AV BRIDGE

USB/IP Streaming Appliance

Part Numbers:

999-8210-000: AV Bridge (North America)

999-8210-001: AV Bridge (International)

Table of Contents

Overview

Vaddio's AV Bridge is a room based HD Media Streaming appliance for USB and IP streaming of content originating from traditional audio and video equipment.   The AV Bridge is designed for pro AV applications offering a flexible audio and video interface that's controllable from an embedded web server or front panel menu. A/V Bridge accepts a

AV Bridge shown with provided Rack Ears Attached

multitude of video input resolutions from standard definition (480i/NTSC and 576i/PAL) up to HD 1080p/60 in HDMI and YPbPr, including wide-screen VESA type PC resolutions (RGBHV) and it also incorporates stereo audio inputs facilitating connection to professional AV equipment.

The USB streaming functions using MJPEG (Motion JPEG) and standard UVC (USB Video Class) with UAC (USB Audio Class) drivers eliminating the need for installation of custom software drivers on the Host PC. The IP streaming uses RTSP and HLS (Apple's variant on HTTP streaming) and encodes H.264 video with AAC Audio. The Ethernet port also provides access to internal web pages for control, set-up and updating the AV Bridge.

Use the AV Bridge in lecture/capture recording applications to "bridge" video and audio signals into a PC for recording, storage, editing, rebroadcasting meetings or worship services and retrofit existing meeting rooms by simply plugging a USB cable into a Host PC or connecting to an IP network.

The AV Bridge supports high definition encoding of audio and video sources, producing superior quality results at the fraction of the cost of other products. The AV Bridge seamlessly integrates with Vaddio's HD cameras, presentation systems, video mixing consoles and audio products. The AV Bridge is an unsurpassable value because of its ease of use and plug and play functionality.

Intended Use

Before operating the device, please read the entire manual thoroughly. The system was designed, built and tested for use indoors, with the provided power supply and cabling. The use of a power supply other than the one provided or outdoor operation has not been tested and could damage the device and/or create a potentially unsafe operating condition.

Important Safeguards

Read and understand all instructions before using. Do not operate any device if it has been dropped or damaged. In this case, a Vaddio technician must examine the product before operating. To reduce the risk of electric shock, do not immerse in water or other liquids and avoid extremely humid conditions.

Use only the power supply provided with the system. Use of any unauthorized power supply will void any and all warranties.

Do not connect Power over Ethernet (PoE) cables directly to the RJ-45 ports on the device as damage may result.
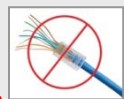
Do not use "pass-thru" type RJ-45 connectors. If they are crimped incorrectly, they can damage the connectors on the product, cause intermittent connections, and degrade signal quality. Physical damage to the connectors will void your warranty. For best results use standard RJ-45 connectors and test all cables for proper pin-outs prior to use.

Product Updates

From time to time Vaddio issues firmware updates for our products, which may render some information in this manual inaccurate. Please check the current product release notes on https://www.legrandav.com/ for the latest information.

Unpacking

Carefully remove the device and all of the parts from the packaging. Unpack and identify the following parts:

For P/N 999-8510-000 AV Bridge (North America)

- AV Bridge HD Audio/Video Encoder
- Rack Ears
- 18 VDC, 2.75 Amp Switching Power Supply with AC Power Cord for North America
- 6 ft (1.83m) USB 2.0 Cable, Type-A Male to Type-B Male (black)
- Rubber feet for bottom of enclosure, qty. 4
- Quick-Start Guide

For P/N 999-8510-000 AV Bridge (International)

- AV Bridge HD Audio/Video Encoder
- Rack Ears
- 18 VDC, 2.75 Amp Switching Power Supply with AC Power Cords for Europe and UK
- 6 ft (1.83m) USB 2.0 Cable, Type-A Male to Type-B Male (black)
- Rubber feet for bottom of enclosure, qty. 4
- Quick-Start Guide

Anatomy of the AV Bridge

Front Panel Features

LCD Display: LCD display for menu system - displays configuration information.

Menu Navigation Controls: Rotary navigation knob to access menu items and information on LCD display. Also includes Selection and Cancel buttons for user interface of system menu.

Mute Controls: Video mute button stops streaming video to USB and injects color bar image. Audio mute button stops audio from being sent on USB record channel.

Audio Level Controls: Rotary encoder knob to adjust audio input level being sent to USB record channel. Functions as the master volume control for both left and right input channels. Volume increases by rotating clockwise and decreases by rotating counterclockwise.

Power/Reset Button: System reset for the A/V Bridge.

Input LED Indicators: Depicts the current video (HDMI, HD, or SD) and audio input selection and signal characteristics - Unbalanced (High-Z) or Balanced (Low-Z).

Rear Panel Features

Power Connector: 5.5mm OD x 2.5mm ID, center positive coaxial connector for supplying power to the device. Use with provided desktop 18 VDC, 2.75 Amp power supply.

DIP Switches: Used to reset device to factory defaults. Setting all DIP switches to the off-position will reset the unit to factory defaults on the next power cycle. User will lose all programmed configurations on the factory default operation.

RS-232: RS-232 communication port on an RJ-45 connector supporting Vaddio's serial command protocol. Used for interfacing with AMX/Crestron control systems.

USB Port: USB Type B connector for interface to the Host PC. Emulates a Webcam and an audio record device.

Network: 10/100 Ethernet with embedded web server for configuration and management of the AV bridge. This port will stream H.264 and AAC audio.

Video Inputs: Video inputs supporting HDMI, HD or SD (SD stands for Standard Definition, NTSC or PAL video formats). The HD connection supports either YPbPr or select wide screen RGBHV resolutions on the DE-15 connector. Video sources can be switched during a USB streaming session.

Audio Inputs: Stereo balanced +4dBu audio on XLR connectors and stereo unbalanced -10dBV on RCA connectors. The audio inputs are line level and user selectable between balanced or unbalanced.

First-Time Set-up with the AV Bridge:

The AV Bridge is a USB or IP streaming appliance that provides a Plug & Play type interface (or bridge) between traditional A/V room equipment and a computer using Unified Communications (UC), lecture/capture, or recording software.

The audio and video can work together as inputs to the AV Bridge, or can be used separately depending on the requirements of the installation.

Diagram: The simple way to look at AV Bridge

The AV Bridge "bridges" the A/V signals into the PC for applications like lecture capture, recording, storage for later playback, editing, distribution and other programs that can manipulate the content that the AV Bridge provides.
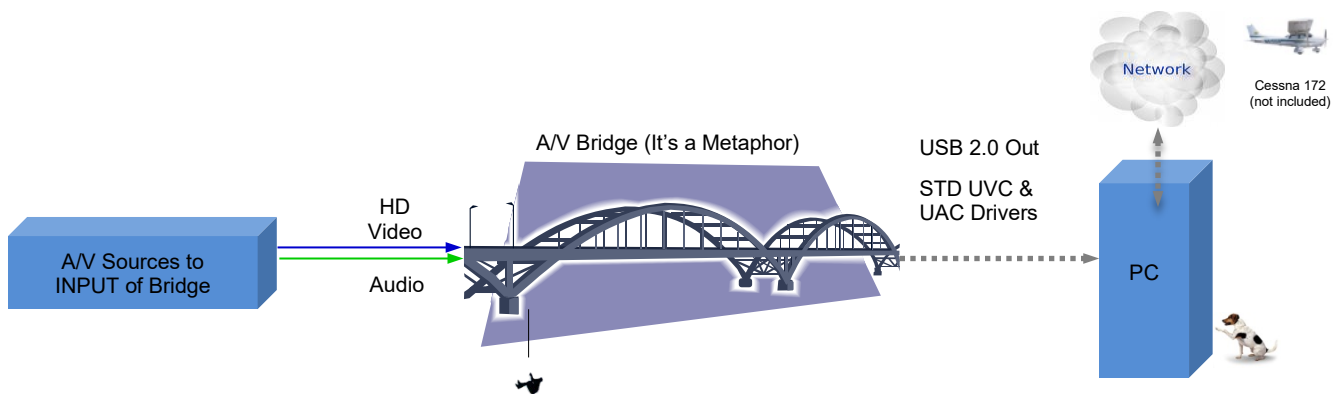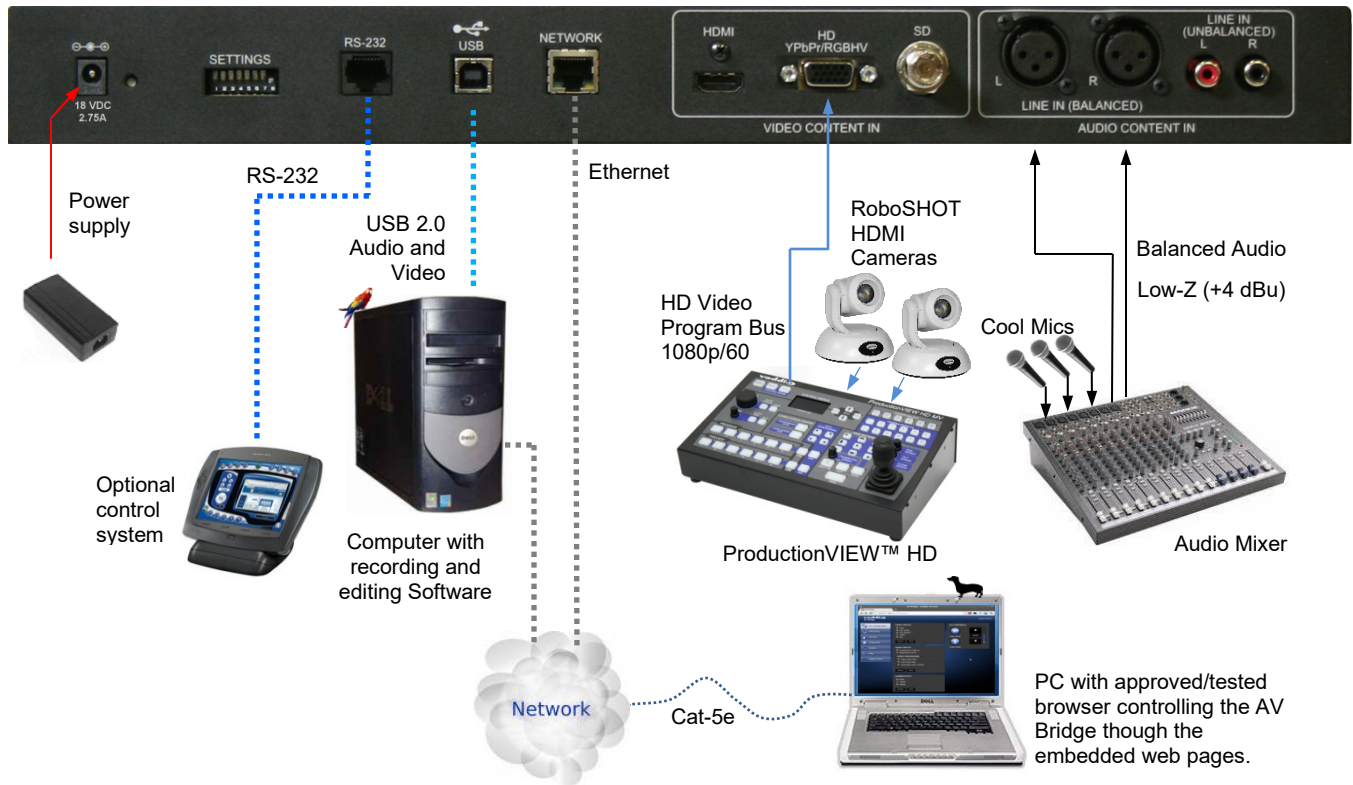

Diagram: A small Lecture Capture System

This system uses a RoboSHOT HDMI camera, microphones, and the AV Bridge to encode the A/V signals to USB 2.0 for use with the User's PC and Lecture Capture software.

Installation Instructions

Step 1: Plug in the 18VDC, 2.75 Amp power supply included with the AV Bridge package. The front panel LCD display will illuminate blue when the power is applied. The menu is now active and ready for configuration.

Step 2: Connect the Video Content Source(s) to the AV Bridge for USB 2.0 Streaming. More than one source can be attached and selected from the front panel or web page menu. In this case a ProductionVIEW HD with HD-22 Cameras is connected to the HD-YPbPr input.

Step 3: Connect the Audio Content Source(s) to the AV Bridge. In this case, a mixer and really good mics are connected using the balanced audio inputs.

Step 4: Connect the Host PC to the AV Bridge with the provided USB 2.0 Type-A Male to Type-B Male cable.

<div align="center">-OR-</div>

Step 5: For IP streaming and control, connect the AV Bridge to the LAN which will allow set-up, configuration and control of the AV Bridge via the internal web pages in AV Bridge from any of the approved browsers.

Step 6: From the front panel Menu System (Large Knob, Select and Cancel button), in this example, select the balanced audio input, and select HD-YPbPr video input that are to be streamed.

Note: The AV Bridge will use DHCP (by default) to obtain an IP address when connected to the LAN. The IP address will be viewable on the front panel menu. In absence of a DHCP server, the AV Bridge will default to a Static IP address which is 169.254.1.1

Connector Pin Outs

RS-232 on AV Bridge

Baud Rate: Selectable 9600, 19.2, or 38.4 kbps; default is 38.4 kbps

Pin #	RS-232 Port
1	Unused
2	Unused
3	Unused
4	Unused
5	Unused
6	GND
7	TXD
8	RXD
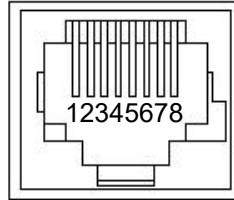
RS-232 Format: The RS-232 command format is based communication interface of:

- Start Bit: 1
- Stop Bit: 1
- Data: 8
- Polarity: None
- Flow Control: None
- Baud Rate: User selectable between 9600, 19,200, 38,400 **(Default is 38,400 bps)**

The DE-15 video port will accept either RGBHV or YPbPr video formats.

Pin	RGBHV	YPbPr
1	Red	Pr
2	Green	Y
3	Blue	Pb
4	-	-
5	N/C	N/C -
6	Red GND	Pr GND
7	Green GND	Y GND
8	Blue GND	Pb GND
9	No Pin	-
10	GND	GND
11	-	-
12	-	-
13	H-Sync	-
14	V-Sync	-
15	N/C	N/C
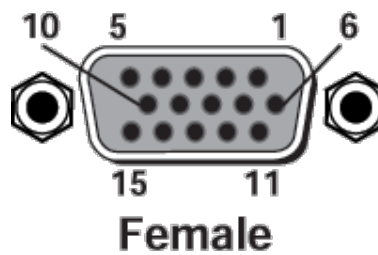
Compatibility

We have tested this product with these web browsers:

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

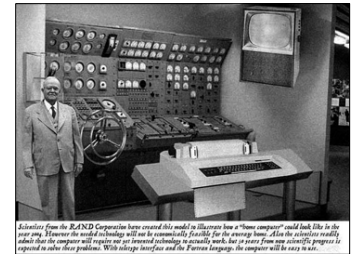We test using the browser version available from the vendor at that time. Other browsers (including older versions of the ones on this list) are likely to work also.

AV Bridge is compatible with most soft conferencing applications, lecture capture applications, and media players.

The table below lists resolutions and frame rates available internally; the host computer and the AV Bridge auto-negotiate these within the application, which may optimize for high quality or low bandwidth. An option for setting video color space as 4:2:0 or 4:2:2 is available in the web interface. The 4:2:0 color space reduces USB bandwidth by up to 25% and may actually improve video quality with some UC soft clients.

Supported UVC Resolutions

Format	Resolution	Frame Rates	Aspect Ratio
MJPEG	720p (1280 x 720)	15/30	16:9
	960 x 544	15/30	~16:9
	704 x 576 (4CIF)	15/30	~4:3
	640 x 480 (VGA)	15/30	4:3
	360p (640 x 360)	15/30	16:9
	424 x 240	15/30	~16:9
	352 x 240 (SIF)	15/30	~4:3
	320 x 240 (QVGA)	15/30	4:3
	180p (320 x 180)	15/30	16:9

Video Inputs - Supported Formats and Resolutions

Video inputs supporting HDMI, HD or SD (SD stands for Standard Definition, NTSC or PAL video formats). The DE-15 HD connection supports either YPbPr or select wide screen RGBHV resolutions on the DE-15 connector.

HDMI and YPbPr

- 1080p/60/59.94/50/30/25 frames/s
- 1080i/59.94/50 fields/sec
- 720p/60/59.94/50 frames/s

RGBHV (VESA RESOLUTIONS):

- 1280 x 720 @ 60Hz (16:9)
- 1280 x 768 @ 60Hz (15:9)
- 1280 x 800 @ 60Hz (16:10)
- 1360 x 768 @ 60Hz (16:9)
- 1024 x 768 @ 60Hz (4:3 centered in 16:9 frame)

DVI (on HDMI connector using sRGB color space)

- 1080p/60/59.94/50 frames/s
- 1080i/59.94/50Hz fields/sec
- 720p/60/59.94/50Hz frames/s
- 1440 x 900 @ 60Hz
- 1360 x 76 @ 60Hz
- 1280 x 800 @ 60 Hz
- 1280 x 768 @ 60Hz
- 1280 x 720 @ 60Hz

SD (Standard Definition – NTSC or PAL) Composite Video

- 480i/29.97Hz NTSC
- 576i/25Hz PAL

System Configuration and Programming

The front panel menu system allows some basic configuration of the AV Bridge and serves to display the important system parameters and settings. The menu tree is depicted below:

> Start Page: Initializing and Audio Ladder Appear

> Main Menu

       > Audio Inputs (Selectable from front panel)

           > Balanced (Low Z)

           > Unbalanced (High Z)

> Video Inputs (Selectable from front panel if connected to video source only)

           > Auto

           > HD YPbPr

           > HD RGBHV

> HDMI

>SD

       > Streaming

           > USB Streaming

> IP Streaming (resolution and quality will be shown)

           Resolution   (i.e. 720p)

           Quality   (i.e. High Quality, Standard, Low bandwidth)

>Network Configuration (read only)

>Host Name

       > Network Settings (read only)

           > Mac Address:

           > IP Address:

           > Subnet Mask:

           > IP Gateway:

           >Type: DHCP

      > Version

           > 2.1.0

Menu Selections

Video Input Selection: This allows the user to select between Auto-Detection, HDMI, HD, or SD video inputs. These selections correspond to the connectors on the back panel of the AV Bridge. The HD connector (DE-15) will support signal formats of up to 1080p/60 on either YPbPr or RGBHV inputs. The HDMI connector only accepts HDMI and DVI signals up to 1080p/60. The *SD signals are Standard Definition, composite video only* at 480i/NTSC and 576i/PAL. This SD input is not an SDI or HD-SDI input, it's just standard definition.

Audio Input Selection: The user has the ability to select between the balanced stereo audio line input and an unbalanced stereo line input.

Network Settings: The Network settings is a "read only" message representing the current IP addresses defined for the AV Bridge by the webpages. Properties displayed include:

- Mac Address:
- IP Address:
- Subnet Mask:
- IP Gateway:
- Net Type: DHCP

Hotkey Buttons and Indicators: A number of common user controls have been included on the front panel for quick access by the user during a streaming session. Dedicated controls and indicators include:

- **Video Mute**: Stops the video input source from being sent to the Host PC and replaces with a color bar image. The Video Mute button will be backlit Red when in mute state.
- **Audio Mute:** This button mutes the input audio source being sent to the Host PC.   The Audio Mute button will be backlit in red when in mute state.
- **Audio Level:** A rotary control with 10 steps (but goes to 11) allows the user to adjust the audio input level being sent to the Host PC. A visual volume level is presented on the LCD to provide feedback of the current audio level. (Note: This level is not the same as the PC's record channel volume controls.)   The audio ladder will show a relative volume level as it is adjusted however, after it shows that level for a few seconds it will act as a VU meter.
- **Video Input LED:** A visual LED indicator represents the current video source being sent to the Host PC. The selected source will be indicated in Blue.
- **Audio Input LED:** A visual indication of current audio input source being sent to the Host PC. Selected source will be blue.

Initial Device Set-Up and Access

When any Vaddio product is shipped from the factory, there is no admin password and the administrative controls are not available. For units using version 2.2.0 or later firmware, this is also true if you restore factory defaults, which returns the device to a "like new" state. You must set the admin password using the web interface.

Functions Enabled after Initial Device Set-Up

Until the admin password is set and any other initial tasks are completed, the control and administrative interfaces are not available.

- You will not be able to open a Telnet session to this product until you set the password using the web interface.
- You will not be able to open a session over the RS-232 connection until you set the admin password using the web interface.
- You will need to set the admin password again if you restore factory defaults.

Initial device set-up includes setting the admin password, and may include additional tasks. After initial device set-up is complete, you will also need to complete system administration tasks in the web interface to define how the device behaves as an element of your network.

Initial Access to the Web Interface

Enter http:// followed by the device's IP address or hostname in your browser's address bar.

The first time the product's web interface is accessed, it presents a dialog box to set the password. This page warns that the connection is not secure because the device does not support HTTPS.

You will also encounter this page after restoring factory defaults. After you complete the initial set-up, you will be able to work with the product.

Create and confirm the admin password, and complete any other required tasks such as accepting agreements. Then select Submit. The main administrative web interface opens.

Web Pages Tour

This chapter covers the functions available on each page of the web interface.

Screen Shot: Login

The AV Bridge web interface is an administrative management tool and requires authentication for access. You will encounter the login page when you access the web interface after the initial device set-up has been done.
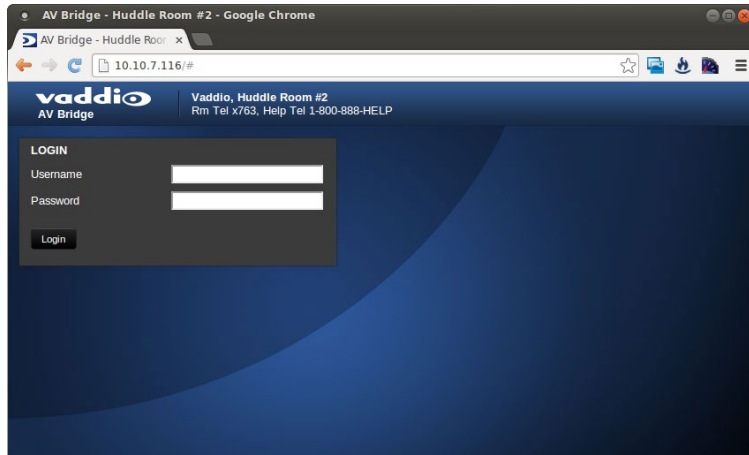

Screen Shot: A/V Configuration Web Page

Choose video input, audio Input and connectivity speed (baud rate is defaulted at 38400). Video mute and audio mute can be selected and the gain control of the audio is available as well.
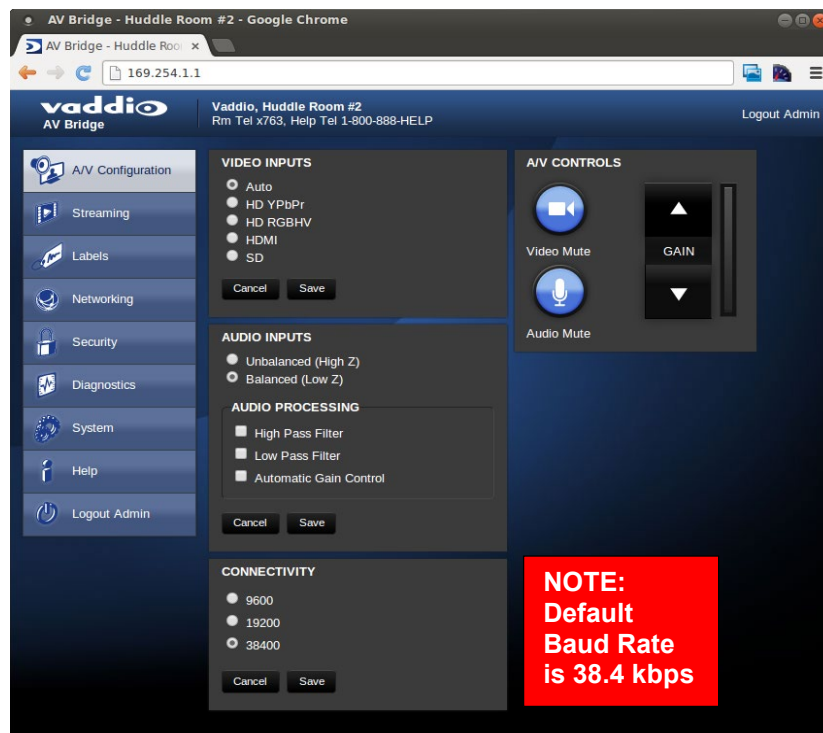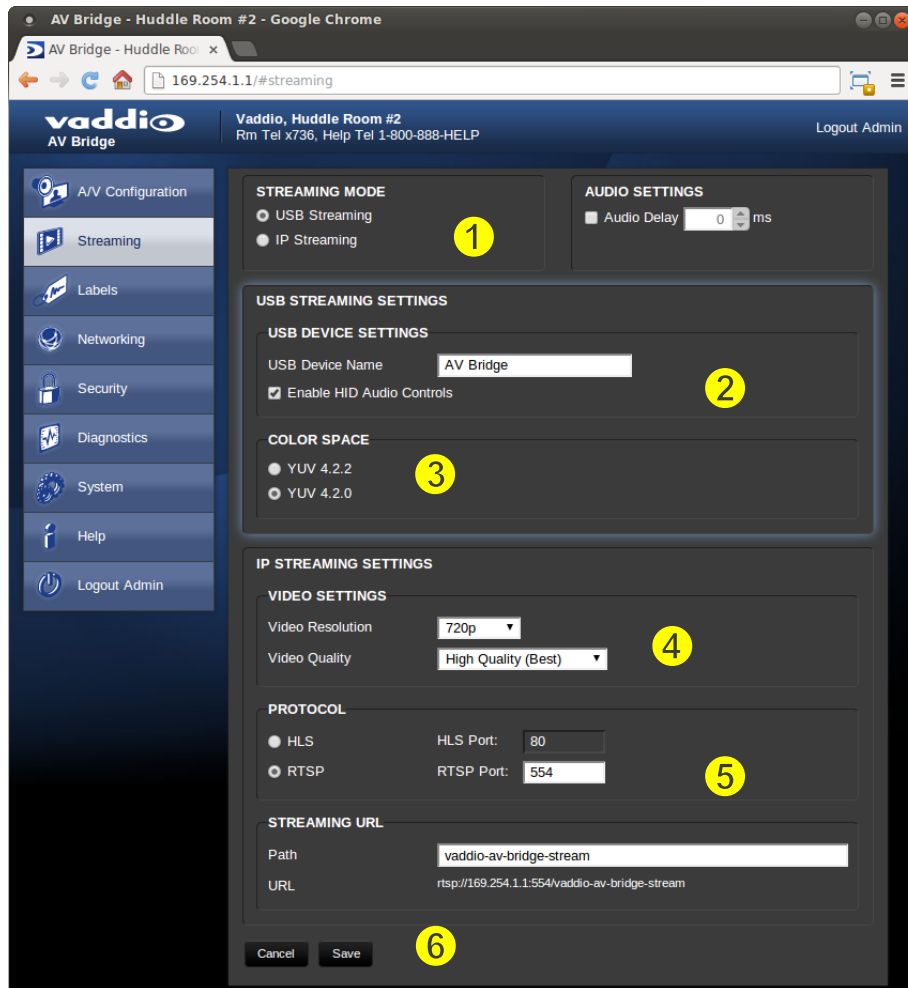
Screen Shot: AV Configuration

When the audio and video is muted the A/V Configuration page, the control icons will turn red, click on the buttons to unmute the audio or video.
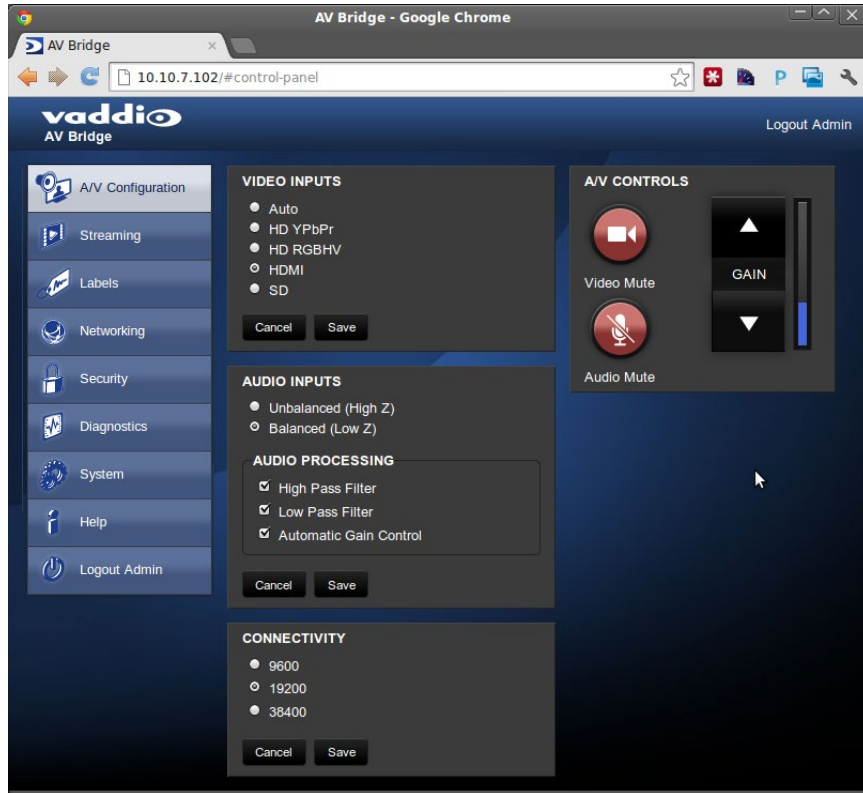
Screen Shot: Streaming

The Streaming Page allows an administrator to set up the type of streaming, color depth, video speed and quality, protocol and path.

1. STREAMING MODE: USB 2.0 streaming or IP streaming (H.264); but not both at the same time. The Audio may need to be delayed so it arrives concurrently with the video. Audio delay is like the lip sync control on a BD player.

2. USB STREAMING SETTINGS: Add a device name (friendly name) and enable HID audio controls for applications that allow it.

3. COLOR SPACE: Allows you to reduce the color depth to 4:2:0, which is used with applications where image quality is not as critical or the window sizes available are small. The 4:2:2 color is used by many applications that take advantage of the video performance where the colors are more vivid and precise.

4. IP STREAMING SETTINGS: Adjust IP Streaming performance. AV Bridge is set up for a variable bit rate; you can select the resolution and the quality, such as High Quality (Best), Standard Quality (Better) and Low Bandwidth (Good). We've tried to eliminate bad combinations of streaming parameters, so you can't pick 1080p at a bit rate of 128Kbps, which would look totally wicked awful…if it worked at all.

5. IP STREAMING PROTOCOL: Allows you to choose the streaming protocol – RTSP or HLS (Apple's HTTP Live Streaming).– and the RTSP port number. (HLS is always on port 80.) RTSP is best for live applications, where HLS serves the Apple iOS devices and is better for playback due to the amount of buffering the HLS has built-in. The Streaming URL auto-populates; the path can be changed.

6. When finished setting up the streaming parameters, click on save to put the changes into effect or cancel to……cancel it.

Screen Shot: Room Labels

The room Labels menu allows you to label the company name, room name, room phone and help phone on a per camera basis. The labels appear on every page at the top of the page. Enter the room information and click Save.
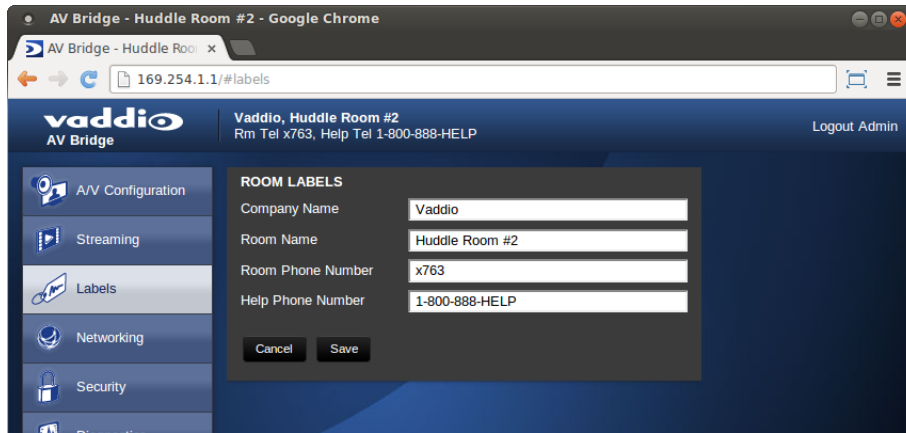

Screen Shot: Network Configuration – DHCP

The Networking page is used to configure the AV Bridge IP addressing. It supports either DHCP or Static IP address along with a Host Name. It also includes MAC address associated with the AV Bridge. All IP addressing is available on the front panel LCD as read only text.

Screen Shot: Network Configuration - Static IP

To set up the Ethernet Port to Static IP address, click on Static and enter the IP address, the subnet mask and the gateway and click on save. Double check the data prior to clicking save.
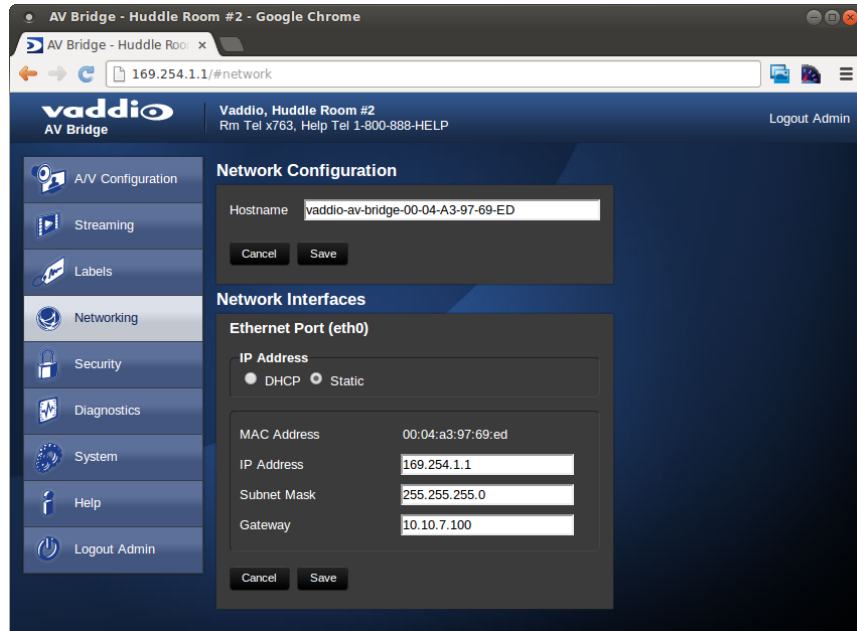
Screen Shot: Security

The admin account has a password for login security. This is set during initial device configuration, and can be changed at any time by the administrator. The admin account will always require a password entry for login to the administrator pages on the AV Bridge.
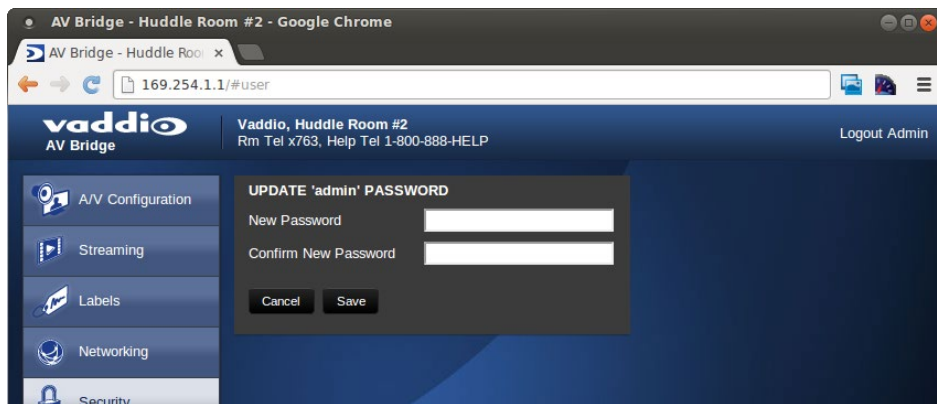
Screen Shot: System Menu

The system menu displays the software versions and allows firmware update, reboot, and restore factory defaults operations.

Updating AV Bridge Firmware

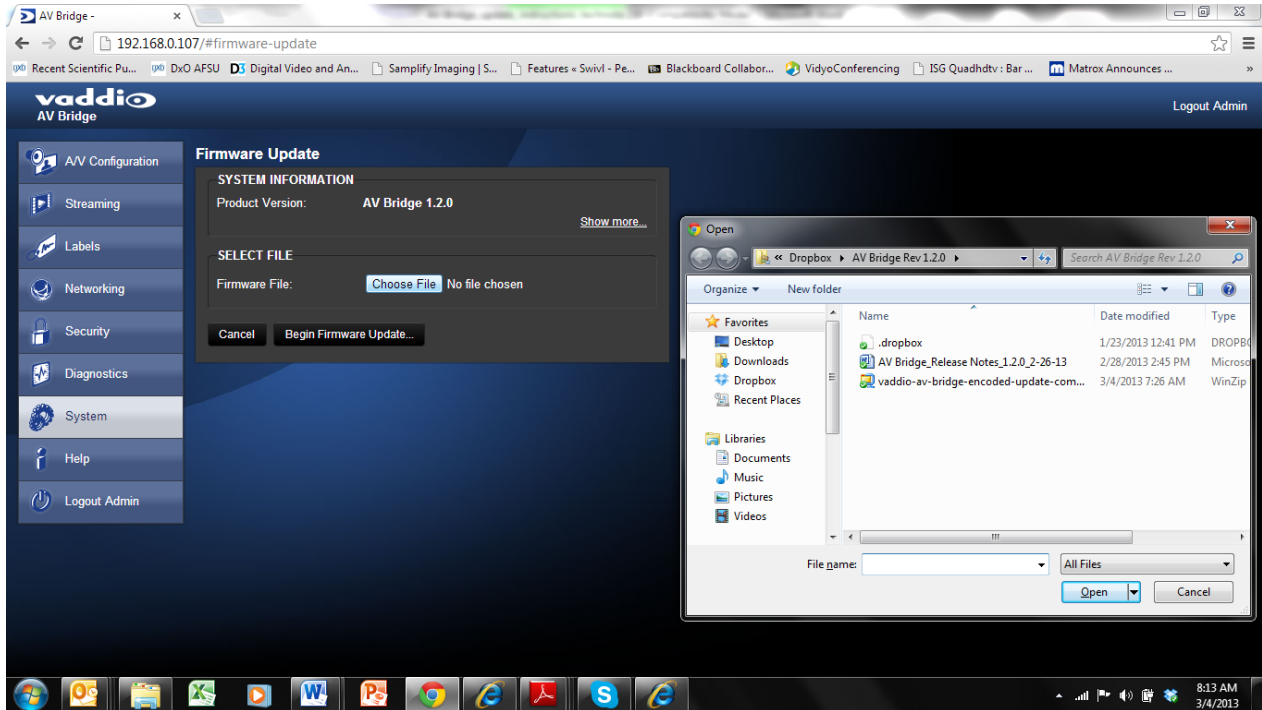1. Download the AV Bridge firmware from the AV Bridge product page on https://www.legrandav.com/

2. **DO NOT UNZIP FILE.**

3. Log in to the AV Bridge web interface. The IP address can be found on the front panel LCD of the AV Bridge.

4. Go to the Systems tab within the web pages. Select Choose File, and select the AV Bridge firmware you downloaded. Then select Begin Firmware Update.

5. After clicking on "Begin Firmware Update…" a confirmation pop-up and warning will be displayed. Please read and completely understand the pop-up warnings as it is easy to lose patience waiting for updates. Please read the warnings regarding the interruption of power below.
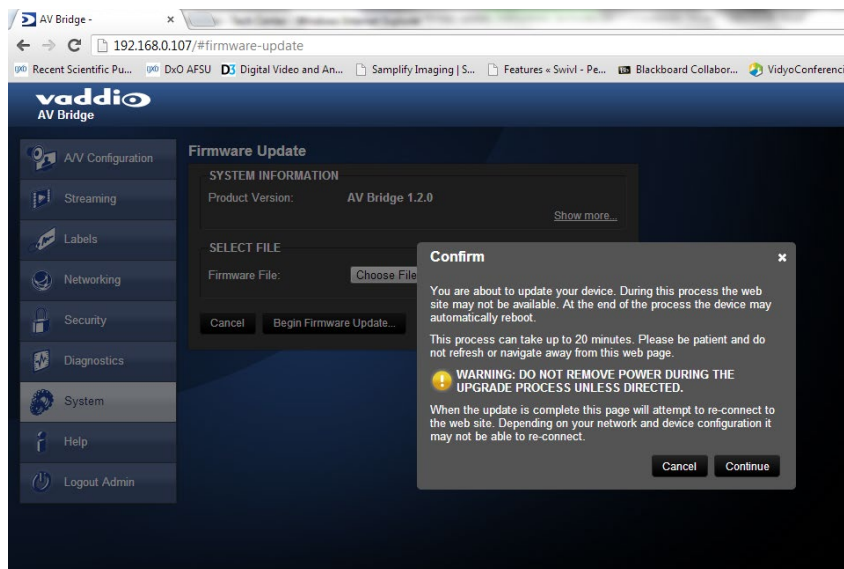
6. This update can take up to 15 minutes, the pop-up message window will identify progress of update and when it is completed.
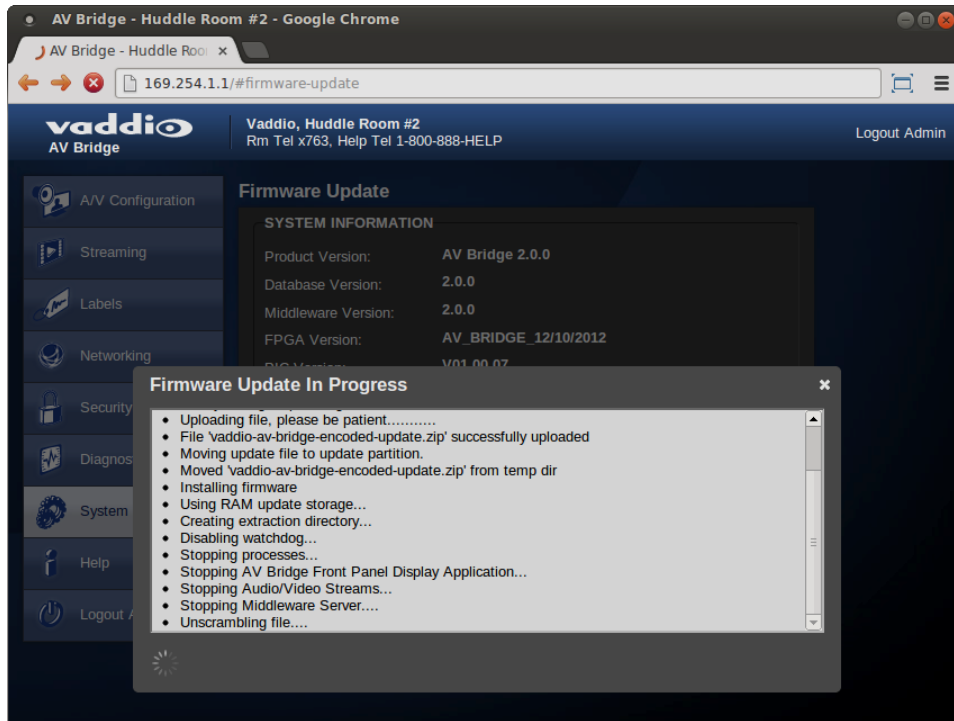
After the update is complete, the new version can be verified on the front panel LCD display or user can log on the web pages and navigate to the Help page. The version is displayed under system information. It is also located under the System page.

Restoring Factory Defaults

The AV Bridge can be restored to factory defaults with the DIP Switches on the rear of the device. It can also be done remotely with the internal web pages. The Process for defaulting AV Bridge to factory settings is:

Warning: Current settings will be erased.

You will need to do the initial device set-up procedure after restoring factory defaults.

1. Place all dip switches to the off position (down). A warning will be issued (without crocodile sign).
2. Press Reset on the front panel of the AV Bridge. Device will reboot to factory settings.
3. Put all DIP switches back up and set up the AV Bridge once again. You will need to do the initial device set-up again.

Note

You will need to do the initial device set-up procedure after restoring factory defaults.

Screen Shot: Help Menu

The Help menu provides general information on the AV Bridge and is intended to assist you in configuration and programming of the device. The Help also includes information on the current firmware release loaded on the device. Click on the support for product related documentation from the Vaddio website.
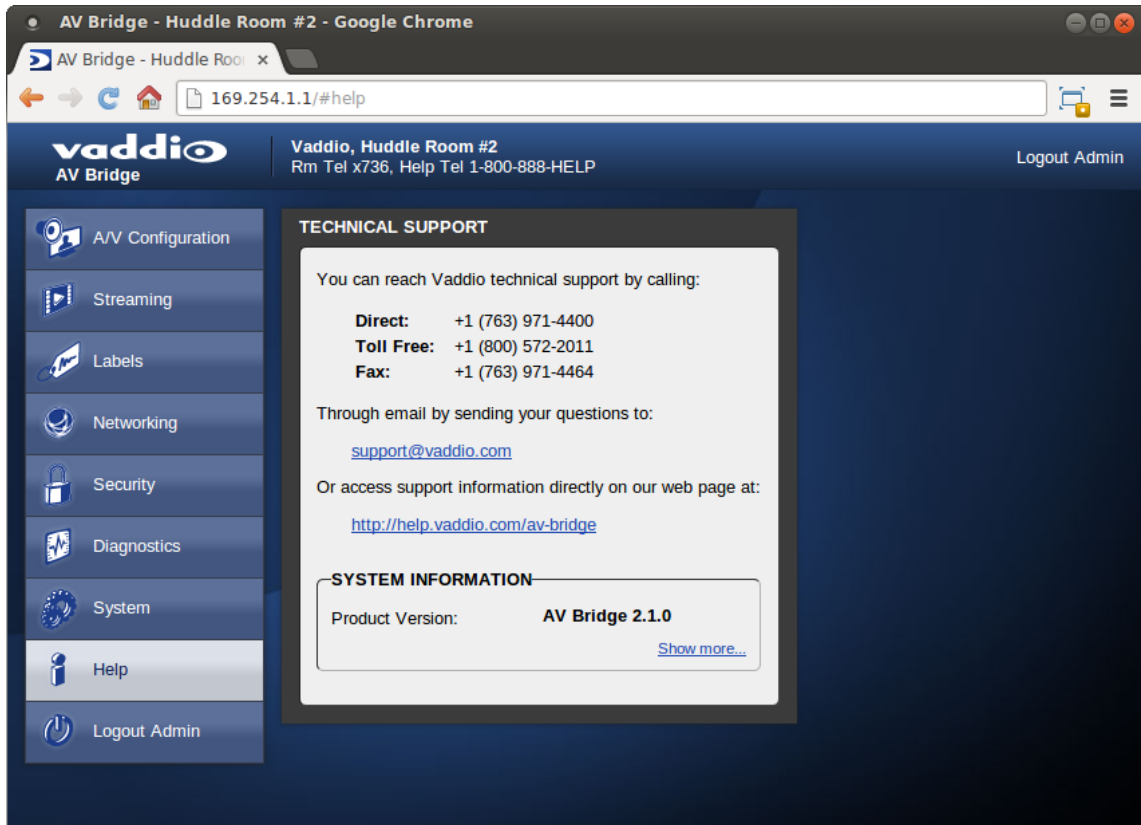
TECHNICAL SUPPORT NOTE:

Please work with your Network Administrator prior to calling Vaddio for technical support. Please have on-site network personnel initiate tech support calls with Vaddio only.

Screen Shot: Diagnostics

The diagnostics function within the AV Bridge is intended for advanced troubleshooting. It includes logging capabilities of key events and error reporting during normal operations. The internal logging function is setup as a revolving FIFO with estimated internal storage capabilities for up to one week. You can clear the log or download it to your computer.
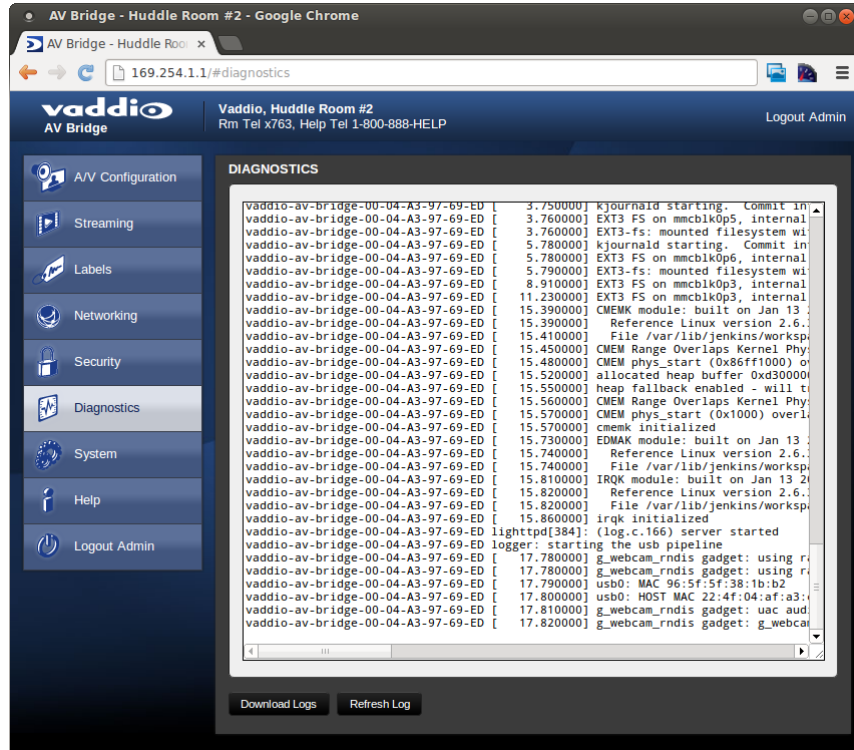
Logout Admin

The Logout function at the top of each page of the web interface…logs you out of the web interface.

Vaddio Serial Command API

The Vaddio Serial Command protocol is a high level text based command line interface supported on the RS-232 port or via telnet session on the AV Bridge.

The AV Bridge command application protocol interface is intended to allow external device such as AMX and Crestron to control the device. The protocol is based upon ASCII format following the VT100 terminal emulation standard and utilizes an intuitive textual command nomenclature for ease of use. The API is supported on both the RS-232 and Ethernet physical layers. All ASCII characters will be **<u>echoed</u>** to terminal program and appended with VT100 string -**ESC[J** (HEX- 1B 5B 4A). Vaddio Command lines are terminated on carriage return. After the carriage return, the VT100 appends with –**ESC[J** . Note that most terminal programs automatically strip the VT100 string.

General format usage follows a get/set structure. Usage examples for each type are:

Set Example:

> COMMAND: > audio mute set on
>
> RESPONSE: >OK

Get Example:

> COMMAND: > audio mute get
>
> RESPONSE: > audio mute on

Syntax Error Example:

> COMMAND: > audio mute on
>
> RESPONSE: > Syntax error: Unknown or incomplete command

CTRL 5- Clears the current serial buffer on the device.

RS-232 Format

- Start Bit: 1

- Stop Bit: 1

- Data: 8

- Polarity: None

- Flow Control: None

- Baud Rate: User selectable between 9600, 19,200, 38,400 **(Default is 38,400 bps)**

Telnet Format: The AV Bridge also supports the API over a network connection with a Telnet session. Telnet sessions require you to log in as admin. The default Telnet Port is 23. Command lines are terminated with carriage return. A complete list of API commands supported by the AV Bridge is described in the next section.
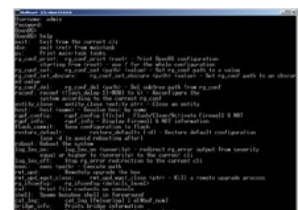
Image: Scintillating example of simulated Telnet session

Audio Input

NAME: audio input - Gets or sets the current audio input source

SYNOPSIS: audio *input* {get|balanced|unbalanced}

DESCRIPTION: Method used to get or set the current audio *input* source

OPTIONS

get   Get the current audio *input*
balanced   Set audio *input* to balanced
unbalanced   Set audio *input* to unbalanced
EXAMPLES

```
audio input get
```

```
input: balanced
```

Returns the current audio *input*

```
audio input unbalanced
```

```
OK
```

Sets the audio *input* to unbalanced

```
audio input balanced
```

```
OK
```

Sets the audio *input* to balanced

Audio Mute

NAME: audio mute - Gets or sets the current audio mute

SYNOPSIS: audio *mute* {get|on|off|toggle}

DESCRIPTION: Method used to get or set the current audio *mute*

OPTIONS

get   Get the current audio mute
on   Set audio mute to on
off   Set audio mute to off
toggle   Toggle the audio mute
EXAMPLES

```
audio mute get
```

```
mute: off
```

Returns the current audio mute

```
audio mute on
```

```
OK
```

Turns the audio mute on

```
audio mute off
```

```
OK
```

Turns the audio mute off

Audio Volume

NAME: audio volume - Gets or sets the current audio volume

SYNOPSIS: audio volume {get|up|down|set <level>}

DESCRIPTION: Method used to get or set the current audio volume

OPTIONS

get   Get the current audio volume
up   Increment audio volume one step
down   Decrement audio volume one step
set   Set the audio volume level. The level must be in the range from 0-10 inclusive
EXAMPLES

```
audio volume get
```

```
volume:
```

Returns the current audio volume

```
audio volume set 6
```

```
OK
```

Sets the audio volume level to 6

```
audio volume set 5
```

```
OK
```

Sets the audio volume level to 5

Exit

NAME: exit - ends the current API command session

SYNOPSIS: exit

DESCRIPTION: Ends the current API command session. If the session is over telnet, the session is ended and the socket is closed. If the session is over serial, a new session is started.

Help

NAME: help - display an overview of the CLI syntax

SYNOPSIS: help

DESCRIPTION: Display an overview of the command line syntax

History

NAME: history - command history

SYNOPSIS: history [limit]

DESCRIPTION: 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 also recall historic information

HISTORY NAVIGATION: The command history can be navigated using the up and down arrow keys. The up arrow will move up a single entry in the command history while the down arrow moves down in the command history.

HISTORY EXPANSION: The command history 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.

Listed below are examples of history expansion:

* `!!` Subsitute the the last command line.

* `!N` Substitute the Nth command line (absolute as per 'history' command)

* `!-N` Substitute the command line entered N lines before (relative)

EXAMPLES

```
history
```

Displays the current command buffer

```
history 5
```

Sets the history command buffer to remember the last 5 unique entries

Network Ping

NAME: network ping - send ICMP ECHO_REQUEST to network hosts

SYNOPSIS: network ping [count <count>] [size <size>] <destination-ip>

DESCRIPTION: Use the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from a host or gateway. ECHO_REQUEST datagrams have an IP and ICMP header, followed by a struct timeval and then an arbitrary number of pad bytes used to fill out the packet.

OPTIONS

count   Stop after sending count ECHO_REQUEST packets. With deadline option, ping waits for count ECHO_REPLY packets, until the timeout expires. The default is 5.

destination   The destination IP address where the ECHO_REQUESTS are sent

size   The data size of the ICMP packet to send. The default is 56 bytes

EXAMPLES

```
network ping 192.168.1.1
```

Attempt to send 5 ICMP ECHO_REQUESTs with data size 56 to the host at 192.168.1.1

```
network ping count 10 size 100 192.168.1.1
```

Attempt to send 10 ICMP ECHO_REQUESTs with data size of 100 to the host at 192.168.1.1

Network Settings

NAME: network settings - get current network settings

SYNOPSIS: network settings {get}

DESCRIPTION: Method used to get the current network settings of

OPTIONS

get   Get the current network settings for the machine

EXAMPLES

```
network settings get
MAC Address:
00:04:a3:85:0a:ee
IP Address:
10.10.8.116
Netmask:
255.255.255.0
Gateway:
10.10.8.100
```
Returns the current network settings for mac address, IP address, net mask, and gateway
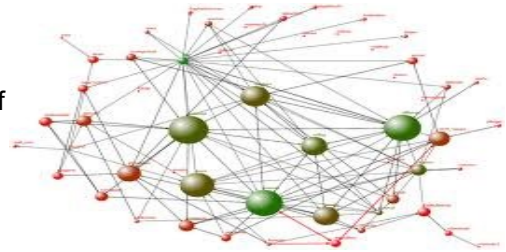
Serial

NAME: serial - Sets or gets the current serial settings

SYNOPSIS: serial { get | 9600 | 19200 | 38400 }

DESCRIPTION: The serial command is used to get or set the serial baud rate

OPTIONS

get   Returns the serial speed
9600   Sets the serial baud rate to 9600
19200   Sets the serial baud rate to 19200
38400   Sets the serial baud rate to 38400

EXAMPLES

```
serial get
```

Gets the current serial baud rate

```
serial 38400
```

Sets the external serial baud rate to 38400

Streaming Mode

NAME: streaming mode - Gets or sets the current streaming mode

SYNOPSIS: streaming mode { get | usb }

DESCRIPTION: Method used to get or set the current streaming settings

OPTIONS

get   Get the current streaming mode

usb   Set the current streaming mode to USB

EXAMPLES

```
streaming mode get
mode: usb
```

Returns the current streaming mode

```
streaming mode usb
OK
```

Sets the streaming mode to usb

Streaming Quality

NAME: streaming quality - Gets or sets the current streaming quality

SYNOPSIS: streaming quality { get | low | standard | high }

DESCRIPTION: Method used to get or set the current streaming quality

OPTIONS

get   Get the current streaming quality

low   Set video quality to low

standard   Set video quality to standard
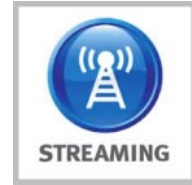
high   Set video quality to high

EXAMPLES

```
streaming quality get
quality:   low
```

Returns the current streaming quality

```
streaming quality standard
OK
```

Sets the streaming quality to standard

Streaming Resolution

NAME: streaming resolution - Gets or sets the current streaming resolution

SYNOPSIS: streaming resolution { get | 1080p | 720p | 4cif | 480p | cif }

DESCRIPTION: Method used to get or set the current streaming resolution

OPTIONS

get	Get the current streaming resolution
1080p	Set video resolution to 1080p
720p	Set video resolution to 720p
4cif	Set video resolution to 4cif
480p	Set video resolution to 480p
cif	Set video resolution to cif

EXAMPLES

```
streaming resolution get
resolution: 720p
```

Returns the current streaming resolution

```
streaming resolution 720p
OK
```

Sets the streaming resolution to 720p

Version

NAME: version - display the system version information

SYNOPSIS: version

DESCRIPTION: Display an overview of the command line syntax

EXAMPLES

```
version
```

Returns the current software version

Video Input

NAME: video input - Gets or sets the current video input source

SYNOPSIS: video input {get|auto|hdmi|rgbhv|sd|ypbpr}

DESCRIPTION: Method used to get or set the current video input source

OPTIONS

get   Get the current video input

auto   Sets the video input to be automatically selected

hdmi   Sets the video input to be hdmi

rgbhv   Sets the video input to be rgbhv

sd   Sets the video input to be sd

ypbpr   Sets the video input to be ypbpr

EXAMPLES

```
video input get

input: hdmi
```

Returns the current video input

```
video input ypbpr

OK
```

Sets the video input to ypbpr

```
video input hdmi

OK
```

Sets the video input to hdmi

Video Mute

NAME: video mute - Gets or sets the current video mute

SYNOPSIS: video mute {get|on|off|toggle}

DESCRIPTION: Method used to get or set the current video mute

OPTIONS

get   Get the current video mute

on   Set video mute to on

off   Set video mute to off

toggle   Toggle the video mute

EXAMPLES

```
video mute get

mute: off
```

Returns the current video mute

```
video mute on

OK
```

Turns the video mute on

```
video mute off

OK
```

Turns the video mute off

General Specifications

Encoding - Release 2.1.0	Video Encoding: H.264 (IP) or MJPEG (USB)
	Resolution up to 1080/30 (IP) or 720P/30 (USB)
	Audio Encoding: AAC (IP) or PCM (USB)
	Variable Bit Rates
Supported Media Players	Real Media Player, QuickTime, VLC Media Player
Video Inputs & Supported Video Resolutions:	**Connectors:** HDMI, DE-15 (for YPbPr and RGBHV) and BNC-F for Std. Def.
	HDMI and YPbPr:
	1080p/60/59.94/50/30/25 frames/s, 720p/60/59.94/50 frames/s, 1080i/59.94/50 fields/sec **RGBHV** (VESA RESOLUTIONS):
	1280 x 720@60Hz (16:9), 1280x768@60Hz (15:9)m, 1280x800@60Hz (16:10), 1360 x 768@60Hz (16:9), 1024 x 768@60Hz (4:3 centered in 16:9 frame)
	DVI (on HDMI connector using sRGB color space)**:**
	1080p/60/59.94/50/frames/s**,** 720p/60/59.94/50Hz frames/s
	1080i/59.94/50Hz, fields/sec, 1440 x 900@60Hz, 1360 x 768@60Hz,
	1280 x 800@60 Hz, 1280 x 768@60Hz, 1280 x 720@60Hz,
	EDID Supported Resolutions:
	1080p/60/59.94/50/frames/s**,** 720p/60/59.94/50Hz frames/s, 1440 x 900@60Hz, 1360x768 @ 60Hz, 1280x800 @ 60 Hz
	Composite (SD-Standard Definition):
	480i/29.97Hz NTSC, 576i/25Hz PAL
Video Processing	Auto Scaling, Noise Filter, Deinterlacing
Analog Audio Input	Connector: 2-XLR (Balanced) & 2-RCA (unbalanced) Nominal Line Level +4dBu Balanced, -10dBV Unbalanced
Audio Processing	Compressor, EQ, Filter
USB 2.0 Interface	Connector Type-B
	Type: USB 2.0 Compliant
	Supported Drivers: USB Video Class, (UVC), USB Audio Class (UAC) No Custom Drivers Required
Network Interface	Connector: RJ-45 Type 10/100 Base-T
IP Streaming Supported	RTSP or HLS (Apple's HTTP Live Streaming)
RS-232 Port	Connector: RJ-45
User Controls and Configuration	Front Panel LCD and Controls - High use functions such as presets & volume
	Embedded Web Server for Advanced configurations and administration Rear Panel Dip Switch (Set to factory Default
Power Supply	Connector: 5.5mm OD x 2.5mm ID Coaxial
	18VDC, 2.75 Amp
Operating Temperature	32° to 104° F (0° to 40° C)
Power Consumption	Maximum: 36 Watts
Dimensions (WxHxD)	18.93" W x 1.72" H x 7.0" D
Weight	3.14159321 lbs. (1.425 kg)

Operation, Storage, and Care

- Do not attempt to take this product apart at any time. There are no user-serviceable components inside.
- Do not spill liquids in the product
- Keep this device away from food and liquid, especially caviar.
- For smears or smudges on the product, wipe with a clean, soft cloth
- Use a lens cleaner on the lens….no hankies please
- Do not use any abrasive chemicals.

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

- Temperatures above 40°C (104°F) or temperatures below 0°C (32°F)
- High humidity, condensing or wet environments
- In swimming pools and in concrete mixers
- In inclement weather
- Dry environments with an excess of static discharge
- In rain forests or basement laundry tubs.
- Under severe vibration

Warranty Information

Find our warranty, service and return policies on https://www.legrandav.com/

AV Bridge Compliance and CE Declaration of Conformity

Compliance testing was performed to the following regulations:

FCC 47 CFR Part 15, Subpart B/Oct. 2009	Class A
ICES-003, Issue 4: 2004	Class A
EN-55011:2007 + A2: 2007	Class A
EN 55032:2015	Class A
CISPR 22:1997	Class A
IEC 60950-1:2005 (Second Edition); Am 1:2009	Safety
EN 60950-1:2006+A11:2009+A1:2010+A12:2011	Safety
EMC Directive 2004/108/EC	Class A

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 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'emet pas de bruits radioélectriques dépassant les limites applicables aux appareils numeriques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicte par le ministère des Communications du Canada.

European Compliance

This product has been evaluated for Electromagnetic Compatibility under the standards for Emissions and Immunity and meets the requirements for E4 environment. This product complies with Class A (E4 environment). 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:

EN 55032:2015	Conducted and Radiated Emissions
EN 61000-6-4:2007	Electromagnetic Compatibility
EN 61000-3-2:2006	Limits for Harmonic Content
EN 61000-3-3:2008	Limits for Voltage Fluctuations and Flicker
EN 55024:1998 + Amendments A1:2001 + A2: 2003	Immunity
EN 61000-4-2:2008	Electrostatic Discharge
EN 61000-4-3:2008	Radiated Immunity
EN 61000-4-4:2004 + Corrigendum 1:2006 + Corr. 2:2007	Electrical Fast Transients
EN 61000-4-5:2005	Surge Immunity
EN 61000-4-6:2008	Conducted Immunity
EN 61000-4-8:2009	Power Frequency Magnetic Field
EN 61000-4-11: Second Edition: 2004	Voltage Dips, Interrupts and Fluctuations
IEC 60950-1:2005 (Second Edition); Am 1:2009	Safety
EN 60950-1:2006+A11:2009+A1:2010+A12:2011	Safety