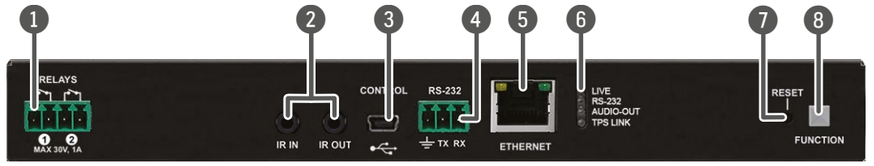
LIGHTWARE
INNOVATIVE, RELIABLE, MADE IN EUROPE.

Quick Start Guide

HDMI-TPS-RX110AY
HDMI-TPS-RX110AY-Plus

Front View



1	**Relay connector**	4-pole Phoenix connector for controlling the two relays.
2	**Infrared connectors**	2 TRS (3.5mm jack) connectors for Infrared units (IR IN for the detector, IR OUT for the emitter)
3	**USB connector**	USB interface for LDC connection to control and configure the device.
4	**RS-232 connector**	3-pole Phoenix connector for serial communication.
5	**Ethernet connector**	RJ45 connector for remote controlling and firmware update via LAN.
6	**Status LEDs**	The LEDs give feedback about the current status of the unit and connection signals.
7	**Reset button**	Pushing the button reboots the unit.
8	**Function button**	Special functions are available with this button (bootload mode, DHCP settings, restore factory default settings, condition launching in Event Manager).

Infrared emitter and detector units are optionally available accessories.

Status LEDs

LIVE

- OFF: device is not powered.
- BLINKING (slow; 1 sec): device is powered and operational.
- BLINKING (fast; 0,5 sec): device is in bootload mode.
- ON: device is powered but not operational.

RS-232

- OFF: RS-232 ports (local and link) are in Pass-through mode.
- BLINKING: Command Injection mode is active.
- ON: RS-232 ports (local and link) are in Control mode.

AUDIO OUT

- OFF: embedded audio is not present or muted.
- BLINKING: embedded audio format is not supported for audio de-embedding.
- ON: embedded audio is present and de-embedded.

TPS LINK

- OFF: no TPS link.
- BLINKING: Device is in low power or Ethernet fallback mode.
- ON: TPS link is active.

Important Safety Instructions

Please read the supplied safety instruction document before using the product and keep it available for future reference.

Introduction

Thank you for choosing Lightware HDMI-TPS-RX110AY series receiver. The product has HDBaseT™ integration with additional Lightware developments. The device receives digital video at a resolution up to 4K, audio and control up to 170 m distance over a single CAT cable. The receiver is compatible with Lightware TPS matrix and 25G boards as well as other TPS products. The device can be remote powered over TPS link with PoE (IEEE 802.3af).

The product is compatible with any third-party HDBaseT™ devices.

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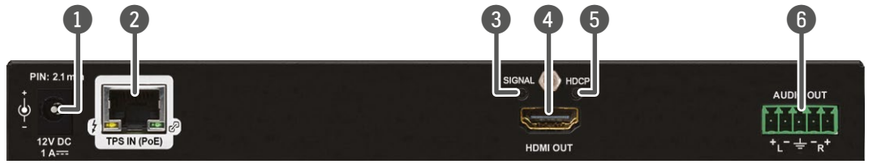
Compatible Devices

The receiver is compatible with other Lightware TPS devices, matrix TPS and TPS2 boards, 25G boards, as well as third-party HDBaseT-extenders, displays, but not compatible with the phased out TPS-90 extenders.

The receiver is PoE-compatible (Power over Ethernet, can be powered remotely via CATx cable) but the device can only receive power and cannot send power other PoE-compatible devices.

Rear View



1	**12V DC input connector**	12V DC input for local powering.
2	**TPS input port**	TPS input port for compatible transmitter device (extender / matrix / board).
3	**Signal LED for HDMI output**	The LED gives feedback about the current status output signal.
4	**HDMI output port**	HDMI output port for DVI or HDMI signal. Connect an HDMI cable between the receiver and the display device.
5	**HDCP LED for HDMI output**	The LED shows the current HDCP status of the video source.
6	**Audio output port**	5-pole Phoenix connector for balanced analog audio output.

Rear Panel LEDs

TPS Input LEDs

- ON: remote power receiving (PoE) is active.
- OFF: no TPS link between transmitter and receiver.
  BLINKING: device is in low power mode or in Ethernet fallback mode.
  ON: TPS link is active.

HDMI Output - SIGNAL LED

- OFF: output signal is not present or muted.
- ON: signal is present

HDMI Output - HDCP LED

- OFF: output signal is not HDCP-encrypted.
- BLINKING: non-HDCP capable device is connected, encrypted signal is replaced with red screen.
- ON: output signal is HDCP-encrypted.

Mounting

To mount the receiver, Lightware supplies optional accessories for different usage. There are two kinds of mounting kits with a similar fixing method. The receiver has two mounting holes with inner thread on the bottom side. Fasten the device by the screws enclosed with the accessory.

Under-desk double mounting kit

1U high rack shelf

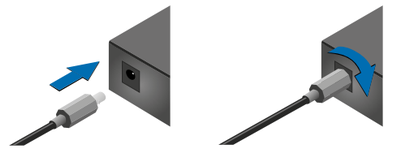
The Under-desk double mounting kit makes it easy to mount a single device on any flat surface, e.g. furniture. The 1U high rack shelf provides mounting holes for fastening two half-rack or four quarter-rack sized units. Pocket-sized devices can also be fastened to the shelf. To order mounting accessories, please contact sales@lightware.com.

Using different (e.g. longer) screws may cause damage to the device.

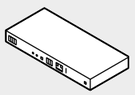
The receiver is half-rack sized.

Locking DC Plug

Twist 90° clockwise to lock.



Box Contents



Receiver unit

12V DC adaptor with interchangeable plugs

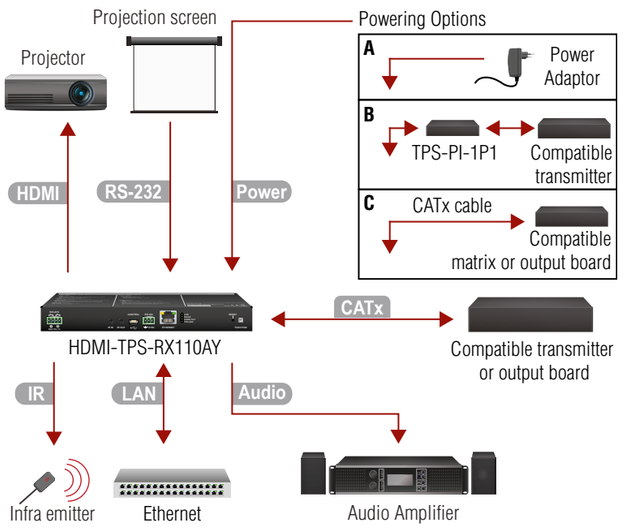
Phoenix Combicon 3-pole connector

Phoenix Combicon 4-pole connector

Phoenix Combicon 5-pole connector

Safety and warranty info, Quick Start Guide

Connecting Steps



CATx	Connect the receiver and the transmitter by a CATx cable via the TPS connectors.
LAN	Optionally connect the transmitter to a LAN network to control the device.
Relay	Optionally for relay extension: connect the controlled device(s) (e.g. projection screen) to the relay port.
IR	Optionally for Infrared extension: ▪ Connect the IR emitter to the IR OUT port of the receiver, and/or ▪ Connect the IR detector to the IR IN port of the receiver.
Audio	Optionally connect an audio device (e.g. audio amplifier) to the audio output port.
RS-232	Optionally for RS-232 extension: connect a controller/controlled device (e.g. projector) to the RS-232 port.
HDMI	Connect a sink to the HDMI output port.
Power	Choose powering option: **A. Local powering**: first, connect the power adaptor to the DC input of the receiver, then to the AC power socket. **B. Powering by a power injector (PoE)**: connect the compatible transmitter and a TPS-PI-1P1 power injector to the TPS input port of the receiver via a CATx cable. The power injector needs to be powered by a local DC adaptor. **C. Powering by a matrix or output board (PoE)**: connect the compatible matrix or output board to the TPS input port of the receiver via a CATx cable. The output board needs to be powered by a local DC adaptor; please check the user's manual of the board.

Further information on the device is available on www.lightware.com.
The User's Manual is also available via the QR code below:

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Doc. ver.: 1.5
19210037

TPS Receiver Concept

HDMI-TPS-RX110AY is a multifunctional TPS receiver with audio de-embedding function and relay extension. The device receives audio/video, Ethernet, RS-232 and Infrared signals via the TPS input port and can be powered by another extender due to the PoE-compatibility. The receiver can be controlled via USB, Ethernet, RS-232 or Infrared and is able to control third-party devices via the RS-232, Ethernet, Infrared and relay interfaces.

+ Local USB
+ Ethernet
+ RS-232
+ Infrared
+ Relay

Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer through the Ethernet, USB or RS-232 ports using Lightware Device Controller. Please download the application from www.lightware.com, install on a Windows PC or a macOS and connect to the device via the Ethernet port.

The IP address of the unit is static (default): 192.168.0.100., DHCP is disabled.

Set dynamic IP address

1. Keep the Function button pressed for 5 seconds; all front panel LEDs start to blink.
2. Release the button, then press it 3 times quickly. DHCP is now enabled.

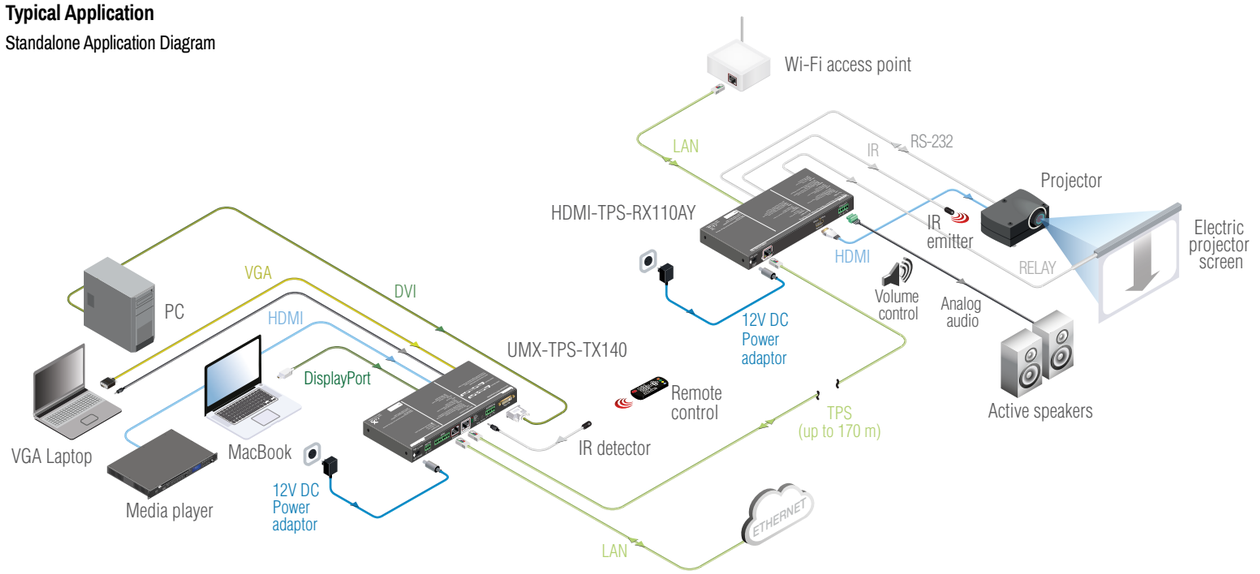
Restore Factory Default Settings

1. Keep the **Function** button pressed for 10 seconds; after 5 seconds the front panel LEDs start to blink, but keep pressing the button; the LEDs start to blink faster 5 seconds later.
2. Release the button, then press it 3 times quickly; the following factory default settings are restored:

IP address (static)	192.168.0.100
Subnet mask	255.255.255.0
Static gateway	192.168.0.1
DHCP	Disabled
TCP/IP port nr. LW2 / LW3	10001 / 6107
Input TPS mode	Auto
Emulated EDID	Dynamic
RS-232 mode	Passthrough
RS-232 control protocol	LW2
RS-232 port setting	57600 BAUD, 8, N, 1
Command injection port (local / link)	8001 / 8002
Relay connection state	Open

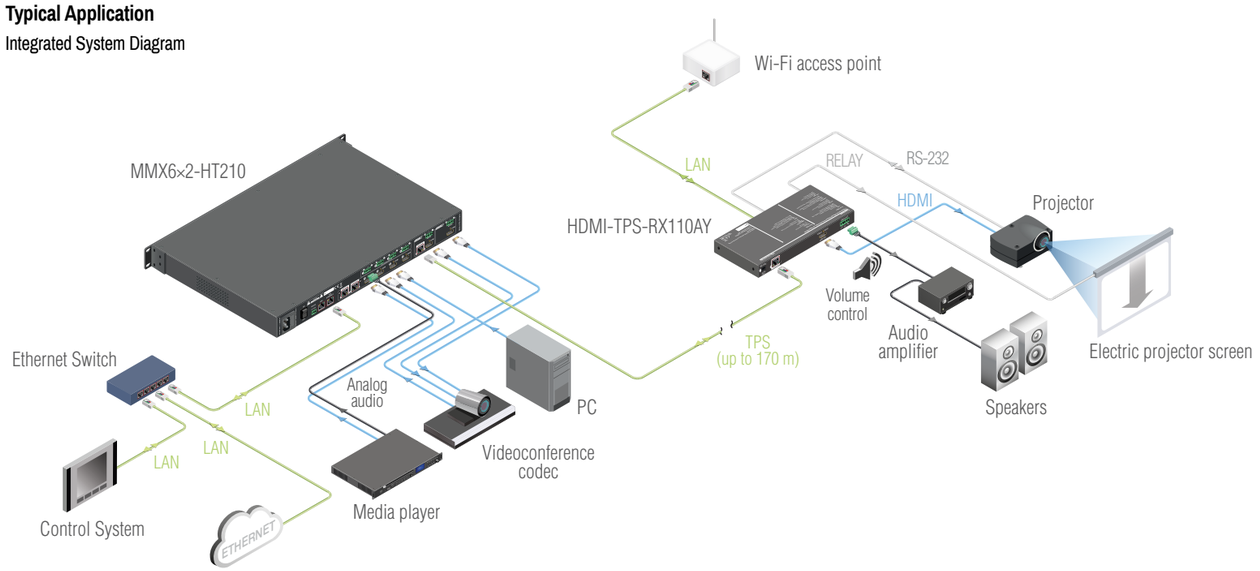
Typical Application

Standalone Application Diagram



Typical Application

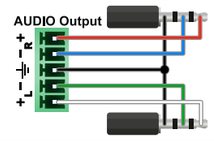
Integrated System Diagram



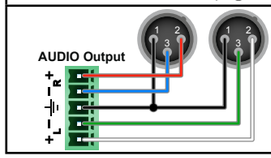
Audio Cable Wiring Guide

The device is built with a 5-pole Phoenix connector, so we would like to help users assemble their own audio cables. See the most common cases below.

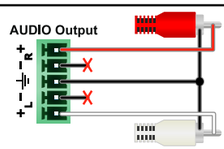
From balanced output to balanced input
Phoenix - 2x6.3 (1/4") TRS



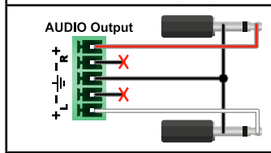
From balanced output to balanced input
Phoenix cable - 2x XLR plugs



From balanced output to unbalanced input
Phoenix - 2x RCA



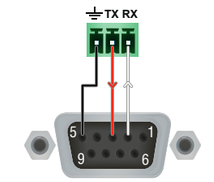
From balanced output to unbalanced input
Phoenix - 2x 6.3 (1/4") TS



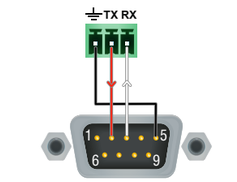
Wiring Guide for RS-232 Data Transmission

The receivers are built with a 3-pole Phoenix connector. See the examples below of connecting to a DCE (Data Circuit-terminating Equipment) or a DTE (Data Terminal Equipment) type device:

Lightware device and a DCE
D-SUB 9 – Phoenix



Lightware device and a DTE
D-SUB 9 – Phoenix



For more information about the cable wiring, see the user's manual of the device or the Cable Wiring Guide on our website.

Maximum Extension Distances

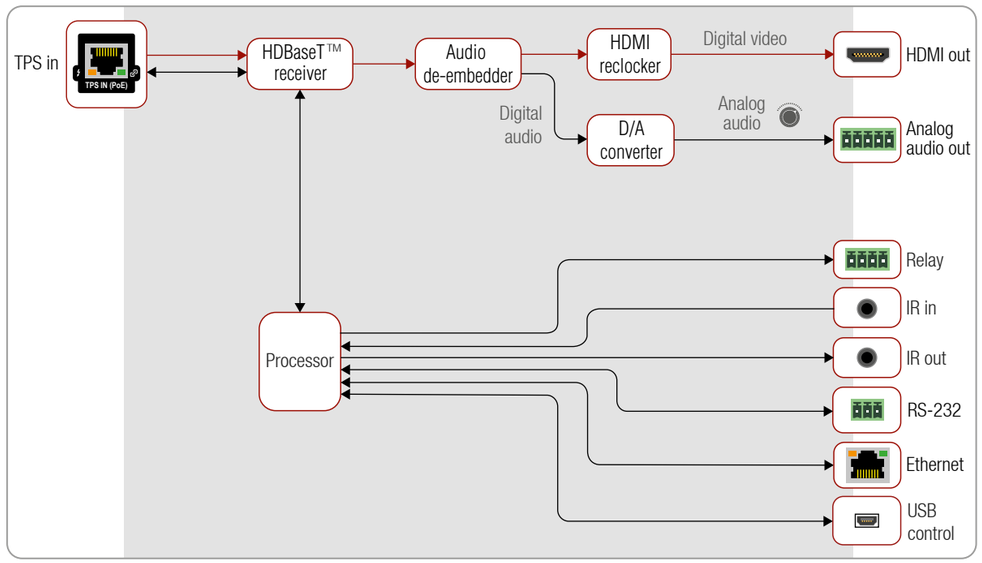
Resolution	Pixel clock rate	Cable lengths (Auto / Long reach TPS mode)		
		CAT5e AWG24	CAT7 AWG26	CAT7 AWG23
1024x768@60Hz	65 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1280x720p@60Hz	73.8 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1920x1080p@60Hz (24bpp)	148.5 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1920x1200@60Hz	152.9 MHz	100 m / NA	90 m / NA	120 m / NA
1600x1200@60Hz	162 MHz	100 m / NA	90 m / NA	120 m / NA
1920x1080@60Hz (36bpp)	223 MHz	70 m / NA	70 m / NA	100 m / NA
3840x2160@30Hz UHD	297 MHz	70 m / NA	70 m / NA	100 m / NA
4096x2160@30Hz 4K	297 MHz	70 m / NA	70 m / NA	100 m / NA

* Long reach TPS mode supports pixel clock frequencies up to 148.5 MHz.

The values above are valid when the transmitter is powered by a local adaptor; distances may decrease depending on the powering mode (local or remote) and cable quality. To specify the accurate extension distances, please also check the documentation of the connected TPS device.

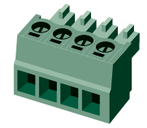
CAT7 SFTP AWG23 cable is always recommended.

HDMI-TPS-RX110AY Port Diagram

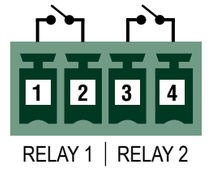


Relay Connector

HDMI-TPS-RX110AY series receivers contain two relays, which can be connected with a 4-pole Phoenix connector. Relays can be controlled by Lightware protocol commands (LW3), and Event manager actions can be assigned to the port. Relay connector pin assignment:



Pin nr.	Description
1	Pin 1 for Relay 1
2	Pin 2 for Relay 1
3	Pin 1 for Relay 2
4	Pin 2 for Relay 2



The device is built with normally open (N.O.) contact relays, which means when the unit is not powered (DC plug is disconnected), the relays will open.

The maximum ratings for each relay are 30V and 1A, AC/DC. The default status of the relays is open.

Types of IR Connectors (1/8" TRS / TS)

3 pole, 2 rings: IR receiver

2 pole, 1 ring: IR transmitter