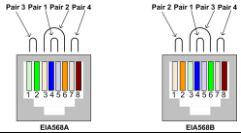
Specifications

Environment	HDMI 1.3a
Devices	DVD, plasma, projectors, monitors, TV, PC, laptops, servers supporting HDMI.
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 jacks for IR emitter/sensor. One (1) DB9 Serial Port Connector Four (4) DIP Switches for device ID addressing. *Note: HDMI 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-connection reduces the effective distance depending on the grade of twisted cable used.*
Latency	One (1) Frame
Compression	Motion JPEG
Network Bandwidth	60Mbps
Network Requirement	100BaseT for Point to Point; 1000BaseT for other configuration
IR Frequency	38 to 56KHz
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 cables 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	3.70" x 3.68" x 0.97" (94 x 93.5 x 24.6mm)
Weight	1.1lbs (0.5kg)
Compliance	Regulatory: FCC, CE, RoHS Flammability: 94V0
Warranty	3 years
Order Information	500753 HDMI / RS232 Over IP Extender Kit with PoE 500753-TX HDMI / RS232 Over IP Encoder with PoE 500753-RX HDMI / RS232 Over IP Decoder with PoE
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

8495 Dalton Road, Mount Royal, Quebec, Canada. H4T 1V5
Tel: (514) 905-0588 Fax: (514) 905-0589
Toll Free (North America): (877) 689-5228
E-mail: videoease@muxlab.com URL: www.muxlab.com

 94-000786-C SE-000786-C

500753 HDMI / RS232 over IP Extender Kit with PoE
Quick Installation Guide

Overview

The HDMI / RS232 over IP Extender Kit with PoE (500753) 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 and multipoint-to-multipoint is possible by connecting several Transmitters and Receivers to the same Ethernet network. The Transmitter (500753-TX) and Receiver (500753-RX) also support PoE (PD) if used with a PoE (PSE) 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 IR based remote control applications.

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 SG300 Series Managed Switches.

The MuxLab ProDigital Network Controller (500811) is available to simplify the configuration and utilization of the 500753 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.

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 Transmitter and Receiver.

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 Transmitter and Receiver.

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 a 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 / RS232 over IP Extender only after all connections have been 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 the IR 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).

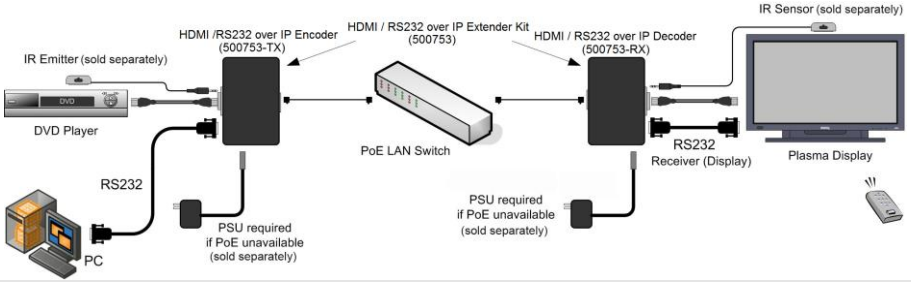
9. Position the IR Sensor so that it is directed at the hand-held remote control. For a clear IR signal reception, aim the hand-held remote control to the top of the IR Sensor enclosure.

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. 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 the 192.168.168.55 IP address, one must send the hexadecimal string: 0xC0 0xA8 0xA8 0x37 0x48 0x65 0x6c 0x6c 0x6f. (or "192 168 168 55 H e l l o" in hexadecimal).

13. The following diagram illustrates a typical point-to-point LAN configuration.



Troubleshooting

The following table describes some of the symptoms, probable causes and possible solutions in regard to the installation of the HDMI / RS232 over IP Extender Kit with PoE:

Symptom	Encoder LEDs		Decoder 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 TX UTP cable.
No Image	ON	BLINK	ON	ON	UTP Cable	• Check the RX 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 of 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 for the interfering light
IR not functioning *	ON	BLINK	ON	BLINK	Interference from RF radiation from the TV	• Place the IR equipment away for the RF radiation

** 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).