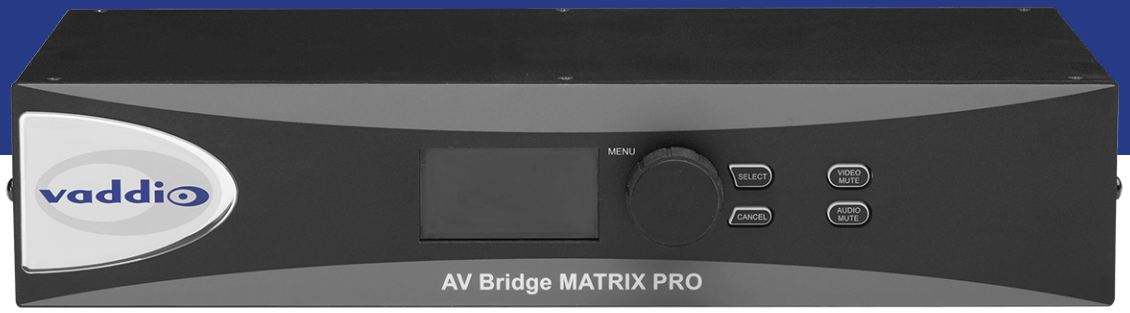


Complete Manual for the

AV Bridge MATRIX PRO

AV Encoder

Document 411-0020-30 Rev E
March 2021

Contents

Overview

This guide provides information about the AV Bridge MATRIX PRO AV encoder:

- 999-8230-000 – North America
- 999-8230-001 – Europe and UK
- 999-8230-009 – Australia and 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 MATRIX PRO AV Encoder**, which covers unpacking, physical features, switch settings, installation, and initial power-up.

For equipment operators, the **Operator's Guide for the AV Bridge MATRIX PRO AV Encoder** covers physical features and console operation.

Features

Inputs and Outputs:

- Quick-Connect inputs for three Vaddio cameras
- Video input for computer or other video source
- HDMI output
- Four EasyMic microphone inputs
- Four additional balanced mic/line inputs with 48 V phantom power
- Four balanced audio outputs
- Simultaneous USB and IP streaming
- External RS-232 control input

Cameras and Video:

- Automatically identifies and configures for Vaddio cameras
- Access to settings stored on each connected camera
- Independently configurable output resolutions
- Configurable picture-in-picture (PIP) for conferencing
- Split screen – top/bottom or quad split showing all four video inputs simultaneously
- Seamless video transitions with software adjustable transition time - cross-fades and straight cuts

Audio:

- Automatic audio mixing with controls to to manage audio levels manually if desired
- Acoustic echo cancellation with selectable AEC reference
- Assignable chairman priority gives one microphone a 3dB boost over the others
- Crosspoint gain configurable separately for each point in the audio matrix

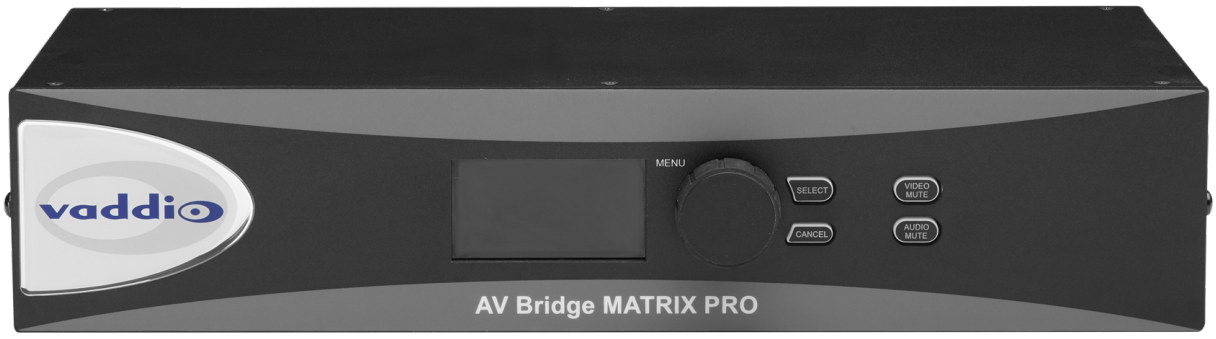
Control

- Browser-based web interface for operation, configuration and system administration
- Triggers for programmed actions such as changing the video source, moving a camera to one of its presets, and most other operations:
  - Up to 10 external hardware trigger inputs
  - Up to 50 software triggers
  - Up to four EasyMIC MicPOD One Touch triggers

A Quick Look at the AV Encoder

Here's what all the controls do, and what all the connectors are for.

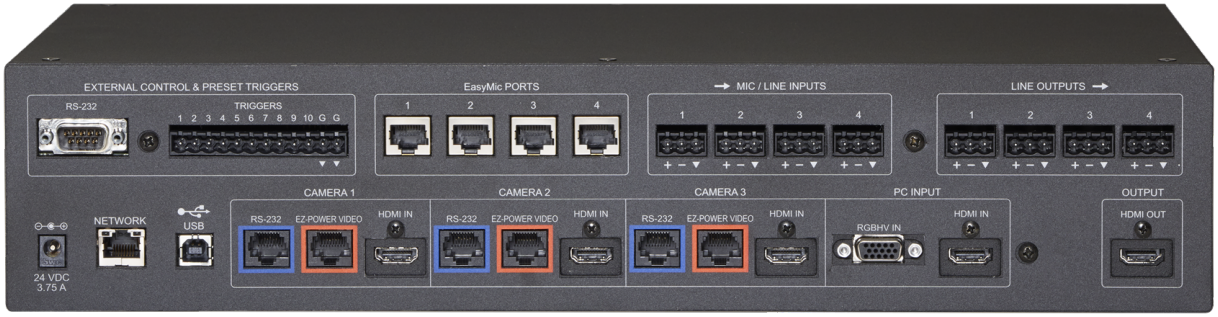
Front Panel



The front panel controls may be locked by the administrator.

- 8-line illuminated display – View basic operation and configuration menu and system information
- Menu knob – Navigate the operation/configuration menu
- Select and Cancel buttons – Work with the operation/configuration menu
- Video Mute button – Stop sending video. Press the button again to resume sending video from the selected source.
- Audio Mute button – Stop sending audio. Press the button again to resume sending audio.
- Dimensionally enhanced puffy badge – We have spared no expense to provide a lovely, dimensionally enhanced, puffy badge to enhance your visual experience. It's quite shiny. We hope you'll enjoy it.

Connector Panel



- External control: RS-232 port for external control device; trigger inputs for up to 10 presenter-controlled devices
- EasyMic Ports: Connections for 4 Vaddio EasyMic tabletop or ceiling microphones
- Mic/Line Inputs: Connections for 4 additional microphones or other balanced audio sources
- Line Outputs: Connections for 4 balanced audio outputs
- 24 VDC 3.75A: Power connection
- Network: Control, IP streaming, graphics
- USB 2.0 port: Uncompressed audio and video stream
- RS-232 ports (Camera 1 – Camera 3): Camera control connections
- EZPower Video ports (Camera 1 – Camera 3): Power to and video from Vaddio cameras that are compatible with Vaddio Quick-Connect devices
- HDMI inputs (Camera 1 – Camera 3): Video from connected cameras that are not compatible with Vaddio Quick-Connect devices
- PC Input (RGBHV In and HDMI In): Video inputs for a computer or other video source
- HDMI Out: HDMI video and audio output

Note

Units manufactured before 2021 also have an HSDS video output (Vaddio proprietary format) that may be connected to a Vaddio Quick-Connect device feeding a display or projector.

Installation

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

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.

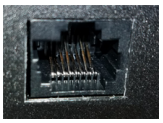
Do not install or operate this product if it has been dropped, damaged, or exposed to liquids. If any of these things happen, return it to Vaddio for safety and functional testing.

Cabling Notes

Use Cat-5e or better cable and standard RJ-45 connectors (568B termination). We recommend using high-quality connectors and 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

Use Cat-5e or better cable. We recommend using high-quality connectors and a high-quality crimping tool.

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.

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.

Basic Connections

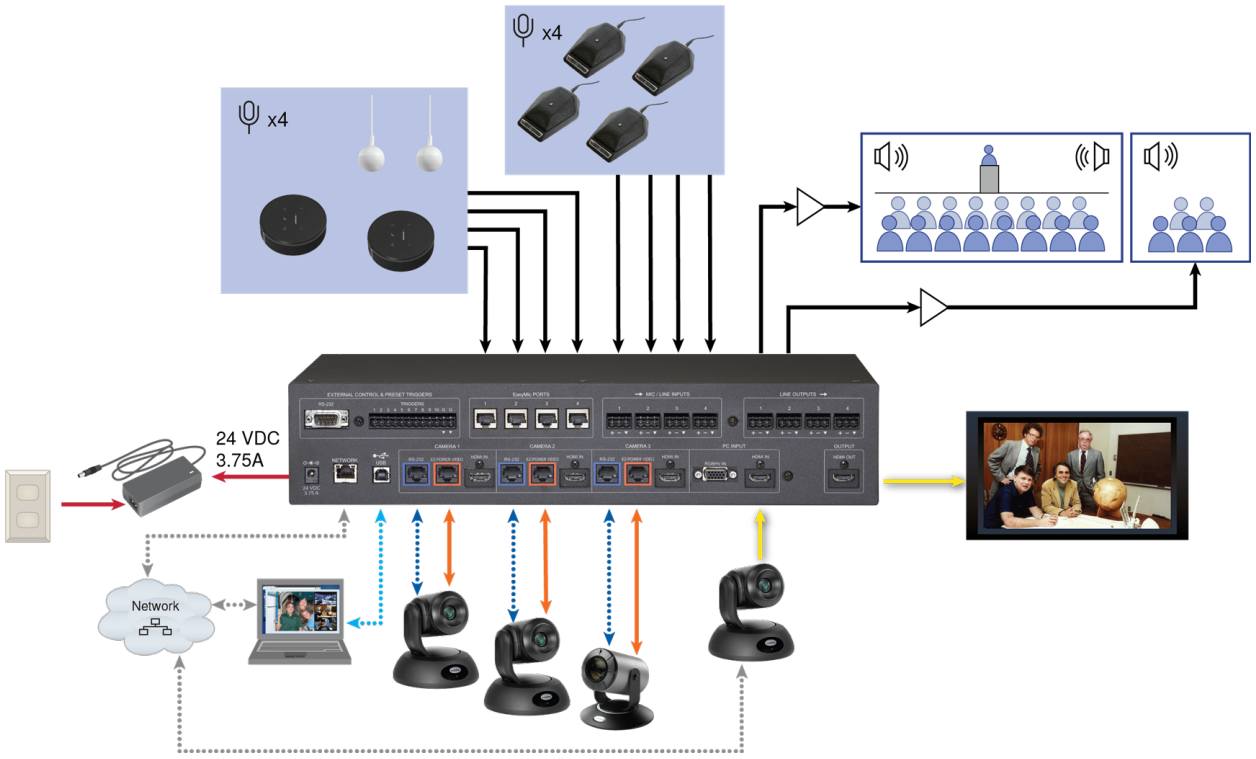
These diagrams illustrate some of the possibilities of the AV Bridge MATRIX PRO – multiple camera and microphone inputs, multiple display and audio outputs.

EasyMic microphone inputs can be connected to EasyUSB Pro Mic I/O devices, each with up to four PZM microphones connected to it.

Note

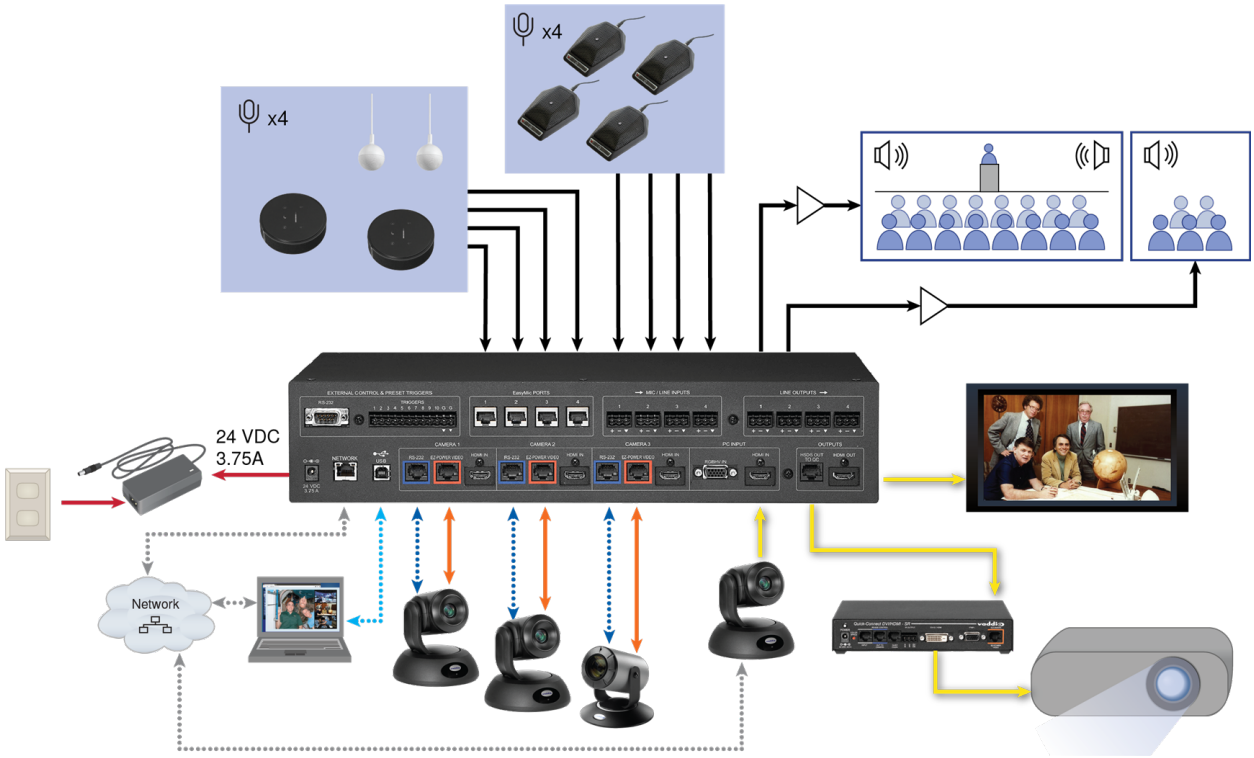
Because the AV Bridge MATRIX PRO provides camera extension functionality, cable distance for cameras 1 through 3 is up to 100 ft. (30 m) for PTZ cameras, or 150 ft. (45 m) for fixed cameras.

AV Bridge MATRIX PRO manufactured after January 1, 2021



AV Bridge MATRIX PRO manufactured before 2021

Has an HSDS output to a Quick-Connect device, in addition to HDMI Out.



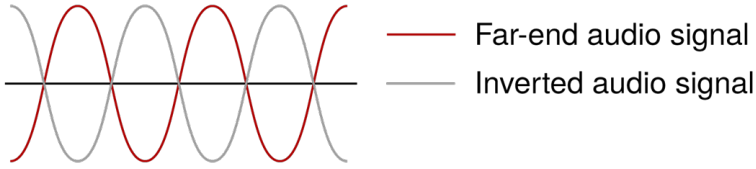
About Echo Cancellation

When a microphone picks up the audio from a speaker (far-end audio) during a conference, it sends the far-end audio back to the participants at the far end, creating an echo. Acoustic echo cancellation prevents this.

Here's how it works.

The speaker feeds the far-end audio into the room. This signal also goes to the audio processor as the reference that needs to be canceled.

The audio processor inverts the signal and sends it to the microphone. The sum of the speaker audio that the microphone picks up and the inverted signal it receives from the audio processor is 0.



For acoustic echo cancellation to work,

- At least one speaker must be connected to provide the audio to be canceled, and
- At least one microphone must be connected, to route the audio from the speakers to the audio processor.

By default, the Echo Cancellation setting is enabled for all microphones.

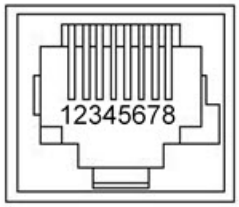
RS-232 Serial Communication Settings and Port Pin-outs

The RS-232 serial ports (color-coded blue) on the back panel provide camera control for video inputs 1 through 3.

Camera communication **parameters are as follows:**

Parameter	Value
Communication Speed	9600 bps (default)
Start bits	1
Stop bits	1
Data bits	8
Parity	None
Flow control	None

Camera RS-232 connector pin-out:

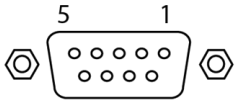


- Pin 1: Not used
- Pin 2: Not used
- Pin 3: Not used
- Pin 4: Not used
- Pin 5: Not used
- Pin 6: GND
- Pin 7: TXD (to RXD of camera)
- Pin 8: RXD (from TXD of camera)

External control communication **parameters are as follows:**

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

External Control connector pin-out:



- Pin 1: Not used
- Pin 2: TXD (to RXD of connected device)
- Pin 3: RXD (to TXD of connected device)
- Pin 4: Not used
- Pin 5: GND
- Pins 6 – 9: Not used

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.

Powering Up

1. Power up all the cameras to be used.
2. Connect the power supply.
3. Power up the camera controller, if your setup includes one.

Ensuring Compatibility

Vaddio pro A/V devices automatically identify and configure for Vaddio cameras when they are connected; but to do this, the connected camera(s) must use firmware that supports the device. Be sure the Vaddio products connected to this device are updated to the latest firmware.

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.

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.

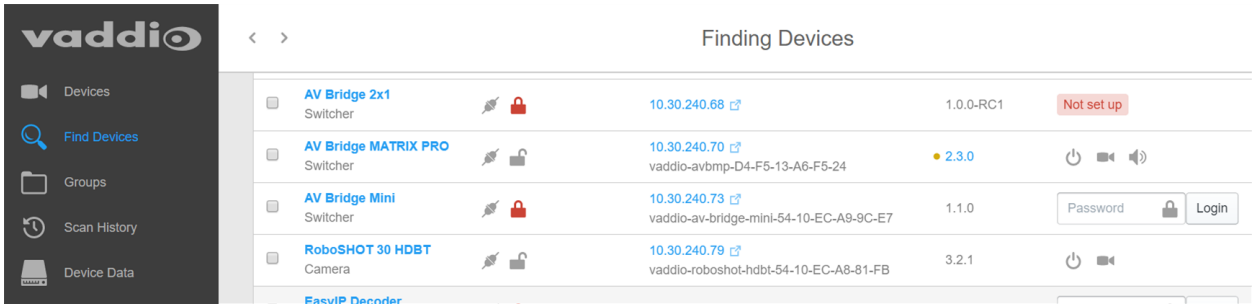
If the Vaddio Device Controller does not find the device, verify that the Vaddio Device Controller and the device are connected to the same subnet.

Initial Device Set-Up Using the Vaddio Deployment Tool

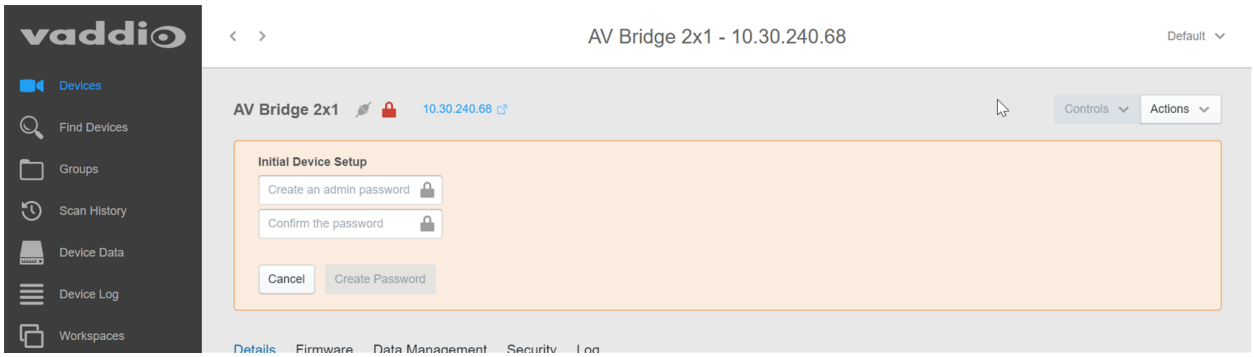
Be sure you have the current version of the Vaddio Deployment Tool. If you have a copy of the tool already, compare its version information to the version shown on the release notes. You can find both at https://www.legrandav.com/en/products/vaddio/accessories/vaddio_deployment_tool under the Resources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

The web interface provides:

Administrative access for system administration, maintenance, and performance/behavior configuration.

User access for operation, including camera controls similar to those available from the IR remote. Set the user password or enable **guest access** for this portion of the web interface.

Browser Support

Supported web browsers:

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

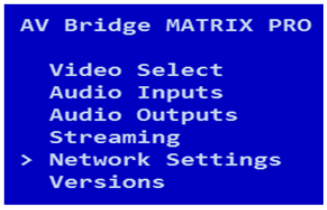
Other browsers may also work.

Getting the Device's IP Address for Manual Access

If you are not using the Vaddio Deployment Tool or a Vaddio Device Controller to access the web interface, you will need to know its IP address.

To get the device's IP address:

1. Turn the menu knob until the arrow points to Network Settings.



2. Press the Select button.

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.
- The network does not automatically assign IP addresses, and you need to configure the device for the network.

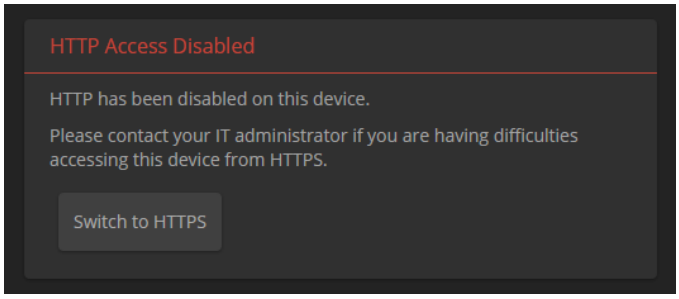
To communicate directly with the device, connect a cable from your computer's network port to the device's network port. This will allow you to access the web interface.

After you have done the initial device set-up, you will need to configure the device for the network.

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

Configuring a Static IP Address for a Device Currently at 169.254.1.1

NETWORKING PAGE

By default, the device is set to DHCP. In a DHCP environment, you do not need to configure it with a static IP address. However, if no DHCP server is available to automatically assign an address, the device will use the default IP address of 169.254.1.1. Other devices may default to the same IP address.

If you install more than one device on a network that does not automatically assign IP addresses (a non-DHCP network), follow this procedure to prevent IP address conflicts.

Note

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

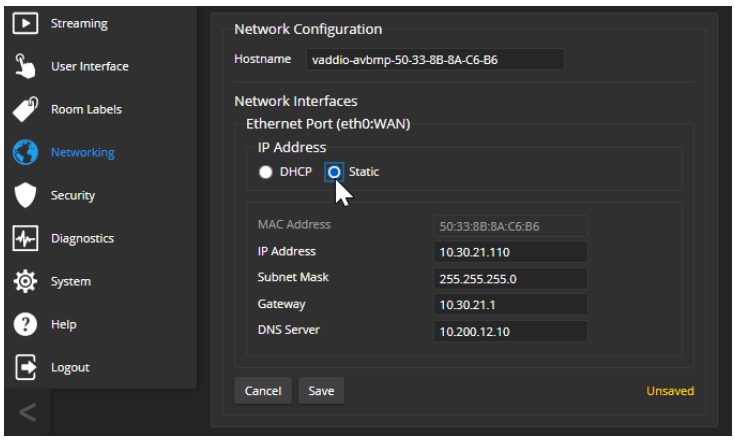
Caution

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. Navigate to the Networking page.
4. Set IP Address to Static; then enter the IP address, subnet mask, and gateway as directed by the network specialist.

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



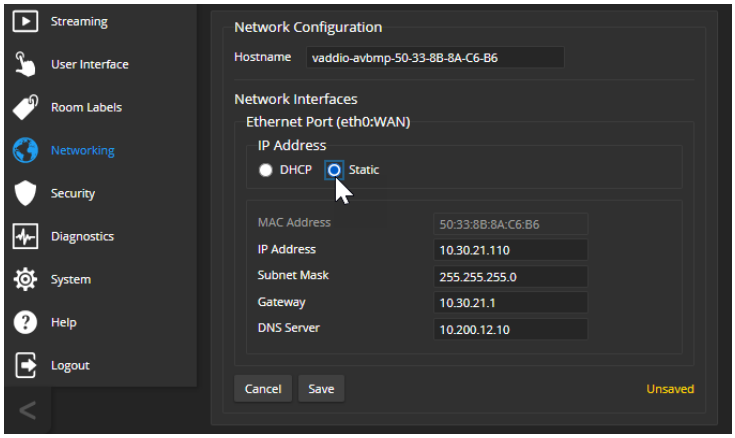
Changing from an Automatically Assigned Address to a Static IP Address

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.
3. If necessary, enter the IP address that your network specialist instructs you to use. Do not change the IP address, subnet mask, or gateway.



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`**.

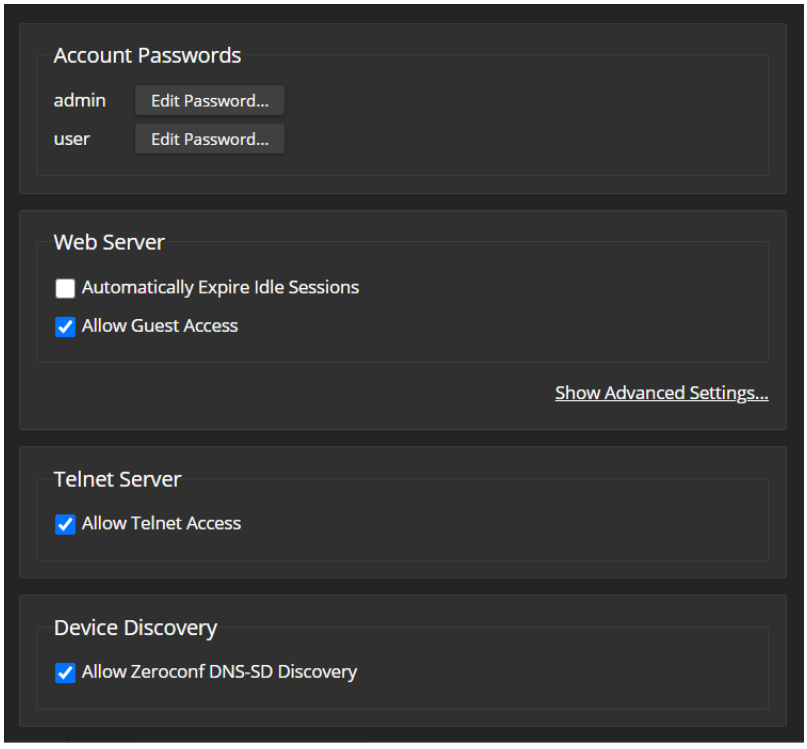
Work with your IT department to ensure that the new hostname conforms to the organization's naming conventions.

Managing Passwords and Access

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 access to the device.
- **User password** – When set, allows password-protected, non-administrative access to the operator's web interface.
- **Guest access** – When enabled, allows non-administrative access to the operator's web interface without a password.
- **Expire idle sessions** – By default, the web interface automatically logs you out after 30 minutes of inactivity.



Configuring Other Security Settings

SECURITY PAGE

Depending on your environment, you may want to make these changes:

- **Enable Telnet access** – When selected, the device accepts Telnet connections.
- **Enable HTTP access** – When selected, administrators and operators can access the product's web interface using the less-secure HTTP protocol.
- **Install an SSL certificate** – Allows the HTTPS connection to trust the device. When the camera does not have an SSL certificate, your browser's address bar may display a security indication.

HTTP Access and SSL Certificate settings are in the Advanced Settings section.

Consult your network security specialist before changing any of these settings.

Caution

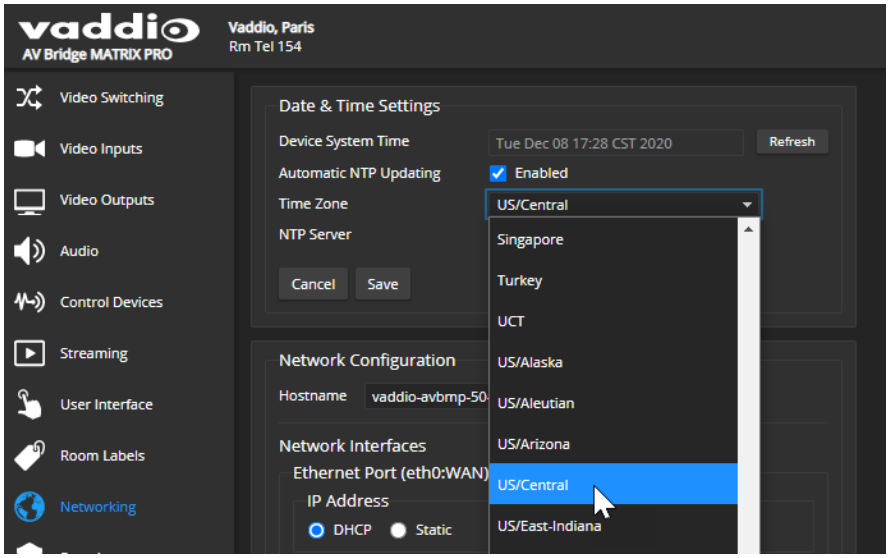
Consult your network security professional to manage the camera's SSL certificate. Do not make any changes in the Certificate or Private Key text boxes without explicit guidance from your organization's network security professional.

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.

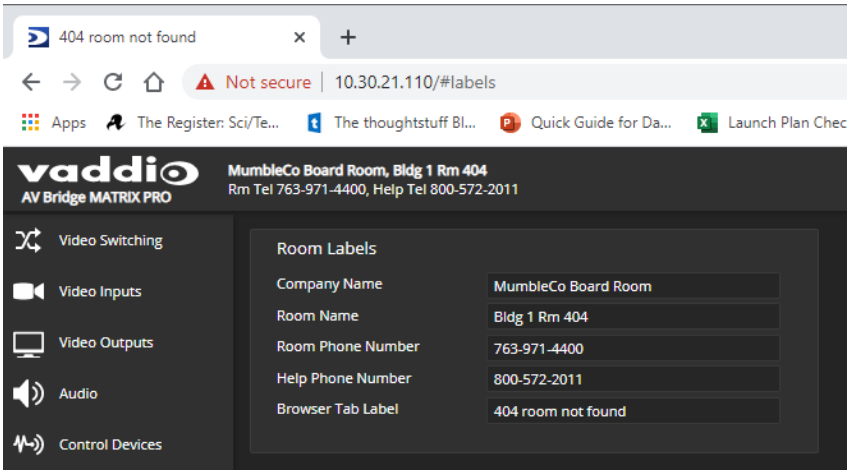
1. To make the time zone and NTP server editable, enable Automatic NTP Updating.
2. Select the desired time zone from the list.
3. Optional: Specify the NTP server to use. If you are not sure about this, use the default.
4. Save your changes.
5. To update the system time immediately, select Refresh.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

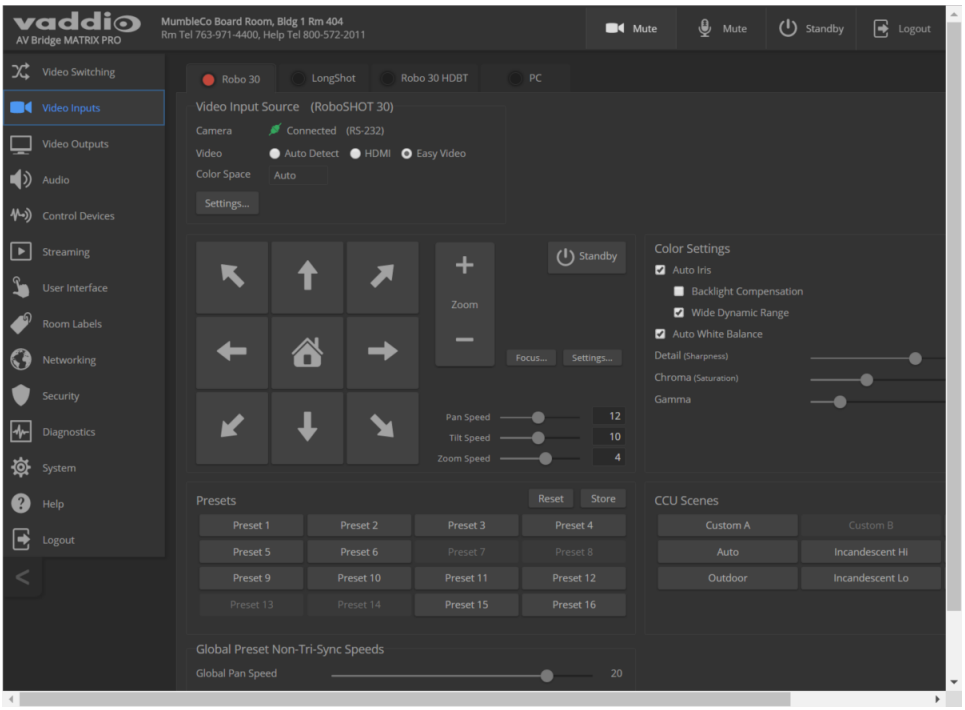
- **Video Inputs, Video Outputs, Video Switching** – Configuring video inputs, outputs, and switching behavior
- **Audio** – Adjusting audio inputs and outputs; configuring the audio matrix
- **Control Devices** – Creating macros and associating them with triggers
- **Streaming** – Configuring USB streaming and IP streaming
- **User Interface** – Specifying which audio inputs are available to the operator; specifying what happens when the switcher goes to standby mode; locking the front panel controls

Working with Video Inputs

VIDEO INPUTS PAGE

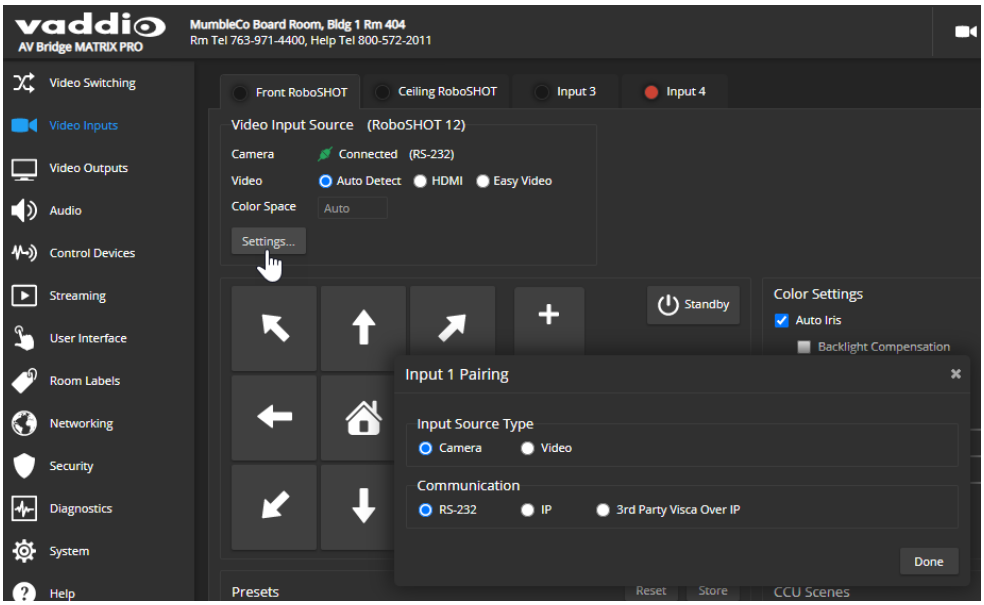
The web interface provides a control page with tabs for each camera and other video input device, allowing you to control the connected cameras without accessing their individual web interfaces. A red tally indicator identifies the tab for the current program source. Typically the corresponding camera also displays a tally light.

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



Controls for the connected video inputs are also available from the Video Switching page.

In most cases, the AV Bridge MATRIX PRO will configure correctly for the devices connected as video inputs; however, each video input presents configuration controls. Select Settings on the tab for the desired video input device.



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

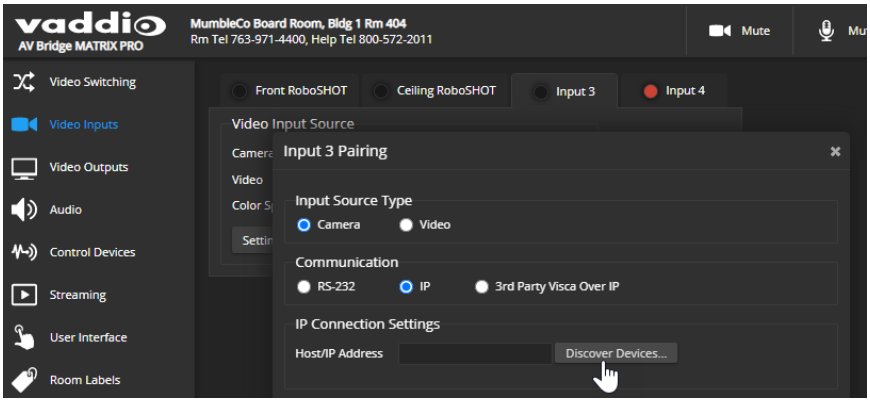
Adding an IP-Connected Camera

VIDEO INPUTS PAGE

1. Select the video input to set up.
2. Select Settings. The Input Pairing box opens.
3. Specify the input type, and select IP communication.
4. If you know the input device's IP address, enter it. The input device can be on a different subnet.
5. If you don't know the IP address of the input device you want to use, select Discover Devices. This will return a list of devices available on the same subnet as the AV Bridge MATRIX PRO. (Discover Devices does not work across subnets.)

   Note

   You can discover a camera's IP address by pointing its remote at it and pressing the Data Screen button. The camera's video output then displays its IP address.



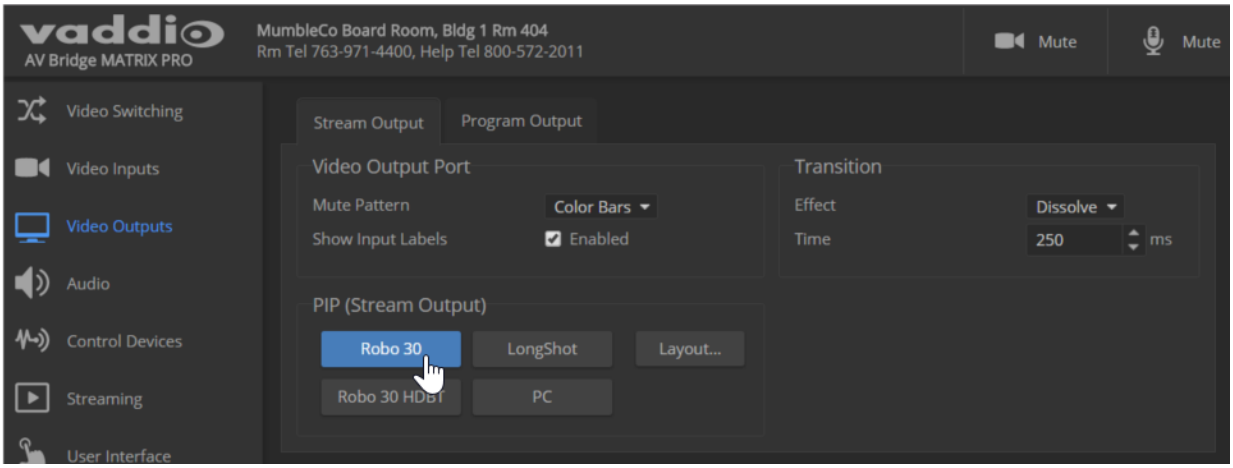
6. Select the device you want from the list of available devices.

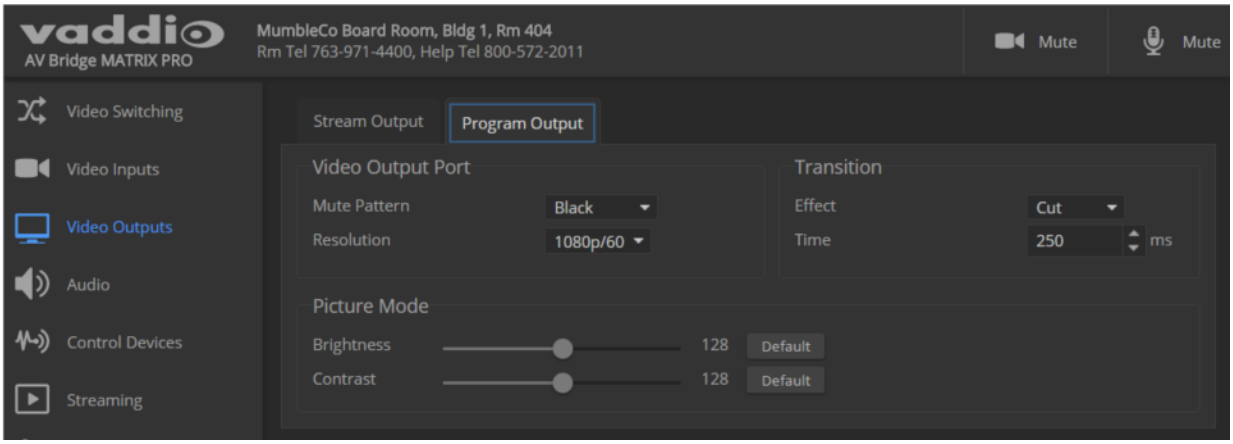
Configuring Video Outputs

The Video Outputs page provides controls to configure the video outputs. Select the tab for the output you need to work with.

Controls available for the program and stream outputs include:

- Output resolution/frame rate (Program output)
- Video mute pattern
- Video transition effect and time
- PIP source and layout (Stream output)
- Brightness and contrast (Program output; for use with displays that lack these adjustments)



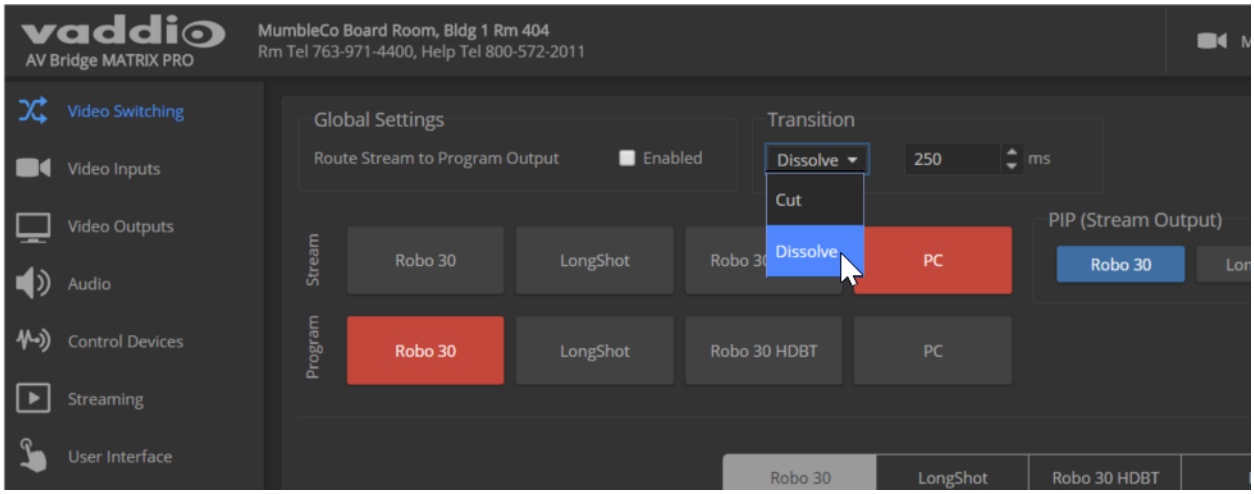


Setting Video Transition Type and Speed

VIDEO SWITCHING PAGE

The video transition settings determine how the program output behaves when you switch its source from one video input to another.

In the Global settings area, select the transition type for the currently selected switching mode. If necessary, adjust the transition time.

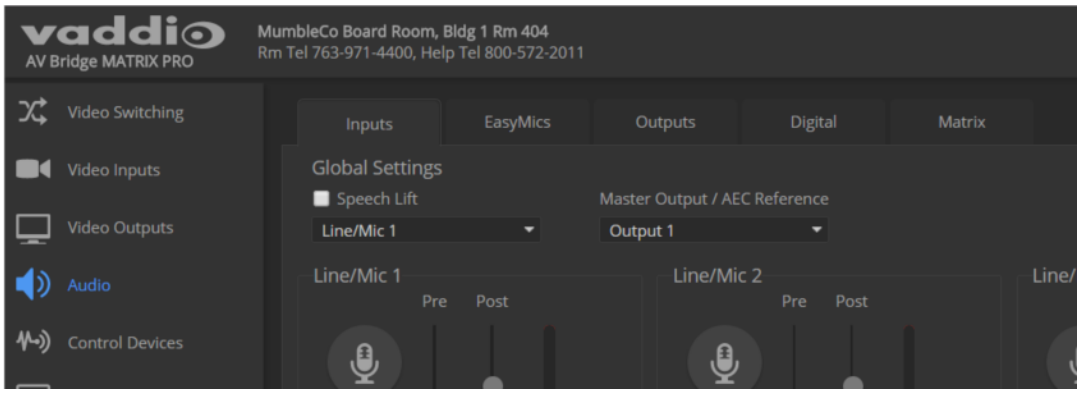


Configuring Audio Settings

AUDIO PAGE (MULTIPLE TABS)

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

- **Inputs** (corresponding to the Mic/Line Inputs area of the connector panel) – Line/Mic inputs 1 through 4
- **EasyMics** (corresponding to the EasyMic Ports area of the connector panel) – Vaddio tabletop and ceiling microphones
- **Outputs** (corresponding to the Line Outputs area of the connector panel) – powered speakers or other audio outputs
- **Digital** (corresponding to the USB, PC HDMI In, and HDMI Out connectors) – USB playback and record, HDMI audio input and output

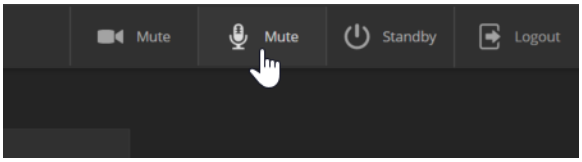


Muting and Setting Volume

AUDIO PAGE, INPUTS, EASYMICS, OUTPUTS, AND DIGITAL TABS

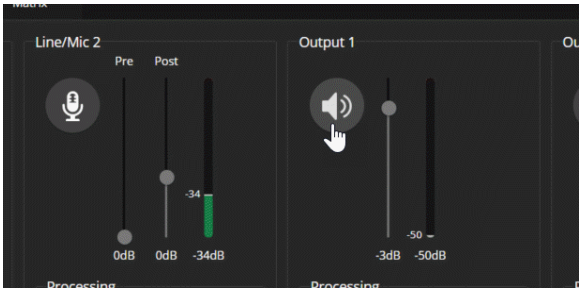
To mute all audio:

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

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

Default Microphone Settings

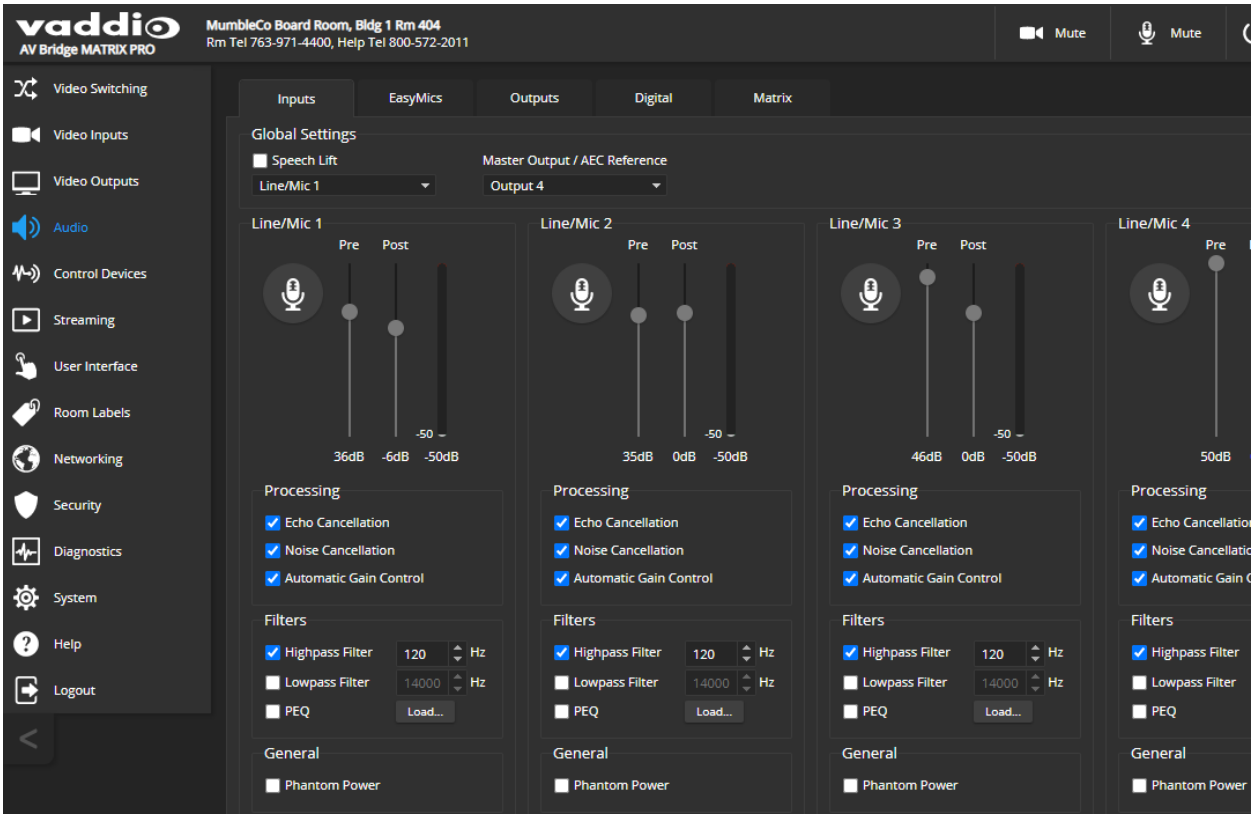
AUDIO PAGE, INPUTS AND EASYMICS TABS

Echo Cancellation (line inputs and EasyMic inputs) – Enabled; prevents audio feedback by cancelling the specified output signal out of the line/mic input.

Noise Cancellation (line inputs and EasyMic inputs) – Enabled; suppresses ambient noise.

Automatic Gain Control (line inputs and EasyMic inputs) – Disabled; adjusts gain to compensate for differences in volume as different people speak.

Mic Boost (EasyMic inputs only) – Disabled; increases microphone volume by 3dB. *Vaddio does not recommend enabling Mic Boost.*



Adjustments for Speech

AUDIO PAGE, INPUTS TAB

To adjust line/mic inputs for more natural speech reproduction:

- **High-pass filter** – Specify the lowest frequency that the microphone should pick up. Use this setting to reduce low-frequency background noise such as heating/air conditioning systems.
- **Low-pass filter** – Specify the highest frequency that the microphone should pick up. Use this setting to reduce hissing sounds and make speech sound natural.
- **PEQ** (parametric equalizer) – Increase or reduce the volume of specific frequency ranges to compensate for the audio challenges unique to the situation.

Note

As a best practice, use the equalizer to attenuate undesirable frequency ranges rather than to boost the desirable frequencies.

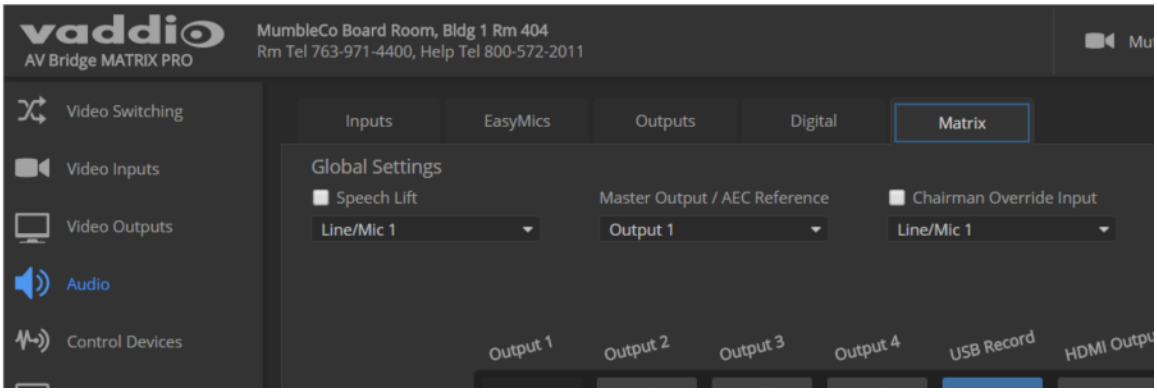
Microphone Settings for Environments with Audiences

AUDIO PAGE, INPUTS AND MATRIX TABS

Speech Lift: Feeds the signal from the specified microphone to the speakers in the room, so that people in the back of the room can hear the person who is speaking.

Master Output/AEC Reference: Specifies the audio output that will be used as the reference for acoustic echo cancellation.

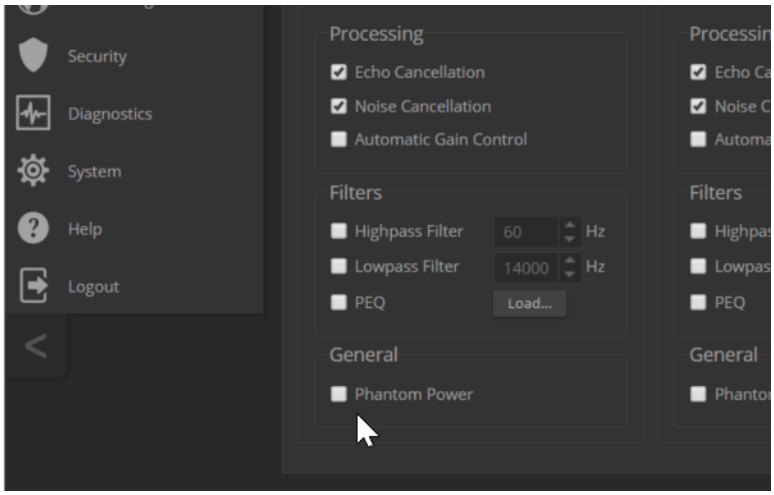
Chairman Override: Gives priority to the specified microphone when more than one person is speaking. (Matrix tab only)



Enabling Phantom Power to Microphones

AUDIO PAGE, INPUTS 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.



Speaker Adjustments

To sync the sound with the video:

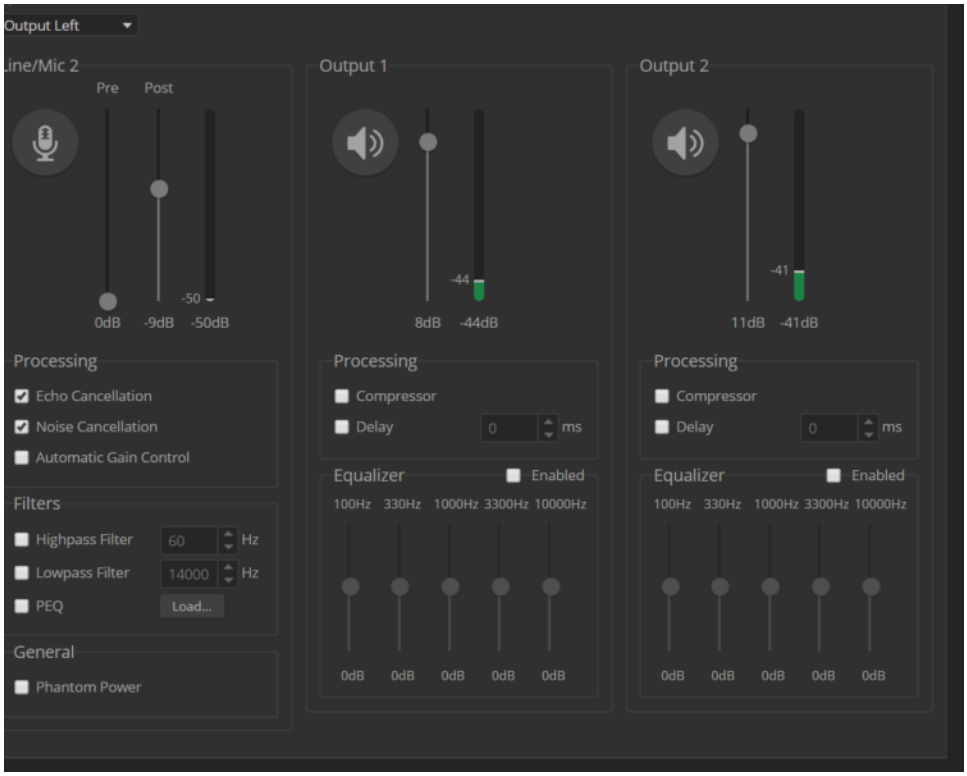
If the video lags noticeably behind the audio, check the Delay box for the appropriate audio outputs (Outputs or Digital tab) and enter a delay value in msec. The delay may differ from one output to another.

To compensate for differing speech volumes:

If some people on the far end are inaudible while others are too loud, check the Compressor box to reduce the dynamic range from the connected speakers. (Outputs tab only.)

To compensate for specific audio issues on the far end:

Use the equalizers 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. (Outputs tab only.)

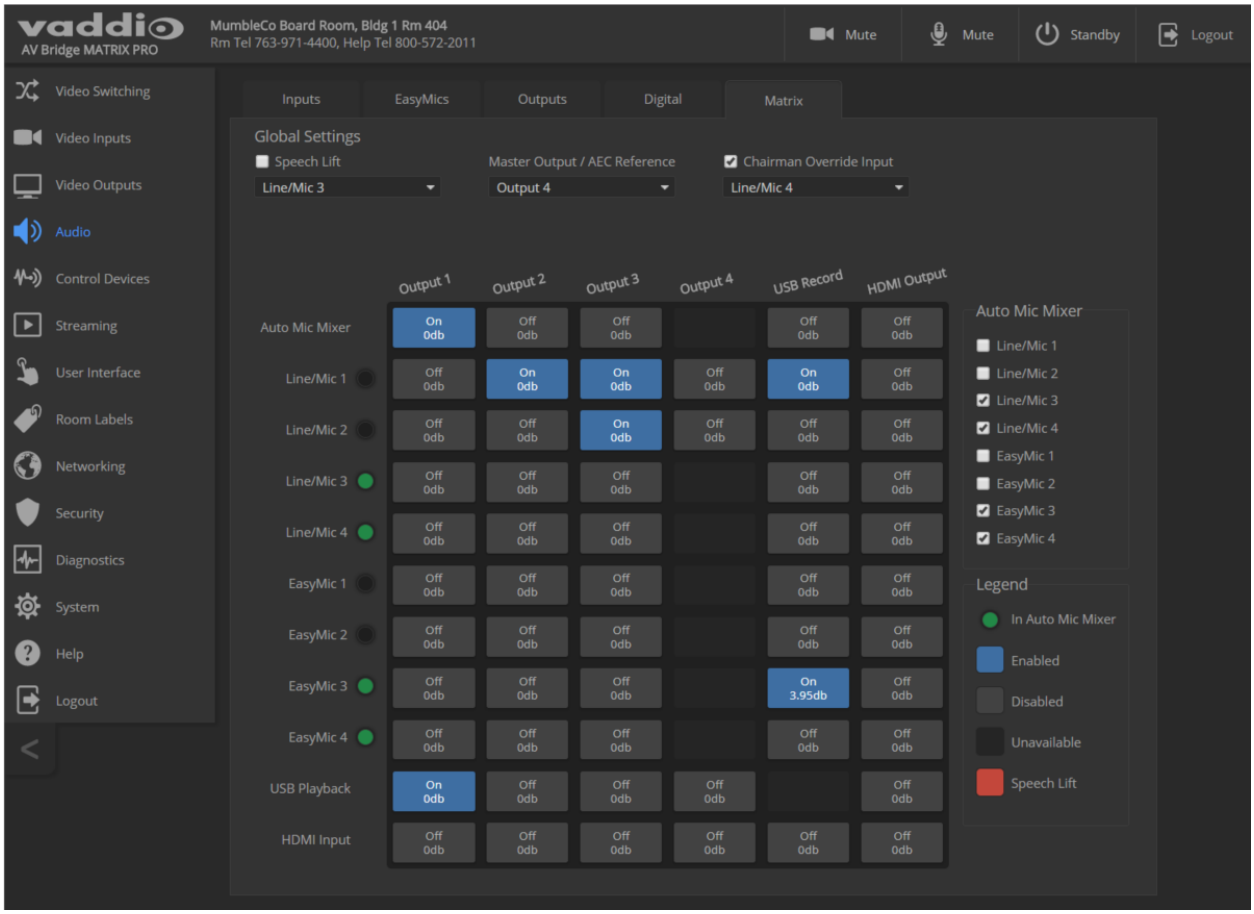


Routing Audio

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 MATRIX PRO 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.



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.

Configuring USB and IP Streaming

STREAMING PAGE

USB and IP streaming are disabled by default. You can enable them separately.

Two IP streaming protocols are available: RTSP and RTMP.

- *RTSP streaming* delivers an IP stream that people can access from your network using a media player. This is the camera's default protocol for IP streaming.
- *RTMP streaming* sends a stream to a content service provider such as YouTube. No local preview is available. To use RTMP streaming, you must have an account with a streaming service.

Supported Input Resolutions and Frame Rates

- 1920x1080p at 60, 59.94, 50, and 30 fps
- 1920x1080i at 60, 59.94, and 50 fps
- 1280x720p at 60, 59.94, and 50 fps
- 1440x900 at 60 fps
- 1280x800 at 60 fps

Viewing Streams

To view the IP stream, when RTSP streaming is selected:

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.

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 your devices 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.

Stopping USB or IP Streaming

STREAMING PAGE

When streaming is enabled, the device streams audio and video unless you take action to stop the stream.

Options:

- **To stop USB or IP streaming entirely:** Clear the Enable USB Streaming or Enable IP Streaming check box, as appropriate.
- **To stop the video portion of the stream, but leave the stream running:** Mute the video. This also stops the video locally, so the connected display is blank.
- **To stop sending the IP stream to a content service provider** but make it available as a network stream: Change from RTMP to RTSP streaming.

Configuring USB Streaming

STREAMING PAGE

When streaming with Vaddio's USB 2.0 or 3.0 products, the resolution/frame rate is mainly determined by the processing power of the PC, available network bandwidth at the time of negotiation, the resolution tables within your soft codec and your streaming device to a maximum of 720P/30fps for USB 2.0 and 1080P/60fps for USB 3.0.

Vaddio's USB streaming devices have a very wide resolution table to be compatible with an assortment of soft codecs as well as being browser friendly (IE, Chrome, Firefox, Safari to name a few). They also use the USB video (UVC) and audio (UAC) drivers inherent within the computers OS, so there's no need for separate or proprietary drivers.

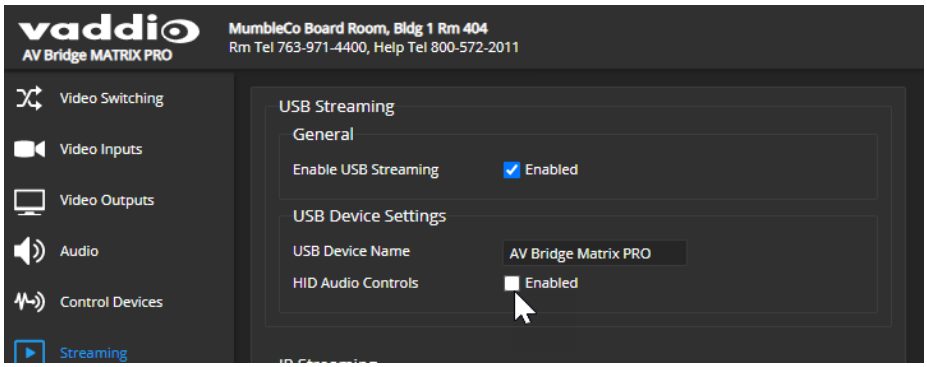
To change the USB device name:

To allow soft client control of the audio:

Check the Enabled box for HID Audio Controls to allow conferencing applications to control the audio.

Note

Most USB streaming settings are automatically negotiated with the conferencing application.



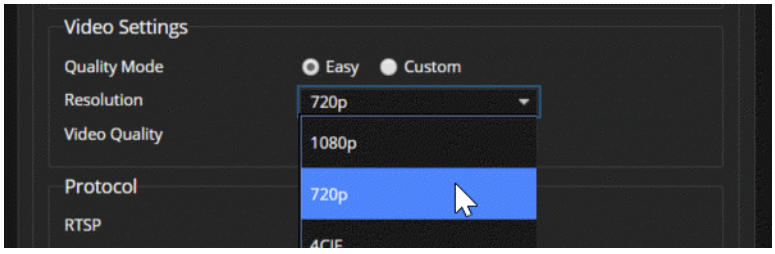
Configuring Video Settings for IP Streaming

STREAMING PAGE

If you are not sure how to configure streaming settings, start with the Easy mode defaults. This configures most settings automatically.

To set up IP streaming in Easy quality mode:

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.



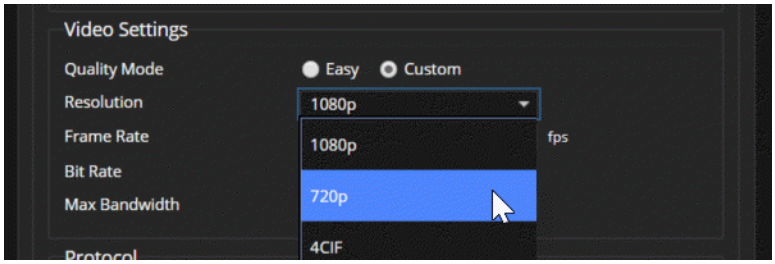
3. Select Video Quality (bandwidth), then save your changes.

Pro Tip

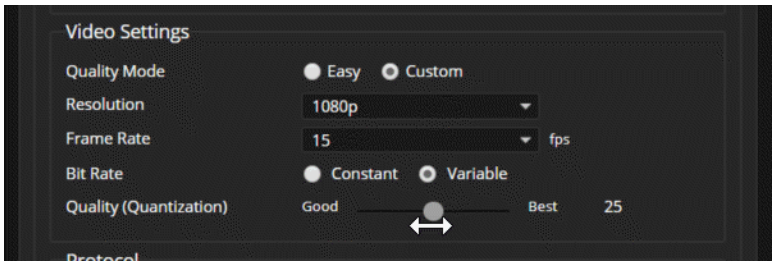
If streaming video quality is poor, try a lower resolution or bandwidth.

To set up IP streaming in Custom quality mode:

1. Select Custom quality mode.
2. Select the desired resolution.



3. Select the desired IP streaming frame rate.
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.



7. Save your changes.

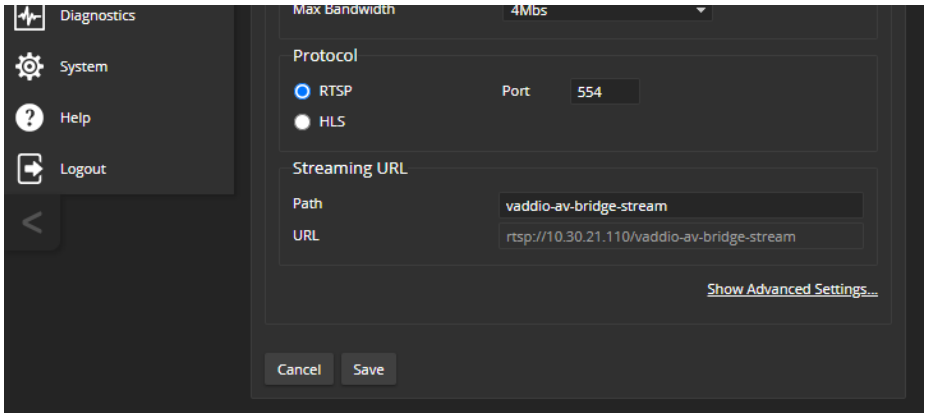
Configuring Network Settings for RTSP Streaming

STREAMING PAGE

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.



Advanced: Changing MTU

STREAMING PAGE

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

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

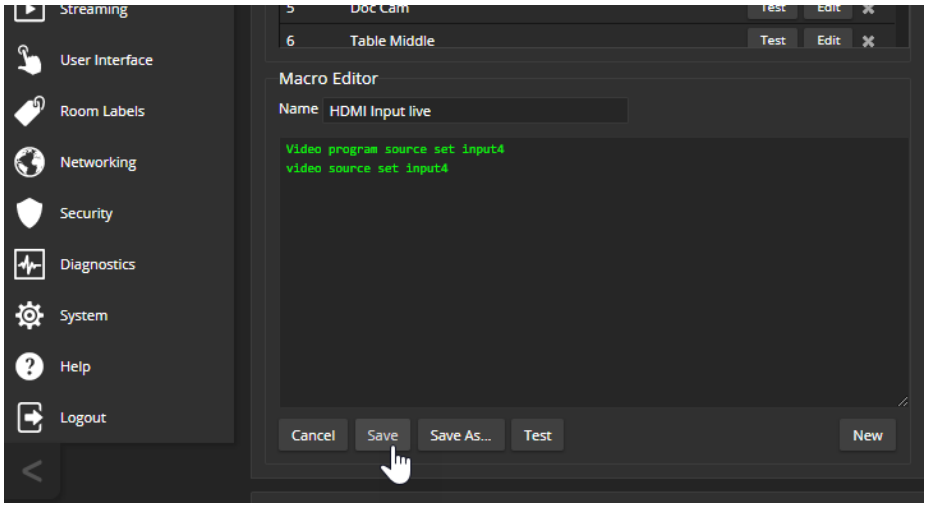
A macro can only run successfully if all its commands are able to run successfully. For example, if the macro sends a camera to a preset position, the camera must be present and able to use presets, and the preset must exist on the camera.

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:

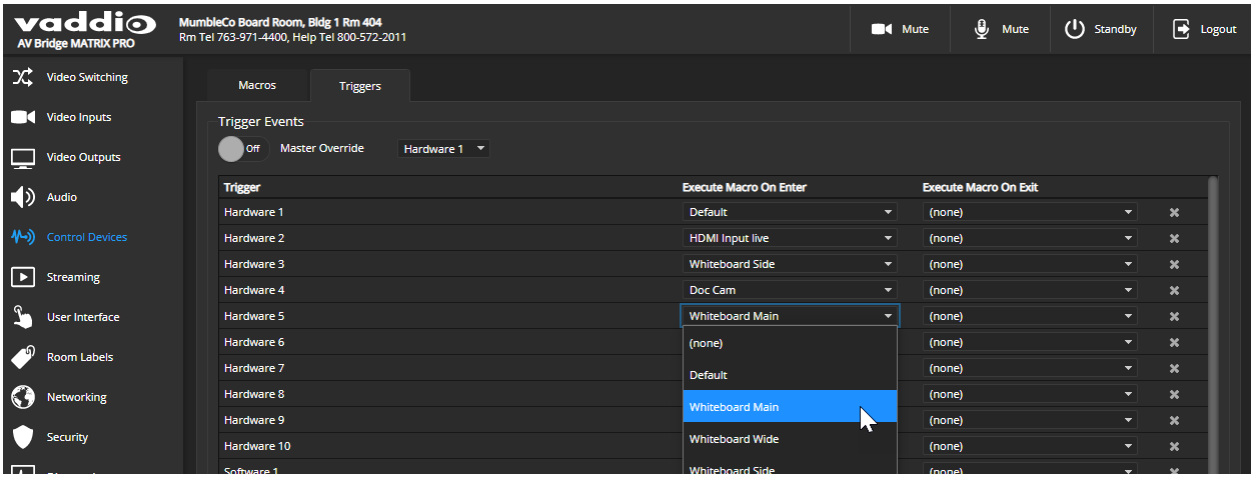
- Select a macro in the Execute Macro on Enter field. This macro will start when the trigger turns on.
- Select a macro in the Execute Macro on Exit field. This macro will start when the trigger turns off.

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.

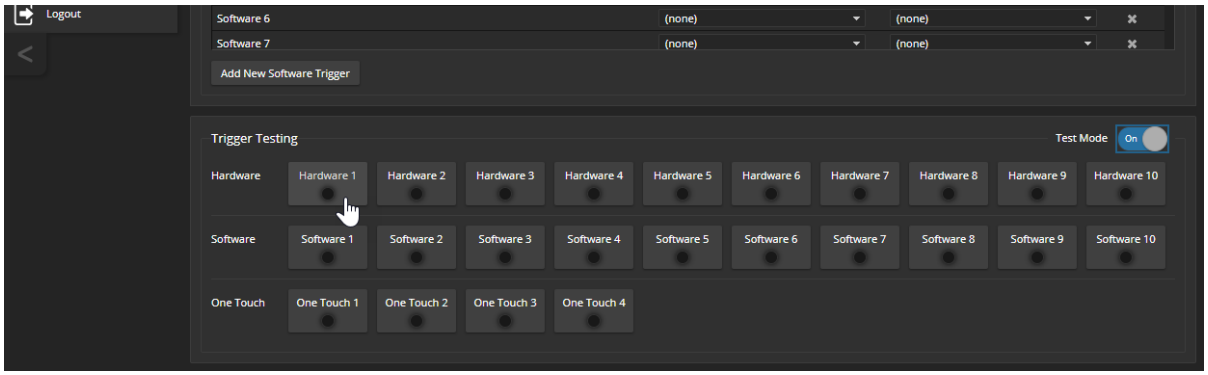
Testing Triggers

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.

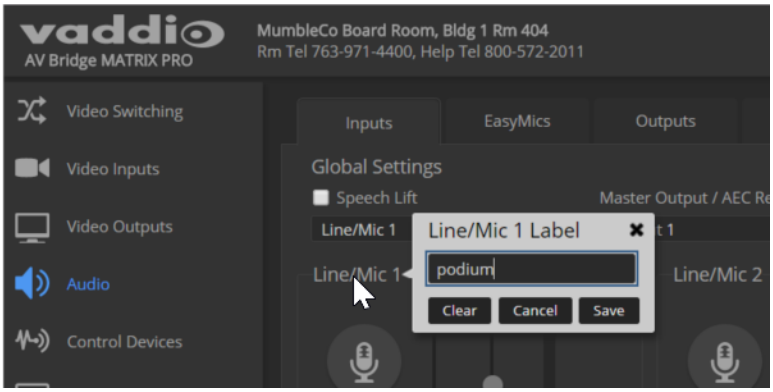
Customizing Labels

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 sources
- Camera presets
- 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.

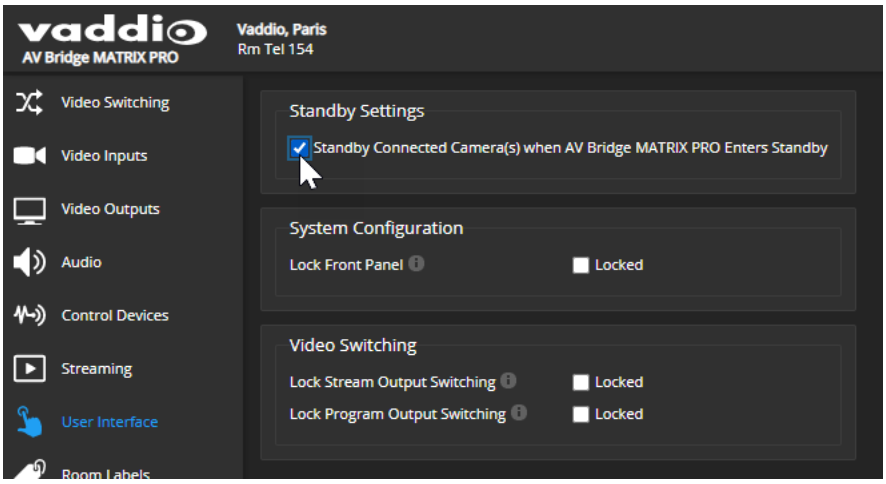


Configuring Standby Behavior

User Interface Page

To place the cameras in standby mode along with the AV Bridge MATRIX PRO, check the box marked "Standby Connected Cameras when AV Bridge MATRIX PRO Enters Standby."

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



Limiting Non-Administrative Operation

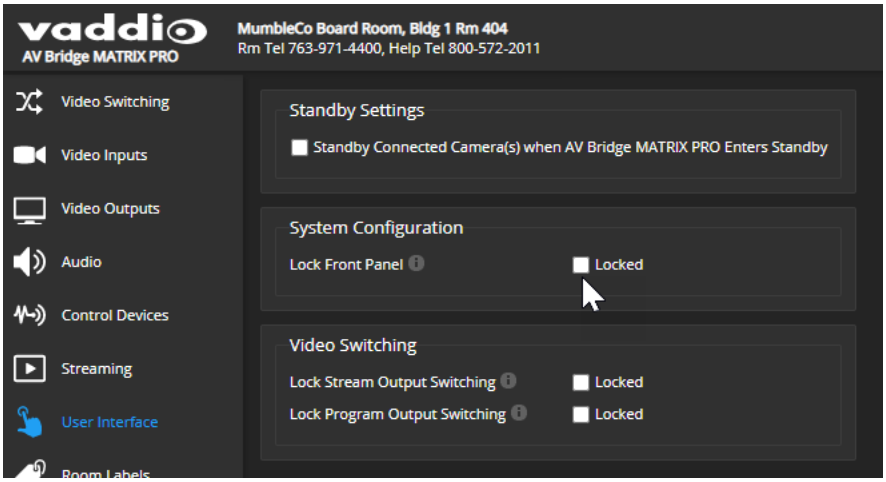
USER INTERFACE PAGE

Depending on your organization's needs, you may wish to disable some functionality that is otherwise available to people who are not logged in as admin:

- **Lock Front Panel** – Disables the controls on the front panel.
- **Lock Stream Output Switching** and **Lock Program Output Switching** – On the operator's pages, disables switching on the selected video output.

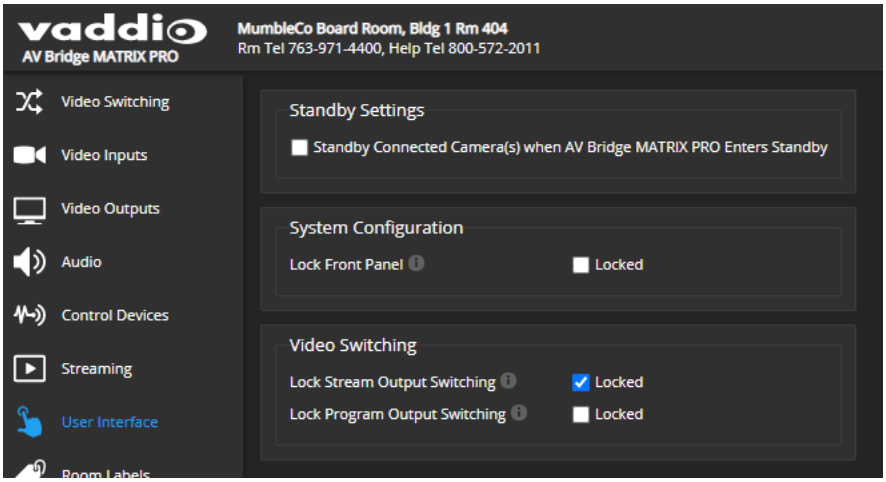
To lock the front panel controls:

Check the Lock Front Panel box in the System Configuration section of the User Interface page. The front panel message shows that the controls are locked, and displays the device's IP address.

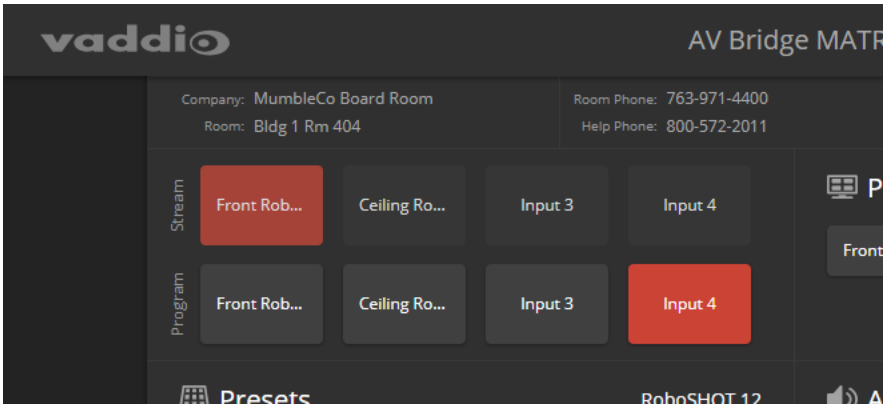


To restrict video switching in the operator's web interface:

Check the box for the video output that the operator should not be able to switch – the stream output, the program output, or both.



The locked output is dimmed on the operator's pages.



System Maintenance

This chapter covers the tasks on the System page:

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

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

Exporting and Importing Configuration Data

System page, Firmware tab

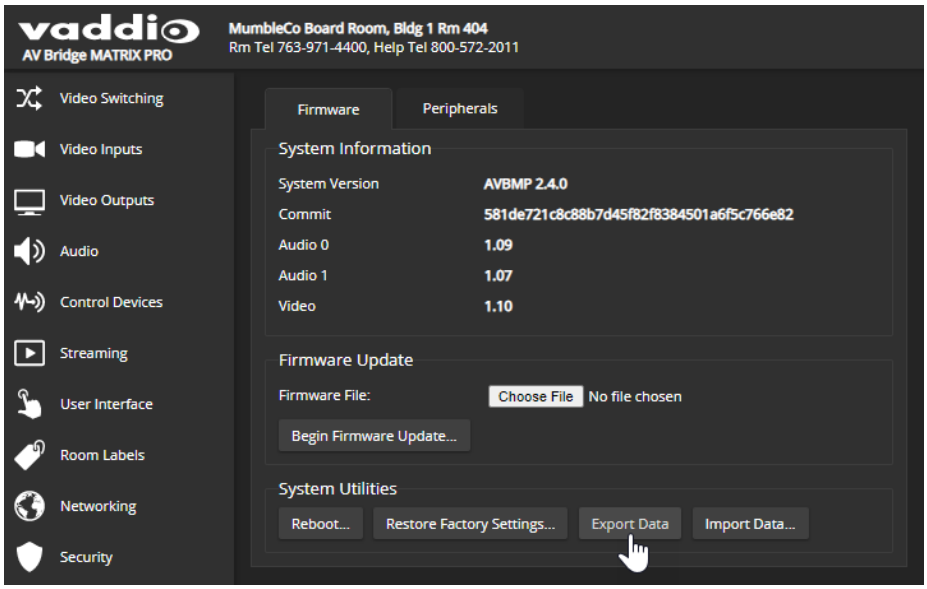
You can export a device's configuration and save it as a backup. This allows you to quickly restore customized information if you need to restore factory defaults or replace the unit, or import a configuration to multiple devices.

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.

Note
Vaddio products using older firmware may be unable to import a configuration file that was exported from a different version of firmware.



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; however, if the device is currently using firmware released before December 2019, you will need to set a new password after installing the update.

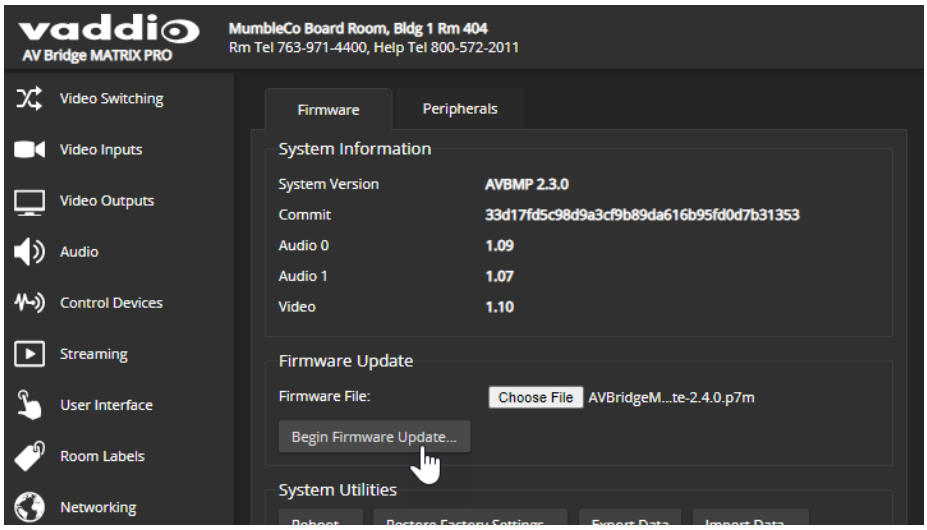
Note

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.



Updating Microphone Firmware

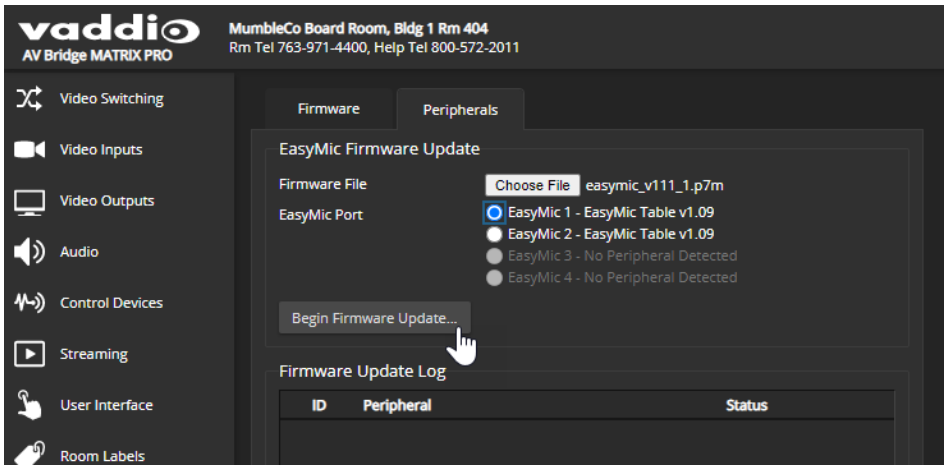
SYSTEM PAGE, PERIPHERALS TAB

If you are using version 2.0.0 firmware or later, you can use the AV Bridge MATRIX PRO to update the connected Vaddio EasyMic microphones. The process is similar to updating the AV Bridge MATRIX PRO firmware.

Only one microphone at a time can be updated.

1. Go to the appropriate product page and download the appropriate update file.
2. On the Peripherals tab, select the port connection for the microphone to be updated.
3. Select the firmware update file that you downloaded.
4. Select Begin Firmware Update.
5. Read the information in the Confirm dialog box, then select Continue.

The Firmware Update Log box displays progress messages during the update, and displays a success message when the microphone is updated and ready to use.

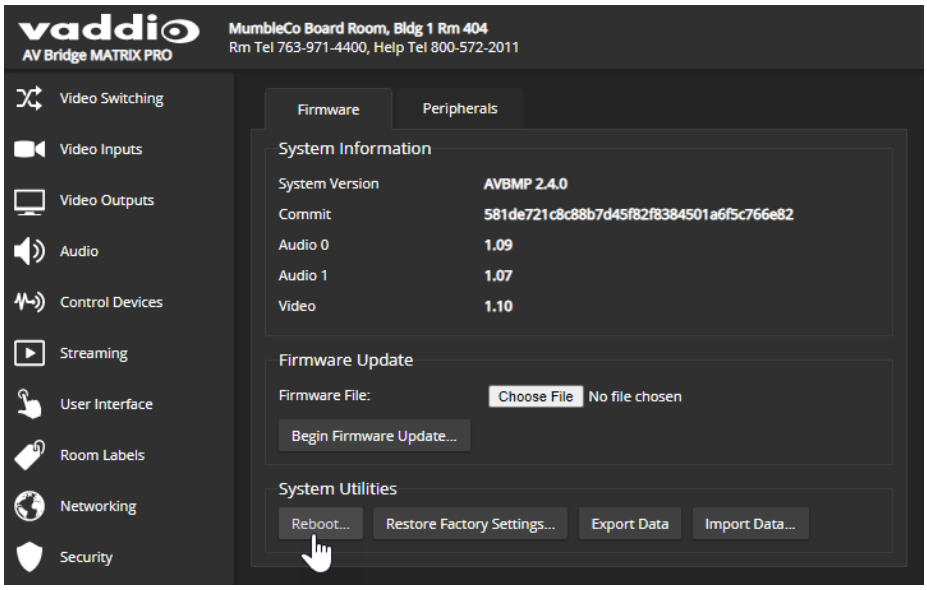


Rebooting

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.

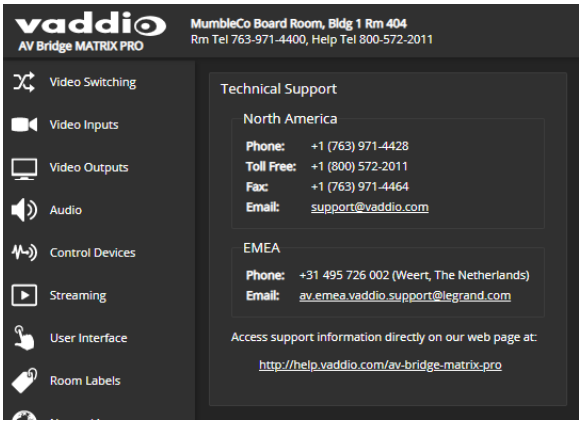


If rebooting the device doesn't fix the problem, you may need to restore factory defaults. Before you take that step, back up the configuration.

Contacting Vaddio Technical Support and Viewing Diagnostic Logs

HELP AND DIAGNOSTICS PAGES

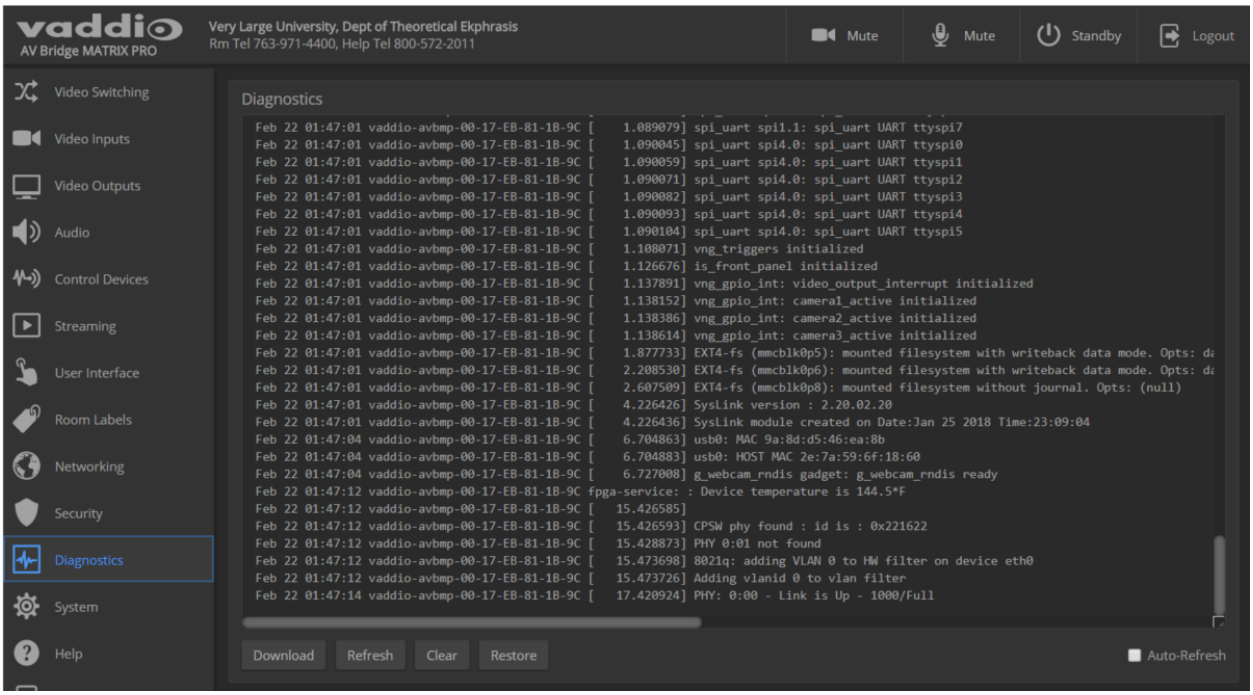
If you can't resolve an issue using your troubleshooting skills (or the Troubleshooting table in this manual), we are here to help. Technical support contact information is on the Help page.



Note

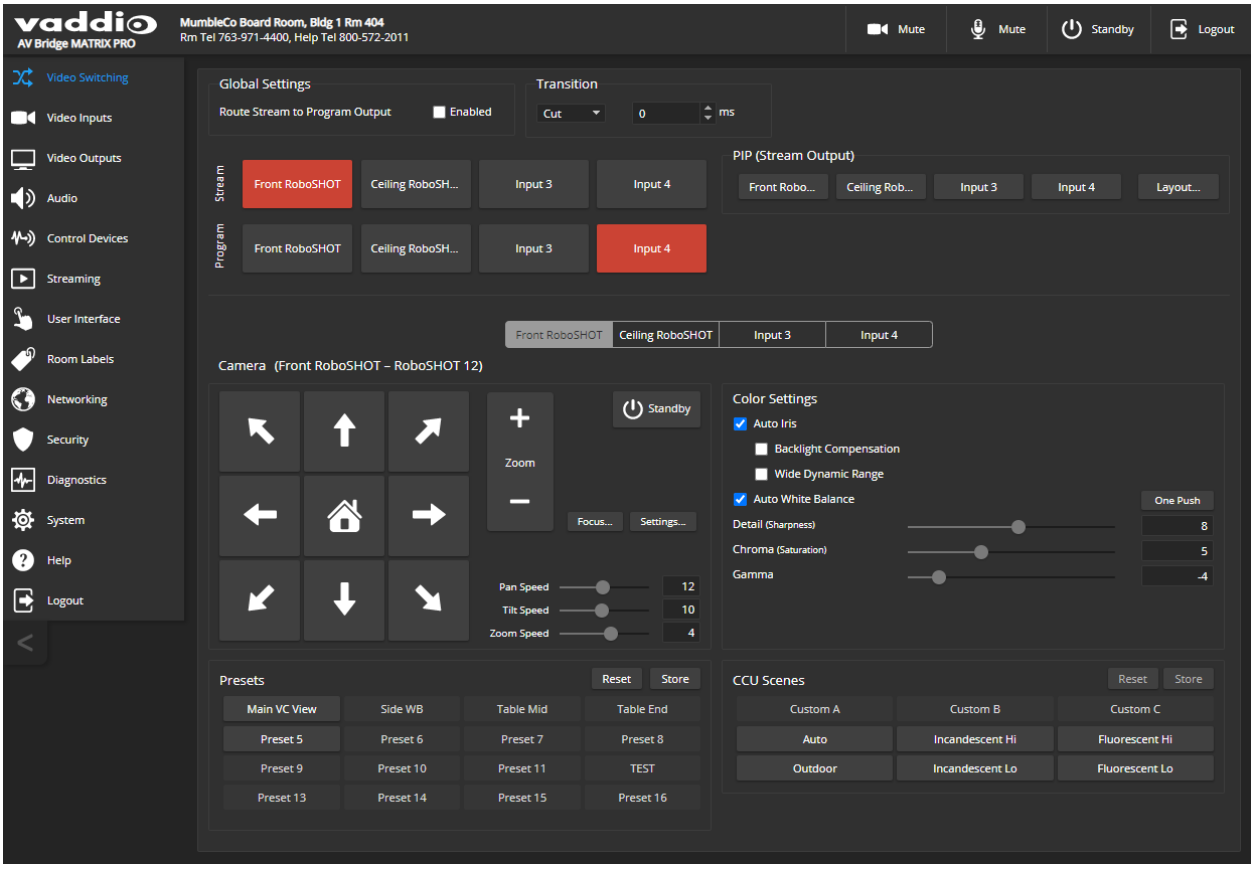
The Help page may provide a link to our standard privacy notice. This product does not record or save audio or video files, and it does not store any identifying information other than what you may choose to enter on the Room Labels page of the web interface. However, the device's IP address is considered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



Operating the Device from the Admin Interface

The Video Switching page provides most of the controls available on the operator's pages (guest access or user account login). Note that the administrator has color, lighting, and speed controls that are not available to the operator.



Operating the AV Encoder

The AV Bridge MATRIX PRO provides a web-based operator 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.

Using the Front Panel for Basic Operation

The front panel provides basic information and controls.

Note
The administrator has the option to lock the front panel.

Muting Audio and Video from the Front Panel

You may choose to mute audio, video, or both for privacy, or while preparing the room for a meeting or other event. The Audio Mute and Video Mute buttons on the front panel correspond to controls in the web interface and commands in the serial API.

Audio mute 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 mute disables all video outputs and sends the selected video mute pattern – either black video or color bars.

Front Panel Display Menu

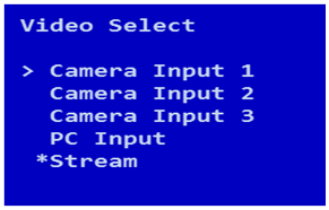
The illuminated display presents a menu of basic information and controls, including:

- Video source for the program output
- Volume settings for audio inputs and outputs
- Information on streaming, network settings, and firmware versions

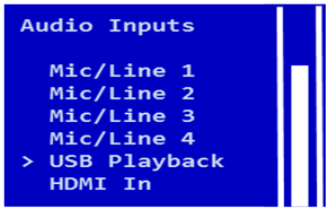
To work with the front panel display menu:

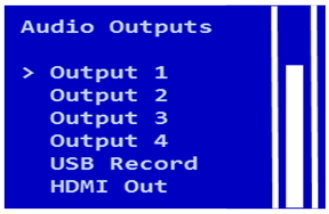
- Use the menu knob to navigate through the menu. The > symbol shows what will be selected when you press the Select button.
- Press the Select button to open the desired sub-menu or select the desired option.
- To return to the main menu, press the Cancel button.

Video Select: Control. This menu indicates the current source of the program output with the * symbol. Use the menu knob and Select button to select a different program source



Audio Inputs and **Audio Outputs:** Control. These menus display the current volume setting for the selected item. Use the menu knob and Select button to adjust the volume.

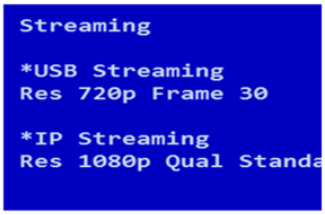




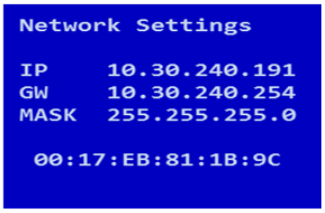
Streaming: Information only. This menu displays the resolution for each stream, along with the frame rate for the USB stream and the quality setting for the IP stream. USB streaming resolution is auto-negotiated; IP streaming is configured in the web interface.

When streaming with Vaddio's USB 2.0 or 3.0 products, the resolution/frame rate is mainly determined by the processing power of the PC, available network bandwidth at the time of negotiation, the resolution tables within your soft codec and your streaming device to a maximum of 720P/30fps for USB 2.0 and 1080P/60fps for USB 3.0.

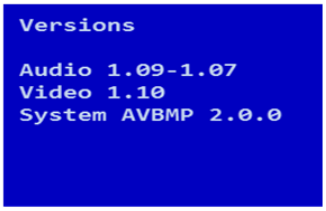
Vaddio's USB streaming devices have a very wide resolution table to be compatible with an assortment of soft codecs as well as being browser friendly (IE, Chrome, Firefox, Safari to name a few). They also use the USB video (UVC) and audio (UAC) drivers inherent within the computers OS, so there's no need for separate or proprietary drivers.



Network Settings: Information only. This menu displays the IP address, gateway address, subnet mask, and MAC address.



Versions: Information only. This menu displays the firmware versions in use.

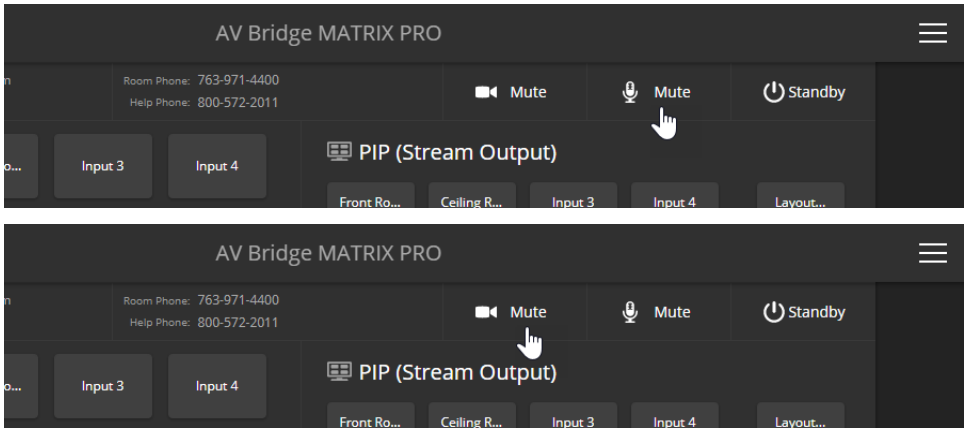


Muting Audio or Video from the Web Interface

Audio and video mute controls are available on the front panel and at the top of each page of the web interface.

Audio mute 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 mute disables all video outputs and sends the selected video mute pattern – either black video or color bars.



Selecting Cameras

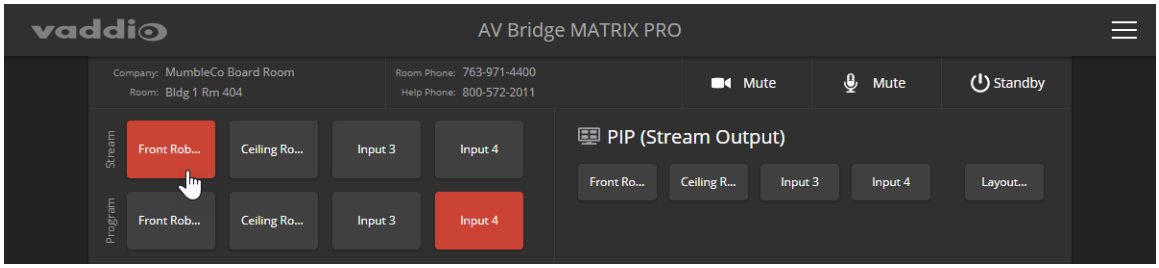
OPERATOR'S HOME PAGE

The web interface shows the active video sources in red. Depending on the current configuration, you may be able to set Stream and Program outputs separately. If the device is configured to route the stream to the Program output, the web interface displays only one row of buttons for the video output.

Note

The IP and USB streams use the same video source.

Select the desired source for the available output(s).



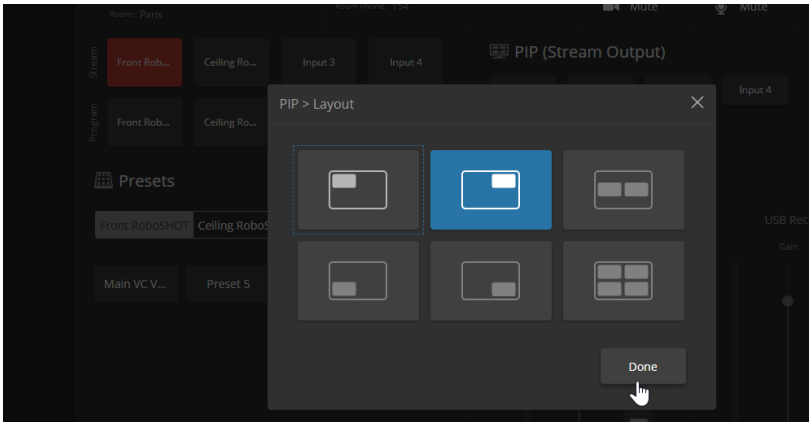
Selecting a PIP Source and Layout

ALL OPERATOR PAGES

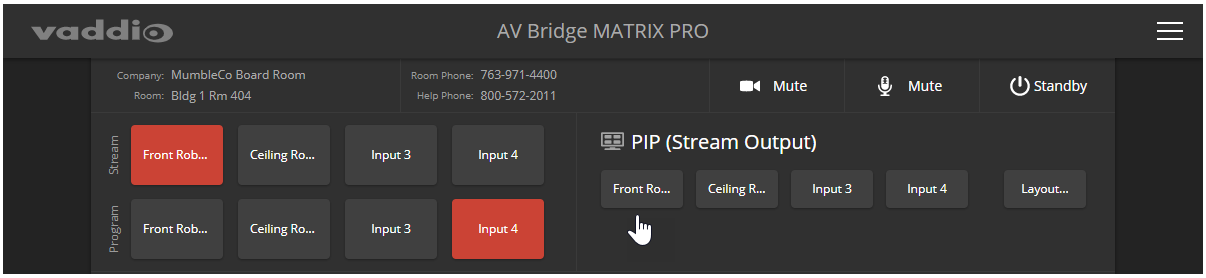
The PIP is only available in the stream.

In the web interface, the button for the active PIP source is highlighted. If all four PIP source buttons are highlighted, the stream is using the quad screen layout; if no buttons are highlighted, there is no PIP.

1. Select Layout to check or change the PIP layout.



2. Select the desired PIP source, if not using the Quad Screen layout.

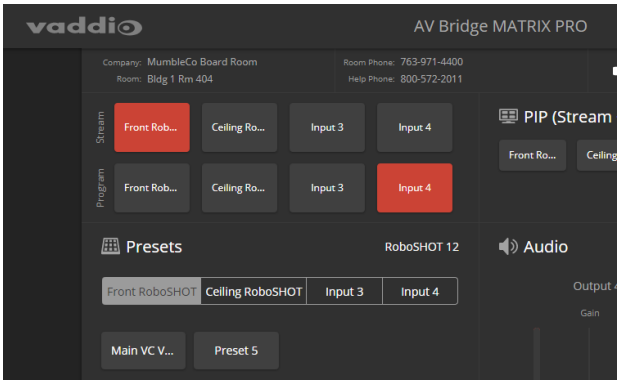


Moving to Camera Presets

OPERATOR'S HOME PAGE

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.

Select the video input to work with, then select the desired preset.

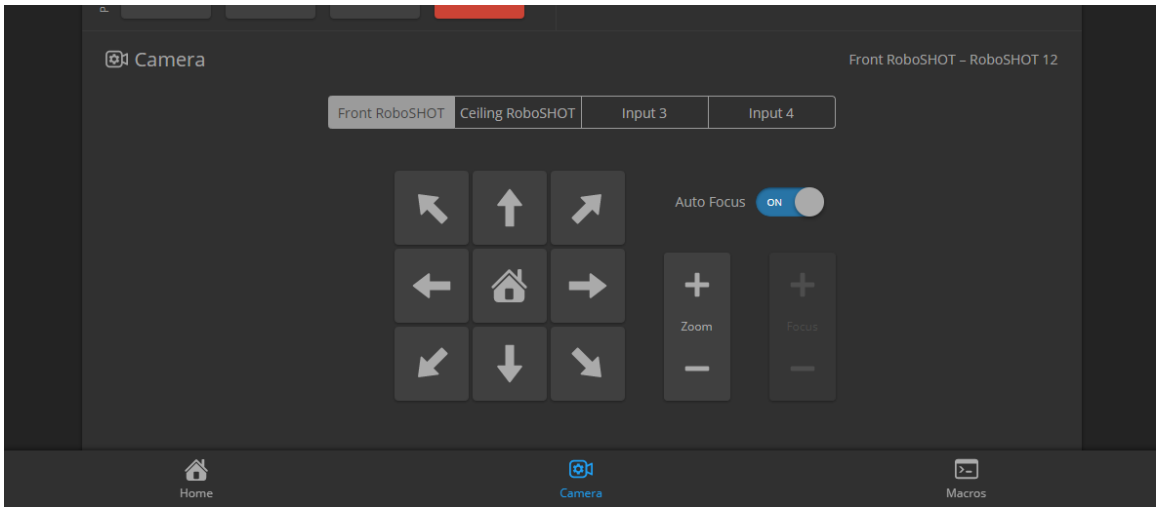


Controlling Pan, Tilt, Zoom, and Focus

OPERATOR'S CAMERA PAGE

The Camera page presents the same controls that are available from the selected video input's web interface. No controls are available for Input 4 unless the connected device is a camera.

Select the video input to work with, then move or focus the camera as needed.



Working with Audio

OPERATOR'S HOME PAGE

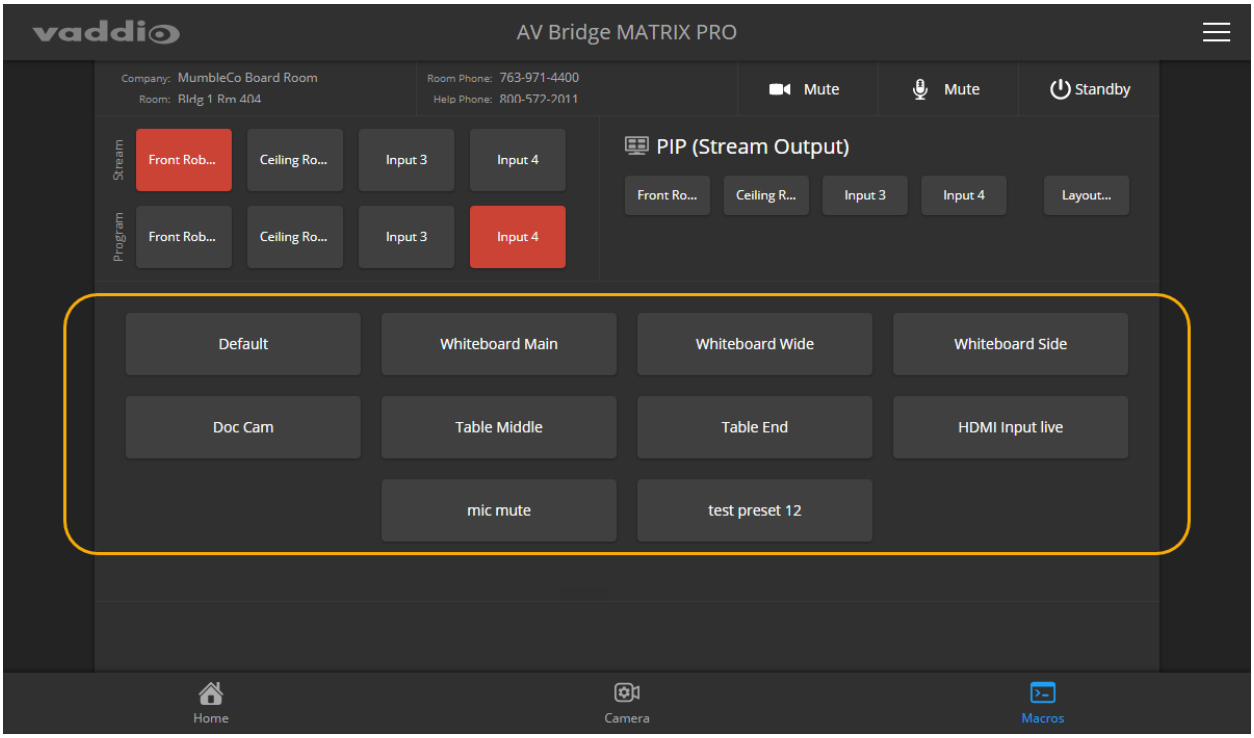
Audio controls include mute/unmute buttons, volume read-outs, and volume slider controls for the audio output currently used as the master/AEC reference and for USB Record (the audio originating at your end of a conference).

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.

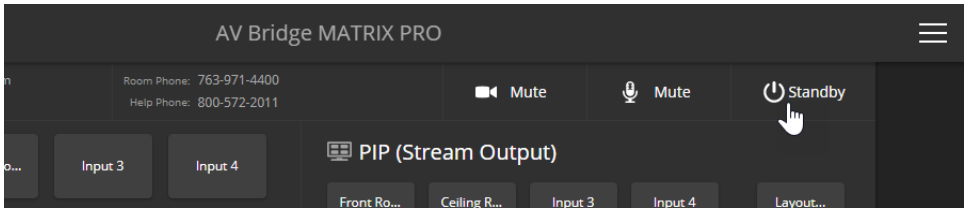


Going to Standby (Low Power) Mode

ALL PAGES

The standby control is available at the top of each page of the web interface.

When the system is in standby, no audio or video is sent or received and most of the web interface controls are unavailable.



Depending on how the device is configured, connected cameras may also go to standby mode. See Configuring Standby Behavior.

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.

Notes

By default, Telnet access is disabled in all firmware releases issued after mid-December 2019. Enable it on the Security page of the web interface.

To start the session, you must log in using the admin account.

Network connection: Telnet connections use port 23. Windows provides a built-in Telnet client; PuTTY can also be used.

Usage notes:

- The > character is the command prompt.
- CTRL-5 clears the current serial buffer on the device.
- *Using a question mark as a command or command parameter* will bring up 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 the parameter available for the system reboot command.

Firmware updates sometimes implement new command parameters. We do not update the manuals for every firmware update. Querying will help you discover the 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.

For information about the RS-232 serial interface, see RS-232 Serial Communication Settings and Port Pin-out.

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..4> home	
Required	<1..4>	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..4> pan { left [<speed>] | right [<speed>] | stop }	
Required	<1..4>	Specify the camera to pan.
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..4> tilt { up [<speed>] | down [<speed>] | stop }	
Required	<1..4>	Specify the camera to tilt.
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..4> zoom { in [<speed>] | out [<speed>] | stop }	
Required	<1..4>	Specify the camera to zoom.
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 focus

Changes the camera focus.

Synopsis	camera <1..4> focus {{ mode { get | auto | manual }} | {{ near | far } <speed>} | stop }	
Required	<1..4>	Specify the camera to focus.
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
 
	`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.	

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..4> preset { recall | store} <1..16> [tri-sync <1..24>] [save-ccu]	
Required	<1..4>	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	`>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.	

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.

`auto_iris` on or off	Allows the camera to compensate automatically for light level.
`iris` integer	Manual aperture adjustment for light level. Range varies depending on camera.
`gain` integer	(Iris gain) Adjusts for light level without changing the iris setting. Range varies depending on camera.
`backlight_compensation` on or off	Reduces contrast to adjust for bright light behind the main subject of the shot. `wide_dynamic_range` must be off to use `backlight_compensation`.
`wide_dynamic_range` on or off	Automatically darkens bright areas and brightens dark areas to provide a more properly exposed image in challenging lighting conditions. `backlight_compensation` must be off to use `wide_dynamic_range`.
`detail` integer	Image sharpness. Range varies depending on camera.
`auto_white_balance` on or off	Adjusts color automatically. Red and blue gain settings are ignored if `auto_white_balance` is on.
`red_gain` and `blue_gain` integer	Adjust color when auto_white_balance is off. Range varies depending on camera.
`chroma` integer	Color intensity. Range varies depending on camera.
`gamma` integer	Range (gray density) between bright areas and shadows. Range varies depending on camera.
`all`	`camera ccu get` 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..4> ccu get <param>	
Required	<1..4>	Specify the camera to query.
	<param>	Specify the CCU parameter to get.
Examples	**>camera 3 ccu get iris** iris 6 OK > Returns the current iris value. **>camera 3 ccu get red_gain** red_gain 201 OK > Returns the current red gain value. **>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 > Returns all current CCU settings.	

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..4> ccu set <param> <value>	
Required	<1..4>	Specify the camera to control.
	<param>	Specify the CCU parameter to set.
Examples	**>camera 2 ccu set auto_iris off** OK > Turns off auto-iris mode for camera 2, returning the camera to manual iris control. **>camera 2 ccu set red_gain 10** OK > Sets camera 2's red gain value to 10.	

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..4> ccu scene {recall {factory <1..6> | custom <1..3>} | store custom <1..3>}	
Required	<1..4>	Specify the camera to control.
Options	`recall factory` <1..6> `recall custom` <1..3>	Recalls the camera to the specified scene (factory 1 – 6 or custom 1 – 3) .
	`store custom` <1..3>	Saves the current scene as the specified custom scene.
Examples	>**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.	

camera comm type

Gets or sets the way the AV Bridge MATRIX PRO communicates with the specified camera.

Notes

Serial communication is not available for camera 4.

If IP is selected, you may need to use the `camera comm host` command to set the camera's IP address or hostname.

Synopsis	camera <1..4> comm type { get | set { ip | serial }}	
Required	<1..4>	Specify the camera to configure.
Options	`get`	Returns the current type of communication used with the specified camera.
	`set`	Sets the type of communication with the camera.
	`ip`	Specifies that communication will be over the IP network.
	`serial`	Specifies that communication will be over the RS-232 serial connection.
Examples	**camera 1 comm type get** serial OK > Returns the information that camera 1 is using an RS-232 serial connection to the AV Bridge MATRIX PRO.	

camera comm host

Gets or sets the specified camera's hostname or IP address.

Note
The AV Bridge MATRIX PRO web interface does not display this information for the connected cameras. If you need to change the way the cameras are labeled in the web interface, you will need to log in to the web interface as admin.

Synopsis	camera <1..4> comm host {get | set { <IP address> | <hostname>}}	
Required	<1..4>	Specify the camera to configure.
Options	`get`	Returns the current host information (IP address or hostname) for the specified camera.
	`set`	Sets the IP address or hostname for the specified camera.
	<IP address>	The IP address to assign to the camera.
	<hostname>	The hostname to assign to the camera.

Examples	**`camera 1 comm host get`**
	`host:  null`
	`OK`
	`>`
	Camera 1 does not have either a hostname or a static IP address.
	`camera 1 comm host set Bubba`
	`OK`
	`>`
	We have just given Camera 1 the hostname Bubba.	

video source

Gets or sets the source for the specified video output.

Synopsis	video { program | stream } source {get | set} <input1..input4>	
Options	`program`	The program (display) output.
	`stream`	The USB and IP stream outputs.
	`get`	Returns the current source for the specified output.
	`set`	Sets the source for the specified output.
	`input1..input4`	The video sources available

Examples	**`video program source get`**
	`source:  input3`
	`OK`
	`>`
	The camera at Input 3 is the current source for the program output.	

	`video program source set input1`
	`OK`
	`>`
	Sets the program (display) output to use the camera at Input 1 as its source.	

video stream pip

Turns the PIP on or off and sets its source. Note that the PIP is only available in the streaming outputs.

Synopsis	video stream pip { on | off | toggle | inset | layout }	
Options	`on`	Turns on the PIP.
	`off`	Turns off the PIP.
	`toggle`	Changes the state of the PIP – turns it on if it was off, or off if it was on.
	`inset` <input1..input4>	Specify one of the four video inputs as the source for the PIP.
	`layout`	Specify the proportions and placement of the PIP.
	`75_25_UL`	PIP occupies the upper left quarter of the display.
	`75_25_UR`	PIP occupies the upper right quarter of the display.
	`75_25_LL`	PIP occupies the lower left quarter of the display.
	`75_25_LR`	PIP occupies the lower right quarter of the display.
	`50_50`	Split screen
	`25_24_25_25`	Quad screen

Examples	`video stream pip inset input2`
	`OK`
	`>`
	Sets the camera at input 2 as the source for the PIP.
	`video stream pip on`
	`OK`
	`>`
	Turns on the PIP.	

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	video mute { get | off | on | toggle}	
Options	`get`	Returns the current video mute status.
	`off`	Unmutes the video. (Normal video resumes.)
	`on`	Mutes the video. (Black screen with message)
	`toggle`	Changes the video mute status.

Examples	**`video mute get`**
	`mute:  off`
	`OK`
	`>`
	Video is not muted.
	`video mute on`
	Transmits the video mute pattern (color bars or black video).	

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

`master`	Line in and EasyMic inputs, USB playback, and HDMI audio in (Not available for `audio route` and `audio crosspoint-gain` commands)
`line_in_1` through `line_in_4`	Microphones or other line-level inputs
`easy_mic_1` through `easy_mic_4`	Connected microphones from Vaddio's EasyMic family
`usb_playback`	USB audio from the far end
`hdmi_in`	Audio from a connected HDMI input device

Outputs

`master`	Speakers, USB record, and HDMI audio out (Not available for `audio route` and `audio crosspoint-gain` commands)
`line_out_1` through `line_out_4`	Speakers or other line-level outputs
`usb_record`	USB audio from your site
`hdmi_out`	Audio out to a connected HDMI device

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	`> audio master mute get`
	`mute:  off`
	`OK`
	`>`
	Returns the current mute state of master mute. It is off, so audio is not globally muted. Some audio channels may be muted, however.
	`>audio line_out_1 mute on`
	`OK`
	`>`
	Mutes the Line Out 1 port.	

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. Valid ranges: Line in, line out, master/AEC reference: -50.0 to 20.0 dB USB, IP, and HDMI: -42.0 to 6.0 dB

Examples	`audio line_in_1 volume up`
	`OK`
	`>`
	Increases the volume for Line In 1 by 1 dB.
	`audio line_out_1 volume get`
	`volume -10.0 dB`
	`OK`
	`>`
	Returns the current volume for the speaker connected to the line out port.	

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.

Note

If Speech Lift is enabled, the designated master (AEC reference) output must have the "lifted" input in its route list. The designated master output cannot have the auto_mic_mix input in its route list. The designated master output can only have line inputs in its route list if they are the enabled speech lift, or are not included in the auto mic mix.

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	`> audio usb3_record route get`
	`[ easy_mic_3 line_in_1 ]`
	`OK`
	`>`
	Returns the current source for USB3 Record. EasyMic3 and Audio Line In 1 are currently routed to the USB3 Record output.
	`> audio hdmi_out route set usb_playback`
	Routes USB playback (far-end audio in soft conferencing applications to HDMI audio out.	

audio crosspoint-gain

Gets or sets thegain 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	`> audio usb_record crosspoint-gain easy_mic_3 get`
	`4`
	`OK`
	`>`
	Returns the current gain setting of the crosspoint between USB Record and EasyMic 1 in dB.
	`> audio usb3_record crosspoint-gain easy_mic_3 set 6.00`
	`OK`
	`>`
	Sets the crosspoint gain of USB Record and EasyMic 1 to 6 dB.	

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

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	system standby { get | on | off | toggle }	
Options	`get`	Returns the device's current standby status.
	`on`	Sets the device to standby mode.
	`off`	Brings the device out of standby mode.
	`toggle`	Changes the device's standby status.
Examples	**`system standby get`** Returns the standby status in this form: `standby:  off` (the device is not in standby mode.)	
	`system standby on` Immediately sets the device to standby mode.	

camera standby

Set or change standby status for the specified camera.

Synopsis	camera <1..4> standby { off | on | toggle | get}	
Required	<1..4>	Specify the camera to place in standby (low-power) mode.
Options	`off`	Brings the camera out of standby mode.
	`on`	Stops video and puts the camera in standby mode.
	`toggle`	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."
	`get`	Returns the camera's current standby state.

Examples	**`camera 1 standby off`**
	Brings camera 1 out of standby mode.
	`camera 2 standby on`
	Puts camera 2 in standby mode.
	`camera 2 standby get`
	Returns the standby status of camera 2 in a form like this:
	`standby: off`
	`OK`
	`>`	

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..10> {off | on | block <seconds> }	
Required	<1..10>	The trigger index (identifier) – triggers 1 through 10 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 `sleep`). The default time to block is 60 seconds.
	<seconds>	Number of seconds to block.
Example	**`trigger 3 on`** Turns trigger 3 on. **`trigger 1 off block 10`** Turns off trigger 1, and blocks for up to 10 seconds while any macros in progress finish.	

sleep

Pauses command execution for the specified number of milliseconds.

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

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

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	`>`**`streaming ip enable on`**
	`> OK`
	Enables IP streaming.
	`>`**`streaming ip enable get`**
	`enabled: true`
	`> OK`
	Returns the current state of IP streaming.	

streaming settings get

Returns current IP and USB streaming settings.

Synopsis	streaming settings get	
Parameters	IP Custom_Frame_Rate	Frame rate selected in Custom quality mode.
	IP Custom_Resolution	Resolution selected in Custom quality mode.
	IP Enabled	May be `true` or `false`. Specifies whether IP streaming is enabled.
	IP Port	The RTSP port number used for IP streaming. Default is 554.
	IP Preset_Quality	Video quality selected in Easy video quality mode.
	IP Preset_Resolution	Resolution selected in Easy video quality mode.
	IP Protocol	The IP streaming protocol in use.
	IP URL	The URL where the stream is available.
	IP Video_Mode	Video quality mode selected (`preset` or `custom`).
	USB Enabled	Specifies whether USB streaming is enabled.
	USB Active	Specifies whether USB streaming is active (in a conference).
	USB Device	The USB device name
	USB Frame_Rate	The current frame rate for the USB stream. If the device is not in a conference (not streaming USB), the frame rate is 0.
	USB Resolution	The current resolution for the USB stream. If the device is not in a conference (not streaming USB), the resolution is 0x0.
Example	>**streaming settings get** IP Custom_Frame_Rate 10 IP Custom_Resolution 720p IP Enabled true IP Port 554 IP Preset_Quality High Quality (Best) IP Preset_Resolution 1080p IP Protocol RTSP IP URL vaddio-av-bridge-stream IP Video_Mode preset USB Active false USB Device AV Bridge Matrix PRO USB Enabled true USB Frame_Rate 0 USB Resolution 0x0 OK >	

network settings get

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

Synopsis	network settings get
Example	**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 >

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	>**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 > Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.66.	
	>**network ping count 10 size 100 192.168.1.1** 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.	

version

Returns the current firmware version.

Synopsis	version
Example	**version** Returns current firmware version information in a form something like this: Audio 1.09-1.07 Commit 6d0f5f005ec720c6b1f83c16686df348f2f7ebb9 System Version AVBMP 2.0.0 Video 1.10 OK >

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	>**system reboot** OK > The system is going down for reboot NOW! avbmp-D8-80-39-62-A7-C5 Reboots the system immediately. >**system reboot 30** Reboots the system in 30 seconds. The response is in the same form; the system message appears at the end of the delay.	

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.

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	>**system factory-reset get** factory-reset (software): off factory-reset (hardware): off OK > Returns the factory reset status. This evaluates the most recent `system factory-reset` on or off command, if one has been received, then reads the rear panel DIP switches and returns the status `on` if they are all in the down position. >**system factory-reset on** factory-reset (software): on factory-reset (hardware): off OK > Enables factory reset upon reboot. ***Note*** *This command does not initiate a factory reset. The factory reset takes place on the next reboot.*	

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.

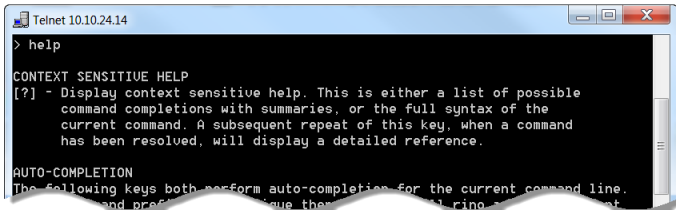
history

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 	You can navigate the command history using the up and down arrow keys. 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. Examples of history expansion: * **!!** 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 	**help** 

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**

Specifications

Inputs and Outputs

Cameras and Video			
Camera Inputs	3 EZ Power Video (Vaddio proprietary) 3 HDMI	**Other Video Inputs (PC or Other Source)**	1 HDMI 1 RGBHV
Program Output	HDMI Out	**Streaming Outputs**	USB 2.0; UVC and UAC drivers IP; H.264 and AAC audio encoding; RTSP format
EZ Power Video In Resolutions	1080p/60/59.94.50/30/25, 1080i/59.94/50, 720p/60/59.94/50		
HDMI In Resolutions (Cameras 1 - 3 + PC)	1080p/60/59.94/50 1080i/59.94/50 720p/60/59.94/50 1440x900/60 1360x768/60 1280x800/60	**Program HDMI Out Resolutions**	1080p/25/30/50/59.94/60 720p/25/30/50//59.94/60
RGBHV in Resolutions (PC)	1360x768/60 1280x800/60 1280x768/60 1280x720/60 1024x768/60	**Streaming Resolutions**	USB 2.0 Stream: Auto-negotiated up to 1080p/30 IP Stream: Up to 1080p/30
Audio			
Inputs	Four EasyMIC ports Four mic/line inputs with 48V phantom power available	**Outputs**	Four line-level outputs HDMI audio supported on HDMI output Streaming audio supported on streaming outputs
Mic/Line Inputs (Balanced)		**Line Outputs (Balanced)**	
Frequency Response **Dynamic Range** **THD + Noise** **Impedance**	20Hz to 20 KHz >90 dB < 0.1% (Mic Level) >20 KΩ	**Frequency Response** **Dynamic Range** **THD + Noise** **Impedance**	20Hz to 20 KHz >90 dB < 0.2% < 50 Ω
HDMI Audio		**IP and USB Streaming Audio**	
Channels **Sample Rate** **Resolution**	Stereo 48 KHz 16 bit	**Channels** **Sample Rate** **Resolution**	Stereo 48 KHz 16 bit

Note

Older units may also have a Vaddio proprietary HSDS program output for use with a Quick-Connect device. Resolutions are 1080p/25/30/50/59.94/60 and 720p/25/30/50//59.94/60.

Control

Control Interfaces	Front panel controls Serial API (RS-232 or Telnet) Browser-based web interface	**Triggers**	10 hardware triggers 4 One-Touch triggers Up to 50 software triggers
Camera Control	RS-232 control connections for cameras 1-3 IP control for a camera connected using the PC Input (Input 4) HDMI connection Operator controls for cameras available in the AV Bridge MATRIX PRO web interface.		

Power, Physical and Environmental

Input Power	24 VDC, 3.75 A	**Audio line in phantom power**	48 VDC, 10 mA
Height	2 RU; 3.47 in. (8.8 cm)	**Width**	16.7 in. (42.5 cm)
Depth	8 in. (20.3 cm)	**Weight**	5.6 lb (2.5 kg)
Temperature **Humidity**	Operating: 32° to 104° F (0° to 40° C); Storage: 23° to 140° F (-5° to 60° C) Operating and Storage: 15% to 80% RH non-condensing		

Specifications are subject to change without notice.

Troubleshooting and Care

If the equipment does not behave as you expect, 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 display is off and the buttons do not light up. 	Power is not connected.	Check the connections from the wall outlet to the power supply and from the power supply 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 supply is bad.	Contact your reseller or Vaddio Technical Support.
Unresponsive camera (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. (This can even be a problem with factory cables.)	Check using a known good cable with the same pin-out.
	There is a problem with the camera.	Refer to the troubleshooting information in the camera manual.
At least one microphone does not work.	Microphone requires phantom power, which is not enabled.	Enable phantom power for the affected microphone. (Web interface, Audio page)

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.	Be sure the network cable is connected. Check using a known good cable.
	The device is not at the IP address you browsed to.	Read the IP address from the front of the device. If it is 169.254.1.1, see Configuring the Device for Your Network.
Unable to log in successfully.	The web interface is out of sync with the unit. This can happen if someone else is logged in.	Use the browser's page refresh button.
	The password has been changed.	Contact your system administrator.
Unable to access the device's stream.	Streaming is not enabled on the device.	Log in as admin and enable the appropriate stream.
DHCP addresses are not assigned properly when cameras are connected to all three EZPower Video connections.	The AV Bridge MATRIX PRO does not have enough power to drive all three cameras.	Be sure you are using the 24 VDC, 3.75A power supply.

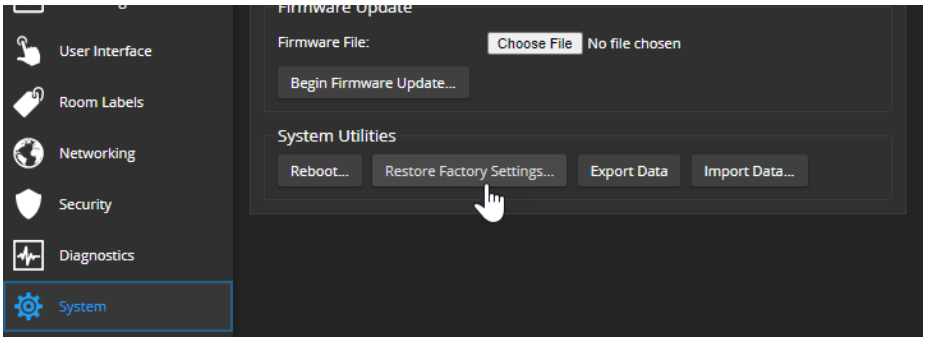
Other Issues

What is it doing?	Possible causes	Check and correct
The display connected to the HDMI output shows a pattern of color bars or a blue screen.	Video is muted.	Unmute the video.
The display connected to the HDMI output shows a black screen.	Video is muted.	Unmute the video.
	The Program video source is in standby mode or disconnectced.	Check the camera or other video source.
	"Route Stream to Program Output" is selected and streaming is disabled.	Deselect "Route Stream to Program Output" (Video Switching page, Global Settings) or enable at least one of the streams.
Various audio issues. Microphones requiring phantom power do not perform properly.	Wrong power supply connected. 	Be sure you are using the 24 VDC, 3.75A power supply. According to the engineer who identified this problem, it looks just like a 12 VDC power supply, but works much better.
The device is behaving in unexpected ways.	More than one operator has control of the device.	We trust you to solve this appropriately. :)

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.

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 a microwave oven
- 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. An indicator 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
By NASA - https://blogs.nasa.gov/ISS_Science_Blog/2015/03/06/women-in-space-part-two-whats-gender-got-to-do-with-it/, Public Domain, https://commons.wikimedia.org/w/index.php?curid=38834990

Carl Sagan, Bruce Murray, Louis Friedman (founders) and Harry Ashmore (advisor), on the occasion of signing the papers formally incorporating The Planetary Society
By credit NASA JPL - JPL, Public Domain, https://commons.wikimedia.org/w/index.php?curid=1180927

Main Control Room / Mission Control Room of ESA at the European Space Operations Centre (ESOC) in Darmstadt, Germany
By European Space Agency - ESOC flickr, Credit: ESA - Jürgen Mai, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743173

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.
By NASA - https://www.flickr.com/photos/nasa2explore/16166230844/, Public Domain, https://commons.wikimedia.org/w/index.php?curid=38931301

Pho. By J. Nguyen~commonswiki assumed (based on copyright claims). - No machine-readable source provided. Own work assumed (based on copyright claims)., CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=587914

European Space Agency astronaut Luca Parmitano, Expedition 36 flight engineer, outside the International Space Station
By NASA - http://spaceflight.nasa.gov/gallery/images/station/crew-36/html/iss036e016704.html, Public Domain, https://commons.wikimedia.org/w/index.php?curid=27263573

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

Nicolas Altobelli, Rosetta Scientist at ESA's European Space Astronomy Centre, Villanueva de la Cañada, Madrid, Spain
By European Space Agency - Nicolas Altobelli talks to the media, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743144

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.
By European Space Agency - Live update from the Main Control Room, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743150

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

Index

V

W

Z

Vaddio is a brand of Legrand AV Inc. · www.legrandav.com · Phone 800.572.2011 / +1.763.971.4400 · Fax +1.763.971.4464 · Email av.vaddio.support@legrand.com

Visit us at www.legrandav.com for firmware updates, specifications, drawings, manuals, technical support information, and more.

A brand of legrand®

Commercial AV Brands Chief | Da-Lite | Middle Atlantic | Projecta | Vaddio

vaddio®