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RX107
Point
Extender

LIGHTWARE RX107 Point Extender Installation Guide

Contents

LWR LIGHTWARE
INNOVATIVE. RELIABLE. MADE IN EUROPE.

LIGHTWARE RX107 Point Extender

FAQs

- **Q: What devices are compatible with the product?**
  - **A:** The product is compatible with all Lightware TPX series models and any third-party AVX devices.
- **Q: How do I know if the device is powered on?**
  - **A:** Check the POWER/LIVE LED indicator on the device. It should be blinking between 50% and 100% brightness (green) when operational.
- **Q: How do I switch between EDID emulation modes?**
  - **A:** For learned mode, press the EDID button shortly. For transparent mode, press and hold the EDID button to learn and store EDID from the receiver's output.

Important Safety Instructions

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

Introduction

- The HDMI-TPX-106 and HDMI-TPX-107 series extenders with AVX technology are Lightware's future-proof development and a natural progression from the widely popular HDMI-TPS-TX/
- RX97 series, allowing users to extend HDMI 2.0 signals up to 4K60 4:4:4 video resolution through a single CATx cable over distances of up to 100 meters. HDMI-TPX-TX106A model is featured with an audio de-embedding function via the 5-pole Phoenix® Combicon analog audio port.
- Beyond the benefits of sending high-resolution video over long distances, the extenders are also capable of handling various connectivity standards, including bi-directional RS-232 and command injection over IR (output only).
- The Gigabit Ethernet port is also a valuable addition, allowing users to connect an additional device to the network directly through the TPX extender.
- HDCP 2.3 and basic EDID management functionality are also among the features offered by these devices, such as their connectivity and easy integration into a wide range of AV operations and compatibility with 3rd
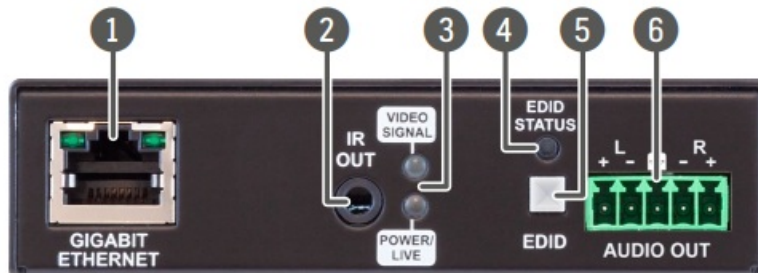
party devices.

Compatible Devices

- The product is compatible with all Lightware TPX series models and any third-party AVX devices.

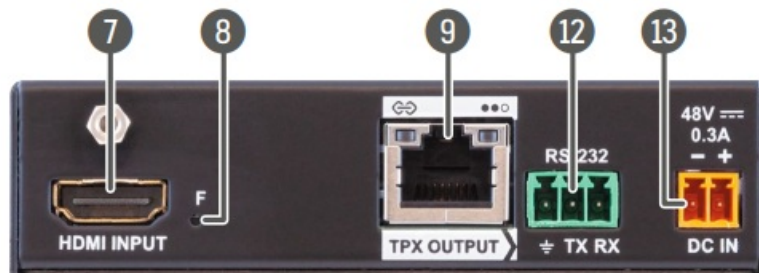**Front and Rear View**

Front and Rear View – Transmitter (TX)

- Front View

  - TX106 / TX106A models have one, TX107 model has two Gigabit Ethernet connectors.
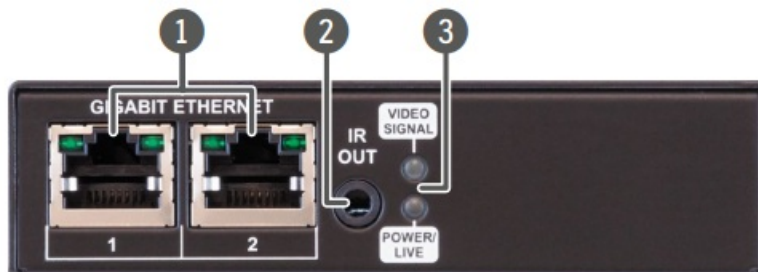 - Only the TX106A model is built with an analog audio output port.
- Rear View

  - TX106 / TX106A models are built with 12V, TX107 model is built with a 48V DC input connector.
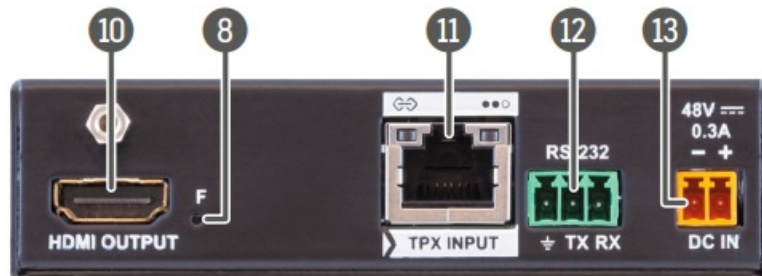
Front and Rear View – Receiver (RX)

- Front View

  - RX106 model is built with one, and the RX107 model is built with two Gigabit Ethernet connectors.
- Rear View

○ The RX106 model is built with a 12V, RX107 model is built with a 48V DC input connector.

1. **Gigabit Ethernet port** 1GBase-T RJ45 connector for user Ethernet purposes.
2. **IR out TRS** (3.5mm jack) output connector for an Infrared emitter unit.
3. **Status LEDs** The LEDs give immediate feedback about the current status of the extender. See the details in the Status LEDs section.
4. **EDID Status LED** The LED gives immediate feedback about the current status of the EDID emulation. See the details in the Status LEDs section.
5. **EDID button** Two EDID emulation modes can be selected with the button: Learned and Transparent.
   - **Short press:** switch between transparent and stored user EDID.
   - **Long press:** learn and store EDID from the output of the receiver.
6. **Analog audio output** 5-pole Phoenix connector for balanced analog audio output.
7. **HDMI input** HDMI input port with HDMI 2.0 support for source devices.
8. **Factory reset button** Hidden button for setting the device to factory default values.
9. **TPX output** RJ45 connector for AVX output signal transmission. See more details about the connector in the Power Supply Options and the Status LEDs sections.
10. **HDMI output** HDMI output port with HDMI 2.0 support for sink devices.
11. **TPX input** RJ45 connector for AVX input signal. See more details about the connector in the Power Supply Options and the Status LEDs sections.
12. **RS-232 port** 3-pole Phoenix connector for bi-directional serial communication.
13. **12V / 48V DC input** DC input for local powering. Connector types by models:
    - **HDMI-TPX-106 series:** 12V DC input with locking connector.

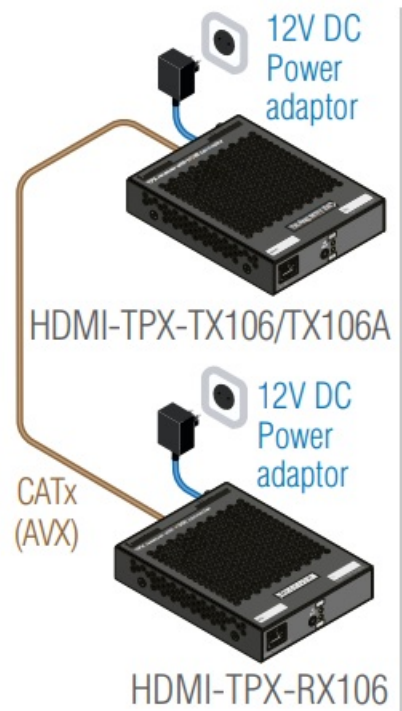   - **HDMI-TPX-107 series:** 48V DC input with 2-pole Phoenix connector.

Power Supply Options

HDMI-TPX-106 series

TPX106 series extenders are able to supply remote power to each other over the TPX connector.

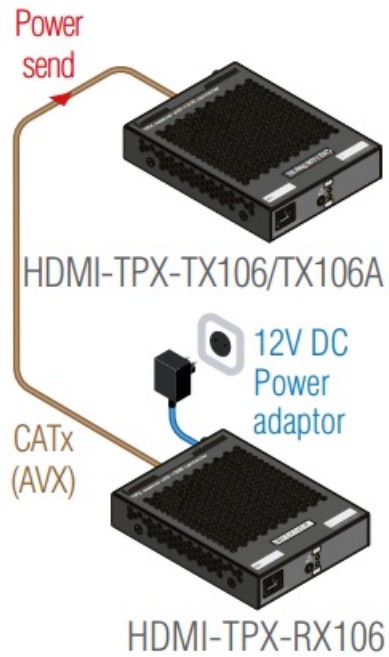**The TPX106 series devices can be powered in any of the following ways:**

1. Local adaptor for both TX and RX

HDMI-TPX-TX106/TX106A

HDMI-TPX-RX106

2. Local adaptor and remote power to RX

HDMI-TPX-TX106/TX106A

HDMI-TPX-RX106

3. Local adaptor and remote power to TX

Power
send

HDMI-TPX-TX106/TX106A

12V DC
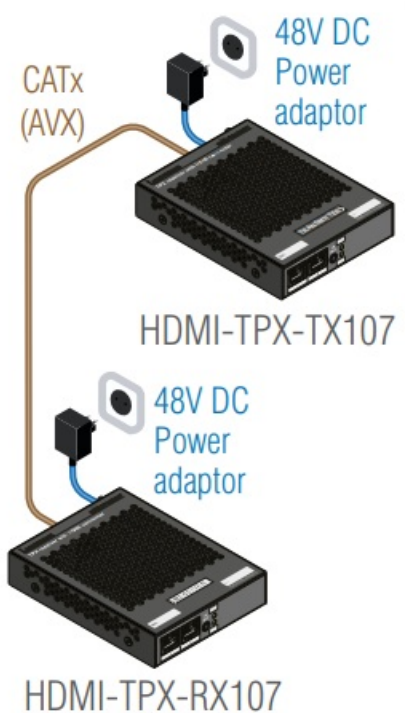Power
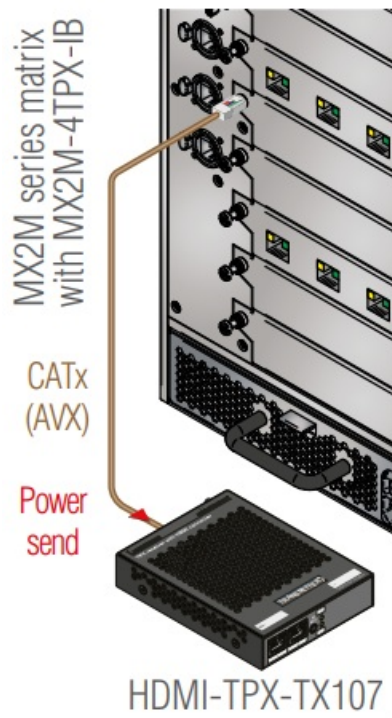adaptor

CATx
(AVX)

HDMI-TPX-RX106

HDMI-TPX-107 series

- TPX107 series extenders fulfill the PoE PD standard, which means the TPX port can receive power over the Ethernet line.
- HDMI-TPX-107 series extenders are not able to send remote power to each other.

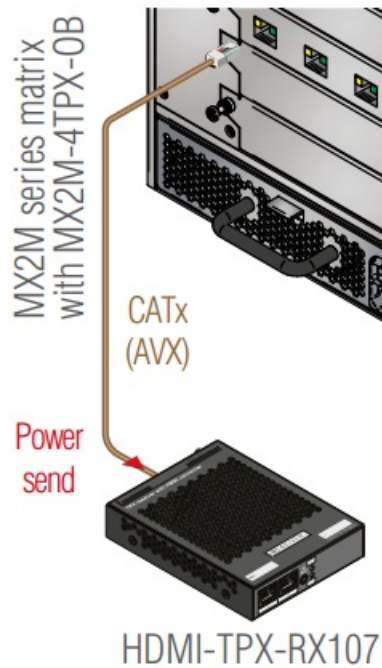**The TPX107 series devices can be powered in any of the following ways:**

1. Local adaptor for both TX and RX

CATx
(AVX)

48V DC
Power
adaptor
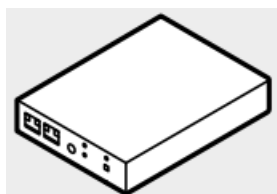
HDMI-TPX-TX107

48V DC
Power
adaptor

HDMI-TPX-RX107

2. Remote power via matrix board to TX

MX2M series matrix with MX2M-4TPX-IB

CATx (AVX)

Power send

HDMI-TPX-TX107

3. Remote power via matrix board to RX

MX2M series matrix with MX2M-4TPX-OB

CATx (AVX)

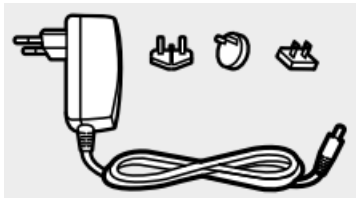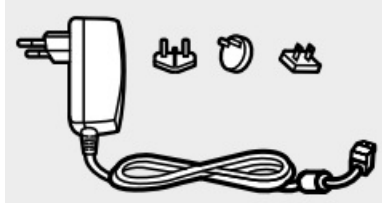Power send

HDMI-TPX-RX107

Box Contents
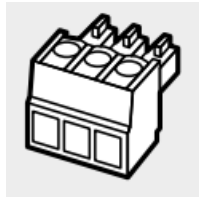
- Transmitter / receiver device
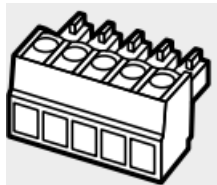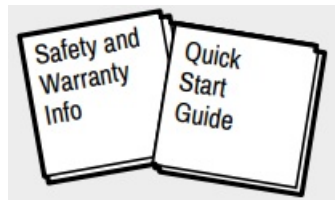

- 12V DC adaptor with interchangeable plugs 1

- 48V DC adaptor with interchangeable plugs 2

- Phoenix® Combicon 3-pole connector

- Phoenix® Combicon 5-pole connector 3

- Safety & Warranty Info; Quick Start Guide

Status LEDs

POWER/LIVE		Transmitter / Receiver
◯	off	Device is not powered.
☼	blinking between 50% and 100% brightness (green)	Device is powered on and operational.

VIDEO SIGNAL		Transmitter / Receiver
◯	off	No video signal detected on the HDMI input (TX) or HDMI output (RX) port.
●	on (green)	Video signal is detected on the HDMI input (TX) or HDMI output (RX) port.

EDID STATUS		Transmitter
●	on (green)	Learned EDID is emulated on the HDMI input port.
●	on (yellow)	Transparent EDID is emulated on the HDMI input port.
☼	blinking (red)	Error occured during the EDID emulation. It may be caused by: • EDID emulation cannot be set correctly. • Device cannot apply transparent EDID emulation.

TPX INPUT/OUTPUT	⬯⬯	Transmitter / Receiver
▢	off	No connection is established between the transmitter and the receiver units.
▣	on (green)	Connection is established with 10G / 5G / 2.5G bandwith.
☼	blinking (yellow)	Link training is in progress.

TPX INPUT/OUTPUT	●●◯	Transmitter / Receiver
▢	off	No data transmission on the port.
☼	blinking (green)	Data transmission is active.

GIGABIT ETHERNET - LEFT LED		Transmitter / Receiver
▣	on (green)	Connection is established with 100Mbps bandwith.
☼	blinking (green)	Data transmission is active.

GIGABIT ETHERNET - RIGHT LED		Transmitter / Receiver
▣	on (green)	Connection is established with 1Gbps bandwith.
☼	blinking (green)	Data transmission is active.

Specification

- **General**
  - Compliance……………………………………………………………………………………..CE, UKCA

- EMC (Emission)……………………………………………………………………………EN 55032:2015+A1:2020
- EMC (Immunity)……………………………………………………………………EN 55035:2017+A11:2020
- Electrical safety…………………………………………………………………….. EN 62368-1:2020
- RoHS……………………………………………………………………………………………EN 63000:2018
- Warranty…………………………………………………………………………………………………..3 years
- Operating temperature……………………………………………………0° to +50°C (+32° to +122°F)
- Operating humidity…………………………………………………………… 10% to 90%, non-condensing
- Cooling………………………………………………………………………………………………..passive

- **Power**
  - Power supply option (TPX106 series)…………… Power adaptor / 12V remote powering
  - Power supply option (TPX107 series)……………………………… Power adaptor / PoE PD
  - Supported power source…………………………………………………100-240 V AC; 50/60 Hz
  - Power consumption (TPX106 series, without remote power)…………………………..7 W
  - Power consumption (TPX106 series, with remote power)……………………………… 16 W
  - Power consumption (TPX107 series)……………………………………………………………11 W
  - Heat dissipation (TPX106 series, without remote power)………………………..23.9 BTU/h
  - Heat dissipation (TPX106 series, with remote power)…………………………….54.6 BTU/h
  - Heat dissipation (TPX107 series)…………………………………………………………37.5 BTU/h

- **Power Adaptor (TPX106 series)**
  - Supplied power………………………………………………………………………………12V DC, 2A
  - AC power plug…………………………………………… Interchangable (EU, UK, JP/US, AUS/NZ)
  - DC power plug…………………………………………… Locking DC connector (2.1/5.5 mm pin)

- **Power Adaptor (TPX107 series)**
  - Supplied power…………………………………………………………………………48V DC, 0.8A
  - AC power plug…………………………………………… Interchangable (EU, UK, JP/US, AUS/NZ)
  - DC power plug…………………………………………………………………2-pole Phoenix connector

- **Enclosure**
  - Rack mountable……………………………………………………… yes, with mounting accessories
  - Enclosure material…………………………………………………………………………….. 1 mm steel
  - Dimensions (mm / inch)………………100.4 W x 131.9 D x 26 H (3.95 W x 5.19 D x 1 H)
  - Weight…………………………………………………………………………………..476 g (1.05 lbs)

- **Video Ports**
  - **HDMI input/output**
    - Connector type……………………………………………………19-pole HDMI Type A receptacle
    - AV standard…………………………………………………………………………… DVI 1.0, HDMI 2.0
    - HDCP compliance……………………………………………………………………………HDCP 2.3
    - Color space…………………………………………………………………………… RGB, YCbCr
    - Supported resolutions at 8 bits/color *……………………..up to 4096×2160@60Hz (4:4:4)
    - Audio formats……………….. 8-channel PCM, Dolby TrueHD, DTS-HD Master Audio 7.1
    - CEC support……………………………………………………………………………..transparent

- **TPX input/output**
  - Connector type……………………………………………………………………….. RJ45 connector
  - Power over Ethernet (TPX106 series)……………………………………….. 12V remote powering

- Power over Ethernet (TPX107 series)…………………………………PoE PD (IEEE802.3af)
- Data rate……………………………………………………………………………………. 10GBase-T
- Compliance……………………………………………………………………………….. SDVoE AVX
- HDCP compliance…………………………………………………………………………..HDCP 2.3
- Transferred signals…………………………………………..Video, Audio, RS-232, Infrared, Ethernet
- Color space…………………………………………………………………………………. RGB, YCbCr
- Video latency (TPX output)…………………………………………..0 frames (five lines/ under 8ms)
- Compression ratio (TPX output)…………………………………………………………………1.4 to 1 **
- Supported resolutions at 8 bits/color *…………………….up to 4096×2160@60Hz (4:4:4)
- Audio formats……………….. 8-channel PCM, Dolby TrueHD, DTS-HD Master Audio 7.1

All standard VESA, CEA, and other custom resolutions up to 600MHz (HDMI2.0) are supported. Compression is applied only if the AV signal is above the HDMI 1.4 standard.

- **Audio Ports**
  - Analog audio output (HDMI-TPX-TX106A)
  - Connector type……………………………………………………………..5-pole Phoenix connector
  - Audio formats……………………………………………………………………………2-channel PCM
  - Sampling frequency………………………………………………………………………………….48 kHz
  - Signal transmission……………………………………………………………………… Balanced signal
- **Control Ports**
  - **Ethernet port**
    - Connector type…………………………………………………………….. RJ45 female connector
    - Number of connectors per unit (106 series / 107 series)………………………………………..1 / 2
    - Ethernet data rate…………………………………………………1GBase-T, full duplex with autodetect
    - Power over Ethernet (PoE)………………………………………………………………….Not supported
- **RS-232 serial port**
  - Connector type……………………………………………………………..3-pole Phoenix connector
  - Default settings……………………………………………………………………………9600 BAUD, 8N1
- **Infrared output port**
  - Connector type……………………………………………………………..3.5mm TRS (approx. 1/8" jack)
  - Output signal………………………………………………………………………………. Modulated (38kHz)
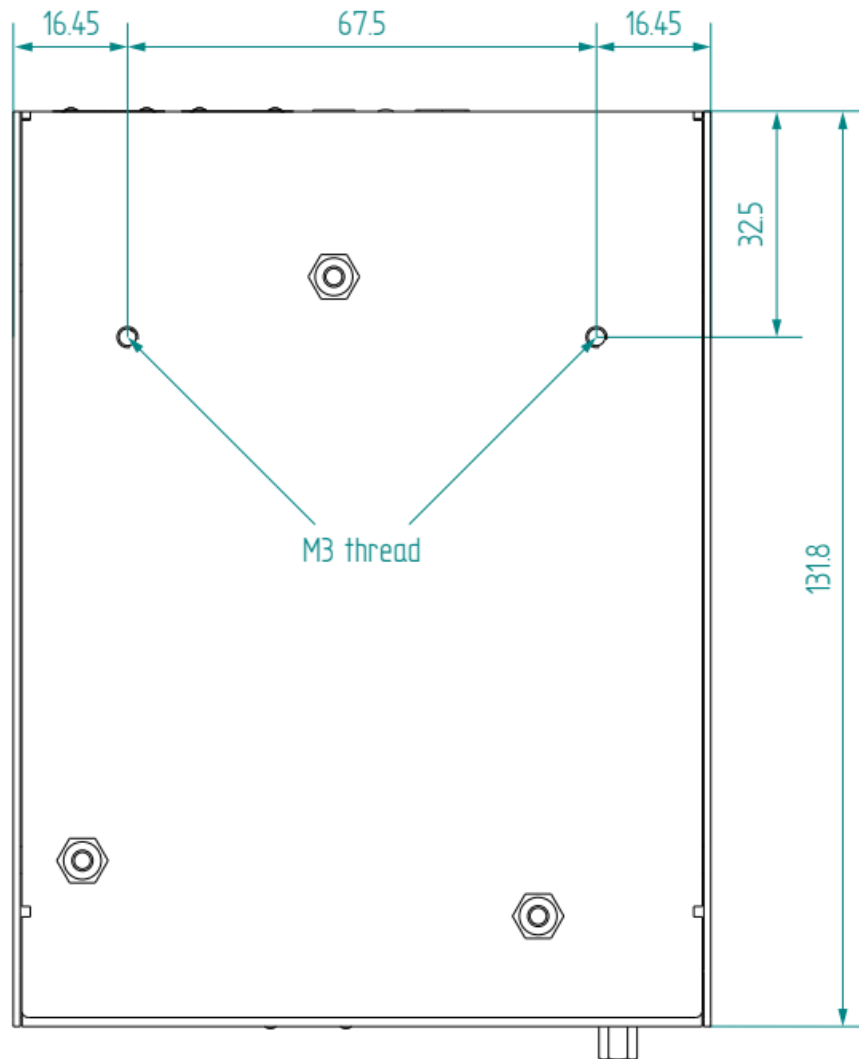 - Operation mode…………………………..Command injection (only with 3rd-party software)

Mechanical Drawings

The following drawings present the physical dimensions of the HDMI-TPX-100 series extenders. Dimensions are in mm.
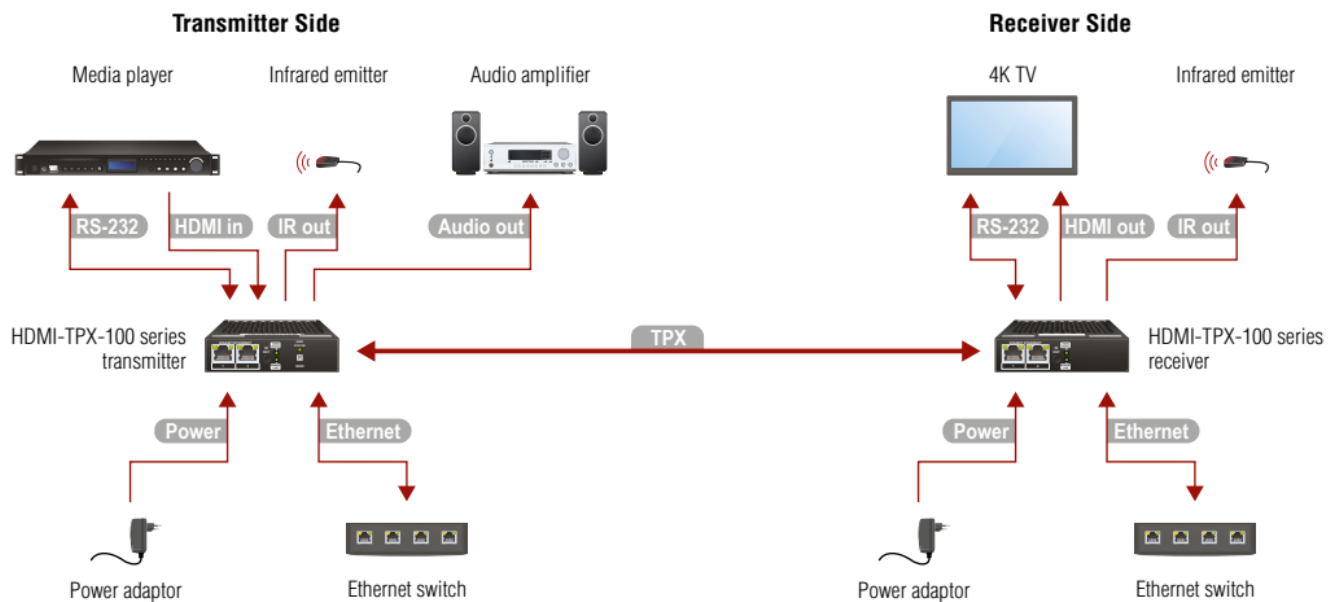
Front View
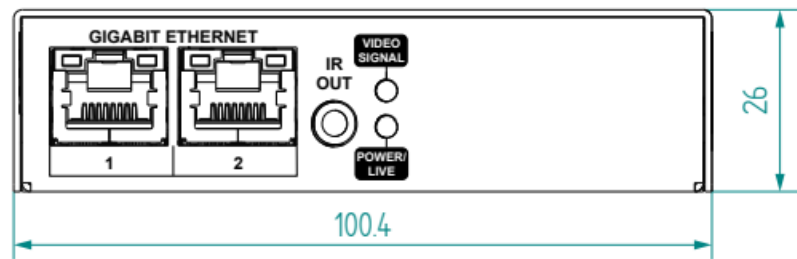
Bottom View

Ventilation: Pay attention to the ventilation holes when designing the system. Top and side ventilation holes must not be covered.

Connecting Steps

Transmitter Side

- **TPX** Connect a CATx cable between the TPX output port of the transmitter and the TPX input port of the receiver.
- **HDMI in** Connect the source (e.g. media player) to the HDMI input port of the transmitter by a HDMI cable.
- **Audio out** Optionally for analog output: connect an audio device (e.g. audio amplifier) to the analog audio output port by an audio cable.
    - Only the HDMI-TPX-TX106A model is built with an analog audio output port.
- **Ethernet** Connect the device to a LAN network.
- **IR out** Optionally for Infrared extension: connect an IR emitter to the IR OUT port of the transmitter.
- **RS-232** Optionally for RS-232: connect a device (e.g. media player) to the RS-232 port.
- **Power** Powering on the devices is recommended to do as the final step during the installation. Please check the Power Supply Options section for the details.

Receiver Side

- **TPX** Connect a CATx cable between the TPX output port of the transmitter and the TPX input port of the receiver.
- **HDMI out** Connect the sink (e.g. 4K TV) to the HDMI output port of the receiver by a HDMI cable.
- **Ethernet** Connect the device to a LAN network.
- **IR out** Optionally for Infrared extension: connect an IR emitter to the IR OUT port of the receiver.
- **RS-232** Optionally for RS-232: connect a device (e.g. 4K TV) to the RS-232 port.
- **Power** Powering on the devices is recommended to do as the final step during the installation. Please check the Power Supply Options section for the details.

Mounting Options

For the mounting of the devices Lightware supplies optional accessories for different usages. The device has two mounting holes with an inner thread on the bottom side. Fasten the device with the screws enclosed to the accessory.

UD Mounting Plate F110   UD Mounting Plate F120

UD Mounting Pro P140
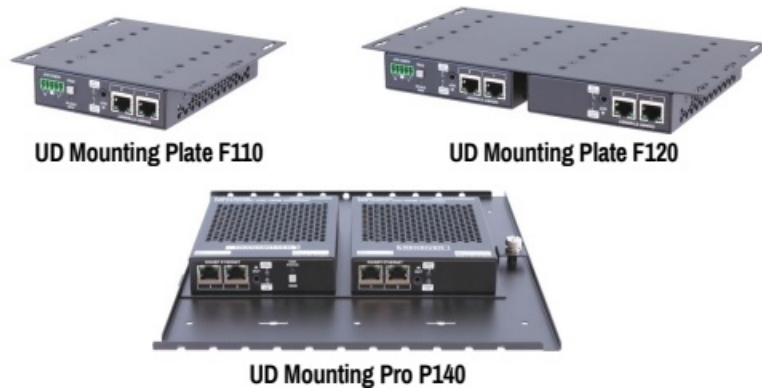
- The UD Mounting Plate F110 makes it easy to mount a single device on any flat surface, e.g. furniture. The UD Mounting Plate F120 and UD Mounting Pro P140 provide the same for one half-rack or two quarter-rack-sized units.
- Pocket-sized devices can also be fastened to them.
- The UD Mounting Pro P140 makes easy and quick changing of the extenders under the desk available. To order mounting accessories, please contact **sales@lightware.com**.
- Using different (e.g. longer) screws may cause damage to the device.
- The extenders are quarter-rack sized.

Locking DC Plug

- Twist 90° clockwise to lock.
- Only HDMI-TPX-106 series extenders are built with a locking DC input connector
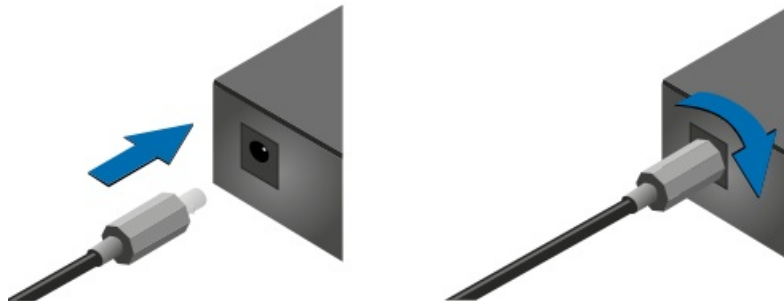
Minimum CAT Cable Requirement

- Lightware highly recommends using CAT6a AWG24 or higher category 10G Ethernet cables for the TPX (AVX) connection between the transmitter and the receiver.
- Usage of e.g. AWG28 Ethernet cables may reduce the extension distance significantly.

Firmware Upgrade

- Lightware Device Updater (LDU2) is an easy and comfortable way to keep your device up to date. Establish the connection via a Gigabit Ethernet port.
- Download and install LDU2 software from the company's website, **www.lightware.com**, where you can find the latest firmware package as well.
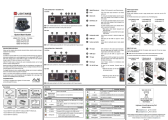
MODELS

- HDMI-TPX-TX106, -TX106A
- HDMI-TPX-RX106
- HDMI-TPX-TX107
- HDMI-TPX-RX107

TAKE CARE OF ME: I AM THE ONE AND ONLY USER DOCUMENT FOR THIS PRODUCT

CONTACT INFORMATION

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- **support@lightware.com**
- +36 1 255 3810
- ©2023 Lightware Visual Engineering. All rights reserved. All trademarks mentioned are the property of their respective owners. Specifications are subject to change without notice.
- Further information on the device is available at **www.lightware.com**.
- Doc. ver.: 1.3 19210103

Documents / Resources

	LIGHTWARE RX107 Point Extender [pdf] Installation Guide TX106, TX106A, RX106, TX107, RX107, RX107 Point Extender, RX107, Point Extender, Extender

References

- **User Manual**