any Web Presenter HD and convert it back to SDI or HDMI video. It allows you to send video over your local network, or to anywhere in the world via the internet.
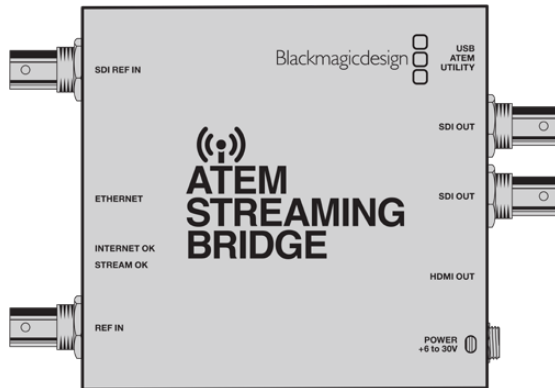
If your ATEM Streaming Bridge is connected to the same local network as your Web Presenter HD, it will be listed in the 'platform' menu on the live stream tab in Web Presenter Setup.

Otherwise, you can load a streaming setting XML file on a USB drive connected to the Web Presenter HD or via your computer using Web Presenter Setup.

For more information on streaming to an ATEM Streaming Bridge please refer to the 'Creating Video Links with ATEM Streaming Bridge' section in the Blackmagic ATEM Mini manual. The latest version of the manual can be downloaded from the Blackmagic Design Support center at www.blackmagicdesign.com/support

Teranex Mini Rack Shelf

Teranex Mini Rack Shelf is a 1 RU shelf that lets you install your Blackmagic Web Presenter HD into a broadcast rack or road case. Your Web Presenter HD is so small, you can install it next to other Blackmagic Design equipment that shares a similar form factor, such as Teranex Mini converters, Blackmagic MultiView 4 and HyperDeck Studio Mini. For example, installing a Blackmagic Web Presenter HD together with ATEM Television Studio HD gives you the ability to switch eight video inputs and live stream the program output through your Web Presenter HD. This modular design lets you build your own custom video solutions that are portable and easy to use!

Teranex Mini Rack Shelf lets you rack mount your Blackmagic Web Presenter HD with other Blackmagic Design equipment that shares the same form factor, such as Teranex Mini Converters and ATEM Television Studio HD

Installing your Blackmagic Web Presenter HD into a Teranex Mini Rack Shelf is as easy as removing the unit's rubber feet, if installed, and fastening the unit to the base of the shelf using the supplied screws. The Teranex Mini Rack Shelf ships with two original blank panels which you can use to cover gaps if you don't need to install additional Blackmagic Design equipment.

For more information check the Blackmagic Design website at www.blackmagicdesign.com

Updating the Internal Software

The setup utility lets you update your Web Presenter HD's internal software in addition to configuring the streaming settings, network settings and streaming quality.

To update the internal software:

1   Download the newest Blackmagic Web Presenter installer from www.blackmagicdesign.com/support.

2   Run the Blackmagic Web Presenter installer and follow the onscreen instructions.

3   After installation is complete, connect your Web Presenter to the computer via the USB connector on the rear panel or on the front panel under the plastic dust cover.

4   Launch Blackmagic Web Presenter Setup and follow any onscreen prompt to update the internal software. If no prompt appears, the internal software is up to date and there is nothing further you need to do.

Download the latest setup utility for your Blackmagic Web Presenter HD from the Blackmagic Design support center at www.blackmagicdesign.com/support

Developer Information

Blackmagic Web Presenter Ethernet Protocol

v1.0

Overview

The Blackmagic Web Presenter Ethernet Protocol is a line-oriented, text-based protocol to control a Web Presenter. The Blackmagic Web Presenter Ethernet Protocol is available for Blackmagic Web Presenter HD. Lines from the Web Presenter server will be separated by an ASCII LF sequence. Messages from the user may be separated by LF or CR LF.

Connection

The Web Presenter server is accessed by connecting to TCP port 9977 on a Web Presenter.

Connection Response

Upon connection, the Web Presenter server sends a dump of the device's state. The Web Presenter server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the "," and "\" characters escaped with a "\" character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

The protocol preamble block is always the first block sent by the Web Presenter server:

```
PROTOCOL PREAMBLE:↵
```

Legend	
↵	End of line
…	and so on
Orange Text	Client Generated
Grey Text	Server Generated

```
Version: 1.0↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Web Presenter server by any client, such as the Blackmagic Web Presenter Setup utility, the Web Presenter server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example. if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵
Video Mode: Auto↵
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Web Presenter server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Web Presenter server will either acknowledge the request by responding:

```
ACK↵
↵
```

or if unable to parse the block responding with:

```
NACK↵
↵
```

After a positive response, the client should expect to see a status update from the Web Presenter server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

If the Web Presenter server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Web Presenter will respond with the existing value for the key. In both cases the Web Presenter server will still respond with an ACK.

```
STREAM SETTINGS:↵
Video Mode: UnsupportedMode↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
↵
```

Requesting a Status Dump

The user may request that the Web Presenter server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Web Presenter server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Web Presenter.

Block Syntax

The following example shows the Identity Block for a Blackmagic Web Presenter HD.

```
IDENTITY:↵
Model: Blackmagic Web Presenter HD↵
Label: Blackmagic Web Presenter HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Web Presenter model name	String
Label	Read/Write	A display name for the Web Presenter	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Web Presenter can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Web Presenter↵
↵
ACK↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Web Presenter.

Block Syntax

```
VERSION:↵
Product ID: BE73↵
Hardware Version: 0100↵
Software Version: 48858B6F↵
Software Release: 2.0↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Web Presenter product ID	Hexadecimal ID
Hardware Version	Read only	The Web Presenter hardware version	Hexadecimal version
Software Version	Read only	The Web Presenter software version	Hexadecimal version
Software Release	Read only	The Web Presenter software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Web Presenter.

Block Syntax

This example shows the output for a connected Web Presenter. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵
Interface Count: 2↵
Default Interface: 0↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
Current DNS Servers: 192.168.1.1, 8.8.4.4↵
↵
NETWORK INTERFACE 0:↵
Name: Cadence GigE Ethernet MAC↵
Priority: 1↵
MAC Address: 00:11:22:33:44:55↵
Dynamic IP: true↵
Current Addresses: 192.168.1.10/255.255.255.0↵
Current Gateway: 192.168.1.1↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
↵
```

```
NETWORK INTERFACE 1:↵
Name: USB Ethernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
↵
```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Web Presenter	Integer
Default Interface	Read only	The default networking interface	Integer
Static DNS Servers	Read only	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

```
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: true↵
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
↵
ACK↵
↵
NETWORK INTERFACE 0:↵
Dynamic IP: false↵
Static Addresses: 192.168.1.2/255.255.255.0↵
Static Gateway: 192.168.1.1↵
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Web Presenter.

Block Syntax
```
UI SETTINGS:↵
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,
tr_TR.UTF-8↵
Current Locale: en_US.UTF-8↵
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵
Current Audio Meter: PPM -20dB↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Web Presenter	Comma separated list of locales
Current Locale	Read/Write	The current locale for Web Presenter	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Web Presenter	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Web Presenter.

Block syntax

This example shows the output for a connected Web Presenter. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Available Default Platforms: Facebook, Twitch, YouTube, Twitter /
Periscope, Restream.IO↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Web Presenter	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the Available Video Modes field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the Available Default Platforms and Available Custom Platforms fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Web Presenter	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
```

Stream XML Block

The stream XML block allows users to configure the Web Presenter with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Web Presenter.

```
STREAM XML:↵
Files: Custom.xml↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Web Presenter	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All

Adding a Stream XML file

An XML file can be loaded onto a Web Presenter by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

```
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
        <service>↵
              <name>My Custom Platform</name>↵
              ...↵
        </service>↵
</streaming>↵
↵
ACK↵
↵
STREAM XML Custom.xml:↵
<?xml version="1.0" encoding="UTF-8"?>↵
<streaming>↵
        <service>↵
              <name>My Custom Platform</name>↵
              ...↵
        </service>↵
</streaming>↵
↵
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Web Presenter by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Web Presenter by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Web Presenter.

The Web Presenter server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration and Bitrate fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵
Status: Idle↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Web Presenter, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Web Presenter shutdown action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵
Action: Start↵
↵
```

```
ACK↵
↵
STREAM STATE:↵
Status: Connecting↵
↵
STREAM STATE:↵
Status: Streaming↵
↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵
Status: Idle↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Web Presenter. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Web Presenter shutdown action.	Reboot Factory Reset

Reboot

The Web Presenter can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
Action: Reboot↵
↵
ACK↵
↵
```

On reboot action, the Web Presenter server will be stopped and clients will be disconnected.

Factory Reset

The Web Presenter can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
Action: Factory Reset↵
↵
ACK↵
↵
```

Blackmagic Embedded Tally Control Protocol

Version 1.0 (30/04/14)

This section is for third party developers or users who may wish to add support for the Blackmagic Embedded Tally Control Protocol to their products or system. It describes the protocol for sending tally information embedded in the non active picture region of a digital video stream.

Data Flow

A master device such as a broadcast switcher embeds tally information into its program feed which is broadcast to a number of slave devices such as cameras or camera controllers. The output from the slave devices is typically fed back to the master device, but may also be sent to a video monitor.

The primary flow of tally information is from the master device to the slaves. Each slave device may use its device id to extract and display the relevant tally information.

Slave devices pass through the tally packet on their output and update the monitor tally status, so that monitor devices connected to that individual output may display tally status without knowledge of the device id they are monitoring.

Assumptions

Any data alignment / padding is explicit in the protocol. Bit fields are packed from LSB first.

Blanking Encoding

One tally control packet may be sent per video frame. Packets are encoded as a SMPTE 291M packet with DID/SDID x51/x52 in the active region of VANC line 15. A tally control packet may contain up to 256 bytes of tally information.

Packet Format

Each tally status consists of 4 bits of information:

```
uint4
    bit 0:  program tally status (0=off, 1=on)
    bit 1:  preview tally status (0=off, 1=on)
    bit 2-3: reserved (0x0)
```

The first byte of the tally packet contains the monitor device tally status and a version number.

Subsequent bytes of the tally packet contain tally status for pairs of slave devices. The master device sends tally status for the number of devices configured/supported, up to a maximum of 510.

```
struct tally
    uint8
        bit 0:  monitor device program tally status (0=off, 1=on)
        bit 1:  monitor device preview tally status (0=off, 1=on)
        bit 2-3: reserved (0b00)
        bit 4-7: protocol version (0b0000)
    uint8[0]
        bit 0:  slave device 1 program tally status (0=off, 1=on)
        bit 1:  slave device 1 device preview tally status (0=off, 1=on)
        bit 2-3: reserved (0b00)
```

```
        bit 4:  slave device 2 program tally status (0=off, 1=on)
        bit 5:  slave device 2 preview tally status (0=off, 1=on)
        bit 6–7: reserved (0b00)
    uint8[1]
        bit 0:  slave device 3 program tally status (0=off, 1=on)
        bit 1:  slave device 3 device preview tally status (0=off, 1=on)
        bit 2–3: reserved (0b00)
        bit 4:  slave device 4 program tally status (0=off, 1=on)
        bit 5:  slave device 4 preview tally status (0=off, 1=on)
        bit 6–7: reserved (0b00)
        ...
```
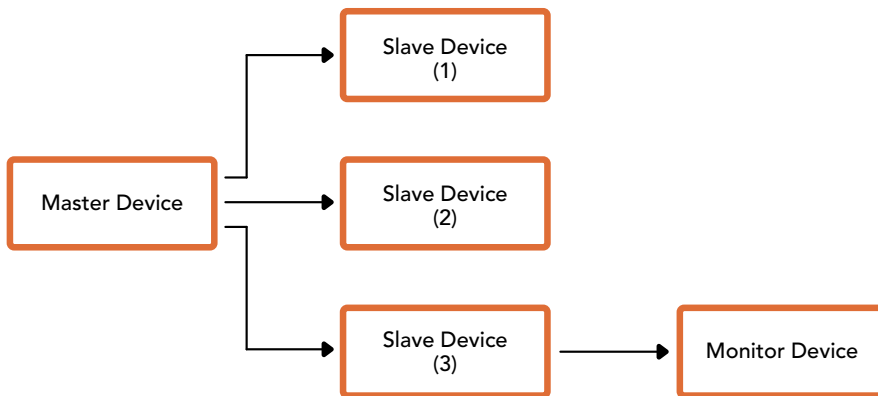

Byte	7 MSB	6	5	4	3	2	1	0 LSB
0	Version (0b0)	Version (0b0)	Version (0b0)	Version (0b0)	Reserved (0b0)	Reserved (0b0)	Monitor Preview	Monitor Program
1	Reserved (0b0)	Reserved (0b0)	Slave 1Preview	Slave 1Program	Reserved (0b0)	Reserved (0b0)	Slave 0Preview	Slave 0Program
2	Reserved (0b0)	Reserved (0b0)	Slave 3Preview	Slave 3Program	Reserved (0b0)	Reserved (0b0)	Slave 2Preview	Slave 2Program
3	…							

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 Web Presenter.

Blackmagic Design Online Support Pages

The latest manual 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 use the 'send us an email' button on the support page to email a support request. Alternatively, click on the 'find your local support team' button on the support page and call your nearest Blackmagic Design support office.

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-20201201001
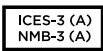
ISED Canada Statement

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

This equipment must be connected to a mains socket outlet with a protective earth connection.

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

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

Storage temperature range is -20°C to 60°C and relative humidity 0% to 90% non-condensing.

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

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

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

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.

Warranty

36 Month Limited Warranty

Blackmagic Design warrants that Blackmagic Web Presenter will be free from defects in materials and workmanship for a period of 36 months from the date of purchase excluding connectors, cables, fiber optic modules, fuses and batteries which will be free from defects in materials and workmanship for a period of 12 months from the date of purchase. If the 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 obligated to furnish service 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. THIS WARRANTY IS GIVEN BY BLACKMAGIC DESIGN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. BLACKMAGIC DESIGN AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BLACKMAGIC DESIGN'S RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE WHOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER BLACKMAGIC DESIGN OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. BLACKMAGIC DESIGN IS NOT LIABLE FOR ANY ILLEGAL USE OF EQUIPMENT BY CUSTOMER. BLACKMAGIC IS NOT LIABLE FOR ANY DAMAGES RESULTING FROM USE OF THIS PRODUCT. USER OPERATES THIS PRODUCT AT OWN RISK.