

Installation Guide for the

AV Bridge MATRIX PRO

AV Encoder

Document 411-0020-31 Rev B
March 2021

Contents

Overview	1
About this Guide	1
Features	1
A Quick Look at the AV Encoder	2
Front Panel	2
Connector Panel	3
Installation	4
Don't Void Your Warranty!	4
Cabling Notes	4
Basic Connections	5
About Echo Cancellation	6
RS-232 Serial Communication Settings and Port Pin-outs	7
Powering Up	8
Ensuring Compatibility	8
Next Steps	8
Operation, Storage, and Care	8
Photo Credits	9

Overview

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

- 999-8230-000 – North America
- 999-8230-001 – Europe and UK
- 999-8230-009 – Australia and New Zealand



About this Guide

This guide covers:

- Unpacking the AV encoder
- Tips for a successful installation
- Connection diagram
- Equipment power-on

Complete product information is available in the **Complete Manual for the AV Bridge MATRIX PRO AV Encoder**.

Features

Inputs and Outputs:

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

Cameras and Video:

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

Audio:

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

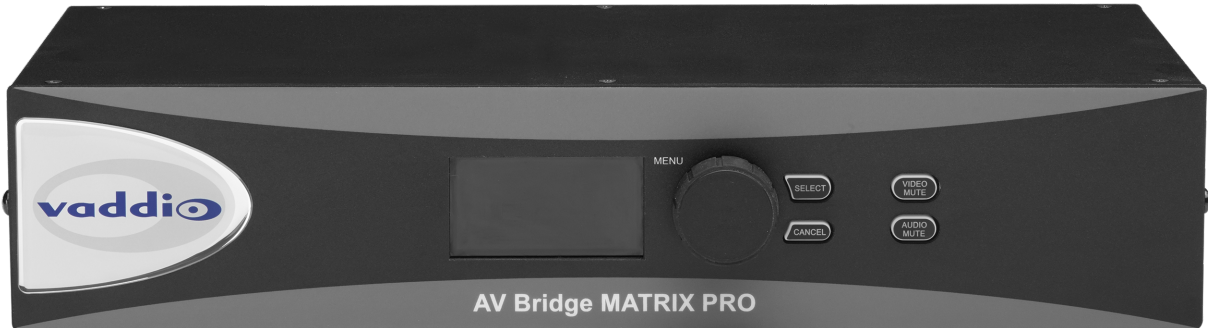
Control

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

A Quick Look at the AV Encoder

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

Front Panel



The front panel controls may be locked by the administrator.

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

Connector Panel



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

Note

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

Installation

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

Don't Void Your Warranty!

Caution

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

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

Cabling Notes

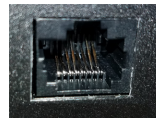
Use Cat-5e or better cable and standard RJ-45 connectors (568B termination). We recommend using high-quality connectors and a high-quality crimping tool.

Caution

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



Intact – will make reliable contact with cable connector



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

Use Cat-5e or better cable. We recommend using high-quality connectors and a high-quality crimping tool. We recommend shielded cabling if the cables will be coiled, run tightly with other cables, or placed close to sources of electromagnetic interference such as power lines.

Caution

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



Pro Tip

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

Basic Connections

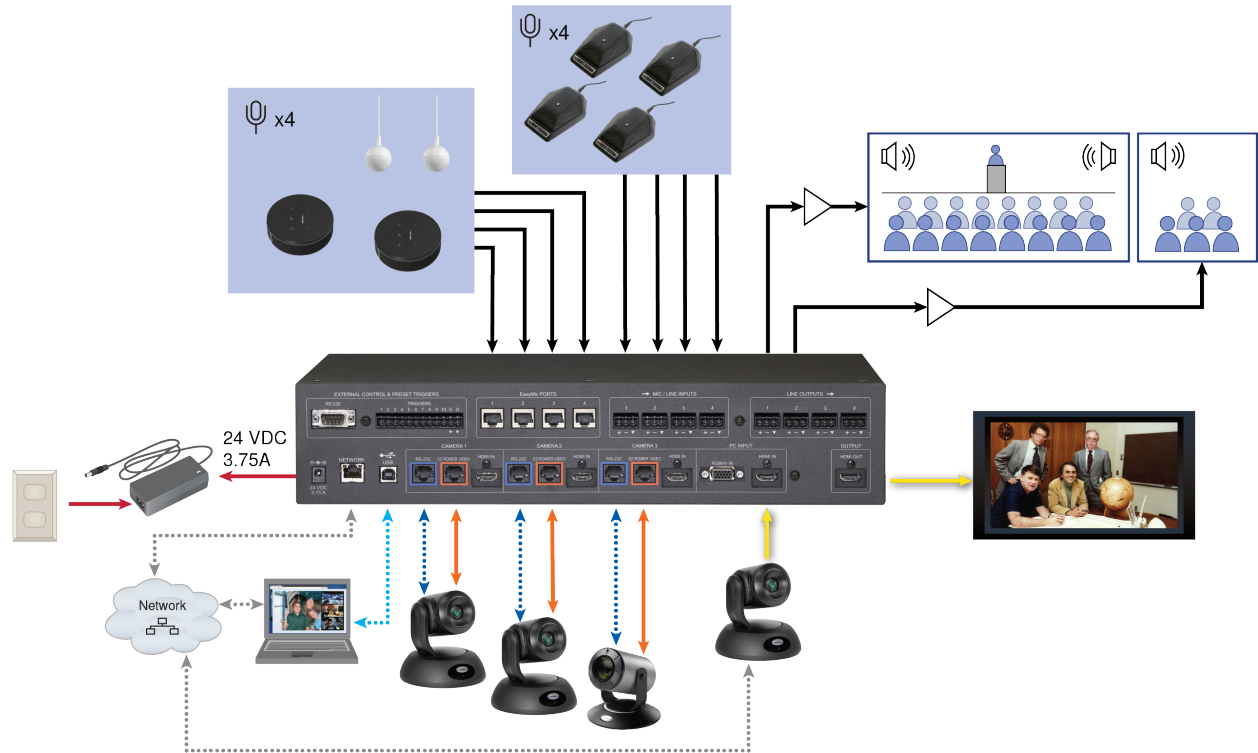
These diagrams illustrate some of the possibilities of the AV Bridge MATRIX PRO – multiple camera and microphone inputs, multiple display and audio outputs.

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

Note

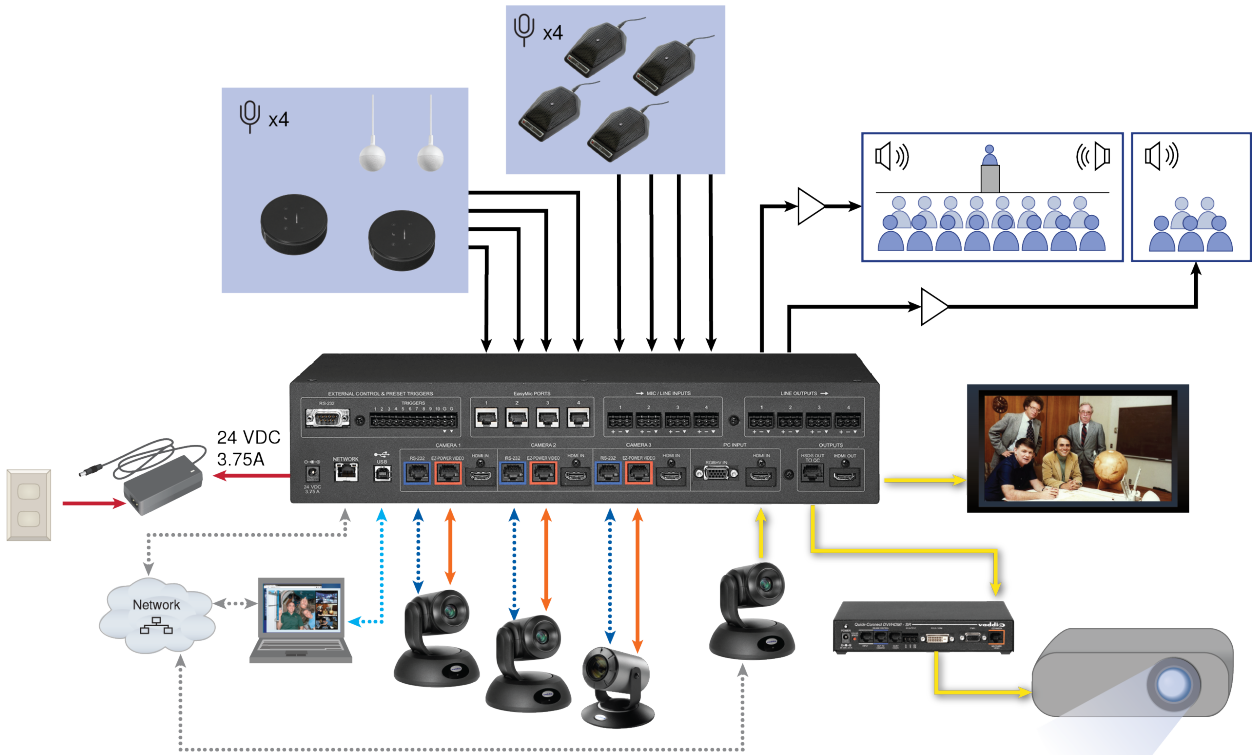
Because the AV Bridge MATRIX PRO provides camera extension functionality, cable distance for cameras 1 through 3 is up to 100 ft. (30 m) for PTZ cameras, or 150 ft. (45 m) for fixed cameras.

AV Bridge MATRIX PRO manufactured after January 1, 2021



AV Bridge MATRIX PRO manufactured before 2021

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



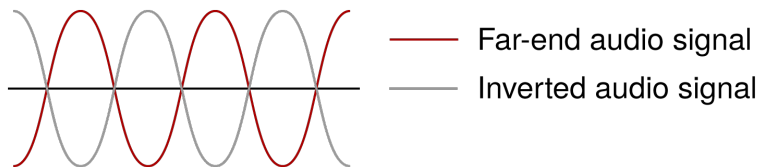
About Echo Cancellation

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

Here's how it works.

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

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



For acoustic echo cancellation to work,

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

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

RS-232 Serial Communication Settings and Port Pin-outs

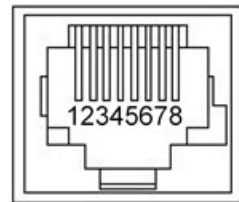
The RS-232 serial ports (color-coded blue) on the back panel provide camera control for video inputs 1 through 3.

Camera communication parameters are as follows:

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

Camera RS-232 connector pin-out:

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

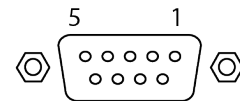


External control communication parameters are as follows:

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

External Control connector pin-out:

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



Caution

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

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

Powering Up

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

Ensuring Compatibility

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

Next Steps

The AV Bridge MatrixMIX is now ready to configure. This includes setting up its address book to manage cameras via the IP network. Until the product is fully configured, its full functionality is not available. This information is available in the **Complete Manual for the AV Bridge MATRIX PRO AV Encoder**.

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

Operation, Storage, and Care

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

Keep this device away from food and liquids.

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

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

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



Photo Credits

This guide may include some or all of these photos.

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

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

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

By credit NASA JPL - JPL, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=1180927>

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

By European Space Agency - ESOC flickr, Credit: ESA - Jürgen Mai, CC BY-SA 3.0-igo,

<https://commons.wikimedia.org/w/index.php?curid=36743173>

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

By NASA - <https://www.flickr.com/photos/nasa2explore/16166230844/>, Public Domain,

<https://commons.wikimedia.org/w/index.php?curid=38931301>

Pho. By J. Nguyen~commonswiki assumed (based on copyright claims). - No machine-readable source provided. Own work assumed (based on copyright claims)., CC BY-SA 3.0,

<https://commons.wikimedia.org/w/index.php?curid=587914>

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

By NASA - <http://spaceflight.nasa.gov/gallery/images/station/crew-36/html/iss036e016704.html>, Public

Domain, <https://commons.wikimedia.org/w/index.php?curid=27263573>

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

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

By European Space Agency - Nicolas Altobelli talks to the media, CC BY-SA 3.0-igo,

<https://commons.wikimedia.org/w/index.php?curid=36743144>

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

By European Space Agency - Live update from the Main Control Room, CC BY-SA 3.0-igo,

<https://commons.wikimedia.org/w/index.php?curid=36743150>

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

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

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

©2021 Legrand AV Inc.

Vaddio is a registered trademark of Legrand AV Inc. All other brand names or marks are used for identification purposes and are trademarks of their respective owners. All patents are protected under existing designations. Other patents pending.

A brand of  legrand®

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

vaddio®