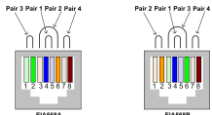


Specifications

Specifications	
Environment	HDMI 2.0 and HDCP 2.2
Devices	Servers/Workstations/PCs, Smart Whiteboards, Monitors, TVs, and Keyboard & Mouse Devices.
Bandwidth	594MHz
Signals	HDMI 2.0
Connectors	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). Two (2) 3.5mm jacks for IR emitter, IR sensor. One (1) 3.5mm jack for line-level 2CH Audio -In (TX) and Audio-Out (RX). Three (3) USB 2.0 (480Mbps) Type A connectors for KVM (RX). One (1) USB 2.0 (480Mbps) Type B connector for KVM (TX). One (1) 3-Pin Phoenix connector for RS232 (supports up to 115.2K baud rate). One (1) 2.1mm power jack (for DC power).
<i>Note: Cables not included.</i>	
Maximum Distance	Cat5e/6: 330ft (100m) up to 4K @ 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>	
Latency	Zero latency (undetectable in human terms)
Compression	Uncompressed up to 4K/60 (4:2:0), and light compression for 4K/60 (4:4:4) only
Network Bandwidth	< 10Gbps
Network Requirement	10Gig Network XFI, IEEE 802.3
IR Frequency	38 to 56KHz
RJ45 Pin Configuration	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) 
<i>Reverse Polarity Sensitive. Use EIA/TIA 568A or 586B straight-through wiring.</i>	
Cable	One (1) Cat 5e/6 or better twisted pair cables required
Power Source	Input: 100-240V/1.5A (max) @ 50-60Hz Output: 12DC @ 3A Includes appropriate AC multi-blades per region (US, UK and Euro)
Power Consumption	Transmitter: 16 Watts Receiver: 16 Watts
Temperature	Operating: 0° to 40°C Storage: -20° to 70°C Humidity: 10% to 90% non-condensing
Unit Dimensions	7.7" x 5.2" x 1.3" (195mm x 132mm x 33mm), per unit
Packaging Shipping Weight	3.12lbs (1.42kg), per unit
Compliance	Regulatory: FCC, CE, RoHS
Warranty	3 years
Order Information	500760-TX-KVM HDMI 4K/60 KVM over IP Transmitter 500760-RX-KVM HDMI 4K/60 KVM over IP Receiver



HDMI 4K/60 KVM over IP Extender 500760-KVM Quick Installation Guide

Overview

The HDMI 4K/60 KVM over IP Extender is based on SDVoE Technology and allows HDMI based servers/workstations supporting up to 4K @ 60Hz resolution to be connected and extended to one or more operators that can connect with and manage any of the servers/workstations in a KVM application. The operator may connect a remote monitor, keyboard & mouse and powered audio speakers to any of the servers/workstations being managed. This system also supports Smart Whiteboard applications via the HDMI and USB ports. 100's of servers/workstations may be managed, depending on network bandwidth, utilizing one Receiver for each operator and one Transmitter per server/workstation. Each Transmitter (500760-TX-KVM) and Receiver (500760-RX-KVM) can be connected via Cat5e/6 cable up to 330ft (100m) from a 10Gig Ethernet Switch. The HDMI 4K/60 KVM over IP Extender also supports Rs232 and 2-way IR for remote management of end devices.

Each unit comes with a 12VDC @ 3A power supply, with multi-blades for North America, UK, Europe and Australia, and also includes a wall mount bracket kit, and IR sensor & emitter for remote management of end devices.

The MuxLab Pro Digital Network Controller is available to simplify centralized configuration and control, software updates and allows for connectivity management from MuxControl and other third party applications running on smartphones and tablets.

Applications

Applications include KVM and Smart Whiteboard applications.

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 server/workstation with an HDMI compliant cable.
 - 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
- To install the Receiver:



2321 Rue Cohen, Montreal, Quebec, Canada. H4R 2N7
Tel: (514) 905-0588 Fax: (514) 905-0589
Toll Free (North America): (877) 689-5228
E-mail: info@muxlab.com URL: www.muxlab.com

- 4a. Connect the Receiver to the HDMI monitor 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.
5. If the configuration is a point-to-multipoint or multipoint-to-multipoint:
 - 5a. You will need to use a 10G Ethernet Switch with 10 Gigabit ports and DHCP Server support. In addition Jumbo Frame support is required, and IGMP Protocol support is required for the multipoint-to-multipoint case. **Verify that the 10G Ethernet Switch is configured correctly and that the DHCP Server is enabled, that the IGMP Protocol is enabled for multipoint-to-multipoint applications, and that Jumbo Frames is enabled.** See the operating manual for more information about configuring the 10G Ethernet Switch.
 - 5b. Connect all Transmitters and Receivers to the 10G Ethernet Switch.
6. Connect the server/workstation USB 2.0 Type B and Audio-In connectors to the Transmitter with appropriate cables.
7. Connect the USB Keyboard & Mouse (or USB Smart Whiteboard port) and Powered Audio Speakers to the Receiver USB 2.0 Type A connectors and 3.5mm jack respectively with appropriate cables.
8. Power the Transmitter and Receiver via the supplied external power supply. Connect the power supply to each 500760-KVM Receiver and to an AC power outlet. Next connect each 500760-KVM Transmitter in the same manner. If power is present, the power LED on each Transmitter and Receiver will illuminate.

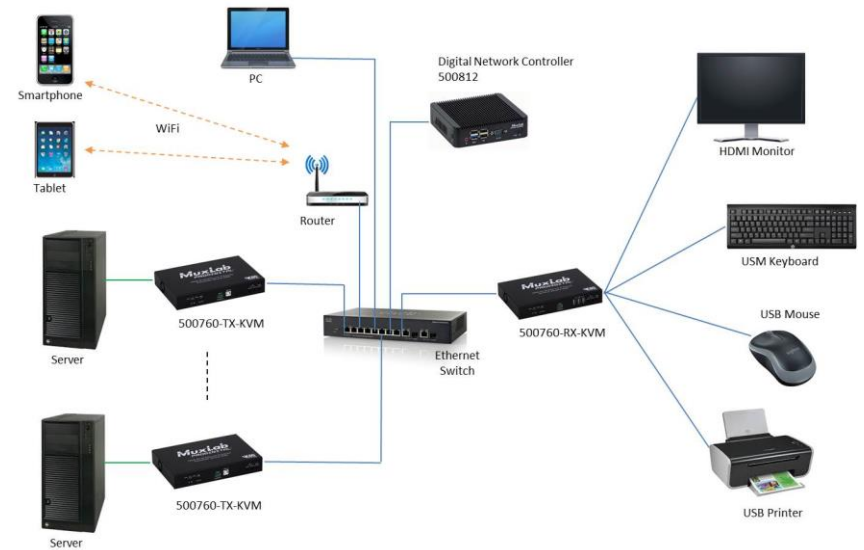
Note: Power 'ON' the HDMI 4K/60 KVM over IP Extender only after all connections have been made.

9. Power 'ON' the equipment and verify the image quality and proper Keyboard & Mouse (or Smart Whiteboard) functionality.
10. This product supports a bi-directional IR pass-thru control. If infrared remote control is needed to control the Source and/or Sink (i.e. Display) equipment, connect the supplied IR Sensors to the 3.5mm Stereo Jack of the Transmitter and Receiver and the supplied IR Emitters to the 3.5mm Mono Jack of the Transmitter and Receiver.

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).

11. 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.
12. Position the IR Emitter as close as possible to the source and sink equipment's IR Sensor (i.e. DVD player, TV, etc.). For a clear IR signal reception, the IR Emitter can be glued on the source and sink equipment's IR Sensor. The IR Emitter's signal is transmitted from the side of the enclosure.
13. This product supports RS232 bidirectional communication. Both the Transmitter and Receiver support a 3-Pin Phoenix connector for RS232 connectivity. Connect your RS232 cable to your equipment and to the RS232 port of the 500760-KVM unit. Configure the RS232 communications setting via the device web interface.
14. Commands or messages may be sent to the source and sink equipment via RS232 by connecting a PC to the RS232 port of the HDMI 4K/60 KVM over IP Extender, or over the network via IP. This communications is meant to be machine to machine.
15. The Transmitters and Receivers may be used to create a 4K/60 KVM application, as

illustrated in the following diagram. Note that a Smart Whiteboard application may also be supported via the HDMI and USB ports.



Troubleshooting

The following table describes some of the symptoms, probable causes and possible solutions in regard to the installation of the HDMI 4K/60 KVM over IP Extender:

Symptom	Transmitter LEDs		Receiver LEDs		Probable Cause	Possible Solutions
	Power	Link TX/RX	Power	Link TX/RX		
No Image	OFF	OFF	OFF	OFF	No power	<ul style="list-style-type: none"> • Check power connections • Check power supply
No Image	BLINK	OFF	BLINK	ON	Booting	<ul style="list-style-type: none"> • Wait until booting process finish
No Image	ON	OFF	ON	OFF	No Ethernet Link	<ul style="list-style-type: none"> • Check Ethernet Switch Status • Check UTP Cables
Choppy Video	ON	ON	ON	ON	Configuration	<ul style="list-style-type: none"> • Check cable length • Check the HDMI Cable Quality • Check if Jumbo Frame & IGMP are enabled on the 10G Ethernet Switch
Image flickers when powering up nearby equipment	ON	ON	ON	ON	Interference	<ul style="list-style-type: none"> • Use STP cables
Keyboard and/or mouse not functioning	ON	ON	ON	ON		Check USB cables, keyboard and mouse devices
IR not functioning	ON	ON	ON	ON	Interference from sunlight, Fluorescent, Neon or Halogen lights	<ul style="list-style-type: none"> • Place the IR equipment away from the interfering light
IR not functioning	ON	ON	ON	ON	Interference from RF radiation from the TV	<ul style="list-style-type: none"> • Place the IR equipment away from the RF radiation

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).