



HDMI over IP H.264/H.265 PoE Receiver, 4K60

User Manual

500762-RX-V2



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1. Safety Precautions

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for future reference.

- Follow basic safety precautions to reduce the risk of fire, electrical shock, and injury.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burns.
- Do not open or remove the housing of the device as you may be exposed to dangerous voltage or other hazards.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture and do not install this product near water. Keep the product away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Using supplies or parts not meeting the product specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- Install the device in a place with adequate ventilation to avoid damage caused by overheat.
- Unplug the power when left unused for a long period of time.
- Information on disposal of devices: do not burn or mix with general household waste, please treat them as normal electrical waste.

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2. Introduction

The HDMI over IP H.264/H.265 PoE Receiver, 4K60 (model: 500762-RX-V2) in combination with a 500762-TX, 500763-TX or 500764-TX transmitter allows HDMI source and display equipment to be extended locally up to 330ft (100m) at up to 4K/60Hz resolution via Cat5e/6 cable in point-to-point, point-to-multipoint and multipoint-to-multipoint configurations via a local Ethernet network, and supports Video Wall and Multiview capabilities in a low bandwidth, flexible, expandable and cost effective manner, without the need to install dedicated cabling systems. The exceptionally low bandwidth requirements of this device combination allows for streaming audio/video content over a local network, and over the Internet for distributed installations spread-out throughout the globe. The Receiver can accept a 1080p/60Hz video streams and up-scale the signal up to 4K/60Hz to be displayed on a 4K monitor. The Receiver also accepts H.264/H.265 video streams from other transmitting devices of up to 4K @ 60Hz. These devices support PoE (PD) and may be powered by a PoE (PSE) Ethernet Switch.

3. Features

- Supports up to 4K @ 60Hz (4:4:4) video streams
- Supports up-scales 1080p @ 60Hz video streams from Transmitter and other devices up to 4K @ 60Hz
- Supports Video Wall and Multiview capabilities
- H.264/265 video codec, excellent for LAN and Internet transmission
- Supports SPDIF (TosLink) Audio Out
- RS232 and Directional IR for remote control of end-devices
- PoE powered, via PoE (PSE) Ethernet Switch
- Managed via Pro Digital Network Controller (500812), and Muximus Network Controller (500813)

4. Package Contents

- One (1) HDMI over IP H.264/H.265 PoE Receiver, 4K60
- One (1) User manual (available via download)

Notes: Confirm that the product and accessories are all included. If not, please contact the supplier from which you purchased the unit.

5. Specifications

Technical	
Environment	HDMI 2.0
Devices	Blu-Ray, Set Top Boxes, projectors, monitors, TVs, PCs, supporting HDMI.
Signal Protocol/Standard	HDMI 2.0 and HDCP 2.2
Video Bandwidth	594MHz
Network Bandwidth	32Mbps
Latency	<200ms (in low latency mode with H.265)
Protocols	RX: Supports Multicast, RTSP, HLS, FLV & TS
Connectors	One (1) HDMI connector for AV (Output) One (1) RJ45S for Ethernet connection One (1) USB 3.0 connector for future capabilities One (1) TosLink optical connector for digital audio extraction One (1) 3.5mm connector for audio extraction One (1) 3.5mm connector for directional IR (direction controllable via software) One (1) RS232 DB9 connector for controlling end devices One (1) 2.1mm locking power connector
Maximum Distance	Cat5e/6: 330ft (100m) from Ethernet Switch. Unlimited over the Internet 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.
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 (500993) may be purchased separately.
PoE	IEEE 802.3af
Power Consumption	4.5W
Temperature	Operating: 0° to 40°C Storage: -20° to 85°C Humidity: Up to 95% non-condensing
Dimensions	4.4" x 3.6" x 1.0" (111mm x 92mm x 25mm)
Weight	0.9lbs (0.4kg)
Compliance	Regulatory: FCC, CE, RoHS Flammability: 94V0
Warranty	2 years
Order Information	500762-RX-V2 HDMI over IP H.264/H.265 PoE Receiver, 4K60 (UPC: 627699817629)
Accessories (These items are sold separately)	500920 16-Port Rackmount Transceiver Chassis 500917 Wall Mount Transceiver Bracket Kit 500990 IR Emitter, and 500994 IR Sensor 500993 Univ. Locking Power Supply 5VDC/2.6A US/UK/EU Blade

6. 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 Cat5e/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) Cat5e/6 cable 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, 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 Network Controller (500812) or Muximus Network Controller (500813) 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 blue power LED on each Transmitter and Receiver will illuminate.

Note: Power 'ON' the HDMI Transmitter and Receiver only after all connections have been made.
7. Power 'ON' the HDMI equipment and verify the image quality.

8. This product supports IR control. IR Emitter and Sensor are not included, and are sold separately. If infrared remote control is needed to control the Source equipment from the Display, connect the IR Sensor (PN: 500994) to the 3.5mm Stereo Jack of the receiver and the IR Emitter (PN: 500998) 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 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. Blu-Ray 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 115.2K, N, 8, 1.
12. This unit supports a Factory Reset function, if ever required. Note however that any saved unit configuration data will be lost. To perform a Factory Reset, press and hold the reset button located on the front between 6 to 10 seconds, until the LED starts to flash. If you just want to reset (reboot) the unit, then simply momentarily press the reset button for 1 second.

7. Web Interface

The 500762-RX-V2 HDMI over IP H.264/H.265 PoE Receiver, 4K60 may be managed by the MuxLab Network Controller (500812), by the Muximus Network Controller (500813) or by the 500762-RX-V2 Web Interface. This document covers how to setup and manage the 500762-RX-V2 via the device's web interface. To manage the 500762-RX-V2 via the 500811 Muxlab Network Controller (500812) or via Muximus Network Controller (500813), reference the 500812 and 500813 Manuals.

Access to the 500762-RX-V2 web interface is possible via a web browser. The unit comes by default with DHCP enabled. Identify the IP address of the 500762-RX-V2 device you want to manage by using network utility software tools such as Bonjour, or similar. Set your PC to a different IP address in the same segment, and set the PC subnet mask and gateway address accordingly. Contact a network administrator if assistance is required on how to accomplish this. Enter the 500762-RX-V2 device IP address in your browser and press Enter. The first screen presented is the Login screen.

There are several screens to navigate in order to manage the 500762-RX-V2. The first screen shown after entering the device IP address in the browser is the login screen.

Login

MuxLab
HDMI OVER IP H.264/H.265 POE EXTENDER (500762-RX)

Info | Decoder | Network | Settings | Log Out

PLEASE LOGIN

USER LOGIN
Username:
Password:

To login to the 500762-RX-V2 web interface, type in the Username and Password, and then click on “Login”. The default Username and Password is “admin”.

Info Tab

MuxLab
HDMI OVER IP H.264/H.265 POE EXTENDER (500762-RX)

Info | Decoder | Network | Settings | Log Out

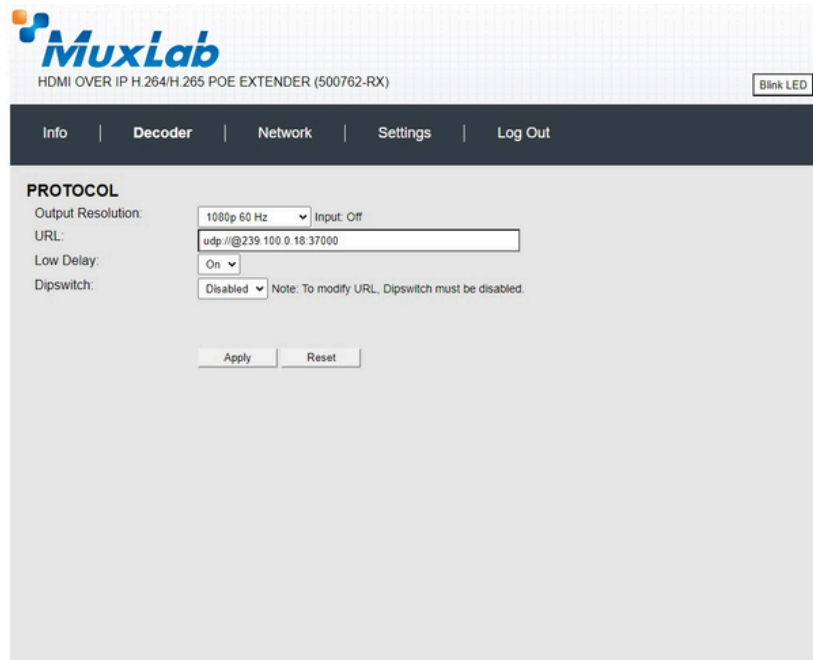
INPUT
Output Resolution: 1080p 60 Hz
Input Resolution: Off
Security Check: PASS

DECODER
URL: udp://@239.100.0.18:37000

NETWORK MONITOR
Traffic Sampling: 8705 packets sampled in 5 seconds
Receiving: 18.68 Mbit/s 1732 packets/s
Sending: 38.83 kbit/s 9 packets/s

Click on the “Info” tab to get information on the 500762-RX-V2, such as the output and input video resolution, and the URL addresses for the supported & configured communication protocols, including TS, HLS, FLV, RTSP, RTMP, and Multicast.

Decoder Tab



The screenshot shows the MuxLab web interface for the HDMI OVER IP H.264/H.265 POE EXTENDER (500762-RX). The navigation bar includes Info, Decoder, Network, Settings, and Log Out. The Decoder tab is active, displaying the following settings:

- PROTOCOL**
- Output Resolution: 1080p 60 Hz (dropdown menu) | Input: Off
- URL: udp://@239.100.0.18:37000 (text input)
- Low Delay: On (dropdown menu)
- Dipswitch: Disabled (dropdown menu) | Note: To modify URL, Dipswitch must be disabled.

Buttons for Apply and Reset are located at the bottom of the settings area.

Click on the “Decoder” tab to (a) set the output video resolution via a pulldown tab (to Auto, or from 480/60 to 3840x2160), (b) set the URL addresses for the supported communication protocols, including TS, HLS, FLV, RTSP, RTMP, and Multicast, (c) enable or disable the Low Delay option via a pulldown tab, (d) enable or disable the Dip Switches via a pulldown tab. Click on the “Apply” button to accept changes, or on “Reset” to return to the previous settings.

Network Tab



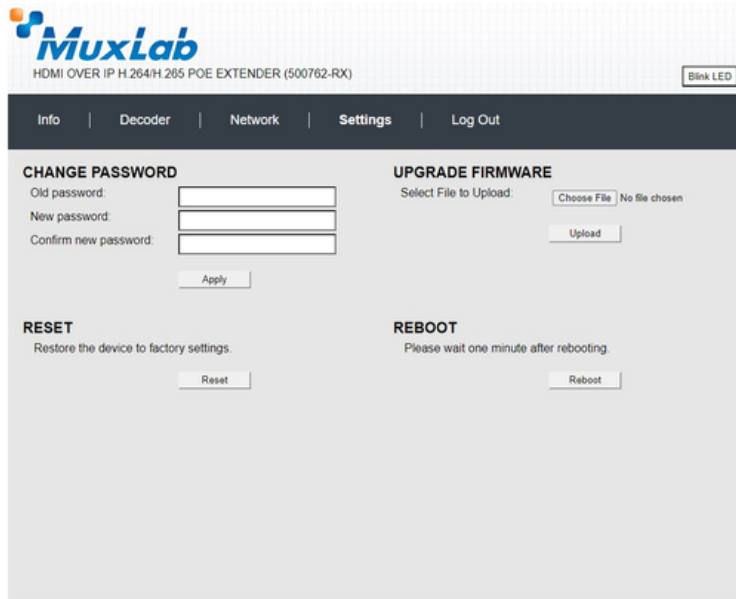
The screenshot shows the MuxLab web interface for the HDMI OVER IP H.264/H.265 POE EXTENDER (500762-RX). The navigation bar includes Info, Decoder, Network, Settings, and Log Out. The Network tab is active, displaying the following settings:

- NETWORK**
- DHCP: Enabled (dropdown menu)
- IP Address: 192.168.168.158 (text input)
- Netmask: 255.255.255.0 (text input)
- Gateway: 192.168.168.1 (text input)
- DNS 1: 8.8.8.8 (text input)
- DNS 2: 4.2.2.1 (text input)
- MAC Address: 00:0B:78:00:F4:42 (text input)

Buttons for Apply and Reset are located at the bottom of the settings area.

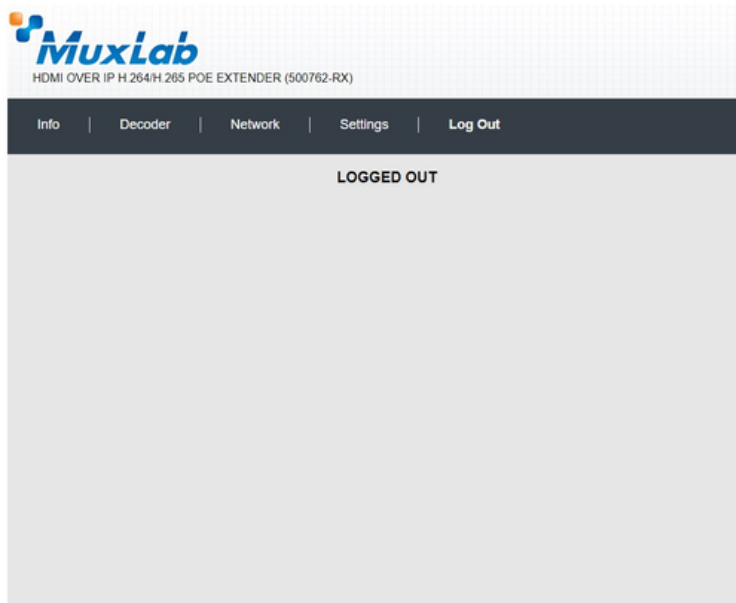
Click on the Network tab to (a) enable or disable DHCP via a pulldown tab, (b) set the device Static IP Address, Subnet Mask, Gateway, DNS 1 and DNS 2, and (c) to get the unit MAC address. Click on the “Apply” button to accept changes, or “Reset” to return to the previous settings.

Settings Tab



Click on the “Settings” tab to (a) change the login password, by entering the old password, new password, and reconfirming the new password, and clicking on “Apply”, (b) upgrade the device firmware, by clicking on the “Choose File” button to search for and select the new firmware, and then clicking “Upload”, (c) reset the unit to factory defaults, by clicking on the “Reset” button, and (d) reboot the unit, by clicking on the “Reboot” button.

Log Out Tab



Click on the “Log Out” tab to log out of the device web interface.

8. Troubleshooting

The following table describes some of the symptoms, probable causes and possible solutions in regard to the installation of the HDMI over IP H.264/H.265 PoE Transmitter and Receiver:

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"> • Check power connections • Check PoE Ethernet Switch Setup
No Image	BLINK	OFF	BLINK	ON	Booting	<ul style="list-style-type: none"> • Wait until booting process is finished
No Image	ON	OFF	ON	OFF	No Ethernet Link	<ul style="list-style-type: none"> • Check Ethernet Switch Status • Check UTP Cables
Info Screen	ON	OFF	ON	BLINK	UTP Cable	<ul style="list-style-type: none"> • Check the Transmitter UTP cable
Info Screen	ON	ON	ON	OFF	UTP Cable	<ul style="list-style-type: none"> • Check the Receiver UTP cable.
Info Screen	ON	BLINK	ON	BLINK	No Data Connection	<ul style="list-style-type: none"> • Check if DIP Switch settings match
Info Screen	ON	ON	ON	BLINK	Wrong setting on Receiver	<ul style="list-style-type: none"> • Check DIP Switch address of the Receiver
Choppy Video	ON	ON	ON	ON	Configuration	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Use STP cables
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

* 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).

9. Application Example

