AT-OME2-E2311 / AT-OME2-D2311

Omega 2 HDBaseT 3 Video Transmitter & Receiver with HDMI and USB Data

Instructions for Use

Version 1.0





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Version Information

This section lists document revisions.

Version	Date	Notes
1.0	September 11, 2026	Initial release.

Sales & Customer Support

Main Office (US)	Hall Research, 1234 Lakeshore Dr Suite #150, Coppell, TX 75019
Support Hours	Monday – Friday, 8:00 a.m. – 6:00 p.m. (CST)
Website	https://www.hallresearch.com
Product Page (Transmitter)	https://www.hallresearch.com/product/AT-OME2-E2311
Product Page (Receiver)	https://www.hallresearch.com/product/AT-OME2-D2311

IMPORTANT: Visit https://www.hallresearch.com/product/AT-OME2-E2311 or https://www.hallresearch.com/product/AT-OME2-D2311 for the latest firmware updates and Instructions for Use.

Warranty

To view the product warranty, use the following link: https://hallresearch.com/warranty

Important Safety Information

CAUTION: Risk of electric shock. Do not open the enclosure or expose it to rain or moisture. No user-serviceable parts inside. Refer servicing to qualified service personnel.

- Do not expose this apparatus to rain, moisture, dripping, or splashing, and do not place objects filled with liquids, such as vases, on the apparatus.
- Do not install or place this unit in a bookcase, built-in cabinet, or other confined space. Ensure the unit is well ventilated.
- To prevent the risk of electric shock or fire from overheating, do not obstruct the ventilation openings with newspapers, tablecloths, curtains, or similar items.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not place sources of naked flames, such as lighted candles, on the unit.
- Clean this apparatus only with a dry cloth.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Protect the power cord from being walked on or pinched, particularly at plugs.
- Only use attachments and accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel.

FCC Compliance

This hardware device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Introduction

Overview

The AT-OME2-E2311 transmitter and AT-OME2-D2311 receiver extend HDMI 2.0 video, audio, USB 2.0, RS-232, and Ethernet over a single category cable using the HDBaseT 3.0 platform. Uncompressed 4K@60Hz 4:4:4 8-bit video can be transmitted up to 100 m (330 ft) over Cat 6A cable.

The pair provides KVM operation: a computer connected to the USB HOST port on the transmitter can use the keyboard, mouse, camera, and other USB devices connected to the four USB DEVICE ports on the receiver. An analog stereo input on the transmitter passes through to the receiver, and each unit also provides an AUDIO OUT port for de-embedded HDMI audio.

Each unit is equipped with an RS-232 port for bi-directional RS-232 pass-through or firmware update, selected with the front-panel DIP switch. With bi-directional Power over HDBaseT (PoH), either the transmitter or the receiver can power both units through the HDBaseT link. Gigabit Ethernet pass-through is also supported between the transmitter and receiver.

Features

- HDMI 2.0 and HDCP 2.2 compliant.
- Transmits 4K@60Hz 4:4:4 8-bit video without compression and supports HDR formats, including Dolby Vision and HDR10+.
- Extends 4K@60Hz 4:4:4 signals up to 100 m (330 ft) over Cat 6A cable.
- USB 2.0 pass-through over HDBaseT with data transfer up to 350 Mbps.
- High-power USB DEVICE ports on the receiver for higher-power USB devices.
- Analog audio pass-through from the transmitter to the receiver.
- Audio de-embedding on both the transmitter and the receiver.
- 1000M/100M adaptive Ethernet pass-through over HDBaseT.
- Bi-directional PoH: either the transmitter or the receiver can power both units.
- Bi-directional RS-232 pass-through and firmware update.

Package Contents

AT-OME2-E2311 Transmitter

- 1 x Transmitter
- 1 x 3.5 mm 3-pin Phoenix male connector
- 4 x Mounting brackets (with screws)

AT-OME2-D2311 Receiver

- 1 x Receiver
- 1 x DC 12V power adapter
- 1 x AC power cord with US pins
- 1 x AC power cord with EU pins
- 1 x 3.5 mm 3-pin Phoenix male connector
- 4 x Mounting brackets (with screws)

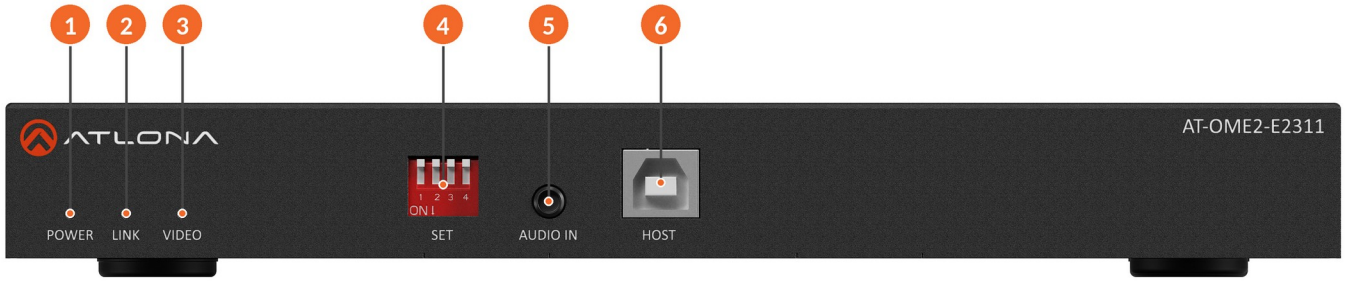
NOTE: The transmitter is shipped without a power adapter. In a typical installation, the adapter supplied with the receiver powers both units through the HDBaseT link (bi-directional PoH).

NOTE: If any items are missing or damaged, contact Hall Research Technical Support at hallresearch.com.

Panel Description

AT-OME2-E2311 Transmitter

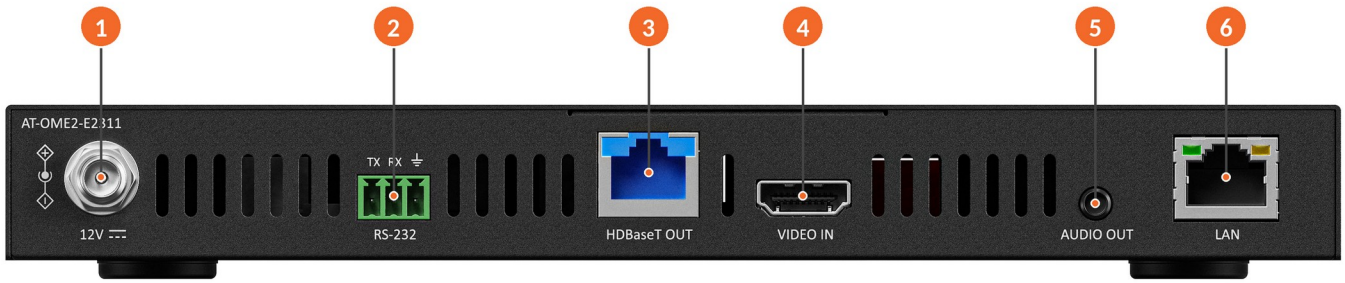
Front Panel



AT-OME2-E2311 — Front Panel

#	Name	Description
1	POWER LED	On: The device is powered on. Off: The device is powered off. Blinking: A firmware update is in progress.
2	LINK LED	On: The HDBaseT link is normal. Off: No HDBaseT link, or a link error.
3	VIDEO LED	On: An HDMI input signal is active. Off: No HDMI input signal, or the input signal is inactive.
4	SET	4-pin DIP switch that sets the RS-232 port mode: RS-232 pass-through, MCU firmware update, or HDBaseT (Valens) firmware update. See DIP Switch Configuration.
5	AUDIO IN	Connect to an analog audio source. The audio passes through to the AUDIO OUT (pass-through) port on the receiver.
6	HOST	USB 2.0 Type-B port. Connect to a USB host device (e.g., a PC).

Rear Panel

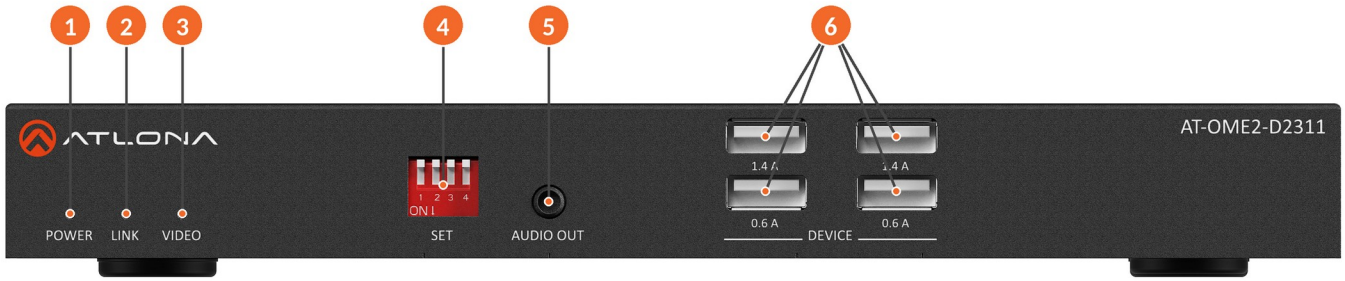


AT-OME2-E2311 — Rear Panel

#	Name	Description
1	12V	Connect to a 12V DC power adapter (not included). Supports bi-directional PoH: when this unit is powered locally, it supplies power to the receiver through the HDBaseT link, so both units operate from a single power adapter. The receiver must be equipped with a compatible PSE or PD module.
2	RS-232	Connect to an RS-232 device for bi-directional RS-232 pass-through or firmware update.
3	HDBaseT OUT	Connect to the HDBaseT IN port of the receiver (e.g., AT-OME2-D2311).
4	VIDEO IN	Connect to an HDMI source device.
5	AUDIO OUT	Connect to an audio receiver for de-embedded audio output.
6	LAN	RJ-45 port. Connect to a network or a PC for Ethernet pass-through.

AT-OME2-D2311 Receiver

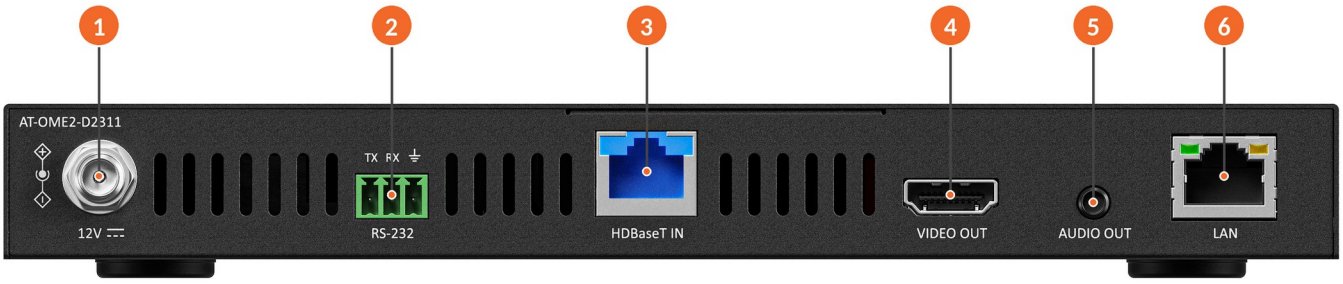
Front Panel



AT-OME2-D2311 — Front Panel

#	Name	Description
1	POWER LED	On: The device is powered on. Off: The device is powered off. Blinking: A firmware update is in progress.
2	LINK LED	On: The HDBaseT link is normal. Off: No HDBaseT link, or a link error.
3	VIDEO LED	On: The HDMI output signal is active. Off: No HDMI output signal, or the signal is inactive.
4	SET	4-pin DIP switch that sets the RS-232 port mode: RS-232 pass-through, MCU firmware update, or HDBaseT (Valens) firmware update. See DIP Switch Configuration.
5	AUDIO OUT	Connect to an audio receiver for the analog audio passed through from the AUDIO IN port on the transmitter.
6	DEVICE	Four USB 2.0 Type-A ports. Connect to USB devices (e.g., keyboard, mouse, USB camera, USB flash drive). The top two ports supply up to 1.4 A and the bottom two ports up to 0.6 A. Before connecting a USB 3.0 device, confirm that it is compatible with USB 2.0.

Rear Panel



AT-OME2-D2311 — Rear Panel

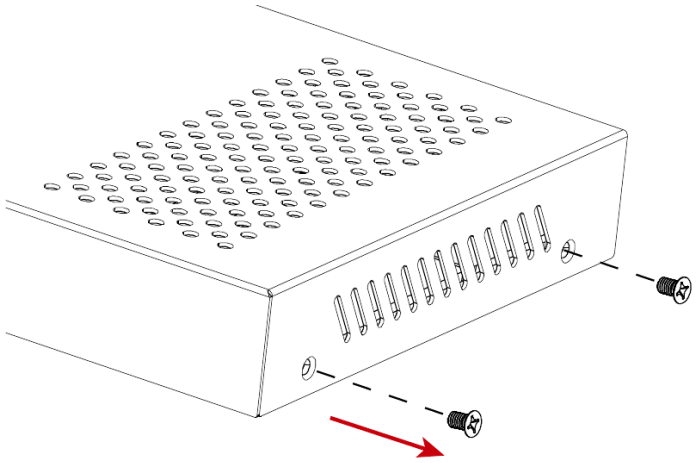
#	Name	Description
1	12V	Connect to the power adapter provided. Supports bi-directional PoH: when this unit is powered locally, it supplies power to the transmitter through the HDBaseT link, so both units operate from a single power adapter. The transmitter must be equipped with a compatible PSE or PD module.
2	RS-232	Connect to an RS-232 device for bi-directional RS-232 pass-through or firmware update.
3	HDBaseT IN	Connect to the HDBaseT OUT port of the transmitter (e.g., AT-OME2-E2311).
4	VIDEO OUT	Connect to an HDMI display.
5	AUDIO OUT	Connect to an audio receiver (e.g., powered speakers) for de-embedded audio output.
6	LAN	RJ-45 port. Connect to a network or a PC for Ethernet pass-through.

Installation

WARNING: Before installation and wiring, disconnect power from all devices. Connect and disconnect cables gently.

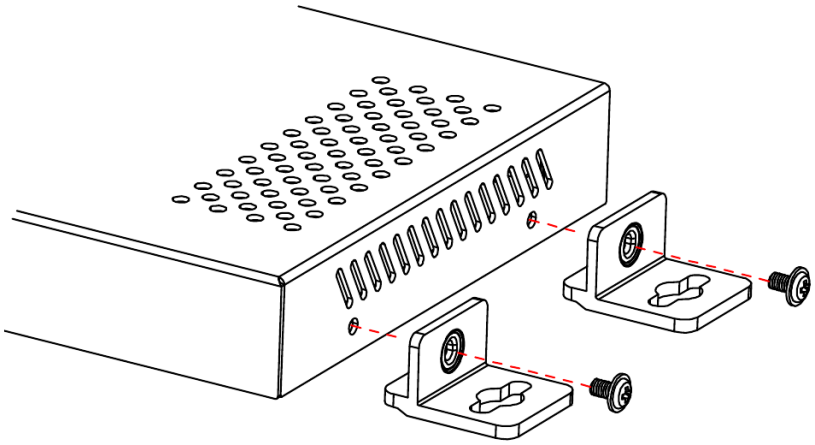
Both units can be surface-mounted using the mounting brackets provided. To install a unit:

1. Remove the two screws on one side of the enclosure.



Removing the enclosure screws

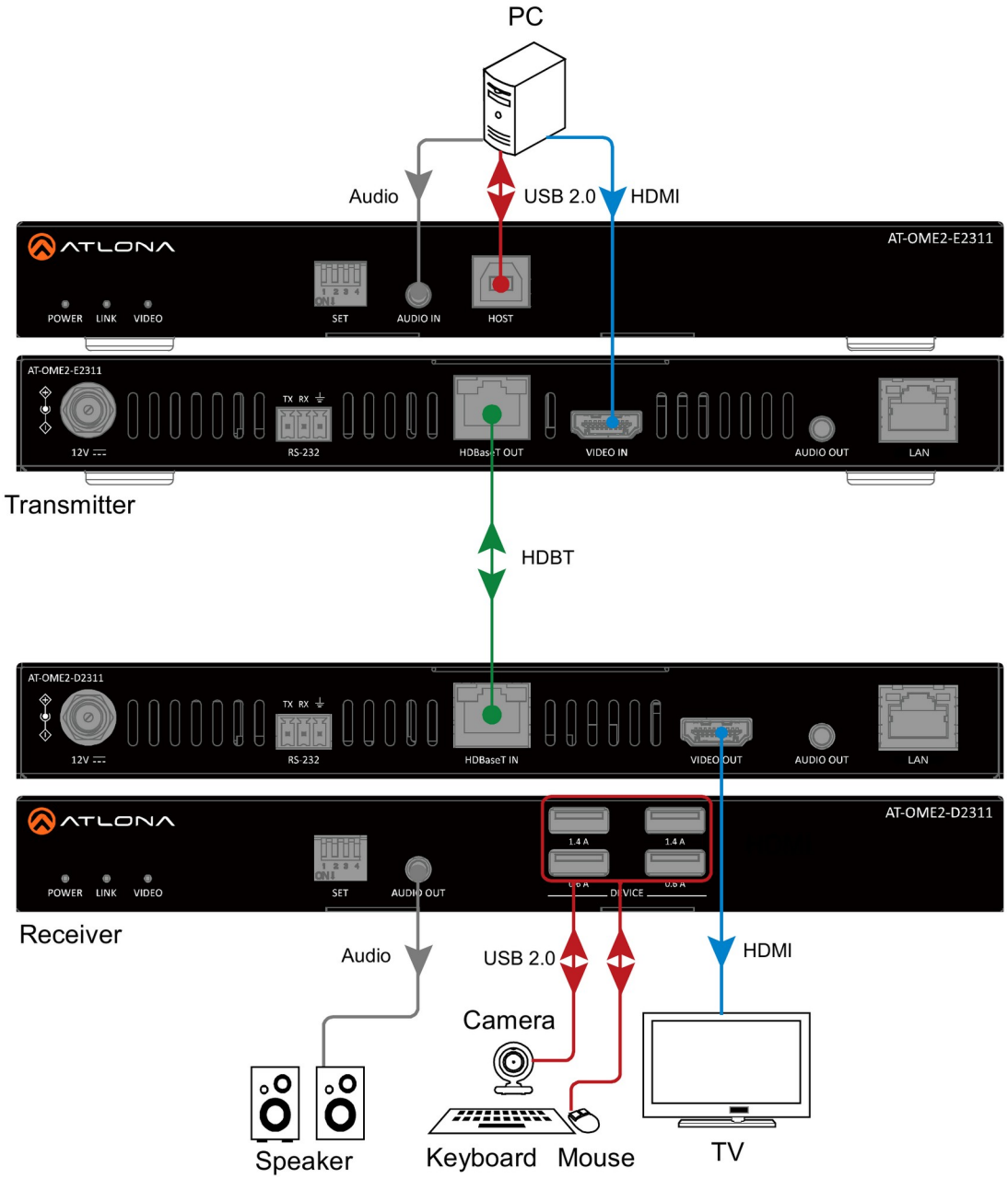
2. Attach a mounting bracket to the enclosure using the screws provided, as shown.



Attaching the mounting brackets

3. Repeat steps 1–2 for the other side of the unit.
4. Attach the brackets to the mounting surface using screws (not included).

Wiring



AT-OME2-E2311 and AT-OME2-D2311 — Application Wiring Diagram

Basic Connections

1. Connect an HDMI source to the VIDEO IN port of the AT-OME2-E2311.
2. For KVM operation, connect the USB HOST port of the transmitter to the source computer using a USB Type-A to Type-B cable.
3. Connect the HDBaseT OUT port of the transmitter to the HDBaseT IN port of the AT-OME2-D2311 using a shielded Cat 6A (U/FTP or F/FTP) cable terminated to T568B.

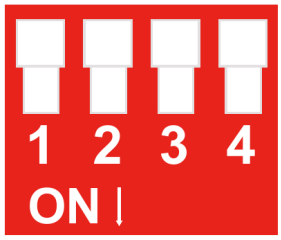
4. Connect an HDMI display to the VIDEO OUT port of the receiver.
5. Connect USB devices (keyboard, mouse, camera, etc.) to the USB DEVICE ports of the receiver.
6. Connect the power adapter to the 12V port of the receiver. Both units are powered through the HDBaseT link.

Additional Control Options

- **Ethernet pass-through:** Connect a PC to the LAN port of one unit and connect a network to the LAN port of the other unit. The PC can then access the network.
- **RS-232 operation:** Connect a control PC or control system to the RS-232 port of the transmitter or receiver. Use the DIP switch to set the function of the RS-232 port. See DIP Switch Configuration.
- **Analog audio pass-through:** Connect an analog audio source to the AUDIO IN port of the transmitter and an audio receiver to the front-panel AUDIO OUT port of the receiver.
- **Audio de-embedding:** Connect an audio receiver to the rear-panel AUDIO OUT port of either unit for de-embedded HDMI audio output.

DIP Switch Configuration

Each unit is equipped with a 4-pin DIP switch (SET) on the front panel that sets the working mode of the RS-232 port: RS-232 pass-through, MCU firmware update, or HDBaseT (Valens) firmware update. By default, all four switches are in the Up position.



DIP switch (SET)

Pin 1	Pin 2	Pin 3	Pin 4	Function
–	–	Up	Up	RS-232 pass-through (default)
–	–	Down	Up	RS-232 for MCU firmware update
–	–	Up	Down	RS-232 for HDBaseT (Valens) firmware update
–	–	Down	Down	Reserved

NOTE: "–" indicates that the position of the pin has no effect on the corresponding function.

- With the switch set to –, –, Down, Up, the RS-232 port can be used to update the MCU firmware of the unit.
- With the switch set to –, –, Up, Down, the RS-232 port can be used to update the HDBaseT (Valens) firmware of the unit and of the unit connected to it over HDBaseT.

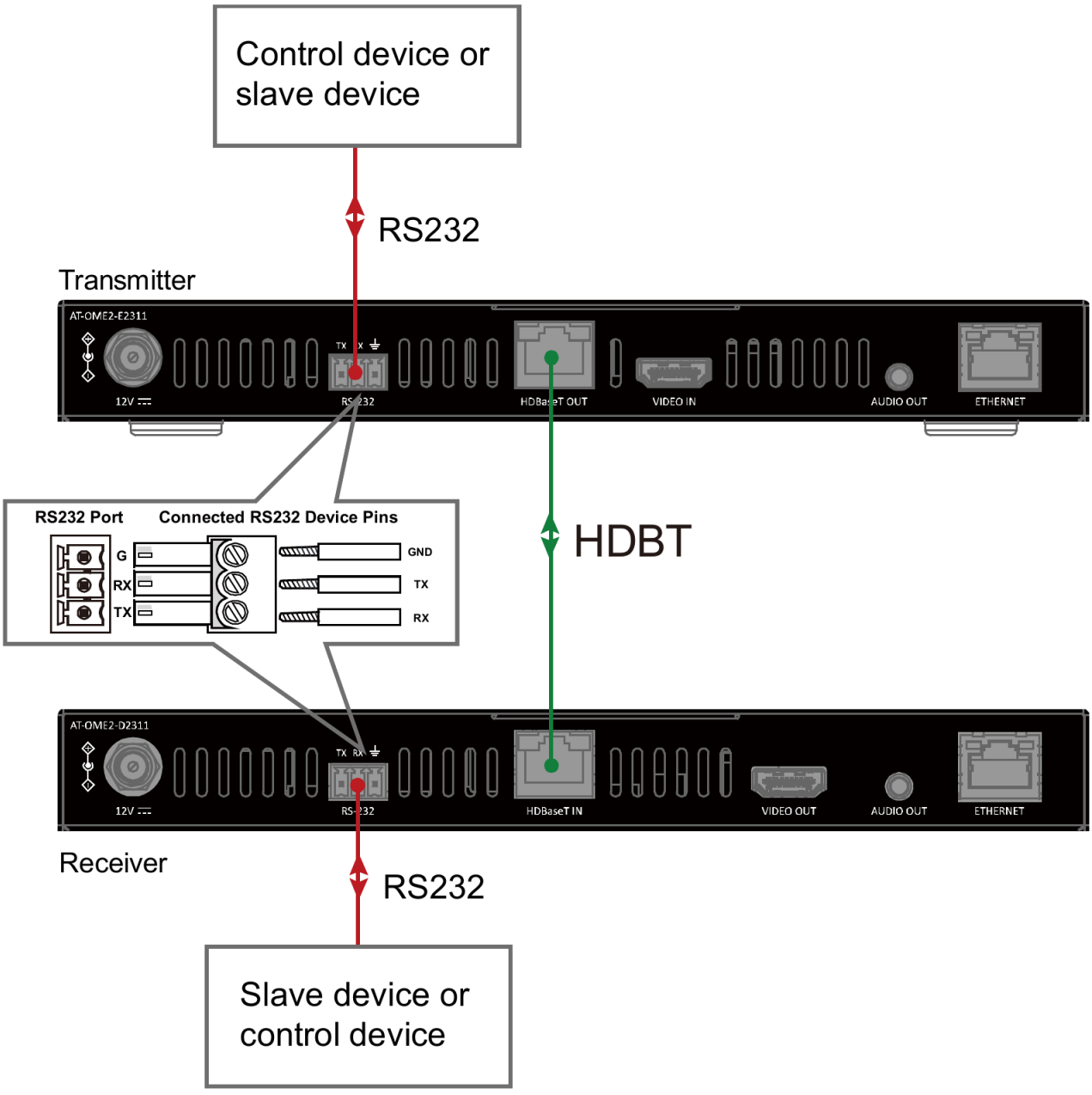
Firmware Update

For firmware files and update instructions, visit the product page (hallresearch.com/product/AT-OME2-E2311 or hallresearch.com/product/AT-OME2-D2311) or contact Hall Research technical support.

RS-232 Pass-Through

The AT-OME2-E2311 and AT-OME2-D2311 support bi-directional RS-232 pass-through between the two units. To use it:

1. Set the DIP switch of both the transmitter and the receiver to –, –, Up, Up (RS-232 pass-through).
2. Connect an RS-232 control device to the transmitter or the receiver, and connect the RS-232 device to be controlled to the other unit.
3. Connect the power adapter to the receiver to power both units.



RS-232 pass-through wiring

RS-232 Port Pin	Connected RS-232 Device Pin
G	GND
RX	TX
TX	RX

Specifications

Technical	
Input/Output Ports	AT-OME2-E2311: 1 x HDMI IN, 1 x HDBaseT OUT, 1 x AUDIO IN (pass-through), 1 x AUDIO OUT (de-embedded), 1 x USB HOST (Type-B), 1 x RS-232, 1 x LAN (RJ-45), 1 x DC 12V IN AT-OME2-D2311: 1 x HDBaseT IN, 1 x HDMI OUT, 1 x AUDIO OUT (pass-through), 1 x AUDIO OUT (de-embedded), 4 x USB DEVICE (Type-A), 1 x RS-232, 1 x LAN (RJ-45), 1 x DC 12V IN
Video Signal	AT-OME2-E2311: Input HDMI up to 4K@60Hz YUV 4:4:4, HDCP 2.2; output HDBaseT AT-OME2-D2311: Input HDBaseT; output HDMI up to 4K@60Hz YUV 4:4:4, HDCP 2.2
Resolutions	4096 × 2160 @ 24, 30, 50, 59.94, 60 Hz (YUV 4:4:4) 3840 × 2160 @ 24, 30, 60 Hz (YUV 4:4:4) 2560 × 1600, 2560 × 1440, 1920 × 1200, 1920 × 1080p, 1680 × 1050, 1600 × 1200, 1600 × 900, 1440 × 900, 1366 × 768, 1360 × 768, 1280 × 1024, 1280 × 960, 1280 × 800, 1280 × 768, 1280 × 720, 1024 × 768, 800 × 600 @ 60 Hz
HDR	Supports HDR formats, including Dolby Vision and HDR10+
Audio Format	AUDIO IN / AUDIO OUT: Stereo HDMI: Supports all audio formats in the HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio, and DTS:X HDBaseT: Same as HDMI
Maximum Data Rate	HDMI: 18 Gbps USB: 350 Mbps
USB	USB 2.0, backward compatible with USB 1.1/1.0 Receiver USB DEVICE ports: 1.4 A max (top two), 0.6 A max (bottom two)
Ethernet	1000M/100M adaptive pass-through over HDBaseT
Control Method	RS-232 (pass-through), DIP switch
General	
Operating Temperature	0 °C to 45 °C (32 °F to 113 °F)
Storage Temperature	-20 °C to 70 °C (-4 °F to 158 °F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body model: ±8 kV (air-gap discharge), ±4 kV (contact discharge)
Power Supply	DC 12V, 3A
Power Consumption (Max)	18.96 W (AT-OME2-E2311 and AT-OME2-D2311 pair)
Dimensions (W x H x D)	215 mm x 25 mm x 120 mm (8.46 in x 0.98 in x 4.72 in), each unit
Net Weight	0.48 kg (1.06 lb), each unit

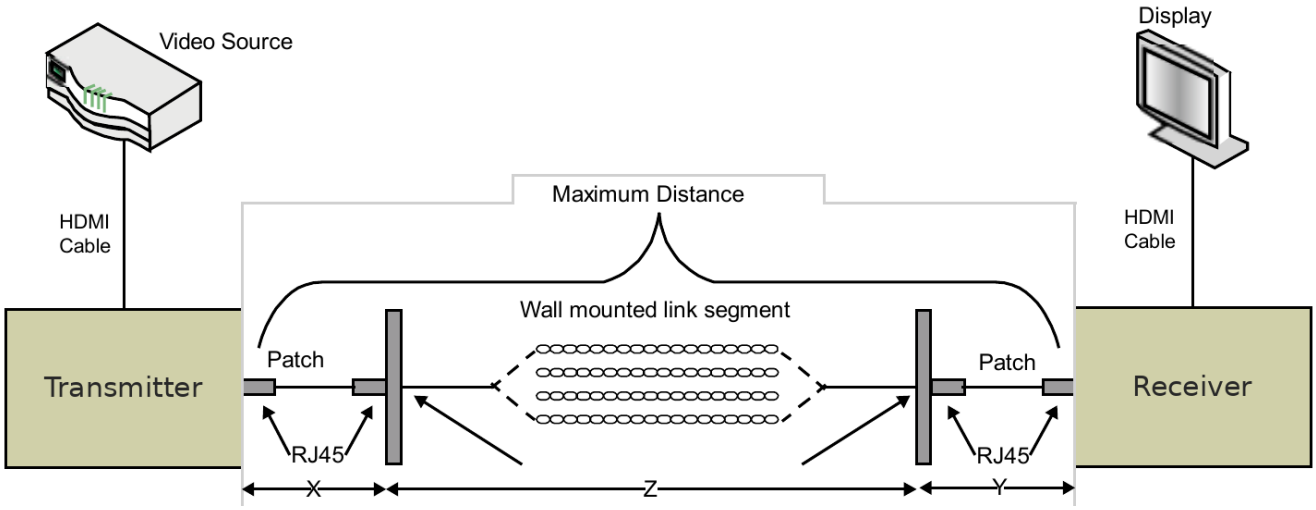
Transmission Distance

- A straight-through category cable wired to the T568B standard is recommended.
- For maximum HDMI 2.0 resolution, Cat 6A U/FTP or F/FTP cable is recommended.

Cable Type	Range	Supported Video
Cat 5e/6	70 m (230 ft)	4K@60Hz 4:2:0 4K@30Hz 1080p@60Hz
	40 m (131 ft)	4K@60Hz 4:4:4 4K@60Hz 4:2:2
Cat 6A (U/FTP)	100 m (330 ft)	4K@60Hz 4K@30Hz 1080p@60Hz

Using Patch Cables

Patch cables may be used in the installation, but they reduce the transmission distance. Up to two patch cables may be used, each no longer than 5 m, one at each end of the link, as shown below.



Three-segment installation with patch cables

- X = patch cable length at the transmitter end ≤ 5 m
- Y = patch cable length at the receiver end ≤ 5 m
- Z = wall segment ≤ maximum distance – X – Y

Cable Type	Range (with patches)	Supported Video
Cat 5e/6	70 m (230 ft)	4K@60Hz 4:2:0 4K@30Hz 1080p@60Hz
	30 m (100 ft)	4K@60Hz 4:4:4 4K@60Hz 4:2:2

Cable Type	Range (with patches)	Supported Video
Cat 6A (U/FTP)	70 m (230 ft)	4K@60Hz 4:4:4 4K@60Hz 4:2:2
	100 m (330 ft)	4K@60Hz 4:2:0 4K@30Hz 1080p@60Hz