AV Bridge™ Matrix Pro

AV Room Solution for USB/IP Applications

High Definition Integrated Camera Controller, 4 X 2 Video Switcher, 8 X 4 Audio Matrix with AEC and Simultaneous USB and IP Streaming Capabilities

Part Number 999-8230-000 North America
Part Number 999-8230-001 International

Contents

Overview

The AV Bridge MATRIX PRO combines the functionality of the AV Bridge encoder with simultaneous IP and USB 2.0 (UVC & UAC) streaming, a four-input seamless HD video presentation switcher, three Quick-Connect™ interfaces for Vaddio cameras with EZCamera™ Cat-5 connectivity, an 8 x 4 audio cross-point matrix, four EasyMic™ ports for Vaddio ceiling or table mics, built-in echo cancellation and a web server for configuration programming, control and remote management. The AV Bridge MATRIX PRO replaces a rack full of gear and then some, with a single box solution which is simple to connect.

The MATRIX PRO was designed for integrators in order to reduce the complexity of AV system design and implementation, while delivering the features and capabilities most sought after by today's sophisticated end user.

MATRIX PRO fits into many applications, including UC and video conferencing, audio conferencing, lecture capture, local AV presentations and more! It's perfect for small, medium, and even large venues such as classrooms, boardrooms, auditoriums, lecture halls, houses of worship, or anywhere that high quality audio, video, network, streaming and control is mission critical. This 2 RU system-in-a-box pairs up with the EasyUSB™ MicPODs, Ceiling MicPODs and interfaces with ZoomSHOT™, WideSHOT™, Vaddio HD PTZ and RoboSHOT PTZ cameras.

The AV Bridge MATRIX PRO front panel includes a delightful 8 line blue backlit LCD display for the more commonly accessed functions such as input selection and simple operation. The Select and Cancel buttons flank the rotary menu knob, the three allowing quick and efficient navigation of menu functions. The important, easy to enable functions of Video and Audio Mute also have their own front panel buttons for quick access, if situations of priority dictate their use.

The AV Bridge MATRIX PRO rear panel has just the right balance of features and simplicity. The layout belies the unit's significant technical abilities. Although adopting the feature sets of video switchers, camera signal transport systems, complex audio DSPs, bulletproof contact closure logic or third party control systems, simultaneous USB and IP streaming, as well as simple interface with Vaddio audio products, its connectivity is anything but arduous. The design goal was to further simplify and unify a number of popular Vaddio technologies, and this goal was realized for the benefit of both integrators and end users, easing both installation and operation.

Key Technical Features

- **Direct (2) Cat-5 connection to Vaddio Cameras:** With a constant view to ease and simplify installation and operations for both the integrator and end user, the MATRIX PRO has eliminated the requirements of multiple Quick-Connects upstream of the switcher, by integrating the Quick-Connects into the switcher itself. This greatly reduces power requirements in a rack installation and provides a single power supply for both the MATRIX PRO and the cameras. The two-cable solution affords a maximum cabling distance of up to 100 Ft. (30 Meters) for Vaddio PTZ cameras, and up to 150 Ft. (45 Meters) for Vaddio fixed POV cameras like the WideSHOT and ZoomSHOT.

- **Computer Inputs:** The MATRIX PRO features inputs for laptop or desktop computers, RGBHV on a DE-15 connector for analog sources, and on an HDMI connector for digital computer sources. Alternately, as with the camera connections, these could also be used for other content sources providing signals if desired.

- **Web Page Configuration and Operational Control:** This allows the user to "dial in" via an IP browser, to access web pages the MATRIX PRO serves. This allows one to choose from multiple audio, video, streaming and automation selections, as well as configure Administration abilities or set access constraints. Control camera movement to set shots, adjust CCU settings to paint or shade cameras remotely, or locally, through tabbed functions on the pages. Or move PTZ cameras to change shots. Oh, and you can control it's video source selection for the local outputs as well as the streaming outputs, and control audio for streaming or local feeds in real time. Basically, sliced bread is envious.

- **Agile Video Switcher**: The internal video switcher can be configured as a traditional video switcher, using front panel controls, or selecting video sources for IP or USB Streaming (essentially two 4 x 1 video switchers).

- **Anything In, Anything Out:** The inputs auto-detect the video resolution and the outputs have user configurable discrete video resolution settings for the local HDMI out as well as the HSDS™ Display output and the streaming outputs.

- **CCU Scenes and Camera Presets:** Each camera has access to six custom presets as well as a custom home position. The three cameras can also adjust CCU functions, and store those configurations along with any of the 6 preset PTZ locations.

- **External Trigger Inputs:** The AV Bridge MATRIX PRO can also be configured for up to ten (10) external hardware trigger inputs, up to ten (10) control system software triggers, and up to four (4) EasyMIC MicPOD One Touch triggers. Any of these can afford the ability to change video sources on Streaming or local Program outputs, and recall camera preset locations. Picture in Picture modes can be selected as well, offering location options and Split Screen or Quad Split PIPs if desired. Audio routing can be changed too, as well as many other functions.

- **Camera Auto-Sensing:** The AV Bridge MATRIX PRO is capable of auto-sensing each PTZ camera attached. Control codes for the following cameras are built-in:
  - Vaddio HD-Series PTZ Cameras
  - Vaddio RoboSHOT™ Series Cameras
  - Vaddio WideSHOT™ and ZoomSHOT Series POV Cameras

- **Video Transitions:** Video transitions are seamless with exceptional video quality. Transition time is software adjustable and includes:
  - Cross Fades (one image fades into another)
  - Straight Cuts

- **Simultaneous USB and IP Streaming:** Newer, high-powered processor allows for USB and IP streaming to happen concurrently.

- **4 x 2 Video Matrix:** 3 inputs with direct (2) CAT-5 Vaddio camera wiring ability or alternate HDMI inputs, a fourth input selectable between RGBHV or HDMI, an HDMI Program output, a Display output, and 2 forms of streaming outputs.

- **8 x 4 Audio Capability:** Four RJ-45 Ports for direct connection of Vaddio EasyMIC MicPODs or EasyMIC Ceiling MicPODs, 4 Mic or Line inputs with 48v phantom power if desired, and four Line outputs.

- **Program and Display Outputs:** A standard HDMI output and a Vaddio-specific HSDS CAT-5 output capable of delivering Program video via an optional Vaddio Quick-Connect at distances of up to 100 feet (30.5m)

- **Automatic Mic Mixing-Chairman Override:** An adaptive gain sharing design which maintains a constant output level regardless of which or how many mics are active. Chairman Priority can be assigned to allow one mic a 3dB advantage over other mics in the auto-mix.

- **PIP Functionality:** Different PIP sizes and locations are user selectable, allowing for custom configuration and hard and soft triggering. Additional PIP modes include top/bottom Split Screen, and a Quad Split which can show all four inputs simultaneously.

- **Acoustic Echo Cancellation (AEC):** AEC is selectable and usable for requirements of far end Echo cancellation. Line inputs or Far End audio from a "Soft Codec" can be selected as the AEC Reference signal for echo cancellation requirements to be fed from any of the (4) MATRIX PRO line output channels.

- **Advanced Audio Matrix switching and Cross-point Level Setting:** An 8 x 4 audio matrix configuration allow for a truly custom integration, with the ability to set gain or attenuation at any points in the matrix. These allow a configuration which could send multiple audios to the same output buss, without directly summing their sources and creating audio signals which are "too hot"- or having different output busses with drastically different signal levels depending on the number of source audios assigned to them.

Intended Use

Before operating the device, please read the entire manual thoroughly. The system was designed, built and tested for use indoors, and 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.

Save These Instructions:
The information contained in this manual will help you install and operate your product. If these instructions are misplaced, Vaddio keeps copies of Specifications, Installation and User Guides and most pertinent product drawings for the Vaddio product line on the Vaddio website. These documents can be downloaded from www.vaddio.com free of charge.

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.**

> **Please do not use "pass-thru" type RJ-45 connectors. These pass-thru type connectors do not work well for professional installations and can be the cause of intermittent connections which can result in the RS-232 control line failing and locking up, and/or compromising the HSDS™ signals. For best results please use standard RJ-45 connectors and test all cables for proper pin-outs prior to use and connection to Vaddio Cat-5e products.**

Unpacking the Boxes

Carefully remove the device and all of the parts from the packaging. You've probably already done it, but we feel obligated to mention it up front here in the first part of the manual. Mentioning it later would be a bit silly.

Upon receipt, identify the following parts for each MATRIX PRO:

For 999-8230-000 North American Version, unpack and identify the following parts:
- One (1) AV Bridge MATRIX PRO (998-8230-000)
- One (1) 24 VDC, 3.75 A Switching Power Supply (451-3750-024)
- One (1) AC Power Cable (802-2564)
- Eight (8) 3-Pin Molex style 5.0mm Euro Connectors (401-0001-003)
- Two (2) 2 Space Rack Ears for Rack Installation (342-0634)
- One (1) 6' (1.83m) USB 2.0 Cable, Type-A Male to Type-B Male, black (802-2561)
- One (1) Quick Start Guide (342-0916)

For 999-8230-001 International Version, unpack and identify the following parts:
- One (1) AV Bridge MATRIX PRO (998-8230-000)
- One (1) 24 VDC, 3.75 A Switching Power Supply (451-3750-024)
- One (1) Euro Power Cable (802-2435)
- One (1) UK Power Cable (802-2436)
- Eight (8) 3-Pin Molex style 5.0mm Euro Connectors (401-0001-003)
- Two (2) 2 Space Rack Ears for Rack Installation (342-0634)
- One (1) 6' (1.83m) USB 2.0 Cable, Type-A Male to Type-B Male, black   (802-2561)
- One (1) Quick Start Guide (342-0916)

AV Bridge MATRIX PRO Front Panel with Feature Call-outs

1. **Display Screen**: Easy to read 8 line blue colored back-lit display, to show unit status and conveniently access the most commonly used Menu functions of the MATRIX PRO.

2. **Menu Knob:** Rotary encoder used to navigate the selections in the Menu Display. Clockwise = numeric increment (or up), Counterclockwise = numeric decrement (or down). In Menu, asterisk (*) = Selected or Enabled.

3. **Menu Select Button:** Select button for setting or accessing items while navigating the user interface of the front panel menu.

4. **Menu Cancel Button:** Button to exit out of sub-category menu selections while navigating the front panel menu.

5. **Video Mute Button:** Mutes (stops) video for both streaming and local outputs, replacing selected input video with a programmable video slate or bars. Pressing again will toggle the mute function off.

6. **Audio Mute Button:** Mutes the output audio when pressed. Pressing again will toggle the mute function off.

7. **Dimensionally enhanced Puffy Badge:** Unlike many offerings of competing products, Vaddio spares no expense and provides a large 3 dimensional, visually delightful puffy badge to enhance the user's experience.

vaddio

AV Bridge MATRIX PRO Rear Panel with Feature Call-outs
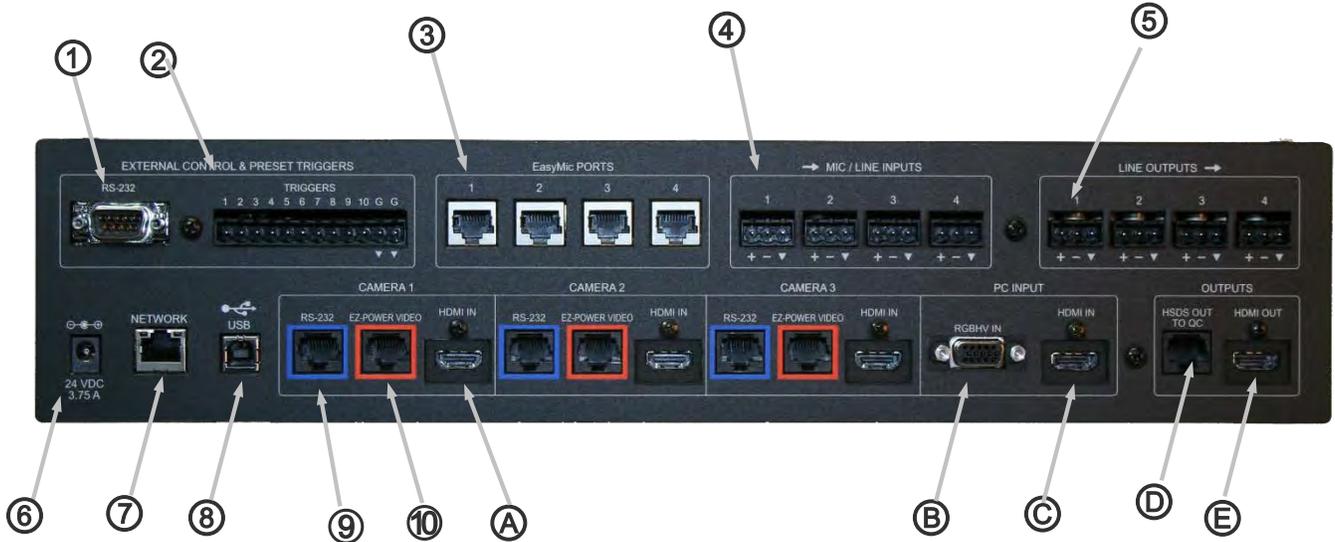
1. **RS-232 Control Port Input:** DE-9 female RS-232 communication port supporting Vaddio's serial command protocol from serial or third party controller (Pin 2 = TX, Pin 3 = RX, Pin 5 = GND).

2. **Trigger Inputs:** 10 contact closure (shunt to ground) inputs for triggering pre-programmed input video or audio selection, or to move cameras to preset locations.

3. **Easy Mic Ports (Audio In 1-4):** RJ-45 Type EasyMic ports allowing direct connection of up to 4 Vaddio MicPODs or Vaddio Ceiling MicPODs. Any combination of MicPODs is acceptable.

4. **Line Level Inputs (Audio In 5-8):** Four Line level fully differential inputs for connection to balanced audio sources.
Typical line level input reference levels of 0dBu.

5. **Line Level Outputs (Audio Out 1-4):** Four Line level fully differential outputs for connection to downstream balanced audio destinations such as in room amplification. Typical line level output reference levels of 0dBu.

6. **Power Supply Input:** 5.5mm OD x 2.5mm ID, center positive coaxial connector for supplying power to the device. Use only the 24 VDC, 3.75 Amp power supply provided with the AV Bridge MATRIX PRO.

7. **Network IP Port**: 10/100 Ethernet with embedded web server for configuration and management of the AV bridge. This port will stream H.264 and AAC audio, serve the browser pages, and provide Telnet control.

8. **USB 2.0 Port:** Type-B USB Port allows for USB interface to host computers and management of AV Bridge MATRIX PRO. This port will emulate a webcam and an audio record device, generating UAC and UVC files.

9. **Camera RS-232 Control Ports (Camera Inputs 1-3):** Self-configuring control ports for two Cat-5 cable based Vaddio camera systems. Handshakes with camera and sends camera controls as required.

10. **Camera EZ Power/Video Ports (Camera Inputs 1-3):** EZ Power video ports to provide power to the cameras and accept HSDS return differential component video for (2) CAT-5 cable based Vaddio cameras, at distances of up to 100' (30m) for PTZ cameras, and up to 150' (45m) for fixed POV cameras (ZoomSHOT or WideSHOT).
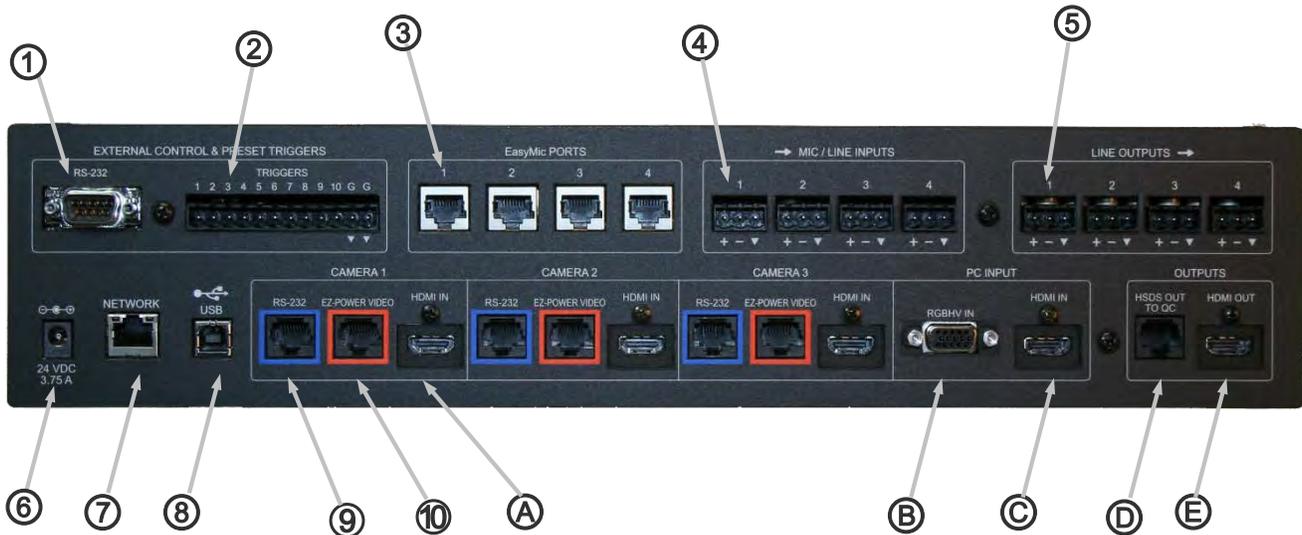

PTZ Cameras
100' (30.48m) Cat-5e
cable distance

POV (fixed) cameras
150' (45.72m) Cat-5e
cable distance

AV Bridge MATRIX PRO Rear Panel with Feature Call-outs cont'd

A. HDMI Input (Camera Inputs 1-3): Alternate HDMI video source input for use when Vaddio (2) CAT-5 cameras are not attached via the built-in Quick-Connects.

B. RGBHV Input on DE-15 (Input 4): RGBHV HD Input for Input 4.

C. HDMI Input (Input 4): HDMI HD Input jack for Input 4.

D. HSDS Output: Vaddio HD HSDS differential analog component display Output to feed any locally powered Vaddio Quick-Connect™ at display locations up to 150 Ft. (45M) away from the MATRIX PRO.

E. HDMI Output: HD HDMI output to feed any downstream or monitoring destinations.

Getting Started

Connect all of the cameras, monitors, audio, triggers and peripheral devices to AV Bridge MATRIX PRO.

> **Please do not use "pass-thru" type RJ-45 connectors. These pass-thru type connectors do not work well for professional installations and can be the cause of intermittent connections which can result in the RS-232 control line failing and locking up, and/or compromising the HSDS (high speed differential) signals. For best results please use standard RJ-45 connectors and test all cables for proper pin-outs prior to use and connection to Vaddio product.**

Vaddio cameras with (2) CAT-5 connectivity can connect directly to each camera input. One cable for camera control into the RS-232 control port, and the other into the Power/Video port at both the camera end and MATRIX PRO end.

Alternately, if no camera or camera control is desired, there is a courtesy HDMI input for Inputs 1-3. These can also be used for other HDMI sources.

PC Sources can be connected either via the HDMI input jack or the RGBHV input jack in the area labeled "PC Input". The MATRIX PRO will auto-configure for the resolution of the source, provided it is a supported resolution. See supported resolutions in the General Specifications section of the manual.

From a front panel or configuration perspective, this will be Input 4, and you will need to select the source desired for that input, either HDMI or RGBHV. This can be selected and switched from the front panel, or in the IP served browser configuration page.
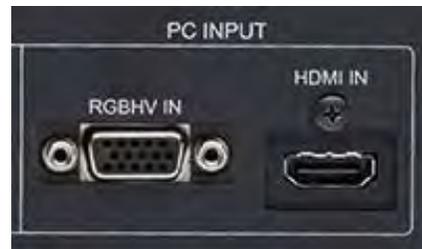
Program outputs should be connected to their destination equipment. There are two local outputs, one HDMI and one Vaddio specific "HSDS" output (on RJ-45).

The HDMI is a standard HDMI connector, and will contain embedded audio as configured for the Program 1 & 2 audio outputs.

The HSDS output, is slightly less obvious and is a proprietary fully balanced differential output which has the ability to connect to any Vaddio Quick-Connect video input. The Quick-Connect is located at the destination location, and must be powered with its own power supply. The typical use for this would be in IMAG or projector scenarios, or to monitors in overflow rooms. Maximum transport distance is 150 Ft, and Vaddio Quick-Connects are all supported. In most instances, the Short Range Quick-Connects would be used- the Quick-Connect SR (998-1105-016), or Quick-Connect DVI/HDMI SR (998-1105-018). These will provide the video signals for the monitors or projectors, but do not support Program audio.
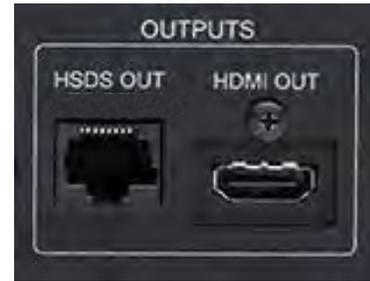
Quick-Connect SR
998-1105-016

Quick-Connect DVI/HDMI SR
998-1105-018

Connect EasyUSB MicPODs™, or EasyUSB Ceiling MicPODs™ into the Easy Mic RJ-45 ports.

These ports will provide power to the mics, send Master* audio to the EasyMICs to allow them to generate their AEC signal and accept the return audio from the mics, without any required configuration. They afford ease of connection via a single CAT-5e cable, and appear as Audio Inputs 1-4.

*In the User Interface (UI), the "Master" output can be configured, and is used as the AEC reference.

Connect other Mic or Line Audio Inputs.

Balanced Mic or Line Inputs with configurable 48 VDC Phantom power if desired.

+, -, GND from left to right on the Phoenix-style connector.

Connect Audio Outputs to any required destinations, such as analog recording devices or room voice lift or P.A. systems.

Balanced Line Outputs. **+, -, GND** from left to Right on the Phoenix-style connector.
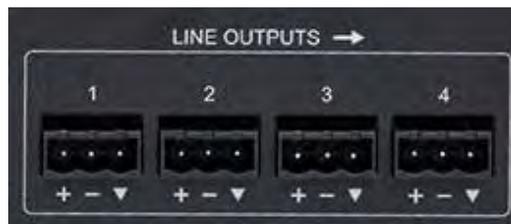
Connect any external trigger and/or control devices.

RS-232 DE-9 female jack for external control from 3rd party systems such as Crestron or AMX.

Trigger inputs are contact-closure style (shunt to Ground), as provided by Vaddio StepVIEW™ Mats or AutoVIEW IR™ Sensors, PresenterPOD™ System, 5-Wire microphones or any other dry closure devices from GPIO ports of control systems or even a simple switch.

Connect USB 2.0 computer if desired. If applicable, connect IP 10/100BaseT Network Port to either network, switch or computer as needed.
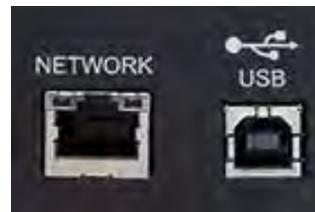
Once you have connected all of your inputs, outputs and the Vaddio provided power supply, connect the power cable to the power supply and plug into an AC outlet. The MATRIX PRO will boot up and scan for cameras. As the MATRIX PRO boots up, it will automatically scan each camera control port sequentially to confirm which ports have compatible PTZ cameras connected.
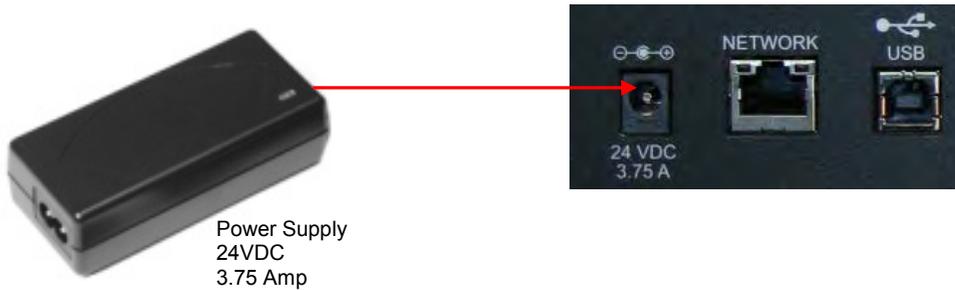
Power Supply
24VDC
3.75 Amp

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

After boot up, a menu will appear on the blue LCD. For access to the web served configuration pages, Rotate front panel knob so that the > cursor on the front blue display points to Network Settings, and hit the Select button. The MAC and Network addresses will appear. Use these with a browser to access and configure web pages.

Further and more detailed menu instructions located in the AV Bridge MATRIX PRO Menu Structure section.

AV Bridge MATRIX PRO
Video Select
Audio Inputs
Audio Outputs
Streaming
Network Settings
> Versions

Basic System Configuration

AV Bridge MATRIX PRO connected to (2) Vaddio PTZ Cameras, (1) Laptop PC, (2) Vaddio EasyMIC MicPODs, (2) Vaddio EasyMIC Ceiling MicPODs, (4) Audio-Technica™ PZM mics, (1) room amplifier and speakers, HDMI Program output feeding a monitor, the Vaddio HSDS output feeding a Quick-Connect DVI/HDMI to provide the video signal for an overhead projector, and connectivity for Network and USB streaming.
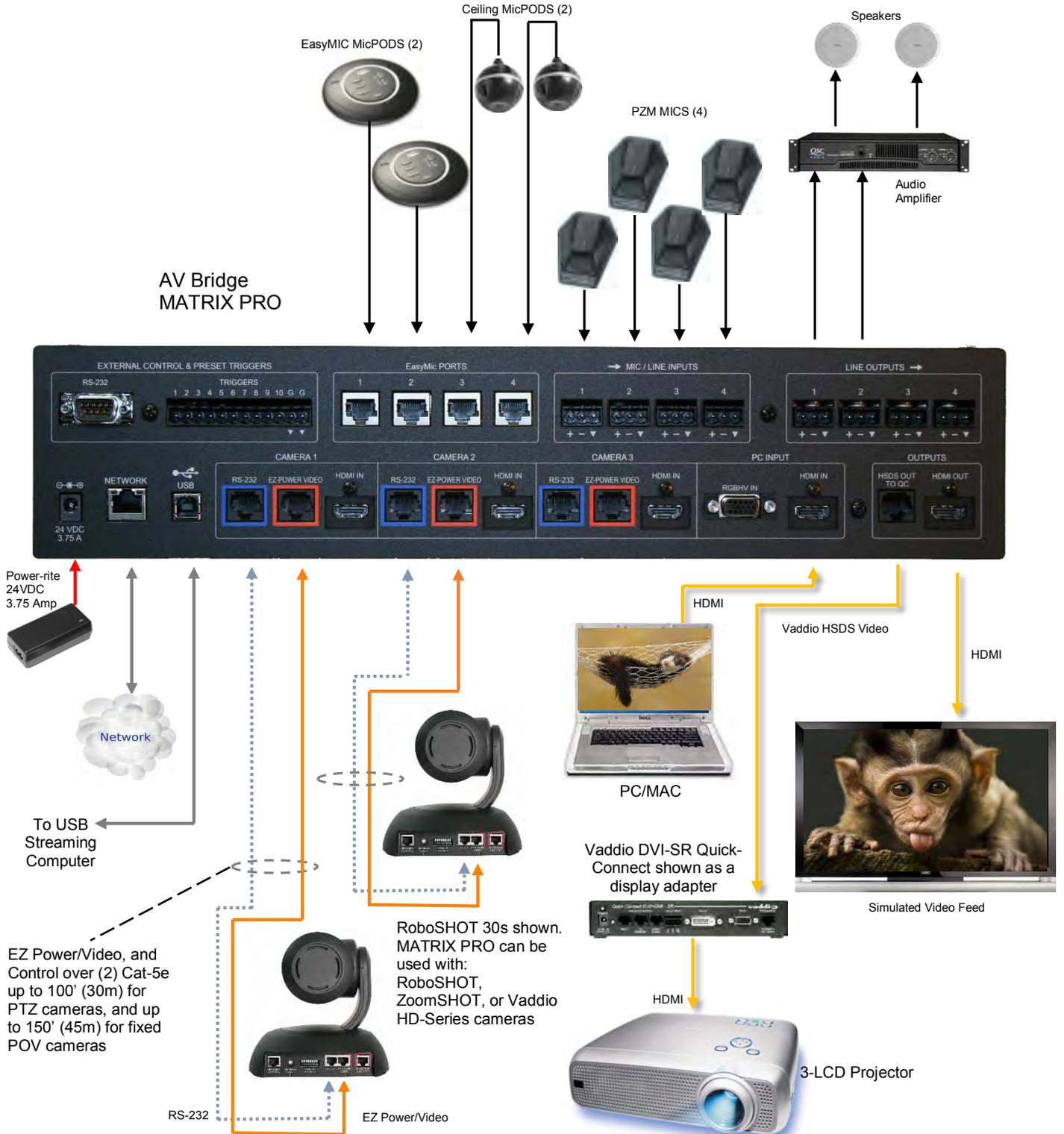
Audio Expansion Configuration Using PRO MIC I/O

The example shown is (1) Ceiling MicPOD, (2) EasyMIC MicPODs, (4) 5-wire PZM Mics into the MIC/LINE audio inputs, and (1) EasyUSB PRO MIC I/O used as an audio expander with (4) 5-wire PZM mics. The output of the PRO MIC I/O would be the mixed and summed output of the PZM mics, and would show up in the audio matrix as EasyMIC #4. 5-wire mics are shown, assuming 2 of the wires are used for triggers when the mics are enabled.
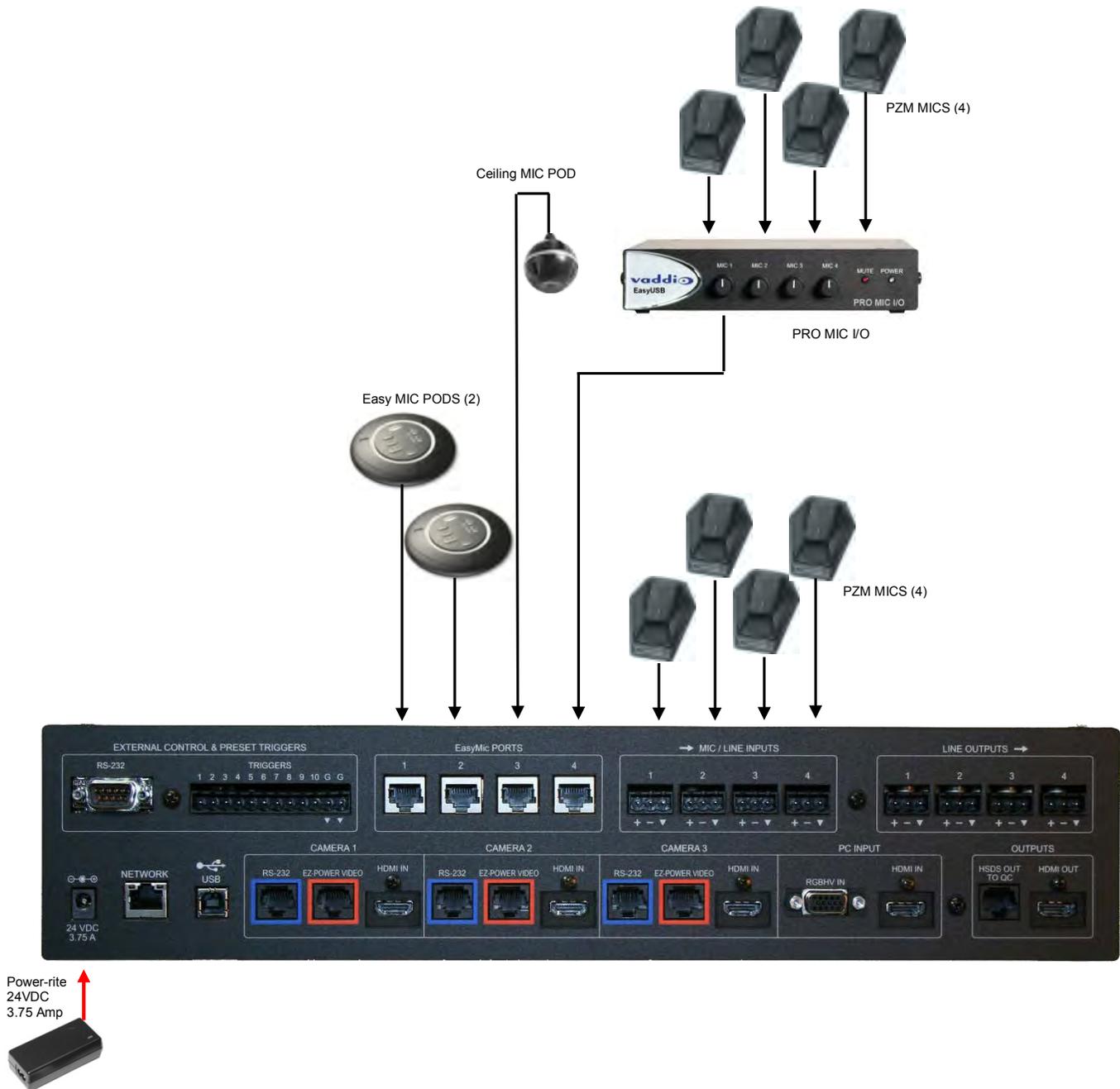
RS-232 Cabling Notes:
For RS-232 cabling, use a standard Cat-5 (if you can still find Cat-5) or Cat-5e/6 cable with *real* RJ-45 connectors (568B termination) from the RS-232 port on the back of the MATRIX PRO to the camera's RS-232 Port. This applies to the EZ Power/Video ports as well.

More Notes: Use of pass-thru type RJ-45 connectors is *highly discouraged.* The Vaddio Cat-5 wiring standard uses pins 1, 2, 7 and 8 on both the power/video and the control Cat-5e cables. The pass-through connectors have proven to provide insufficient connectivity for these important signals. They are OK for voice and data that use the center pins only, but not for cabling systems that use all the pins.

Auto Configured Video Input Resolutions:
- The AV Bridge MATRIX PRO automatically configures and matches the input resolution for each camera video output connected (with active video output) to an Input port.
- For Inputs 1 through 3, it will scan and select from 1080p/60 Hz (1920x1080) to 640x480@60 Hz.).
- For Input 4, it will scan and select HDMI and RGBHV resolutions. If those auto scanned resolutions/settings aren't as desired, they may be selected in the web UI.

Additional Programming: Review the AV Bridge MATRIX PRO Menu Structure for additional information on programming specific parameters. For API and Programming Language, see information in the Appendix.

Basic Trigger Configuration

Trigger inputs are contact-closure style (shunt to Ground), as provided by Vaddio StepVIEW Mats or AutoVIEW IR Sensors, PresenterPOD System, 5-Wire microphones or any other dry closure devices from GPIO ports of control systems to a simple switch. Both "G" ground lugs are electrically common, one leg of each trigger device can be wired with common grounds. Up to 10 physical triggers can be attached and assigned logic (See Input Trigger Programming section for configuration).
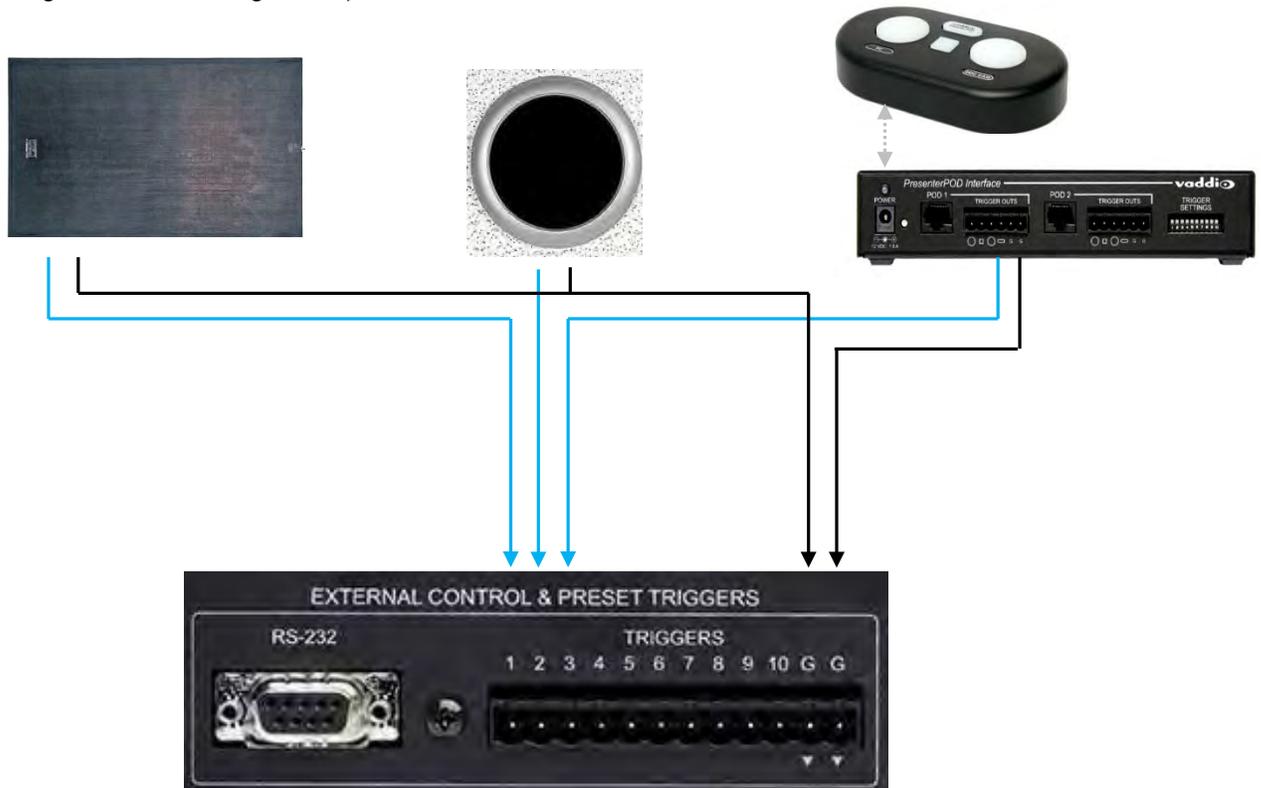
Operating the AV Bridge MATRIX PRO

Most of the console functions and controls are easy and intuitive, designed with an eye toward automated use. Over the next few pages there are details on how the different functions operate.

The functions in this section are all available with the MATRIX PRO through the served website pages, viewable via any Web Browser.   This is a quick overview, more detailed explanations and screen User Interface pictures are available in the software Screen Shot Tour later in the manual.

Camera Controls:
Pan, Tilt, Zoom, CCU shading, CCU painting as well as presets that store location and CCU settings

Wipes, Cut or Mix Transitions:
To set up the switcher to transition from the current input selected as the Program output to another input, select a different video signal.

Select the type of effect (wipe, cut or mix) that the switcher will use to transition from one input to the other.

Changing Transition Speed:
Both the Mix and Wipe effects can be adjusted from .01 to 4 seconds, by adjusting the Transition Speed.

PIP Display:
To set up and display a Picture-In-Picture on the Streaming output, select the input that will be the "background" on the Streaming bus. The three PIP modes available are Quarter Screen, 50/50 Split, and Quad Split. There is only one PIP engine, and it appears on the Streaming bus. The Program buss may be configured to track (mirror the functions of) the Streaming bus.

AV Bridge MATRIX PRO Menu Structure

The MATRIX PRO has an 8-line LCD that displays the system menus. The menus are traversed with the rotary encoder, select and cancel buttons. Select function accesses, Cancel button exits. An asterisk (*) before the selection = enabled. For front panel manual control, use the menu tree below to navigate and manipulate functions as desired, in real time. Settings from the front panel or from the web UI will persist after a power sequence or a reboot.

The menu structure is as follows:

1st Screen   Vaddio
                    AV Bridge MATRIX PRO
                    192.168.1.1 (default)

Main Menu

> **Video Select**
> **Audio Inputs**
> **Audio Outputs**
> **Streaming**
> **Network Settings**
> **Versions**

Menus

Video Inputs

>Select Camera Input 1
         Camera Input 2
         Camera Input 3
         PC Input
         PIP

Audio Inputs

>Select Mic/Line 1>
                 Gain Up
                 Gain Down
         Mic/Line 2>
                 Gain Up
                 Gain Down
         Mic/Line 3>
                 Gain Up
                 Gain Down
         Mic/Line 4>
                 Gain Up
                 Gain Down
         USB Playback>
                 Gain Up
                 Gain Down

Audio Outputs

>Select   Output 1>
                Gain Up
                Gain Down
        Output 2>
                Gain Up
                Gain Down
        Output 3>
                Gain Up
                Gain Down
        Output 4>
                Gain Up
                Gain Down
        USB Record>
                Gain Up
                Gain Down

⚠ All changes are saved as they are selected and altered. Function changes occur in real time. All control systems from triggers, UI, Telnet, RS-232 to font panel operate in real time and are simultaneous.

Streaming

>Select USB Streaming>   (*resolution must be selected and displayed allow streaming*)
                Enable/Disable
                Res: 1080P   Frame 30
        IP Streaming>
                Enable/Disable

                Res: 1080P Frame 30

Network Settings

>Select MAC Address
        IP Address   192.168.1.2
        Gateway Address   192.168.111.222 (example)

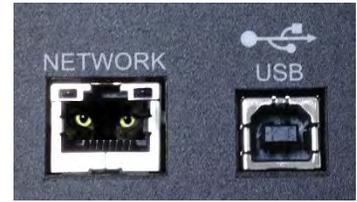   Subnet Address

Versions

>Select Displays Firmware version(s)
        Audio x.xx
        Video xxxx xx/xx/xxx
        System AV MATRIX PRO x.x.x

Web Page Configuration and Structure

To access the Configuration pages served by the MATRIX PRO, connect IP 10/100BaseT Network Port on rear panel to either a Network or computer.

☞ ***Access the MATRIX PRO web pages by entering* the default address, 169.254.1.1. If connected to a DHCP switch, there may be a dynamic address assigned by the network. In that case, use the front panel controls and display to locate that assigned address under "Network Settings".**

Screen Shot: Login

The AV Bridge MATRIX PRO web server is an administrator's management tool and requires authentication for access.

* The default Username is: admin
* The default Password is: password

The user account and password can be changed after the initial login. If these are changed, it is extremely important that information gets saved and remembered for future access.
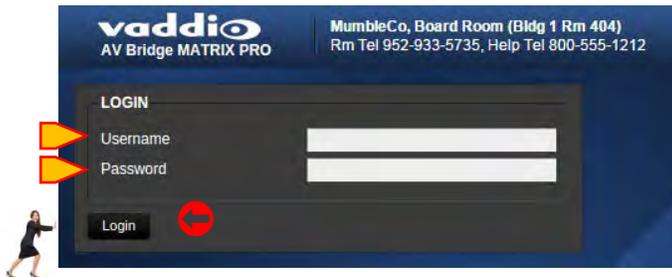
> **Insure that any password changes are recorded and easily accessible for future use. If the password is changed and forgotten or lost, the unit will have to be returned to Vaddio for factory service.**

Screen Shot: Room UI Tab
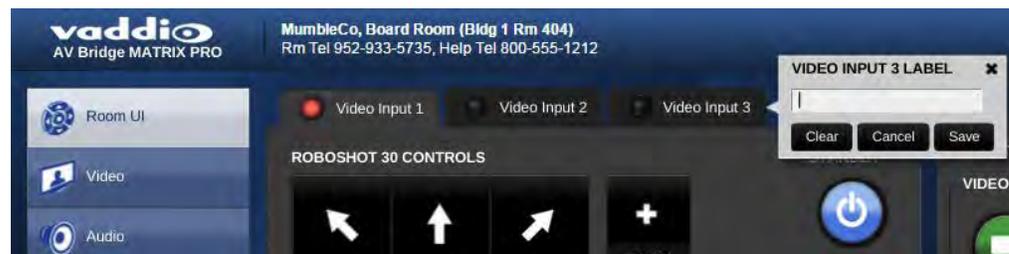
- Allows for control of Pan Tilt Zoom (PTZ) and Point of View (POV) Cameras. PTZ cameras will show pan, tilt and zoom arrows with speed sliders for each, POV Cameras only display zoom control and a zoom speed slider.
- **Video Inputs:**

- **Editable Input Labels**
The Video Input labels can be customized for ease of use. Right-click a Video Input tab to open the label editing box.

- **PTZ Camera**

① PTZ Camera Up / Down controls

② PTZ Camera Diagonal controls

③ PTZ Camera Left / Right controls

④ PTZ Camera Home Button

⑤ Camera location Preset Store Button

⑥ Camera Location Preset Recall buttons

⑦ CCU Factory suggested Scene recall buttons
allow for choice among (3) Custom Scenes or
(6) suggested factory Scenes designed for different
specific lighting-type environments.
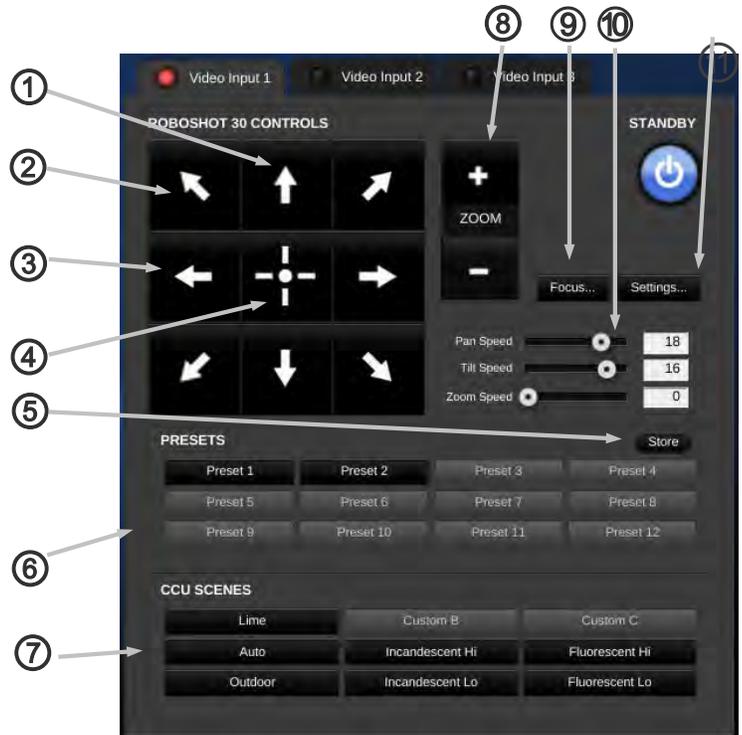
⑧ PTZ/POV Camera Zoom control.

⑨ Focus Button brings up a window for manual
or Automatic Focus control

⑩ Speed control sliders for Pan, Tilt and Zoom

⑪ Settings button brings up a dialog to set pan and tilt for normal
or inverted operation.
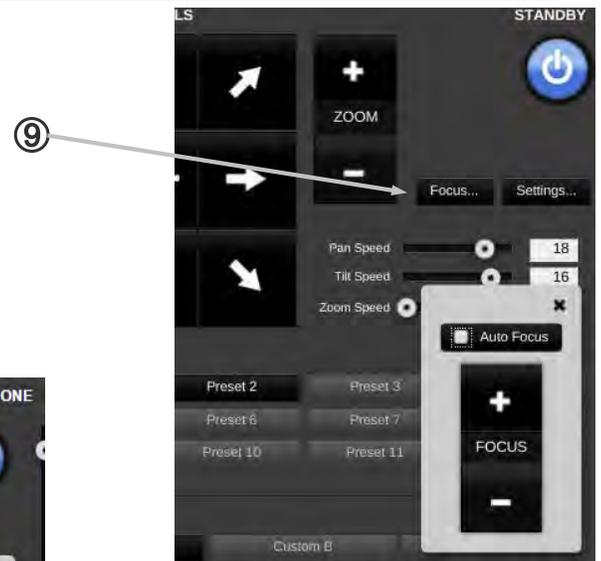
- **POV Camera:**

①   Home button to recall Zoom Home position

②   Zoom button + Zoom in, - Zoom out

③   Zoom speed control slider

- **Video Source Selection:**

①   **Stream Output selection**: Use the Video Input 1, 2, 3 or PC Input to select source for the Streaming Outputs. This selection will apply to both the USB and IP streamed outputs.
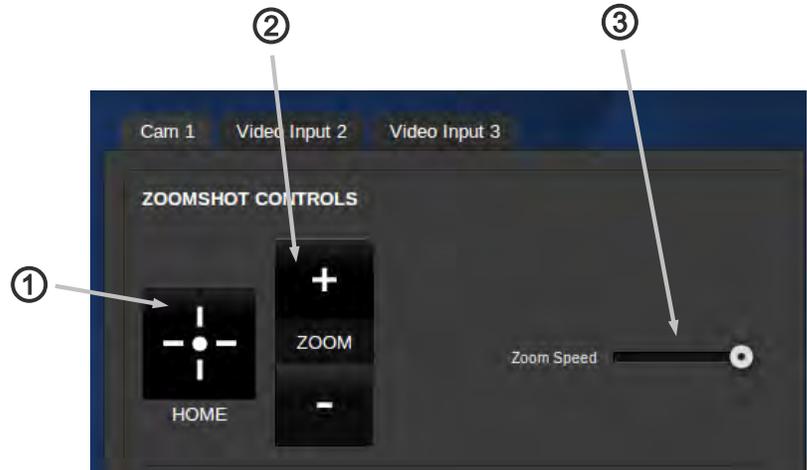
②   **Program Output selection:** Use the Video Input 1, 2, 3 or PC Input to select source for the Program Outputs. This selection will apply to both the local back plane HDMI and Vaddio HSDS outputs.

③   **Enable PIP:** Check box to enable PIP. The pull down will allow selection of the video to appear in the PIP. Selection of PIP type and location is in the video/switching setting page.

④   **Stream Output button:** Since there is only one PIP engine, and it's located in the Streaming buss, this button acts as a source select for the local Program Outputs to "Track" the Streaming outputs.

⑤   Stream Output and Program Output enable check boxes allow the user to change sources when checked. If not checked, changing of source selection on that buss is disabled.

- **AV Controls:**

① **Video Mute button:** Mutes all video outputs. Green color indicates live video, red indicates mute condition.

② **Microphone mute:** Mutes all microphone/line inputs. Blue indicates active, Red indicates mute condition.

③ **Microphone level slider:** Adjusts audio level for outbound USB microphone input.

④ **Microphone level indication meter:** Shows average level of all active microphone sources.

⑤ **Speaker Mute:** Mutes speaker (Master) Output. Blue indicates active, Red indicates mute condition.

⑥ **Speaker level slider:** Adjusts audio output level for speaker (Master) audio output.

⑦ **Speaker output level indication meter:** Displays average level of speaker (Master) audio output.
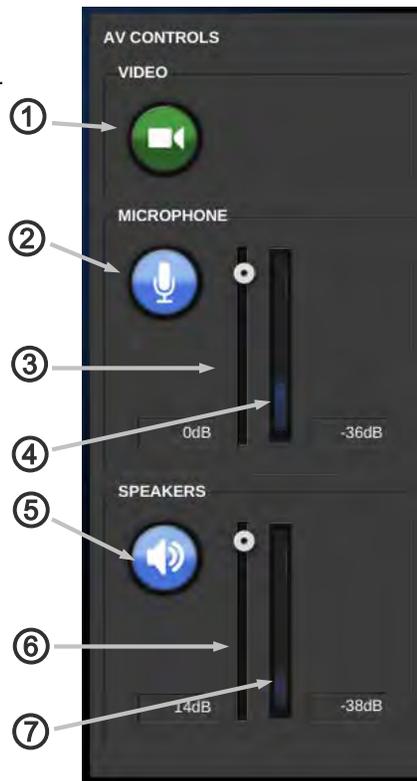
Screen Shot: Video Settings Tab

- **Cameras:**
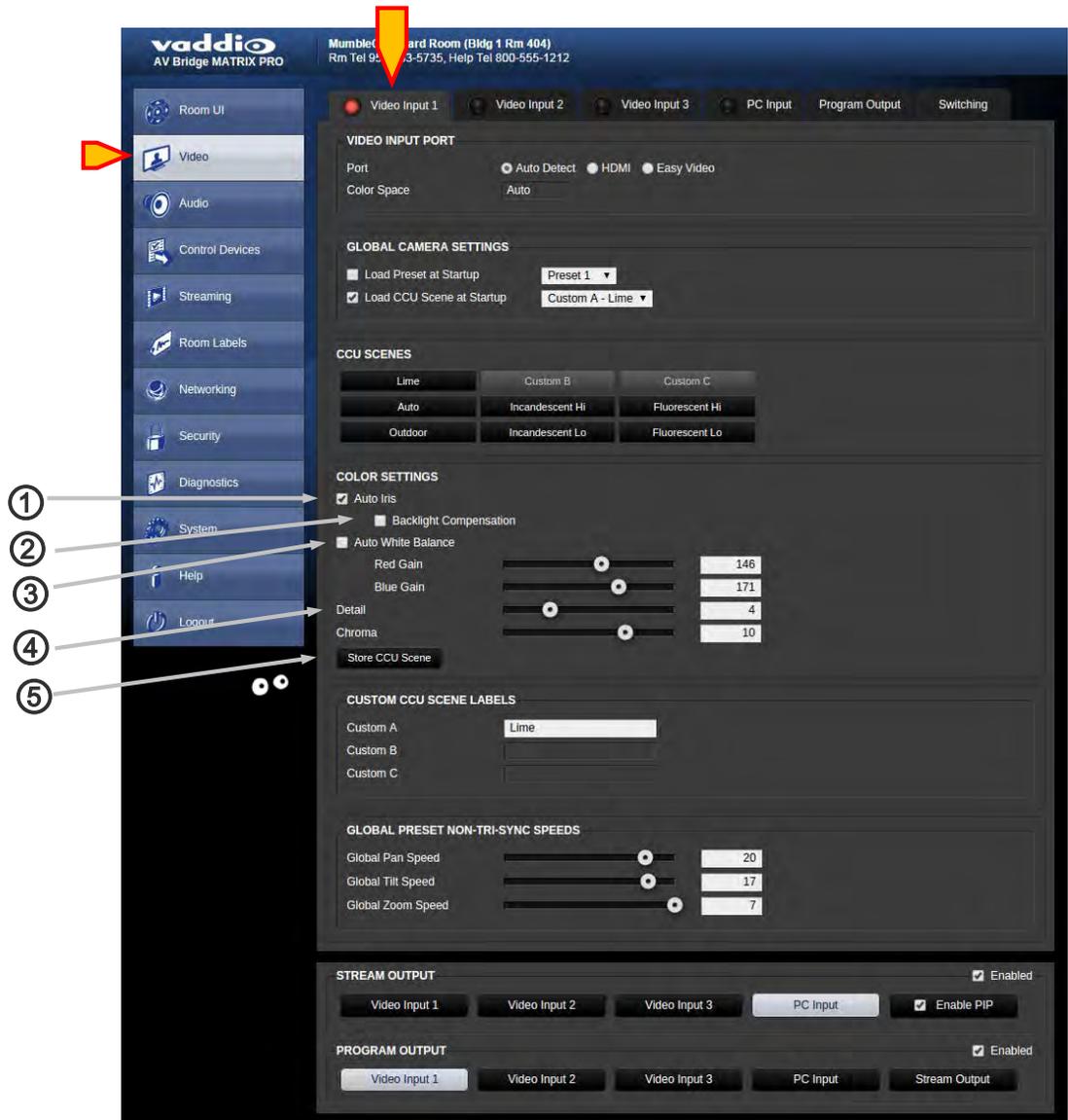
- **Camera Color Settings:**

① **Auto Iris:** Check box to enable Auto Iris.   Iris and Iris Gain sliders will appear when unchecked and in manual mode.

② **Auto White Balance:** Check box to enable Auto White Balance. Red and Blue sliders will appear and can be adjusted when unchecked and in manual mode.

③ **Backlight Compensation:** Check box to enable Backlight Compensation, used when detail is required to address blooming caused by brightly backlit environments.

④ **Detail/Chroma:** Slider Controls to set level of desired Detail and Chroma levels. Too much detail can cause image grain, too much Chroma will cause color bloom.

⑤ **Store CCU Scene** button to store current settings into one of the Custom Scene locations.

- **Video PC Input:**
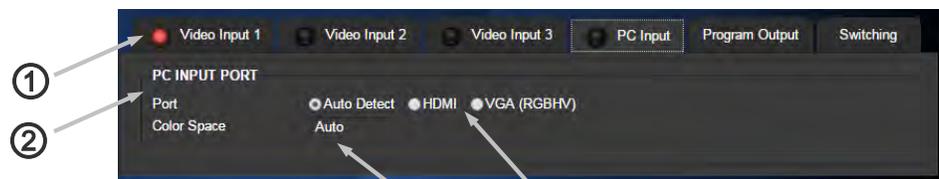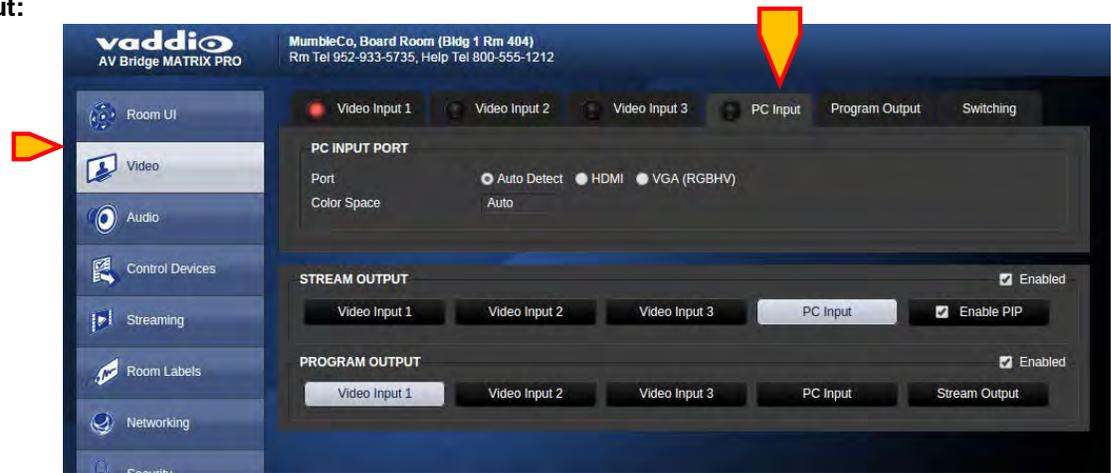
① **Red Light on tabs:** The red LED-style indicator is a Tally light for the Program buss. Whichever source is selected in the Program buss will also show a tally on it's tab to help alleviate changing a camera which is "live".

② **PC Input Port:** Use this screen to configure the PC (or 4th) input. It will default to Auto-detecting the video sources for their resolution and color space information. If both sources are connected, and valid video detected, the priority will be HDMI, then RGBHV (DE-15).

③ **HDMI/RGBHV:** Bulleting either of these will force the MATRIX PRO to use these as the desired input. The unit will still Auto-detect both signals, so this could be used for crude web page source selection if desired.

④ **Color Space:** Use this selection to choose the color Space for DVI or HDMI. The two options are sRGB (usually DVI) or HDMI (usually YCbCr). Adapters will will play into this, so which choice will display the correct video is not always what you might expect. Hence the ability to select the best color space for your given application.

- **Video Program Output:**
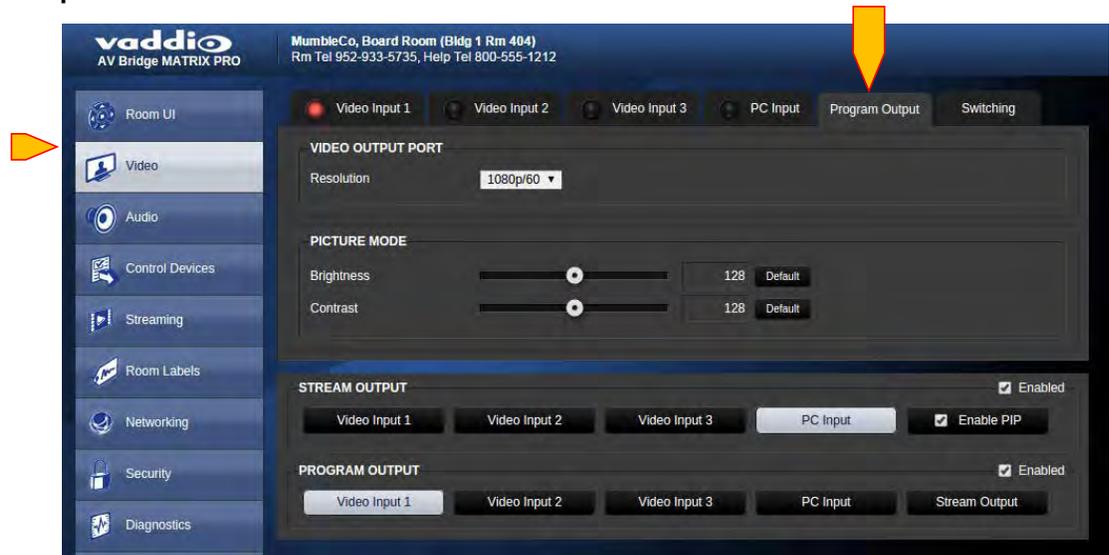
① **Video Output Port:** Resolution pull-down allows for setting the program output resolution. This affects both the Program HDMI output and the HSDS output. Available Program output resolutions options are 1080p/60, 1080p/50, 720p/60 and 720p/50.

② **Picture Mode:** Brightness control affects the Program outputs, and allows for brightness adjustment to compensate for downstream monitor displays or other destinations which lack adjustment abilities. Available adjustment range is 0-255, the numeric value is shown to the right of the slider. Once highlighted or clicked, small adjustments can be made with the arrow keys on your computer.

③ **Picture Mode:** Contrast control affects the Program Outputs, and allows for contrast adjustment to compensate for downstream monitor displays or other destinations which lack adjustment abilities. Available adjustment range is 0-255, the numeric value is shown to the right of the adjustment slider. Once highlighted or clicked on, small adjustments can be made with the arrow keys on your computer.

- **Video Switching:**
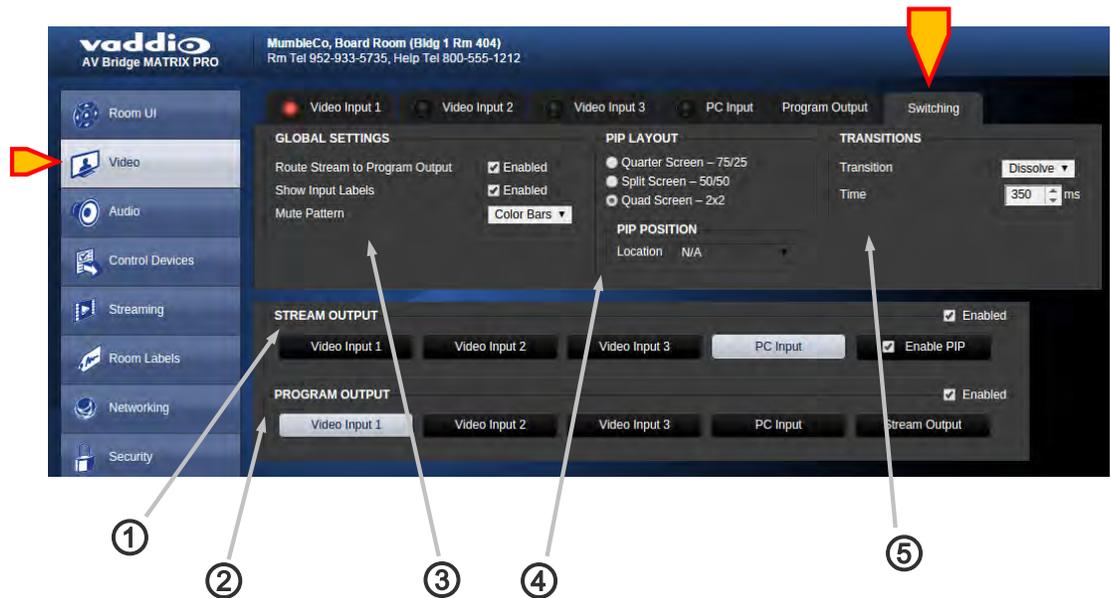
① **Stream Output:** Select Streaming output source with buttons, the button highlighted white indicates selected source. Locked checkbox prevents unwanted switching if desired.

② **Program Output:** Select Program Output source with buttons, button highlighted white indicates selected source. A red LED light on upper input tabs indicates tally, showing that source is live on the Program outputs. If desired, the locked checkbox prevents unwanted switching.

③ **Global Settings:** Check box to enable input labels to be superimposed over video content sources. The lettering background can be selected with the pull-down menu.

④ **PIP Layout:** PIP (Picture in Picture) style selection. Quarter Screen allows for PIP location in any of the four corners, location adjustable when enabled. Also available are Split Screen (up/down) and Quad Split to show all 4 video sources simultaneously.

⑤ **Transitions**: Select desired transition type: straight cut or cross-fade (dissolve). Transition time duration can be selected with the up/down arrows on the right of the window, setting the duration of transition in milliseconds.

Screen Shot: Audio Settings

- **Audio Inputs:**

① **Speech Lift, Master Output/AEC Reference:** Speech Lift and Master Output functions described in the Audio Matrix section.

② **Input channels**: Audio Mute button for that specific input. Blue = active, red = muted.

③ **Input channels:** Level control sliders for Pre and Post levels. Up to 50 dB of analog Pre matrix gain available, up to 20 dB of Post matrix gain available. Label indicates gain/attenuation. VU Meter on right displays active average (RMS) audio on that specific channel.

④ **Input Channesl:** Processing check boxes allow for Echo Cancellation, Noise Cancellation for AEC, and Automatic Gain Control. Checking the box = enabled.

⑤ **Input Channels:** Filter selection affords High Pass enabling with adjustable knee point, and Low Pass enabling with adjustable knee point. Checking the box = enabled. Pop up window will appear. PEQ discussed in next section.

⑥ **Input Channels:** Enabling PEQ (parametric equalizer) Load button will pop up a window with 3-band PEQ parameter fine adjustments.

⑦ **Input Channels:** Phantom Power check box will enable 48 volt DC Phantom power for the according input channel.
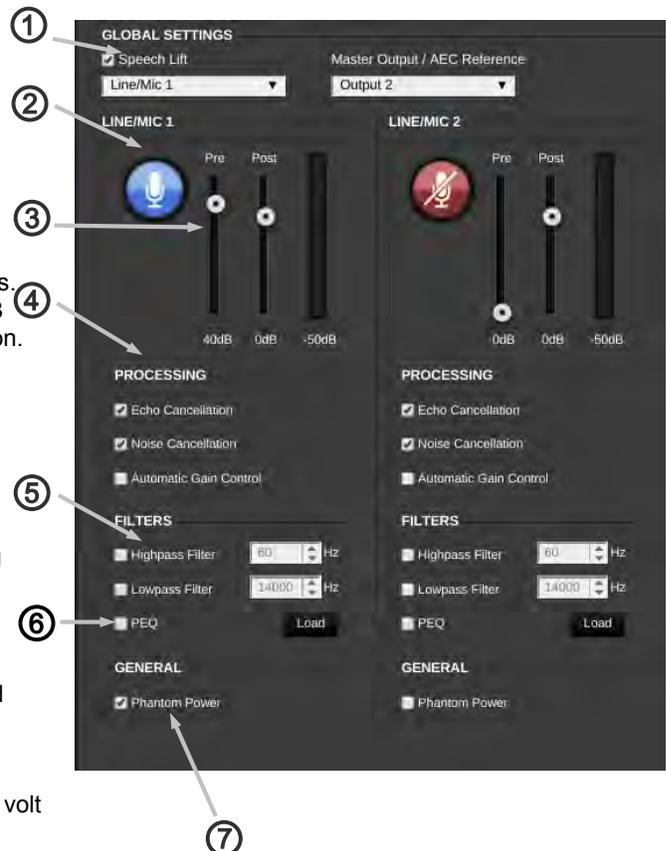
- **Audio Inputs:**

① **PEQ:** When check box is enabled, Parametric EQ is active. Press Load button to open window and allow parameter adjustments. 3 bands available, each with check boxes to enable.

② **Bandwidth:** Use up/down arrows to adjust the desired bandwidth of each EQ filter band.

③ **Frequency:** Use up/down arrows to adjust the desired center frequency of each EQ filter band.

④ **GAIN:** Use up/down arrows to set the desired amount of gain or attenuation at that frequency of each EQ filter.

⑤ **Save Button:** Use this button to save current PEQ parameters and exit PEQ pop-up window.
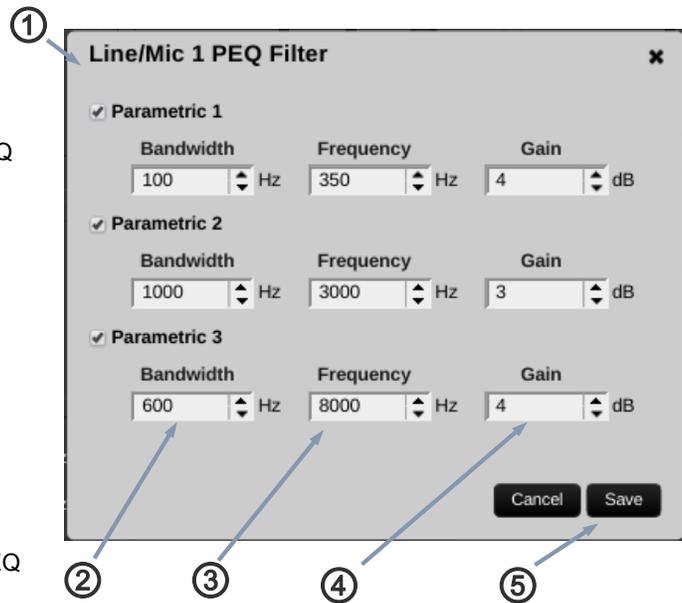
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- **Vaddio Easy MIC Inputs:**

① Mute Button: Mutes EasyMic when enabled. Blue = active, Red = muted .

② Level slider: Adjusts EasyMic signal level for required amplitude.

③ Level indicator: Displays active average (RMS) audio on that specific EasyMic input. Labels indicate gain or attenuation.

④ **Processing:** Echo Cancelation: check box to enable echo cancelation for the Vaddio EasyUSB Table MicPOD or EasyUSB Ceiling MicPOD connected to that EasyMIC port.

⑤ **Processing:** Noise Cancelation: check box to enable the noise canceling DSP function for the EasyMIC connected to that port. This is not a noise gate, but a method to reduce wide-band noise in the echo canceller.

⑥ **Processing:** Automatic Gain Control: Check box to enable the Automatic Gain Control for that specific EasyMIC.

⑦ **Processing:** Mic Boost: Check box to enable Additional Gain for that EasyMIC (if required).
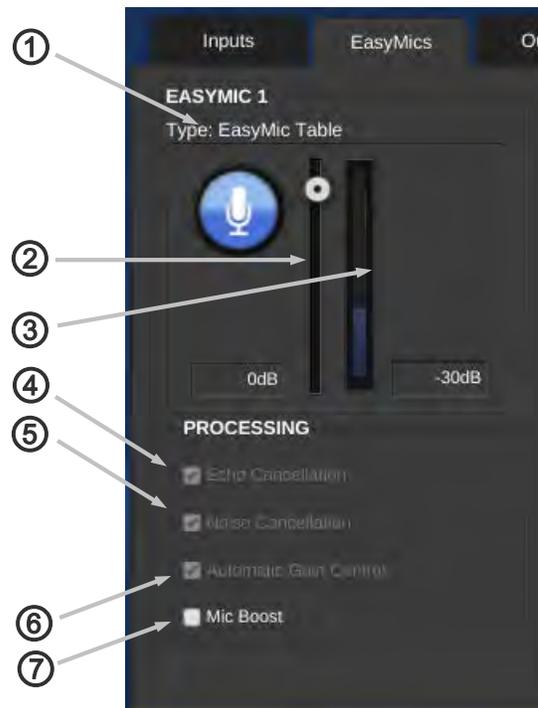
- **Audio Outputs:**

① **Global Settings:** Master Output: selects which Output will be the Speaker output. Speaker Output is the AEC reference for Acoustic Echo Cancelation.

② **Global Settings:** Output channel Mute button. Blue = active, red = muted.

③ **Global Settings:** Output channel level control slider, label indicated gain/attenuation. VU meter on right displays active audio on that channel.

④ **Global Settings:** Processing Section allows for enabling a fixed attribute Compressor, as well as an audio Delay with adjustable delay duration.

⑤ **Global Settings:** Equalizer enabling activates an adjustable 5 Band EQ, with a slider for each of the 5 equalization band frequencies. The 5 equalization frequencies are 100 Hz, 330 Hz, 1 KHz, 3.3 KHz, and 10 KHz, respectively, left to right.
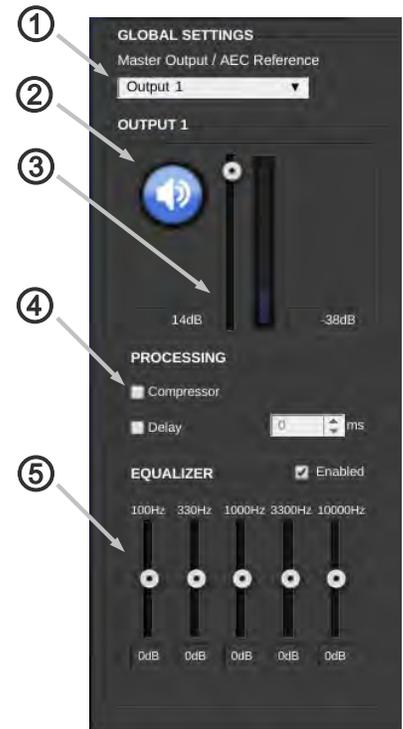
- **USB:**

① **USB Playback (Mic):** Mute Button: Blue = active, Red = muted.

② **USB Playback (Mic):** Level Slider: adjust for desired microphone amplitude. Label indicates gain or attenuation, VU Meter on right displays active audio on that channel.

③ **USB Record (Speakers):** Mute, blue = active, red = muted.

④ **USB Record (Speakers):** Level slider: adjust for desired microphone amplitude. Label indicates gain or attenuation, VU Meter on right displays active audio on that channel.

⑤ **Processing:** Check box to enable audio delay function for Lip Sync requirements, adjust number of milliseconds needed with the up/down arrows on the right of the time delay display. Delay time adjustable only when function is enabled.

- **Matrix:**

① **Global Setting:** Speech Lift: check to enable. Select input desired for speech lift to increase the gain through the Master audio outputs. Only one channel of Mic/Line source is available for this feature.

② **Global Setting:** Master Output: selects which output will be the Speaker output. Speaker Output is the AEC reference for Acoustic Echo Cancelation.

③ **Global Setting:** Chairman Override Input: check box to enable, select desired input with the pull down arrow. Chairman override will afford a higher level in Automix mode for audio priority when multiple sources are amplified simultaneously. This override is only available for the Mic/Line inputs.

④ **Audio Matrix Mixer:** Inputs shown vertically

⑤ **Audio Matrix Mixer:** Outputs shown horizontally

⑥ **Audio Matrix Mixer:** Legend showing function colors for what is configured at each cross-point location:
  - Red = Speech Lift is enabled
  - Blue/White = Cross-point is enabled (ON)
  - Grey/White = Cross-point Off
  - Black = Cross-point disabled
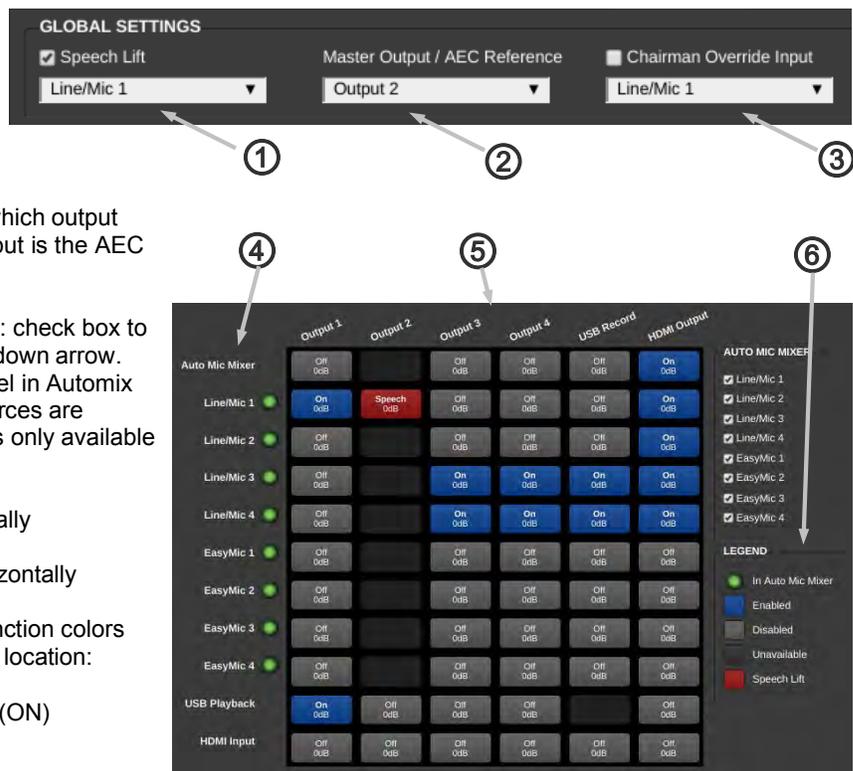
- **Matrix (cont'd):**

① **Audio Matrix Mixer:** Input and Output labels are editable. Right-click the item to open the label dialog. Clear labels to use the defaults, or enter and save the custom label you want.

② Audio Matrix Mixer: Inputs and Outputs can be adjusted directly from the matrix. Double-click the input or output to be adjusted. This opens a control dialog.

- **Matrix Cross-point:**
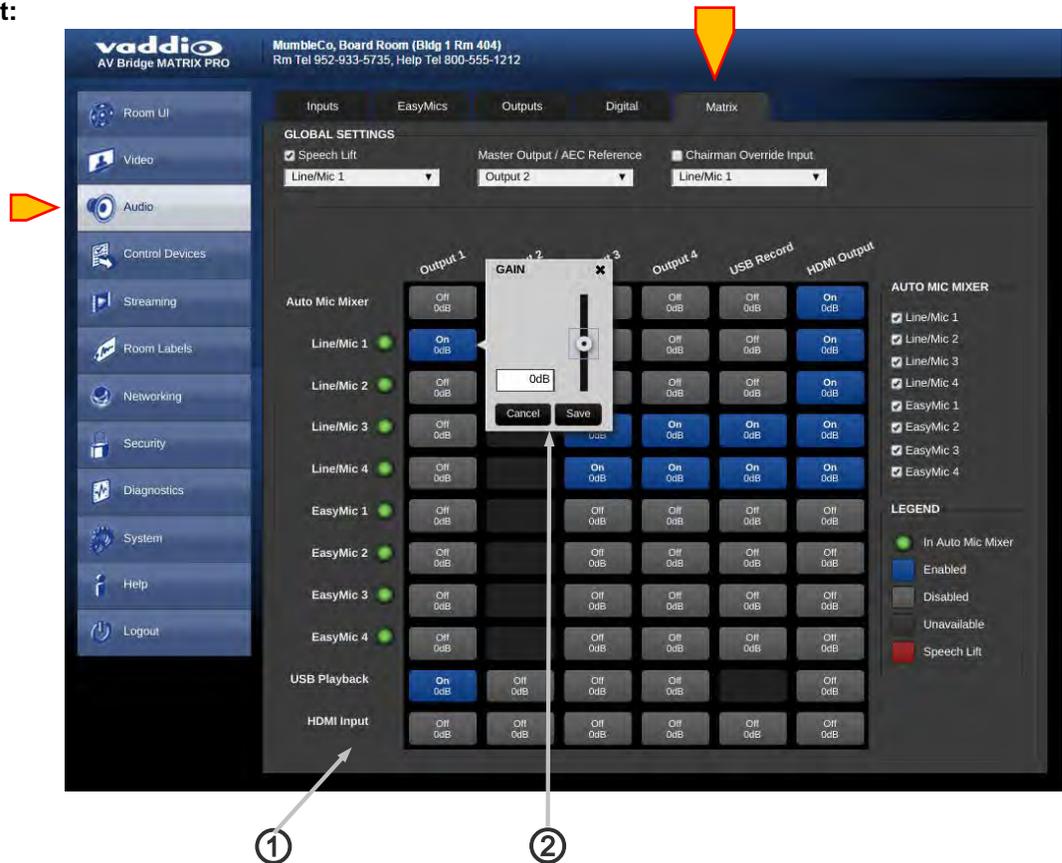
Audio Matrix Mixer: Legend showing function colors for what is configured at each cross-point location:

        Red = Speech Lift is enabled.
        Green = Gated Mic is enabled.
        Blue = Cross-point is enabled.
        White = Cross-point Off.
        Black = Not Available

① **Audio Matrix Mixer:** configuration: At each Input/Output crossing point, functions dictated by color can be initiated (see functions above).

    Click at the crossing points to select. Toggle color by repeated clicking at the intersection. As an example, Input 1 can be assigned to all Outputs by enabling all the horizontal buttons to the right of Input 1. Speech Lift will only be available on the Input selected in Global Settings (described on previous page).

② **Audio Matrix Mixer:** A cross-point gain or attenuation window will appear when selecting the blue "cross-point on" setting. This will allow for setting gain or attenuation to solve problems, such as the summing of multiple mics to the same Output destination. Use the up/down arrows to select desired amount of gain. Click on the "x" in the upper right to close the cross-point gain window.

Screen Shot: Control Devices

- **Macros:**
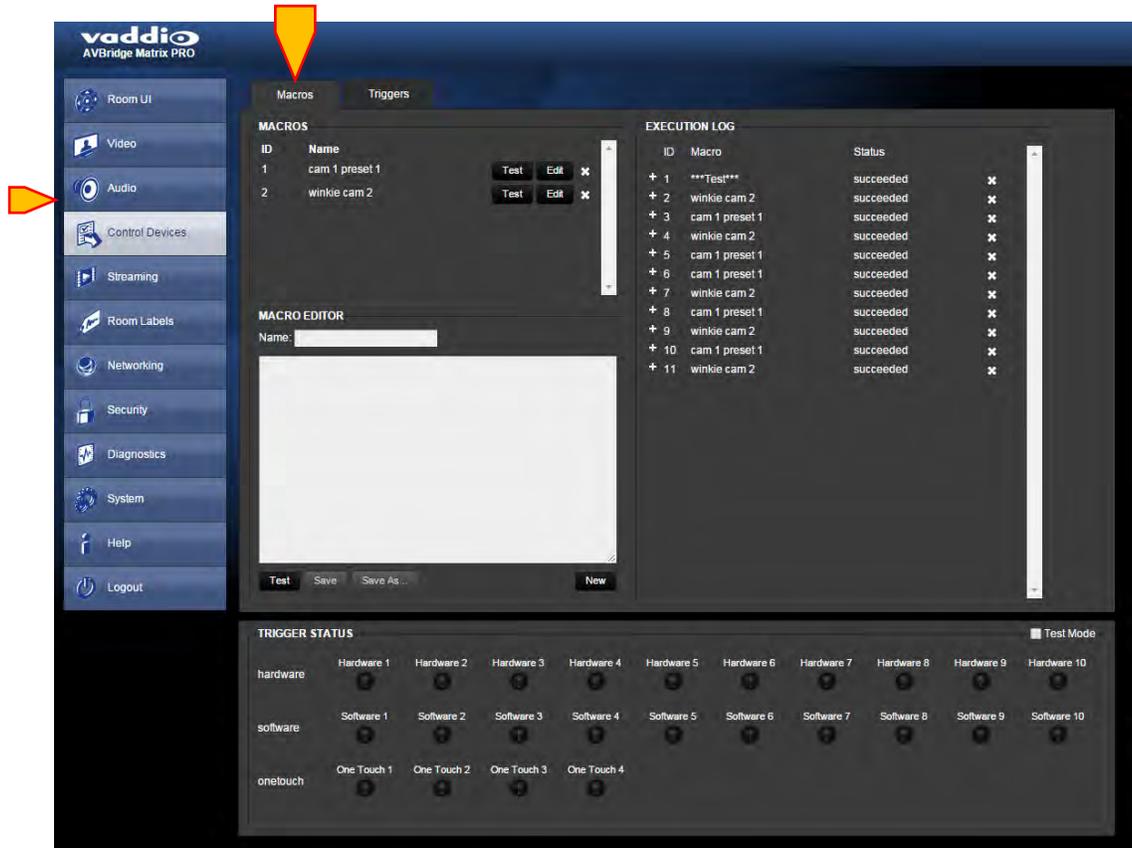
① **MACROS ID / Name:** Displays the name given to Macros and the ID number assigned to any Macros.

② **Test Button:** Tests the Macro the button corresponds to in the list of available Macros.

③ **Edit Button:** Allows editing of the Macro the button corresponds to. That Macro and code will then appear in the Macro Editor area below the Macro list.

④ **MACRO EDITOR:** This area is to write or edit the Macros required for performing functions with hardware, software or One-Touch (MicPOD) triggers.

⑤ **MACRO EDITOR Name:** Type in desired macro name.

⑥ **MACRO EDITOR Commands:** Use this area to enter telnet command lines for desired functions or groups of functions. Up to 50 lines of code available for each of 25 Macros. It is suggested to use one command per line.

⑦ **MACRO EDITOR:** Test, Save and Save As buttons: Rather self-explanatory, use these to Test the Macro, Save the Macro or Save the Macro As another name. Macros are saved locally to the MATRIX PRO and will persist after a power cycle.

⑧ **MACRO EDITOR:** New button will clear any information in the Name field and the Command field to start writing a new Macro.
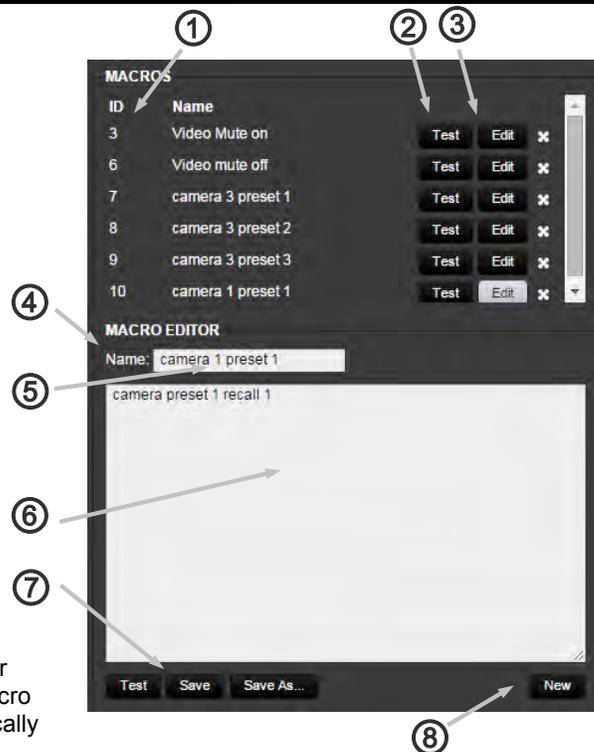
- **Macros Cont'd:**

① **TRIGGER STATUS Hardware:** Trigger status lights indicate real time hardware trigger status, corresponding to rear panel trigger connections. Red lamp lit indicates hardware contact closure active.

② **TRIGGER STATUS Software:** Trigger status lights indicate real time Software trigger status from external **control system**, either Telnet or RS-232. Red lamp lit indicates software contact closure active.

③ **TRIGGER STATUS OneTouch:** Trigger status lights indicate real time OneTouch triggers status from Vaddio EasyMIC MicPODs.

④ **TRIGGER STATUS Test Mode:** Test Mode check box will allow the programmer to enable the trigger status lights to act as test buttons to test Macro functionality. Clicking on a light will act as an external hardware, software or OneTouch trigger event, and will affect the unit in real time. So instead of asking a lackey to run to the other end of the room to stand on a pressure step mat or stand under an IR detector, just hit the button in Test mode to check the Macros you've written. Clicking on a triggers status button once will light the red light and act as a trigger event starting, a second time will extinguish the red light and act as a trigger event ending. These will allow for testing the *On Enter* trigger Macro, and the *On Exit* trigger Macros assigned to a given trigger. Un-check Test Mode box after testing.

⑤ **Execution Log Macro:** Lists the name of the Macros which have been executed in the order of their occurrence. First shown is the Macro ID, then Macro name.

⑥ **Execution Log Status:** Displays the status of the requested Macro event, and if the commands were successfully completed or not.

⑦ **Execution Log Delete:** Click the "x" to delete any commands from the executed commands list.

⑧ **Execution Log scroll bar:** The scroll on the right allows viewing of various groups of executed Macros if the list gets too long to view in one pane.
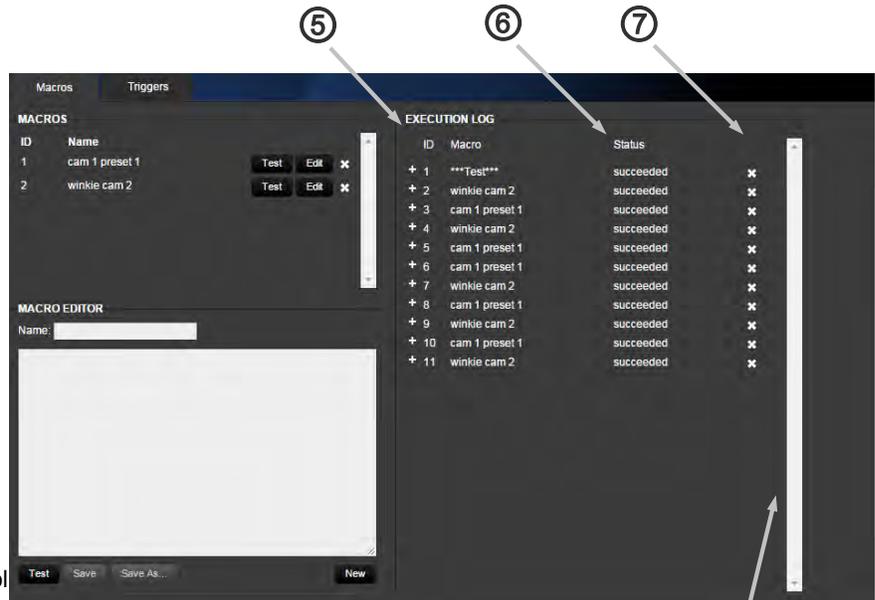
- **Triggers:**
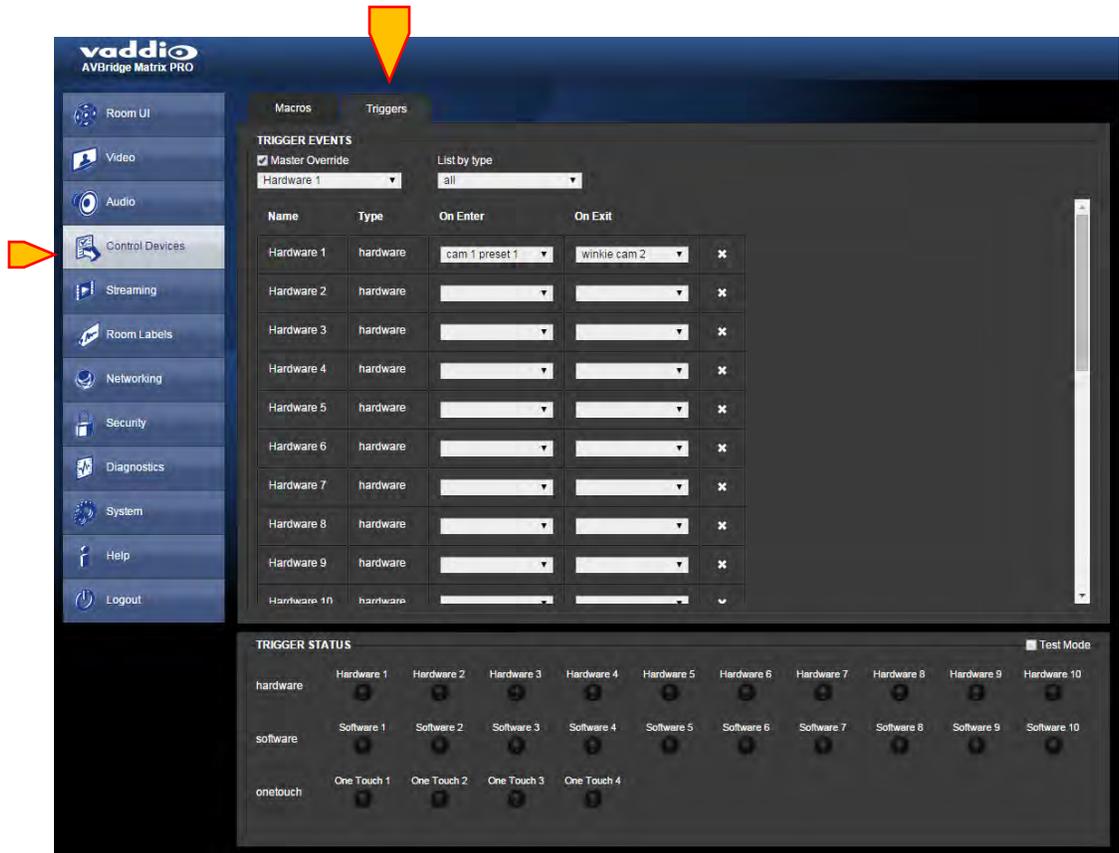
① **Name:** Name of the Trigger Event, assignable when building the Trigger Event in the Macro Editor section.

② **Type:** Type of Trigger Event, these can be hardware, software or One-Touch (MicPOD) events.

③ **On Enter:** The Macro desired to be initiated at the start of the trigger event, immediately upon triggering. Select the desired Macro from any already built, using the pull down arrow.

④ **On Exit:** The Macro desired to be at the end of a Trigger Event, when the trigger is no longer happening. This is typically configured as whatever the user requires to be the "default" condition. Select the desired Macro from any already built, using the pull down arrow.

⑤ **Master Override:** Check Master Override box to enable a single trigger to be prioritized above the rest. Use the pull down to select which of the 24 triggers should be the prioritized one.

⑥ **List by type:** Allows filtering of the Trigger event list so those trigger types used most often appear first in the displayed list.
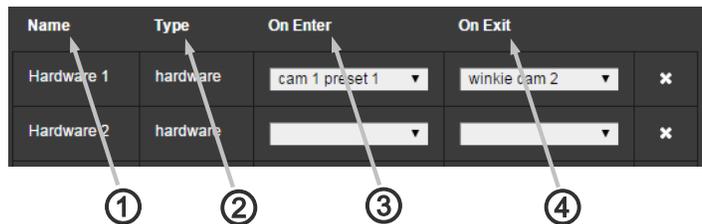
•**Triggers cont'd**
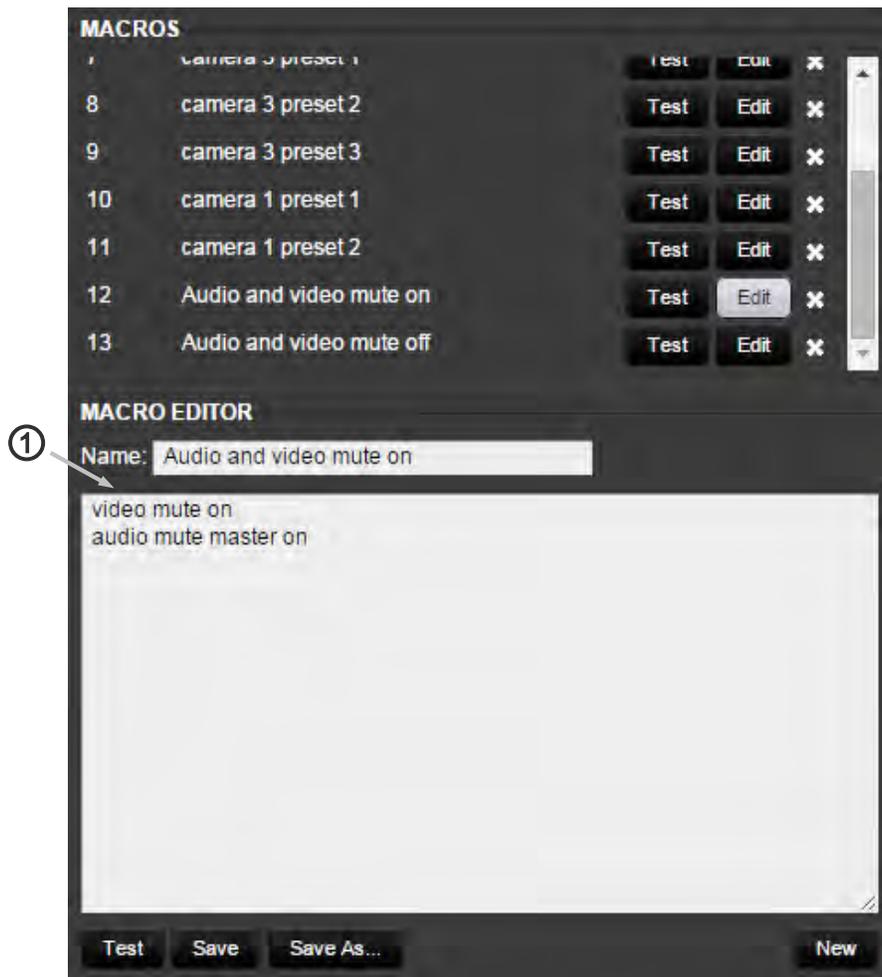
① **Example Macro:** Using the Telnet commands from the CLISH list in Appendix 4, construct the Macros with the functions desired. A carriage return (keyboard Enter key) is required at the end of each command for clarity while editing and viewing. Once saved, Macros will populate the Macro list immediately above the Macro Editor, and are available for testing, trigger assignment and editing.

Example above shows Trigger 13 with the functions of turning the audio and video mutes off.

② **Trigger Button labeling:** Right clicking on a trigger light button will allow you to change the label of that trigger.

Screen Shot: Streaming
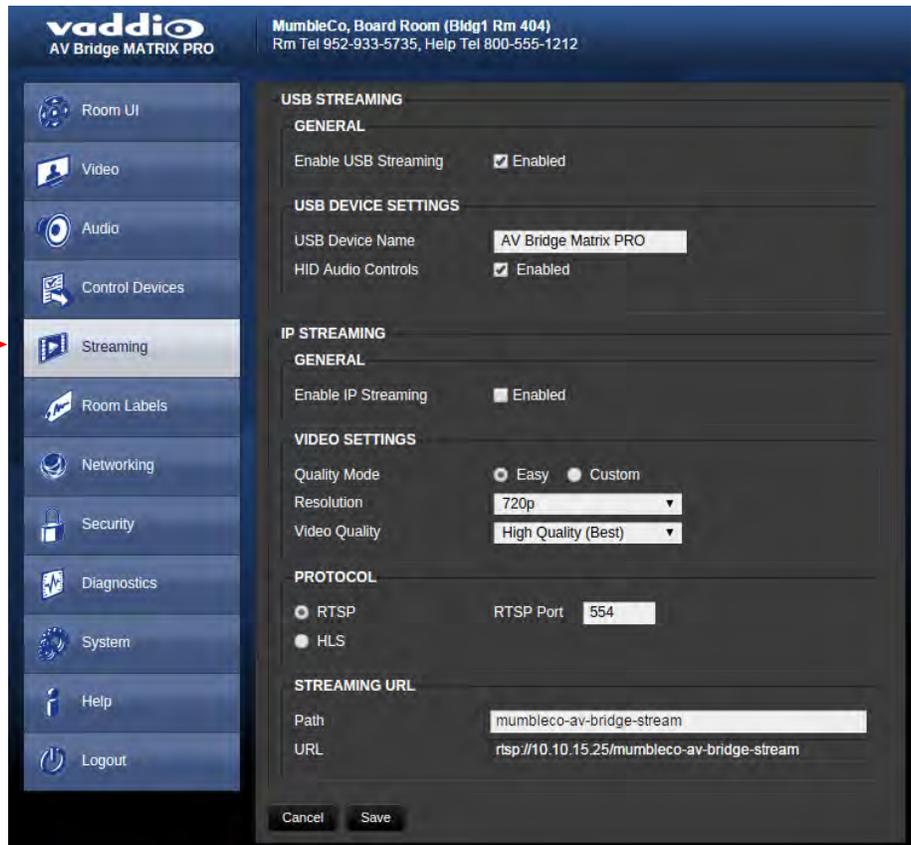
Note:
Both USB and IP streaming outputs are fed from the same output scaler and are the same source and resolution. Simultaneous IP/USB streaming therefore affords a maximum resolution of 720P due to inherent bandwidth limitations of USB 2.0 with MJPEG encoding

IP Streaming Settings: Streaming URL is the Network source addressing of the IP streamed output. The MATRIX PRO can support up to 4 simultaneous IP streams, all from the same URL address.

Streaming can be viewed at the same time a web browser is being used to control or configure the web pages served by the MATRIX PRO. If it is required or desired, use a media player like QuickTime, Windows Media Player or VLC to view the streamed output from the MATRIX PRO. Open your media player application and select "View Network Stream". Copy and paste the URL address into that application. In the above example, the URL is: *rtsp://10.1.2.140/vaddio-av-bridge-stream*. Start playing or recording the stream in your application, and control the MATRIX PRO through the browser based User Interface as desired.

Note : *** This streamed video will have significant viewed latency due to the buffering inherent to the media player applications. The actual H.264 or USB streamed output latency of the MATRIX PRO should always be less than a second. Any latency seen above that encoding time will be due to IP network delays, transport delays, or media player buffering functions. ***

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Screen Shot: Room Labels

Room Labels: The Room Labels section provides the ability to customize room identification for remote monitoring, configuration, or control purposes. This is convenient for potentially confusing situations such as educational facilities, where many different MATRIX PRO systems may be deployed. Labeling can include Company Name, Room Name, Room Phone Number and the option for a Help line phone number.

To add or change an item in the room label, type in the box and press the Enter key to save your change.

AV Bridge MATRIX PRO

Screen Shot: Networking
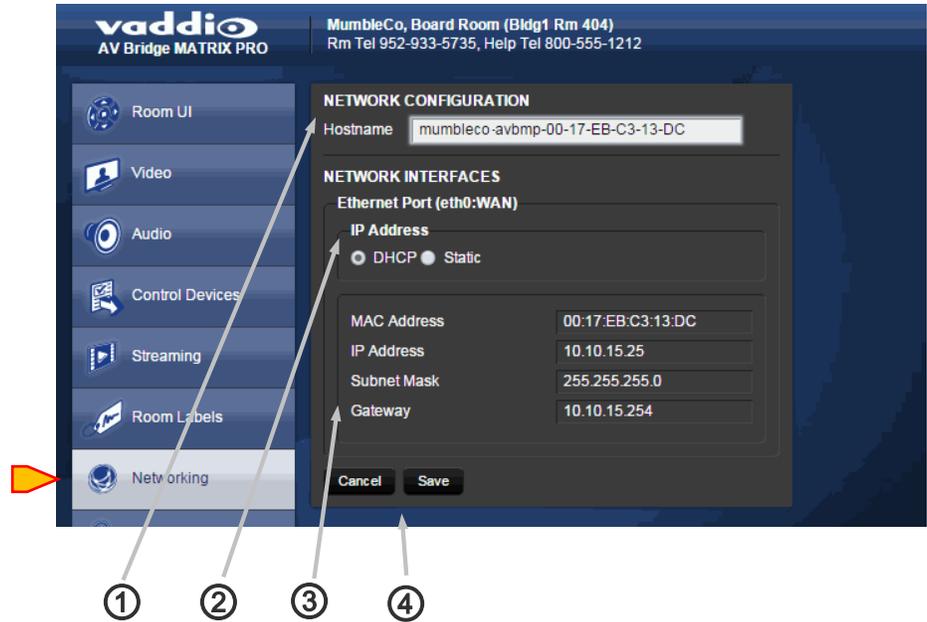
① **Network Configuration:** Hostname: Enter a new hostname if desired.

② **Network Interfaces:** Ethernet Port: Select DHCP or Static Ethernet address with the radio buttons. Choosing Static will allow for editing of address.

③ **Network Interfaces:** MAC Address, IP Address, Subnet Mask, and Gateway are displayed. Configuration of these parameters might require consultation with the IT department in a business or educational facility for security reasons.

④ **Network Interfaces:** Cancel & Save: Cancel will exit the Room Label editing mode, without saving any changed parameters. Save will store any changes of the above information, overwriting any previous saved labels.

Screen Shot: Security

① **Edit Password:** Opens a dialog box to change the password.

Note: At this time, only the Admin password is used.
Guest access is enabled by default. This only provides access to the Room UI screen.

② **Edit admin Password:** The Cancel button will exit the Edit box. Save, by definition, will save the new password, provided the New Password and Confirm New Password are identical.
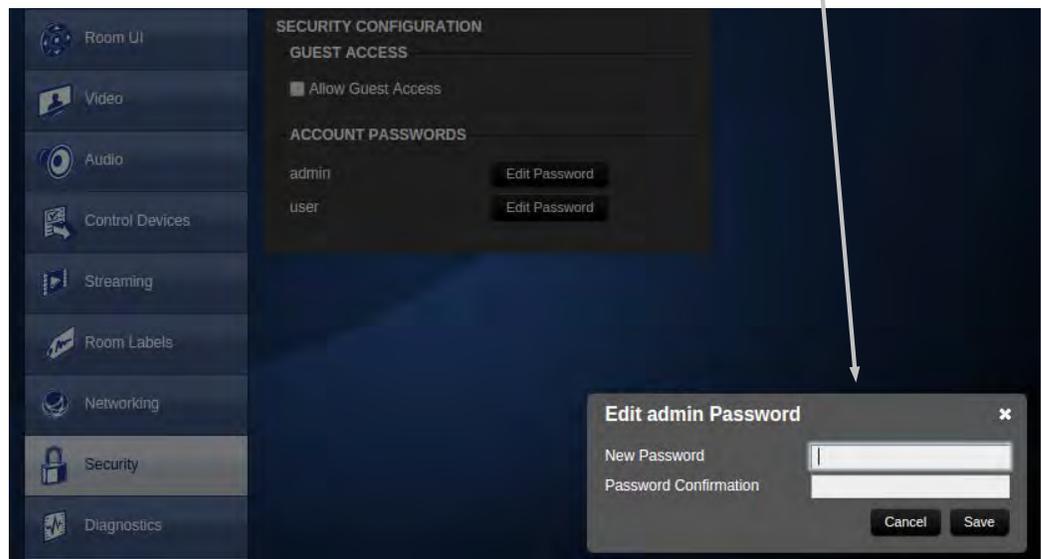
Screen Shot: Diagnostics

① **Diagnostics:** The Diagnostics screen will monitor and log function and code history of the AV Bridge MATRIX PRO. This allows for verification of remote control code commands and history of recent events, which can be helpful for troubleshooting and remote monitoring requirements.

② **Diagnostics:** Download: this function can be used as a data dump for archive purposes. A destination window will appear when pressed, to configure the destination for these files to be stored in.

③ **Diagnostics:** Refresh: this button will refresh the diagnostics logging to insure it lists recent data, functions and communications.

④ **Diagnostics:** Clear: this button will clear the contents of the Diagnostics display.

⑤ **Diagnostics:** Restore: This button will restore the contents of the Diagnostics display after it has been cleared.

Screen Shot: System Update

① **Firmware Update:**
support.vaddio.com will have the most recent version of firmware for the MATRIX PRO. Download it to the computer you are using to access the MATRIX PRO's web interface. **Do not unzip file**! Save it to a local drive.

Use the Choose File button to select the version of firmware just downloaded.

Press the Begin Firmware Update button to initiate Update. A confirmation pop-up window will be displayed. Read these *and insure power is not lost during updat*e or it will be very bad, likely requiring a trip to Vaddio for repair. A window will appear showing update progress, and a message will appear upon completion of the update.
Contact Vaddio Support if these instructions aren't fully understood; we'd obviously rather you had a successful update than not. We're also pretty sure you'd agree

② **System Utilities:** Reboot button will reset and re-initialize the MATRIX PRO.

③ **System Utilities:** Restore Factory Settings button will reset the MATRIX PRO settings to the original factory condition. Use with care as programming such as triggers may be lost, although this is unlikely.

④ **System Information:** Provides firmware version information.

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Screen Shot: Help

Technical Support: Contact Vaddio for any technical support requirements, via the direct or toll-free phone lines, or via email at support@vaddio.com. This is an excellent resource for additional information, user manuals, FAQs and drawings.
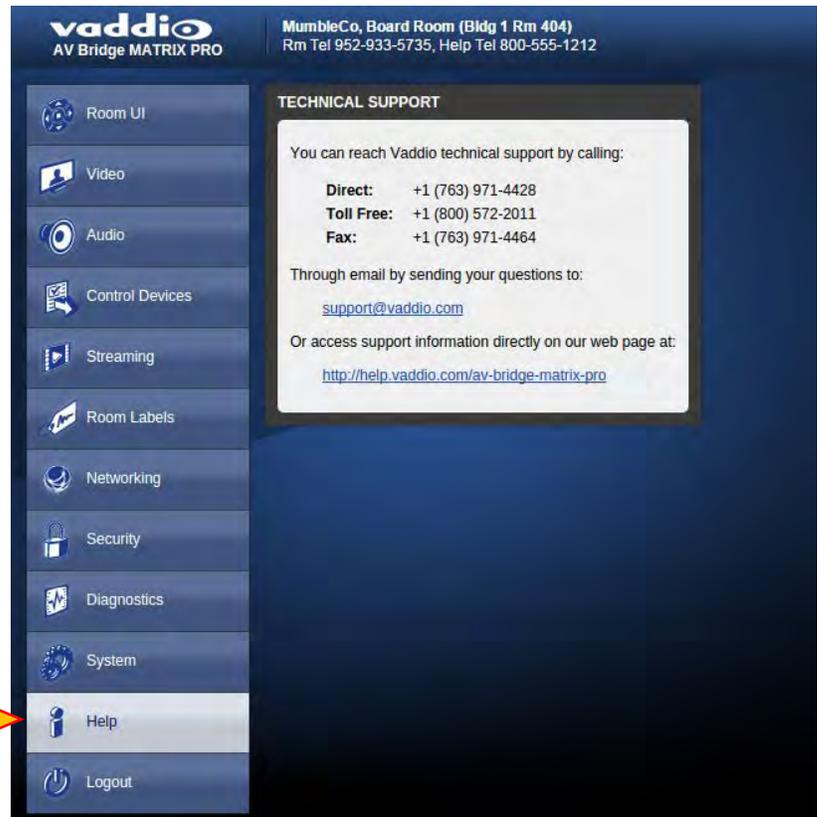
AV Bridge MATRIX PRO Back Panel Connectors

External Control Port:
- RS-232 - DE-9-F

Triggers/Tally:
- 12-pin Molex 5.0mm Euro connector (two 7-pin mating connectors)

Easy Mic Ports Audio in 1-4:
- Direct Audio and power connection to Vaddio MicPODs or Vaddio Ceiling MicPODs

Line Inputs Audio 5-8:
- Balanced Mic or Line inputs
- 48vdc switchable Phantom power

Line Ouputs 1-4:
- Balanced differential outputs

Power:
- 24 VDC, 3.75A (5.5mm OD x 2.5mm ID), Positive Center

Inputs 1-3:
- Analog Differential Camera Component Video on RJ-45: YPbPr, RGBHV, Y/C and CVBS (DE-15 female x 5)
- RS-232C Port (RJ-45 Jack x 5)
- Alternate Digital HD video on HDMI

Input 4:
- HDMI x 1
- Analog Component Video - YPbPr, RGBHV (DE-15 female x 1)

Program Out:
- Digital HD video on HDMI jack
- HDMI female x 1

USB 2.0 Streaming:
- UVC Video streaming
- UAC Audio streaming

IP Streaming Out:
- RTSP
- HLS (Apple's HTTP Live Streaming)

HSDS Display Port Out:
- Analog Differential (HSDS) output to feed any Vaddio Quick-Connect at the display location
- HSDS Output on RJ-45 8-pin jack

General Specifications

Automatically Accepted MATRIX PRO Video Input Resolutions:

HDMI HD Digital on Inputs 1 – 4
    (sRGB Color Space)
- 1080p 60/59.94/50 Hz
- 1080i 59.94/50 Hz
- 720p 60/59.94/50 Hz
- 1440 x 900 @60 Hz
- 1360 x 768 @60 Hz
- 1280 x 800 @60 Hz
- 1280 x 768 @60 Hz
- 1280 x 720 @60 Hz

Camera Analog Component (YPbPr) on Inputs 1 – 3
    (HSDS on RJ-45 Ports)
- 1080p 60/59.94/50/30/25Hz
- 1080i 59.94/50 Hz
- 720p 60/59.94/50 Hz

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

Assignable MATRIX PRO Local Output Resolutions:

HSDS HD Analog
    (on RJ-45 Port)
- 1080p 60/59.94/50/30/25Hz
- 1080i/59.94 Hz
- 1080i/50 Hz
- 720p/59.94/50/30/25 Hz
- 720p/50 Hz

HDMI HD Digital
- HDMI 1080p/60/59.94/50/30/25Hz
- HDMI 1080i/59.94 Hz
- HDMI 1080i/50 Hz
- HDMI 720p/59.94/50/30/25 Hz
- HDMI 720p/50 Hz

Assignable MATRIX PRO Streaming Output Resolutions*

IP (Network) H.264 & AAC Audio
- Up to 1080p 30/25 Frames/Sec

USB MJPEG & PCM Audio
- Up to 720p 30 (limits of USB 2.0)

*Streaming outputs are fed from the same output scaler and are same source and resolution. Simultaneous IP/USB streaming affords a maximum resolution of 720P due to bandwidth limitations of USB 2.0.

AV Bridge MATRIX PRO	
Part Numbers:	999-8230-000 North America 999-8230-001 International
Compatible Cameras:	Vaddio HD-Series Vaddio RoboSHOT-Series Vaddio WideSHOT Vaddio ZoomSHOT Vaddio CeilingVIEW Doc Cam
Video Formats Supported:	NTSC and PAL
Video Switcher:	4 x 2
Video Transitions:	Cross Fade, Cut
Video Inputs (1-3):	Three (3) RJ-45: Vaddio HSDS from cameras Three (3) Alternate HDMI
Video Input 4:	One (1) HDMI Computer or alternate source input One (1) RGBHV Input on DE-15 Connector
Video Input Resolutions:	**HDMI IN (sRGB):** 1080p 60/59.94/50 Hz, 1080i 59.94/50 Hz, 720p 60/59.94/50 Hz **YPbPr Camera IN:** 1080p/60/59.94/50/30/25 frames/sec, 1080i/59.94/50 fields/sec, 720p/60/59.94/50 frames/sec **RGBHV IN:** (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) **EDID Supported Resolutions:** 1080p/60/59.94/50/frames/sec, 720p/60/59.94/50Hz frames/sec, 1440 x 900@60Hz, 1360x768 @ 60Hz, 1280x800 @ 60 Hz
Program Output:	One (1) HDMI Program Output One (1) Vaddio HSDS Display Output
Video Output Resolutions:	**HDMI and Vaddio Display HSDS::** 1080p 60/59.94/50/30/25 Hz, 1080i 59.94/50 Hz, 720p 59.94/50/30/25 Hz
USB:	USB: Type B USB 2.0 compliant connector Supported Drivers: USB Video Class, (UVC), USB Audio Class (UAC) No Custom Drivers, Custom Programs or Custom Headaches
USB Streaming Resolutions:	MJPEG and PCM Audio Up to 720p 30 Frames (limits of USB 2.0)
Network:	Shielded RJ-45 10/100 Base-T
Network Streaming Resolutions:	H.264 & AAC Audio up to 1080p 30/25 Frames
Audio I/O	Four (4) EasyMic Ports, Four Mic/Line Inputs (with 4-AECs and phantom power for mics), Four (4) Line Outputs (8x4 Matrix Mixer)
Video/Audio DSP:	Video: Auto Scaling, Noise Filtering and De-interlacing Audio: Compressor, Equalization, Filters, AEC
Camera Control Ports:	Six (6) RS-232 on RJ-45F
Control Interface:	One (1) RS-232 on DE-9
Control:	**Embedded Web Server:** for configuration and Administration **Front Panel Controls:** for viewing configurations and AV Muting **Telnet:** on network RJ-45 Port **RS-232 Port:** (Feature to be added at second firmware release)
LCD Display:	8-line backlit LCD display
Power Requirements:	24 VDC, 3.75 Amp Switching Power Supply
Trigger Inputs:	Configurable Trigger Inputs, contact closure type
Dimensions (H x W x D):	18.93" (480.8mm) W (with rack ears) x 3.47" (88.14mm) H x 8.0" (203.2mm) D
Mass:	5.55643 lbs. (2.5203543 kg)

vaddio

Appendix 1: Connectors and signals

Camera Control Ports 1 through 3 - RS-232 on RJ-45 Connectors

PIN#	Signal
1)	Unused
2)	Unused
3)	Unused
4)	Unused
5)	Unused
6)	GND
7)	TXD (to RXD of camera)
8)	RXD (from TXD of camera)

12345678
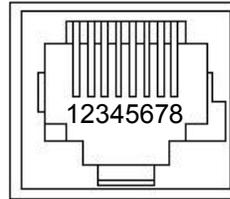
Camera EZ Power/ Video Ports 1 through 3 - on RJ-45 Connectors

PIN#	Signal
1)	Power +
2)	Power -
3)	Y +
4)	Pb +
5)	Pb GND
6)	Y GND
7)	Pr +
8)	Pr –

12345678
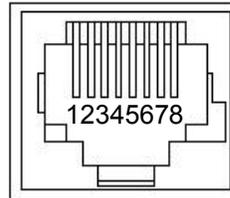
EasyMIC Port

PIN#	Signal
1)	Audio Output +
2)	Audio Output -
3)	Audio Input -
4)	+18 VDC
5)	RS-485 Control + (not used)
6)	Audio Input +
7)	RS-485 Control -
8)	GND

12345678
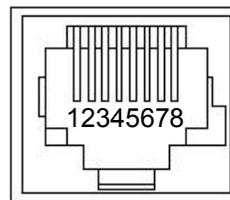
Ethernet Network Port

PIN#	Signal
1)	TX+
2)	TX-
3)	RX+
4)	Unused
5)	Unused
6)	RX-
7)	Unused
8)	Unused

12345678
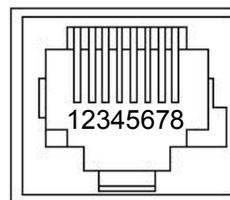
Video on HDMI

PIN#	Signal
1)	TMDS Channel 2 +
2)	TMDS Channel 2 Shield
3)	TMDS Channel 2 -
4)	TMDS Channel 1 +
5)	TMDS Channel 1 Shield
6)	TMDS Channel 1 -
7)	TMDS Channel 0 +
8)	TMDS Channel 0 Shield
9)	TMDS Channel 0 -
10)	TMDS Clock +
11)	TMDS Clock Shield
12)	TMDS clock -
13)	CEC
14)	N/C (HEC Data -)
15)	DDC I^{2}C clock SCL
16)	DDC I^{2}C data SDA
17)	DDC/CEC/HEC Shield
18)	+5 VDC Power
19)	Hot Plug Detect (HEC data +)
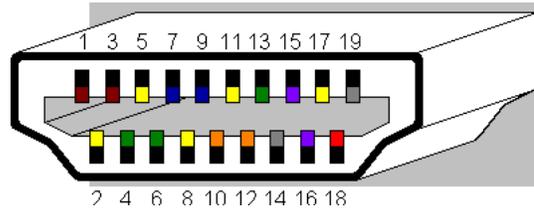
RGBHV Video on DE-15

PIN#	Signal
1)	Red +
2)	Green +
3)	Blue +
4)	Unused
5)	Unused
6)	Red GND
7)	Green GND
8)	Blue GND
9)	Unused
10)	GND
11)	Unused
12)	Unused
13)	H-Sync
14)	V-Sync
15)	Unused
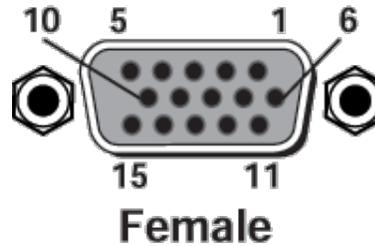
Appendix 2: API for External Control

The AV Bridge MATRIX PRO command application protocol interface is intended to allow external controllers such as AMX or Crestron to control the device using a high-level text-based command line interface.

The API is supported on the RS-232 external control port and via Telnet session. The default Telnet port is 23.

Things to know about using the serial command API:
- **Unlike Vaddio cameras, the MATRIX PRO has a single serial command set which is used either via RS-232 or Telnet session.**
- **Admin login is required.**
- **Commands are case-sensitive.**
- **All commands must be followed by a carriage return.**
- **Idle sessions may time out after a few minutes.**

About the Vaddio Serial Command API

Format:
The protocol is based upon ASCII format following the VT100 terminal emulation standard with an intuitive textual command nomenclature for ease of use. Again, the API is supported on both the RS-232 and Ethernet physical layers. Command lines are terminated on carriage return. All ASCII characters will be echoed to terminal program and appended with VT100 string -**ESC[J** (HEX- 1B 5B 4A) following the carriage return. (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: > camera pan right
RESPONSE: > OK

Get Example
COMMAND: > camera home get
RESPONSE: > OK

Syntax Error Example
COMMAND: > camera right pan
RESPONSE: > ERROR

Additional programming controls associated with the terminal protocol include:
- **CTRL 5**- Clears the current serial buffer on the device.
- In Telnet sessions, commands and their subcommands and options are also available by entering a "?"

RS-232 Serial Control

The AV Bridge MATRIX PRO has three (3) discrete camera control ports which eliminates the need for daisy-chaining control cabling. With MATRIX PRO, all cabling configurations are home run wiring configurations. Each channel will auto-configure the input channel for control of the camera attached.

Vaddio uses simple control protocols to accomplish custom programming with the RS-232 Input of the AV Bridge MATRIX PRO.

Communication Specification	Control Port - RS-232 on DE-9F Connector
Communication speed (baud rate): 38400 bps Start bit: 1 Stop bit: 1 Data bits: 8 Parity: None No Flow control	PIN# Signal 2) TXD 3) RXD 5) GND All other pins - Unused

The DE-9F Connector may require a null modem to reverse Tx and Rx, depending on the application.

Command List

Many of these have subcommands. For clarity, subcommands are described individually – for example, camera focus is described separately from camera home.

Camera commands

The base command camera is used to access camera control functionality. Used in conjunction with control arguments including home, pan, tilt, zoom, preset etc. The camera number *must* be specified.
This section covers the camera subcommands:
home
focus
pan
tilt
zoom
preset
ccu get
ccu set
ccu scene
standby

Camera home

Moves the specified camera to the home position.

Synopsis	camera [1-3] home	
Required	1 - 3	Specify which camera to return to the home position.
Example	camera 1 home Moves camera 1 back to the home position.	

Camera focus

Changes the focus of the specified camera nearer or farther than the current focus.

Synopsis	camera [1-3] focus {{near | far | stop} <1-8> | mode {auto | manual}}	
Required	[1 – 3]	Specify which camera to focus.
Options	near <1 – 8>	Move the focus nearer. Optionally specify speed as an integer from 1 to 8.
	far <1 – 8>	Move the focus farther. Optionally specify speed as an integer from 1 to 8.
	stop	Stop the focus movement at the current point.
	mode [auto | manual]	Set the focus mode to automatic or manual.
Examples	camera 3 focus near Focuses camera 3 near at the default speed. camera 1 focus far 8 Focuses camera 1 far using a speed of 8. camera 1 focus stop Stops the focus movement of camera 1. camera 2 focus mode auto Sets camera 2 to automatic focus mode.	

Camera pan

Pans the specified camera to the left or right.

Synopsis	camera [1-3] pan {left | right | stop} <1-24>	
Required	[1 – 3]	Specify which camera to pan.
Options	left <1 – 24>	Move the camera left. Optionally specify speed as an integer from 1 to 24. Default speed is 12.
	right <1 – 24>	Move the camera right. Optionally specify speed as an integer from 1 to 24. Default speed is 12.
	stop	Stop the pan movement.
Examples	camera 2 pan left Pans camera 2 to the left at the default speed. camera 1 pan right 20 Pans camera 1 to the right using a speed of 20. camera 1 pan stop Stops the pan movement of camera 1.	

Camera tilt

Move the specified camera up or down.

Synopsis	camera [1-3] tilt {up | down | stop} <1-20>	
Required	[1 – 3]	Specify which camera to tilt.
Options	up <1 – 20>	Move the camera up. Optionally specify speed as an integer from 1 to 20. Default speed is 10.
	down <1 – 20>	Move the camera down. Optionally specify speed as an integer from 1 to 20. Default speed is 10.
	stop	Stop the tilt movement.
Examples	camera 3 tilt up Tilts camera 3 up at the default speed camera 1 tilt down 20 Tilts camera 1 up using a speed of 20 camera 1 tilt stop Stops the tilt movement of camera 1	

Camera zoom

Zoom the specified camera in for a close-up view or out to show more of the room.

Synopsis	camera [1-3] zoom {in | out | stop} <1-7>	
Required	[1 – 3]	Specify which camera to zoom.
Options	in <1 – 7>	Zoom the camera in. Optionally specify speed as an integer from 1 to 7. Default speed is 3.
	out <1 – 7>	Zoom the camera out. Optionally specify speed as an integer from 1 to 7. Default speed is 3.
	stop	Stop the zoom movement.
Examples	camera 3 zoom in Zooms camera 3 in at the default speed camera 1 zoom out 7 Zooms camera 1 out using a speed of 7 camera 1 zoom stop Stops the zoom movement of camera 1	

Camera preset

Store preset camera positions or move the camera to a stored preset.

Synopsis	camera [1 – 3] preset {recall | store} [1-16] [tri-sync <1-24>] [save-ccu]	
Required	[1 – 3]	Specify which camera's presets to work with.
Options	store [1 – 16] [tri-sync <1-24>] [save-ccu]	Store the current position as a preset. Specify the preset number as an integer from 1 to 16. The preset number is required. Optionally store a tri-sync setting with this preset. When recalled, the camera will move to this preset using tri-sync. The tri-sync speed is optional and is an integer from 1 to 24. Optionally store the current CCU settings as well as position for this setting.
	recall [1 – 16]	Move the camera to a previously stored preset position. Specify the preset number as an integer from 1 to 16.
Examples	camera 1 preset store 1 Store camera 1 position as preset 1. camera 1 preset store 2 tri-sync 10 save-ccu Store camera 1 position and CCU settings as preset 2, will recall using tri-sync at speed 10. camera 2 preset store 4 tri-sync 15 Store camera 2 position as preset 4, will recall using tri-sync at speed 15. camera 2 preset recall 3 Move camera 2 to preset position 3.	

Camera ccu set

Set CCU values for the specified camera. At the risk of stating the obvious, all options require option parameters.

Synopsis	camera [1-3] ccu set {auto_white_balance {on | off} I red_gain [0-255] | blue_gain [0-255] |backlight_compensation | auto_iris | iris | gain | detail | chroma}	
Required	[1 – 3]	Specify which camera's values to set.
Options	auto_white_balance [on | off]	Set auto white balance mode on or off.
	red_gain [0 – 255]	Set the red gain value to an integer between 0 and 255.
	blue_gain [0 – 255]	Set the blue gain value to an integer between 0 and 255.
	backlight_compensation [on | off]	Use backlight compensation or turn it off.
	auto_iris [on | off]	Set auto-iris mode on or off. If auto-iris is on, it overrides any manual iris setting. The manual iris value will persist and be recalled when setting is changed back to manual.
	iris [0 – 13]	Set the iris value to an integer between 0 and 13. This will over-ride any auto-iris setting
	gain [0 – 13]	Set gain to an integer between 0 and 13.
	detail [0 – 15]	Set detail value to an integer between 0 and 15.
	chroma [0 – 14]	Set chroma value to an integer between 0 and 14.
Examples	camera 1 ccu set auto_iris off Sets the camera 1 auto_iris off camera 2 ccu set red_gain 10 Sets the camera 2 red gain to be 10	

Camera ccu get

Retrieve current CCU values for the specified camera.

Synopsis	camera [1-3] ccu get {auto_white_balance I red_gain | blue_gain | backlight_compensation | auto_iris | iris | gain | detail | chroma}	
Required	[1 – 3]	Specify which camera's values to get
Options	auto_white_balance	Gets auto white balance mode
	red_gain	Gets red gain value
	blue_gain	Gets blue gain value
	backlight_compensation	Gets backlight compensation mode
	auto_iris	Gets auto-iris mode
	iris	Gets iris value
	gain	Gets gain value
	detail	Gets detail value
	chroma	Gets chroma value
Examples	camera 3 ccu get iris Gets the iris value for camera input 3 camera 1 ccu get red_gain Gets the red_gain value for camera 1	

Camera ccu scene
Set or recall a ccu scene for the specified camera.

Synopsis	camera ccu scene [1-3] {recall {factory [1-6]	custom [1-3]}	store custom [1-3]}	
Required	[1 – 3]	Specify which camera's ccu scene to work with.
Options	store custom [1 – 3]	Store a custom ccu scene.
	recall {factory [1 – 6]	custom [1 – 3]}	Recall a ccu scene. Specify one of the six factory preset scenes or one of the three available custom scenes.
Examples	camera 3 ccu scene recall factory 2 Recalls factory preset scene 2 for camera 3. camera 1 ccu scene store custom 1 Stores camera 1's current ccu scene as its first custom ccu scene.	

Camera standby
Set or change camera standby state.

Synopsis	camera standby [1-3] {on	off	toggle}	
Required	[1 – 3]	Specify the camera to work with.
Options	on	Put the camera in standby mode.
	off	Bring the camera out of standby mode.
	toggle	Change the camera's standby state.
Examples	camera 3 standby on Puts camera 3 in standby mode. camera 1 standby toggle Changes camera 1's standby state. If camera 1 was not in standby mode, it will go to standby. If it was in standby already, it will come out standby.	

Video and streaming commands
The base command video is used to control video behaviors such as PIP and program output source.
This section covers the video subcommands:
source
stream pip
mute

The MATRIX PRO uses only one form of the streaming base command - streaming settings get.

Video source
command description.

Synopsis	video <output> source [get	set] {input1	input2	input3	input4}	
Outputs	program	Applies the command to the Program output.
	stream	Applies the command to the Stream output.
Options	set	Defines the source for the specified output.
	get	Returns the current source for the specified output.
Sources	input1 through input4	Specifies Input 1, 2, 3, or 4 as the source for the output.
	stream	The Program output may be set to use the Stream output.
Examples	video program source get Returns the current source for the video program output in the form source: input1 video stream source set input2 Sets input 2 as the source for the video stream output. video program source set stream Sets the stream output to provide the program output as well.	

Video stream pip

Specifies PIP behavior.

Synopsis	video stream pip {on | off | toggle | inset [input1 | input2 | input3 | input4]}	
Options	on	Turns on the PIP.
	off	Turns off the PIP.
	toggle	Changes the state of the PIP – on if it was off, or off if it was on.
	inset [input1 | input2 | input3 | input4]	Specifies the source of the PIP.
Examples	video stream pip on Enables the PIP. video stream pip toggle Changes the state of the PIP. video stream pip inset input2 Sets the source of the PIP to be video input 2.	

Video mute

Sets the video mute state or returns its current state.

Synopsis	video mute {get | on | off | toggle}	
Options	get	Returns the current state of video muting (on or off).
	on	Sets video muting.
	off	Restores video.
	toggle	Changes the current state of video muting – off if it was on, on if it was off.
Examples	video mute on Replace the video with the video mute display. video mute get Get the current state of video muting.	

Streaming

Can be used to return a list of current settings. At this time, streaming is not configured via the API.

Synopsis	streaming settings get
Example	streaming settings get Returns current streaming settings in the form IP Enabled true IP Port 554 IP Protocol RTSP IP Quality High Quality (Best) IP Resolution 720p IP URL lobby-conference USB Enabled true

Audio commands
The base command audio is used to control audio behaviors.
This section covers the audio subcommands:
volume
mute
route
crosspoint-gain

Audio mute
Sets or gets the current state of audio muting on the specified channel.

Synopsis	audio [channel] mute {get | on | off | toggle}	
Channel	master	Applies the command to all audio channels.
	line_out_1 through line_out_4	Applies the command to the specified audio line out (line out 1, 2, 3, or 4).
	easy_mic_1 through easy_mic_4	Applies the command to the specified EasyMIC microphone.
	usb_playback	Applies the command to the USB playback line (input data).
	hdmi_in	Applies the command to the HDMI IN line from the computer connected as the PC input.
	line_in_1 through line_in_4	Applies the command to the specified audio line in.
	usb_record	Applies the command to the USB record line (output data).
	hdmi_out	Applies the command to the HDMI OUT line.
Options	get	Returns the mute setting of the specified channel.
	on	Mutes the audio for the specified channel.
	off	Unmutes the audio for the specified channel.
	toggle	Changes the mute state for the specified channel – unmutes if it was muted, mutes if it was not.
Examples	audio master mute get Returns the current mute state for master audio. audio line_in_2 mute on Mutes the audio from line in 2.	

Audio volume

Synopsis	audio [channel] volume {get | on | off | toggle}	
Channel	master	Applies the command to all audio channels.
	line_in_1 through line_in_4	Applies the command to the specified audio line in.
	easy_mic_1 through easy_mic_4	Applies the command to the specified EasyMIC microphone.
	usb_playback	Applies the command to the USB playback line (input data).
	hdmi_in	Applies the command to the HDMI IN line from the computer connected as the PC input.
	line_out_1 through line_out_4	Applies the command to the specified audio line out (line out 1, 2, 3, or 4).
	usb_record	Applies the command to the USB record line (output data).
	hdmi_out	Applies the command to the HDMI OUT line.
Options	get	Returns the current volume for the specified channel.
	up	Raises the volume of the specified channel.
	down	Lowers the volume of the specified channel.
	set [level]	Sets the volume level for the specified channel. Valid volume ranges are:

Within the set [level] cell:

master	-50.0 to 20.0
line in	-50.0 to 20.0
EasyMIC	-42.0 to 6.0
USB playback	-42.0 to 6.0
HDMI in	-42.0 to 6.0
line out	-50.0 to 20.0
USB record	-42.0 to 6.0
HDMI out	-42.0 to 6.0

Examples	audio master volume get Returns the current master volume in the form volume 5.0 dB audio easy_mic_2 volume set 5.5 Sets the volume for EasyMIC 2 to 5.5.

Audio route
Set or get the inputs routed to the specified output.

Synopsis	audio [output] route {get | set [input]}	
Outputs	line_out_1 through line_out_4	Specifies the output – line out 1, 2, 3, or 4.
	usb_record	Specifies USB record as the output. When this is the output, USB playback may not be specified as an input.
	hdmi_out	Specifies HDMI OUT as the output.
Options	set	Defines the inputs routed to the specified output.
	get	Returns the inputs currently routed to the specified output.
Inputs	auto_mic_mix	Include the auto mic mix in the specified input.
	line_in_1 through line_in_4	Include the specified line in – line in 1, 2, 3, or 4 – in the specified input.
	easy_mic_1 through easy_mic_4	Include the specified EasyMIC – 1, 2, 3, or 4 – in the specified input.
	usb_playback	Include USB playback in the specified input. USB playback cannot be an input when the output is USB record.
	hdmi_in	Specifies the audio input to be the HDMI IN line from the computer connected as the PC input
Examples	audio usb_record route set auto_mic_mix Routes the auto mic mix to USB record. audio line_out_1 route set easy_mic_1 line_in_1 Routes EasyMIC 1 and line in 1 to line out 1. audio line_out_4 route get Returns the inputs routed to line out 4.	

Audio crosspoint-gain
Sets or returns the current value for the input routing gain for a given output and input.

Synopsis	audio <output> crosspoint-gain <input> {get | set <level>}	
Outputs	line_out_1 through line_out_4	Specifies the output – line out 1, 2, 3, or 4.
	usb_record	Specifies USB record as the output.
	hdmi_out	Specifies HDMI OUT as the output.
Options	get	Returns the current input routing gain value.
	set <level>	Sets the input routing gain value. The value must be in the range of -12.0 to 12.0 dB.
Inputs	auto_mic_mix	Set or get the routing gain for the auto mic mix for the specified output.
	line_in_1 through line_in_4	Set or get the routing gain for the specified line in (1, 2, 3, or 4) to the specified output.
	easy_mic_1 through easy_mic_4	Set or get the routing gain for the selected EasyMIC (1, 2, 3, or 4) to the specified output.
	usb_playback	Set or get the routing gain for the USB playback to the specified output.
	hdmi_in	Set or get the routing gain for the HDMI IN line from the computer connected as the PC input, to the specified output
Examples	audio usb_record crosspoint-gain auto_mic_mix set 6.00 Sets the crosspoint gain of USB record and auto mic mix to 6 dB. audio line_out_1 crosspoint-gain easy_mic_1 get Returns the current gain setting of the crosspoint between line out 1 and EasyMIC 1 in the form 3.95	

Administrative Commands

System administration commands include:
network
system
trigger
sleep
version
history
help
exit

Network ping

Sends ICMP ECHO_REQUEST packets to the specified IP address.

Synopsis	network ping [count <count>] [size <size>] <destination-ip>	
Options	count	The number of ECHO_REQUEST packets to send. If this is not specified, the default is five packets.
	size	The size of each ECHO_REQUEST packet. If this is not specified, the default is 56 bytes.
	<destination-ip>	The IP address where the ECHO_REQUEST packets will be sent.
Examples	network ping 192.168.1.1 Sends five ECHO_REQUEST packets of 56 bytes each to the host at 192.168.1.1. 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.	

Network settings

Returns the current network settings.

Synopsis	network settings get
Examples	network settings get Returns current settings in this form: MAC Address: 00:04:a3:85:0a:ee IP Address: 10.10.8.116 Netmask: 255.255.255.0 Gateway: 10.10.8.100

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>]	
Option	<seconds>	Number of seconds to delay the reboot.
Examples	system reboot Reboots the system immediately. system reboot 30 Reboots the system 30 seconds later.	

System factory-reset

Sets or gets the factory reset status. An attempt will be made first to use the middleware. If that fails, clish will revert to the old file I/O method. When the factory reset status is on, the system resets to factory defaults on reboot.

Synopsis	system factory-reset {get | on | off}	
Options	get	Get the current factory reset status.
	on	Enable factory reset on reboot.
	off	Disable factory reset on reboot.
Examples	system factory-reset get Returns the factory reset status in this form: factory-reset (software): off factory-reset (hardware): off ---- system factory-reset on Enables factory reset upon reboot. Returns current status in this form: factory-reset (software): on factory-reset (hardware): off	

Trigger

Activate or deactivate a software trigger. This command is disabled if the trigger is in test mode.

Synopsis	trigger <1-10> {on | off} [block [seconds]]	
Options	on	Turns on the specified trigger.
	off	Turns off the specified trigger.
	block	Block until all macros initiated by the state change have finished. Optionally specify the number of seconds to wait for the macros to run. If the block interval is not specified, the default is 60 seconds.
Examples	trigger 2 on Enables trigger 2. trigger 3 off block 10 Turns off trigger 3, allowing up 10 seconds for macros to finish if any are running.	

Sleep

Utilized as a pause command in Macros.

Synopsis	sleep <1-10,000mS>
Example	sleep 150 delays next command by 150 milliseconds

Version

Returns the current software version.

Synopsis	version
Example	AVBMP 1.0.0

History

Returns the list of recently executed commands from the history buffer.

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.

Synopsis	history [limit]	
Option	[limit]	Specify the number of unique commands to save in the history buffer.
Examples	history Displays the current command buffer. history 5 Specify that the command buffer retains the last 5 unique commands.	

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:

* !!   Substitute 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)

Help

Displays an overview of the CLI syntax.

Example	help

Exit

Ends the command session and closes the Telnet socket.

Note: This differs from the exit command's behavior in sessions over a serial connection – in that situation, the exit command ends the current session and starts a new one.

Example	exit

Compliance and CE Declaration of Conformity – AV Bridge MATRIX PRO

Compliance testing was performed to the following regulations:

- **FCC Part 15** (15.107, 15.109)**, Subpart B**   Class A
- **ICES-003, Issue 4: 2004**   Class A
- **EN 55022 A: 2010**   Class A
- **KN24 2008 (CISPR 24: 1997 + A1: 2000 + A2: 2002)**   Class A
- **KN22 2008 (CISPR 22: 2006)**   Class A
- **EMC Directive 2004/108/EC**   Class A
- **EN 55024: A2: 2003**   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, 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'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 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 2004/108/EC

EN 55022 A: 2010	Radiated and Conducted Emissions
EN 55024: 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
IEC 60950-1:2005 (2nd Edition); Am 1:2009	Safety
EN 60950-1:2006+A11:2009+A1:2010+A12:2011	Safety

Warranty Information

(See Vaddio Warranty, Service and Return Policies posted on vaddio.com for complete details):

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 products and 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 through one of the following resources: e-mail support at support@vaddio.com or online at 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. RMA's 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.

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.

Other General Information:
Care and Cleaning
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 and test for smell
- Do not use any abrasive chemicals
- If you clean the base, it may do that dog-leg thing like when you pet a dog's belly

Operating and Storage Conditions:
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 with movie stars
- In inclement weather
- Dry environments with an excess of static discharge
- In, under or around basement laundry tubs or outer space
- Under severe vibration
- During interstellar transport
- Let's not go down the road in discussion of *inter*stellar versus *intra*stellar, this manual would get too long.

Vaddio

Toll Free: 800-572-2011 ▪ Phone: 763-971-4400 ▪ FAX: 763-971-4464
www.vaddio.com