# Quick Start Guide

HDMI-TPX-RX107A-SR
HDMI-TPX-RX107AU2K-SR

## 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 series scaling receiver devices with SDVoE technology are Lightware's development allowing users to extend HDMI 2.0 signals up to 4K60 4:4:4 video resolution from a single source to multiple destinations through 10G Ethernet networks.

Beyond the benefits of sending high-resolution video over long distances, the extenders are also capable of handling various connectivity standards, including a 1G user Ethernet channel over the 10G link, as well as command injection into RS-232.

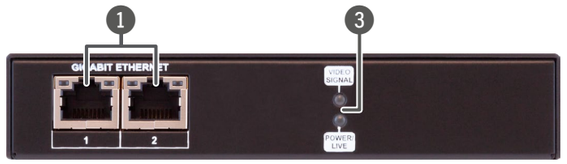
The additional Gigabit Ethernet ports are also a valuable addition, allowing users to connect an additional device to the network directly through the TPN extender. This is particularly useful for controlling external devices like projectors and displays.

HDCP 2.3 and basic EDID management functionality are also among the features offered by these devices, as is their connectivity and easy integration into a wide range of AV operations and with 3rd party devices, such as the Christie Terra projector.

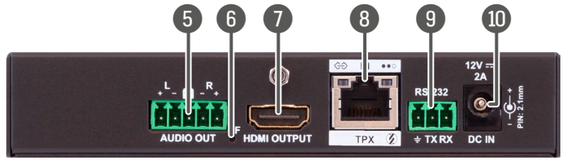
The in-built scaler can cater for adjusting the video content to the format of the attached display. Moreover, the scaler is also able to handle glitches in the video arriving at the input of the corresponding transmitter by outputting an uninterrupted HDMI signal.

## Front and Rear View - HDMI-TPX-RX107A-SR

### Front View

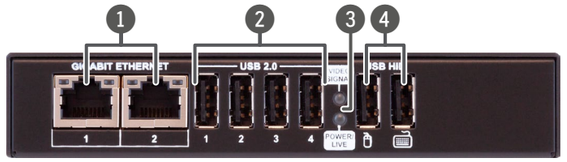



### Rear View

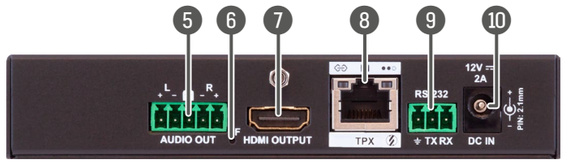



## Front and Rear View - HDMI-TPX-RX107AU2K-SR

### Front View




### Rear View




1. **Gigabit Ethernet port** — 1GBase-T RJ45 connector for user Ethernet purpose.
2. **USB 2.0 connectors** — USB-A connectors with USB 2.0 support for various types of USB devices (e.g. webcam, microphone, external storage, etc). The signal is transmitted to the receiver over the TPX link.
3. **Status LEDs** — The LEDs give immediate feedback about the current status of the extender. See the details in the *Status LEDs* section.
4. **USB HID connectors** — USB K+M ports for HID-compatible devices (preferably keyboard and mouse). The signal is transmitted to the receiver over the TPX link.
5. **Audio output** — 5-pole Phoenix connector for de-embedding the HDMI audio, which can be transmitted as a 2-channel balanced analog audio signal.
6. **Factory reset button** — Hidden button for setting the device to factory default values.
7. **HDMI output** — HDMI output port with HDMI 2.0 support for sink devices.
8. **TPX input** — RJ45 connector for SDVoE input signal. See more details about the connector in the *Power Supply Options* and the *Status LEDs* sections.
9. **RS-232 port** — 3-pole Phoenix connector for bi-directional serial communication.
10. **12V DC input** — 12V DC input with locking connector for local powering.

## Status LEDs

| VIDEO SIGNAL | | |
|---|---|---|
| ○ | off | No video signal present on the HDMI output port. |
| ● (green) | on (green) | Video signal is present on the HDMI output port. |
| **POWER/LIVE** | | |
| ○ | off | Device is not powered. |
| ✳ (green) | blinking between 50% and 100% brightness (green) | Device is powered on and operational. |

## Ventilation

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

## Minimum CAT Cable Requirement

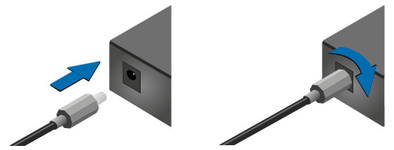
Lightware highly recommends using **CAT6a AWG24** or higher category 10G Ethernet cables for the TPX (SDVoE) connection between the transmitter and the receiver. Usage of e.g. AWG28 Ethernet cables may reduce the extension distance significantly.

## Firmware Update

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

## Locking DC Plug

Twist 90° clockwise to lock.



| TPX INPUT | | ⇔ |
|---|---|---|
| ▭ | off | No connection is established between the transmitter and the receiver units. |
| ▬ (green) | on (green) | Connection is established with 10G / 5G / 2.5G bandwith. |
| ✳ (yellow) | blinking (yellow) | Link training is in progress. |
| **TPX INPUT** | | ●●○ |
| ▭ | off | No data transmission on the port. |
| ✳ (green) | blinking (green) | Data transmission is active. |
| **GIGABIT ETHERNET - LEFT LED** | | |
| ▬ (green) | on (green) | Connection is established with 100Mbps bandwith. |
| ✳ (green) | blinking (green) | Data transmission is active. |
| **GIGABIT ETHERNET - RIGHT LED** | | |
| ▬ (green) | on (green) | Connection is established with 1Gbps bandwith. |
| ✳ (green) | blinking (green) | Data transmission is active. |

## Box Contents

- Receiver device
- 12V DC adaptor with interchangeable plugs
- Phoenix® Combicon 3-pole connector
- Phoenix® Combicon 5-pole connector
- Safety & Warranty Info; Quick Start Guide

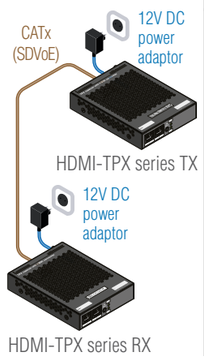
## Power Supply Options

HDMI-TPX-SR series receivers fulfill the PoE PD standard, which means the TPX port can receive power over the Ethernet line.

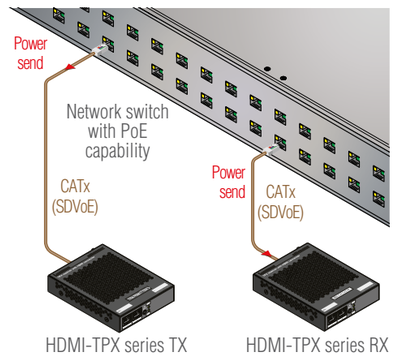
ℹ *HDMI-TPX series extenders are not able to send remote power to each other.*

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

### 1. Local adaptors for both TX and RX




### 2. Remote power via network switch




## Mounting Options

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

| | 1U high rack shelf | UD Mounting Plate F120 | UD Mounting Pro P140 |
|---|---|---|---|
| **HDMI-TPX-RX107A-SR** | ✓ (3x) | ✓ (1x) | ✓ (1x) |
| **HDMI-TPX-RX107AU2K-SR** | ✓ (3x) | ✓ (1x) | ✓ (1x) |

1U high rack shelf provides mounting holes for fastening three 1/3 rack sized units. The UD Mounting Plate F120 makes it easy to mount a single device on any flat surface, e.g. furniture. 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.***

ℹ *The extenders are 1/3 rack sized and 1/2 U high.*

**TAKE CARE OF ME**

**I AM THE ONE AND ONLY USER DOCUMENT FOR THIS PRODUCT**


**Lightware Visual Engineering PLC.**

**Budapest, Hungary**

sales@lightware.com +36 1 255 3800

support@lightware.com +36 1 255 3810



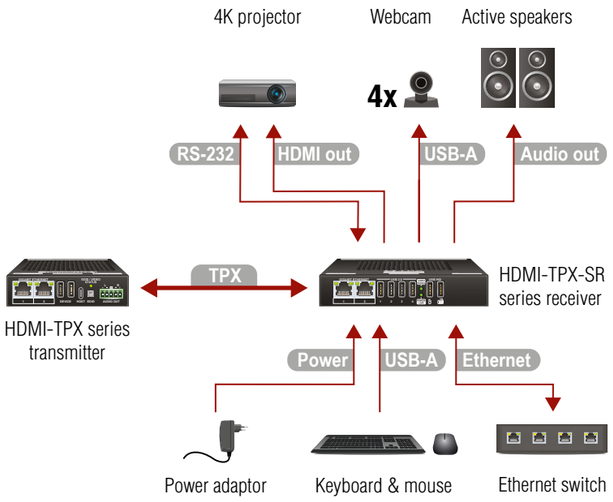
©2024 Lightware Visual Engineering. All rights reserved. All trademarks mentioned are the property of their respective owners. Specifications are subject to change without notice.


Further information on the device is available at www.lightware.com.


Doc. ver.: 1.0

19210117

## Connecting Steps




| | |
|---|---|
| TPX | Connect a CATx cable between the TPX output port of the transmitter and the TPX input port of the receiver.<br>⚠ ***User Ethernet is also transmitted over the TPN interface, so be sure not to create a network loop.*** |
| HDMI out | Connect the sink (e.g. 4K projector) to the HDMI output port of the receiver by a HDMI cable. |
| Audio out | Optionally for analog output: connect an audio device (e.g. active speakers) to the analog audio output port by an audio cable. |
| USB-A | USB 2.0 ports: connect up to four USB 2.0 devices (e.g. pendrive/ microphone/webcam/etc) to the receiver.<br>USB HID ports: connect up to two USB HID devices to the receiver (preferably mouse and keyboard).<br>ℹ *The ports are available in the RX107AU2K-SR model only.* |
| Ethernet | Connect the device to a LAN network.<br>⚠ ***User Ethernet is also transmitted over the TPN interface, so be sure not to create a network loop.*** |
| RS-232 | Optionally for RS-232: connect a device (e.g. 4K projector) 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. |

## 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: Power adaptor / PoE PD
- Supported power source: 100-240 V AC; 50/60 Hz
- Power consumption: 22 W
- Heat dissipation: 75 BTU/h

#### Power Adaptor

- 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)

### Enclosure

- Rack mountable: yes, with mounting accessories
- Enclosure material: 1 mm steel
- Dimensions (mm / inch): 138 W x 151.8 D x 26 H (5.43 W x 5.97 D x 1 H)
- Weight: 646 g (1.42 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 4096x2160@60Hz (4:4:4)
- Audio formats: 8-channel PCM, Dolby TrueHD, DTS-HD Master Audio 7.1
- CEC support: transparent

#### TPX input

- Connector type: RJ45 connector
- Power over Ethernet: PoE PD (IEEE802.3af)
- Data rate: 10GBase-T
- Compliance: SDVoE AVX
- HDCP compliance: HDCP 2.3
- Transferred signals: Video, Audio, RS-232, Infrared, USB K+M, Ethernet
- Color space: RGB, YCbCr
- Video latency (TPX output): 0 frame (five lines/ under 8ms)
- Compression ratio (TPX output): 1.4 to 1 **
- Supported resolutions at 8 bits/color *: up to 4096x2160@60Hz (4:4:4)
- Audio formats: 8-channel PCM, Dolby TrueHD, DTS-HD Master Audio 7.1

### Audio Ports

#### Analog audio output

- Connector type: 5-pole Phoenix connector
- Audio formats: 2-channel PCM
- Sampling frequency: 48 kHz
- Signal transmission: Balanced signal

* 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 HDMI 1.4 standard.

### USB Ports (only for RX107AU2K-SR model)

#### USB-A port

- Connector type: Type-A receptacle
- Number of ports: 6
- USB compliance: USB 2.0
- Power supplement of USB 2.0 ports: 5V, 1.7A
- Power supplement of USB HID ports: 5V, 0.3A
- Max current supplement per USB-A port: 1A

### Control Ports

#### Ethernet port

- Connector type: RJ45 female connector
- Number of ports: 2
- Ethernet data rate: 1GBase-T, full duplex with autodetect
- Power over Ethernet (PoE): Not supported

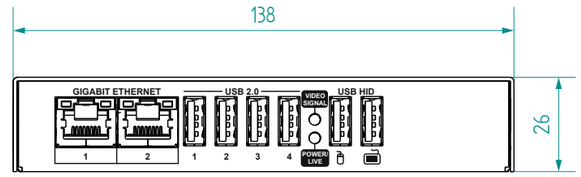
#### RS-232 serial port

- Connector type: 3-pole Phoenix connector
- Default settings: 9600 BAUD, 8N1

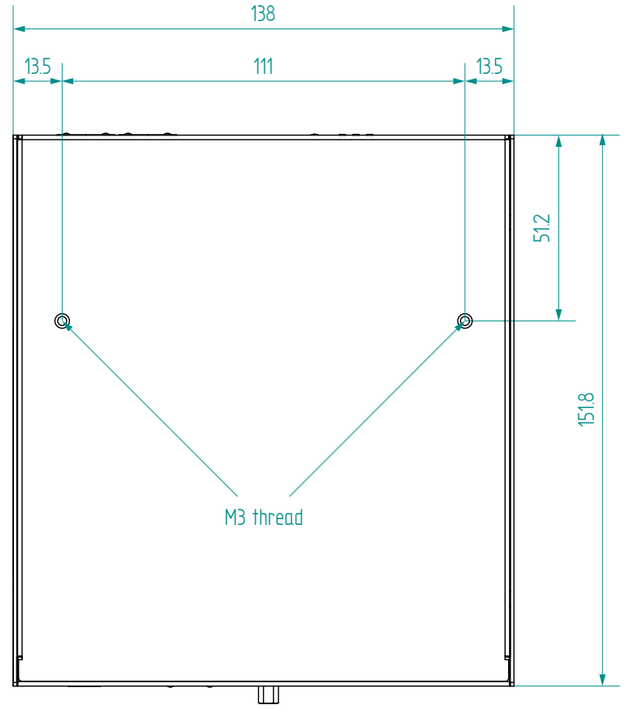
## Mechanical Drawings

The following drawings present the physical dimensions of the HDMI-TPX-SR series extenders. Dimensions are in mm.

### Front View

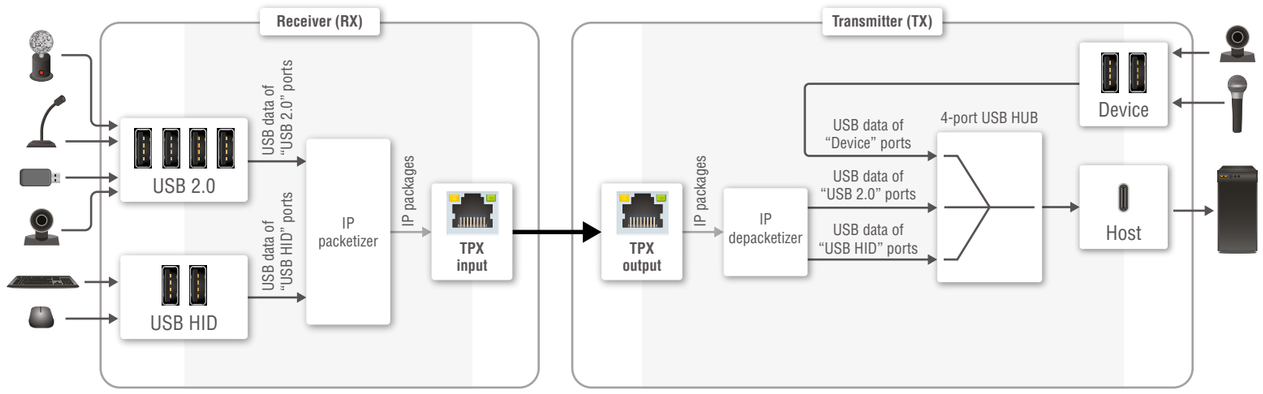



### Bottom View




## Port Diagram

The following port diagram describes the USB signal routes of the HDMI-TPX-RX107AU2K-SR and the HDMI-TPX-TX209AU2K models.




## Software Control

### BlueRiver AV Manager

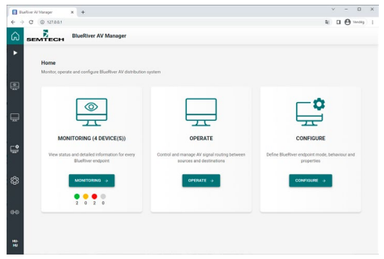
HDMI-TPN series are supported by **BlueRiver AV Manager** control software. It is available for download from mySemtech on Semtech.com. The software can be installed on Windows or Linux operation systems as well.

### Running the Software

After installation the BlueRiver AV Manager is running in any web browser application and can be launched by typing the **127.0.0.1** IP address in the URL bar.

The following administration tools are available in the software:

- Device monitoring on the network
- Crosspoint settings and audio routing
- EDID settings
- Network settings
- RS-232 port configuration
- Command injection
- Configuration of the integrated scaler




## Limitations of the Scaler

### Bandwidth Related Limitations

The scaler function has bandwidth limitation, which in the practice means that the compression of the original picture is not possible below specific settings. When the scaling is not applicable, the error symptoms could be a flashing screen or displaying a black screen.

The following resolutions **cannot be scaled while keeping the aspect ratio**:

- 3840x2160 to
  640x480; 800x600; 960x1280; 1024x768; 1050x1400; 1200x1600
- 4096x2160 to
  1280x768; 1680x1050; 1200x1900

### Color Space / Color Depth Related Limitations

If the scaler function is enabled in the receiver, **the output is always RGB 8 bit/channel**.