LIGHTWARE HDMI-OPTN-RX100A-SR Receiver Device User Guide

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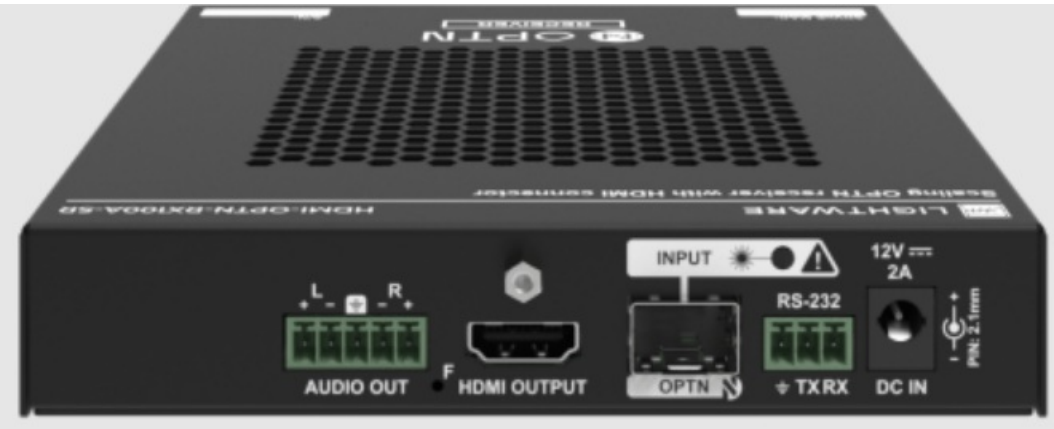
LIGHTWAVE HDMI-OPTN-RX100A-SR Receiver Device



Product Information

Specifications

- Model: HDMI-OPTN-RX100A-SR
- Technology: SDVoE fiber extenders
- Connectivity: HDMI 2.0-compliant video, audio, and control signals
- Additional Features: Built-in scaler, Gigabit Ethernet ports, USB 2.0 connectors

Product Usage Instructions

Introduction:
The HDMI-OPTN-RX100A-SR receiver devices are designed for extending HDMI 2.0-compliant video, audio, and control signals from a single source to multiple destinations through a fiber optical link.

Features:

- Handle various connectivity standards
- The built-in scaler for adjusting video content
- Gigabit Ethernet ports for connecting Ethernet-capable devices
- USB 2.0 connectors for connecting various USB devices

Mounting Options
Optional accessories are available for mounting the devices. Mount the device using the provided screws enclosed with the accessory.

Important Safety Instructions

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

Introduction

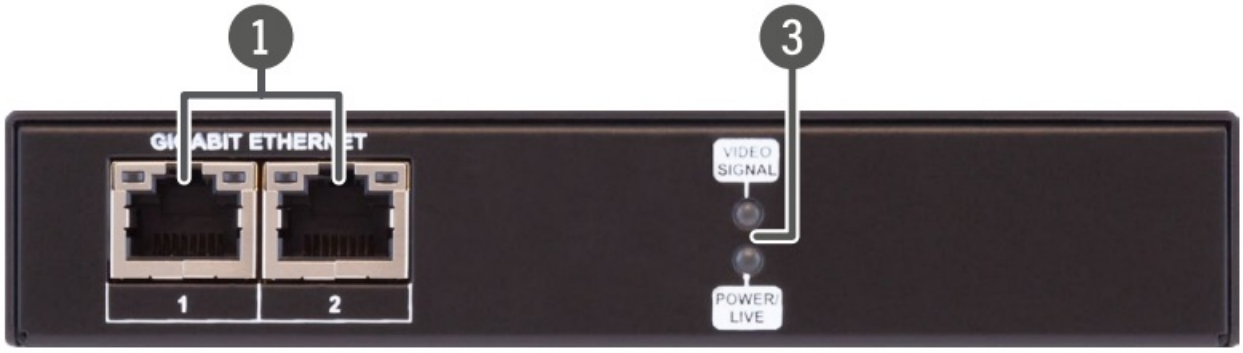
The HDMI-OPTN-RX100A-SR receiver devices are fiber extenders based on SDVoE technology and allow users to extend HDMI 2.0-compliant video, audio, and control signals from a single source to multiple destinations through a fiber optical link. The extenders are also able to handle various connectivity standards, including a 1G user Ethernet channel over the 10G link, as well as command injection into RS-232. The built-in scaler can cater to 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. The Gigabit Ethernet ports are also valuable additions, allowing users to connect Ethernet-capable devices to the network directly through the OPTX extenders. This is particularly useful for controlling external devices like projectors and displays.

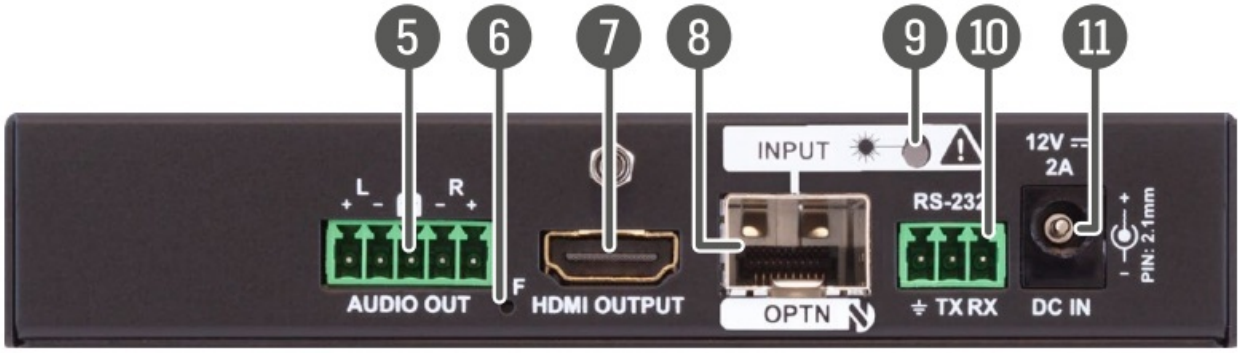
In the case of the HDMI-OPTN-RX100AU2K-SR model, composite USB 2.0 transmission adds the ability to connect remote USB-HID devices to a host computer through an extender pair. Transparent USB2.0, on the other hand, provides support for various types of USB2.0 devices like webcams, microphones, and touch displays just to name a few.

Front and Rear View HDMI-OPTN-RX100A-SR

Front View

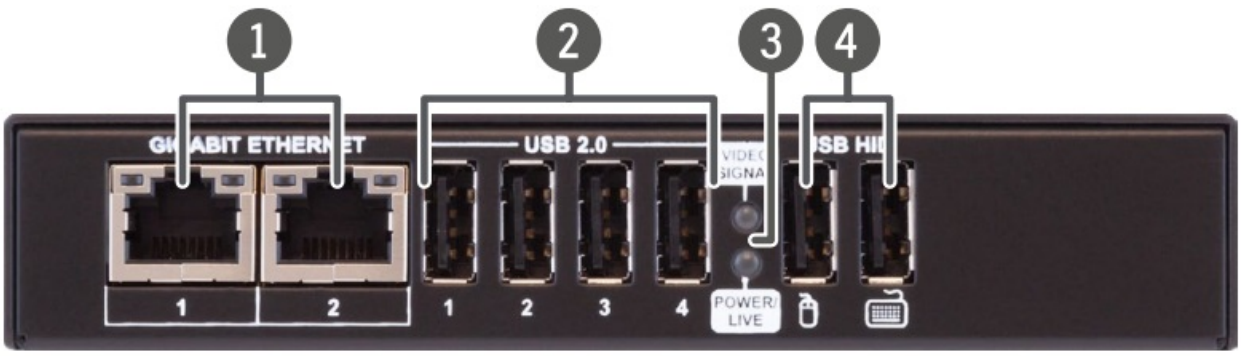


Rear View

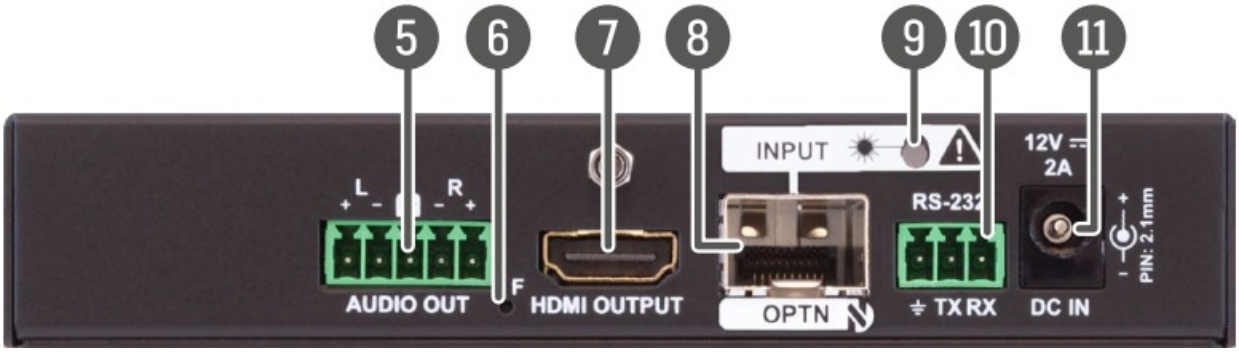


Front and Rear View – HDMI-OPTN-RX100AU2K-SR

Front View



Rear View



1. **Gigabit Ethernet port**: 1GBase-T RJ45 connector for user Ethernet purposes.
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 transmitter over the OPTN 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 transmitter over the OPTN 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. **SFP+ port slot for OPTN input connection:** Input-output port slot for a 10 GbE SFP+ module or a DAC cable. The port can be used for either single mode or multimode optical connection.
9. **OPTN input link LED:** The LED gives immediate feedback about the current status of the extender. See the details in the Status LEDs section.
10. **RS-232 port:** 3-pole Phoenix connector for bi-directional serial communication.
11. **12V DC input:** 12V DC input with locking connector for local powering.

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.

	 1U high rack shelf	 UD Mounting Plate F120	 UD Mounting Pro P140
HDMI-OPTN-RX100A-SR	✔ (3x)	✔ (1x)	✔ (1x)
HDMI-OPTN-RX100AU2K-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.
ATTENTION: Using different (e.g. longer) screws may cause damage to the device.
INFO: The extenders are 1/3 rack-sized and 1/2 U-high.

Network Requirements
The HDMI-OPTN-SR series extenders require managed network switches that support 10Gbps (10GbE) line speed. BlueRiver technology transmits uncompressed or lightly compressed video of up to 4K along with other AV signals such as audio and control signals.

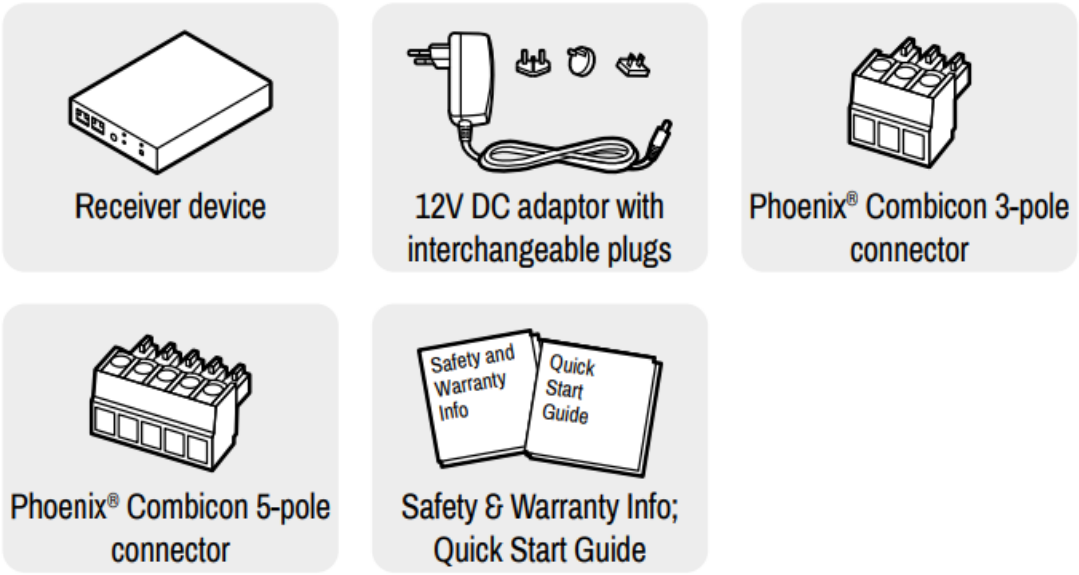
Network Switch Requirements
The following are the Layer 2 multicast configurations that are required on all the network switches:

- IGMP version 2 supported
- IGMP version 2 snooping enabled
- Filter/Drop unregistered multicast traffic
- Disable unregistered multicast flooding
- Enable fast leave support

Applied Ports

Protocol	Port Number	Description
TCP	6970	Used for communications between control software and BlueRiver Control Server.

Box Contents



Status LEDs

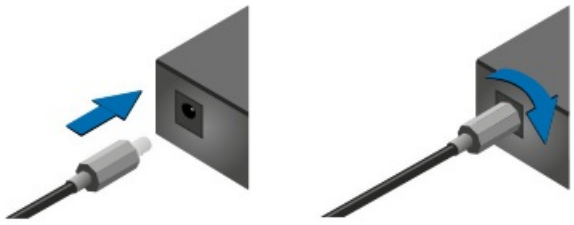
VIDEO SIGNAL		
	off	No video signal present on the HDMI output port.
	on (green)	Video signal is present on the HDMI output port.
POWER/LIVE		
	off	Device is not powered.
	blinking between 50% and 100% brightness (green)	Device is powered on and operational.
GIGABIT ETHERNET - LEFT LED		
	on (green)	Connection is established with 100Mbps bandwith.
	blinking (green)	Data transmission is active.
GIGABIT ETHERNET - RIGHT LED		
	on (green)	Connection is established with 1Gbps bandwith.
	blinking (green)	Data transmission is active.

OPTN INPUT LINK LED		
	off	Device is not powered or SFP+ transceiver module is not installed.
	on (red)	Device might emit laser radiation.
	on (green)	Optical link established.

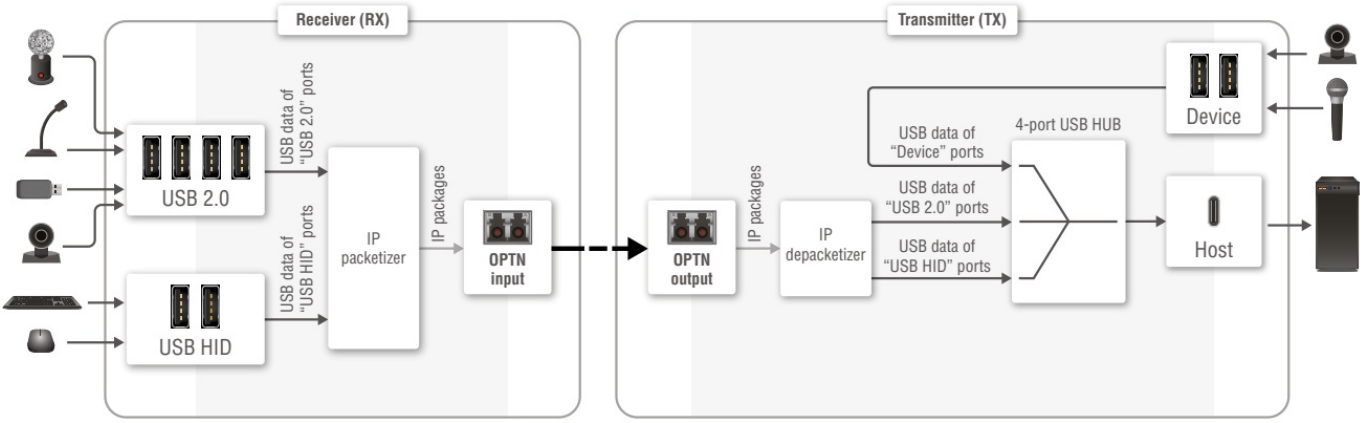
Ventilation
Pay attention to the ventilation holes when designing the system. Top and side ventilation holes must not be covered.

Locking DC Plug

- Twist 90° clockwise to lock.



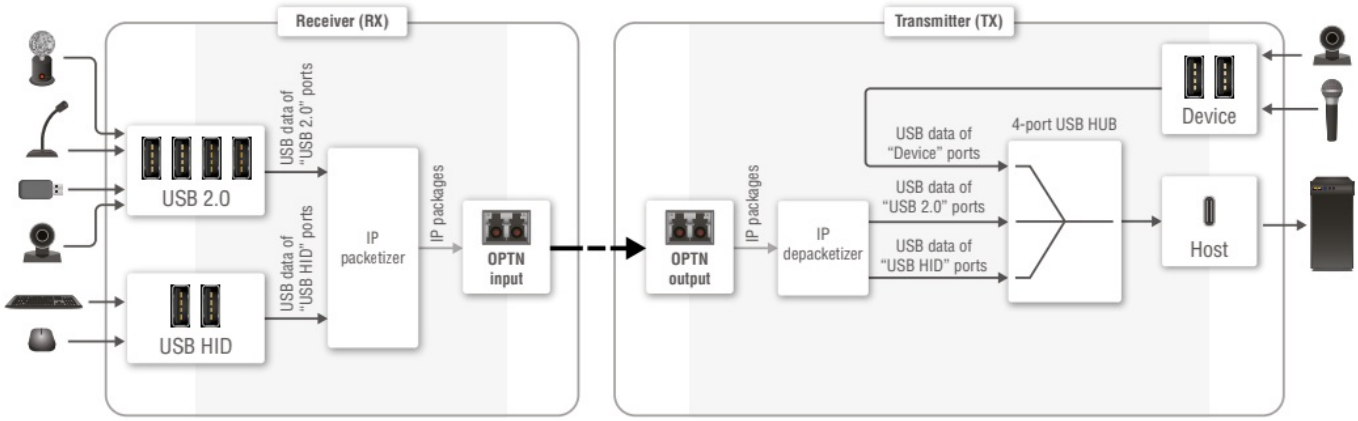
Connecting Steps



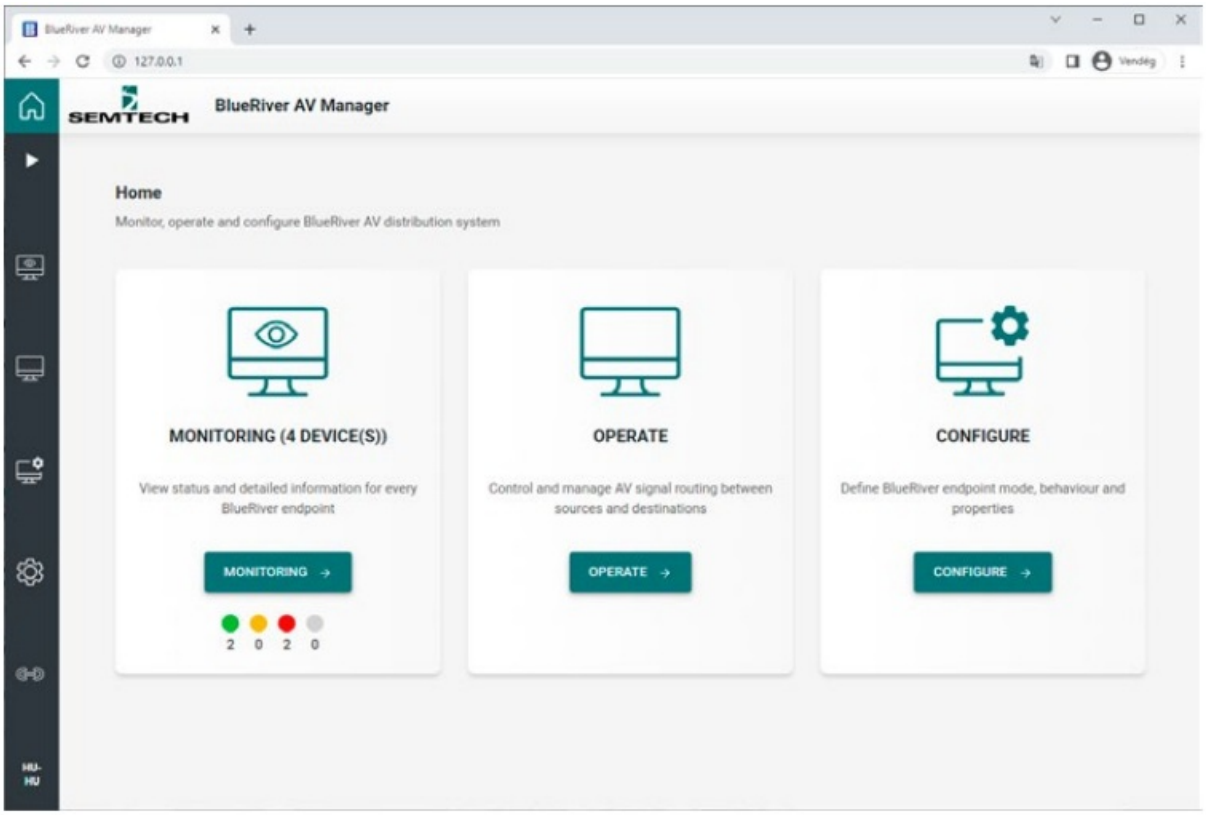
- **OPTN**
  - **Option 1** – Point-to-point connection – Connect single or multimode (depending on the installed SFP+ modules) fiber optical cables or DAC cables between the OPTN input port of the receiver and the OPTN output port of the transmitter. In this case, the extender operates as an OPTX device.
  - **Option 2** – Point-multipoint connection – Connect single mode or multimode (depending on the installed SFP+ modules) fiber optical cables or DAC cables between the OPTN input port of the receiver and the SFP+ port of the 10G network switch.
    User Ethernet is also transmitted over the OPTN 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.
  - **USB HID ports**: connect up to two USB HID devices to the receiver (preferably a mouse and keyboard).
    - The ports are available in the RX100AU2K-SR model only.
- **Ethernet:** Connect the device to a LAN network.
  - User Ethernet is also transmitted over the OPTN 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 as the final step during the installation.

Port Diagram

The following port diagram describes the USB signal routes between the HDMI-OPTN-RX100AU2K-SR model and an HDMI-OPTN-AU2K series transmitter.



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 operating 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 limitations, which in practice means that the scaling 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:

- **3840×2160 to**

  640×480; 800×600; 960×1280; 1024×768; 1050×1400; 1200×1600
- **4096×2160 to**

  1280×768; 1680×1050; 1200×1900

Color Space / Color Depth-Related Limitations
If the scaler function is enabled in the receiver, the output is always RGB 8 bit/channel.

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 ports 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.

The User's Manual is also available via the QR code below:

Lightware Visual Engineering PLC. Budapest, Hungary

- **sales@lightware.com** +36 1 255 3800
- **support@lightware.com** +36 1 255 3810

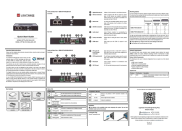
FAQ's

Q: What types of devices can be connected using the USB 2.0 connectors?
A: The USB 2.0 connectors support various USB devices such as webcams, microphones, and external storage devices.

Q: How can I reset the device to factory default values?
A: Use the hidden factory reset button located on the device to restore it to the default settings.

Q: What is the purpose of the Gigabit Ethernet ports?
A: The Gigabit Ethernet ports allow users to connect Ethernet-capable devices directly through the extenders, useful for controlling external devices like projectors and displays.

Documents / Resources

	LIGHTWARE HDMI-OPTN-RX100A-SR Receiver Device [pdf] User Guide HDMI-OPTN-RX100AU2K-SR, HDMI-OPTN-RX100A-SR Receiver Device, HDMI-OPTN-RX100A-SR, Receiver Device, Device

References

- User Manual