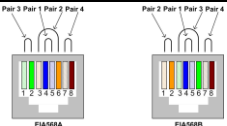


# Specifications

<b>Environment</b>	HDMI 1.4								
<b>Devices</b>	Computers and servers with HDMI monitor ports.								
<b>Transmission</b>	Transparent to the user								
<b>Bandwidth</b>	300MHz								
<b>Signals</b>	HDMI 1.4 protocol, HDCP 1.4								
<b>Connectors</b>	One (1) HDMI receptacle. One (1) RJ45S for Cat 5e/6 unshielded or shielded twisted pair. Two (2) 3.5mm jacks for audio insert (on TX)/audio extract (on RX). Two (2) 3.5mm jacks for mic-out (on TX)/mic-in (on RX). One (1) 2.1mm locking barrel jack for power One (1) or Four (4) USB Connector(s) for Host (on TX)/Client (on RX) Four (4) DIP Switches for device ID addressing.								
<i>Note: Cables not included.</i>									
<b>Maximum Distance</b>	Cat5e/6: 330ft (100m) up to 1080p @ 60Hz and 1920x1200 @ 60Hz <i>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.</i>								
<i>Based on a maximum length of 6.6ft (2m) of HDMI cable per end.</i>									
<b>Latency</b>	One (1) Frame (16ms) @ 60Hz (typical)								
<b>Compression</b>	JPEG 2000								
<b>Network Bit Rate</b>	300Mbps (typical)								
<b>Network Requirement</b>	1000BaseT with PoE								
<b>RJ45 Pin Configuration</b>	<p><b>RJ45 Link</b></p> <table border="0"> <tr> <td>Pin 1 (R)</td> <td>Pin 2 (T)</td> </tr> <tr> <td>Pin 3 (R)</td> <td>Pin 6 (T)</td> </tr> <tr> <td>Pin 4 (R)</td> <td>Pin 5 (T)</td> </tr> <tr> <td>Pin 7 (R)</td> <td>Pin 8 (T)</td> </tr> </table>  <p>Reverse Polarity Sensitive. Use EIA/TIA 568A or 586B straight-through wiring.</p>	Pin 1 (R)	Pin 2 (T)	Pin 3 (R)	Pin 6 (T)	Pin 4 (R)	Pin 5 (T)	Pin 7 (R)	Pin 8 (T)
Pin 1 (R)	Pin 2 (T)								
Pin 3 (R)	Pin 6 (T)								
Pin 4 (R)	Pin 5 (T)								
Pin 7 (R)	Pin 8 (T)								
<b>Cable</b>	One (1) Cat 5e/6 or better twisted pair cables required								
<b>Power Source</b>	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 (500993) may be purchased separately.								
<b>PoE Standard</b>	IEEE 802.3af								
<b>Power Consumption</b>	Transmitter: 2.85Watt      Receiver: 2.55Watt								
<b>Temperature</b>	Operating: 0° to 40°C      Storage: -20° to 85°C Humidity: Up to 95% non-condensing								
<b>Dimensions</b>	4.40" x 5.08" x 1.00" (112mm x 129mm x 25mm)								
<b>Weight</b>	1.5lbs (0.68kg)								
<b>Compliance</b>	Regulatory: FCC, CE, RoHS      Flammability: 94V0								
<b>Warranty</b>	2 years								
<b>Order Information</b>	500770      KVM HDMI over IP PoE Extender Kit 500770-TX      KVM HDMI over IP PoE Extender TX 500770-RX      KVM HDMI over IP PoE Extender RX								
<b>Accessories</b> (These items are sold separately)	500920      16-Port Rackmount Transceiver Chassis 500917      Wall Mount Transceiver Bracket Kit 500993      Univ. Locking Power Supply 5VDC/2.6A US/UK/EU Blade								



## KVM HDMI over IP PoE Extender Kit 500770 Quick Installation Guide

### Overview

The KVM HDMI over IP PoE Extender Kit allows HDMI & USB equipment to be connected up to 330ft (100m) up to 1080p resolution @ 60Hz and 1920x1200 @ 60Hz via one (1) Cat5e/6 unshielded twisted pair cable in a point-to-point configuration. The Transmitter (500770-TX) and Receiver (500770-RX) also support PoE (PD) if used with a PoE (PSE) Ethernet Switch. The kit comes with one (1) Transmitter and one (1) Receiver. Additional Transmitters and Receivers may be purchased as kits or purchased separately depending on the number of units required.

For the multiple point-to-point (including point-to-multipoint) configurations the Ethernet Switch must have Gigabit ports, Jumbo Frame capability and DHCP Server capability. 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 500770 and other MuxLab IP based products via an Ethernet web interface.

### Applications

Applications include management of multi-server systems supporting HDMI displays in IT departments within corporations, educational institutions, CAD Design, Graphic Design, Media Servers, and Data Centers.

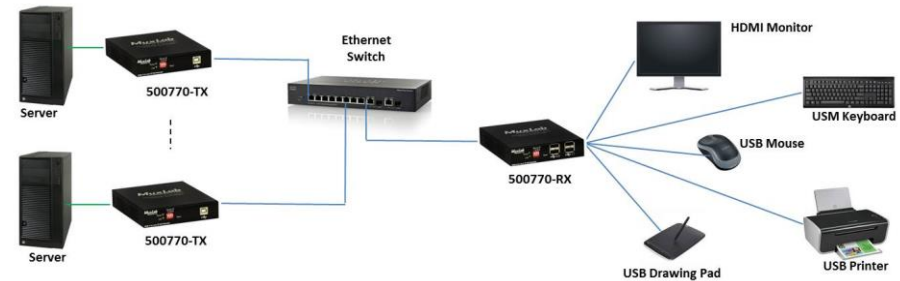
### Installation

- 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.
- Verify that the distance between the HDMI Transmitter and Receiver is within MuxLab specifications (see Specifications table for more details).
- To install the Transmitter:
  - Connect the Transmitter to the HDMI video source with an HDMI compliant cable.
  - Connect the Transmitter USB Port to the Computer USB port, using a compliant Type A to Type B USB Cable.
  - If required, connect the computer audio-out and mic-in port to the Transmitter audio-in and mic-out port, respectively.
  - 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.



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4. To install the Receiver:
  - 4a. Connect the Receiver HDMI port to the Monitor HDMI port with an HDMI compliant cable.
  - 4b. Connect the two Receiver USB 1.1 ports to a USB keyboard and mouse.
  - 4c. Connect the two Receiver USB 2.0 ports to other USB devices, such as a printer, drawing pad, storage device, camera, etc.
  - 4d. If required, connect the Receiver audio-out and mic-in port to an audio/mic system audio-in and mic-out port, respectively.
  - 4e. 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 multiple point-to-point (including point-to-multipoint) architecture:
  - 5a. You will need to use an Ethernet Switch with Gigabit ports and DHCP Server support. In addition Jumbo Frame support is required. **Verify that the Ethernet Switch is configured correctly and that the DHCP Server is enabled and that Jumbo Frame 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 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 Pro Digital 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 (500993 - 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 KVM HDMI over IP PoE Extender Kit only after all connections have been made.**
7. Power 'ON' the HDMI equipment and verify the image quality, sound if applicable, keyboard and mouse functionality, as well as any additional USB connected devices.
8. There are two basic hot key methods to switch a Receiver among different Transmitters. One method is via an OSD (On Screen Display) menu, which can be called up by pressing the hotkey sequence "Scroll Lock" three times in less than 0.5 seconds. This brings up the OSD menu to select which Transmitter to connect with. The second method is via 16 different hotkey sequences, with each one providing direct access to a preconfigured Transmitter. This is available by pressing the CTRL Key with the port number pressed three times within 0.5 seconds. Port numbers follow the switch setting and are from 0 to 9 and q (10), w (11), e (12), r (13), t (14) and y (15). Hotkeys can be modified from the device web server interface; to find the IP address of the product use Bonjour Protocol.
9. Please download and reference the 500770 Operation Manual found on the MuxLab website (under the 500770 webpage) for further instructions on how to operate this device, including how to configure and use the hotkeys and OSD.
10. 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 KVM HDMI over IP PoE Extender Kit:

Symptom	Transmitter LEDs		Receiver LEDs		Probable Cause	Possible Solutions
	Power	Link	Power	Link		
No Image	OFF	OFF	OFF	OFF	No power	<ul style="list-style-type: none"> <li>• Check power connections</li> <li>• Check PoE Ethernet Switch Setup</li> </ul>
No Image	BLINK	OFF	BLINK	ON	Booting	<ul style="list-style-type: none"> <li>• Wait until booting process is finished</li> </ul>
No Image	ON	OFF	ON	OFF	No Ethernet Link	<ul style="list-style-type: none"> <li>• Check Ethernet Switch Status</li> <li>• Check UTP Cables</li> </ul>
Info Screen	ON	OFF	ON	BLINK	UTP Cable	<ul style="list-style-type: none"> <li>• Check the Transmitter UTP cable</li> </ul>
Info Screen	ON	ON	ON	OFF	UTP Cable	<ul style="list-style-type: none"> <li>• Check the Receiver UTP cable.</li> </ul>
Info Screen	ON	BLINK	ON	BLINK	No Data Connection	<ul style="list-style-type: none"> <li>• Check if DIP Switch settings match</li> </ul>
Info Screen	ON	ON	ON	BLINK	Wrong setting on Receiver	<ul style="list-style-type: none"> <li>• Check DIP Switch address of the Receiver</li> </ul>
Choppy Video	ON	ON	ON	ON	Configuration	<ul style="list-style-type: none"> <li>• Check cable length</li> <li>• Check the HDMI Cable Quality</li> <li>• Check if Jumbo Frame is enabled on the Ethernet Switch</li> </ul>
Image flickers when powering up nearby equipment	ON	ON	ON	ON	Interference	<ul style="list-style-type: none"> <li>• Use STP cables</li> </ul>
Mouse or Keyboard not working	ON	ON	ON	ON	USB Cable	<ul style="list-style-type: none"> <li>• Check the USB Cable Quality</li> <li>• Check that the Keyboard and mouse are connected to the USB 1.1 Port.</li> </ul>
USB Speed Slow	ON	ON	ON	ON	Wrong Port	<ul style="list-style-type: none"> <li>• Check that any additional USB devices are connect to the USB 2.0 Port</li> </ul>

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).