



Installation and Operation Manual

Teranex Mini IP Video 12G

April 2017



Welcome

Thank you for purchasing Teranex Mini IP Video 12G, a Teranex Mini converter that lets you send SDI video over IP networks.

Your Teranex Mini IP Video 12G converts SDI video into TICO encoded data which can be delivered over your network via Ethernet. A second unit connected to the network decodes the data and converts it back to SDI so you can plug the video into other SDI equipment.

With multiple units connected to your network as sources or destinations, you can route any signal to any unit using Blackmagic Videohub Control or Teranex setup software, or via the LCD menu with an optional Teranex Mini Smart Panel attached.

HD video can be connected via the 1G Ethernet port, or you can install an optional 10G Ethernet optical fiber SFP module if you want to connect Ultra HD video!

This instruction manual contains all the information you need to start using your Teranex Mini IP Video 12G.

Please check the support page on our website at www.blackmagicdesign.com for the latest version of this manual and for updates to your IP Video 12G converter's software. Keeping your software up to date will ensure you get all the latest features as well as support for any new SDI formats that might be invented in the future! When downloading software, please register with your information so we can keep you updated when new software is released or you can follow us on twitter to get notifications of any software updates. We are continually working on new features and improvements, so we would love to hear from you!

A handwritten signature in black ink that reads "Grant Petty". The signature is written in a cursive, flowing style.

Grant Petty

CEO Blackmagic Design

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Getting Started with HD

For a basic IP video connection, you will need two Teranex Mini IP Video 12G's. One unit will be the source, which will convert your source video using TICO encoding, and the other unit will be the destination, which receives the TICO encoded video signal and converts it back to SDI so you can then plug it into other SDI equipment such as a monitor or recording deck.

TICO encoding is a visually lossless compression specifically designed to let you to distribute high quality video across an IP network.

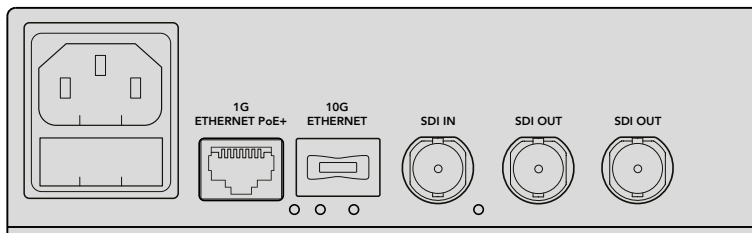
However, Teranex Mini IP Video 12G is more than a simple point to point video over Ethernet converter, because it can also use the Blackmagic Videohub Software. This turns any Windows or Mac OS computer into a router server that can manage the connections between many units so you can build a large custom sized router, all using your network.

The advantage of this is you can customize the size of your router plus you can also use broadcast router control panels, routing software and even custom automation solutions designed for Blackmagic Design's Videohub routers. This eliminates the user and installation complexity, and the whole system is as fast to use as any traditional broadcast style router.

Connecting Power

The first step is to plug in power to your Teranex IP Video 12G units. To supply power, simply plug a standard IEC power cable into the power input on each unit's rear panel. When power is connected, the small LED indicator on the basic front panel illuminates white.

NOTE You can also power your IP Video 12G via Ethernet by connecting the 1G Ethernet PoE+ port on the rear of each unit into a compatible Ethernet switch that supports PoE+ or 'power over Ethernet plus'.



Connect power to your Blackmagic Teranex Mini IP Video 12G's rear panel using a standard IEC power cable, or via 1G Ethernet if your network switch support PoE+

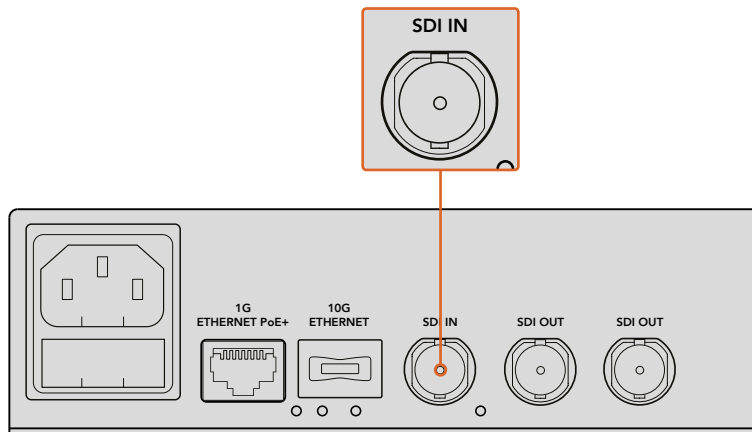
Connecting HD Video

Teranex Mini IP Video 12G takes an HD video source connected via the unit's SDI input and converts the signal using TICO encoding so you can connect the video output to your network via Ethernet.

Plugging in the HD Source Video

Connect the HD source video to a source unit via the SDI in connector on the rear panel. The unit will automatically detect the video format and the LED indicator on the basic front panel will illuminate green. The small LED indicator next to the SDI connector will also illuminate to let you know the signal is locked.

TIP If you have a Teranex Mini Smart Panel attached, the source video can be seen on the panel's LCD.

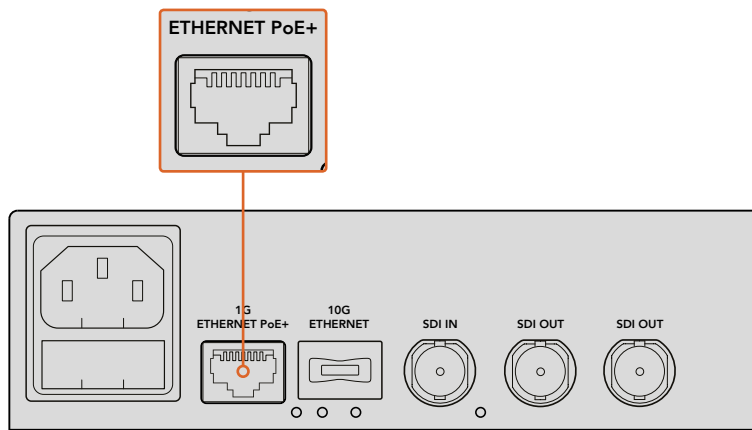


Plug the SDI source video into the source unit's SDI video input

Plugging in Video via Ethernet

The next step is to connect the unit's 1G Ethernet output to your network. HD video is sent and received via the 1G Ethernet connector on the unit's rear panel. The direction of the signal, for example a video input or output, depends on whether you have set the unit as a source or destination. You can find more information about this setting in the 'setting Teranex Mini IP Video 12G as a source or destination' section in this manual.

You can plug into your network using a standard Cat 5 or Cat 5e Ethernet cable, however we recommend using a shielded cable, such as a Cat 6a S/FTP network cable. A shielded cable will prevent potential electromagnetic interference when the unit is positioned near other electrical equipment.



Plug HD video to and from your network via the 1G Ethernet connector

Connecting the Destination Video Output

For the destination unit, you will likely want to connect the unit's video outputs to other SDI equipment, for example a HyperDeck Disk Recorder or SDI monitor. To do this, simply plug into the SDI outputs on the unit's rear panel. There are two SDI outputs so you have the option to plug into more SDI equipment if you need to.

Connecting Audio

There are no separate audio inputs as audio is always embedded into the SDI video signal and is carried across the network in sync with the video.

Connecting to your Network

Your Teranex Mini IP Video 12G source and destination units were connected to the network when you connected video via the 1G Ethernet connector. The Ethernet connector handles all network related activity including sending and receiving TICO encoded video, changing settings and updating the unit's internal software.

About Network Switches

When connecting to a network switch, we recommend using a managed switch with PTP precision time protocol and E2E end to end enabled. This type of network switch lets you change the configuration to suit your network requirements, for example prioritizing traffic for smoother data flow and improved reliability.

If you are connecting to a network switch with VLAN functionality, ensure VLAN is disabled.

Non managed network switches can still be used. However, without the IGMP management systems enabled, a destination unit may be getting traffic from several sources, thus exceeding its port's bandwidth.

NOTE The number of IP video streams you can have routed on your network depends on the bandwidth of your network switch. Refer to the your network switch's manufacturer specifications for more information.

Network Settings

Your source and destination units will have their network settings set to DHCP by default. DHCP lets your network automatically identify each Teranex Mini IP Video 12G with their own IP addresses and lock each unit to the network's PTP clock, so you won't need to change any settings and each unit will be automatically recognized by your network.

If you want to set the IP address manually on each unit, you can change the network settings via the Blackmagic Teranex Setup administration software, or by using an optional Teranex Mini Smart Panel, if attached. For more information, refer to the 'Settings' section in this manual.

Setting a Unit as a Source or Destination

Now that video is connected to your source and destination units and each unit is connected to the network, you need to set each unit as a source or destination so they can be routed correctly.

If you have the basic front panel attached that came with the unit, you can use the built in small switches. Simply move switch 1 up or down using the tip of a pen.



On the basic front panel, set the unit as a source or destination by moving switch 1 up or down with the tip of a pen

If you have a Teranex Mini Smart Panel attached, you can change this setting and more using the LCD menu settings. You can also use the Blackmagic Teranex Setup software. Refer to the Blackmagic Teranex Setup section for more information on how to change settings using the setup software.

Routing Sources and Destinations

With each unit set as a source and destination, you can now route the source to the destination unit. There are two ways you can route your IP video, including the LCD menu with an optional Teranex Mini Smart Panel attached, or via the Blackmagic Videohub software.

Routing IP Video using Teranex Mini Smart Panel

With a Teranex Mini Smart Panel attached you can route IP video using the buttons, rotary knob and LCD.

To route a source to a destination unit:

- 1 Press the menu button to enter the settings menu.
- 2 Rotate the knob clockwise or counter clockwise to select the 'source list'. Press the set button to open the list.
- 3 Rotate the knob to select your desired source from the list and press the set button to confirm the selection.

Press the menu button twice to return to the home screen. You will now see the video for the selected source on the home screen.

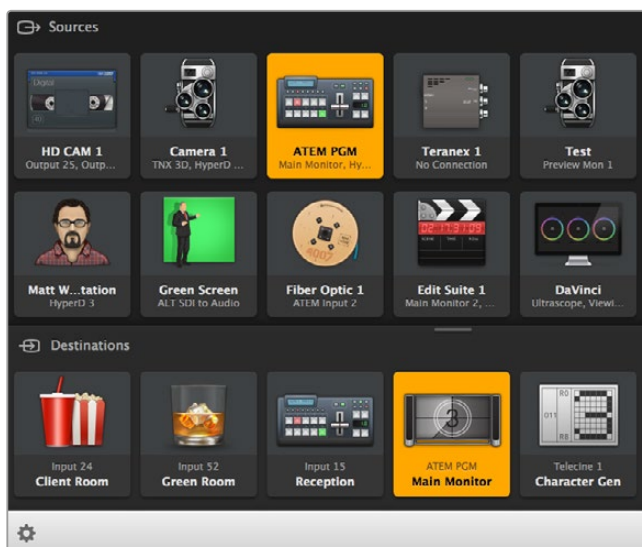
Source List	
1	Input 1
2	Input 2
3	Input 3
4	Input 4
5	Input 5
6	Input 6

With a Teranex Mini Smart Panel attached, you can use the sources list in the LCD menu to route sources to a destination

Routing IP Video using Blackmagic Videohub

If you have a larger network with multiple IP video units connected, it is much faster and easier to route them all using Blackmagic Videohub Control. The Blackmagic Videohub software panel lets you manage and route small to large networks of IP video units using one single control panel.

For details on how to use the Videohub software, refer to the 'Routing IP Video using Blackmagic Videohub Control Software' section.



Blackmagic Software Control lets you manage and route multiple sources and destinations using one single control panel

For hardware control over large networks you can route IP Video using a Blackmagic Design hardware control panel, such as a Blackmagic Smart Videohub or Master Control. Refer to the ‘using a Videohub hardware panel’ section in this manual for more information.

Low Latency and Clean Switching

If you need clean switching when routing sources, you can set the unit to use the clean switch feature. This lets you route sources sharing the same video format without any glitches. However, this introduces a minor delay of several lines in the output video. For immediate routing without any delay, select low latency. You can find more information about these settings and how to change them in the ‘settings’ section in this manual.

Adding More Units to the Network

You can always add more Teranex Mini IP Video 12G units to your network if you need access to more video sources, or route more video sources to more destinations.

- 1 Power the unit and connect to your network via Ethernet as shown earlier in the getting started section.
- 2 Once connected and recognized by the network, set the unit as a source or destination using the built in switches, or optional Teranex Mini Smart Panel.
- 3 Route a source to the unit using Blackmagic Teranex Setup or Teranex Mini Smart Panel, or you can add the input to an IP Videohub and route the new source or destination using Blackmagic Videohub Control.

NOTE For information on how to setup an IP Videohub on your computer so you can route sources and destinations using Blackmagic Videohub Control, refer to the Setting up and Routing and IP Videohub’ section in this manual.

That’s all there is to getting started routing HD video on your network!

The size of your network can be as small or as large as you need. It’s not unusual to find many units connected to a network with many video sources routed to many destinations. Please keep reading this manual for more information about the features on your Teranex Mini IP Video 12G, plus all available settings.

Getting Started with Ultra HD

For a basic IP video connection, you will need two Teranex Mini IP Video 12G's. One unit will be the source, which will convert your source video using TICO encoding, and the other unit will be the destination, which receives the TICO encoded video signal and converts it back to SDI so you can then plug it into other SDI equipment such as a monitor or recording deck.

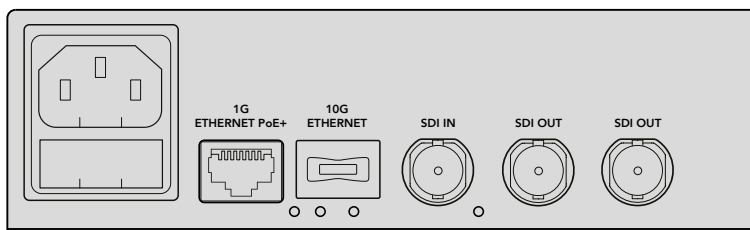
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The advantage of this is you can customize the size of your router plus you can also use broadcast router control panels, routing software and even custom automation solutions designed for Blackmagic Design's Videohub routers. This eliminates the user and installation complexity, and the whole system is as fast to use as any traditional broadcast style router.

Connecting Power

The first step is to plug in power to your Teranex IP Video 12G units. To supply power, simply plug a standard IEC power cable into the power input on each unit's rear panel. When power is connected, the small LED indicator on the basic front panel illuminates white.



Connect power to your Blackmagic Teranex Mini IP Video 12G's rear panel using a standard IEC power cable

Connecting Ultra HD Video

Teranex Mini IP Video 12G supports 12G-SDI so you can connect SDI video formats up to 2160p60. However, to send and receive Ultra HD video over the network you will need to install an optional 10G Ethernet optical fiber module and connect to the network via single mode optical fiber cables with LC connectors.

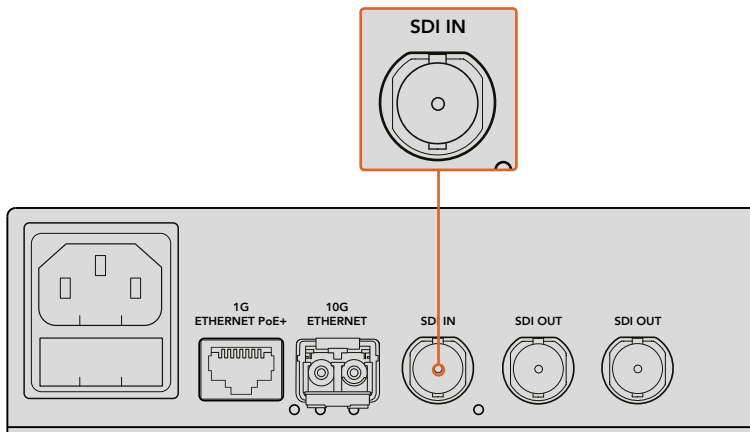
The 10G Ethernet optical fiber module is available from any Blackmagic Design reseller and you can find more information on the Blackmagic Design website at www.blackmagicdesign.com.

TIP When the optional 10G Ethernet optical fiber module is installed and connected to your network, the 1G Ethernet port is disabled and all communication between your Teranex Mini IP Video 12G and your network is handled via the 10G Ethernet connection. This includes all network related activity, such as changing settings and updating the unit's internal software.

Plugging in the Ultra HD Source Video

Connect the Ultra HD source video to a source unit via the SDI in connector on the rear panel. The unit will automatically detect the video format and the LED indicator on the basic front panel will illuminate green. The small LED indicator next to the SDI connector will also illuminate to let you know the signal is locked.

TIP If you have a Teranex Mini Smart Panel attached, the source video can be seen on the panel's LCD.

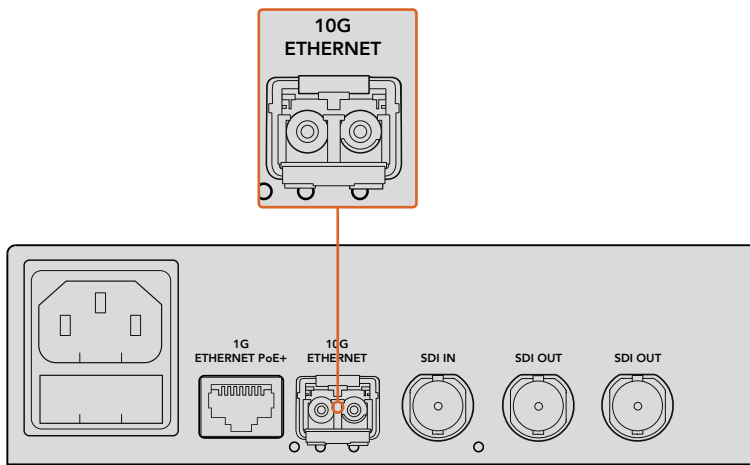


Plug the SDI source video into the source unit's SDI video input

Plugging in Ultra HD Video via Ethernet

The next step is to connect the 10G Ethernet output to your network. Ultra HD video is sent and received via the 10G Ethernet connector on the unit's rear panel when the 10G Ethernet optical fiber SFP module is installed. The direction of the signal, for example a video input or output, depends on whether you have set the unit as a source or destination. Keep reading the getting started section for information on how to set a unit as a source or destination.

The 10G Ethernet connector plugs into your network via optical fiber using single mode optical fiber cables with LC connectors. These are available joined together as a duplex cable for bi-directional support. High speed Ethernet networks typically support optical fiber.



When the 10G Ethernet optical fiber SFP module is installed, Ultra HD video can be connected to your network via the 10G Ethernet connector

Connecting the Destination Video Output

For the destination unit, you will likely want to connect the unit's video outputs to other SDI equipment, for example a HyperDeck Disk Recorder or SDI monitor. To do this, simply plug into the SDI outputs on the unit's rear panel. There are two SDI outputs so you have the option to plug into more SDI equipment if you need to.

Connecting Audio

There are no separate audio inputs as audio is always embedded into the SDI video signal and is carried across the network in sync with the video.

Connecting to your Network

Your Teranex Mini IP Video 12G source and destination units were connected to the network when you connected video via the 10G Ethernet connector. The 10G Ethernet connector handles all network related activity including sending and receiving TICO encoded video, changing settings and updating the unit's internal software.

About Network Switches

When connecting to a network switch, we recommend using a managed switch with PTP precision time protocol and E2E end to end enabled. This type of network switch lets you change the configuration to suit your network requirements, for example prioritizing traffic for smoother data flow and improved reliability.

If you are connecting to a network switch with VLAN functionality, ensure VLAN is disabled.

Non managed network switches can still be used. However, without the IGMP management systems enabled, a destination unit may be getting traffic from several sources, thus exceeding its port's bandwidth.

NOTE The number of IP video streams you can have routed on your network depends on the bandwidth of your network switch. Refer to the your network switch's manufacturer specifications for more information.

Network Settings

Your source and destination units will have their network settings set to DHCP by default. DHCP lets your network automatically identify each Teranex Mini IP Video 12G with their own IP addresses and lock each unit to the network's PTP clock, so you won't need to change any settings and each unit will be automatically recognized by your network.

If you want to set the IP address manually on each unit, you can change the network settings via the Blackmagic Teranex Setup administration software, or by using an optional Teranex Mini Smart Panel, if attached. For more information, refer to the 'Settings' section in this manual.

Setting a Unit as a Source or Destination

Now that video is connected to your source and destination units and each unit is connected to the network, you need to set each unit as a source or destination so they can be routed correctly.

If you have the basic front panel attached that came with the unit, you can use the built in small switches. Simply move switch 1 up or down using the tip of a pen.



On the basic front panel, set the unit as a source or destination by moving switch 1 up or down with the tip of a pen

If you have a Teranex Mini Smart Panel attached, you can change this setting and more using the LCD menu settings. You can also use the Blackmagic Teranex Setup software. Refer to the Blackmagic Teranex Setup section for more information on how to change settings using the setup software.

Routing Sources and Destinations

With each unit set as a source and destination, you can now route the source to the destination unit. There are two ways you can route your IP video, including the LCD menu with an optional Teranex Mini Smart Panel attached, or via the Blackmagic Videohub software.

Routing IP Video using Teranex Mini Smart Panel

With a Teranex Mini Smart Panel attached you can route IP video using the buttons, rotary knob and LCD.

To route a source to a destination unit:

- 1 Press the menu button to enter the settings menu.
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Press the menu button twice to return to the home screen. You will now see the video for the selected source on the home screen.

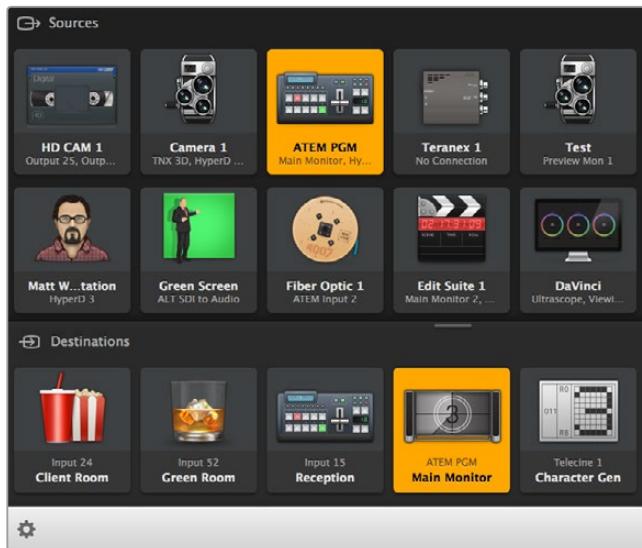
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If you have a larger network with multiple IP video units connected, it is much faster and easier to route them all using Blackmagic Videohub Control. The Blackmagic Videohub software panel lets you manage and route small to large networks of IP video units using one single control panel.

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For hardware control over large networks you can route IP Video using a Blackmagic Design hardware control panel, such as a Blackmagic Smart Videohub or Master Control. Refer to the ‘using a Videohub hardware panel’ section in this manual for more information.

Low Latency and Clean Switching

If you need clean switching when routing sources, you can set the unit to use the clean switch feature. This lets you route sources sharing the same video format without any glitches. However, this introduces a minor delay of several lines in the output video. For immediate routing without any delay, select low latency. You can find more information about these settings and how to change them in the ‘settings’ section in this manual.

Adding More Units to the Network

You can always add more Teranex Mini IP Video 12G units to your network if you need access to more video sources, or route more video sources to more destinations.

- 1 Power the unit and connect to your network via Ethernet as shown earlier in the getting started section.
- 2 Once connected and recognized by the network, set the unit as a source or destination using the built in switches, or optional Teranex Mini Smart Panel.
- 3 Route a source to the unit using Blackmagic Teranex Setup or Teranex Mini Smart Panel, or you can add the input to an IP Videohub and route the new source or destination using Blackmagic Videohub Control.

NOTE For information on how to setup an IP Videohub on your computer so you can route sources and destinations using Blackmagic Videohub Control, refer to the Setting up and Routing and IP Videohub’ section in this manual.

That’s all there is to getting started routing Ultra HD video on your network!

The size of your network can be as small or as large as you need. It’s not unusual to find many units connected to a network with many video sources routed to many destinations. Please keep reading this manual for more information about the features on your Teranex Mini IP Video 12G, plus all available settings.

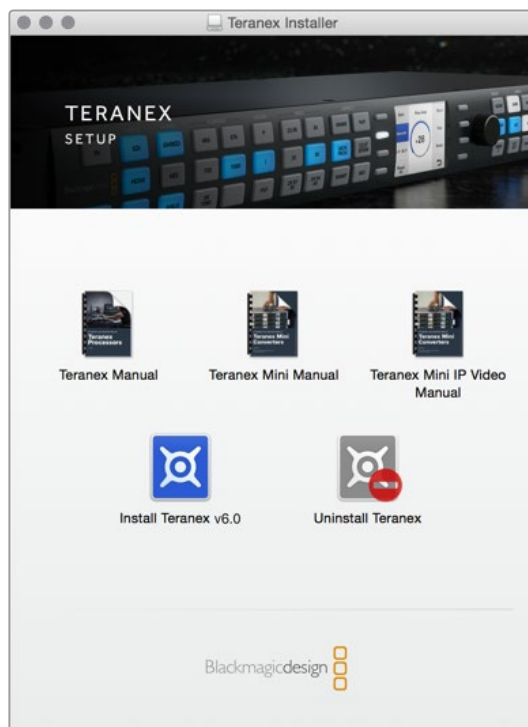
Settings

There are three different ways you can change settings on your Teranex Mini IP Video 12G. You can use the Blackmagic Teranex Setup administration utility to change settings via Ethernet or USB, you can use the LCD menu if you have an optional Teranex Mini Smart Panel attached, or you can use the built in small switches on the unit itself.

Installing Blackmagic Teranex Setup

The Blackmagic Teranex Setup administration software is used to change routing settings and update your Teranex Mini IP Video 12G with the latest internal software via USB or Ethernet. You can also change network settings using the setup software via USB.

The software installer is located on the supplied SD card, but we recommend downloading the latest version from the Blackmagic Design Support Center at www.blackmagicdesign.com/support/family/broadcast-converters.



Blackmagic Teranex Setup can be installed on Mac and Windows computers

Mac OS Installation

- 1 Download the Blackmagic Teranex software from www.blackmagicdesign.com.
- 2 Unzip the downloaded file and open the resulting disk image to reveal its contents.
- 3 Double click the installer and follow the prompts to complete the installation.

The Teranex setup utility is now installed.

Windows Installation

- 1 Download Blackmagic Teranex software from www.blackmagicdesign.com.
- 2 Unzip the downloaded file. You should see a Blackmagic Teranex Setup folder containing this PDF manual and the Teranex setup utility installer.
- 3 Double click the installer and follow the prompts to complete the installation.
- 4 When the installation has finished, it will prompt you to restart your computer. Click 'restart' to complete the installation.

Once the computer has restarted, Blackmagic Teranex Setup will be ready to use.

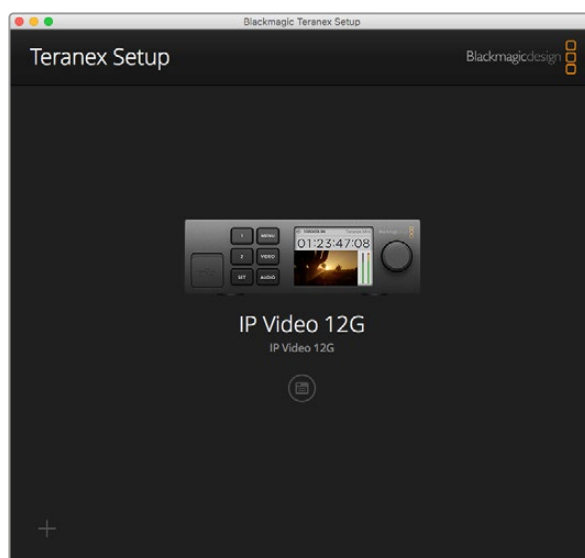
Changing Settings using Blackmagic Teranex Setup

Once you have installed the Teranex Setup software on your computer, connect the computer to your Teranex Mini IP Video 12G via USB or an Ethernet cable. Using Blackmagic Teranex Setup is the most efficient way to manage multiple units on your network.

The first thing you'll see when launching the software is the home page. Here you can select the unit you want to configure. To change settings, click on the 'settings' icon below the image of your Teranex Mini IP Video 12G. If you have more than one unit connected to your network or computer, choose the unit by clicking on the arrows on each side of the home page.

Adjustments will be immediately saved to the unit. This means if power is lost, your settings will be re-established as soon as the power is restored.

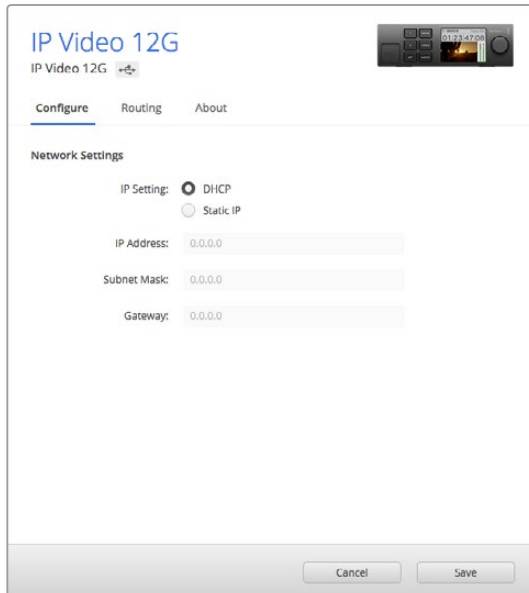
NOTE If you have connected your Teranex Mini IP Video 12G via Ethernet but the unit does not appear on the home page, you may first need to configure the unit's network settings via USB. Refer to the 'configure tab' information in this section for more information on how to change the network settings on your Teranex Mini IP Video 12G.



Blackmagic Teranex Setup lets you update your Teranex Mini IP Video 12G's internal software and change settings using a Mac or Windows computer

Configure Tab

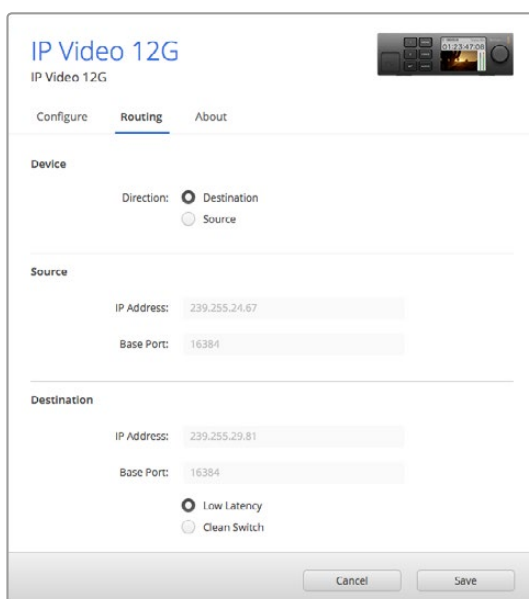
The 'configure' tab contains the network settings for your IP Video 12G. Here you can select between DHCP and static network addresses, as well as set up the IP address, subnet mask, and gateway for the unit. To change network settings, your Teranex Mini IP Video 12G must be connected to the computer via USB.



The 'configure' tab lets you change network settings when the unit is connected to your computer via USB

Routing Tab

The routing tab contains the direction settings which lets you set the unit as a source or destination, displays important information about the source and destination network settings, plus lets you set a destination unit to use low latency or clean switch modes.



Use the 'routing tab' in Blackmagic Teranex Setup to set your Teranex Mini IP Video 12G as a source or destination

Device

Click on the destination or source radio buttons to set your Teranex Mini IP Video 12G as a source or destination unit.

Source and Destination Settings

These settings display the IP address and base port for the source and destination units.

Low Latency and Clean Switch Settings

Destination units can be set to low latency or clean switch modes. Low latency minimizes any delay in signal from source to destination by only several lines, however when switching between sources there may be a small disturbance as the source is resynchronized. To avoid any disturbance or glitches when changing sources, select 'clean switch'. This removes any disturbance when changing sources using the same video format, but adds 1 to 2 frames of latency.

About Tab

The 'about' tab allows you to name your Teranex Mini IP Video 12G and identify individual units.

Device

To name a unit, simply click the 'name' text box and type your desired name.

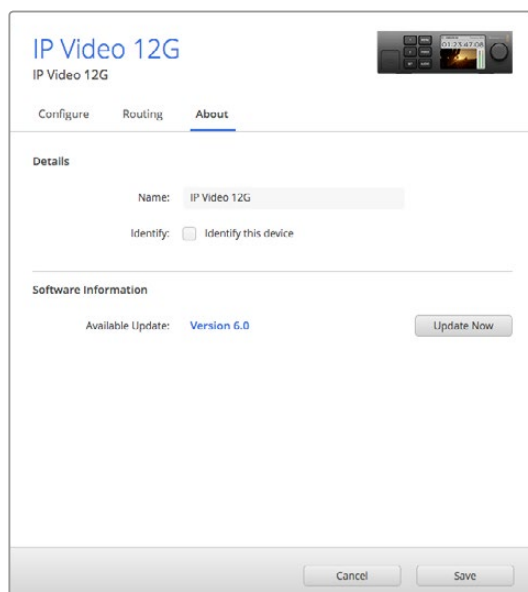
Click 'save' to confirm the change

Identify

To visually identify your selected Teranex Mini IP Video 12G, click on the 'identify' checkbox. This will flash the LED indicator on the unit's basic front panel. If you have a Teranex Mini Smart Panel installed, you will see the smart panel buttons flash. Deselect the checkbox to turn off the indicators.

Software Information

This information identifies which software version your Teranex Mini IP Video 12G is running. If the unit's internal software is older than the current version that comes with Blackmagic Teranex Setup, an 'update now' button will appear which allows you to update the unit's internal software.



The 'about' tab in Blackmagic Teranex Setup is used to name and identify your Teranex Mini IP Video 12G. You can also check the version of the setup software

Changing Settings using a Teranex Mini Smart Panel

With an optional Teranex Mini Smart Panel attached, you can quickly change settings directly from the unit itself using buttons, a rotary knob and LCD menu. You can also confirm sources visually on the LCD and check the audio via the audio meters on the home screen.

This control panel mounts to the front of your IP Video 12G and replaces the original basic panel that shipped with the unit.

The panels are hot swappable, so you don't even need to turn off your Teranex Mini IP Video 12G when installing.

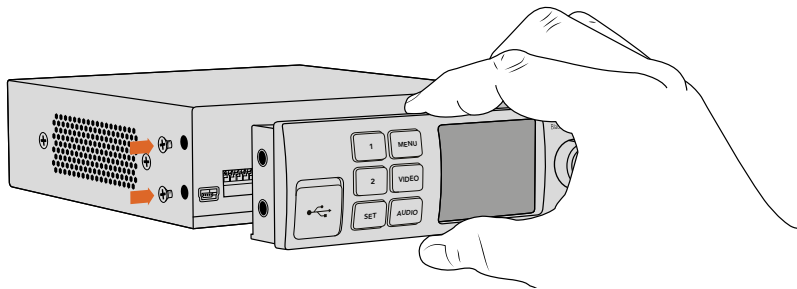
- 1 Remove the two M3 screws on each side of your unit's basic front panel using a Pozidriv 2 screwdriver and gently pull the panel away from the front of your Teranex Mini.
- 2 On the inside of the basic panel, you'll notice a small clear plastic tube attached to the bottom corner. This tube directs light from the LED inside the unit to illuminate the status indicator on the basic panel. This tube should stay attached to the basic front panel.

TIP If reattaching the basic front panel, make sure the light tube is aligned with the slot in the front of the unit.

- 3 Align the connector on the rear of the Smart Panel with the adjoining connector on the face of your Teranex Mini IP Video 12G and gently push the Smart Panel towards the unit until the connectors are firmly seated. The Smart Panel should make a firm connection and fit neatly inside the face of your Teranex Mini IP Video 12G.
- 4 Re-insert the M3 screws from the original panel.

If your Teranex Mini IP Video 12G is installed in a Teranex Mini Rack Shelf, you will need to remove the unit from the rack shelf to access the front panel screws.

See the 'Teranex Mini Rack Shelf' section for more information.



When installing the Teranex Mini Smart Panel to your IP Video 12G, holding the panel with your fingers and thumb aligned with the panel's rear connector will help guide it into place

The USB port is still accessible with the Smart Panel attached. To access the port, simply open the rubber USB dust cover. With the Smart Panel installed, the front panel small switches are covered up and no longer used. This is because all settings can now be changed via the LCD menus.

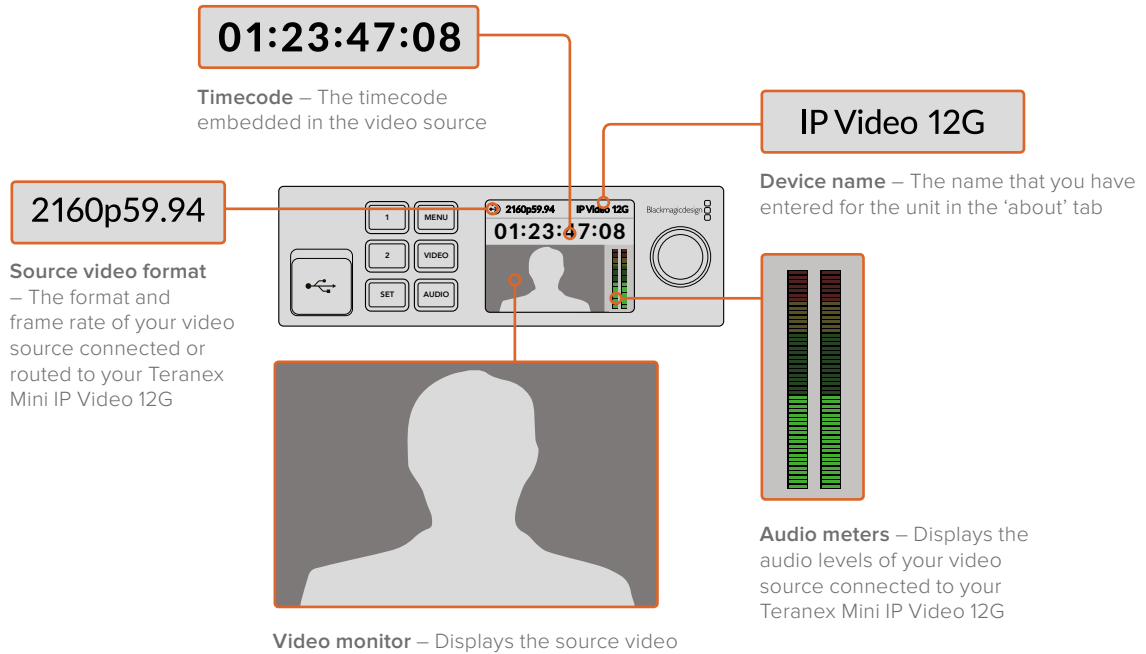
Refer to the 'changing settings' section for information on changing settings using an optional Teranex Mini Smart Panel.

TIP The original basic panel is very strong, so if you need to mount your Teranex Mini IP Video 12G in the back of a rack system or in areas where there are lots of cables or activity, you can always reinstall the original basic panel.

Smart Panel Features





LCD Display

The home screen is the first feature you'll see on your Teranex Mini Smart Panel's LCD display. It displays important information, including the source video format, custom name for the unit, source timecode, and status indicators.



Status Indicators

Indicators on the LCD will show you the current status of the video signal, network connection, and supported data rate.

<p> Network IP Video 12G</p> <p>00:00:00:00</p>	<p>If the network is not detected, 'network' will be displayed on the LCD screen. Check the unit's network settings, and also check the network cable is properly locked into the Ethernet connectors and firmly seated.</p>
<p> Locking ... IP Video 12G</p> <p>00:00:00:00</p>	<p>After the network is successfully connected, you will see the 'locking' indicator as the unit locks to the PTP clock of your network switch. Depending on the network you are connecting to, it may take a short period of time to lock.</p>
<p> No Video IP Video 12G</p> <p>00:00:00:00</p>	<p>Once locked to the network switch, the unit will look for a video signal. If a video signal from the SDI source or Ethernet connection is not detected, 'no video' will be displayed on the LCD screen. Check the SDI source cable is properly connected.</p>
<p> Data rate IP Video 12G</p> <p>00:00:00:00</p>	<p>If the data rate of your SDI source signal is too high for transmission through the selected Ethernet port, 'data rate' will be displayed on the LCD screen. Try changing the source to an HD signal if using the 1G Ethernet port, or install an optional 10G Ethernet optical fiber SFP module for Ultra HD.</p>

Control Buttons and Rotary Knob

Teranex Mini Smart Panel has a set of buttons and a rotary knob that are used to navigate your Teranex Mini IP Video 12G's settings menu.

1 and 2 buttons

Press these buttons to increase or decrease the numeric setting values, or to move up or down through menu settings.

Set

Press the set button to confirm a settings change.

Menu

Press 'menu' to open the settings menu. You can also press the menu button to step back through menu items.

Video and Audio Buttons

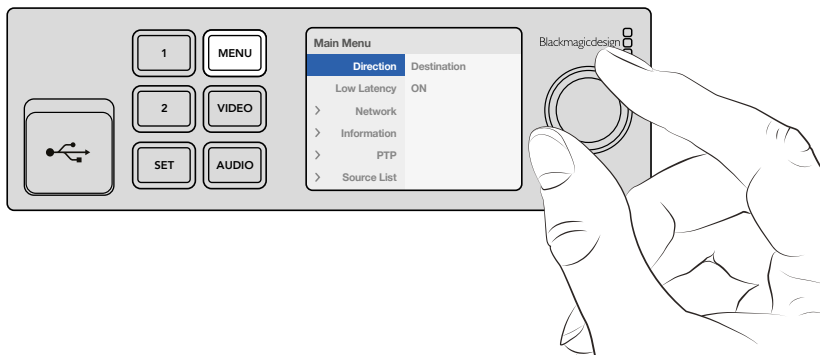
These buttons have no function for Teranex Mini IP Video 12G.

Rotary Knob

Turn the rotary knob clockwise or counter clockwise to navigate through the menu settings and adjust numeric setting values.

Smart Panel Settings

With the Smart Panel attached you can now change settings using the LCD menus.



You can quickly change your settings using an optional Teranex Mini Smart Panel. .

To change a setting using the Smart Panel:

- 1 Press the menu button to open the settings menu.
- 2 Use the rotary knob to scroll through the list of settings.
- 3 Press the set button to select the setting you want to change.
- 4 Use the rotary knob and set button to make changes to the selected setting, then press the menu button to back out of the menu settings and return to the home screen.

The settings displayed on the Teranex Mini Smart Panel will differ depending on whether your Teranex Mini IP Video 12G is set as a 'source' or 'destination'. These settings include:

Direction

This setting lets you to choose whether the unit is a source or a destination.

By default, the unit will be set as a destination. When changing the direction setting, your Teranex Mini IP Video 12G will restart.

Low Latency

Destination units can be set to low latency or clean switch modes. Low latency minimizes any delay in signal from source to destination by only several lines, however when switching between sources there may be a small disturbance as the source is resynchronized. To avoid any disturbance or glitches when changing sources, turn low latency off. This sets the unit to use clean switch mode, which removes any disturbance when changing sources using the same video format, but adds 1 to 2 frames of latency.

Network

Select DHCP if you want to let the network automatically identify each unit with its own IP address, or 'static' if you want to enter your own network settings.

Information

This setting is an indicator that provides information on the source Ethernet connection, such as the source port and IP address.

PTP

The PTP, or precision time protocol setting, indicates whether the unit is a master or slave. The master is provided by a PTP grandmaster device somewhere in the network. If your network does not contain a PTP grandmaster, one Teranex Mini IP Video 12G will be automatically set as the master unit, and all other connected units will lock to that master unit.

Source List

All available Teranex Mini IP Video 12G source units will be displayed in a list using their custom name entered using Blackmagic Teranex Setup. On a destination unit, press the 'set' button to open the list, select your desired source using the rotary knob, and press 'set' again to confirm.

NOTE Even if there is only one source unit connected to the network, you must still select it from the source list on the destination unit.

Changing Settings using Switches

On the original basic panel of your Teranex Mini you'll see a rubber dust cover which protects a set of small switches used for settings. The 'on/off' switches are used to configure internal settings and you can change them using the tip of a pen.



Change settings by adjusting switch 1 with a pen

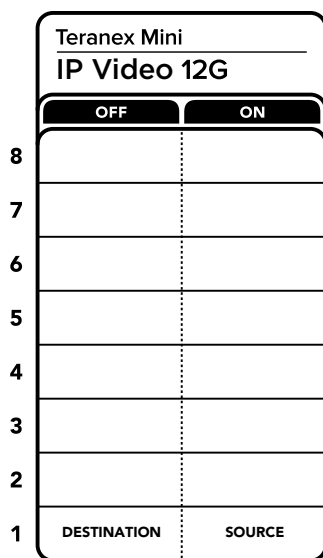
You'll find a switch settings diagram printed on the base of your IP Video 12G. Ensure your switch settings correspond to the legend by observing the switch numbers from 1 to 8, left to right.

When using the optional Teranex Mini Smart Panel, the switch settings will be overridden by the Smart Panel settings. Your Teranex Mini IP Video 12G will retain its last settings whether applied via switch, Smart Panel or Blackmagic Teranex Setup software. If reverting to switch control after removing the Smart Panel or updating your converter's settings via software, you may need to toggle switch 1 for new settings to take effect.

Even though switch settings are printed on the base of your converter, new features in later updates can add new settings so it's worth checking the latest version of this manual for the most up to date information. You can download the latest version from the Blackmagic Design support center at www.blackmagicdesign.com/support

Switch Settings

Switch 1 on Teranex Mini IP Video 12G's small switches sets the direction of the unit to a source or destination. The default state for switch 1 is 'off', which means the unit is set as a destination. To set the unit as a source, set switch 1 to 'on'.

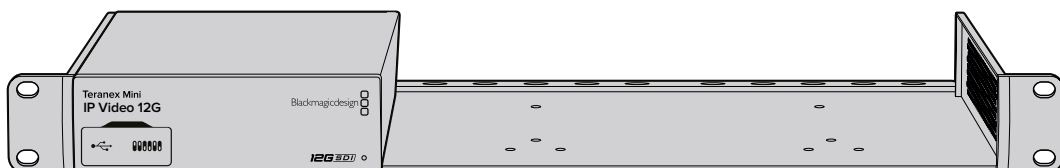


Refer to the switch legend printed on the base of your Teranex Mini IP Video 12G when setting the unit as a source or destination using switch 1

Teranex Mini Rack Shelf

When running multiple sources and destinations, you can use Teranex Mini Rack Shelf to install your Teranex Mini IP Video 12G units into a broadcast rack or road case. Up to three Teranex Minis can fit neatly onto each 1RU Teranex Mini Rack Shelf. Teranex Mini IP Video 12G units are installed into the rack shelf by removing each unit's rubber feet, if attached, and screwing each unit into the base of the shelf using the mounting holes underneath. 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 units.

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



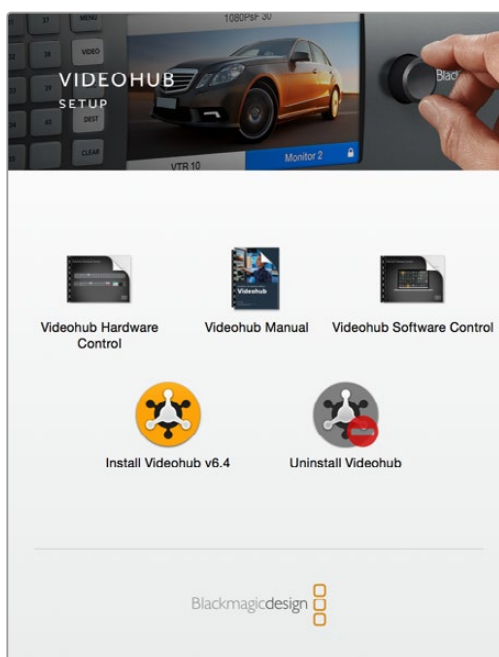
Teranex Mini IP Video 12G can be installed in the Teranex Mini Rack Shelf along with other Blackmagic equipment that shares the same form factor, such as HyperDeck Studio Mini and Teranex Mini Converters

Setting up and Routing an IP Videohub

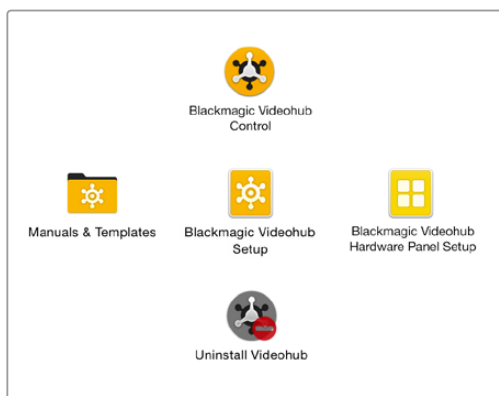
Blackmagic Videohub software lets you set up an IP Videohub and make routing changes using Blackmagic Videohub Control software, or you can also configure a hardware control panel, such as a Blackmagic Videohub Master Control or Smart Control, so you can make routing changes from a rack mounted control panel.

Installing Blackmagic Videohub Software

The Videohub software runs on the latest Sierra version of Mac OS, plus 32 and 64 bit versions of Windows 10. It can be installed from the SD card supplied with your Teranex Mini IP Video 12G, however we recommend downloading the latest version of the software from the Blackmagic Design Support Center at www.blackmagicdesign.com/support/family/routing-and-distribution



To install the Videohub software, double click the installer and follow the prompts



The Blackmagic Videohub folder contains three Videohub applications. Videohub Control, Videohub Setup, and Videohub Hardware Panel Setup.

Mac OS Installation

- 1 Double click the installer file from your downloads folder.
- 2 Follow the install prompts and Mac OS will automatically install the software.

A folder called 'Blackmagic Videohub' will be created within your applications folder containing the following three applications: Videohub Control, Videohub Setup and Videohub Hardware Panel Setup.

Windows installation

- 1 Double click the installer file from your downloads folder.
- 2 Follow the install prompts and accept the terms in the License Agreement and Windows will automatically install the software.

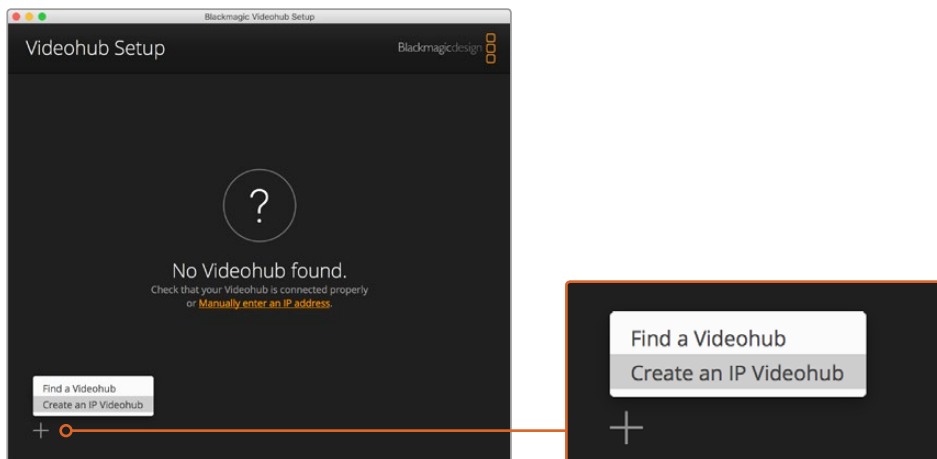
Click the Windows Start button and then All Programs>Blackmagic Design>Videohub. The following three applications are contained within the folder: Videohub Control, Videohub Setup and Videohub Hardware Panel Setup.

Creating an IP Videohub

To use Blackmagic Videohub Control to make routing changes, you will need to create a Videohub server on the host computer. This server can then be accessed by any computer or Blackmagic Videohub control panel on the same network.

To create an IP Videohub using Blackmagic Videohub Setup:

- 1 Connect your Teranex Mini IP Video 12G units to the network as described in the getting started section. Also make sure your computer is also connected to the same network.
- 2 Launch Blackmagic Videohub Setup.
- 3 Click on the '+' symbol and select 'Create IP Videohub'.

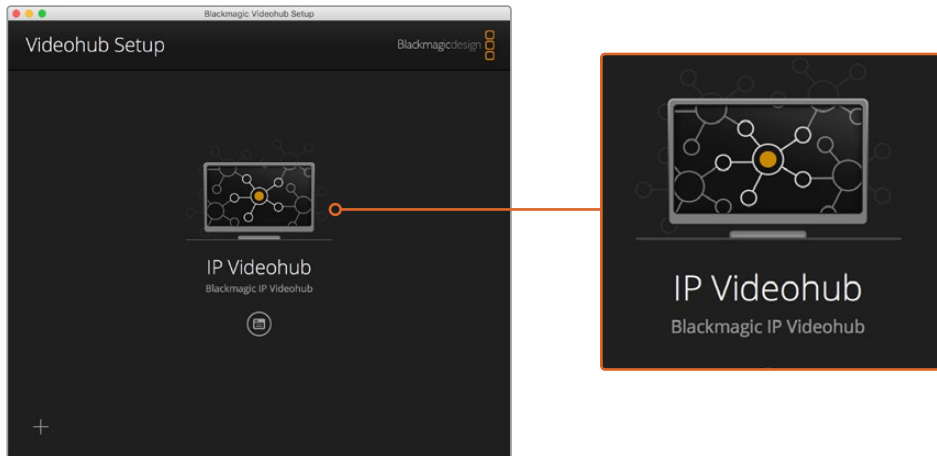


Use Blackmagic Videohub Setup to create an IP Videohub so you can route units using Blackmagic Videohub Control

- 4 Enter a name for the IP Videohub and select a number of inputs and outputs. For example, 1 input and 1 output if you have 1 source unit and one destination unit connected to your network.
- 5 Click 'add'.

NOTE The IP address of the created IP Videohub will share the same IP address of your computer.

Now that your IP Videohub is created, you can see it in the home page. Click on the IP Videohub's icon to open the settings. Here is where the inputs and outputs are defined for the Videohub server. This is important because it tells Blackmagic Videohub Control what all the sources and destinations are so that you can route them.



Create an IP Videohub so you can route source and destination units using Blackmagic Videohub Control software

To set the inputs and outputs for the IP Videohub:

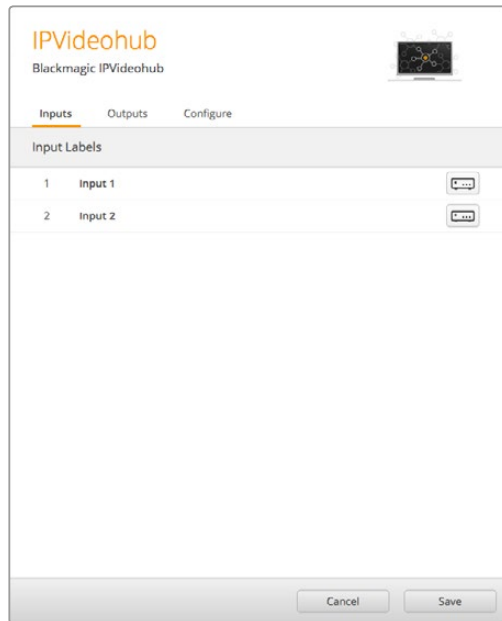
- 1 Click on the 'inputs' tab. This lists the number of inputs you defined when creating the IP Videohub. Now you will need to assign source units to each input. You will see an icon on the right side of each input name. Click on the icon to the right of the 'input 1' label.
- 2 A new window will open showing a list of all source units connected to the network. Choose a source for input 1.

If the source unit does not appear in the list, you can add it manually by entering its IP address. After selecting the source unit, click 'save'.

To assign destination units to each output, simply click on the 'outputs' tab and follow the same instructions set out above but for the outputs instead of the inputs. Click 'save' after you have finished setting your inputs and outputs.

TIP If you gave your source and destination units a custom name in Blackmagic Teranex Setup, the inputs and outputs list will display their custom labels.

If you want to add more inputs and outputs to your IP Videohub, or rename your IP Videohub, simply click on the 'configure' tab and edit the settings from there. You can also edit the names of each input and output by launching Blackmagic Teranex Setup and changing the device name in the 'about' tab.



The inputs and outputs tabs let you assign source and destination units to each input and output

NOTE The IP address of the created IP Videohub will match your computer's IP address.

Removing an IP Videohub

After finishing a project, you may want to remove the IP Videohub from your network. Note that you can only remove the IP Videohub on the local host.

To remove an IP Videohub:

- 1 Select the Videohub you would like to remove.
- 2 Click on the '+' symbol and select 'Remove IP Videohub'.
- 3 A dialogue box will ask you to confirm the removal of the IP Videohub from your computer. Click 'remove'.

Blackmagic Videohub Control

Using Blackmagic Videohub Control provides a fast and intuitive way to view and switch between multiple sources and destinations. Videohub Control operates on a single video output at a time, and selecting a destination pushbutton shows which source is connected to it by illuminating the source pushbutton. To change the source, simply click on a different source pushbutton.



Videohub Control provides an intuitive, icon-driven representation of the Videohub connections

Selecting a Videohub

Launch Videohub Control and click 'select Videohub'. If you already have another Videohub selected, click on the settings icon and choose, 'select Videohub'.

Click on the IP Videohub you just created. You will now see two panels in the software named 'sources' and 'destinations', and your IP Video units will appear in each one.

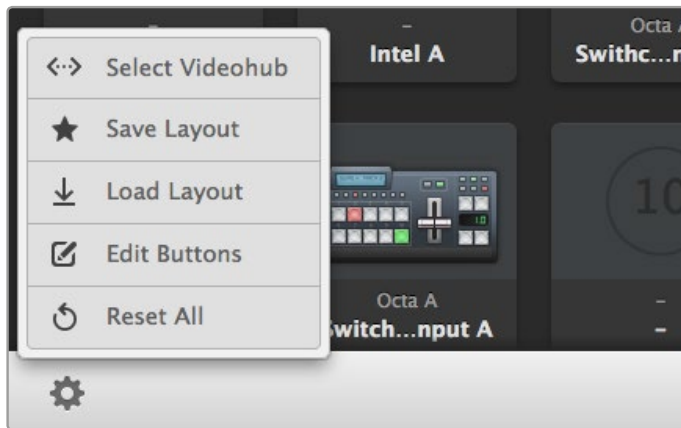
Of course, in the IP Videohub we created there is only one source and one destination, so they will always be routed to each other, but if you have more source and destination units connected, you will see all of them as buttons in both areas and they can all be routed.

You have now set up your IP router so you can route source and destination units using Blackmagic Videohub Control.

Keep reading for more information on how to customize push buttons, including labels and icons, and general control features.



The video destination button will illuminate when selected and displays its current source. In the above example, the destination is the main monitor connected to a DaVinci Resolve suite.



Click on the 'Select Videohub' button and then select the Videohub you wish to control. Select 'edit buttons' to modify your panel layout.

Adding Pushbuttons

Select the settings button and then select 'edit buttons'. Click on the add button and choose whether to add a source or destination pushbutton. The set button window appears and allows you to set the IP video source or destination icon for the pushbutton.

Viewing Routes

In order to see which IP video source has been routed to a video destination, press the button in the destinations panel to make the button illuminate. The associated video source button will illuminate in the sources panel, making it immediately obvious which source is connected to that destination.

Switching Routes

In order to change the video source from one IP video unit to another one, press a different source pushbutton in the sources panel to immediately illuminate the new source and route that source to your selected destination.

Resizing the Interface

Click and drag the bottom right hand corner to proportionally resize the interface to best fit your screen size. Alternatively, drag a window edge to resize either vertically or horizontally.

Resizing the Sources and Destinations Areas

Drag the divider bar up and down and use the scroll bars to scroll the respective areas.

Switching Views

You can switch between pushbutton view and list view by clicking the icons in the bottom right corner.

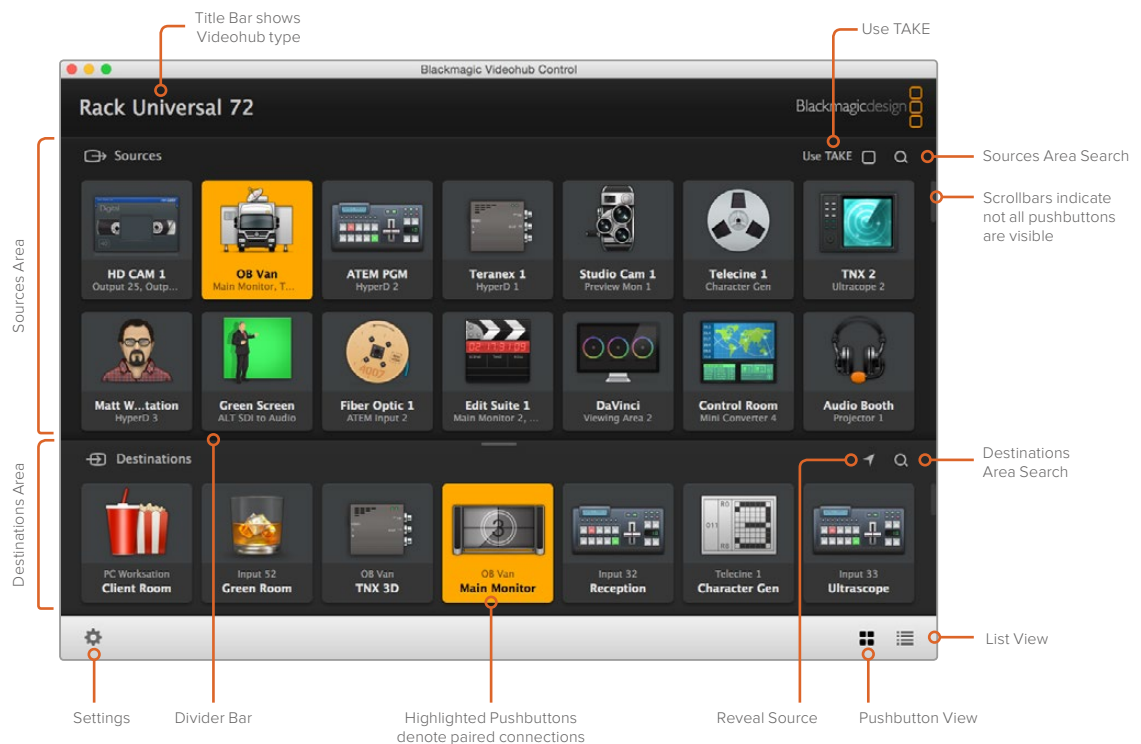
Using the Dynamic Search

Both the sources and destinations areas contain a search icon, which allows you to search for text dynamically. This is useful if you have many pushbuttons and quickly want to locate a pushbutton with a specific name. As you type the name you wish to search for, the pushbuttons that are displayed will be dynamically filtered.



The word 'ATEM' is entered into the Destinations Search Box and the filtered results are displayed

Blackmagic Videohub Control at a Glance



Click and drag the window edges to resize Blackmagic Videohub Control to fit your screen size. Drag the Divider Bar up or down to reveal more or less of the 'Sources' and 'Destinations' areas and use the Scroll Bars to scroll the areas

Settings Menu

Select Videohub

Select from a list of Videohubs that are currently connected to your network.

Save Layout

Save customized pushbutton layouts for the different environments in which you use your Videohub.

Load Layout

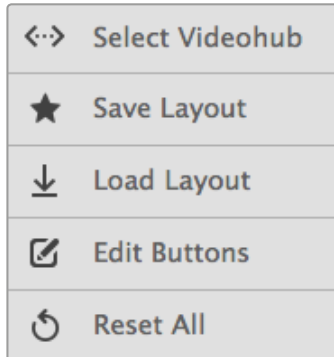
Load previously saved pushbutton layouts.

Edit Buttons

Displays the edit buttons for editing the pushbuttons.

Reset All

Displays all of the inputs and outputs of the connected Videohub and replaces customized icons with the default icon. Source, destination and deck control settings are maintained.



Click the Settings button to display the above menu

Edit Buttons

Add

Add a source or destination pushbutton.

Edit

Allows you to set the SDI source or destination, deck control and the icon for the selected pushbutton.

Lock and Unlock

This feature is not available for an IP Videohub.

Clear

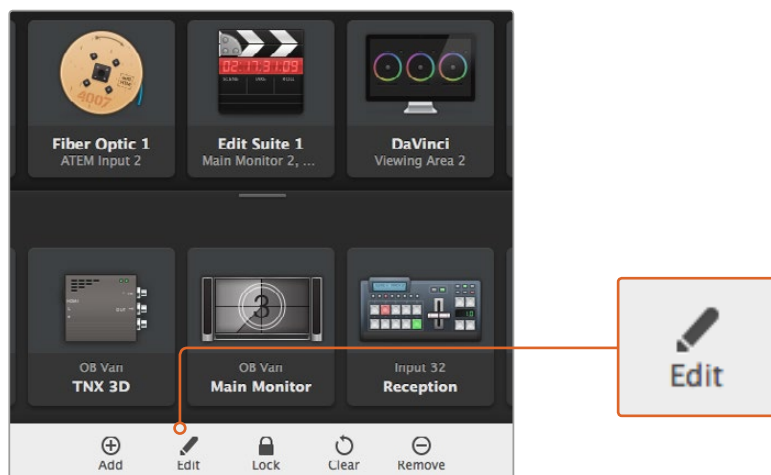
Deletes source, destination and deck control settings as well as the icon for the selected pushbutton.

Remove

Removes the selected pushbutton.

Done

Click the Done button to exit the edit mode.



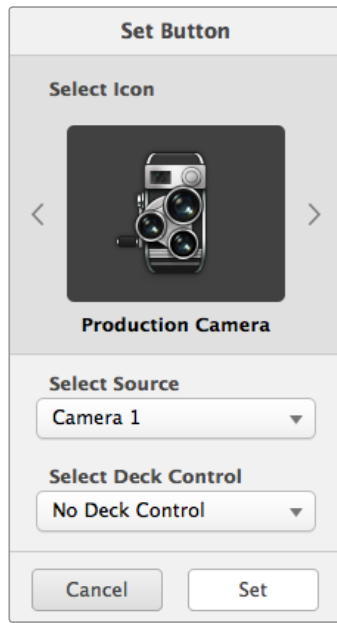
Click on the settings icon and select 'edit buttons' to open the pushbutton customization settings

Using Pushbuttons

Adding and Editing Pushbuttons

Click on the settings icon and then select 'edit buttons'. Click on the add button and choose whether to add a source or destination pushbutton, or click 'edit' to modify an existing one.

The set button window appears and allows you to set the IP video source or destination, control and the icon for the pushbutton.



The set button window allows icon customization for sources and destination pushbuttons

Moving Pushbuttons

When editing or adding pushbuttons, you can also reposition them by clicking on the respective button and dragging it to a new position.

Once you are satisfied with your changes, click 'done' to return the software to standard routing.

Viewing and Switching Routes

Viewing Routes

In order to see which IP video source has been routed to a video destination, such as a monitor, press the button in the destinations panel to make the button illuminate. The associated video source button will illuminate in the sources panel, making it immediately obvious which source is connected to the monitor.

Reveal Source

If you select a destination but the source is currently positioned offscreen, clicking the reveal source button will scroll the sources area to display the source pushbutton.

Switching Routes

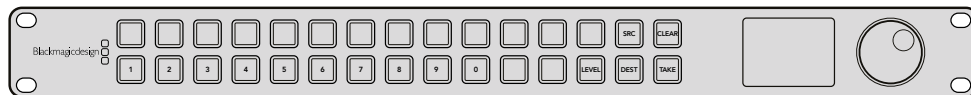
In order to change the video source from a tape deck to a video camera, press a camera pushbutton in the sources panel. The camera pushbutton will illuminate, indicating that it is now routed to the video monitor. The tape deck button will no longer be illuminated and will be disconnected from the video monitor.

Use TAKE Confirmation before Switching Routes

You may wish to enable the 'use take' button to help prevent unintentional changes to video routes. Once enabled, any attempt to change a video route using a pushbutton will cause a red 'take' button to appear. Select the button to confirm or click the current source or destination pushbutton to cancel.

Using a Videohub Hardware Panel

You can also control your IP Videohub router using a Videohub hardware control panel, such as a Blackmagic Videohub Master Control or Smart Control. This lets you route all your sources and destinations from one single rack mounted control panel.



Using an optional control panel like Videohub Master Control lets you route all your IP Video sources and destinations from a rack mounted hardware control panel

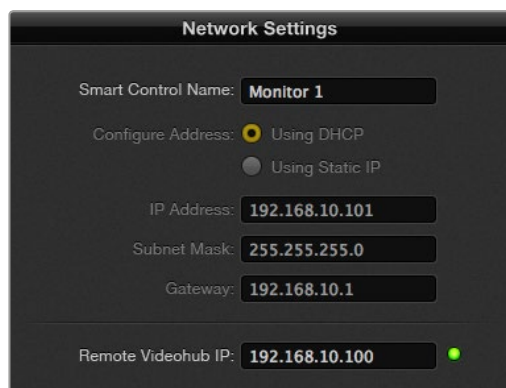
All you need to do is tell the hardware panel the IP Videohub router you want it to control. This is done by entering the IP Videohub's IP address in the panel's network settings via Blackmagic Videohub Hardware Panel Setup.

To set the IP address in the panel's network settings:

- 1 Launch Blackmagic Videohub Hardware Panel Setup.
- 2 Make sure your hardware panel is connected to your computer via Ethernet and is selected in the left column of the hardware panel's setup settings.
- 3 In the hardware panel network settings you will see a setting at the bottom of the list for remote Videohub IP. Click in the edit window and enter your IP Videohub's IP address.

When your hardware panel connects with the IP Videohub, the indicator on right side of the IP address setting will illuminate green.

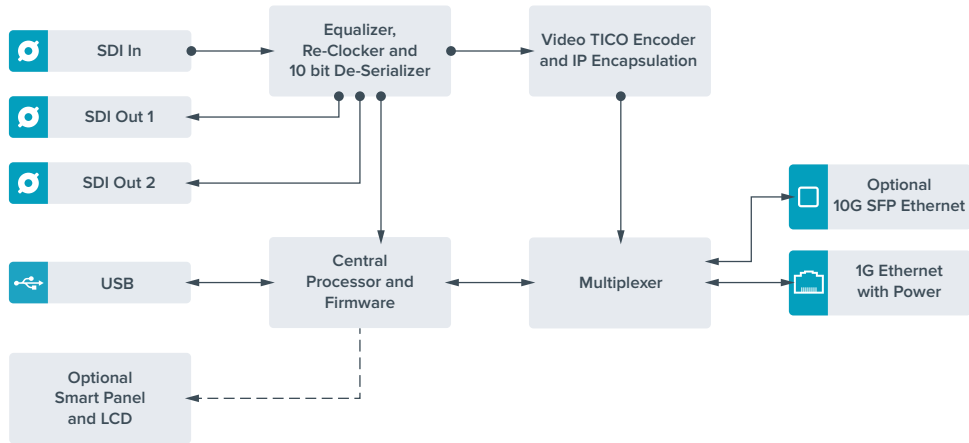
Now you can route your IP Video sources and destinations using the Videohub hardware control panel.



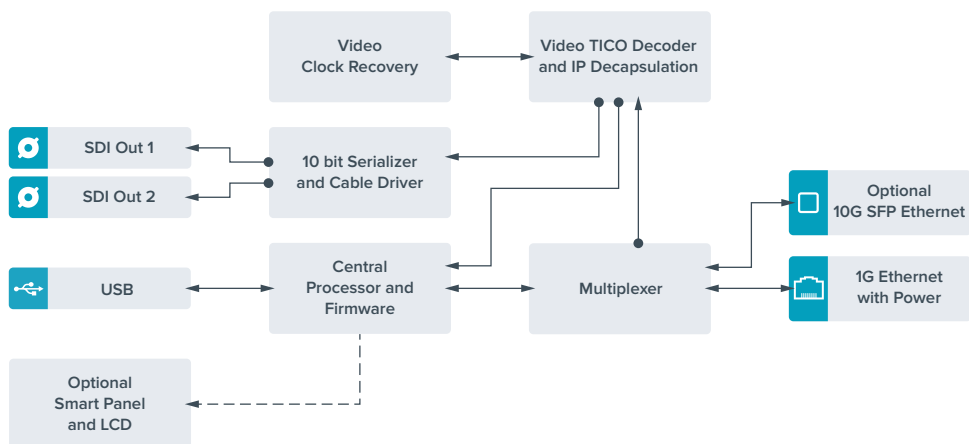
Set the remote Videohub IP setting in Blackmagic Videohub Hardware Panel Setup so you can route your IP video using a Videohub hardware control panel

Teranex Mini IP Video 12G Block Diagram

Source



Destination



Updating the Internal Software

Occasionally, updates for your Teranex Mini IP Video 12G's internal software will be available on the Blackmagic Design website. We recommend downloading the software and updating the internal software so you can benefit from new features and improvements.

The latest software can be downloaded from the Blackmagic Design Support Center at www.blackmagicdesign.com/support

To update the internal software:

- 1 Download and install the latest version of Teranex Mini Setup. Refer to the 'settings' section for information on how to install Teranex Mini Setup.
- 2 Power your Teranex Mini IP Video 12G.

NOTE It is important to ensure that power is connected to your Teranex Mini IP Video 12G before connecting a USB cable between the computer and the unit.

- 3 Attach a USB cable from your computer to the unit, or connect via Ethernet, and launch the Blackmagic Teranex Setup utility.

If your Teranex Mini IP Video 12G is not detected, Blackmagic Teranex Setup will report 'no converter connected' in the title bar. When the unit is detected, the name of the unit and its image will appear.

If Blackmagic Teranex Setup contains newer internal software than that currently installed in your Teranex Mini IP Video 12G, it will prompt you to update. Just follow the on screen instructions to complete the update. Once the internal software update is complete, you will be able to make adjustments to the unit using the Blackmagic Teranex Setup utility.

Appendix

Connecting a Grand-Master Clock

If connecting a grand master clock to your switch, it should allow unicast delay request packets.

Packet fields recommended values:

- defaultDS.priority1: 128
- defaultDS.priority1: 128
- defaultDS.domainNumber: 127
- defaultDS.slaveOnly: FALSE
- portDS.logAnnounceInterval: -2 (this is 250ms)
- portDS.announceReceiptTimeout: 3 (the number of announce intervals that have to pass without receipt of an announce message before the occurrence of the event ANNOUNCE_RECEIPT_TIMEOUT_EXPIRES)
- portDS.logSyncInterval: -3 (this is 125ms)
- portDS.delayMechanism: 01h (we do only Delay request-response, aka End-to-End)
- portDS.logMinPDelayReqInterval: -3 (equal to portDS.logSyncInterval)
- transparentClockDefaultDS.delayMechanism: 01h (we do only End-to-End)
- transparentClockDefaultDS.primaryDomain: 127 (same as defaultDS.domainNumber)
- portDS.logMinDelayReqInterval: -3 (equal to portDS.logSyncInterval)

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 Teranex Mini.

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.

Contacting Blackmagic Design Support

If you can't find the help you need in our support material, 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.

Checking the Software Version Currently Installed

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

On a Mac, open Blackmagic Teranex Setup from the Applications folder. Select About Blackmagic Teranex Setup from the application menu to reveal the version number.

On Windows 7, open Blackmagic Teranex Setup from your Start menu. Click on the Help menu and select About Blackmagic Teranex Setup to reveal the version number.

On Windows 8, open Blackmagic Teranex Setup from the Blackmagic Teranex Setup tile on your Start page. Click on the Help menu and select About Blackmagic Teranex Setup to reveal the version number.

How to Get the Latest Software Updates

After checking the version of Blackmagic Teranex 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 and Safety Information

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.

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

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.

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.

This product has the facility to connect small form-factor transceiver (SFP) optical fibre modules. Only use Laser class 1 optical SFP modules.

Warranty

36 Month Limited Warranty

Blackmagic Design warrants that Teranex Minis 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 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 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.

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