



Complete Manual for the

AV Bridge Mini

HD Audio/Video Encoder

Document 411-0029-30 Rev C
April 2019

Contents

Overview	1
About this Guide	1
Features	1
Unpacking the AV Bridge Mini	2
A Quick Look at the AV Bridge Mini	3
Connector Panel	3
Installation	4
Don't Void Your Warranty!	4
Cabling Notes	4
Basic Connections	5
RS-232 Serial Communication Settings and Port Pin-outs	6
Powering Up	6
Web Interface	7
Getting the Device's IP Address	7
Compatible Web Browsers	7
User Access	8
Admin Access	9
Compact Menu View	9
Web Interface Cheat Sheets	10
System Administration Tasks	11
For Non-DHCP Environments: Configuring the Device with a Static IP Address for Initial Installation	11
Changing the Device's Hostname	13
Optional For DHCP Environments: Changing from a DHCP Address to a Static IP Address ...	14
Setting System Time and Time Zone	15
Managing Access and Passwords	16
Enabling or Requiring HTTPS	17
Adding Room Information	18
Rebooting	19
Exporting and Importing Configuration Data	20
Updating the Firmware	22
Contacting Vaddio Technical Support	23
Viewing Diagnostic Logs	23
Performance and Behavior Settings	24
Configuring Audio Settings	24
Muting and Setting Volume	24
Microphone Adjustments	25
Speaker Adjustments	25
Synchronizing Audio with Video in the IP Stream	26
Routing Audio	27

Setting Gain Between Input and Output (Crosspoint Gain)	28
Configuring Streaming Settings	29
Supported Input Resolutions and Frame Rates	29
Configuring USB Streaming	29
Set IP Streaming Video Settings	30
RTSP Streaming Settings	32
RTMP Streaming Settings	33
Stopping the IP Stream	34
Advanced: Changing MTU	34
Customizing Labels	35
Serial Command API	36
audio volume	37
audio mute	38
audio route	39
audio crosspoint-gain	40
streaming settings get	41
streaming ip enable	42
network ping	42
network settings get	43
system reboot	43
system factory-reset	44
version	44
history	45
help	45
exit	45
Specifications	46
Troubleshooting and Care	47
Power Issues	47
Network and Communication Issues	48
Restoring Factory Defaults	48
Operation, Storage, and Care	48
Compliance Statements and Declarations of Conformity	49
FCC Part 15 Compliance	49
ICES-003 Compliance	49
European Compliance	50
Warranty and Return Policy	51
Photo Credits	55
Index	56

Overview

This guide provides information about the AV Bridge Mini HD audio/video encoder:

- 999-8240-000 AV Bridge Mini, North America
- 999-8240-001 AV Bridge Mini, Europe/UK
- 999-8240-009 AV Bridge Mini, Australia/New Zealand



About this Guide

This guide covers:

- Unpacking and installing the HD audio/video encoder
- The HD audio/video encoder's physical features and user interfaces
- Administration and configuration tasks
- Serial API command reference
- Specifications
- Troubleshooting and maintenance
- Warranty and compliance/conformity information

For your convenience, the information you need to install this product is also available in the smaller, stand-alone **Installation Guide for the AV Bridge MiniHD Audio/Video Encoder**, which covers unpacking, physical features, switch settings, installation, and initial power-up.

Download manuals, dimensional drawings, and other information from www.vaddio.com/support.

Features

- Bridges two audio sources and one HDMI camera or other video source into a soft-client conferencing or IP streaming environment (RTSP or RTMP)
- Simultaneous USB 3.0 and IP streaming, video and audio
- Delivers IP stream resolution up to 1080p/30 and USB stream resolution up to 1080p/60
- Accepts up to 2160p/30 from the camera or other video source
- Audio mixer
- Phantom power to microphones
- Power over Ethernet (PoE)

Unpacking the AV Bridge Mini

Make sure you received all the items you expected. Here is the packing list for the AV Bridge Mini.

North America: AV Bridge Mini, part number 999-8240-000

Europe and UK: AV Bridge Mini, part number 999-8240-001

Australia and New Zealand: AV Bridge Mini, part number 999-8240-009

- AV Bridge Mini
- PoE+ power injector with AC cord set(s)
- Half-rack mounting kit
- 3-position Phoenix-style connectors (qty. 4)
- Cat-5 cable, 6 ft (1.8 m)
- USB 3.0 cable, type A to type B, 6 ft (1.8 m)
- Quick Start Guide

Optional dual half-rack and under-table mounts are also available.
Contact us if you can't find the mount you need.



A Quick Look at the AV Bridge Mini



- IP Address button and indicator light:
 - Press to display the device's IP address in the USB stream. Press again to dismiss the IP address information.
 - Illuminated: Streams are displaying the IP address.
 - Off: Normal display.
- Power/Reset button and indicator light:
 - Press to reboot the device.
 - Illuminated: Normal operation.
 - Off: No power to the device.
 - Blinking: Error.
- Dimensionally enhanced puffy badge: We have spared no expense to provide a lovely, dimensionally enhanced logo badge to elevate your visual experience. It's quite shiny. We hope you'll enjoy it.

Connector Panel



- **Network/PoE** – This port provides access to the web interface and powers the AV Bridge Mini.
- **USB 3.0** – Uncompressed video output with PCM audio for conferencing applications.
- **Audio I/O Line Out 1 and Line Out 2** – Far-end audio from conferencing application or as configured in the audio matrix.
- **Audio I/O Mic/Line In 1 and Mic/Line In 2** – Microphone or other audio inputs. Can be configured to supply phantom power.
- **HDMI** – Video (and audio, if available) from the connected camera or other HDMI source.
- **RS-232** – Connect to an optional third-party control system.

Installation

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

Note

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

Or in UL's preferred phrasing...

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

Don't Void Your Warranty!

Caution

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

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

Cabling Notes

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.

Note

Do not use pass-through RJ-45 connectors. If they are crimped incorrectly, they can damage the connectors on the product, cause intermittent connections, and degrade signal quality. Physical damage to the connectors may 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

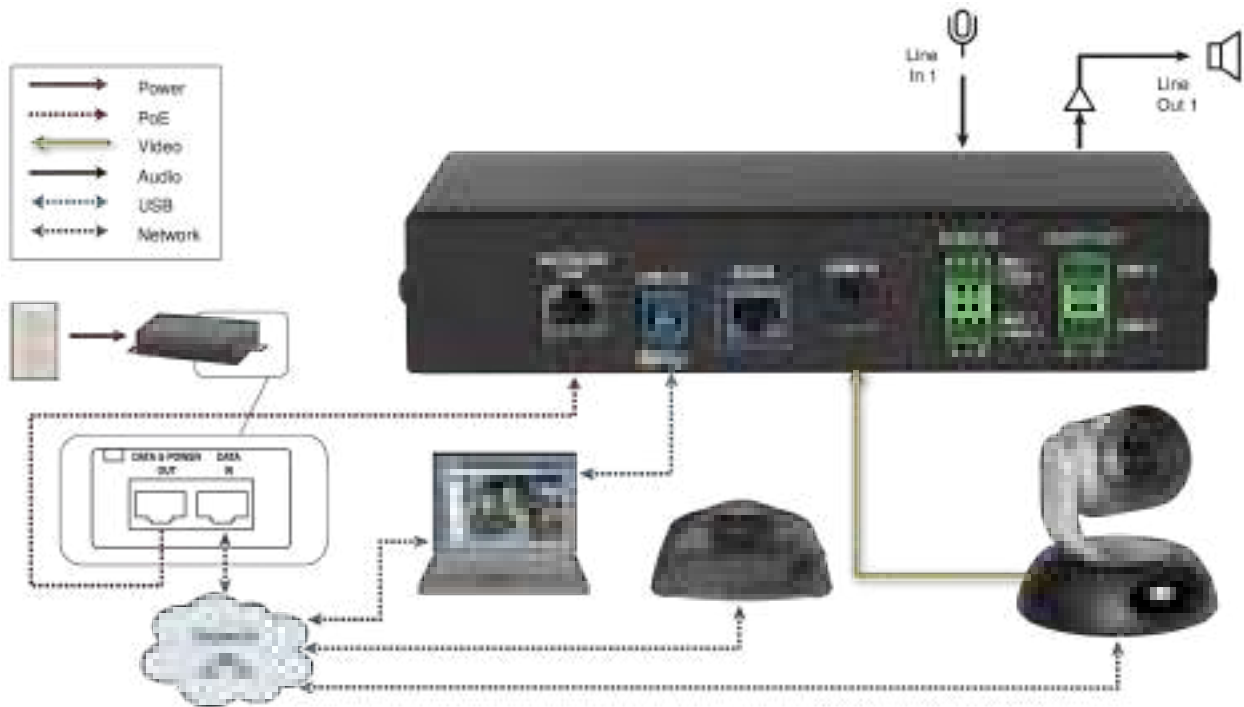


Pro Tip

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

Basic Connections

This diagram shows a basic installation.

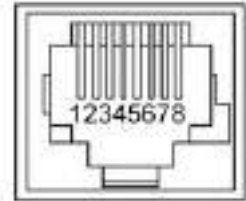


RS-232 Serial Communication Settings and Port Pin-outs

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

RS-232 connector pin-out:

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



Communication parameters:

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

Caution

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

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

Powering Up

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

Web Interface

The HD audio/video encoder provides a web interface to allow configuration via the IP network connection, using a browser. The web interface allows you to:

- Set idle session behavior and passwords
- Manage network and streaming settings
- Add identifying information to the web interface
- Back up, reboot, reset, or update the device
- View information about the device's firmware and current settings

You can access the web interface either through the network or from a computer connected directly to the network port.

When connected to a LAN that has a DHCP server, the HD audio/video encoder will get its IP address, gateway and routing information automatically and you will be able to browse to it. In the absence of a DHCP server, the device's default IP address is 169.254.1.1 and its subnet mask is 255.255.0.0.

If the LAN does not have a DHCP server, you will need to configure the device for your network, as it may default to the same IP address as other devices.

Getting the Device's IP Address

To see the AV Bridge Mini's current IP address, press the IP button on the front panel. The IP address and other network information is displayed on the USB and IP streams. Access the USB stream from the connected computer.

Compatible Web Browsers

Supported web browsers:

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

Other browsers may also work.

User Access

You can access the web interface using the device's IP address. If your network supports hostname resolution, you can configure the device with an easy-to-remember hostname and access the web interface using the hostname instead of the IP address.

Note

Only the operator's page is available with user or guest access.

Enter the IP address or hostname in your browser's address bar. (See [Getting the Device's IP Address](#) if you do not already know it.) If you use the hostname, you may need to enter `http://` as a prefix to keep the browser from treating it as a search query.

If the system is configured for guest access, you will not need to log in.

If a login is required, the username is **user**. Contact the system administrator if you do not know the current password.



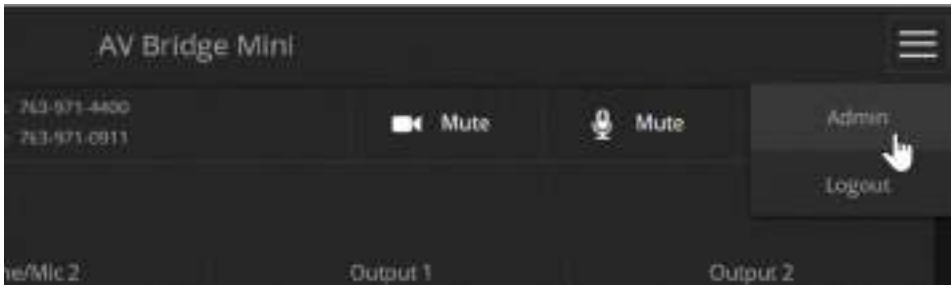
Admin Access

If no administrative controls (such as networking, security, or system pages) are available, you're logged in at the user level, or guest access is enabled and you're not logged in at all.

Use the menu access button to select the admin login. The default password is **password**. The admin has access to all pages of the web interface.

Note

For best security, Vaddio strongly recommends changing the default password(s). Using default passwords leaves the product vulnerable to tampering. See [Managing Access and Passwords](#).



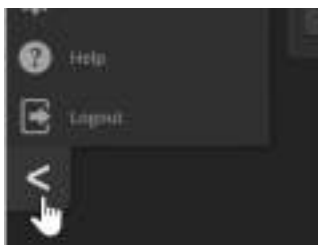
The admin account has access to system administration tasks and performance/behavior configuration tasks.

System administration tasks are on the following pages, listed in the lower portion of the left navigation panel:

- **Networking page**— Configure date and time settings, hostname, and IP addressing
- **Room Labels page** — Information to display on the web interface screens, including the conference room name and phone number and the in-house number for AV assistance.
- **Help page**— Tech support contact information and a link to the product information library on the Vaddio website.
- **Diagnostics page**— View or download logs when troubleshooting issues.
- **Logout button**— A graceful way to leave the web interface in a password-protected state.

Performance and behavior configuration tasks are on the following pages, listed in the upper portion of the left navigation panel:

- **Audio page**— Configure and adjust audio inputs and outputs; configure the audio matrix
- **Streaming page**— Configure USB and IP streaming



Compact Menu View

By default, the navigation buttons display an icon and a text label. The web interface provides a compact view of the menu buttons along with the default view. The button at the bottom of the menu toggles between the two views.

Web Interface Cheat Sheets

Where to find the controls you need right now.

With admin access:

What do you need?	Go to this page
Global audio mute/unmute	Available from any page
All other audio functions	Audio
Global video mute/unmute	Available from any page
IP streaming and USB streaming settings	Streaming
Passwords for admin and user accounts; guest access; Telnet access	Security
Enable/disable session timeout	Security
Hostname and network settings	Networking
Time and date settings	Networking
Reboot or factory reset	System
Backup and restore operations	System
Firmware update and current version	System
Helpdesk phone number for end users	Room Labels
Contact information for Vaddio helpdesk	Help
Diagnostic log	Diagnostics
Information about the device's location	Room Labels
Standby	Available from any page
Logout	Available from any page

System Administration Tasks

Administrative tasks are on these pages of the web interface, shown in the lower portion of the left navigation panel:

- **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
- **System** – Controls to reboot, export and import configuration data, and run firmware updates
- **Help** – Contact information for Technical Support and a link to the documentation for this product
- **Diagnostics** – Logs to help Technical Support troubleshoot issues

Note

Typically, you do not need to configure the device to work with connected Vaddio products; this is done automatically.



For Non-DHCP Environments: Configuring the Device with a Static IP Address for Initial Installation

NETWORKING PAGE

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.

By default, the device is set to DHCP and 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 this is the case, you may need to follow this procedure.

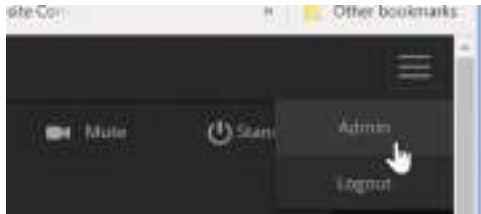
If you install more than one device on a network that does not automatically assign IP addresses (a non-DHCP network), follow this procedure to prevent IP address conflicts.

Note

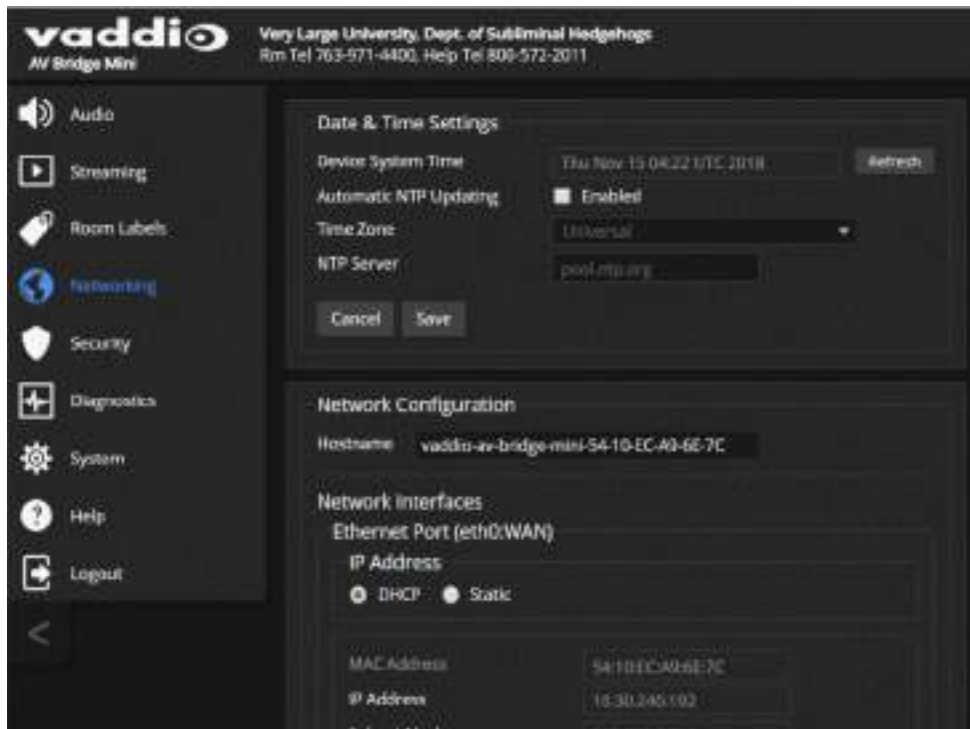
If the device is currently at an IP address other than 169.254.1.1, skip this section unless you are instructed to configure it with a static IP address.

To access the device's Networking page during installation (skip this procedure if the device has already been in service on this network):

1. Connect the device according to the connection diagram, but do not connect it to the network.
2. Connect the network port on the device to the network port on a computer. You may need a crossover cable.
3. Open a browser and access the device's web interface at <http://169.254.1.1>.
4. Log in as admin. The default password is **password**.



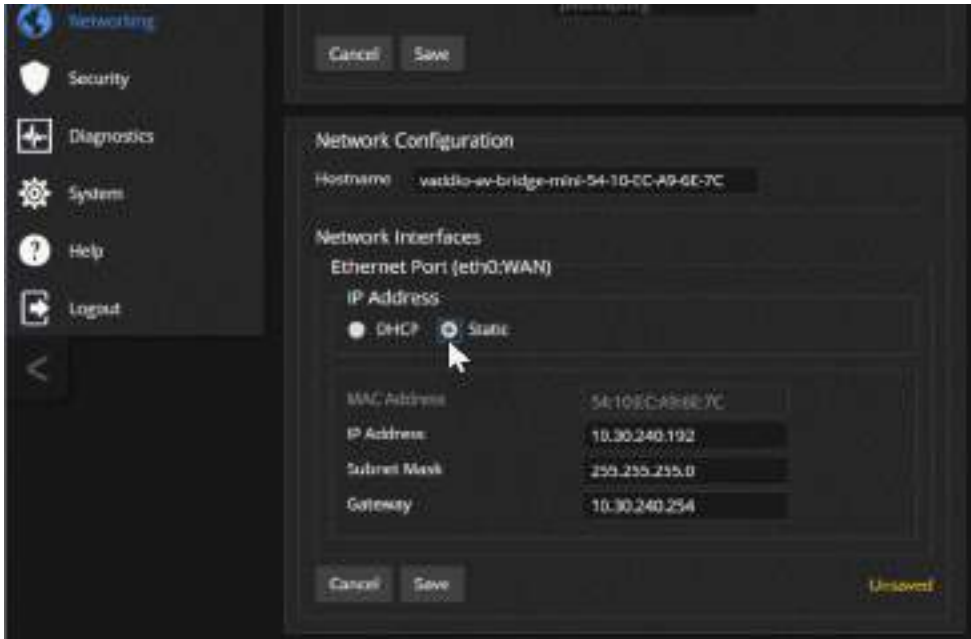
5. Navigate to the Networking page.



To configure the device with a specific static IP address:

1. Work with your IT department to determine the correct IP address, subnet mask, and gateway to assign.
2. On the Networking page, set IP Address to Static.
3. Enter the IP address, subnet mask, and gateway as directed by the IT staffer; then save your work.

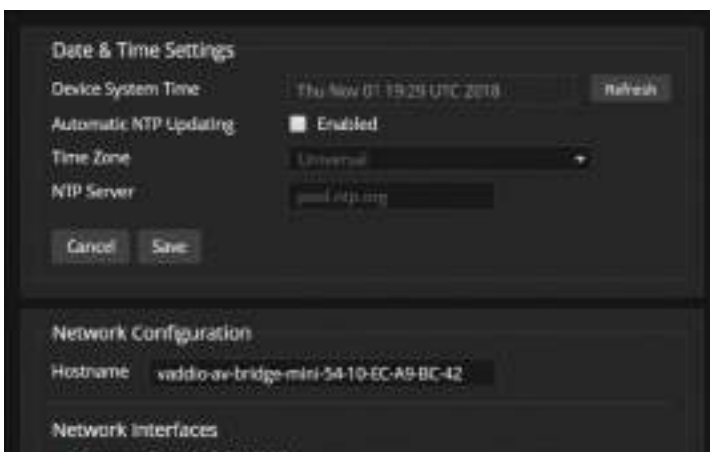
The device is now ready to be connected to the network.



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

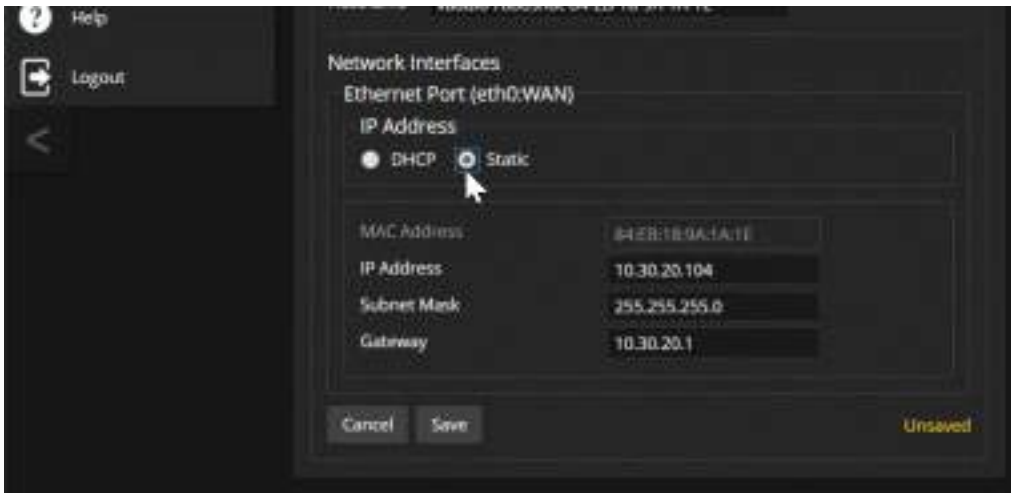


Optional For DHCP Environments: Changing from a DHCP Address to a Static IP Address

NETWORKING PAGE

In a network that assigns IP addresses automatically, the device's IP address may change from time to time. To keep this from happening, set the IP address to Static after the device has received an IP address. Do not change the IP address, subnet mask, or gateway.

You may wish to change the IP addresses of other connected equipment to static addresses as well. For all Vaddio products with web interfaces, this setting is on the Networking page.

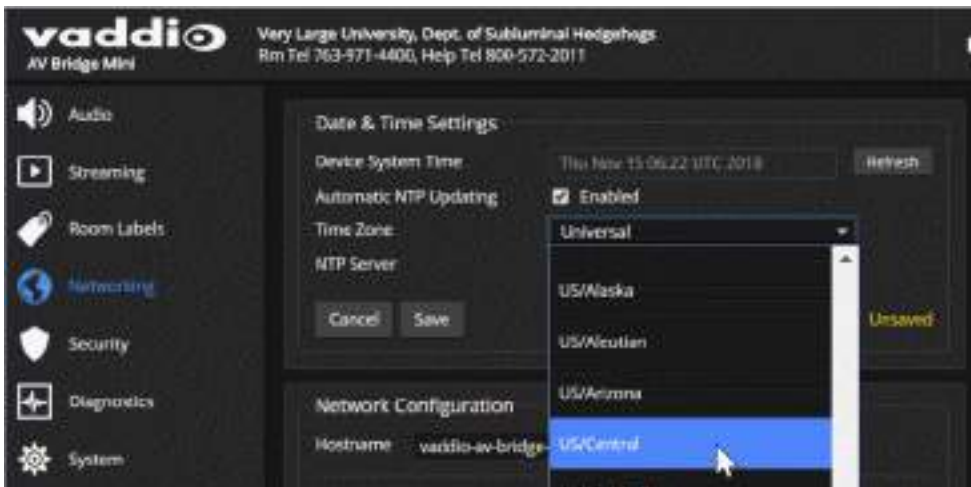


Setting System Time and Time Zone

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.



Managing Access and Passwords

SECURITY PAGE

You can set up the appropriate level of security to conform to your organization's requirements.

Note

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

Change a password – Select Edit Password for the appropriate account (user or admin) to open the Edit Password dialog box.

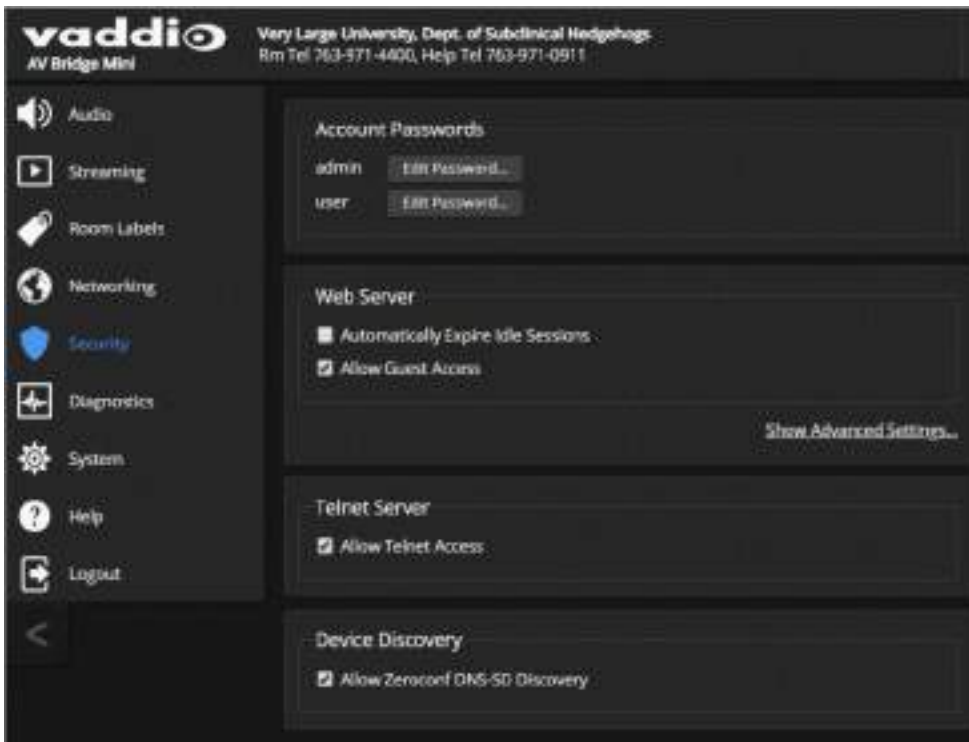
Idle session time-out – check the box labeled Automatically Expire Idle Sessions to automatically log you out of the web interface after 30 minutes without interaction.

Require a password for user access – clear the box labeled Allow Guest Access. (A password is always required for administrative access via the web interface or a Telnet session.)

Disable Telnet access – clear the box labeled Telnet Server Enabled.

Note

For best security, Vaddio strongly recommends changing the user and admin passwords. Using the default passwords leaves the product vulnerable to tampering.



Enabling or Requiring HTTPS

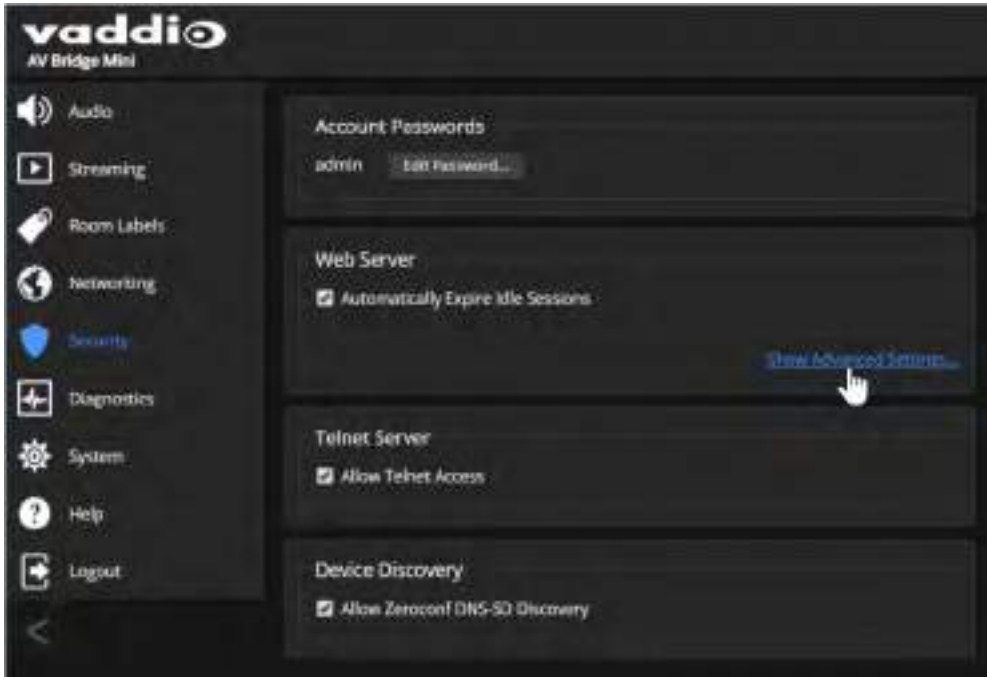
SECURITY PAGE

By default, the web interface uses the HTTP protocol. You can configure the web interface to require a secure HTTPS connection instead.

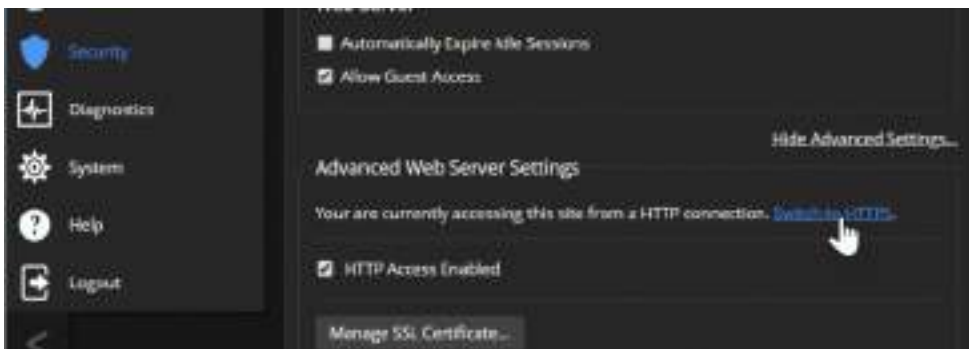
Caution

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

The settings in this section are under Advanced Settings.



To switch to a secure HTTPS connection for the remainder of your session:
Select Switch to HTTPS.

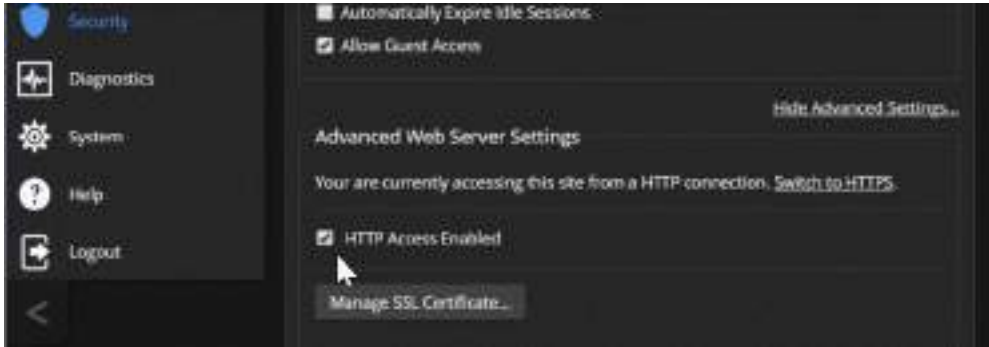


Note

If the device is configured for HTTPS access but no SSL certificate is installed, your browser may present messages warning you that your connection is not secure, because the site's certificate is not valid.

To require HTTPS connections:

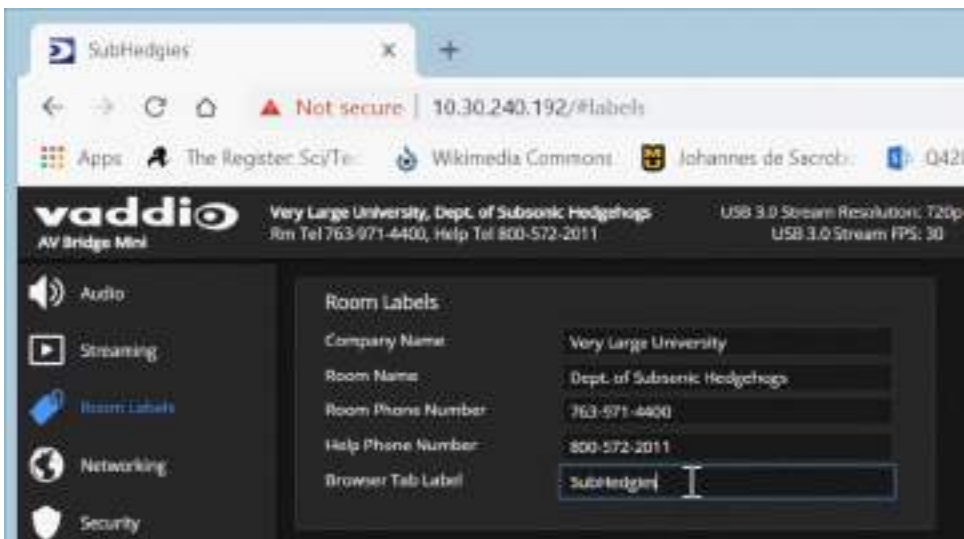
Clear the box labeled HTTP Access Enabled. The device's web interface will only be available via an HTTPS connection.



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.



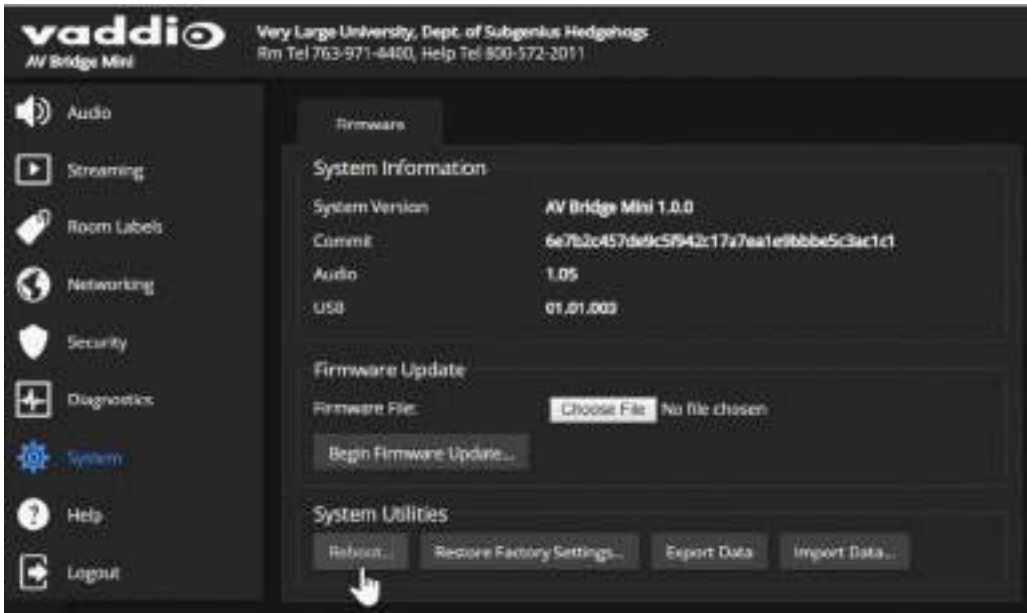
Rebooting

SYSTEM PAGE

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.

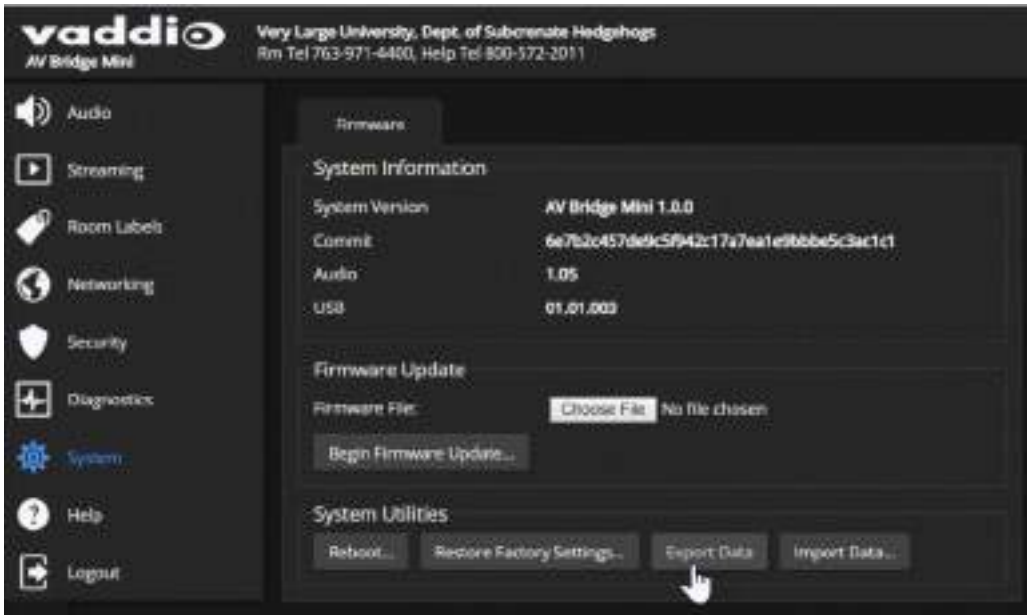
If rebooting the device doesn't fix the problem, you may need to [restore factory defaults](#). But before you take that step, [back up the configuration](#).



Exporting and Importing Configuration Data

SYSTEM PAGE

If your organization uses several of the same product, you may choose to configure one of them, verify that the configuration is good, and then copy it to the others. Most Vaddio professional AV products and cameras have this capability.



To export a configuration:

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

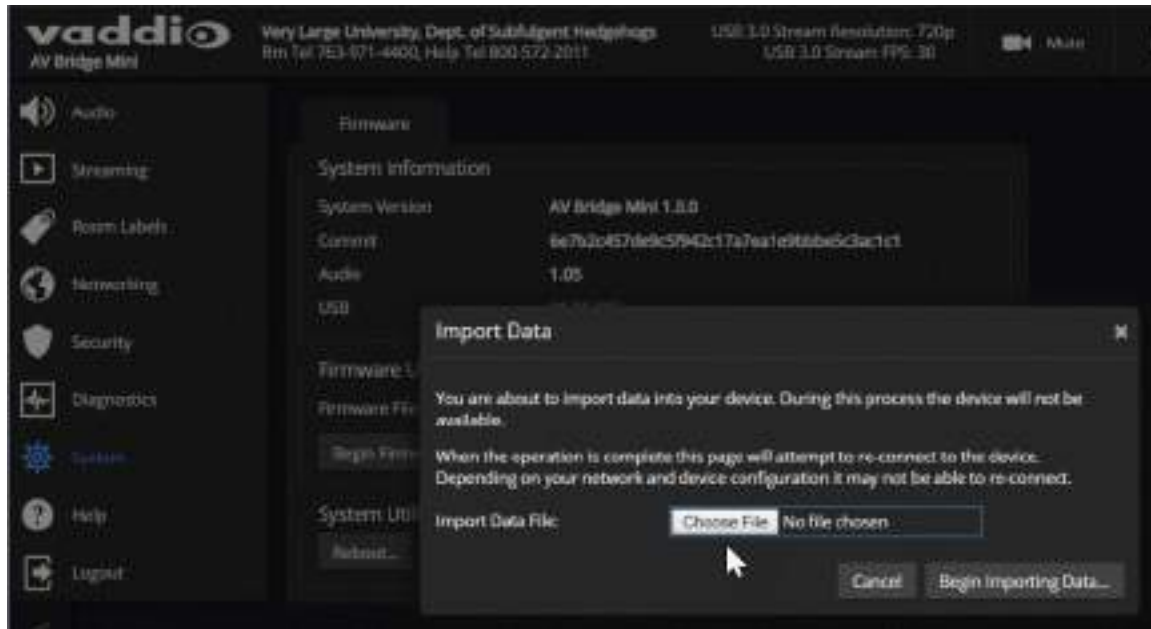
The configuration exports as a `.dat` file and downloads to your default file download location. The filename is the device's hostname followed by the `.dat` file extension. If you only need to back up the configuration, you're done.

Note

This operation does not copy device-specific data such as hostname or sensitive data such as passwords.

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 and you will need to log in again.

Updating the Firmware

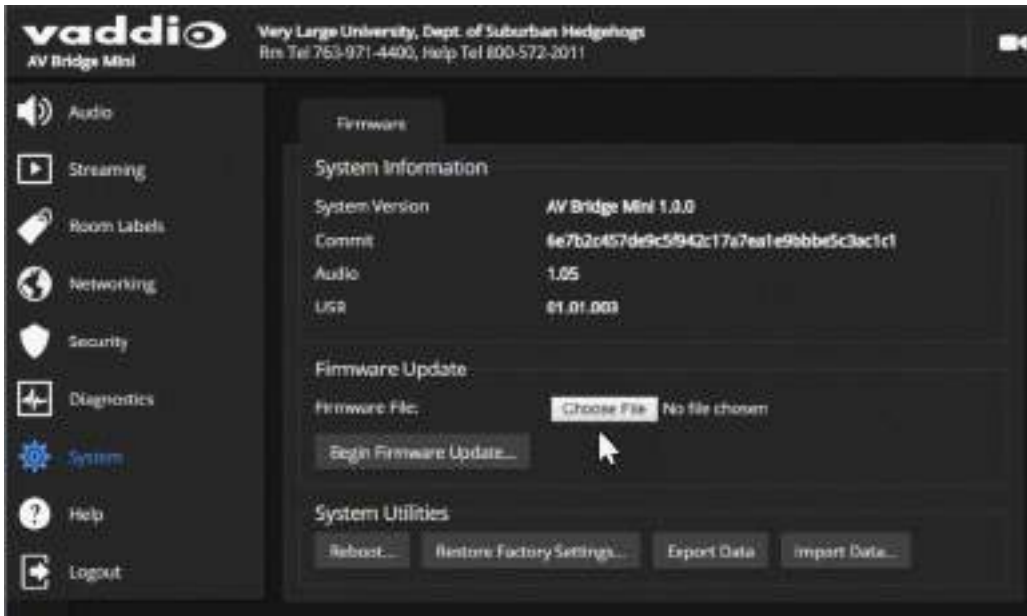
From time to time, we issue new firmware to introduce new features and other product improvements, and to fix issues that turn up. We recommend keeping all your Vaddio products up to date, to get the most out of them.

Firmware updates do not change the configuration or password.

Note

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

1. In a separate browser tab or window, go to the appropriate product page, or to the software updates section of support.vaddio.com and download the appropriate update file.
2. In the Firmware Update pane, select Choose File. Then browse to the update file and select it.
3. Select Begin Firmware Update.
4. READ the information in the Confirm dialog box and be sure you understand it.
5. When you are ready to start the update, select Continue. The device reboots as the last step in the update process.



Performance and Behavior Settings

Performance and behavior settings for the AV Bridge Mini HD audio/video encoder are on these pages of the web interface, shown in the upper portion of the left navigation panel:

- **Audio** – Adjusting audio inputs and outputs; configuring the audio matrix
- **Streaming** – Configuring USB streaming and IP streaming



Configuring Audio Settings

AUDIO PAGE (MULTIPLE TABS)

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

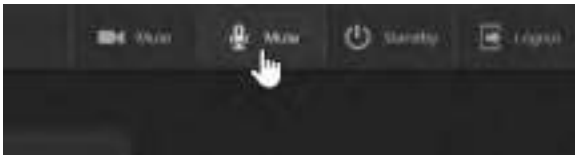
- **Analog** – Line/Mic inputs 1 and 2 (typically the room's microphones) ; audio line out 1 and 2 (typically the room's speakers)
- **Digital** – Near-end and far-end audio for the USB stream and the IP stream
- **Matrix** – defines audio routing

Muting and Setting Volume

AUDIO PAGE, ANALOG AND DIGITAL TABS

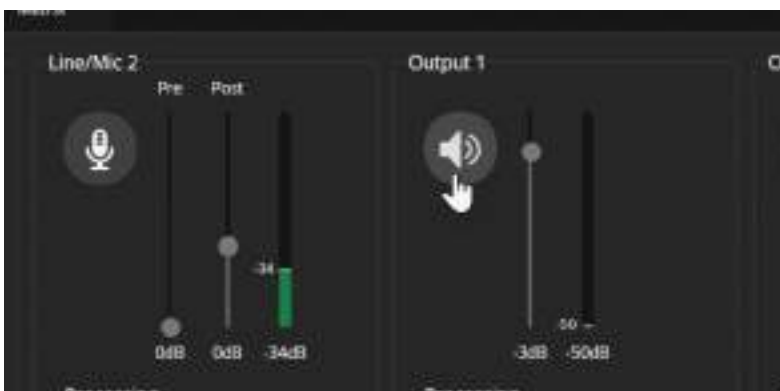
To mute all audio:

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



To mute a specific audio input or output:

Click the icon button (microphone or speaker) associated with the input or output.



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

Move the volume slider associated with the input or output.

Note

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

Microphone Adjustments

AUDIO PAGE, ANALOG TAB

To adjust 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.
- **Automatic Gain Control** – Check the box to adjust gain automatically to compensate for differences in volume as different people speak.



Speaker Adjustments

AUDIO PAGE, ANALOG TAB

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.

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.

Synchronizing Audio with Video in the IP Stream

AUDIO PAGE, DIGITAL TAB

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



Routing Audio

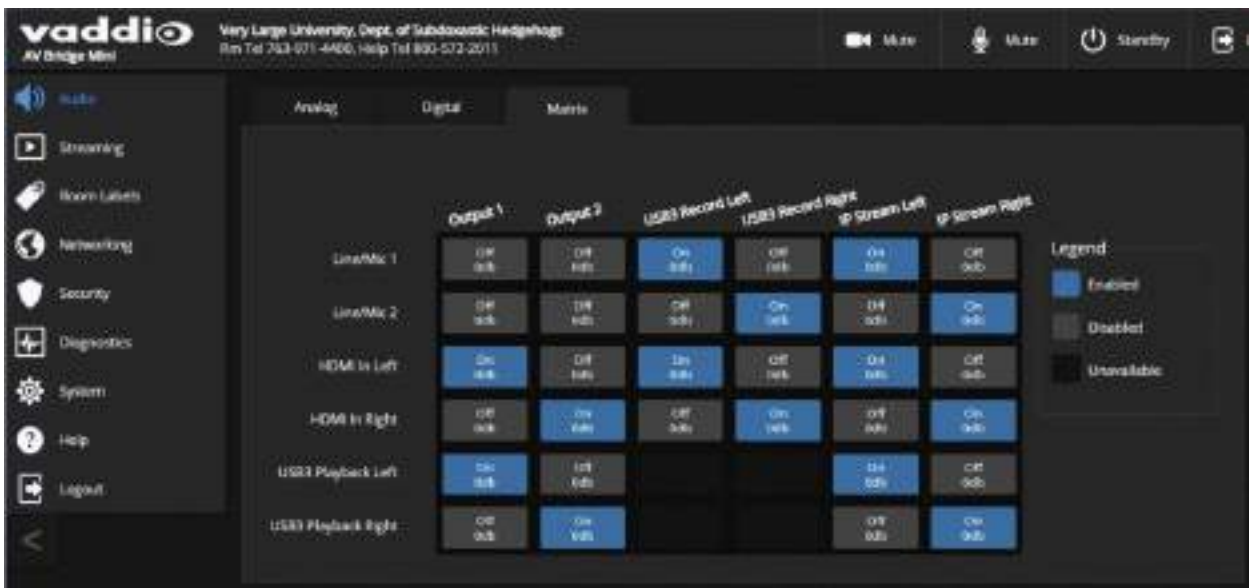
AUDIO PAGE, MATRIX TAB

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

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

Example: In the screen shot below...

- The microphone or other audio source connected to Mic/Line In 1 provides the left-channel audio in both the USB and IP streams.
- The microphone or other audio source connected to Mic/Line In 2 provides the right-channel audio in both the USB and IP streams.
- The USB stream and the IP stream both send the left channel of far-end audio to the speaker connected to Line Out 1, and right channel to the speaker connected to Line Out 2. Depending on how the audio is configured at the far end, people in the room may hear the far end in stereo.



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 Streaming Settings

STREAMING PAGE

USB streaming cannot be disabled. IP streaming is disabled by default.

Supported Input Resolutions and Frame Rates

The AV Bridge Mini accepts the following resolutions and frame rates from the connected camera or other video input device:

- 3840x2160p at 30 fps
- 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

Configuring USB Streaming

STREAMING PAGE

To change the USB device name:

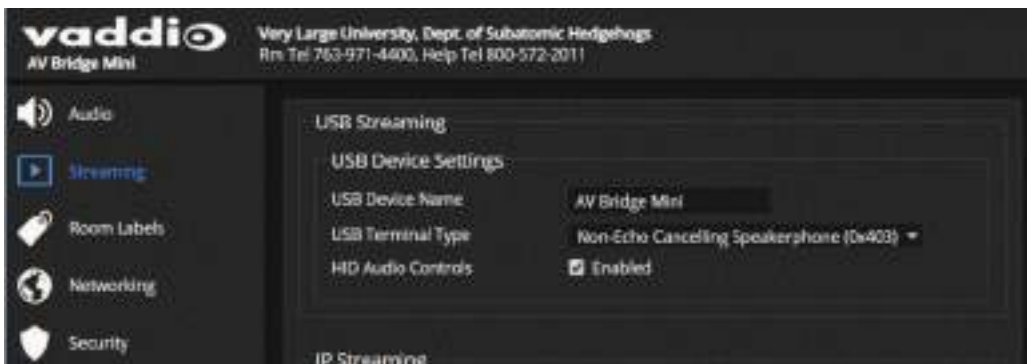
Edit the USB Device Name to change the way the AV Bridge Mini shows up in your soft client's device selection list.

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.



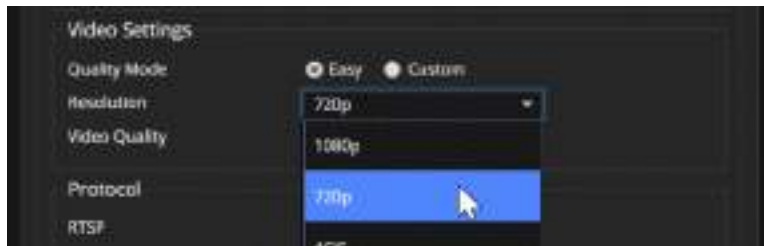
Set IP Streaming Video Settings

STREAMING PAGE

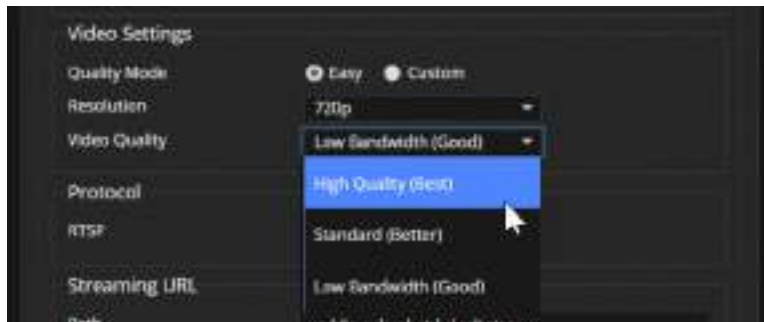
If you are not sure how to configure streaming settings, start with the Easy mode defaults. This configures most settings automatically.

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. Easy quality mode only: Select Video Quality.



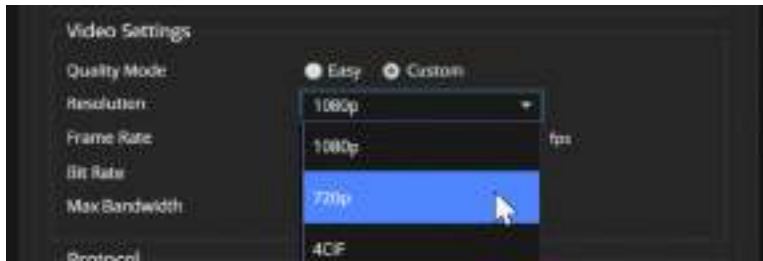
4. Save your changes.

Pro Tip

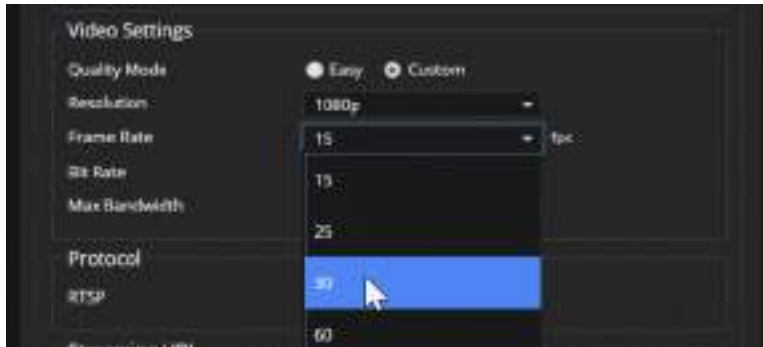
If streaming video quality is poor, try a lower resolution or bandwidth.

To set up IP streaming in Custom quality mode:

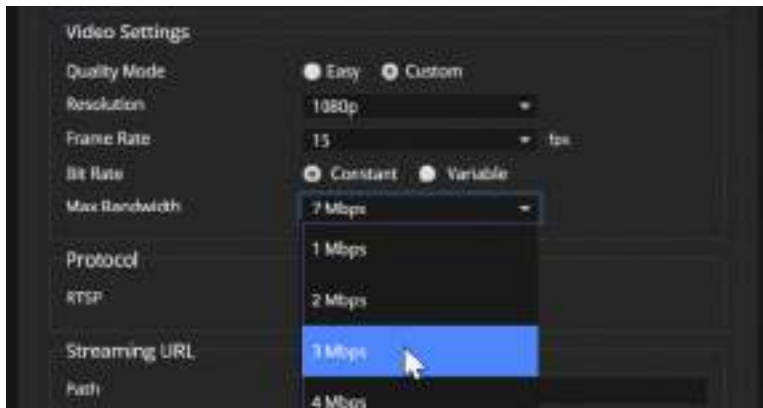
1. Select Custom quality mode.
2. Select the desired resolution.



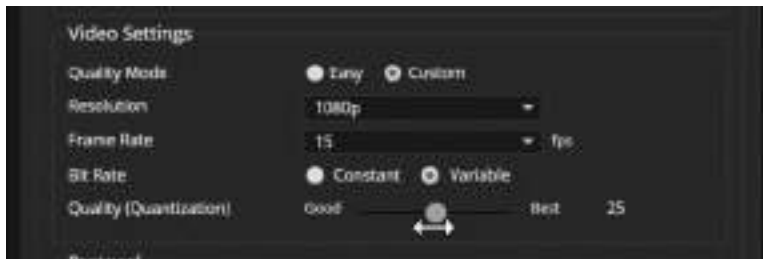
3. Select the desired IP streaming frame rate.



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.

RTSP Streaming Settings

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.

The screenshot shows a configuration window for RTSP streaming. At the top, 'Video Quality' is set to 'Standard (30FPS)'. Below this, the 'Protocol' section has two radio buttons: 'RTSP' (selected) and 'RTMP'. To the right of these is a 'Port' field with the value '554'. The 'Streaming URL' section contains a 'Path' field with the text 'vaddio-av-bridge-mini-stream' and a 'URL' field with the text 'rtsp://10.10.240.192/vaddio-av-bridge-mini-stream'. At the bottom left are 'Cancel' and 'Save' buttons. At the bottom right is a link that says 'Show Advanced Settings...'.

To view the RTSP stream:

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 the device's Streaming page and paste it into the viewer as the URL for the network stream.

RTMP Streaming Settings

STREAMING PAGE

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

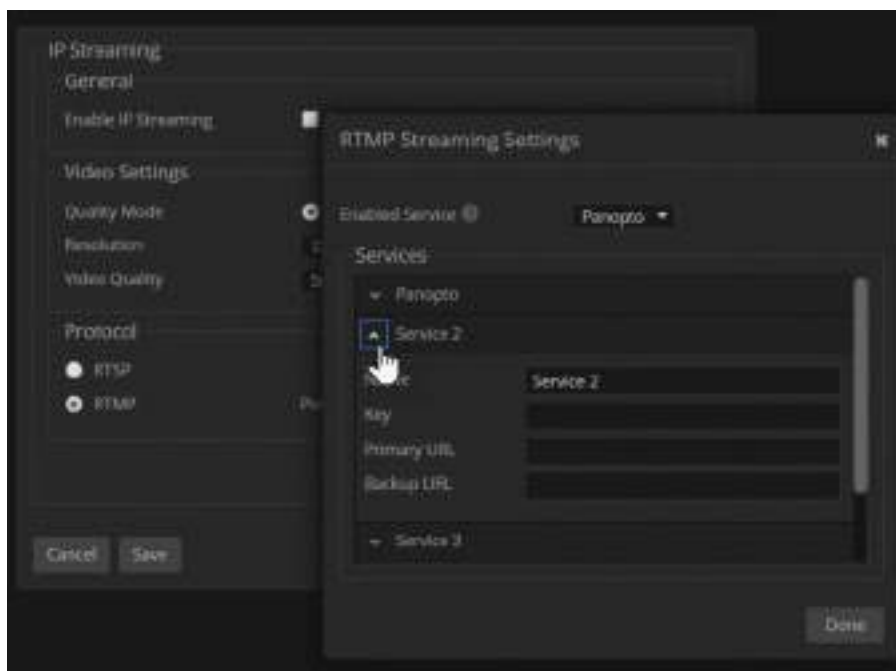
Notes

When RTMP streaming is selected and a content service provider is configured, the device streams to the service until you stop the stream. Configure RTMP streaming before enabling it.

The RTMP stream can only be viewed from the content service provider. No local display or preview is available.

To configure an RTMP streaming service:

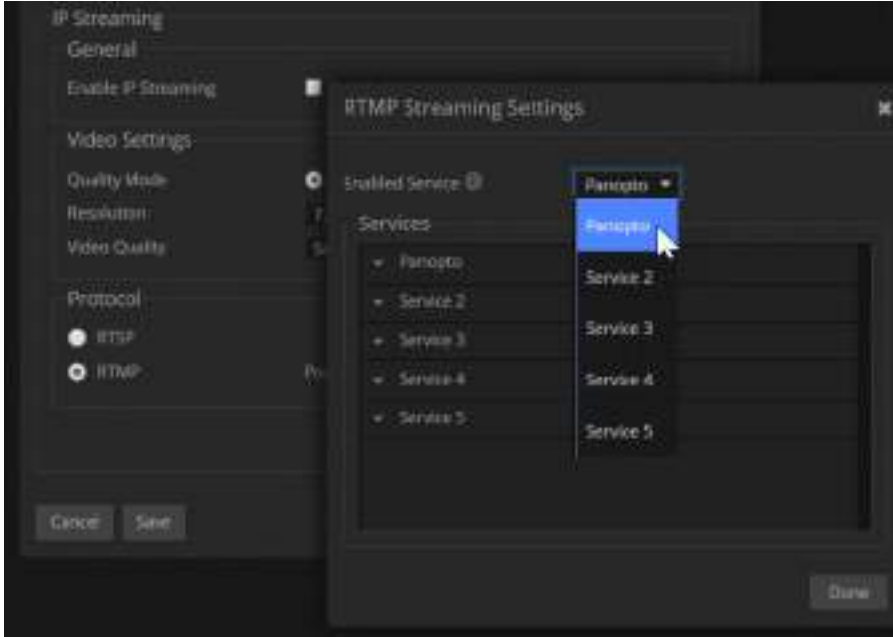
1. Select RTMP streaming, then select Settings.
2. Expand the information box for the service.



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

To select the enabled RTMP streaming service:

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



Enable IP streaming when you are ready to start sending content to the streaming service.

Stopping the IP Stream

STREAMING PAGE

Just as a camera outputs video unless you mute it or put it in standby, the AV Bridge Mini streams audio and video unless you take action to stop the stream.

Options:

- **To stop IP streaming entirely:** Clear the Enable IP Streaming check box.
- **To stop the video portion of the stream, but leave the stream running:** Mute the video. Audio remains available.
- **To stop the audio portion of the stream, but leave the stream running:** Mute the audio. Video continues to stream.
- **To stop sending the stream to a content service provider but make it available as a network stream:** Change from RTMP to RTSP streaming. Local video is still displayed on the connected screen(s).
- **To stop all streaming:** Put the AV Bridge Mini in standby mode. All AV Bridge Mini functions stop.

Advanced: Changing MTU

STREAMING PAGE

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

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."

When in doubt, try it.

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



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.

Note

When you connect via Telnet, you must log in using the admin account.

Things to know about Telnet:

- Telnet port 23 is used.
- The > character is the command prompt.
- 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.
- CTRL-5 clears the current serial buffer on the device.

Typographical conventions:

- n{x | y | z} – Choose x, y, or z.
- n<variable> – The named variable (such as <ip address>) is required.
- n < x..y > – A value in the range of x through y is required.
- n[optional] – This parameter (such as [speed <1..7>]) is not required.

For information about the RS-232 serial interface, see [RS-232 Serial Communication Settings and Port Pin-out](#).

audio volume

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

Synopsis	audio [channel] volume { get up down set <level> }	
Channels	master	Gets or sets the volume of the audio master control.
	line_in_1 line_in_2	Gets or sets the volume of the specified Audio Line In.
	usb3_playback_left usb3_playback_right	Get or set the volume for the USB3 Playback Left/Right input channel.
	hdmi_in_left hdmi_in_right	Get or set the volume for the left/right channel of the specified HDMI input.
	line_out_1 line_out_2	Gets or sets the volume of the specified Audio Line Out.
	usb3_record_left usb3_record_right	Get or set the volume for the USB3 Record Left/Right output channel.
	ip_out_left ip_out_right	Get or set the volume for the left/right channel of the IP stream's audio.
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	<pre>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 ></pre> <p>Returns the current volume for the speaker connected to the line out port.</p>	

audio mute

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

Synopsis	audio <channel> mute {get on off toggle}	
Channels	master	Gets or sets the mute status of master audio mute, the emergency mute for all channels. This is equivalent to the Mute button on the front panel or in the operator's web interface.
	line_in_1 line_in_2	Gets or sets the mute status of the specified Line In port.
	usb3_playback_left usb3_playback_right	Gets or sets the mute status of the USB3 Playback Left/Right channel.
	hdmi_in_left hdmi_in_right	Gets or sets the mute status of the left/right channel of the HDMI audio input.
	line_out_1 line_out_2	Gets or sets the mute status of the specified Line Out port.
	usb3_recond_left usb3_record_right	Gets or sets the mute status of the USB3 Record Left/Right channel.
	ip_out_left ip_out_right	Gets or sets the mute status of the left/right channel of the IP stream's audio.
Options	get	Returns the current mute state of the specified channel.
	on	Mutes the audio for the specified channel.
	off	Unmutes the audio for the specified channel.
	toggle	Changes the mute state for the specified channel – unmutes if it was muted, mutes if it was not.
Examples	<pre>> audio master mute get mute: off OK ></pre> <p>Returns the current mute state of master mute. It is off, so audio is not globally muted. Some audio channels may be muted, however.</p> <pre>> audio line_out_1 mute on OK ></pre> <p>Mutes the Line Out 1 port.</p>	

audio route

Gets or sets the input routed to the specified output.

Synopsis	audio <channel> route {get set <inputs>}	
Outputs	line_out_1 line_out_2	Get or set the inputs routed to the specified Line Out port.
	usb3_record_left usb3_record_right	Get or set the inputs routed to the USB3 Record Left/Right channel. Not permitted to have USB3 Playback Left/Right in its route list.
	ip_out_left ip_out_right	Get or set the inputs routed to the left/right channel of the IP stream.
Options	get	Returns the routing for the specified output.
	set	Sets the routing for the specified output.
Inputs	line_in_1 line_in_2	Line In 1 or Line In 2
	usb3_playback_left usb3_playback_right	USB Playback Left/Right channel. Not permitted to be routed to USB Record.
	hdmi_in_left hdmi_in_right	HDMI input, left or right channel
Examples	<pre>> audio usb3_record_left route get [auto_mic_mix] OK ></pre> <p>Returns the current source of the left channel of USB3 Record. The auto mic mixer is currently routed to the left channel of the USB3 Record output.</p> <pre>> audio ip_out_right route set line_in_1</pre> <p>Routes Line Input 1 to the right channel of the outbound IP stream.</p>	

audio crosspoint-gain

Returns or sets the input routing gain, in dB, for a given output and input.

Synopsis	audio <output> crosspoint-gain <input> {get set <level>}	
Outputs	line_out_1 line_out_2	Get or set the gain for the specified input routed to the Line Out port.
	usb3_record_left usb3_record_right	Get or set the gain for the specified input routed to the USB3 Record Left/Right channel.
	ip_out_left ip_out_right	Get or set the gain for the specified input routed to the left/right channel of the IP stream.
Inputs	line_in_1 line_in_2	Line In 1 or Line In 2
	usb3_playback_left usb3_playback_right	USB Playback Left/Right channel.
	hdmi_in_left hdmi_in_right	HDMI input, left or right channel
Options	get	Returns the routing gain from the specified input to the specified output.
	set <-12.00 .. 12.00>	Sets the routing gain from the specified input to the specified output. Valid range is -12.00 dB to 12.00 dB.
Examples	<pre>> audio line_out_1 crosspoint-gain hdmi_in_left get 3.95 OK ></pre> <p>Returns the current gain setting of the crosspoint between Line Output 1 and HDMI Input Left in dB.</p> <pre>> audio usb3_record_left crosspoint-gain line_in_1 set 6.00 OK ></pre> <p>Sets the crosspoint gain of USB Record Left and Line In 1 to 6 dB.</p>	

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 <code>true</code> or <code>false</code> . Specifies whether IP streaming is enabled.
	IP MTU	MTU for IP streaming. Default is 1400.
	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 (RTSP or RTMP).
	IP URL	The URL where the stream is available.
	IP Video_Mode	Video quality mode selected (<code>preset</code> or <code>custom</code>).
	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 streaming USB (not in a conference), the resolution is 0x0.
	USB Version	The USB version in use (USB 3).
Example	<pre> IP Custom_Frame_Rate 30 IP Custom_Resolution 720p IP Enabled true IP MTU 1400 IP Port 554 IP Preset_Quality High Quality (Best) IP Preset_Resolution 1080p IP Protocol RTSP IP URL vaddio-avbridge-mini-stream IP Video_Mode preset USB Active true USB Device AV Bridge Mini USB Frame_Rate 30 USB Resolution 1080p USB Version 3 OK ></pre>	

streaming ip enable

Set or change the state of IP streaming.

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

network ping

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

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

network settings get

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

Synopsis	network settings get
Example	<pre> network settings get Name: eth0:WAN MAC Address: 00:04:a3:85:0a:ee IP Address: 10.10.8.116 Netmask: 255.255.255.0 VLAN: Disabled Gateway: 10.10.8.100 OK > </pre>


system reboot

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

Synopsis	system reboot [<seconds>]	
Options	<seconds>	The number of seconds to delay the reboot.
Examples	<pre> >system reboot OK > The system is going down for reboot NOW! avbmini-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. </pre>	

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

version

Returns the current firmware version.

Synopsis	version
Example	<pre>version</pre> <p>Returns current firmware version information in a form something like this:</p> <pre>Audio 1.05 Commit 418875905f5f27cf01f83c16686df348f2f7ebb9 System Version AV Bridge Mini 1.0.0 USB 01.01.003 OK ></pre>

history



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

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



help

Displays an overview of the CLI syntax.

Synopsis	help	
Example	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  </div> </div>	

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

USB Stream	Video and Audio; Up to 1080p/60 Resolution (Full HD)		
IP Stream	RTSP or RTMP Video and Audio; Up to 1080p/30 Resolution		
HDMI Input	Video and Audio; Up to 2160p/30 Resolution (UHD)		
Audio Inputs	Stereo USB Stereo HDMI Two Balanced Mic/Line-Level Inputs	Audio Outputs	Stereo USB AAC IP Audio Stream Two Balanced Line-Level Outputs
Control	Browser-based user interface for configuration and administration; front panel controls for IP address toggle, power reset, and factory reset; Telnet and RS-232 for external control		
Input Power	PoE	Phantom Power to Microphones	48 VDC, 10 mA
Height	1.72 in. (4.4 cm)	Width	8.38 in. (21.3 cm)
Depth	6.0 in. (15.2 cm)	Weight	2.65 lb. (1.2 kg, or 1273 plain M&M candies)
Temperature	Operating and Storage: 32° to 104° F (0° to 40° C)		
Humidity	Operating and Storage: 20% to 80% RH non-condensing		

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 buttons do not light up. 	Power is not connected.	Check the connections from the wall outlet to the PoE+ power injector and from the power injector to the device.
	The wall outlet is not active. (Check by finding out if it powers something else, such as a laptop or phone charger.)	Use a different outlet.
	The device or its power injector is bad.	Contact your reseller or Vaddio Technical Support.
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.	Check to be sure the PoE injector's network cable is connected. Check using a known good cable.
	The device is not at the IP address you browsed to.	Follow the procedure for Getting the Device's IP Address . If it is 169.254.1.1, the device needs to be configured for your network. See Configuring the Device for Your Network .
Unable to log in successfully.	The web interface is out of sync with the unit. This can happen if more than one person is controlling the device.	Use the browser's page refresh button.
	The password has been changed.	Contact your system administrator. If you are the system administrator, call Vaddio Technical Support.

Restoring Factory Defaults

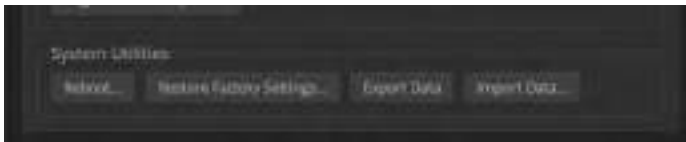
SYSTEM PAGE

To restore the original factory settings:

Select Restore Factory Settings.

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

This operation logs you out and resets the admin password to its factory default value of `password`.



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
- Dry environments with an excess of static discharge
- While exiting, pursued by a bear

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



Compliance Statements and Declarations of Conformity

Compliance testing was performed to the following regulations:

FCC Part 15 (15.107, 15.109), Subpart B	Class A
ICES-003, Issue 54: 2012	Class A
EMC Directive 2014/30/EU	Class A
EN 55032: 2015	Class A
EN 55024: November 2010	Class A
KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)	Class A
IEC 60950-1:2005 (2nd Edition); Am 1: 2009 + Am 2: 2013	Safety
EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013	Safety

FCC Part 15 Compliance

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

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference including interference that may cause undesired operation of the device.

Changes or modifications not expressly approved by Vaddio can affect emission compliance and could void the user's authority to operate this equipment.



ICES-003 Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.



European Compliance

This product has been evaluated for Electromagnetic Compatibility under the EMC Directive for Emissions and Immunity and meets the requirements for a Class A digital device. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Standard(s) To Which Conformity Is Declared:



EMC Directive 2014/30/EU

EN 55032: 2015

Conducted and Radiated Emissions

EN 55024: November 2010

Immunity

EN 61000-4-2: 1995 + Amendments A1: 1998 + A2: 2001

Electrostatic Discharge

EN 61000-4-3: 2006 + A1: 2008

Radiated Immunity

EN 61000-4-4: 2004 + Corrigendum 2006

Electrical Fast Transients

EN 61000-4-5: 2006

Surge Immunity

EN 61000-4-6: 2009

Conducted Immunity

EN 61000-4-8: 2010

Power Frequency Magnetic Field

EN 61000-4-11: 2004

Voltage Dips, Interrupts and Fluctuations

KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)

IT Immunity Characteristics

EN 61000-4-2

Electrostatic Discharge

EN 61000-4-3

Radiated Immunity

EN 61000-4-4

Electrical Fast Transients

EN 61000-4-5

Surge Immunity

EN 61000-4-6

Conducted Immunity

EN 61000-4-8

Power Frequency Magnetic Field

EN 61000-4-11

Voltage Dips, Interrupts and Fluctuations

IEC 60950-1: 2005 (2nd Edition); Am 1: 2009 + Am 2: 2013

Safety

EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013

Safety

Warranty and Return Policy

Hardware warranty: Two (2) year limited warranty on all parts and labor for Vaddio manufactured products. Vaddio warrants its manufactured products against defects in materials and workmanship for a period of two years from the day of purchase, to the original purchaser, if Vaddio receives notice of such defects during the warranty. Vaddio, at its option, will repair or replace products that prove to be defective. Vaddio manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry standard practices.

Exclusions: The above warranty shall not apply to defects resulting from improper or inadequate maintenance by the customer, customers applied software or interfacing, unauthorized modifications or misuse, mishandling, operation outside the normal environmental specifications for the product, use of the incorrect power supply, modified power supply or improper site operation and maintenance. OEM and special order products manufactured by other companies are excluded and are covered by the manufacturer's warranty.

Vaddio Customer Service: Vaddio will test, repair, or replace the product or products without charge if the unit is under warranty. If the product is out of warranty, Vaddio will test then repair the product or products. The cost of parts and labor charge will be estimated by a technician and confirmed by the customer prior to repair. All components must be returned for testing as a complete unit. Vaddio will not accept responsibility for shipment after it has left the premises.

Vaddio Technical Support: Vaddio technicians will determine and discuss with the customer the criteria for repair costs and/or replacement. Vaddio Technical Support can be contacted by email at support@vaddio.com or by phone at one of the phone numbers listed on support.vaddio.com.

Return Material Authorization (RMA) number: Before returning a product for repair or replacement request an RMA from Vaddio's technical support. Provide the technician with a return phone number, e-mail address, shipping address, product serial numbers and original purchase order number. Describe the reason for repairs or returns as well as the date of purchase. See the General RMA Terms and Procedures section for more information. RMAs are valid for 30 days and will be issued to Vaddio dealers only. End users must return products through Vaddio dealers. Include the assigned RMA number in all correspondence with Vaddio. Write the assigned RMA number clearly on the shipping label of the box when returning the product. All products returned for credit are subject to a restocking charge without exception. Special order products are not returnable.

Voided warranty: The warranty does not apply if the original serial number has been removed or if the product has been disassembled or damaged through misuse, accident, modifications, use of incorrect power supply, use of a modified power supply or unauthorized repair.

Shipping and handling: Vaddio will not pay for inbound shipping transportation or insurance charges or accept any responsibility for laws and ordinances from inbound transit. Vaddio will pay for outbound shipping, transportation, and insurance charges for all items under warranty but will not assume responsibility for loss and/or damage by the outbound freight carrier. If the return shipment appears damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

Products not under warranty: Payment arrangements are required before outbound shipment for all out of warranty products.

General RMA Terms and Procedures: RMAs are valid for 30 days and will be issued to Vaddio dealers only.

- End users must return products through Vaddio dealers.
- Before a defective product can be authorized to send in for repair, it must first go through the troubleshooting process with a member of the Vaddio Technical Support team.
- Products authorized for repair must have a valid RMA (Return Material Authorization) number.
 - Vaddio RMA Team will issue the RMA number.
 - An RMA number is to be included in all correspondence with Vaddio.
 - The RMA number must appear clearly on the shipping label (not the box) when the product is returned.
 - A packing slip must be included on the inside of the box with the RMA number listed and reason for RMA return.
- Products received at Vaddio that do not have a valid RMA number clearly marked on the outside of the shipping container may be refused and returned to sender.
- Boxes showing external damage will be refused and sent back to the sender regardless of the clearly marked RMA number and will remain the responsibility of the sender.

RMA Charges (Restocking): All qualified returns must be made in unopened, original packaging with all original materials.

- Initial shipments of equipment that are refused upon attempted delivery, for any reason, are subject to restocking charges.
- The Dealer has up to 60 days from the date of purchase to return Vaddio product for credit for future purchases of Vaddio product only.
- The Dealer has 61 to 90 days from the date of purchase to return Vaddio product with a 15% restocking fee or \$50.00 fee, whichever amount is greater
- The Dealer has up to 30 days from the date of purchase to return OEM and other manufacturer's products with a 15% restocking fee or \$50.00 fee, whichever amount is greater.
- NOTE: Special Order products from other manufacturers (identified in the Vaddio Price Guide as noncancelable, nonreturnable and not refundable) are not eligible for advance replacement from Vaddio.

Advance Replacement Policies: For Vaddio manufactured products, advance replacement will be provided for up to one (1) year after the initial shipment of products.

- NOTE: OEM and other manufacturer's products are excluded from the Vaddio advance replacement policy. Advance replacement will be provided for up to 30 days after initial shipment of OEM products. Thereafter, a return to Vaddio and factory repair is offered during the other manufacturer's warranty period. Vaddio will determine if the returned product is qualified for the OEM warranty.
- NOTE: Special Order products from other manufacturers (identified in the Vaddio Price Guide as noncancelable, nonreturnable and not refundable) are not eligible for advance replacement from Vaddio.

Advance Replacement Procedures: The Vaddio Dealer must submit a non-revocable purchase order for advance replacement equipment at normal dealer pricing. Credit shall be issued upon complete product return (including all accessories) for dealers with Net 30 terms. For credit card accounts, charges will be assessed to the credit card for the replacement and credited back upon complete product return.

- Returns must be made in the original Vaddio packaging with all original materials if at all possible. Vaddio products with missing original materials will be billed to the dealer at dealer price.
- NOTE: OEM products must be returned in the original packaging with all materials and the RMA number written on the shipping label only and not on the OEM box. If the return is incomplete and/or the OEM box is defaced, the product shall be returned to the dealer and the RMA will not be credited.
- Equipment returned with “No Trouble Found” after advanced replacement will be assessed a full 15% or \$50.00 restocking fee (whichever is greater) for each item and may also be assessed for additional charges to compensate for wear, damages and reconditioning.
- All returns must be accompanied by RMA # as stated above.
- All Advanced Replacement products are sent via 2-day service in the continental USA. If the product is requested to be sent via priority or overnight shipping, the Dealer shall pay shipping costs. The dealer can elect to supply their preferred shipping account number.
- International customers are responsible for all freight charges for equipment returned to Vaddio, including international shipping, taxes, and duties, insurance and all other associated logistic charges.

Warranty Repair Terms and Procedures: Vaddio will repair any product free of charge, including parts and labor, within the terms outlined in the warranty agreement for that product.

- Customers must provide proof of the product’s purchase date.
- Product that is within the warranty period will be repaired under the non-warranty terms if:
 - The equipment has been damaged by negligence, accident, act of God, mishandling, used with the incorrect, modified or extended power supply or has not been operated in accordance with the procedures described in the operating and technical instructions.
 - The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative.
 - Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment, which in the determination of the Manufacturer, shall have affected the performance, safety or reliability of the equipment; or the equipment’s original serial number has been modified or removed.
- Customer is responsible for shipping charges to send defective product under warranty to Vaddio. Vaddio will pay ground service return shipping charges during the 2nd year of the warranty period.
- Standard return shipping method for products under warranty, but out of the advance replacement warranty period, is ground shipment. Extra charges associated with priority shipping, when requested, will be the responsibility of the customer.

Non-Warranty Repair Terms: Vaddio will repair any non-obsolete product that does not meet the terms of the warranty. Non-warranty repair terms are as follows:

- The customer is responsible for, and agrees to pay, all parts and labor costs associated with the repair. Standard non-warranty repair charges are outlined below.
- Customers must provide payment method and one of the following, prior to receiving an RMA:
 - Hard copy of a PO, for dealers with Net 30 terms and in good standing with Vaddio.
 - Valid credit card number - Credit card will be charged upon shipping repaired product back to customer.
- Request for COD: Customers will be notified of COD charges prior to shipping repaired unit.
- Customer is responsible for all shipping charges both to and from Vaddio, and may use their own carrier.
- Customers will receive a courtesy call notifying them of total repair charges prior to return shipping.

Non-Warranty Repair Charges: Total repair charges (per unit) for a non-warranty repair consist of the following:

- Cost of any replacement parts needed to repair the defect.
- Labor costs billed per hour after minimum charges/time.
- Labor charges include troubleshooting and repair time only.
- Burn-in time and final test time is not included in the labor charges.
- Labor time is rounded to the nearest quarter hour.
- Labor charges are billed at the prevailing rate for the category of equipment repaired, after minimum charges/time. For prevailing labor rates, please contact the Vaddio technical support.
- All shipping and handling costs are the responsibility of the customer for non-warranty repairs.

Minimum Labor Charges: All non-warranty repairs are subject to a minimum evaluation/repair labor charge even if there is no problem found. Please contact Vaddio technical support for the current applicable rate.

Repair Charge Estimates: Estimates on repair charges for a specific problem will not be given before an RMA is issued and the actual product has been evaluated by a Vaddio technician. Repair estimates will be given after the repair department receives and evaluates the unit.

- Customers requesting an estimate on repair charges must do so up front when they call in for an RMA. The RMA team will call or email with the estimate after evaluating the unit and before proceeding with the repair.
- Any product evaluated for a repair estimate is still subject to the minimum labor charges even if the customer decides not to proceed with the repair.
- Vaddio does not guarantee estimates given on repair charges. Actual repair costs may exceed the estimate.
- Customer is responsible for actual repair charges, regardless of estimate.

Repair Policy Notes:

- **Duration of Repair:** Products are repaired on a first come first serve basis. The turn-a-round time of a particular repair is dependent upon circumstances such as product type, the nature of the problem and current repair volumes. Requests for expedited repair service will be considered on a case-by-case basis.
- **Repair Warranty:** Vaddio guarantees all of its repair work, performed on non-warranty items, for 90 days from the day the repaired product is shipped back to the customer. If the original problem described was not resolved or reoccurs within the 90-day period, Vaddio will repair the unit free of labor charges. However additional material charges may apply unless the parts used to affect the repair are again deemed defective.

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

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Carl Sagan, Bruce Murray, Louis Friedman (founders) and Harry Ashmore (advisor), on the occasion of signing the papers formally incorporating The Planetary Society

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Main Control Room / Mission Control Room of ESA at the European Space Operations Centre (ESOC) in Darmstadt, Germany

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

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

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

Nicolas Altobelli, Rosetta Scientist at ESA's European Space Astronomy Centre, Villanueva de la Cañada, Madrid, Spain

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

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Index

A

- access 8-9
 - administrator 9
 - guest 8
 - operator 8
- accessories 2
- admin login 7, 9, 16
 - changing 16
 - default 7
- AGC (automatic gain control) 25
- API 36-45
 - syntax help 45
- audio 3, 24-29, 38-40
 - adjustments 24-26, 28
 - allowing soft client to control 29
 - controls 24-25
 - crosspoint gain 28, 40
 - delay 26
 - matrix, editing 27
 - muting 24, 38
 - ports 3
 - routing 27, 39
 - volume 24
- Audio page (web) 24-27
- automatic NTP updating (setting) 15

B

- backing up a configuration 20-21
- bandwidth 30
- behavior settings (summary) 24
- bit rate (IP streaming setting) 30
- browser 7, 18
 - compatibility 7
 - tab label 18

C

- cable 4, 6, 47
 - connectors 4
 - length, maximum 4
 - please test them (PLEASE) 47
 - RS-232 pin-out 6
- capabilities 1, 46
- cheat sheet 10
 - web interface 10
- cleaning 48

- command history 45
- commands 37-45
- compatibility 7
 - browsers 7
- configuration data 21
 - exporting 21
 - importing 21
- configuration, saving or restoring 20
- connection diagram 5
- connector panel 3
- Constant Bit Rate (IP streaming setting) 30
- crosspoint gain 28, 40

D

- damage, preventing 4, 6
- date and time settings 15
- default IP address 7
- default settings, restoring 44, 48
- device name, USB 29, 41
 - editing 29
- DHCP addressing 13
- diagnosing problems 47
- Diagnostics page (web) 23
- diagram, connection 5
- dynamic range 25

E

- equalizer 25
- expire idle sessions 16
- exporting configuration data 21

F

- factory defaults, restoring 44, 48
- fault isolation 47
- filters, high-pass and low-pass 25
- firmware 22, 44
 - update 22
 - version 44
- Frame Rate (IP streaming setting) 30
- front panel 3
 - controls 3

G

- gain 28, 40
 - audio, crosspoint 28, 40
- getting help 23
- guest access 8, 16
 - allowing 16

H

HDMI input 3
 Help page (web) 23
 HID audio controls 29
 high-pass filter (microphone adjustment) 25
 hostname 13

I

importing a configuration 20-21
 inactive sessions (web interface) 16
 indicator lights 3
 information, room 18
 IP address 3, 7-8, 11, 13-14
 changing to static 14
 configuring 11, 13
 conflicts, preventing 11
 default 7, 11, 13
 discovering 3, 7-8
 IP streaming 30, 34, 41-42
 enabling 34
 settings 30, 41-42

L

labels 18, 35
 browser tab 18
 inputs, outputs, presets 35
 room 18
 lip sync 26
 log files 23
 login 7, 9
 low-pass filter adjustment (microphones) 25

M

Max Bandwidth (IP streaming setting) 30
 maximum cable lengths 4
 microphones 24
 adjusting volume 24
 filter adjustments 25
 muting 24, 38
 microphones 24, 38
 speakers 24, 38

N

network configuration 7, 11, 13, 43
 current 43
 default 7, 13
 Network/PoE port 3
 Networking page (web) 11, 13-15

NTP server 15

O

operating environment 4, 48
 operator 8
 access 8

P

packing list 2
 page 11, 13-16, 18-20, 22-27, 29, 48
 Audio 24-27
 Diagnostics 23
 Help 23
 Networking 11, 13-15
 Room Labels 18
 Security 16
 Streaming 29
 System 19-20, 22, 48
 part numbers 2
 passwords 9, 16
 default 9
 performance specifications 46
 pin-out, RS-232 6
 ping command 42
 power up 6
 order 6
 product capabilities 1, 46
 product returns and repairs 51
 puffy logo badge 3

Q

quick reference 10
 web interface 10

R

rebooting 3, 19, 43
 regulatory compliance 49
 resolution 30
 IP streaming 30
 restoring a configuration 20-21
 restoring default settings 44, 48
 RJ-45 connectors 4
 room information 18
 Room Labels page (web) 18
 routing audio 27
 RS-232 3, 6, 36
 cable pin-out 6
 communication settings 6
 port 3

S

safety information 4, 48
 saving a configuration 20
 Security page (web) 16
 serial command API 36
 settings, default, restoring 44
 software update 22
 solving problems 47
 source 27
 audio 27
 speakers 24-26
 adjusting for differing speech volumes 25
 adjusting volume 24
 equalizer 25
 muting 24
 synchronizing audio with video 26
 static IP address 11, 13
 storage environment 48
 storing a configuration 20
 streaming 24, 29-30, 34, 41-42
 audio 24
 enabling 34
 IP 30
 settings 29-30, 41
 state 42
 USB 29
 Streaming page (web) 29
 supported web browsers 7
 synchronizing audio with video 26
 System page (web) 19-20, 22, 48
 system time 15

T

technical support 23
 Telnet access, disabling/enabling 16
 Telnet API syntax 45
 Telnet session 36, 45
 ending 45
 history 45
 temperature, operating and storage 48
 third-party control 36
 time and date settings 15
 time zone 15
 troubleshooting 47

U

update, firmware 22

USB 3, 29, 41

 conferencing audio 29
 device name 41
 device name, editing 29
 port 3
 USB Device Name (setting) 29
 USB Record volume (setting) 24
 USB streaming 29, 34, 41
 enabling 34
 settings 29
 status 41
 user login 7-8, 16
 changing 16
 default 7

V

Variable Bit Rate (IP streaming setting) 30
 version, firmware 44
 Video Quality (IP streaming setting) 30
 voilà, a small cat 48
 volume 24, 37
 command 37
 controls 24

W

warranty 4, 51
 web browsers supported 7
 web interface 8-9, 11, 13-16, 18-20, 22-27, 29, 48
 accessing 8
 admin access 9
 Audio page 24-27
 Diagnostics page 23
 Help page 23
 Networking page 11, 13-15
 Room Labels 18
 Security page 16
 Streaming page 29
 System page 19-20, 22, 48
 what's in the box 2

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