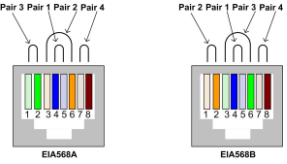# Specifications

Environment	HDMI 1.3a
Devices	DVDs, projectors, monitors, TVs, PCs, laptops, servers supporting HDMI.
Video Wall	NxM video wall capabilities.
Transmission	Transparent to the user.
Video Bandwidth	225MHz
Signals	HDMI 1.3a protocol.
Connectors	One (1) HDMI receptacle. One (1) RJ45S for Cat 5e/6 unshielded or shielded twisted pair. One (1) 3.5mm jack for IR emitter/sensor. One (1) DB9 Serial Port Connector. Four (4) DIP switches for device ID addressing. *Note: HDMI, RS232, IR and Cat 5e/6 cables not included.*
Maximum Distance *Based on a maximum length of 6.6ft (2m) of HDMI cable per end.*	Cat5e/6: 330ft (100m) up to 1080P *Note: When installed in an electrically noisy environment, an STP cable must be used. Also, cross-connections in the signal path reduce the effective distance depending on the grade of twisted pair cable used.*
Latency	One (1) Frame.
Compression	Motion JPEG
Network Bandwidth	60Mbps
Network Requirement	100BaseT for Point-to-Point; 1000BaseT for multi-point configurations.
IR Frequency	38 to 56 KHz
RJ45 Pin Configuration *Reverse Polarity Sensitive. Use EIA/TIA 568A or 586B straight-through wiring.*	**RJ45 Link** Pin 1 (R) Pin 2 (T) Pin 3 (R) Pin 6 (T) Pin 4 (R) Pin 5 (T) Pin 7 (R) Pin 8 (T)
Cable	One (1) Cat 5e/6 or better twisted pair cable required.
Power Source	This device supports PoE (PD), an external power supply is not included. It is intended to be powered via a PoE (PSE) Ethernet Switch. If required, an optional power supply (500992) may be purchased separately.
PoE	IEEE 802.3af
Power Consumption	Transmitter: 2.9Watt Receiver: 1.8Watt
Temperature	Operating: 0° to 40°C Storage: -20° to 85°C Humidity: Up to 95% non-condensing
Enclosure	Metal
Dimensions	4.40" x 3.00" x 1.00" (11.2 x 7.6 x 2.5cm)
Weight	1.1lbs (0.5kg)
Compliance	Regulatory: FCC, CE, RoHS Flammability: 94V0
Warranty	3 years
Order Information	500754-TX HDMI over IP PoE Transmitter 500754-RX HDMI over IP PoE Receiver
Accessories (These items are sold separately)	500905 3-Port Rackmount Transceiver Chassis 500920 16-Port Rackmount Transceiver Chassis 500917 Wall Mount Transceiver Bracket Kit 500990 IR Emitter, and 500991 IR Sensor 500992 Univ. Power Supply 5VDC/1.2A US/UK/EU Blade

500754 HDMI over IP PoE Extender
Quick Installation Guide

Overview

The HDMI over IP PoE Extender (500754) allows HDMI equipment to be connected up to 330ft (100m) @ 1080p via one (1) Cat5e/6 unshielded twisted pair cable in a point-to-point configuration. Point-to-multipoint, multipoint-to-multipoint, and Video Wall configurations are also possible by connecting several Transmitters and Receivers to the same Ethernet local IP network via an Ethernet Switch. The Transmitter (500754-TX) and Receiver (500754-RX) also support PoE (PD) if used with a PoE Ethernet Switch. The kit comes with one (1) Transmitter and one (1) Receiver. The IR Emitter and IR Sensor, if required, may be purchased separately for remote control applications. Additional Transmitters and Receivers may be purchased as kits or purchased separately depending on the intended application and number of units required.

For the point-to-multipoint and multipoint-to-multipoint configuration the Ethernet Switch must have Gigabit ports and DHCP Server capability and additionally support the IGMP communication protocol for the multipoint-to-multipoint case. MuxLab recommends using the Cisco SG350 Series Managed Switches.

The MuxLab ProDigital Network Controller (500811) is available to simplify the configuration and utilization of the 500754 and other MuxLab IP based products via an Ethernet web interface.

Applications

Applications include commercial and residential AV systems, classroom projector systems, digital signage, boardroom systems, collaborative PC systems, and medical information systems.
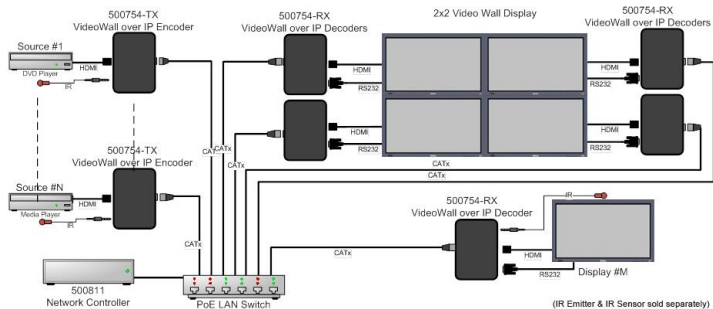
Installation

1. Identify the connectors on the Transmitter and Receiver as indicated on the product labels, see the above front and rear product views for further details.

2. Verify that the distance between the HDMI Transmitter and Receiver is within MuxLab specifications (see Specifications table for further details).

3. To install the Transmitter:

   3a. Connect the Transmitter to the HDMI video source with an HDMI compliant cable.

   3b. If the application is point-to-point, then connect one (1) length of Cat 5e/6 (or higher) grade UTP cable to the RJ45 LINK connector on the Transmitter. If transmitting over the network, use an Ethernet Switch between the TX & RX unit.

4. To install the Receiver:

   4a. Connect the Receiver to the HDMI display equipment with an HDMI compliant cable.

   4b. If the application is point-to-point, then connect one (1) Cat 5e/6 cable (or higher) coming from the Transmitter, to the RJ45 LINK connector on the Receiver. If

transmitting over the network, use an Ethernet Switch between the TX & RX unit.

5. If the configuration is a point-to-multipoint or multipoint-to-multipoint:

   5a. You will need to use an Ethernet Switch with Gigabit ports and DHCP Server support. In addition IGMP Protocol support is required for the multipoint-to-multipoint case. **Verify that the Ethernet Switch is configured correctly and that the DHCP Server is enabled and that the IGMP Protocol is enabled for multipoint-to-multipoint applications**. See the operating manual for more information about configuring the Ethernet Switch.

   5b. Connect all Transmitters and Receivers to the Ethernet Switch.

   5c. Use the DIP Switches to select a unique Device ID for each Transmitter present on the network and configure each Receiver Device ID to the corresponding selected Transmitter.
   Note: This step is not necessary if the MuxLab ProDigital Network Controller (500811) is used.

6. Powering the Transmitter or Receiver via an external power supply is only necessary where PoE (PSE) is unavailable. If PoE is unavailable, connect the 5 VDC power supply (sold separately) to each Receiver and to an AC power outlet. Next connect each Transmitter in the same manner. If power is present, the green power LED on each Transmitter and Receiver will illuminate.
   Note: Power 'ON' the HDMI over IP PoE Extender only after all data connections are made.

7. Power 'ON' the HDMI equipment and verify the image quality.

8. This product supports IR pass-thru control. If infrared remote control is needed to control the Source equipment from the Display, connect the IR Sensor (sold separately) to the 3.5mm Stereo Jack of the Receiver and the IR Emitter (sold separately) to the 3.5mm Mono Jack of the Transmitter.
   Note: You can differentiate the IR Sensor and Emitter by looking at the 3.5 mm plug. The IR Sensor is using a Stereo Plug (3 Contacts) and the IR Emitter a mono plug (2 Contacts).

9. Position the IR Sensor so that it is directed at the hand-held remote control. For a clear IR signal reception, aim the hand-held remote control at the top of the IR Sensor enclosure.

10. Position the IR Emitter as close as possible to the source's IR Sensor (i.e. DVD player). For a clear IR signal reception, the IR Emitter can be glued on the source's IR Sensor. The IR Emitter's signal is transmitted from the side of the enclosure.

11. This product supports RS232 bidirectional communication. On the Transmitter, the RS232 port is configured as a DCE; and on the Receiver as a DTE. Please connect your RS232 cable accordingly as previously indicated. The default settings are 9600, N, 8, 1.

12. To send an RS232 packet to a specific device, you need to put the IP address in front of the packet. This communication is meant to be machine to machine; and hexadecimal codes must be used. For example, to send the message "Hello" to a device having an IP address of 192.168.168.55, send the following hexadecimal string: 0xC0 0xA8 0xA8 0x37 0x48 0x65 0x6c 0x6c 0x6f. (or "192 168 168 55 H e l l o" in hexadecimal).

13. To setup a video wall, please use the 500811 ProDigital Network Controller and follow the steps in the controller manual.

14. The following diagram illustrates a typical 2x2 Video Wall configuration.

Troubleshooting

The following table describes some of the symptoms, probable causes and possible solutions in regard to the installation of the HDMI over IP PoE Extender:

Symptom	Transmitter LEDs		Receiver LEDs		Probable Cause	Possible Solutions
	Power	Link	Power	Link		
No image	OFF	OFF	OFF	OFF	No power	• Check power connections. • Check PoE Ethernet Switch setup.
No image	ON	OFF	ON	ON	Internal error	• Reboot the Transmitter.
No image	ON	ON	ON	OFF	Internal error	• Reboot the Receiver.
No image	ON	ON	ON	ON	UTP cable	• Check the Transmitter UTP cable.
No image	ON	BLINK	ON	ON	UTP cable	• Check the Receiver UTP cable.
No image	ON	BLINK	ON	BLINK	HDMI cable	• Check the HDMI cable quality.
Choppy image	ON	BLINK	ON	BLINK	Ethernet Switch	• For multipoint-to-multipoint enable the IGMP mode on the Gigabit Ethernet Switch.
Choppy sound	ON	BLINK	ON	BLINK	Synchronization	• Check cable length. • Check the HDMI cable quality.
Image flickers when powering up nearby equipment.	ON	BLINK	ON	BLINK	Interference	• Use STP cables.
IR not functioning *	ON	BLINK	ON	BLINK	Remote control not directed to the IR Sensor or IR Emitter not directed to the source.	• Make sure the IR Sensor is directed towards the remote and the IR Emitter to the equipment.
IR not functioning *	ON	BLINK	ON	BLINK	Interference from sunlight, fluorescent, neon or halogen lights.	• Place the IR equipment away from the interfering light source.
IR not functioning *	ON	BLINK	ON	BLINK	RF radiation interference from the TV.	• Place the IR equipment away from the interfering RF radiation source.

* IR Emitter and IR Sensor sold separately.

If you still cannot diagnose the problem, please call MuxLab Customer Technical Support at 877-689-5228 (toll-free in North America) or (+1) 514-905-0588 (International).