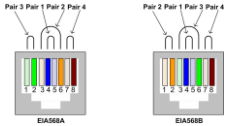
Specifications

Specifications	
Environment	HDMI 2.0b and HDCP 2.2
Devices	Blu-Ray, projectors, monitors, TV, PC, laptops, and media servers supporting HDMI.
Bandwidth	297 MHz
Signals	HDMI 2.0b protocol, up to 4K @ 60Hz (4:2:0)
Connectors *Note: Cables not included.*	Connectors per TX and RX: One (1) HDMI receptacle. Two (2) RJ45S for Cat 5e/6 unshielded or shielded twisted pair (for 10GbE and 1GbE ports). One (1) 3.5mm jack for IR emitter or IR sensor. One (1) 3-pin terminal block connector for RS232. One (1) 2.1mm locking power jack (for DC power).
Maximum Distance *Based on a maximum length of 6.6ft (2m) of HDMI cable per end.*	Supports up to 4K @ 60Hz (4:2:0) at 100m over Cat 6a/7 and at 55m over Cat 6 *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	Zero Latency
Compression	Uncompressed
Network Bandwidth	< 10Gbps
Network Requirement	10Gig Network XFI, IEEE 802.3
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 cable required
Power Source	Input: 100-240VAC @ 50-60Hz Output: 12VDC Includes multi-blades for US, UK and EU
Temperature	Operating: 0° to 40°C Storage: -20° to 85°C Humidity: Up to 95% non-condensing
Dimensions	4.33" x 6.93" x 1" (11cm x 17.6cm x 2.5cm)
Weight	1.16 lbs (0.53 kg)
Compliance	Regulatory: FCC, CE, RoHS Flammability: 94V0
Warranty	3 years
Order Information	500768-TX HDMI over IP Uncompressed Transmitter, 4K/60 500768-RX HDMI over IP Uncompressed Receiver, 4K/60
Accessories (These items are sold separately)	500920 16-Port Rackmount Transceiver Chassis 500917 Wall Mount Transceiver Bracket Kit 500990 IR Emitter 500994 IR Sensor

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HDMI over IP Uncompressed Extender, 4K/60
500768
Quick Installation Guide

The HDMI over IP Uncompressed Extender, 4K/60 allows HDMI source equipment supporting up to 4K (3840x2160) resolution @ 60Hz to be connected via Cat5e/6 cable up to 330ft (100m) from a 10G Ethernet Switch, in point-to-point, point-to-multipoint and multipoint-to-multipoint configurations. The Transmitter and Receiver, also each support a 1G Ethernet Switch port to connect additional network devices, plus a directional IR port and RS232 port for remote control of end devices. The MuxLab Pro Digital Network Controller (500811) is available to simplify centralized configuration and control, software updates, and allows for management from the MuxLab Control smartphone and tablet App, and third party control Apps. 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 more 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 a 10G 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 a 10G Ethernet Switch between Transmitter and Receiver. **You may use the 1G port of the TX and RX to connect additional network devices (e.g. for managing purposes) if required.** In both point-to-point cases, ensure the TX and RX have the same Dip Switch setting.

5. If the configuration is a point-to-multipoint or multipoint-to-multipoint:
   - 5a. You will need to use an Ethernet Switch with 10G ports and DHCP Server support. In

addition IGMP Protocol support is required. **Verify that the Ethernet Switch is configured correctly and that the DHCP Server and IGMP Protocol is enabled**. 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 address for each Transmitter present on the network and configure each Receiver Device ID to the corresponding selected Transmitter. **To avoid Multicast address conflicts, please follow these settings when using several Transmitters:**

TX Number	Value	Dip 1	Dip 2	Dip 3	Dip 4
TX-1	0000	Down	Down	Down	Down
TX-2	0001	Down	Down	Down	Up
TX-3	0010	Down	Down	Up	Down
TX-4	0011	Down	Down	Up	Up
.	.	.	.	.	.
.	.	.	.	.	.
TX-16	1111	Up	Up	Up	Up
TX-17	0000	Down	Down	Down	Down
TX-18	0001	Down	Down	Down	Up

6. To power the Transmitter and Receiver, connect the included 12VDC power supply 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 Uncompressed Extender, 4K/60 devices 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. IR Emitter and Sensor are not included, and are sold separately. If for example infrared remote control is needed to control the Source equipment from the Display, connect the IR Sensor to the 3.5mm Stereo Jack of the Receiver and the IR Emitter to the 3.5mm Mono Jack of the Transmitter. The IR port is directional, ensure that the IR direction is properly configured via the unit web interface or via the 500811 Pro Digital Network Controller. **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).**

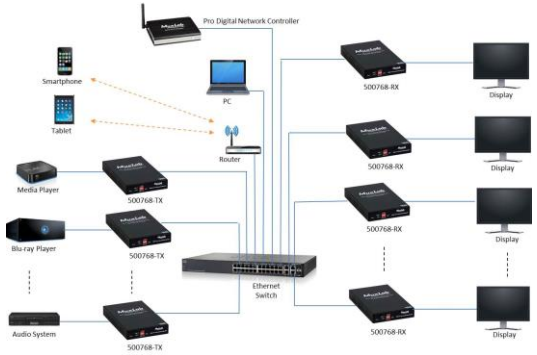
9. Position the IR Sensor so that it is directed at the hand-held remote control. For a clear IR signal reception, aim the hand-held remote control at the top of the IR Sensor enclosure.

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. Configure the RS232 communications setting via the device web interface or 500811 Pro Digital Network Controller.

12. Commands or messages may be sent via RS232 by connecting a PC to the RS232 port of the 500768, or over the network via IP. This communications is meant to be machine to machine.

13. The following diagram illustrates a typical LAN 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 Uncompressed Extender, 4K/60 Kit:

Symptom	Transmitter LEDs		Receiver LEDs		Probable Cause	Possible Solutions
	Power	Link	Power	Link		
No Image	OFF	OFF	OFF	OFF	No power	• Check power connections
No Image	BLINK	OFF	BLINK	ON	Booting	• Wait until booting process is finished
No Image	ON	OFF	ON	OFF	No Ethernet Link	• Check Ethernet Switch Status • Check UTP Cables
Info Screen	ON	OFF	ON	BLINK	UTP Cable	• Check the Transmitter UTP cable
Info Screen	ON	ON	ON	OFF	UTP Cable	• Check the Receiver UTP cable.
Info Screen	ON	BLINK	ON	BLINK	No Data Connection	• Check if DIP Switch settings match
Info Screen	ON	ON	ON	BLINK	Wrong setting on Receiver	• Check DIP Switch address of the Receiver
Choppy Video	ON	ON	ON	ON	Configuration	• Check cable length • Check the HDMI Cable Quality • Check if IGMP is enabled on the Ethernet Switch
Image flickers when powering up nearby equipment	ON	ON	ON	ON	Interference	• Use STP cables
IR not functioning *	ON	ON	ON	ON	Interference from sunlight, Fluorescent, Neon or Halogen lights	• Place the IR equipment away for the interfering light
IR not functioning *	ON	ON	ON	ON	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).