



Complete Manual for the

AV Bridge 2x1

Presentation Switcher

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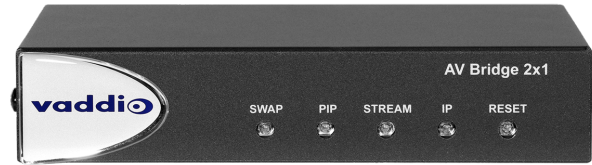
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Overview

This guide provides information about the AV Bridge 2x1 presentation switcher:

- 999-8250-000 – North America
- 999-8250-001 – Europe/UK
- 999-8250-009 – Australia/New Zealand



About this Guide

This guide covers:

- Physical features and user interfaces
- Administration, configuration, and maintenance tasks
- Operation
- Serial API command reference
- Specifications
- Troubleshooting
- Glossary

For your convenience, information on installing this product is also available in the smaller, stand-alone **Installation Guide for the AV Bridge 2x1 Presentation Switcher**, which covers unpacking, physical features, switch settings, installation, and initial power-up.

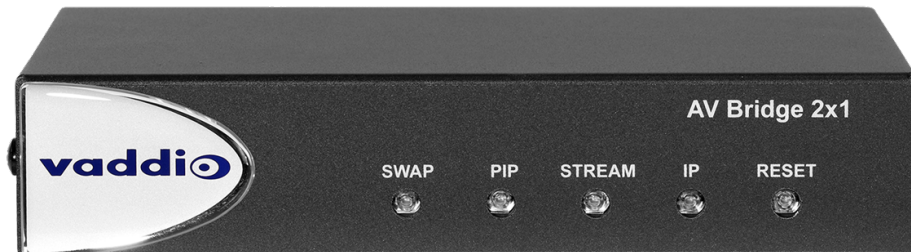
Features

- The perfect solution for rooms where you only need two cameras: 2x1 video switcher bridges two HDMI cameras or other video sources into a soft-client conferencing or IP streaming environment
- Simultaneous USB 3.0 and IP streaming (RTSP or RTMP), video and audio
- Delivers IP stream resolution up to 1080p/30 and USB stream resolution up to 1080p/60
- Supports HDCP
- Multiple audio formats: USB and IP stream, analog, HDMI, Dante® networked audio
- Phantom power to microphones
- Connections for up to five external trigger devices

A Quick Look at the AV Bridge Mini

Physical features of the device – controls, status lights, and connectors.

Front Panel



- **Swap** button – Changes the selected input. If the PIP is turned on, this also exchanges the PIP and main image on the HDMI output.
- **PIP** button – Toggles the PIP on or off. Illuminated when the PIP is on.
- **Stream** button – Toggles the IP stream on or off. Illuminated when the stream is available.
- **IP** button – Press to display the device's IP address in the streams and video output, or to clear the information display. Illuminated when the IP address information is displayed. When the device is in standby, press to return to operation.
- **Reset** button – Press to reboot the device. Illuminated during normal operation. Blinks to indicate an error.
- Dimensionally enhanced puffy badge – We have spared no expense to provide a lovely, dimensionally enhanced logo badge to elevate your visual experience. It's quite shiny. We hope you'll enjoy it.

Connector Panel



- **Network/PoE+** – Power, control via web interface, Dante audio, and IP streaming.
- **USB 3.0** – Uncompressed video output with PCM audio for conferencing applications.
- **RS-232** – Connect to an optional third-party control system.
- **Trigger** – Connect up to five trigger devices.
- **HDMI In 1** and **HDMI In 2** – HDMI video (and audio, if available) from the connected camera or other HDMI source.
- **HDMI Out** – Output video (and audio, if available) from the selected input.
- **Audio In Mic/Line 1** and **Mic/Line 2** – Microphone or other audio inputs. Can be configured to supply phantom power.
- **Audio Out Line 1** and **Line 2** – Far-end audio from conferencing application or as configured in the audio matrix.

Installation

This section covers how to install and connect the product. It also provides safety information and other guidance related to installing the product.

Note

This product is intended for installation and use only in environments where all RS-232 and PoE/PoE+ connections originate within the building.

Or in UL's preferred phrasing...

PoE-type networks connected to this equipment are for intra-building use only and should not be connected to lines that run outside the building in which this product is located.

Don't Void Your Warranty!

Caution

This product is for indoor use. Do not install it outdoors or in a humid environment without the appropriate protective enclosure. Do not allow it to come into contact with any liquid.

Do not install or operate this product if it has been dropped, damaged, or exposed to liquids. If any of these things happen, return it to Vaddio for safety and functional testing.

Cabling Notes

Best practices for making cables:

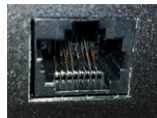
- Use Cat-5e or better cable. We recommend shielded cabling if the cables will be coiled, run tightly with other cables, or placed close to sources of electromagnetic interference such as power lines or fluorescent light fixtures.
- Use high-quality standard RJ-45 connectors; 568B termination recommended.
- Use a high-quality crimping tool.

Caution

When building cables for Vaddio products, do not use pass-through RJ-45 connectors. If they are crimped incorrectly, they can cause intermittent connections and degrade signal quality. Incorrectly crimped pass-through connectors can also damage the connectors on the product, which will void your warranty.



Intact – will make reliable contact with cable connector



Damaged – Bent contact fingers will NOT make reliable contact with cable connector

Caution

Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.



Pro Tip

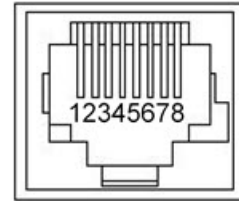
To prevent tragic mishaps, label both ends of every cable.

RS-232 Serial Communication Settings and Port Pin-outs

The RS-232 serial port (color-coded blue) on the back panel connects to a third-party controller.

RS-232 connector pin-out:

- Pin 1: Not used
- Pin 2: Not used
- Pin 3: Not used
- Pin 4: Not used
- Pin 5: Not used
- Pin 6: GND
- Pin 7: RXD
- Pin 8: TXD



Communication parameters:

Parameter	Value
Communication Speed	38400 bps
Start bits	1
Stop bits	1
Data bits	8
Parity	None
Flow control	None

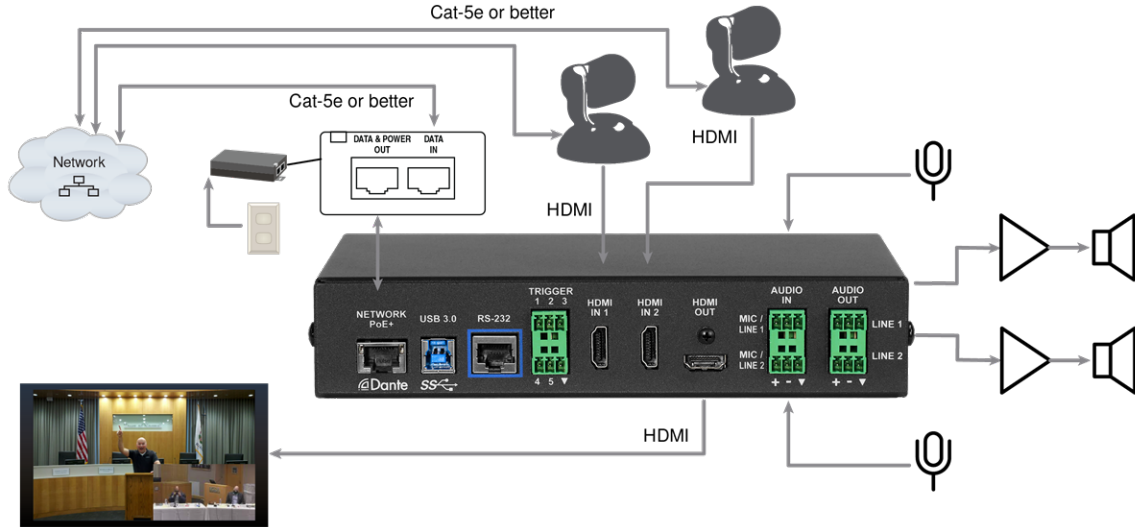
Caution

Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

Depending on the equipment connected to the RS-232 port, you may need a null-modem (crossover) cable.

Basic Connections

This diagram shows a basic installation. Cameras or other HDMI sources may be used for both HDMI inputs. The AV Bridge 2x1 does not power the speaker(s). The HDMI output displays video from the selected source; the picture-in-picture (PIP) is from the video source not currently selected – a camera, laptop, or other video source.

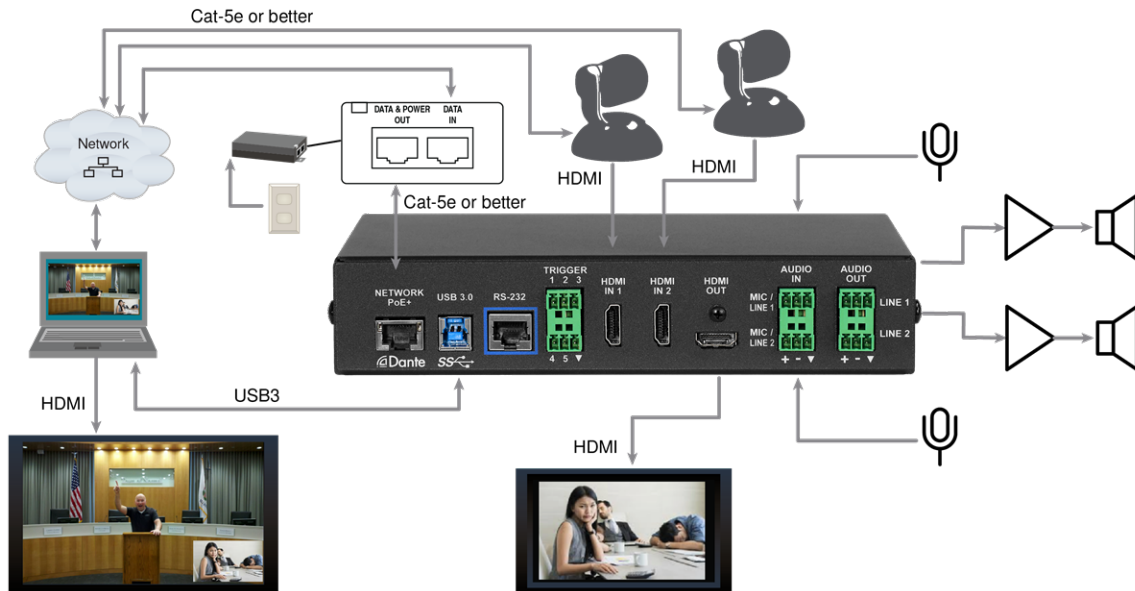


Basic Connections for Conferencing

Add a laptop and a second HDMI display for conferencing.

In this diagram, the laptop connects to the room's main display, which shows the far-end video from the soft conferencing application on the laptop. (In contrast to the previous diagram, our friend at the podium is on the far end of the call.) The soft conferencing application manages the PIP(s) in this image. The display connected to the HDMI output shows near-end video.

The HDMI output from the AV Bridge 2x1 goes to a "confidence display" showing near-end video only. The image on this display is used as the near-end PIP on the main display.



Powering Up

Power up the AV Bridge 2x1 and the connected equipment at the same time, or power up the connected equipment before you power up the AV Bridge 2x1.

Initial Device Set-Up and System Administration Tasks

Vaddio devices have a web interface for initial device set-up, administrative control, and operation.

When any Vaddio product is shipped from the factory, there is no admin password and the administrative controls are not available. You will need to access the web interface and set the admin password. You will then have access to the system administration tasks to define how the device behaves as an element of your network.

Browser Support

Supported web browsers:

- Chrome®
- Firefox®
- Microsoft® Edge® and Internet Explorer®
- Safari®

Other browsers may also work.

Initial Device Set-up Process Overview

The sequence of tasks for initial device set-up and system administration differs somewhat, depending on which method you use.

Ways to access the device for initial device set-up:

- **Locate and set up the device using the Vaddio Deployment Tool** – This tool is available as a free download from the Vaddio tools page: https://www.legrandav.com/tools_and_training/tools/vaddio_tools. The tool scans the network for Vaddio devices, lists them by model and IP address, identifies all devices that are not set up, provides the controls to complete the initial device set-up, and provides links to each device's web interface.
- **Access the web interface from a Vaddio Device Controller** – The touch-panel automatically scans the subnet to locate Vaddio devices. Select the desired device and exit to the device's web interface to complete the initial device set-up. The process is the same for all products.
- **Access the web interface directly** – The classic method. Discover the device's IP address and browse to its web interface. The way you discover the IP address depends on the device. The rest of the process is the same for all products. *Use this method if you know that your network does not assign IP addresses.*

Initial Device Set-Up Using the Vaddio Device Controller

The Vaddio Device Controller is a stand-alone tablet for working with Vaddio products' web interfaces.

To complete the initial device set-up with the Vaddio Device Controller:

1. Connect the touch-panel to the network on the same subnet as the products you need to work with – for example, connect both to the same PoE+ switch.
2. Go to the touch-panel's Configuration page (gear icon) and select Scan.
3. Locate the device you need to work with, and select Use.
4. Select Exit to leave the Configuration page and open the device's web interface.

Note

The first time you access a device at a specific IP address, the Vaddio Device Controller's screen may remain blank for 20 seconds or more.

5. Set the admin password.

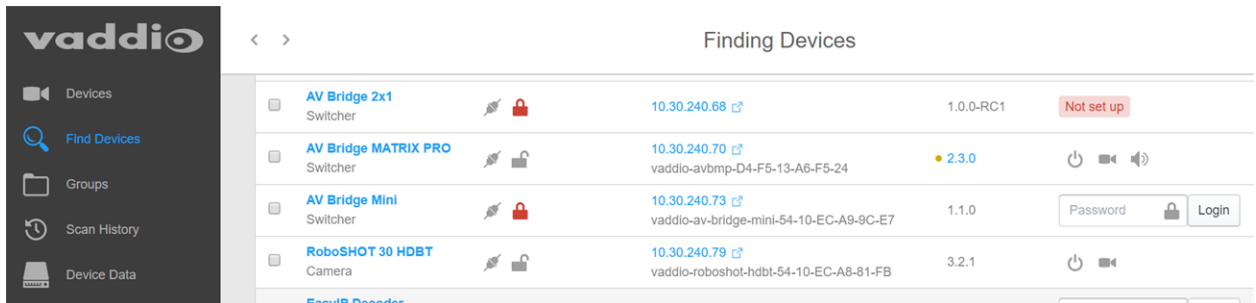
If the Vaddio Device Controller does not find the device, verify that the Vaddio Device Controller and the device are connected to the same subnet.

Initial Device Set-Up Using the Vaddio Deployment Tool

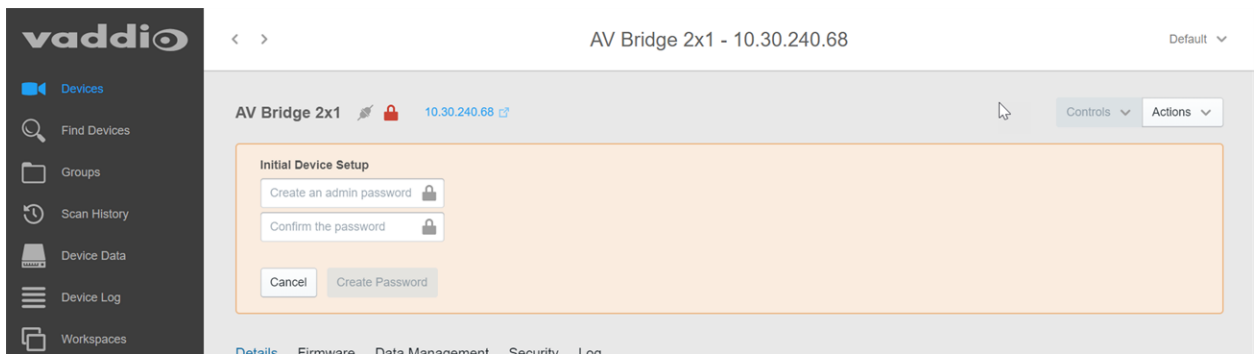
Be sure you have the current version of the Vaddio Deployment Tool. If you have a copy of the tool already, compare its version information to the version shown on the release notes. You can find both at https://www.legrandav.com/en/products/vaddio/accessories/vaddio_deployment_tool under the Resources tab.

To complete the initial device set-up with the Vaddio Deployment Tool:

1. Download and install the Vaddio Deployment Tool if you have not done so already, then open it.
2. Power up the AV Bridge MATRIX PRO if you have not done so already.
3. On the Find Devices page, click Scan. If the scan does not locate the device, your computer may be on a different subnet. Click Advanced and specify the appropriate portion of the network to scan.
4. In the list of equipment that the scan discovers, locate the devices marked Not Set Up.



5. For each device that you need to work with, click the Not Set Up button and set the admin password on the device detail page that opens.



The device shows up as unlocked after you set the admin password.

After the password is set, you will be able to log in to the administrative web interface to complete system administration and other configuration tasks.

Manual Access and Initial Device Set-Up

If you do not use a Vaddio Device Controller or the Vaddio Deployment Tool, you will need to complete the initial device set-up manually, which requires you to discover the device's IP address and browse to the device's web interface.

Getting the Device's IP Address

To see the current IP address for the AV Bridge 2x1, press the IP button on the front panel. The IP address and other network information is displayed on the video outputs.

If the Device Is At 169.254.1.1

This is the device's default IP address. This means one of these things:

- The device is not connected to the network – check the cable connected to the Network/PoE+ port.
- The network does not automatically assign IP addresses, and you need to configure the device for the network.

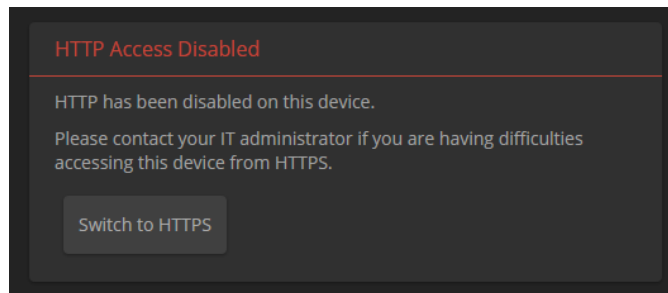
To communicate directly with the device, connect your computer's network port directly to the DATA IN port of the device's mid-span power injector. You do not need to disconnect other devices.

After completing the initial device set-up, you will need to configure the device with a static IP address. Work with your network administrator.

Initial Access to the Web Interface

Enter `https://` followed by the device's IP address in your browser's address bar.

Before the product is configured, HTTP access is disabled. **This is also true after restoring factory defaults.** If you access the web interface using HTTP, you may encounter this message:



Switch to HTTPS if you see this message.

Expect a security warning from your browser the first time you access the device's web interface.

Different browsers will respond with different messages and options. Your browser will probably present a message indicating one of these things:

- The connection is not private
- The site is not secure
- The site is not trusted
- The site poses a security threat

This is because the certificate (the product's website security credential) is self-signed rather than being issued by an external certificate authority. *The HTTPS connection is secure and traffic is encrypted.*

You will need to make the selections that your browser's security message discourages.

Depending on the browser, the warning presents an option to learn more, view details, or go to the "Advanced" page. When you select this, your browser provides an explanation and a button or link to continue to the IP address you entered, with a reminder that it may be unsafe. Select the option to continue. *Your HTTPS connection is safe.*

After you have accessed the product's web interface once, your browser may remember its IP address and not present the security message again.

Setting Access to the Web Interface

Set the admin password. If there are other tasks on the page (such as reading and accepting policies and agreements), complete them also.

Note

This page may include a link to the company's standard privacy policy. This product does not record or save audio or video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the device's IP address is considered "personally identifiable information" for the purposes of the privacy policy.

Note

Be sure you have a way to remember the admin password. We cannot reset it for you. If the password is lost, you will need to restore factory defaults.

The full administrative interface opens when you finish.

System Administration

Administrative tasks are on these pages of the web interface:

- **Networking** – Network configuration, time zone and NTP server
- **Security** – Passwords, guest access, other IT security-related settings
- **Room Labels** – Helpful information to display in the web interface

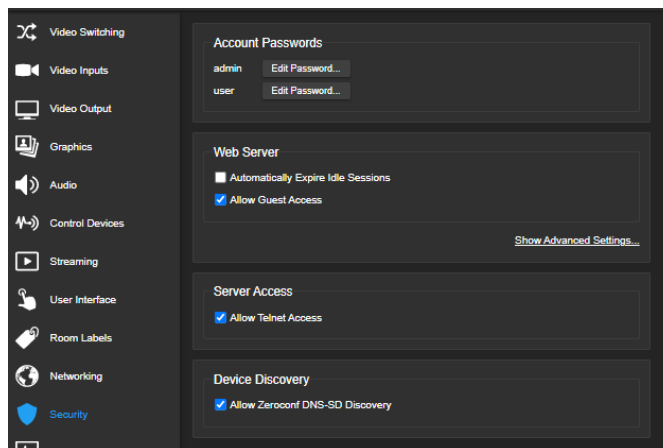
The screen shots in this chapter may look slightly different from your device's web interface. Some may be from other products within the same product family.

Configuring Access and Other Security Settings

SECURITY PAGE

The Account Passwords and Web Server areas of the Security page provide basic security for the web interface:

- **Admin Password** – Required for access to the admin pages of the web interface and for Telnet or RS-232 access to the device.
- **User Password** – Allows password-protected access to the non-administrative operator's web interface.
- **Guest Access** – Allows access to the non-administrative operator's web interface without a password.
- **Automatically Expire Idle Sessions** – Logs you out after 30 minutes of inactivity.



Other security settings include:

- **Allow Telnet Access** – disabled by default.
- **Allow Zeroconf DNS-SD Discovery** – allowed by default.
- Advanced Settings – **Enable HTTP Access** (disabled by default) and **Manage SSL Certificate**.

Note

Consult your network security specialist before changing any of these settings. Seek explicit guidance concerning the SSL certificate.

Configuring a Static IP Address for a Device Currently at 169.254.1.1

NETWORKING PAGE

If the device is currently at an IP address other than 169.254.1.1, skip this section.

By default, the device is set to DHCP, and will receive an IP address automatically if your network assigns IP addresses. However, if no DHCP server is available to automatically assign an address, the device uses its default IP address of 169.254.1.1. Other devices may default to the same IP address. If you install more than device on this network, you must follow this procedure to prevent IP address conflicts.

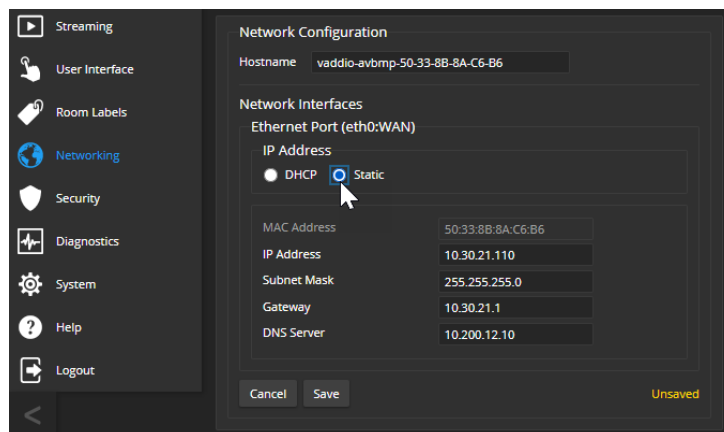
Caution

Consult your IT department before editing network settings. Errors in network configuration can make the device inaccessible from the network. Do not change DHCP/Static addressing, IP address, subnet mask, or gateway unless you are very familiar with the characteristics and configuration of the network where you install the device.

To access the device's Networking page after initial device setup:

1. Leave the device connected as for initial device setup.
2. Log in to the web interface as admin, if you have not done so already.
3. On the Networking page, set IP Address to Static; then enter the IP address, subnet mask, and gateway as directed by the network specialist. You will need to log in again after saving your changes.

The device is now ready to be connected to the network.



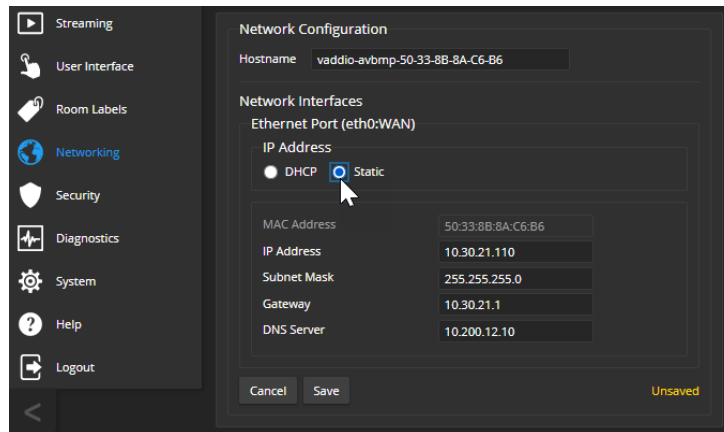
Changing from an Automatically Assigned Address to a Static IP Address

NETWORKING PAGE

In a network that assigns IP addresses automatically, the device's IP address may change from time to time. Setting a static IP address will keep this from happening,

You may wish to change the IP addresses of other connected equipment to static addresses as well. The process is the same for all Vaddio products with web interfaces.

1. Consult your network specialist to determine what the IP address should be.
2. Set the IP address to Static. If this is the only change you make, you will not be logged out.
3. If necessary, enter the IP address, subnet mask, and gateway that your network specialist instructs you to use. You will need to browse to the new IP address and log in again.



Changing the Device's Hostname

NETWORKING PAGE

If your network supports hostname resolution, you may find it convenient to change the device's hostname to something easy to remember. This allows you to access the device by its hostname instead of its IP address – for example, by entering `https://ginger` to open the web interface of the device named **ginger**.

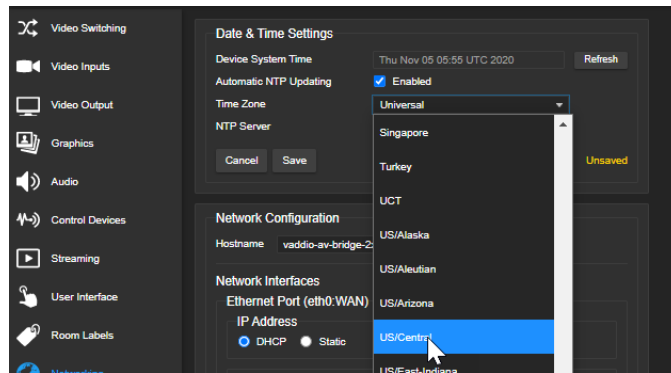
Work with your IT department to ensure that the new hostname conforms to the organization's naming conventions.

Setting System Time and Time Zone

NETWORKING PAGE

Using automatic NTP updating ensures that the timestamps in the device's diagnostic log are accurate. Specifying your time zone may make it easier to match logged events with other actions and external events.

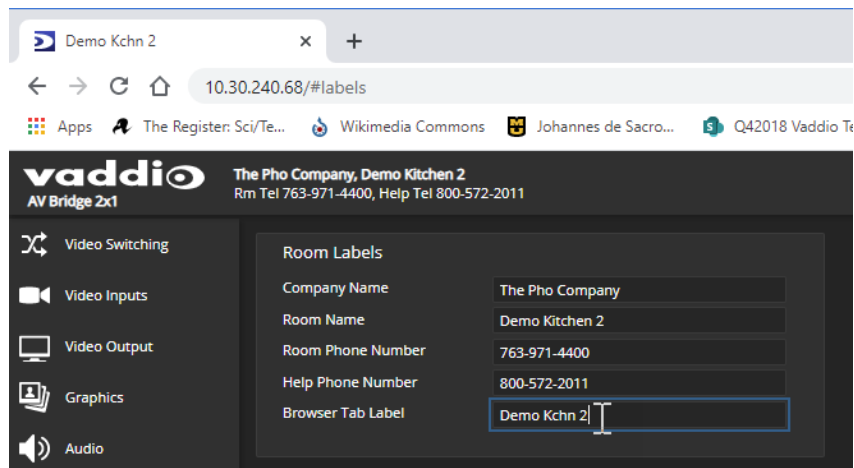
1. To make the time zone and NTP server editable, enable Automatic NTP Updating.
2. Select the desired time zone from the list.
3. Optional: Specify the NTP server to use. If you are not sure about this, use the default.
4. Save your changes.
5. To update the system time immediately, select Refresh. Otherwise, the time will update the next time the device contacts the NTP server.



Adding Room Information

ROOM LABELS PAGE

Enter information about the location of the equipment and the local IT or A/V help line. This information will be displayed on all pages of the web interface.



Performance and Behavior Settings

Performance and behavior settings are on these pages of the web interface, shown in the upper portion of the left navigation panel:

- Video Switching
- Video Inputs
- Video Output
- Graphics
- Audio
- Control Devices
- Streaming
- User Interface

Note

To locate or pair to Dante devices, use the Dante Controller application.

Other performance and behavior settings are in the AV Bridge 2x1 web interface.

The screen shots in this chapter may look slightly different from your device's web interface. Some may be from other products within the same product family.

Configuring Streaming Behavior

Conferencing applications use *USB streaming*. After initial device set-up is complete, the device's USB stream is always enabled.

IP streaming is disabled by default.

Viewing the USB Stream

Do one of these things:

- Start or join a conference.
- Open a stream viewer.
- Locate the option to open a capture device, and select your AV Bridge-family device from the list. The media player will correctly identify your device by model.

Configuring USB Streaming

STREAMING PAGE

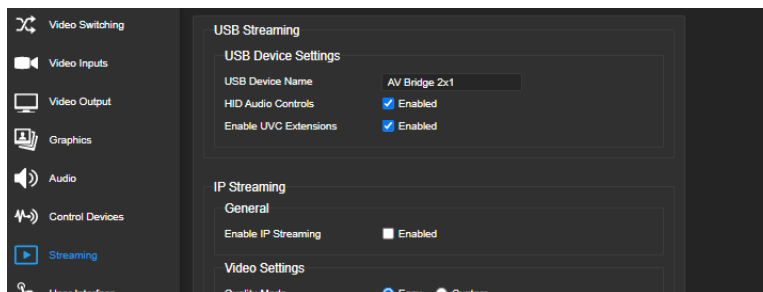
These settings affect how the device works with soft conferencing applications.

USB Device Name – Specify how the device shows up in your soft client's USB device selection list.

HID Audio Controls – Enable to allow conferencing applications to control the audio.

Enable UVC Extensions – Allow conferencing applications to control the connected cameras.

Depending on the conferencing application that you use, you may need to change the cameras' USB stream format setting. Refer to the appropriate camera manual.



Enabling or Disabling IP Streaming

STREAMING PAGE

IP streaming is disabled by default.

Two IP streaming protocols are available:

- *RTSP streaming* delivers an IP stream that people can access from your network using a media player.
- *RTMP streaming* sends a stream to a content service provider such as YouTube. To use RTMP streaming, you must have an account with a streaming service.

Viewing the IP Stream (RTSP)

1. Open a stream viewer such as VLC Media Player.
2. Select "Network stream" or your viewer's equivalent option.
3. Copy the streaming URL from your device's Streaming page and paste it into the viewer as the URL for the network stream.

RTSP Streaming Protocol and URL

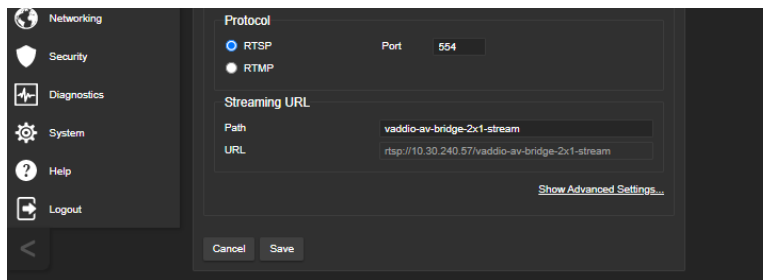
STREAMING PAGE

When IP streaming is enabled and RTSP is selected, the RTSP stream is automatically available. Consult your IT department before changing these settings.

RTSP port: Vaddio strongly recommends using the default RTSP port number.

Path: The portion of the streaming URL that appears after the IP address. You may wish to change this to help identify the stream source – for example, **demo-studio-3**.

URL: The location where the stream can be viewed. This will change if you edit the path.



Setting up IP Streaming in Easy Mode

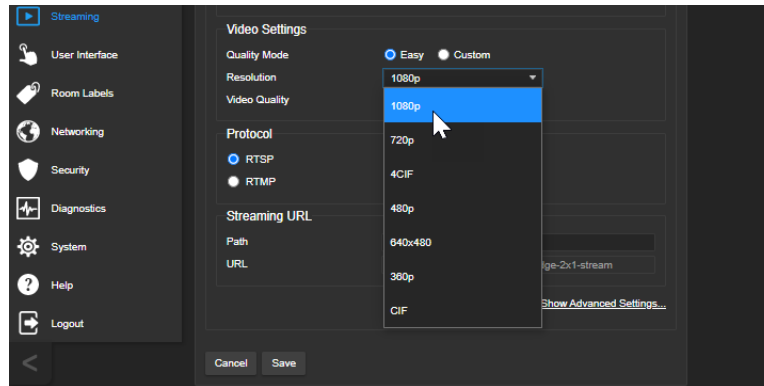
STREAMING PAGE

Note

Consult your network specialist when setting up IP streaming, to be sure that you select settings that are appropriate for the network.

If you are not sure about these settings, start with the defaults.

1. Select Easy Quality Mode.
2. Select the desired IP streaming resolution. This determines the size of the window in which the stream is displayed.



3. Select Video Quality. Then save your changes.

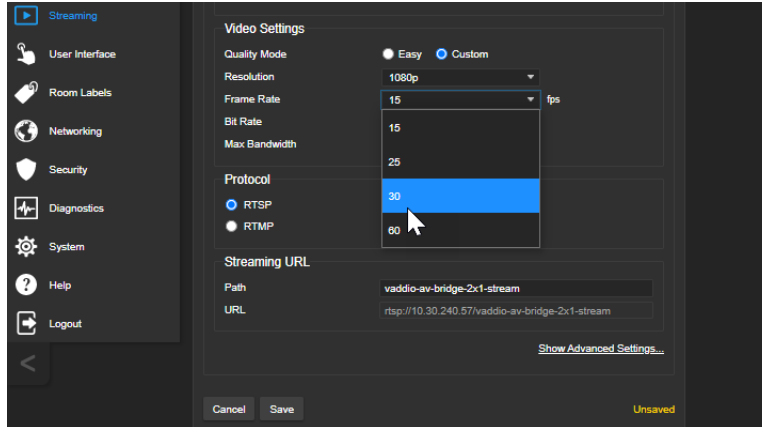
Setting up IP Streaming in Custom Mode

STREAMING PAGE

Note

Consult your network specialist when setting up IP streaming, to be sure that you select settings that are appropriate for the network.

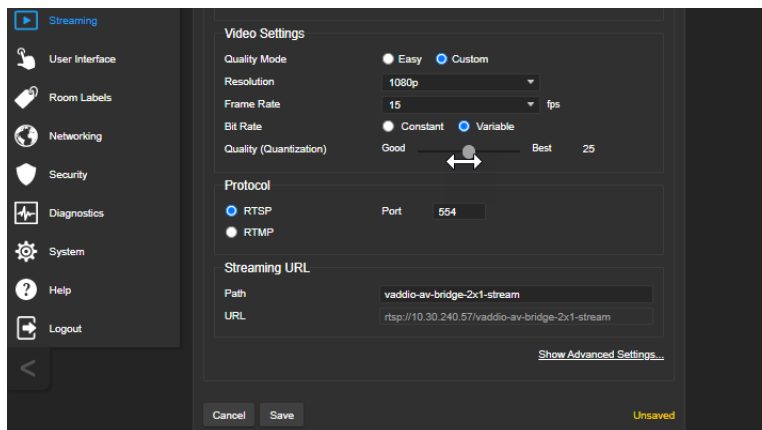
1. Select Custom quality mode.
2. Select the desired resolution.
3. Select the desired frame rate.



Note

Some combinations of resolution and frame rate are not valid, and will generate notifications.

4. Select Constant or Variable Bit Rate.
5. Constant Bit Rate only: Set Max Bandwidth.
6. Variable bit rate only: Set the Quality (Quantization) slider. Then save your changes.



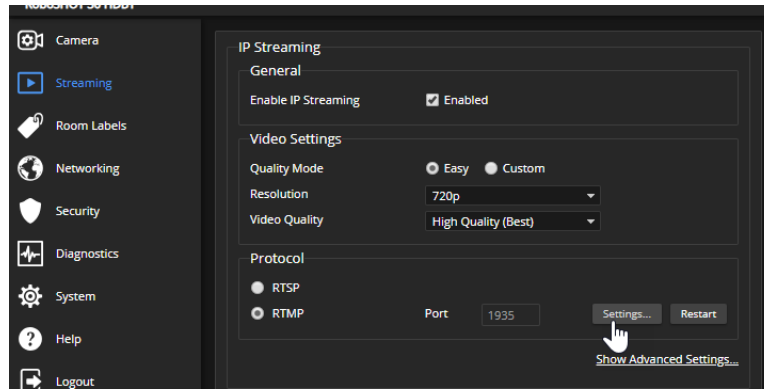
Configuring RTMP Streaming

STREAMING PAGE

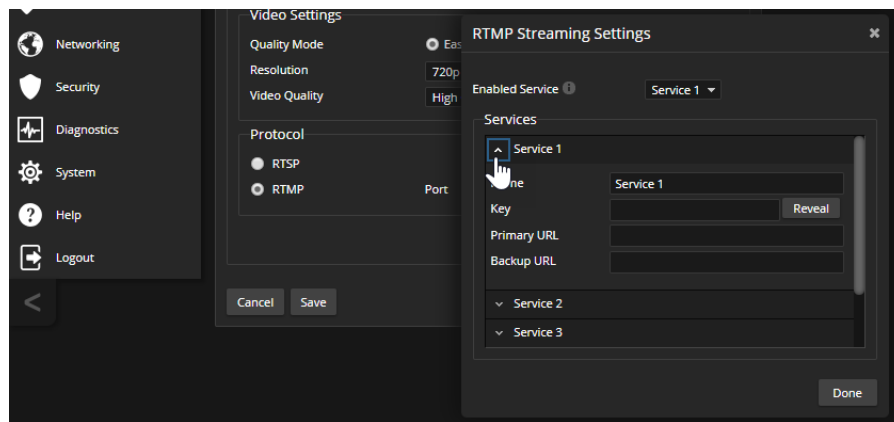
To use RTMP streaming, you must have an account with a streaming service.

To configure an RTMP streaming service:

1. Select RTMP streaming, then select Settings.



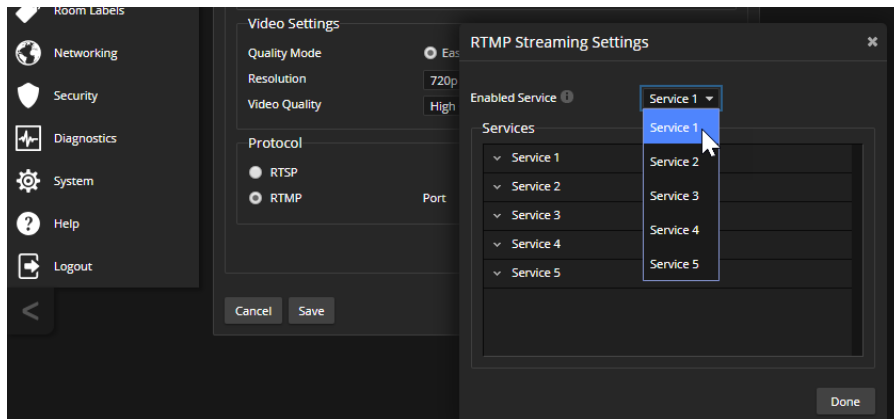
2. Expand the information box for the service.



3. Enter the name of the service.
4. Paste in the key and URL(s) provided by the service.

To select the enabled RTMP streaming service:

Expand the list of available streaming services, and select the one to use.



Note

When RTMP streaming is selected and a service is configured, the device streams to that service until you stop the stream.

Stopping the IP Stream

STREAMING PAGE

Options:

- **To stop IP streaming entirely:** Clear the Enable IP Streaming check box.
- **To stop local video and the video portion of the stream,** but leave the stream running: Mute the video. Audio is available but the connected display is blank.
- **To stop the audio portion of the stream,** but leave the stream running: Mute the audio. Video continues to stream, and local video is still displayed on the connected screen(s).
- **To stop sending the stream to a content service provider** but make it available as a network stream: Change from RTMP to RTSP streaming. Local video is still displayed on the connected screen(s).

Changing MTU

STREAMING PAGE, ADVANCED SETTINGS

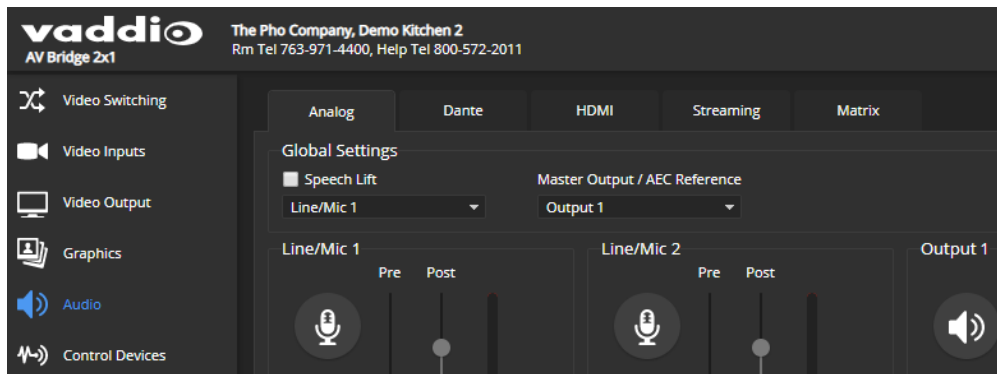
The default packet size for streaming is 1400. Do not change this except in consultation with your network administrator.

Configuring Audio Settings

AUDIO PAGE (MULTIPLE TABS)

The web interface provides separate controls for each of the audio inputs and outputs:

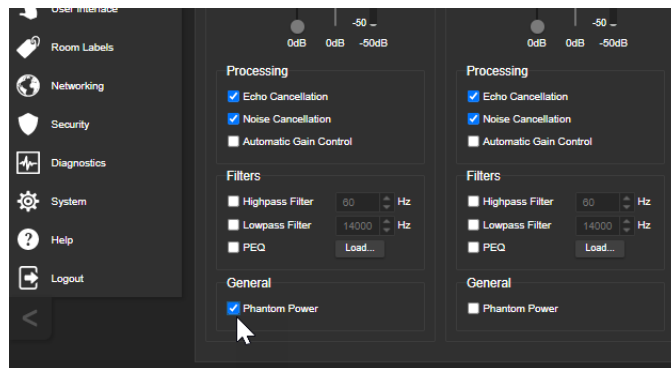
- **Analog** – Line/Mic 1 and 2 (connections to the Audio In connectors, typically the room's microphones); Output 1 and 2 (connections to the Audio Out connectors, typically the room's speakers).
- **Dante** – Network-connected microphones and speakers. You will need additional software to pair the AV Bridge 2x1 to Dante networked audio devices, and to manage them. See [Working with Dante Audio Devices](#).
- **HDMI** – Left and right audio channels from the two HDMI input devices, and left and right audio channels to the HDMI output.
- **Streaming** – Left and right audio channels for the IP stream, USB Playback (far-end audio), and USB Record (near-end audio).
- **Matrix** – Defines the source for each audio output.



Enabling Phantom Power to Microphones

AUDIO PAGE, ANALOG TAB

To supply 48 VDC phantom power to a microphone connected to a Line/Mic input, check the Phantom Power checkbox below the controls for the appropriate input.

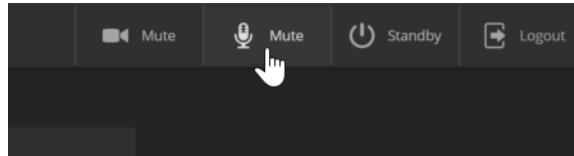


Muting and Setting Volume

AUDIO PAGE – ANALOG, DANTE, HDMI, AND STREAMING TABS

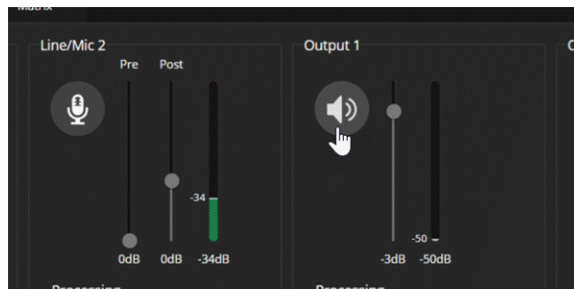
To mute all audio:

Use the microphone mute control at the top of any page.



To change the volume or mute a specific audio input or output:

Go to the appropriate tab and use the controls associated with the input or output.



Note

Because Dante audio components connect to the network, unexpected behavior can occur. This can be disruptive if the affected component is a speaker. Vaddio recommends muting Dante speakers or turning down their volume to the minimum setting when they are not in use.

Note

For best performance with most computers, we recommend setting the USB Record volume high.

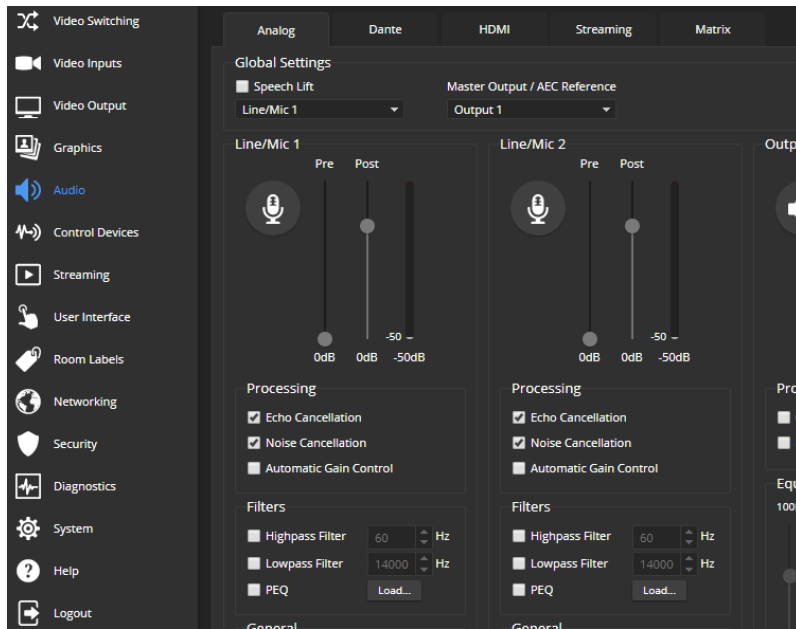
Analog Microphone Settings and Adjustments

AUDIO PAGE, ANALOG AND MATRIX TABS

To accomplish this...	Do this
Help people to hear the person who is speaking.	Enable Speech Lift and select the microphone closest to the person who is speaking. The signal from the selected microphone goes to the speakers in the room. (Analog and Matrix tabs)
Automatically adjust for differences in volume as different people speak	Enable Automatic Gain Control . (Analog tab only)
Specify microphone priority when more than one person is speaking.	Enable Chairman Override and select the microphone that has priority. (Matrix tab only)
Specify which audio output to use as the reference for acoustic echo cancellation.	Select a Master Output/AEC Reference . (Analog and Matrix tabs)
Reduce hissing sounds that microphones pick up.	Enable Lowpass Filter and specify the highest frequency for the microphone to pick up. (Analog tab, per microphone)
Reduce low-frequency background noise (such as heating/air conditioning systems) that the microphones pick up.	Enable Highpass Filter and specify the lowest frequency for the microphone to pick up. (Analog tab, per microphone)
Adjust the volume of specific frequency ranges to compensate for specific audio challenges.	Enable PEQ (parametric equalizer) and select Load to open the PEQ Filter window for the specified microphone. Adjust the filter settings as needed. (Analog tab, per microphone)

Note

Use the equalizer to attenuate undesirable frequency ranges, not to boost the desirable frequencies.



Analog Speaker Adjustments

AUDIO PAGE, ANALOG TAB

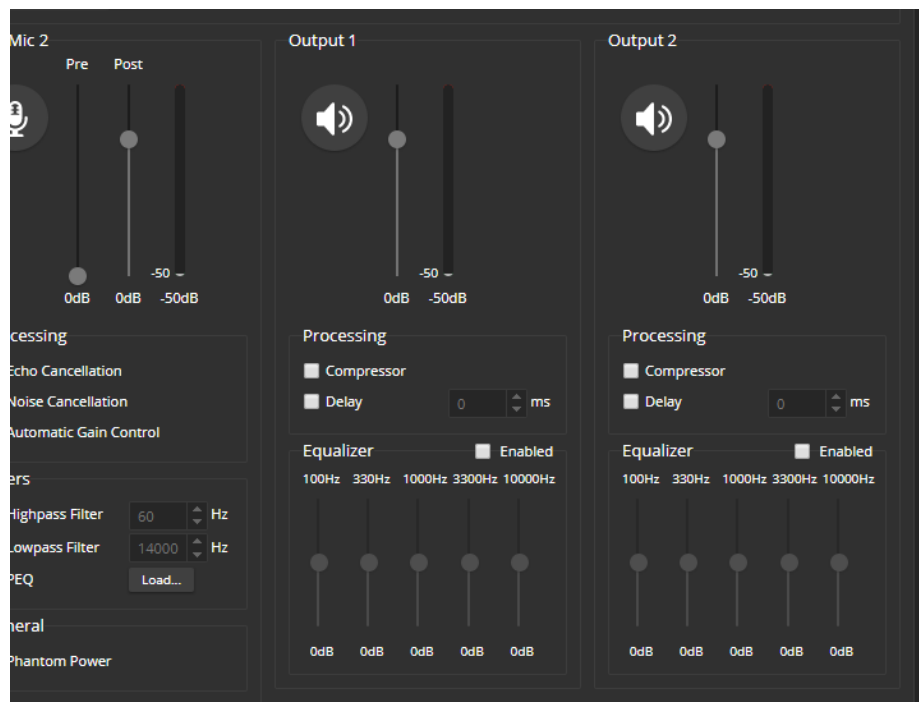
Note

Use the Vaddio Dante Interface Application to adjust speakers with Dante networked audio.

To accomplish this...	Do this
Compensate for differing speech volumes on the far end.	Select Compressor to reduce the dynamic range from the connected speakers.
Compensate for specific audio issues on the far end.	Use the equalizer settings for the analog outputs to attenuate specific frequency ranges. This can help if the far-end audio includes unwanted elements such as a rumbling HVAC system or a cricket in the room.

Note

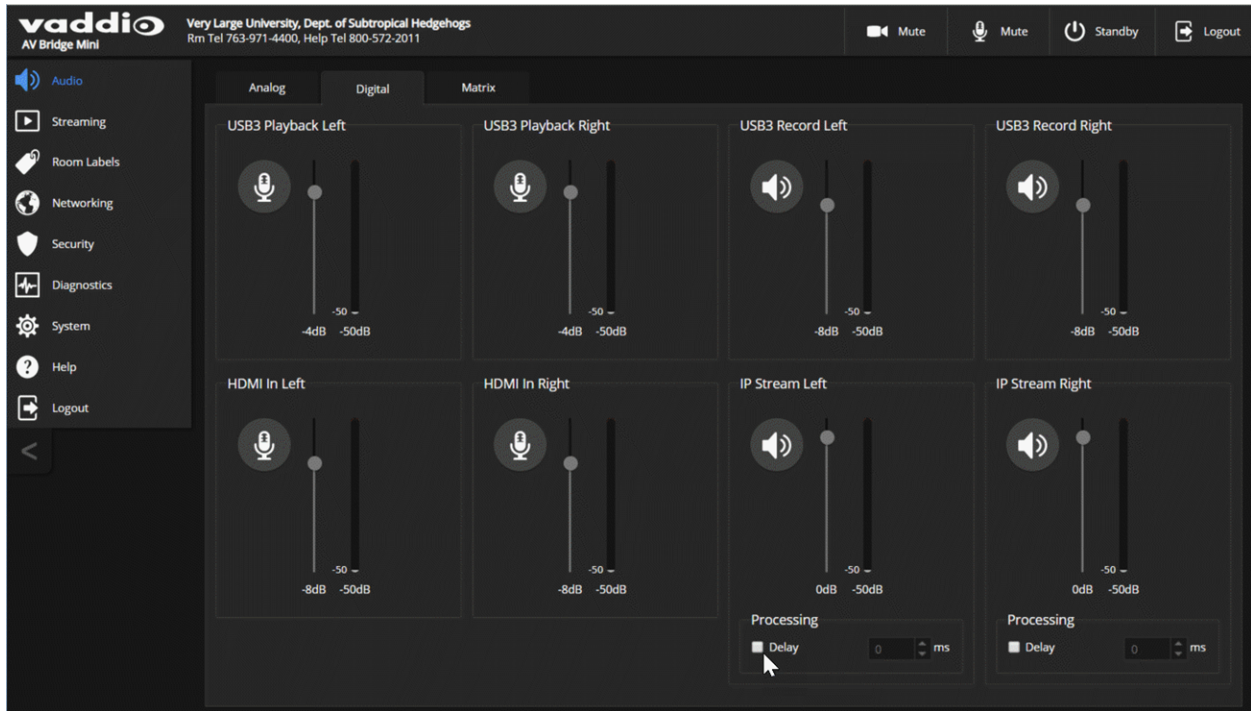
Use the equalizer to attenuate undesirable frequency ranges, not to boost the desirable frequencies.



Synchronizing Audio with Video in the IP Stream

AUDIO PAGE, STREAMING TAB

If the video lags noticeably behind the audio in the IP stream, check the Delay box for the appropriate audio outputs and enter a delay value in milliseconds. The delay may differ from one output to the other.



Routing Audio

AUDIO PAGE, MATRIX TAB

The audio matrix defines where each audio output originates. Each column of the matrix shows one audio output, and each row shows one audio input. Table cells highlighted in blue mean that the input represented in that row is routed to the output represented in that column.

To specify how the AV Bridge 2x1 uses a given audio input, locate its row. Locate the column representing the desired output and select the table cell where the desired row and column intersect.

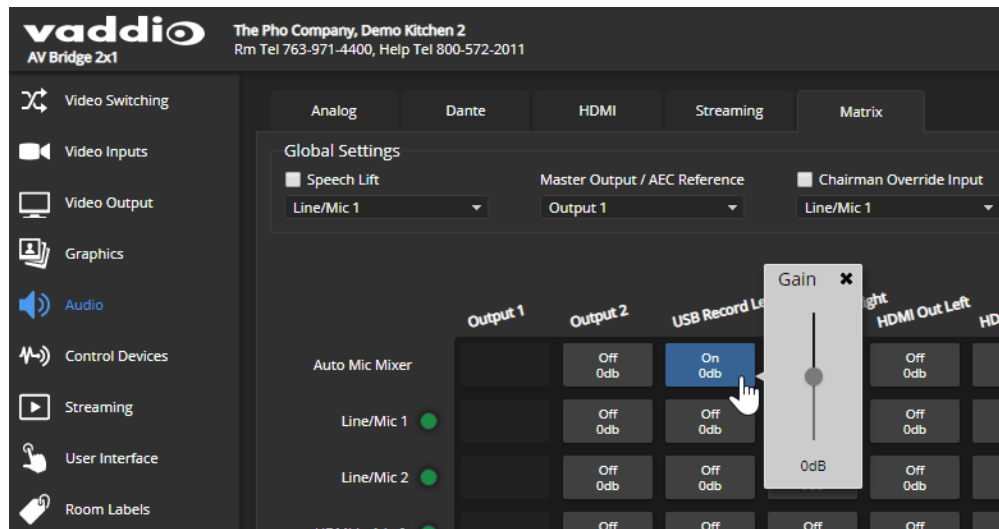
Example: In the screen shot below,

- The left and right USB playback channels feed into all the available audio output channels. Left and right channels are separate for the HDMI output and IP stream.
- The auto mic mixer feeds all audio inputs into the USB and IP streams.

The screenshot displays the Vaddio AV Bridge 2x1 Matrix configuration page. The interface is dark-themed with a sidebar on the left containing navigation icons for Video Switching, Video Inputs, Video Output, Graphics, Audio, Control Devices, Streaming, User Interface, Room Labels, Networking, Security, Diagnostics, System, Help, and Logout. The main area is titled 'Matrix' and shows a grid of audio routing options. At the top, there are tabs for Analog, Dante, HDMI, Streaming, and Matrix. Below the tabs are 'Global Settings' including Speech Lift, Master Output / AEC Reference, and Chairman Override Input. The matrix grid has columns for Output 1, Output 2, USB Record Left, USB Record Right, HDMI Out Left, HDMI Out Right, IP Stream Left, IP Stream Right, Dante Out 1, Dante Out 2, Dante Out 3, and Dante Out 4. Rows represent various audio inputs: Auto Mic Mixer, Line/Mic 1, Line/Mic 2, HDMI In 1 Left, HDMI In 1 Right, HDMI In 2 Left, HDMI In 2 Right, USB Playback Left, USB Playback Right, Dante In 1, Dante In 2, Dante In 3, and Dante In 4. Blue highlights indicate active routing paths. For example, USB Playback Left and Right are routed to all outputs. The Auto Mic Mixer is routed to USB and IP streams. A legend on the right side of the matrix explains the status indicators: a green dot for 'In Auto Mic Mixer', a blue square for 'Enabled', a grey square for 'Disabled', a black square for 'Unavailable', and a red square for 'Speech Lift'.

Setting Gain Between Input and Output (Crosspoint Gain)

To adjust crosspoint gain between any input and the output to which it is routed, right-click the table cell in the matrix to open a gain control.



Working with Dante Audio Devices

The AV Bridge 2x1 presentation switcher is compatible with Dante audio products. These products connect to the AV Bridge 2x1 over the network.

To manage Dante devices, you will need to download and install the free Dante Controller application from Audinate Pty. Ltd.:

www.audinate.com/products/software/dante-controller

Things to know about Dante Controller:

- Dante Controller does not work over Wi-Fi or across subnets. Your computer must be on the same subnet as the Dante devices you need to work with.
- Device names and IP addresses shown in Dante Controller do not match the corresponding information shown in Vaddio devices' web interfaces.
- Dante Controller allows you to rename devices, so you can make their identifying labels match what's displayed in the Vaddio web interface.

Audinate provides information, training, and documentation for Dante technology on their website.

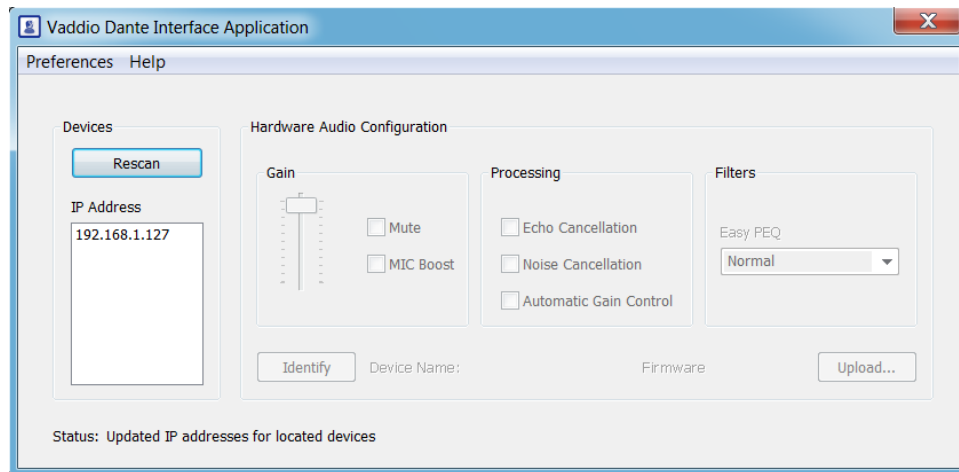
EasyIP and Dante technologies use differing communication protocols. Because of this, Vaddio host devices can provide only limited controls for networked audio peripherals, and the Vaddio Deployment Tool does not recognize them as Vaddio devices. To access the full range of controls for Vaddio's EasyIP microphones and other networked audio devices, use the free Vaddio Dante Interface Application. This tool is available as a free download from the Vaddio tools page:

https://www.legrandav.com/tools_and_training/tools/vaddio_tools.

The Vaddio Dante Interface Application provides access to adjustments that are not available from the host device's web interface. In the event that Vaddio releases an update to the microphone firmware, the Vaddio Dante Interface Application offers firmware update capability.

Things to know about the Vaddio Dante Interface Application:

- The application only detects EasyIP audio peripherals.
- The application does not scan across subnets. Your computer must be on the same subnet as the devices.



Identifying and Locating Dante Devices

DANTE CONTROLLER APPLICATION

Use the Dante Controller application to identify the Dante devices on your subnet and optionally rename them.

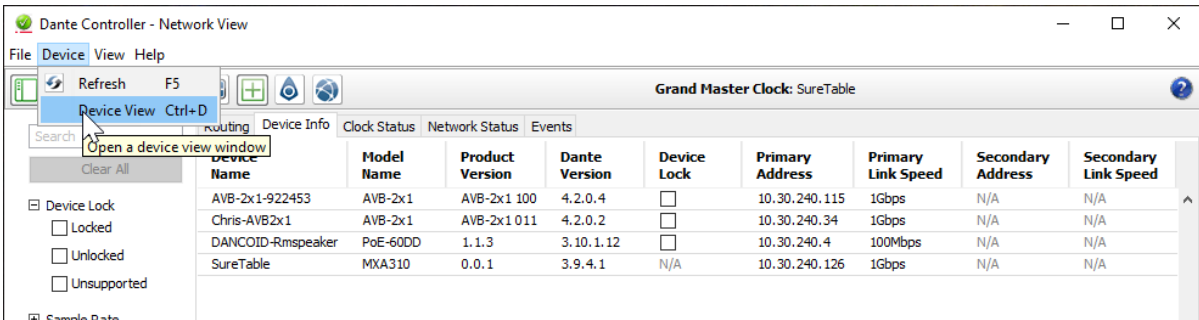
Note

The Dante chip in the AV Bridge 2x1 has its own IP address and device name. These do not correspond to the AV Bridge 2x1's device name and IP address in the web interface.

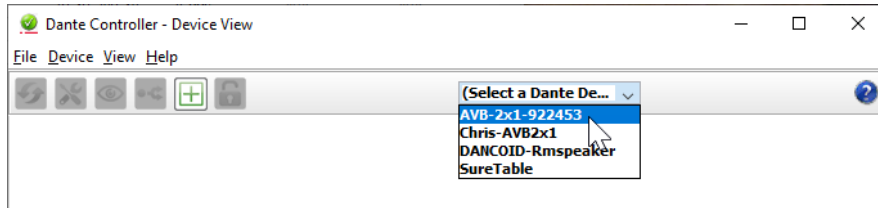
1. Open the Device Info tab to see the IP address and other information about each Dante device on the subnet that your computer is on.
2. From the main Network View, select Device : Device View. The Device View window opens.

Note that AV Bridge 2x1 devices will show the IP address of the Dante chip, not device's web server IP address. In the screen shot below, the device with a Dante chip at 10.30.240.115 is the same device used for the screen shots in this manual, at 10.30.240.68.

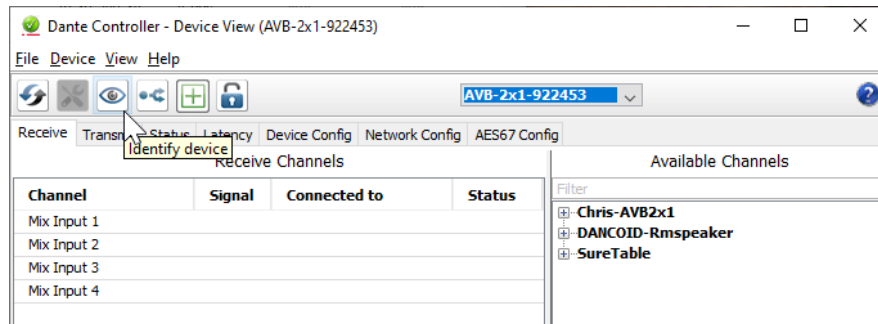
Your devices' IP addresses will probably be different from the ones in the screen shots.



3. In the Device View window, select the device of interest. The window presents information about the device.

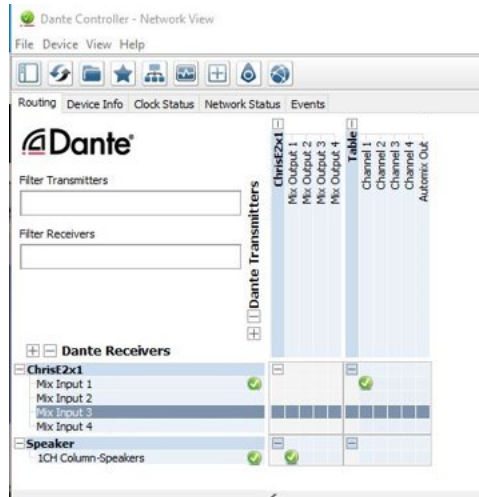


4. Select the Identify icon. The way the device responds depends on the device. The AV Bridge 2x1 responds by blinking all the lights on the front panel. To stop the identifying behavior, select the Identify icon again.



Pairing Dante devices to the AV Bridge 2x1

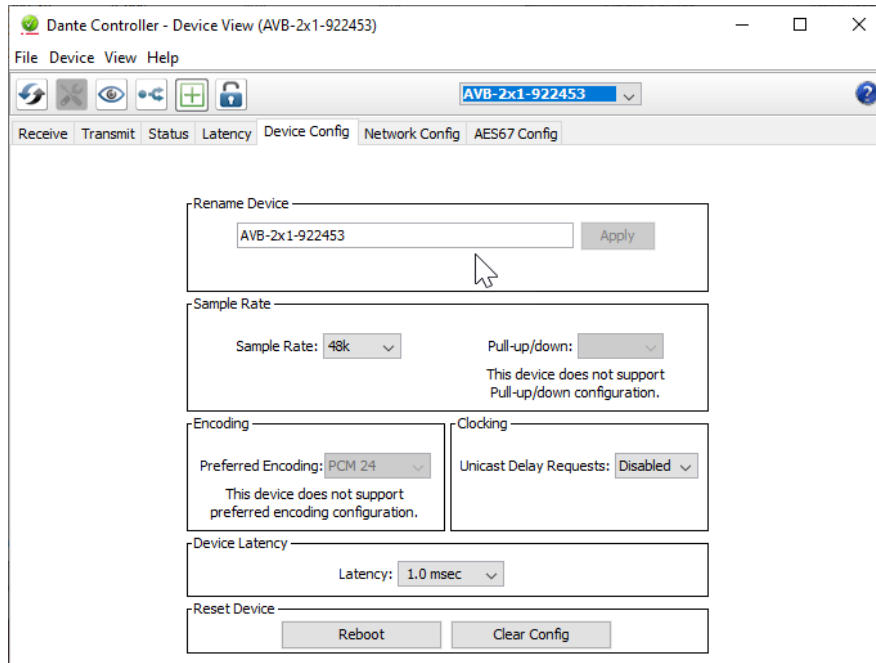
1. From the main Network View, select Routing.
2. Use the matrix to pair receivers (speakers) and transmitters (microphones) to the AV Bridge 2x1, which is both a receiver and a transmitter.



In this screen shot, the receiver "Speaker" is routed to Dante output 1 of the device "ChrisE2x1". The transmitter "Table" (a tabletop microphone) is routed to the device's Dante input 1.

Renaming Devices in the Dante Controller Application

In the Device View window, select the device and go to its Device Config tab. The Rename Device option is near the top of the tab.



Pairing to More than Two EasyIP CeilingMIC D or Other Dante Microphones

DANTE CONTROLLER APPLICATION

In the examples that follow, we're working with a system that uses four Dante-connected microphones and a Dante-connected speaker.

Your devices will be labeled differently from the devices in these screen shots.

For this configuration to work properly, we will need to do these things:

- *Route audio from the host device to the speaker, and route the same audio to the microphones as their AEC reference.* In the example set-up, this audio channel needs to be transmitted to five devices. To allow the signal to go to five places, we will need to **set up a multicast flow**.
- *Create two flows to route audio from the microphones back to the host device.* Although the AV Bridge 2x1 has four Dante input channels, it is limited to two transmit flows and two receive flows. We will need to **combine the four microphone channels into two flows**.

About Channels and Flows

- A **channel** in a Dante environment is the same thing it would be in other environments: a signal from a single source.
- A **flow** in a Dante environment is one to four channels that can be routed from device to device. Channels remain separate within the flow. For example, left and right audio channels can be part of the same flow.
- By default, flows are **unicast** – they can only be routed to one receiving device.
- If one or more channels need to be routed to more than one device, the flow needs to be **multicast**. A multicast flow goes to all the receiving devices. Each device subscribes only to the channel it needs to receive.

This manual only covers the very most basic information about working with Dante products; Audinate Pty. Ltd. provides a great deal of useful information on their website. Please visit www.audinate.com/learning for documentation, tutorials, whitepapers, and more.

Creating a Multicast Flow

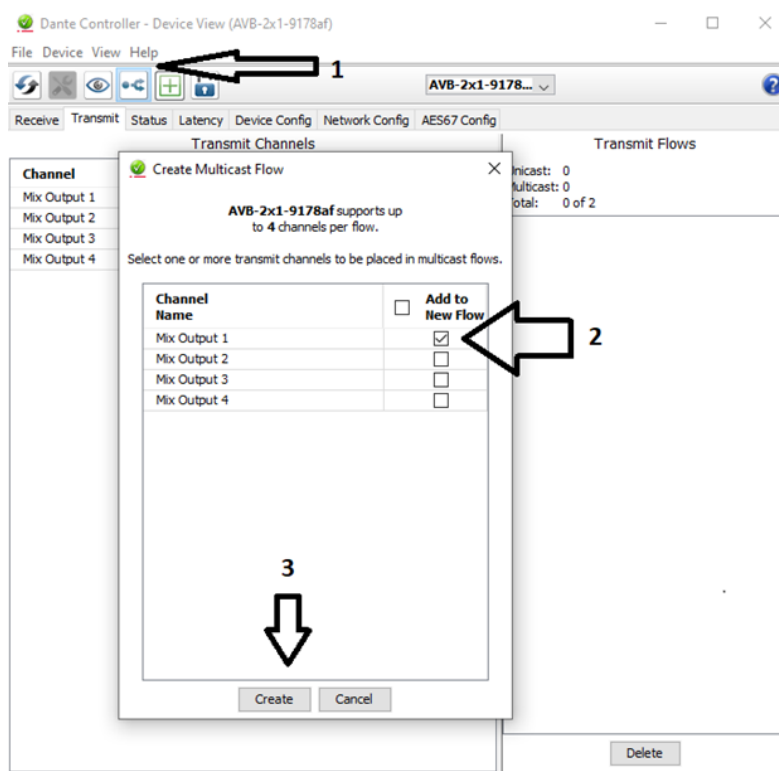
DANTE CONTROLLER APPLICATION

To allow one audio channel from the host device to go to the speaker and also serve as the AEC reference signal that goes to the four microphones in our example set-up, define a multicast flow containing only that channel.

To define the multicast flow:

1. Select Device : Device View, and go to the Transmit tab.
2. Select the Multicast icon (labeled 1 in this screen shot from our engineering team).
3. Select the output from the host device. In this case we're using Dante Output 1, which is labeled Mix Output 1 in Dante Controller.
4. Select Create.

Now Dante Output 1 is available to every device that can receive it – the speaker and the four microphones. These devices will only use the channel in the multicast flow if it is routed to them.



Combining Microphone Channels into Flows

DANTE CONTROLLER APPLICATION

The AV Bridge 2x1 can only receive two Dante audio flows. Each EasyIP microphone provides a pass-through channel as well as its own audio channel, so one microphone can be routed to another, which creates a flow with two microphone channels that can be routed to the host device. Think of it as daisy-chaining the microphones, but without the cable.

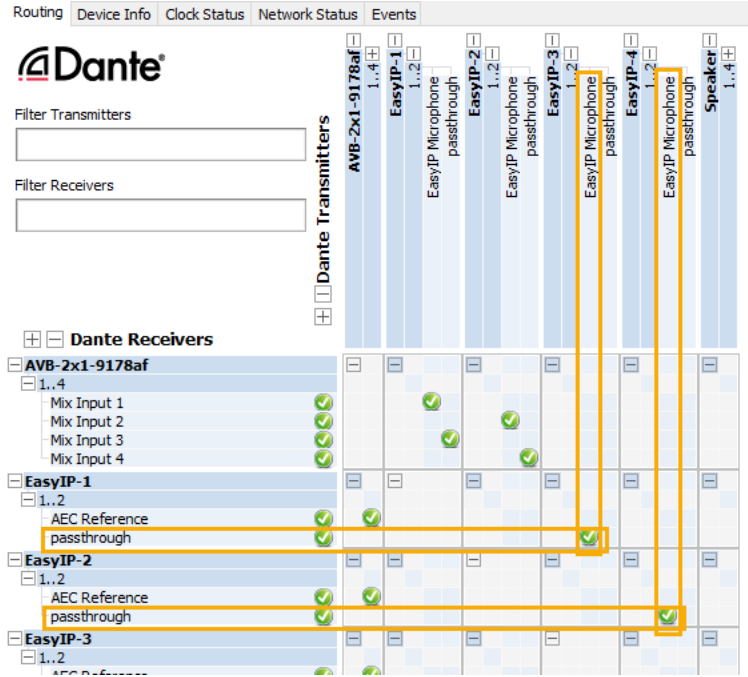
In the screen shot below, locate the microphones in the Dante Receivers column. Each receives its AEC reference from the Mix Output 1 channel that we set up as a multicast flow. Microphone EasyIP-1 also receives a pass-through channel from microphone EasyIP-3; microphone EasyIP-2 receives a pass-through channel from microphone EasyIP-4.

Each of the host device's four Mix Inputs receives the channel from the corresponding microphone, but the four channels are all coming from microphones EasyIP-1 and EasyIP-2.

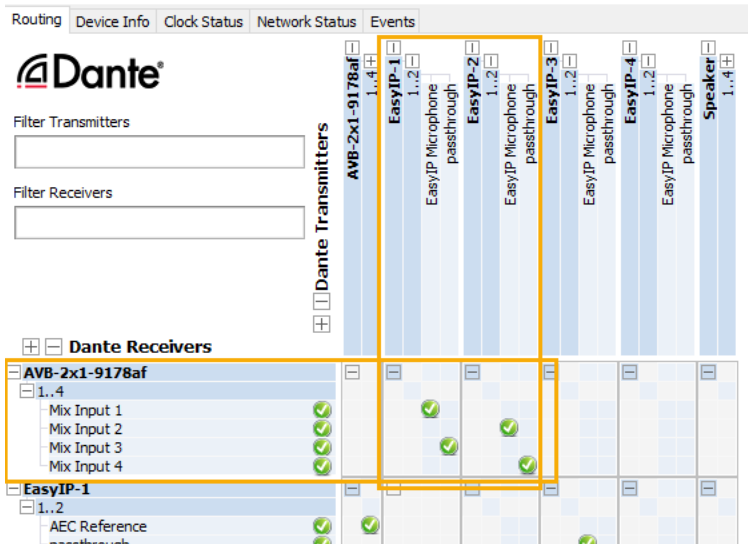
The screenshot displays the Dante Controller Network View for the device AVB-2x1-9178af. The interface includes a menu bar (File, Device, View, Help), a toolbar with various icons, and a main routing matrix. The matrix is organized into columns for Dante Transmitters and Dante Receivers. The transmitters listed are AVB-2x1-9178af (1..4), EasyIP-1 (1..2), EasyIP-2 (1..2), EasyIP-3 (1..2), EasyIP-4 (1..2), and Speaker (1..4). The receivers listed are AVB-2x1-9178af (1..4) with sub-entries Mix Input 1, 2, 3, and 4; EasyIP-1 (1..2) with sub-entries AEC Reference and passthrough; EasyIP-2 (1..2) with sub-entries AEC Reference and passthrough; EasyIP-3 (1..2) with sub-entries AEC Reference and passthrough; EasyIP-4 (1..2) with sub-entries AEC Reference and passthrough; and Speaker (1..4) with sub-entries Output 1, NA, NA, and NA. Green checkmarks in the matrix cells indicate active connections: AVB-2x1-9178af Mix Input 1 is connected to EasyIP-1 AEC Reference; AVB-2x1-9178af Mix Input 2 is connected to EasyIP-2 AEC Reference; AVB-2x1-9178af Mix Input 3 is connected to EasyIP-3 AEC Reference; AVB-2x1-9178af Mix Input 4 is connected to EasyIP-4 AEC Reference; EasyIP-1 passthrough is connected to EasyIP-3 AEC Reference; EasyIP-2 passthrough is connected to EasyIP-4 AEC Reference; and Speaker Output 1 is connected to AVB-2x1-9178af Mix Input 1.

To route four microphones as two flows:

1. Decide which two microphones will be routed to the host device. In our example, it's EasyIP-1 and EasyIP-2.
2. In the Network View, look under Dante Receivers to find the **passthrough** row for each of these two microphones. Read across the Dante Transmitters to find the EasyIP Microphone column for the microphone originating the signal that will pass through, and select the box where they intersect.



3. Find the rows for the host device's Dante inputs. In this example, it's Mix Input 1 through Mix Input 4 of AVB-2x1-9178af. Read across the Dante transmitters to find the two microphones receiving pass-through channels.
4. For each Mix Input, select the box where the Mix Input row intersects with either the EasyIP Microphone channel or the passthrough channel, to route each microphone to the desired input.

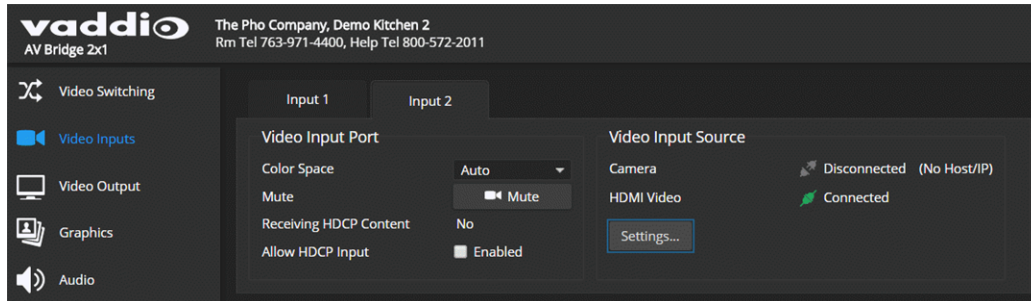


Working with Video Inputs

VIDEO INPUTS PAGE

Control the connected cameras directly from the Video Inputs page, without opening separate browser tabs to access their individual web interfaces. A red tally indicator identifies the tab for the current program source. Typically the corresponding camera also displays a tally light.

The tabs for connected Vaddio cameras present the same controls present in the cameras' own web interfaces.



To rename a video input tab, right-click the tab to open the label editing box.

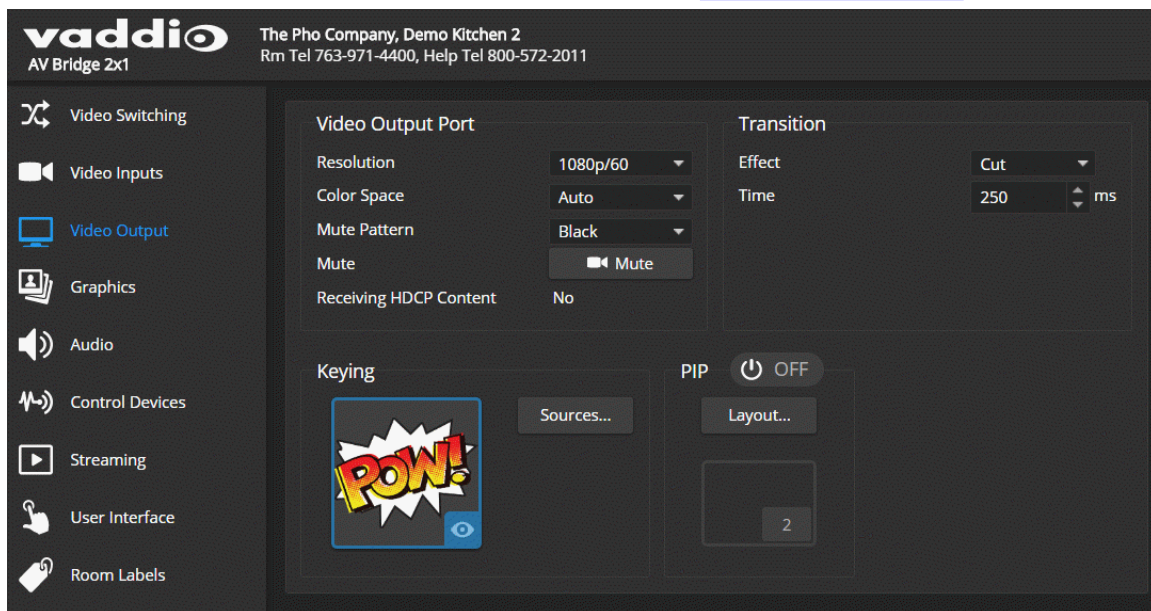
Configuring the Video Output

VIDEO OUTPUT PAGE

The Video Output page provides controls to configure the video on the local HDMI output. Controls include:

- Resolution/frame rate
- Color space
- Video mute pattern
- Video transition effect and time
- Keying control and sources
- PIP control and layout

Graphics and keying are managed on the Graphics page. See [Working with Graphics](#).

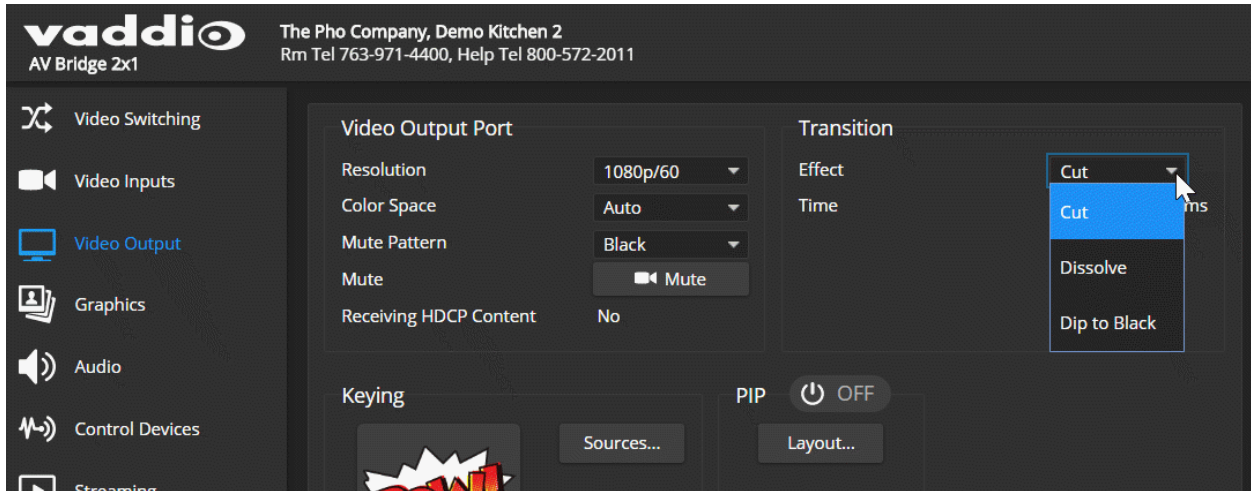


Setting Video Transition Type and Speed

VIDEO SWITCHING PAGE OR VIDEO OUTPUT PAGE

The video transition settings determine how the video output behaves when you switch from one video input to the other.

Transition Effect and Transition Time settings are available on the Video Switching page and the Video Output page.



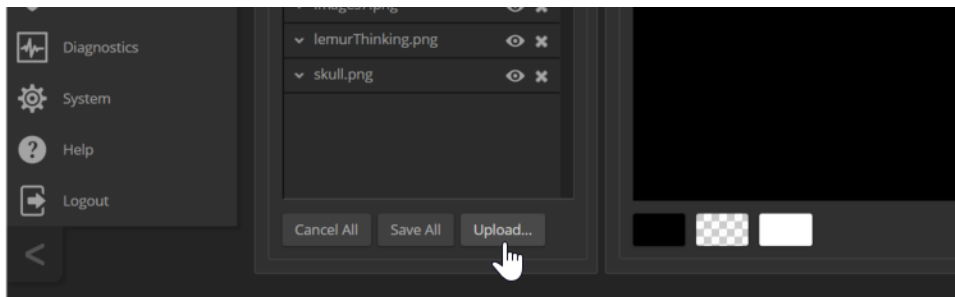
Working with Graphics

GRAPHICS PAGE, LIBRARY TAB

Use the graphics library to set up keying and placement for on-screen graphics.

To upload a graphics file:

1. Select Upload. The Upload Graphics box opens.
2. Select Choose Files and browse to the file(s). File type may be .png or .jpg.



To place the graphic on the canvas and work with it:

1. Select the expand/collapse arrow associated with the filename to open the file information.
2. Select the View icon associated with the filename. Initially the image is placed at the top left corner of the canvas (coordinates 0,0).



3. Drag the image to the desired location on the canvas, or enter the desired offset from top left.
4. Select the desired mask type – alpha, luma, chroma, or opaque.
5. After making changes, save your work and select the expand/collapse arrow to close the file information dialog box.

To manage the graphics library:

Right-click the filename to edit it.

Select the X to delete the file.

Setting up Macros and Triggers

CONTROL DEVICES PAGE

Macros are sequences of commands that define programmed behaviors. Macros may use any of the device's serial API commands.

Triggers register events or state changes that can be associated with macros, to make them run.

A trigger may be either hardware, such as the Home button on a tabletop microphone, or software.

Software triggers allow you to program custom functions for third-party control devices, such as defining the buttons on a conference room touch-screen. *Hardware triggers* (labeled One Touch in the web interface) allow you to define responses to connected trigger devices. OneTouch triggers are Vaddio trigger devices such as TableMic microphones.

Writing, Editing, and Testing Macros

CONTROL DEVICES PAGE, MACROS TAB

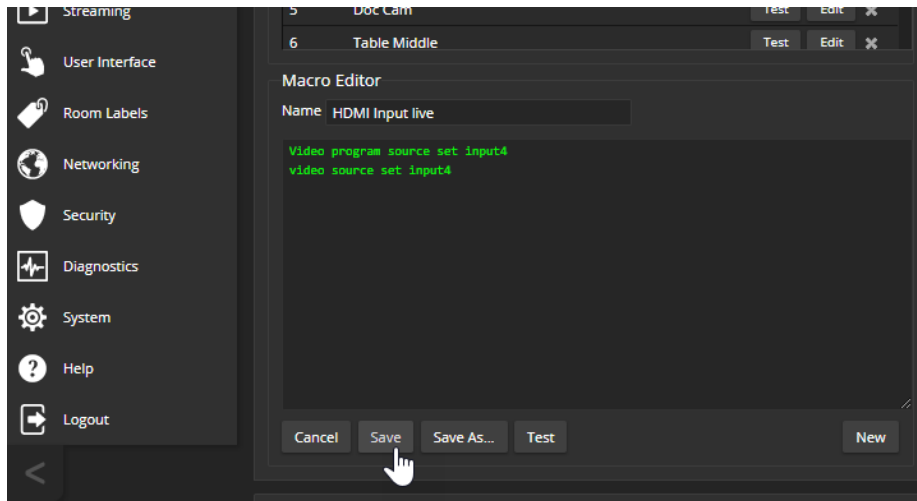
A macro can only run successfully if all its commands are able to run successfully. For example, if the macro sends a camera to a preset position, the camera must be present and able to use presets, and the preset must exist on the camera.

Refer to the [Serial Command API](#) section for a full list of commands.

Some products provide example macros. You can safely rename, edit, or delete them.

To write and test a macro:

1. Select New, and enter a name in the Macro Editor's Name field.
2. Enter one or more Telnet commands in the editing area. Note that commands for attached devices must specify the device they apply to – for example, `camera 1 tilt set 10` applies to the camera at input 1.
3. Optional but strongly recommended: Use the Test button to check your work while you are writing the macro.
4. Save the macro, or select New to start over.



To test (debug) the macro:

Use the Test button to run a macro while you are editing it. You can also test macros after saving them. The Macro Execution Log shows the result of each test.

To edit an existing macro:

Select the Edit button associated with the macro, make your changes in the Macro Editor, and save your work.

To create a new macro based on an existing one:

Select the Edit button for the existing macro to open it, and use the Save As button to give it a new name. Then select its Edit button again, and make the desired changes.

Assigning Macros to Triggers

CONTROL DEVICES PAGE, TRIGGERS TAB

When you associate a macro with a trigger, you must specify whether it runs when the trigger turns on, or when it turns off – so you can associate two macros with each trigger, one to run when the trigger is activated, and one to run when the trigger is turned off.

To associate a macro to a trigger:

Do at least one of these things:

- Select a macro in the Execute Macro on Enter field. This macro will start when the trigger turns on.
- Select a macro in the Execute Macro on Exit field. This macro will start when the trigger turns off.

If you assign two macros to a Vaddio TableMIC microphone's One Touch trigger (the Home button), ensure that the One Touch trigger is set to Latching mode. If you assign only one macro to the One Touch trigger, ensure that it is set to Momentary mode, so the macro runs every time you tap the button. Right-click a trigger label or test button to rename the trigger.

To remove macro assignments from a trigger:

Select the X on that trigger's row. This is equivalent to setting both macros to *(none)*.

Assigning a Macro to a Connected TableMIC Microphone's Home Button

1. On the Macros tab of the Control Devices page, name and create the macro. Then test, debug, and save it.
2. If you want this macro to run every time you tap the microphone's One Touch button, go to the Audio page and set the One Touch Button mode to Momentary. Otherwise the button acts as an on/off switch and the macro runs *every other time* you tap the button.
3. On the Triggers tab of the Control Devices page, locate One Touch in the list of trigger events, and select the macro from the list of available actions for Execute Macro On Enter.

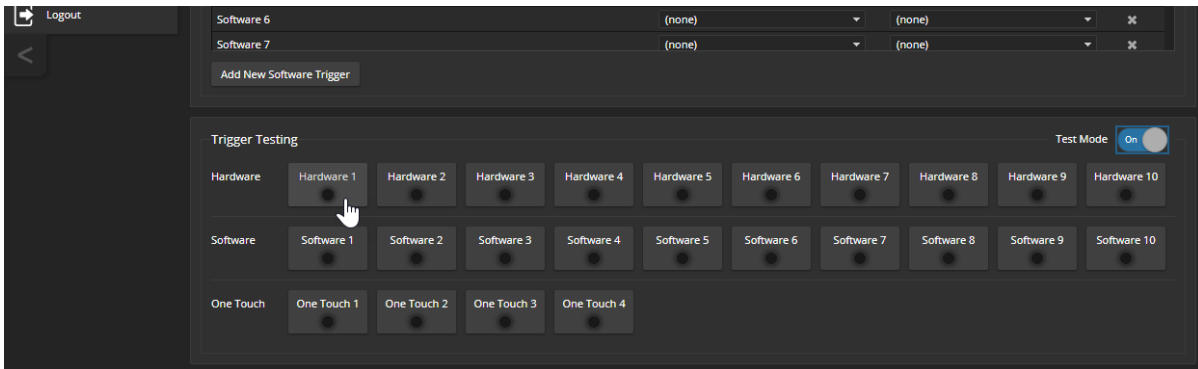
Testing Triggers

CONTROL DEVICES PAGE, TRIGGERS TAB

Just as it can be helpful to test macros when you write them, it can also be helpful to test triggers when you assign macros to them. The Trigger Testing section is available from both tabs of the Control Devices page.

To test a trigger:

1. Set Test Mode on. The web interface displays a notification.
2. Select the trigger to run the macro associated with turning the trigger on.
3. Select the trigger again to run the macro associated with turning the trigger off, if there is one.
4. Turn off Test Mode when you finish testing.



Note

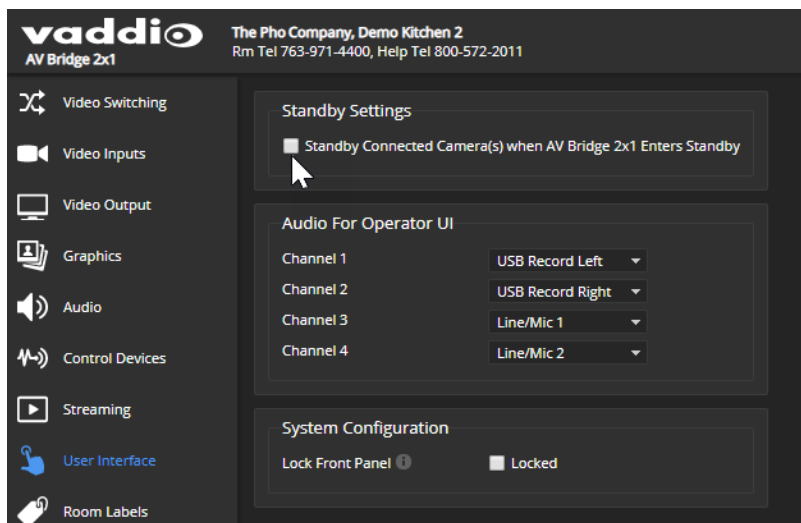
Triggers are not available to the control device when Test Mode is selected.

Configuring Standby Behavior

USER INTERFACE PAGE

To place the cameras in standby mode along with the switcher, check the box marked "Standby Connected Camera(s) when AV Bridge 2x1 Enters Standby."

Leave this check box unchecked if the cameras should remain powered up.

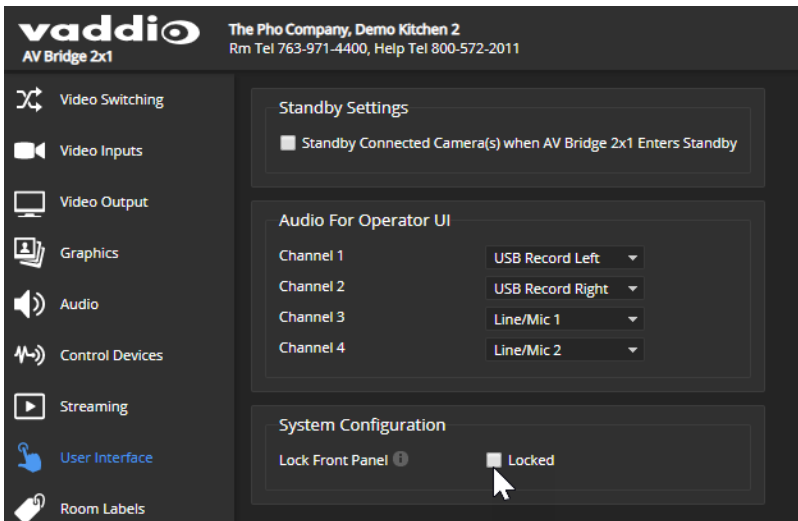


Locking the Front Panel

USER INTERFACE PAGE

Select Lock Front Panel to disable the Swap, PIP, and Stream buttons.

The IP and Reset buttons cannot be disabled, as they may be needed if the administrator cannot access the device via the web interface or serial API.



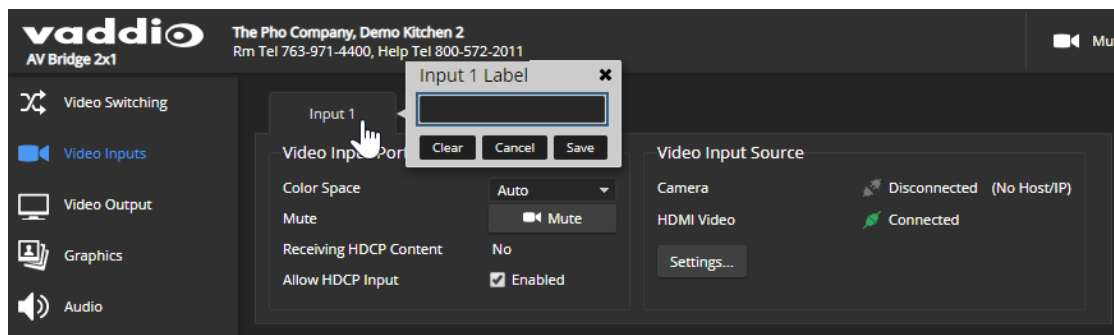
Customizing Labels

Some of the labels in the web interface are customizable – because you may find, for example, that "Podium" is a more useful label than "Line/Mic 1." You can rename:

- Video inputs
- Audio inputs and outputs

When in doubt, try it.

Right-click the label you want to rename. If it is customizable, it opens a dialog box.



Operating the AV Bridge 2x1

The AV Bridge 2x1 provides a web-based user interface in addition to the front panel controls for basic functions. *To access the web interface, you may need to log in with the `user` account credentials, depending on how the device is configured.* The admin login is not required.

Contact the administrator for information on accessing and logging in to the web interface.

To operate the device effectively, you will need to be able to view one of these:

- HDMI output (the display connected to the device)
- USB stream
- IP stream

About Viewing Streams

The USB stream is always available to the computer directly connected to the device.

IP streaming is disabled by default. If you are unable to view the IP stream, this usually means it is not enabled. Contact your system administrator.

To view the IP stream:

- If RTMP streaming is selected, you will need to know the service provider and channel.
- If RTSP streaming is selected, you will need to know the streaming URL for the IP stream. Contact the system administrator for this information. It is available from Streaming page in the admin portion of the web interface.
- You will need a stream viewer application such as VLC Media Player to view the RTSP stream.

To view the USB stream:

Connect a computer to the USB port on the device, and do one of these things:

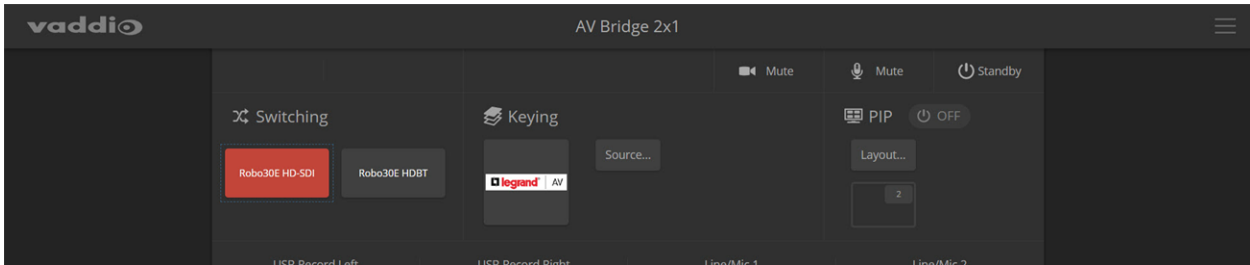
- Open a stream viewer and select the camera as the video capture device.
- Start or join a conference.

When viewing either stream, keep in mind that there is always inherent latency and network-dependent latency, so the video and audio may not be perfectly synchronized. An audio delay adjustment is available to administrators on the Audio page of the web interface. See [Speaker Adjustments](#).

Quick Steps You Can Take from Any Page

ALL OPERATOR PAGES

All non-administrative pages of the web interface provide controls for muting, video, and graphics.



Muting and Standby

- **Mute all video** – HDMI Out and the USB and IP streams send the selected video mute pattern, either black video or color bars. Audio remains on unless you mute it also.
- **Mute all audio** – Disables the microphone inputs and the audio portion of the stream. It does not disable PC audio input or HDMI audio output; if you mute audio while playing content from a PC, the audio portion of the content is not muted. Video remains on unless you mute it also.
- **Set the system to standby mode** – Connected cameras may also go to standby mode, depending on how the system is configured.

Video Input Switching and Graphics

- **Change video input** (Switching) – Toggle between input 1 and input 2.
- **Turn keying on/off and select keying source** – When you change the video input, you may want to change keying as well.

Working with the PIP

- **Check the PIP status and layout** at a glance.
- **Change the PIP layout** – Select Layout to open the PIP Layout window.

Working with Cameras

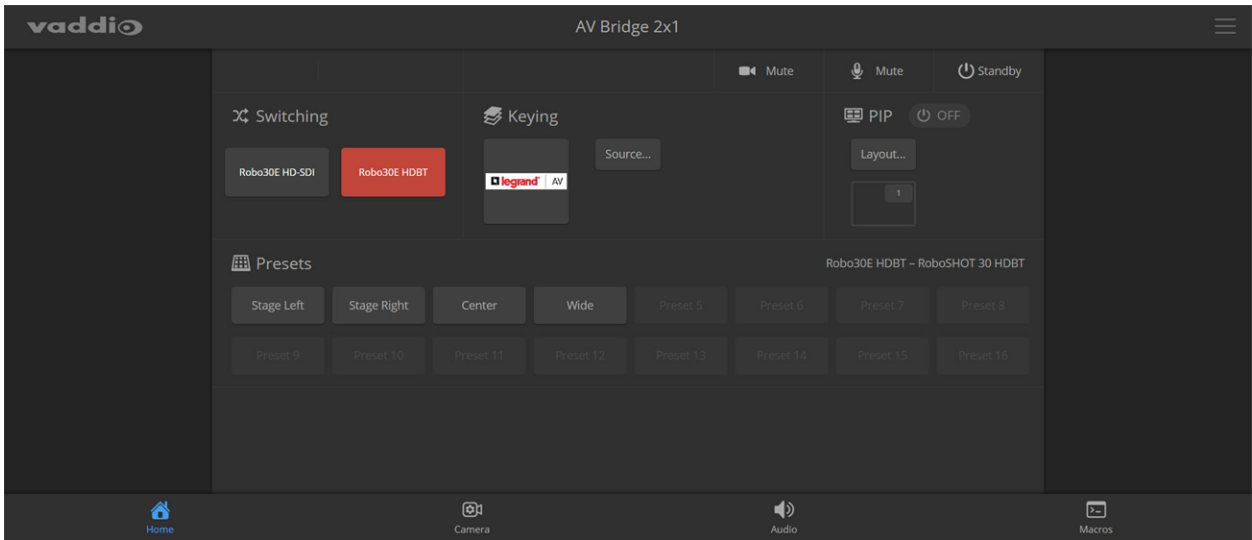
The web interface shows the active video source in red.

Select the video source to display on the HDMI output and the IP and USB streams. If it is a camera, you do not need to log in to its web interface - you can control it directly from the AV Bridge 2x1 web interface. The Home page and Camera page both present the camera controls available. These depend on the camera's capabilities.

Working with Camera Presets

HOME PAGE (USER OR GUEST ACCESS)

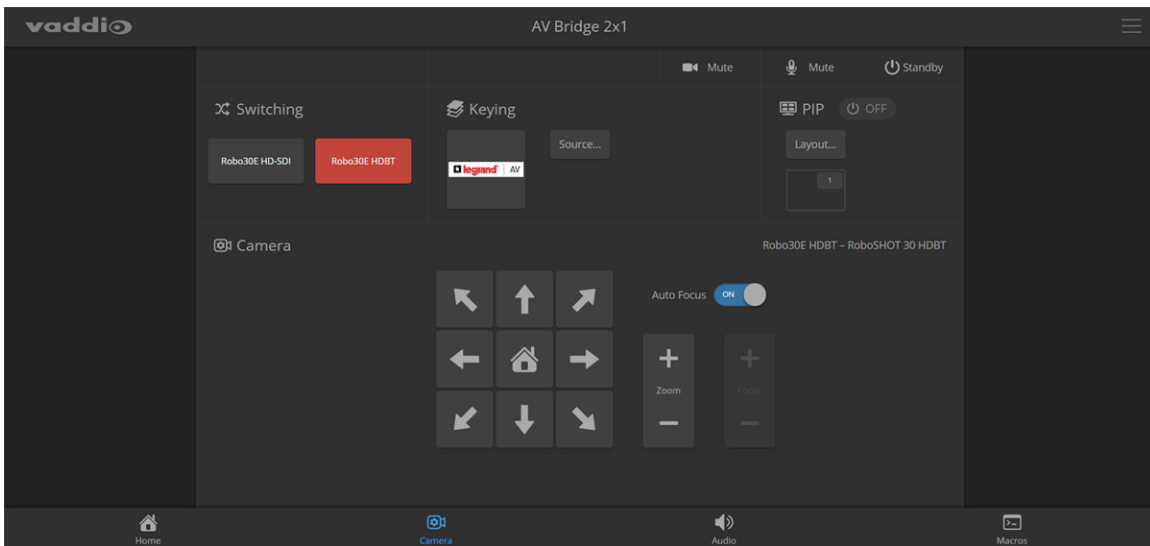
If presets have been defined for the selected video input, they are available on the Home page. The administrator has the option to customize the labels for the video inputs and the presets for each.



Controlling Movement

CAMERA PAGE (USER OR GUEST ACCESS)

The Camera page presents the same controls that are available from the selected video input's web interface. Depending on the camera, these may include pan, tilt, zoom, and focus controls.

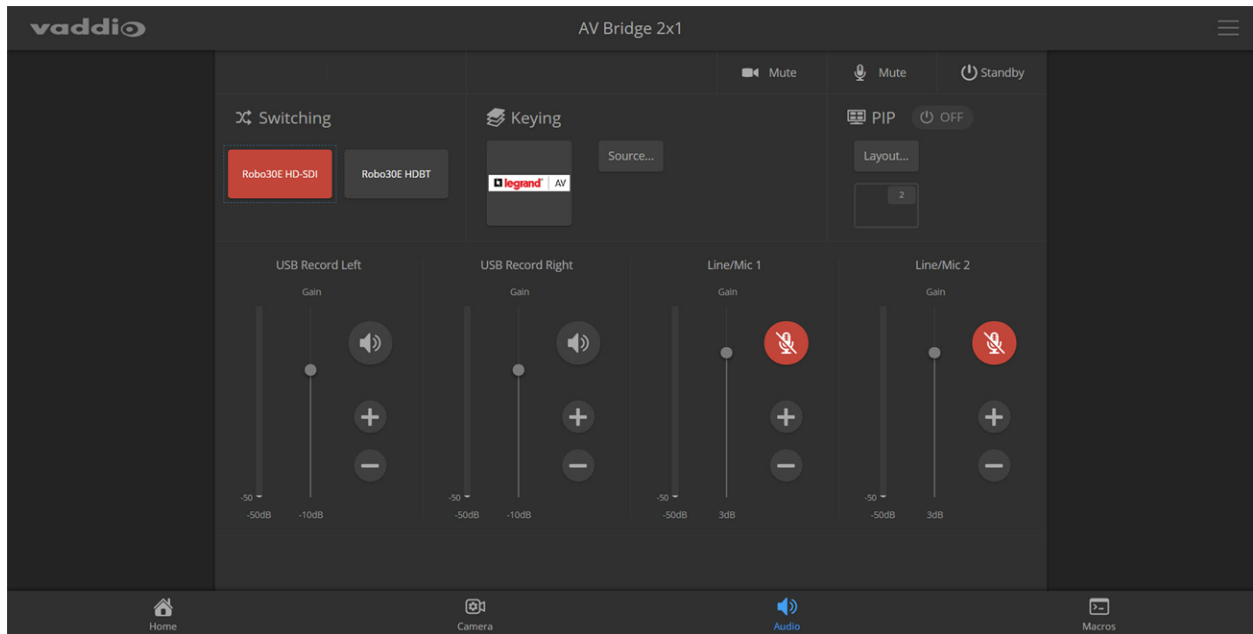


Working with Audio

AUDIO PAGE (USER OR GUEST ACCESS)

Up to four audio channels may be available on the operator's Audio page. Each provides a mute/unmute button, volume read-out, and volume slider control.

The system administrator selects the audio channels available on this page.

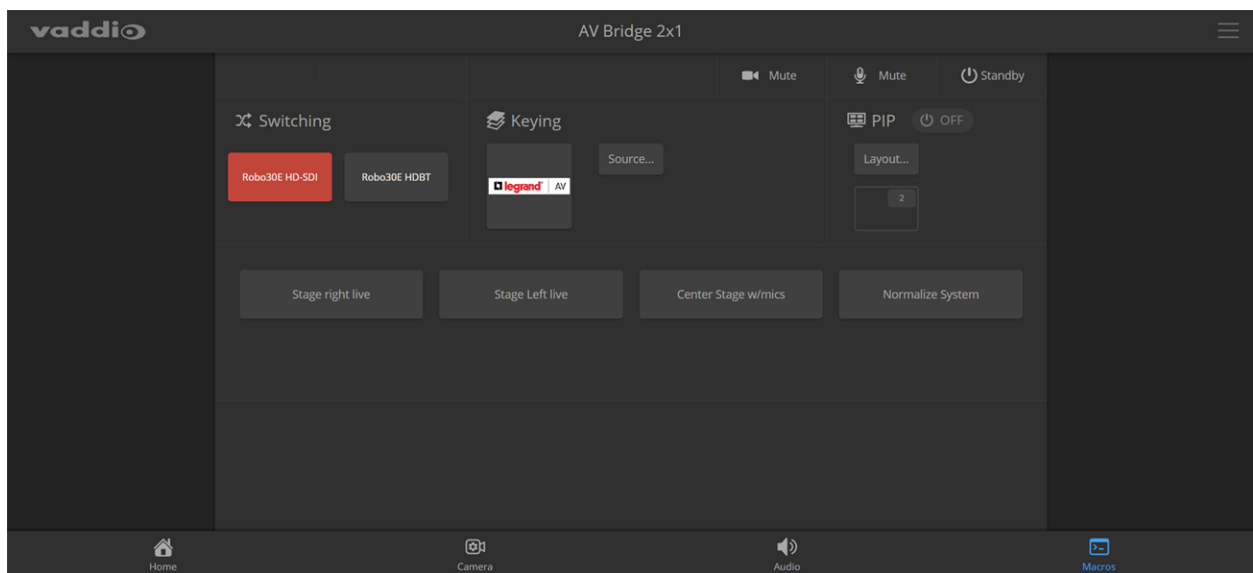


Working with Macros

MACROS PAGE (USER OR GUEST ACCESS)

Macros provide shortcuts for common sequences of actions. For example, the system administrator might create a macro that moves and zooms a camera to frame the presenter at the podium, then switches to that camera and the podium microphone.

If macros have been defined, you can select them from the Macros page.

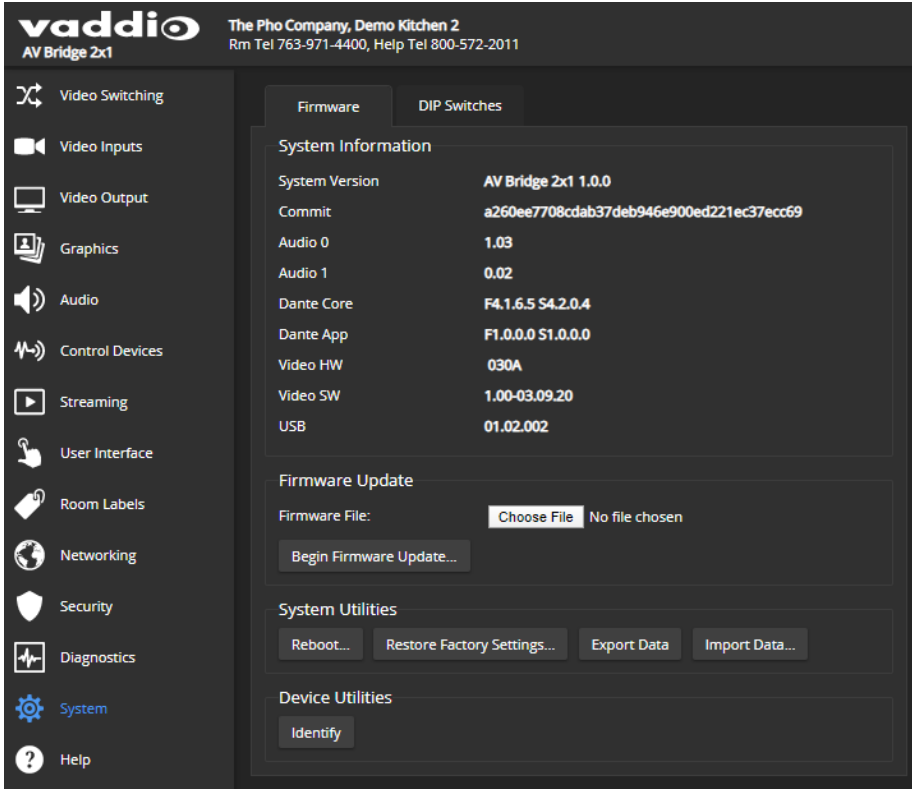


System Maintenance

This chapter covers the tasks on the System page:

- Exporting (backing up) and importing configuration data
- Updating firmware
- Rebooting

The screen shots in this chapter may look slightly different from your device's web interface. Some may be from other products within the same product family.



It also covers information that may help if you need to contact Vaddio Technical Support.

Exporting and Importing Configuration Data

SYSTEM PAGE, FIRMWARE TAB

You can export a device's configuration and save it as a backup. This allows you to quickly restore customized information if you need to [restore factory defaults](#) or replace the unit, or import a configuration to multiple devices.

The exported data includes settings that may be the same on several devices – the room label, NTP and time zone information, audio and video settings, and streaming settings.

Security and network settings are not included in the export file.

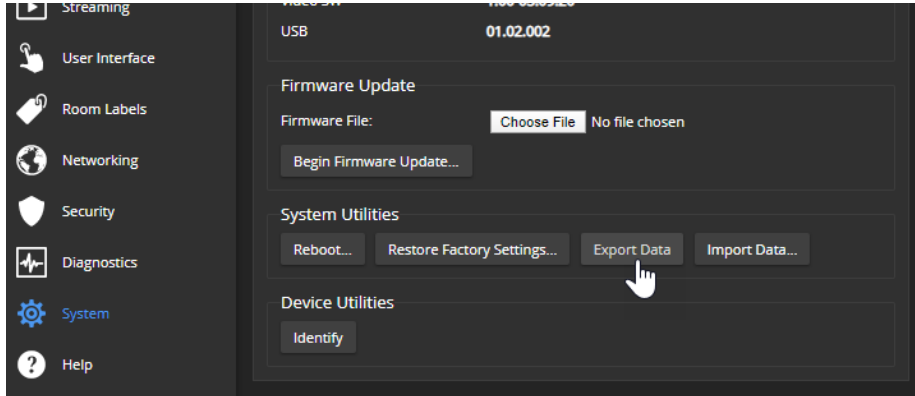
When importing a configuration to multiple devices:

- All the devices must be of the same model.
- All the devices must have compatible firmware versions installed.

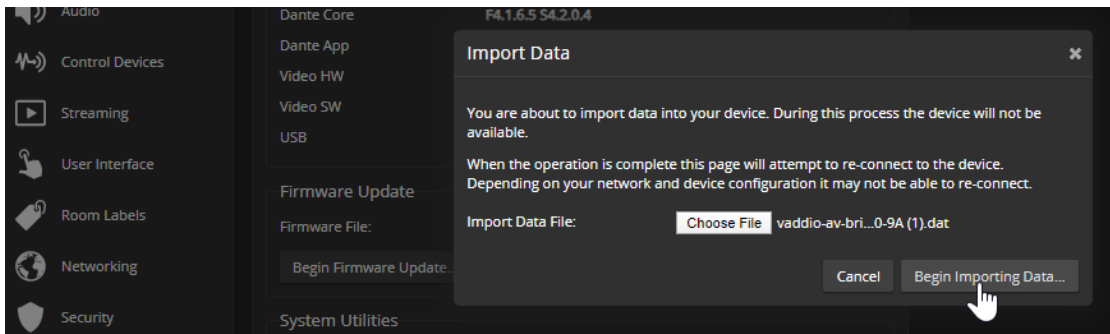
To export a configuration:

To save a copy of the current configuration, select Export Data.

The configuration exports as a .dat file and downloads to your default file download location. The filename is the device's hostname followed by the .dat file extension. If you only need to back up the configuration, you're done.

**To import a configuration:**

1. Select Import. The Import Data box opens.



2. Select Choose File, and browse to the .dat file to be imported.
3. Select Begin Importing Data. When the import is complete, the device reboots.

Updating the Firmware

SYSTEM PAGE, FIRMWARE TAB

From time to time, we issue new firmware to introduce new features and other product improvements, and to fix issues that turn up. We recommend keeping all your Vaddio products up to date, to get the most out of them.

Firmware updates do not typically change the configuration or password.

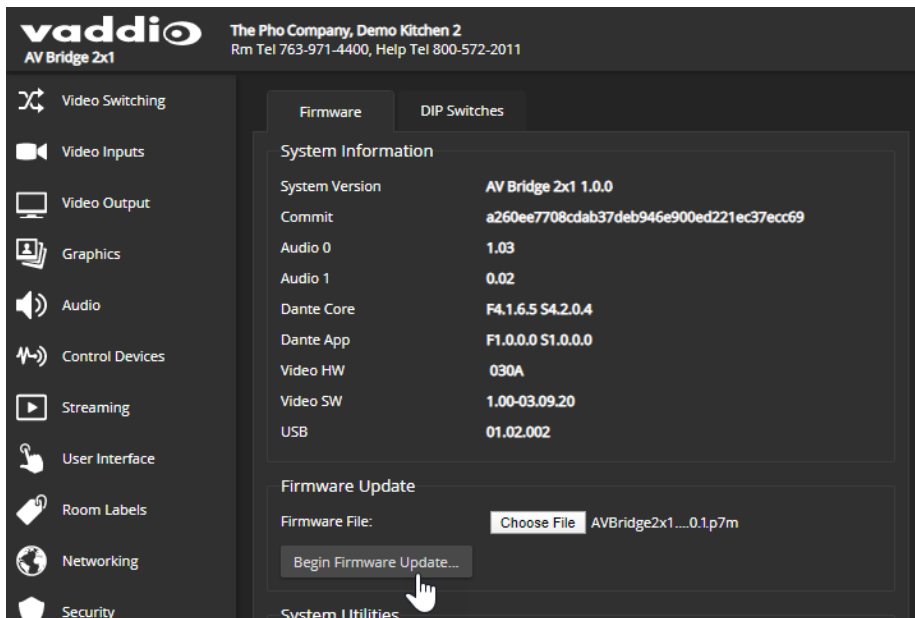
Note

*It is rare for an update to generate errors. If this happens, please read them carefully and record them. Screen shots of the error message may be very helpful in troubleshooting the problem. If the update does not finish successfully, **do not remove power**. Contact Vaddio technical support immediately.*

1. Go to the appropriate product page and download the firmware update file.
2. Select the firmware file that you downloaded.
3. Select Begin Firmware Update.
4. Read the information in the Confirm dialog box, then select Continue.

The device reboots as the last step in the update process.

We recommend also checking for firmware updates for all connected Vaddio products.

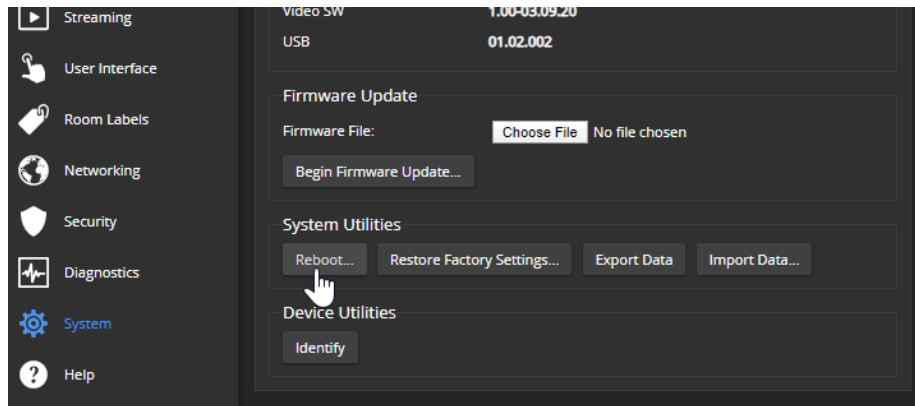


Rebooting

SYSTEM PAGE, FIRMWARE TAB

This can help if the device stops responding as you expect.

In the System Utilities section, select Reboot, then confirm. You will need to log in again after the reboot.



If rebooting the device doesn't fix the problem, you may need to [restore factory defaults](#). Before you take that step, [back up the configuration](#).

If the problem seems related to the device's Dante settings or connected Dante devices, you may need to correct it using the Dante Controller application.

Contacting Vaddio Technical Support and Viewing Diagnostic Logs

HELP AND DIAGNOSTICS PAGES

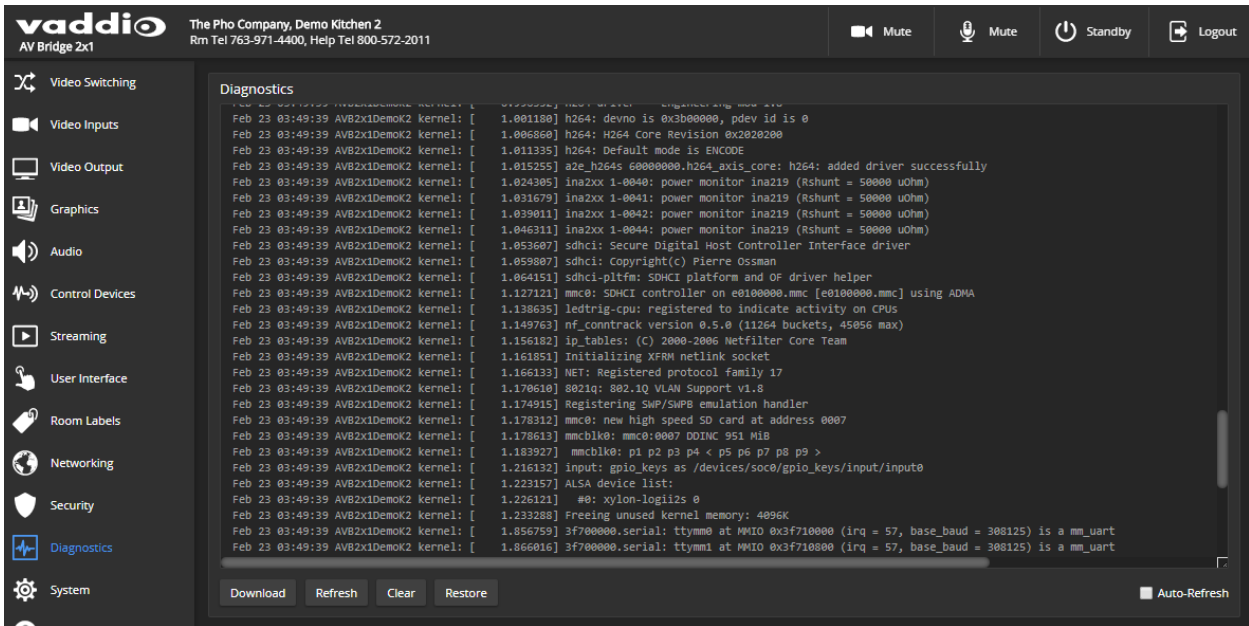
If you can't resolve an issue using your troubleshooting skills (or the [Troubleshooting](#) table in this manual), we are here to help. Technical support contact information is on the Help page.



Note

The Help page may provide a link to our standard privacy notice. This product does not record or save audio or video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the device's IP address is considered "personally identifiable information" for the purposes of the privacy notice. This information is stored for display to the user, but not otherwise shared or transmitted.

Your Vaddio technical support representative may ask you to download and email the event log file available from the Diagnostics screen. The event log may include large numbers of internal events even when no errors have occurred. Rebooting generates over 100 log entries.



Serial Command API

The Vaddio serial command API allows an external device such as an AMX or Crestron presentation system to control the device. It is also used for device macros. The serial command API can be accessed via Telnet or direct RS-232 connection. Commands are the same using either communication protocol.

Requirements for Access

To connect via Telnet:

- Telnet must be enabled on the Security page of the device's web interface.
- Your computer must have a Telnet client. Telnet port 23 is used. Windows provides a built-in Telnet client; PuTTY can also be used.
- Your computer must be able to connect to the device over the network.

Direct RS-232 connection to a computer:

- Connect your computer to the device's RS-232 port using a Vaddio EZ Control Adapter and an RS-232 to USB adapter. For connection information, see [RS-232 Serial Communication Settings and Port Pin-out](#).
- Use a SSH client such as PuTTY.

You will need to log in using the `admin` account.

Usage Notes

- The `>` character is the command prompt.
- In addition to the camera control commands, Telnet session management commands are available – `help`, `history`, and `exit`.
- `CTRL-5` clears the current serial buffer on the device.

Getting More Information

Use a question mark as a command or command parameter to display a list of available commands, subcommands, or command parameters. For example, `?` returns all top-level commands; `network ?` returns the valid subcommands for the `network` command; and `network ping ?` returns the parameters available for the `network ping` command.

Firmware updates sometimes implement new command parameters. We do not update the manuals for every firmware update. Querying will help you discover any command parameters that have been added since the last update.

Typographical conventions:

- `{x | y | z}` – Choose x, y, or z.
- `<variable>` – The named variable (such as `<ip address>`) is required.
- `<x..y >` – A value in the range of x through y is required.
- `[optional]` – This parameter (such as `[speed]`) is not required.

Audio Management Commands

The following commands are available for audio management:

- audio volume
- audio mute
- audio route
- audio crosspoint-gain

Channels Available for Audio Commands

Audio mute and volume commands may be applied to all audio channels at once (`master`) or one specific input or output. Routing and crosspoint gain commands specify individual channels.

Inputs

<code>master</code>	Line in and EasyMic inputs, USB playback, and HDMI audio in (Not available for <code>audio route</code> and <code>audio crosspoint-gain</code> commands)
<code>line_in_1</code> , <code>line_in_2</code>	Microphones or other line-level inputs
<code>usb3_playback_left</code> , <code>usb3_playback_right</code>	USB audio from the far end
<code>hdmi_in_<1..2>_left</code> , <code>hdmi_in_<1..2>_right</code>	Audio from a connected HDMI input device
<code>dante_in_<1..4></code>	Dante microphones or other Dante input devices

Outputs

<code>master</code>	Speakers, USB record, and HDMI audio out (Not available for <code>audio route</code> and <code>audio crosspoint-gain</code> commands)
<code>line_out_1</code> , <code>line_out_2</code>	Speakers or other line-level outputs
<code>usb3_record_left</code> , <code>usb3_record_right</code>	USB audio from your site
<code>ip_out_left</code> , <code>ip_out_right</code>	Audio portion of the IP stream
<code>hdmi_out_left</code> , <code>hdmi_out_right</code>	Audio out to a connected HDMI device
<code>dante_out_<1..4></code>	Dante speakers or other Dante output devices

audio volume

Gets or sets the volume of the specified audio channel. The valid range depends on the channel.

See [Channels Available for Audio Commands](#) for the audio input and output channels available on your device.

Synopsis	audio <channel> volume { get up down set <level> }	
Options	get	Returns the current volume of the specified channel.
	up	Increases the volume of the specified channel by 1 dB.
	down	Reduces the volume of the specified channel by 1 dB.
	set <level>	Sets the volume of the specified channel in dB.
Examples	<pre>audio line_in_1 volume up OK ></pre> <p>Increases the volume for Line In 1 by 1 dB.</p> <pre>audio line_out_1 volume get volume -10.0 dB OK ></pre> <p>Returns the current volume for the speaker connected to the line out port.</p>	

audio mute

Gets or sets the mute status of the specified audio channel.

See [Channels Available for Audio Commands](#) for the audio input and output channels available on your device.

Synopsis	audio <channel> mute {get on off toggle}	
Options	get	Returns the current mute state of the specified channel.
	on	Mutes the audio for the specified channel.
	off	Unmutes the audio for the specified channel.
	toggle	Changes the mute state for the specified channel – unmutes if it was muted, mutes if it was not.
Examples	<pre>> audio master mute get mute: off OK ></pre> <p>Returns the current mute state of master mute. It is off, so audio is not globally muted. Some audio channels may be muted, however.</p> <pre>>audio line_out_1 mute on OK ></pre> <p>Mutes the Line Out 1 port.</p>	

audio route

Gets or sets the input routed to the specified output.

See [Channels Available for Audio Commands](#) for the audio input and output channels available on your device.

Synopsis	audio <channel> route { get set <inputs> }	
Options	get	Returns the routing for the specified output.
	set	Sets the routing for the specified output. More than one input may be routed to the specified output.
Examples	<pre>> audio usb3_record_left route get [auto_mic_mix] OK ></pre> <p>Returns the current source of the left channel of USB3 Record. The auto mic mixer is currently routed to the left channel of the USB3 Record output.</p> <pre>> audio ip_out_right route set line_in_1</pre> <p>Routes Line Input 1 to the right channel of the outbound IP stream.</p>	

audio crosspoint-gain

Gets or sets the gain for the input routed to the specified output, in dB, for a given output and input.

See [Channels Available for Audio Commands](#) for the audio input and outputs channels available on your device.

Synopsis	audio <output> crosspoint-gain <input> {get set <level>}	
Options	get	Returns the routing gain from the specified input to the specified output.
	set <-12.00 .. 12.00>	Sets the routing gain from the specified input to the specified output. Valid range is -12.00 dB to 12.00 dB.
Examples	<pre>> audio line_out_1 crosspoint-gain hdmi_in_left get 3.95 OK ></pre> <p>Returns the current gain setting of the crosspoint between Line Output 1 and HDMI Input Left in dB.</p> <pre>> audio usb3_record_left crosspoint-gain line_in_1 set 6.00 OK ></pre> <p>Sets the crosspoint gain of USB Record Left and Line In 1 to 6 dB.</p>	

Camera Management Commands

The following commands are available for controlling connected cameras:

- camera home
- camera pan
- camera tilt
- camera zoom
- camera focus
- camera preset
- camera ccu
- camera standby

You must specify the camera to be controlled, and the camera must be able to execute the command. For example, only PTZ cameras can respond to the **camera pan** and **camera tilt** commands. Refer to the camera's Complete Manual for detailed information on available parameters and value ranges. Some camera command parameters may be unavailable to the AV Bridge MATRIX PRO, although they are available when controlling the camera directly via Telnet.

camera home

Moves the specified camera to its home position.

Synopsis	camera <1..2> home	
Required	<1..2>	Specify the camera to control.
Example	camera 1 home Moves camera 1 to its home position.	

camera pan

Moves the specified camera horizontally.

Synopsis	camera <1..2> pan { left [<speed>] right [<speed>] stop }	
Required	<1..2>	Specify the camera to control.
Options	left	Moves the camera left.
	right	Moves the camera right.
	<speed>	Optional: integer specifies the speed for right or left movement. Range and default speed depend on the camera.
	stop	Stops the camera's horizontal movement.
Examples	camera 2 pan left Pans camera 2 left at the default speed.	
	camera 2 pan right 5 Pans camera 2 right using a speed of 5.	
	camera 1 pan stop Stops camera 1's horizontal motion.	

camera tilt

Moves the specified camera vertically.

Synopsis	camera <1..2> tilt { up [<speed>] down [<speed>] stop }	
Required	<1..2>	Specify the camera to control.
Options	up	Moves the camera up.
	down	Moves the camera down.
	<speed>	Optional: integer specifies the speed for up or down movement. Range and default speed depend on the camera.
	stop	Stops the camera's vertical movement.
Examples	camera 1 tilt up Tilts camera 1 up at the default speed.	
	camera 2 tilt down 20 Tilts camera 2 down using a speed of 20.	
	camera 1 tilt stop Stops camera 1's vertical motion.	

camera zoom

Moves the specified camera in toward the subject or out away from the subject.

Synopsis	camera <1..2> zoom { in [<speed>] out [<speed>] stop }	
Required	<1..2>	Specify the camera to control.
Options	in	Zooms the camera in.
	out	Zooms the camera out.
	<speed>	Optional - integer specifies the speed for zoom movement. Range and default speed depend on the camera.
	stop	Stops the camera's zoom movement.
Examples	camera 1 zoom in Zooms camera 1 in at the default speed.	
	camera 2 zoom out 7 Zooms camera 2 out using a speed of 7.	
	camera 2 zoom stop Stops camera 2's zoom motion.	

camera preset

Moves the camera to the specified preset, or stores the current camera position and optionally CCU information, either with or without specifying that Tri-Synchronous Motion is to be used when moving to this position.

Synopsis	camera <1..2> preset { recall store } <1..16> [tri-sync <1..24>] [save-ccu]	
Required	<1..2>	Specify the camera to control.
Options	recall <1..16>	Moves the camera to the specified preset, using Tri-Synchronous Motion if this was saved with the preset. If CCU information was saved with the preset, the camera switches to the CCU setting associated with the preset.
	store <1..16>	Stores the current camera position as the specified preset.
	tri-sync <1..24>	Optional: Specifies that the camera uses Tri-Synchronous Motion to move to this position, using the specified speed. Valid only for cameras that have the Tri-Synchronous Motion feature.
	save-ccu	Optional: Saves the current CCU settings as part of the preset. If not specified, the last color settings are used when recalled.
Examples	<pre>>camera 2 preset recall 3 OK > Moves camera 2 to its stored preset 3. >camera 2 preset store 1 OK > Saves camera 2's current position as its preset 1. >camera 2 preset store 4 tri-sync 15 OK > Stores camera 2's current position as preset 4. The camera will use Tri-Synchronous Motion at speed 15 when it is recalled to this preset. >camera 2 preset store 2 tri-sync 10 save-ccu OK > Stores camera 2's current position as preset 2. The camera applies the current CCU settings and uses Tri-Synchronous Motion at speed 10 when it is recalled to this preset.</pre>	

Camera CCU Parameters

The parameters returned by the `camera <n> ccu get` command and available to the `camera <n> ccu set` command depend on the capabilities of the specific camera. The following parameters are typically available.

Refer to the camera's manual for detailed information. Note that some command parameters may be unavailable to the AV Bridge MATRIX PRO, although they are available when controlling the camera directly via Telnet.

<code>auto_iris</code> on or off	Allows the camera to compensate automatically for light level.
<code>iris</code> integer	Manual aperture adjustment for light level. Range varies depending on camera.
<code>gain</code> integer	(Iris gain) Adjusts for light level without changing the iris setting. Range varies depending on camera.
<code>backlight_compensation</code> on or off	Reduces contrast to adjust for bright light behind the main subject of the shot. <code>wide_dynamic_range</code> must be off to use <code>backlight_compensation</code> .
<code>wide_dynamic_range</code> on or off	Automatically darkens bright areas and brightens dark areas to provide a more properly exposed image in challenging lighting conditions. <code>backlight_compensation</code> must be off to use <code>wide_dynamic_range</code> .
<code>detail</code> integer	Image sharpness. Range varies depending on camera.
<code>auto_white_balance</code> on or off	Adjusts color automatically. Red and blue gain settings are ignored if <code>auto_white_balance</code> is on.
<code>red_gain</code> and <code>blue_gain</code> integer	Adjust color when <code>auto_white_balance</code> is off. Range varies depending on camera.
<code>chroma</code> integer	Color intensity. Range varies depending on camera.
<code>gamma</code> integer	Range (gray density) between bright areas and shadows. Range varies depending on camera.
<code>all</code>	<code>camera ccu get</code> command only; returns current values for all CCU parameters.

camera ccu get

Returns or sets CCU (lighting) information for the specified camera.

The parameters returned by this command depend on the capabilities of the specific camera. See [Camera CCU Parameters](#) for a list of CCU parameters typically available on Vaddio cameras.

Synopsis	camera <1..2> ccu get <param>	
Required	<1..2>	Specify the camera to query.
	<param>	Specify the CCU parameter to get.
Examples	<pre>>camera 3 ccu get iris iris 6 OK ></pre> <p>Returns the current iris value.</p> <pre>>camera 3 ccu get red_gain red_gain 201 OK ></pre> <p>Returns the current red gain value.</p> <pre>>camera 3 ccu get all auto_iris on auto_white_balance on backlight_compensation off blue_gain 193 chroma 2 detail 8 gain 3 iris 11 red_gain 201 wide_dynamic_range off OK ></pre> <p>Returns all current CCU settings.</p>	

camera ccu set

Sets the specified CCU (lighting) information.

The parameters available for this command depend on the capabilities of the specific camera. See [Camera CCU Parameters](#) for a list of CCU parameters typically available on Vaddio cameras.

Synopsis	camera <1..2> ccu set <param> <value>	
Required	<1..2>	Specify the camera to control.
	<param>	Specify the CCU parameter to set.
Examples	<pre>>camera 2 ccu set auto_iris off OK ></pre> <p>Turns off auto-iris mode for camera 2, returning the camera to manual iris control.</p> <pre>>camera 2 ccu set red_gain 10 OK ></pre> <p>Sets camera 2's red gain value to 10.</p>	


camera ccu scene

Stores the current CCU scene to the specified camera, or recalls the specified ccu scene for the specified camera. Valid only if the specified camera supports CCU scenes.

Synopsis	camera <1..2> ccu scene {recall {factory <1..6> custom <1..3>} store custom <1..3>}	
Required	<1..2>	Specify the camera to control.
Options	recall factory <1..6>	Recalls the camera to the specified scene (factory 1 – 6 or custom 1 – 3) .
	recall custom <1..3>	
Options	store custom <1..3>	Saves the current scene as the specified custom scene.
Examples	<pre>>camera 2 ccu scene recall factory 2 OK > Sets camera 2 to use factory CCU scene 2. >camera 2 ccu scene store custom 1 OK > Saves the current CCU scene to camera 2 as its custom CCU scene 1.</pre>	

camera focus

Changes the camera focus.

Synopsis	camera <1..2> focus {{ mode { get auto manual }} {{ near far } <speed>} stop }	
Required	<1..2>	Specify the camera to control.
Options	mode	Sets or returns the focus mode.
	auto	Sets auto-focus mode.
	manual	Sets manual focus mode.
	get	Returns the current focus mode.
	near	Brings the focus nearer to the camera. Cannot be used when auto-focus is selected.
	far	Moves the focus farther from the camera. Cannot be used when auto-focus is selected.
	<speed>	Optional: integer specifies the speed for changing focus. Range and default speed depend on the camera.
	stop	Stops the camera's focus movement.
Examples	 <pre> camera 3 focus near OK > Brings the focus near at the default speed. camera 3 focus far 7 OK > Moves the focus farther from the camera at a speed of 7. camera 3 focus mode get auto_focus: on OK > Returns the current focus mode. </pre>	

Video and Graphics Management Commands

The following commands are available for managing video and graphics from the device:

- video mute
- video program source
- video program pip
- video type
- graphics enable
- graphics source

video mute

Gets or sets the video mute status of the specified channel. When video is muted, the device sends a mute pattern such as blue or black video with an on-screen message stating that video mute is on. This can be desirable when preparing the room or when privacy is needed.

Synopsis	<code>video <channel> mute { get off on toggle }</code>	
Channels	<code>master</code>	All video channels.
	<code>input1</code>	Video from HDMI input 1.
	<code>input2</code>	Video from HDMI input 2.
Options	<code>get</code>	Returns the current video mute status.
	<code>off</code>	Unmutes the video. (Normal video resumes.)
	<code>on</code>	Mutes the video. (Black screen with message)
	<code>toggle</code>	Changes the video mute status.
Examples	<pre>video input1 mute on</pre> <p>Mutes video from HDMI input 1.</p> <pre>video master mute get mute: off OK ></pre> <p>Video is not globally muted. Note that individual video channels may be muted, however. If the two commands above were issued in the sequence shown, the audio from Input 1 would be muted although video is not globally muted.</p>	

video program source

Gets or sets the source for the specified video output.

Synopsis	video program source {get set} <source channel>	
Options	get	Returns the current source for the specified output.
	set	Sets the source for the specified output.
Source channels	input1 or input2	Video from HDMI inputs.
Examples	<p>video program source get</p> <p>Returns the video source in a form something like this:</p> <pre>source: input2 OK ></pre> <p>The camera at Input 2 is the current source for the output.</p> <p>video program source set input1</p> <p>Sets the video source to HDMI input 1.</p>	

video program pip

Get or set the state of the PIP.

When not in a call, the PIP source is the HDMI input that is not currently selected; the main image is from the selected input.

In a call, the PIP is near-end video (the selected HDMI input); the main image is far-end video.

Synopsis	video program pip { get on off toggle layout }	
Options	get	Returns the current source of the PIP.
	on	Enables the PIP.
	off	Disables the PIP.
	toggle	Changes the state of the PIP.
	layout <layout>	Specifies the screen lay-out. The PIP may be in any corner of the screen, or the screen may be split vertically or horizontally.
Examples	<p>video program pip get</p> <pre>source: input2 OK ></pre> <p>Returns the source of the PIP.</p> <p>video program pip layout left_right</p> <pre>OK ></pre> <p>Sets the video output to show side-by-side images of the video output and PIP.</p>	

video type

Gets or sets the video type (camera or other video source) of the specified channel.

Synopsis	<code>video <channel> type { get set <camera video> }</code>	
Channels	<code>input1</code>	Video from HDMI input 1.
	<code>input2</code>	Video from HDMI input 2.
Options	<code>get</code>	Returns the video type (camera or video) of the specified input.
	<code>set</code>	Specifies the current video type (camera or video) of the specified input; for use when the AV Bridge 2x1 does not automatically detect what type of device is connected.
	<code>video</code>	Identifies the input as a non-camera video source.
	<code>camera</code>	Identifies the input as a camera.
Example	<pre>video input1 type get input type: camera OK ></pre> <p>The device connected to Input 1 is a camera.</p>	

graphics enable

Get or set the state of a graphics layer on the program or preview output.

Synopsis	<code>graphics <channel> enable <layer> { get on off toggle }</code>	
Channels	<code>program</code>	Get or set the state of a layer on the program output.
	<code>preview</code>	Get or set the state of a layer on the preview output.
Layers	<code>layer1</code>	Get or set the state of layer 1.
	<code>layer2</code>	Get or set the state of layer 2.
Options	<code>get</code>	Returns the state of the specified layer on the specified output.
	<code>on</code>	Enables the specified layer on the specified output.
	<code>off</code>	Disables the specified layer on the specified output.
	<code>toggle</code>	Changes the specified layer's state – if it was disabled, it changes to enabled, and vice-versa.
Examples	<pre>graphics preview enable layer1 get enabled: on OK ></pre> <p>Returns the current state of layer 1 on the preview output. Layer 1 is on.</p> <pre>graphics preview enable layer1 off OK ></pre> <p>Turns off layer 1 on the preview output.</p>	

graphics source

Get or set the state of a graphics layer on the program or preview output.

Synopsis	<code>graphics <channel> source <layer> { get set <selection> }</code>	
Channels	<code>program</code>	Get or set the state of a layer on the program output.
	<code>preview</code>	Get or set the state of a layer on the preview output.
Layers	<code>layer1</code>	Get or set the state of layer 1.
	<code>layer2</code>	Get or set the state of layer 2.
Options	<code>get</code>	Returns the current source of the specified layer on the specified output.
	<code>set <selection></code>	Enables the specified layer on the specified output.
Selections	<code>input7</code>	Set the device at input 7 as the source for the specified graphic.
	<code>input8</code>	Set the device at input 8 as the source for the specified graphic.
	<code><filename></code>	Use the specified file as the specified graphic. The file must be available in the switcher's Graphics Library.
Examples	<pre>graphics preview source layer1 get source: 120px-Stop_Sign.png OK ></pre> <p>Returns the source of the graphic currently in use as layer 1 on the preview output. Layer 1 on the preview output is currently a graphics file called 120px-Stop_Sign.png.</p> <pre>graphics preview source layer2 set input7 OK ></pre> <p>Sets the device connected to Input 7 as the source for the layer 2 graphic on the preview output.</p>	

Communications and Networking Commands

The following commands are available for managing communication and discovering communication-related settings:

- streaming ip enable
- streaming settings get
- network settings get

camera comm host

Directory operations – get the IP address of the device at the specified input, add or delete a device.

Synopsis	camera <input> comm host { get set <host> unset }	
Options	<input>	Integer 1 to 4; specifies which input to manage.
	get	Returns the IP address of the device at this input.
	set <host>	Set this input to the IP address or hostname of an input device. Equivalent to adding a device to the directory using the web interface.
	unset	Delete the IP address information for the specified input. Equivalent to deleting a device from the directory using the web interface.
Examples	<pre>>camera 1 comm host get host: 10.30.240.160 (connected) OK ></pre>	

streaming ip enable

Set or change the state of IP streaming.

Synopsis	streaming ip enable { get on off toggle }	
Parameters	get	Returns the current state of IP streaming
	on	Enables IP streaming.
	off	Disables IP streaming.
	toggle	Changes the state of IP streaming (on if it was off, or off if it was on). streaming ip enable toggle has the same effect as selecting the Enable IP Streaming checkbox in the web interface.
Example	<pre>>streaming ip enable on > OK Enables IP streaming. >streaming ip enable get enabled: true > OK Returns the current state of IP streaming.</pre>	

streaming settings get

Returns current IP and USB streaming settings.

Synopsis	<code>streaming settings get</code>	
Parameters	<code>IP Custom_Frame_Rate</code>	Frame rate selected in Custom mode.
	<code>IP Custom_Resolution</code>	Resolution selected in Custom mode.
	<code>IP Enabled</code>	May be <code>true</code> or <code>false</code> . Specifies whether IP streaming is enabled.
	<code>IP MTU</code>	MTU for IP streaming. Default is 1400.
	<code>IP Port</code>	The RTSP port number used for IP streaming. Default is 554.
	<code>IP Preset_Quality</code>	Video quality selected in Easy mode.
	<code>IP Preset_Resolution</code>	Resolution selected in Easy mode.
	<code>IP Protocol</code>	The IP streaming protocol in use (RTSP or RTMP).
	<code>IP URL</code>	The URL where the stream is available.
	<code>IP Video_Mode</code>	Video quality mode selected (preset or custom).
	<code>USB Active</code>	Specifies whether USB streaming is active (in a conference).
	<code>USB Device</code>	The USB device name.
	<code>USB Frame_Rate</code>	The current frame rate for the USB stream. If the USB stream is not active, the frame rate is 0.
	<code>USB Resolution</code>	The current resolution for the USB stream. If the USB stream is not active, the resolution is 0x0.
<code>USB Version</code>	The USB version in use (USB 3).	
Example	<pre> IP Custom_Frame_Rate 30 IP Custom_Resolution 720p IP Enabled true IP MTU 1400 IP Port 554 IP Preset_Quality High Quality (Best) IP Preset_Resolution 1080p IP Protocol RTSP IP URL vaddio-av-bridge-2x1-stream IP Video_Mode preset USB Active true USB Device AV Bridge 2x1 USB Frame_Rate 30 USB Resolution 1080p USB Version 3 OK ></pre>	

network settings get

Returns the device's current network settings, including MAC address, IP address, netmask, and gateway.

Synopsis	<code>network settings get</code>
Example	<pre>network settings get Name: eth0:WAN MAC Address: 00:04:a3:85:0a:ee IP Address: 10.30.240.187 Netmask: 255.255.255.0 VLAN: Disabled Gateway: 10.30.240.254 Hostname: bergstrom OK ></pre>

Control and Power Commands

These commands are available for managing power and sequences of actions:

- camera standby (may also be sent directly to a connected camera)
- system standby
- trigger
- sleep

trigger

Turn an existing trigger on or off. This command has no effect if the specified trigger has not been defined.

Note

If the web interface's macro/trigger test mode is in use, this command is disabled.

Synopsis	trigger <1..50> {off on block <seconds> }	
Required	<1..50>	The trigger index (identifier) – triggers 1 through 50 are available.
	{off on}	Set the state of the trigger.
Optional	block	Block execution of subsequent command to allow macros to finish executing (similar to <code>sleep</code>). The default time to block is 60 seconds.
	<seconds>	Number of seconds to block.
Example	<pre>trigger 3 on</pre> <p>Turns trigger 3 on.</p> <pre>trigger 1 off block 10</pre> <p>Turns off trigger 1, and blocks for up to 10 seconds while any macros in progress finish.</p>	

sleep

Pauses command execution for the specified number of milliseconds.

Synopsis	sleep <milliseconds>	
Options	<milliseconds>	The number of milliseconds (1 - 10000) to pause
Example	<pre>sleep 7000</pre> <p>Pause for 7 seconds (7000 milliseconds) before accepting the next command.</p>	

camera standby

Set or change standby status for the specified camera.

Synopsis	<code>camera <1..2> standby { off on toggle get }</code>	
Required	<code><1..2></code>	Specify the camera to control.
Options	<code>off</code>	Brings the camera out of standby mode.
	<code>on</code>	Stops video and puts the camera in standby mode.
	<code>toggle</code>	Changes the camera's standby state – if it was not in standby mode, it enters standby; if it was in standby mode, it "wakes up."
	<code>get</code>	Returns the camera's current standby state.
Examples	<p>camera 1 standby off Brings camera 1 out of standby mode.</p> <p>camera 2 standby on Puts camera 2 in standby mode.</p> <p>camera 2 standby get Returns the standby status of camera 2 in a form like this:</p> <pre>standby: off OK ></pre>	

system standby

Gets, sets, or toggles the camera controller's current standby status.

Cameras currently connected to the video inputs may also go to standby when you set `system standby on`. This depends on how the device is configured.

Synopsis	<code>system standby { get on off toggle }</code>	
Options	<code>get</code>	Returns the device's current standby status.
	<code>on</code>	Sets the device to standby mode.
	<code>off</code>	Brings the device out of standby mode.
	<code>toggle</code>	Changes the device's standby status.
Examples	<p>system standby get Returns the standby status in this form:</p> <pre>standby: off (the device is not in standby mode.)</pre>	
	<p>system standby on Immediately sets the device to standby mode.</p>	

Maintenance and Troubleshooting Commands

The following commands are available for maintenance and troubleshooting:

- network ping
- system reboot
- system factory-reset
- version

network ping

Sends an ICMP ECHO_REQUEST to the specified IP address or hostname.

Synopsis	network ping [count <count>] [size <size>] <destination-ip>	
Options	<count>	The number of ECHO_REQUEST packets to send. Default is five packets.
	<size>	The size of each ECHO_REQUEST packet. Default is 56 bytes.
	<destination-ip>	The IP address where the ECHO_REQUEST packets will be sent.
Examples	<pre>>network ping 192.168.1.66 PING 192.168.1.66 (192.168.1.66): 56 data bytes 64 bytes from 192.168.1.66: seq=0 ttl=64 time=0.476 ms 64 bytes from 192.168.1.66: seq=1 ttl=64 time=0.416 ms 64 bytes from 192.168.1.66: seq=2 ttl=64 time=0.410 ms 64 bytes from 192.168.1.66: seq=3 ttl=64 time=0.410 ms 64 bytes from 192.168.1.66: seq=4 ttl=64 time=3.112 ms --- 192.168.1.66 ping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss round-trip min/avg/max = 0.410/0.964/3.112 ms ></pre> <p>Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.66.</p>	
	<pre>>network ping count 10 size 100 192.168.1.1</pre> <p>Sends 10 ECHO_REQUEST packets of 100 bytes each to the host at 192.168.1.1. The command returns data in the same form as above.</p>	

version

Returns the current firmware version.

Synopsis	version
Example	<pre>version</pre> <p>Returns current firmware version information.</p>

system reboot

Reboots the system either immediately or after the specified delay. Note that a reboot is required when resetting the system to factory defaults (system factory-reset).


Synopsis	system reboot [<seconds>]	
Options	<seconds>	The number of seconds to delay the reboot.
Examples	<pre>>system reboot OK > The system is going down for reboot NOW! avb2x1-D8-80-39-62-A7-C5</pre> <p>Reboots the system immediately.</p> <pre>>system reboot 30</pre> <p>Reboots the system in 30 seconds. The response is in the same form; the system message appears at the end of the delay.</p>	

system factory-reset

Gets or sets the factory reset status. When the factory reset status is on, the system resets to factory defaults on reboot.

Note

Factory reset does not affect settings managed in the Dante Controller application.

Synopsis	system factory-reset { get on off}	
Options	get	Returns the device's current factory reset status.
	on	Enables factory reset on reboot.
	off	Disables factory reset on reboot.
Examples	 <pre>>system factory-reset get factory-reset (software): off factory-reset (hardware): off OK ></pre> <p>Returns the factory reset status.</p> <p>This evaluates the most recent <code>system factory-reset on</code> or <code>off</code> command, if one has been received, then reads the rear panel DIP switches and returns the status <code>on</code> if they are all in the down position.</p> <pre>>system factory-reset on factory-reset (software): on factory-reset (hardware): off OK ></pre> <p>Enables factory reset upon reboot.</p> <p>Note <i>This command does not initiate a factory reset. The factory reset takes place on the next reboot.</i></p>	

Telnet Information and Session Management Commands

The following commands are available for Telnet help and session management:

- help
- history
- exit

You can also use a question mark as a command or command parameter to display a list of available commands, subcommands, or command parameters. For example, `?` returns all top-level commands; `system ?` returns the valid subcommands for the system command; and `system reboot ?` returns any parameters available for the system reboot command.

history

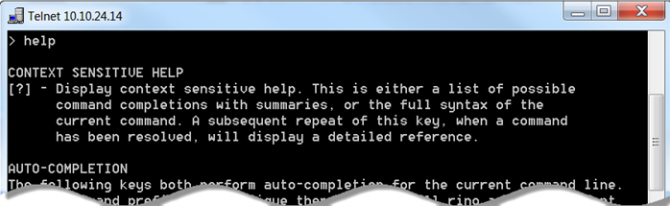
Returns the most recently issued commands from the current Telnet session. Since many of the programs read user input a line at a time, the command history is used to keep track of these lines and recall historic information.

Synopsis	history <limit>	
Options	<limit>	Integer value specifying the maximum number of commands to return.
Examples	history Displays the current command buffer.	
	history 5 Sets the history command buffer to remember the last 5 unique entries.	
Additional information	<p>You can navigate the command history using the up and down arrow keys.</p> <p>This command supports the expansion functionality from which previous commands can be recalled from within a single session. History expansion is performed immediately after a complete line is read.</p> <p>Examples of history expansion:</p> <ul style="list-style-type: none"> * !! Substitute the last command line. * !4 Substitute the 4th command line (absolute as per 'history' command) * !-3 Substitute the command line entered 3 lines before (relative) 	



help

Displays an overview of the CLI syntax.

Synopsis	help
Example	<p>help</p> 

Note

Use `?` as a command parameter to see information about a given command's syntax.

exit

Ends the command session. If the session is via Telnet, the Telnet socket closes as the session ends. If the session is via RS-232 serial connection, the session ends and a new session automatically opens.

Synopsis	exit
Example	exit

Troubleshooting and Care


If the equipment does not power up as expected, use this table to determine whether to call Vaddio Technical Support.

Note

If the equipment behaves in a way that suggests even a remote possibility of a bad cable, please try a known good cable with the same pin-out. Factory-made cables can be defective. Cables can appear to be good but only work part of the time. A cable may pass a standard continuity check but be unable to pass enough power to the connected device. Crimping tools can crimp unevenly, contacts can break internally, and individual conductors in the cable can break inside the jacketing material. Any of these can result in a cable that passes a continuity check but does not work reliably.

(The author would like to confess having made more than a few almost-good cables. It happens.)

Power Issues

What is it doing?	Possible causes	Check and correct
Nothing. The buttons do not light up. 	Power is not connected.	Check the connections from the wall outlet to the PoE+ power injector and from the power injector to the device.
	The wall outlet is not active. (Check by finding out if it powers something else, such as a laptop or phone charger.)	Use a different outlet.
	The device or its power injector is bad.	Contact your reseller or Vaddio Technical Support.
A connected microphone is not working.	Phantom power is not enabled.	Enable phantom power.
	The cable is bad.	Check using a known good cable.
	There is a problem with the microphone.	Check using a different microphone.
A connected camera is not working.	Check the camera's power connection. Refer to the camera's manual for detailed troubleshooting information.	

Control Issues

What is it doing?	Possible causes	Check and correct
Swap, PIP, and Stream buttons do not do anything.	The front panel is locked.	This is normal. Unlock the front panel ; or for Swap or PIP, change the selected input from the operator's web interface.
Camera is on but unresponsive (no video, unable to control the camera, or both).	A cable is connected to the wrong port.	Check and correct cable connections.
	A cable is bad.	Check using a known good cable.
	There is a problem with the camera.	Refer to the troubleshooting information in the camera manual.
Dante networked audio microphone or speaker is on but unresponsive.	The audio device is not paired to the AV Bridge 2x1	Pair the device to the AV Bridge 2x1.
The device is behaving in unexpected ways.	More than one person has control of the device.	Solve this as a "people problem."

Network and Communication Issues

What is it doing?	Possible causes	Check and correct
Unable to access the web interface.	The device is not connected to the network. Check the device's IP address. If it is 169.254.1.1, the device is not connected, or is on a non-DHCP network and needs to be configured with a valid IP address.	Check using a known good cable. Verify that the device is correctly configured for the network. See Configuring a Static IP Address for a Device Currently at 169.254.1.1 .
	The device is not at the IP address you browsed to.	Follow the procedure for Getting the Device's IP Address . If it is 169.254.1.1, the device needs to be configured for your network. See Configuring a Static IP Address for a Device Currently at 169.254.1.1 .
Unable to log in successfully.	The web interface is out of sync with the unit. This can happen if more than one person is controlling the device.	Use the browser's page refresh button.
	The password has been changed.	Contact your system administrator. If you are the system administrator, call Vaddio Technical Support.

Video and Audio Issues

What is it doing?	Possible causes	Check and correct
Video drops out when input is content from a Mac.	The Allow HDCP Input setting is selected, and is interfering with non-HDCP input.	On the Video Inputs page, clear the checkbox labeled Allow HDCP Input.
Occasional loud sounds from Dante network-connected speaker	Speaker is not in use and volume is set high.	Vaddio recommends muting network-connected speakers when they are not in use.

Restoring Factory Defaults

This operation returns the device to its original state.

- Any settings you have customized will be lost.
- Anyone who is logged in to the web interface is logged out.
- You will need to do the initial device setup again to be able to communicate with the device.

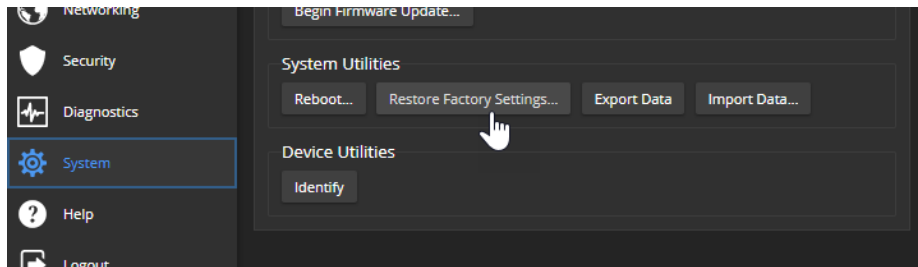
To save and restore your customized settings, export the device configuration before restoring factory defaults. See [Exporting and Importing Configuration Data](#). Then import the configuration after completing the initial device configuration. Device behavior settings and room labels are preserved in the configuration file; identity settings, such as passwords, device hostname, and IP streaming path and URL are not.

You can restore factory defaults from the web interface, serial API, or the device's front panel.

Restoring Factory Defaults from the Web Interface

SYSTEM PAGE

1. If you have customized the device's room label or behavior settings and will want to restore them, export the configuration. See [Exporting and importing configuration data](#).
2. Select Restore Factory Settings.



3. A confirmation message informs you that the action cannot be undone. This is your cue to make sure you have successfully exported the configuration before you confirm.

Note

This operation does NOT reset Dante-related information. Use the Dante Controller application to manage Dante devices and Dante-related settings on the AV Bridge 2x1.

Restoring Factory Defaults from the Front Panel

Press and release the Reset button, then immediately press and hold the IP button for 15 seconds.

When the process is complete, video is available again. When you access the web interface, it presents the Initial Device Set-Up page.

Operation, Storage, and Care

For smears or smudges on the product, wipe with a clean, soft cloth. Do not use any abrasive chemicals.

Keep this device away from food and liquids.

Do not operate or store the device under any of the following conditions:

- Temperatures above 40°C (104°F) or below 0°C (32°F)
- High humidity, condensing or wet environments
- Inclement weather
- Severe vibration
- In any mode of transportation with Tom Hanks
- Dry environments with an excess of static discharge

Do not attempt to take this product apart. There are no user-serviceable components inside.



Glossary

AEC

Acoustic echo cancellation. Audio processing that subtracts the far-end (speaker) audio from the sound that your microphone picks up.

bandwidth

Data transfer rate (bits per second) for the stream. In some cases, using a high bandwidth can slow down other network traffic. On networks with very low bandwidth, video issues may result. Streaming at a lower resolution or frame rate can reduce bandwidth usage.

DHCP

Dynamic Host Configuration Protocol. A network management protocol that assigns an IP address to a device automatically when it is connected to the network.

DIY

Do It Yourself. As in, "You can copy information from this document to create a DIY room guide customized for your conference room." Yes! You can do that! In fact, the "Info for DIY Room Guides" document is specifically designed for you to adapt and customize.

EasyMic

Vaddio's proprietary connectivity standard for conferencing microphones.

echo cancellation

Audio processing that subtracts the far-end (speaker) audio from the sound that your microphone picks up.

far end

(conferencing) A location in the conference other than the one where you are. Far-end video is what you typically see in a conference – the people at the other end of the call.

felis catus

What the internet is made of.

full-duplex

Simultaneous two-way (or multi-way) audio; conference participants at the near end can talk and still hear the participants at the far end(s), as in a face-to-face meeting.

gateway

Network information automatically assigned in a DHCP network. If installing equipment on a non-DHCP network, get this information from the network administrator.

HDMI

(High-Definition Multimedia Interface) A video output format; may also carry audio information.

HID audio controls

(Human Interface Device) Controls to enable conference participants to use the conferencing client to control the audio.

HTTP

HyperText Transfer Protocol. The magic that makes websites work.

HTTPS

HyperText Transfer Protocol Secure. The magic that uses encryption to make websites work securely. See **SSL certificate** for more information.

IP address

Where a given device is on the IP network, logically. The IP address enables the network to route data to the right device – and that’s why IP address conflicts are bad.

IP address conflict

Two or more devices attempting to use the same IP address on a network. Results are unpredictable but never good.

LED

Light-Emitting Diode. A status light.

MTU

Maximum Transmission Unit. The largest number of bytes allowed in a packet. If you don't know what that means, don't change MTU size.

near end

(conferencing) Your location in a conference. When you mute the video, your camera stops sending near-end video.

NTP

Network Time Protocol. Ensures that NTP-enabled devices on the network all show the same system time, so timestamps are accurate.

PoE, PoE+, PoE++

Power over Ethernet; a means of powering a device using its network connection. Requires a mid-span power injector. PoE+ and PoE++ deliver more power than PoE.

RCLB

Really Cool Logo Badge. A visual cue that the device is a genuine Vaddio product. Accept no substitutes!

RTMP

Real-Time Messaging Protocol. Used for livestreaming video (and audio, if available) to a service such as YouTube Live.

RTSP

Real-Time Streaming Protocol. Used for streaming video and audio over your network.

soft conferencing client

A conferencing application (such as Zoom, Google Hangouts, or Skype for Business) that uses a computer rather than requiring a conferencing codec.

SSL certificate

A file used with HTTPS proving that a web page really originates from its purported source. Vaddio devices use self-signed SSL certificates. Since these are not issued by a recognized certificate authority, your browser will pop up security warnings the first time you try to browse to the device’s web interface.

standby mode

Low-power mode. All inputs and outputs are muted for privacy.

streaming protocol

A set of rules that define how video and audio data are sent over the network. See RTMP and RTSP.

subnet mask

Network information automatically assigned in a DHCP network. If installing equipment on a non-DHCP network, get this information from the network administrator.

trigger

An event that can be associated with a macro (defined command sequence). Devices that originate trigger events are sometimes called triggers or trigger devices.

UAC drivers

(Universal Audio Class) Standard USB audio drivers used by Vaddio conferencing products with audio capabilities.

UCC, UC conferencing

Unified Communications Conferencing; refers to soft-client conferencing (such as Zoom or Skype for Business) using a computer with USB-connected peripherals.

USB 2

An older, lower-speed USB protocol; good for audio but offers lower maximum resolutions for video conferencing. USB 2 products can be connected to USB 2 or USB 3 ports on your computer.

USB 3

A high-speed USB protocol, capable of handling high-quality video and audio as in conferencing applications. USB 3 products should be connected to USB 3 ports; performance may be degraded otherwise.

USB playback

Audio from other sites (far-end audio) in a conference call. Considered an input because it's part of the incoming USB stream.

USB record

Audio from your site (near-end audio) in a conference call. Considered an output because it's part of the outbound USB stream.

UVC drivers

(Universal Video Class) Standard USB video drivers used by Vaddio cameras. They're the reason your computer doesn't have to stop and download a driver when you connect your new Vaddio USB camera to it.

UVC extensions

Controls in UVC drivers to allow participants at the far end of a conference to control your camera, if it processes UVC commands. The administrator may choose to disable these.

Photo Credits

This guide may include some or all of these photos.

European Space Agency (ESA) astronaut Samantha Cristoforetti, a Flight Engineer with Expedition 42, photographs the Earth through a window in the Cupola on the International Space Station

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Expedition 42 on orbit crew portrait, International Space Station, Mar. 7, 2015 – Barry Wilmore (Commander) Top, Upside down, to the right cosmonaut Elena Serova, & ESA European Space Agency Samantha Cristoforetti. Bottom center US astronaut Terry Virts, top left cosmonauts Alexander Samokutyaev and Anton Shkaplerov.

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European Space Agency astronaut Luca Parmitano, Expedition 36 flight engineer, outside the International Space Station

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Chris Cassidy, Luca Parmitano, and Karen Nyberg, ISS, 2013. Photo Credit: NASA

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Andrea Accomazzo, ESA Rosetta Spacecraft Operations Manager, providing a live update from the Main Control Room at ESA's European Space Operations Centre, Darmstadt, Germany during the Rosetta wake-up day.

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May also contain random images of the author's own cats. You're welcome.

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