visual engineering

LIGHTWARE

Quick Start Guide

HDMI-3D-OPT-TX210A
HDMI-3D-OPT-TX210RAK

Front View

1	HDCP status LED	LED shows the actual HDCP status of the video output.
2	USB port	USB interface for USB KVM function, firmware upgrade, and LDC software control purposes.
3	HDMI input	Connect an HDMI cable between the HDMI source and the transmitter unit.
4	Audio1 input	3.5 mm jack connector for unbalanced analog audio input signal.
5	Reset button	Pushing the button reboots the unit.
6	Audio select button	Button for switching between audio sources.
7	Audio2 status LED	LED gives feedback about actual connection status of Audio2 input port (on the rear side of device).
8	Show me button	Special functions are available with this button (switch to bootload mode, restore factory default settings).

Front Panel LEDs

Video Source LEDs
- ON: video source is active.
- BLINKING: video source is connected but no signal is detected.

Audio Source LEDs
- OFF: audio source is not selected.
- BLINKING: audio source is selected but no signal is detected (digital inputs only).
- ON: (with short pause): audio source is selected and the port is active but not embedded to the output video stream (DVI output mode).
- ON: (continuously): audio source is selected, the port is active and the audio is embedded to the output video stream (HDMI output mode).

HDCP LED
- OFF: video output signal is not encrypted with HDCP.
- ON: video output signal is encrypted with HDCP.

USB LED
- OFF: USB is disconnected or there is no USB data transfer over the port.
- BLINKING (green): device control mode is active.
- ON (green): USB KVM: composite mode is active.
- ON (yellow): USB KVM: transparent mode is active.
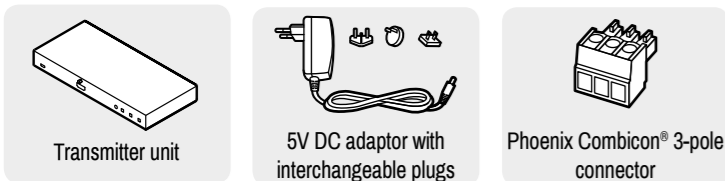
Important Safety Instructions

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

⚠ *The transmitter is a Class 3R laser product. Caution! Invisible Class 3R laser radiation! Avoid exposure to the beam!*
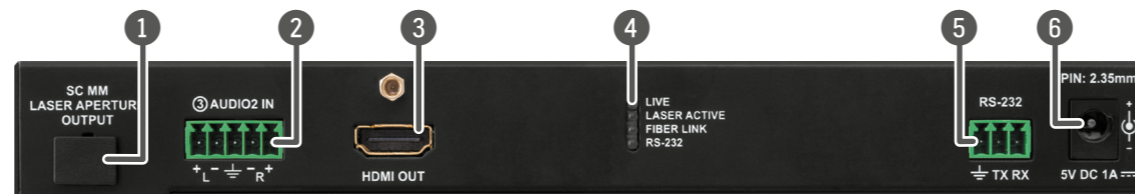
Introduction

Thank you for choosing Lightware HDMI-3D-OPT series transmitter. The product is a multi-mode single fiber extender with bidirectional RS-232 extension. The device transmits HDMI digital video signals up to 4K resolution, 3D- and HDCP compliant and is able to embed analog audio from 3.5mm jack or 5-pole Phoenix type ports. The HDMI-3D-OPT-TX210RAK model is built with USB KVM function.

Box Contents

Transmitter unit	5V DC adaptor with interchangeable plugs	Phoenix Combicon® 3-pole connector
Phoenix Combicon® 5-pole connector	Safety and warranty info, Quick Start Guide	

Mounting

To mount the transmitter Lightware supplies optional accessories for different usage. There are two kinds of mounting kits with similar fixing method. The transmitters have two mounting holes with inner thread on the bottom side. Fasten the device by the screws enclosed to 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. 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 on the shelf. To order mounting accessories please contact sales@lightware.com.

ⓘ *The transmitter is half-rack sized.*

Rear View

| 1	SC fiber output	Connect a multimode single fiber optical cable between the receiver and the transmitter.
2	Audio2 input	5-pole Phoenix connector for balanced analog audio input.
3	HDMI output	Connect an HDMI cable between the transmitter and the display device.
4	Status LEDs	LEDs give feedback about actual status of unit and connection signals.
5	RS-232	3-pole Phoenix connector for serial communication.
6	5V DC input	Connect the output of the supplied 5V DC power adaptor.

Locking DC Plug
Twist 90° clockwise to lock.
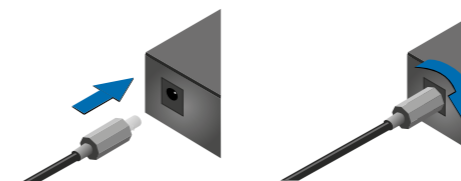
ⓘ *Rear view illustration belongs to the HDMI-3D-OPT-TX210RAK model. The HDMI-3D-OPT-TX210A model has no RS-232 LED in the Status LEDs.*
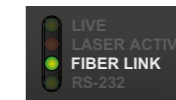
Rear Panel LEDs

LIVE
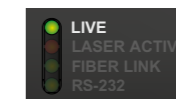
- OFF: device is not powered.
- BLINKING (green): device is powered and operational.
- BLINKING (red): alert detected.
- BLINKING (yellow): firmware upgrade mode, device is in bootload mode.
- ON (yellow): device is powered but no operation.

LASER ACTIVE

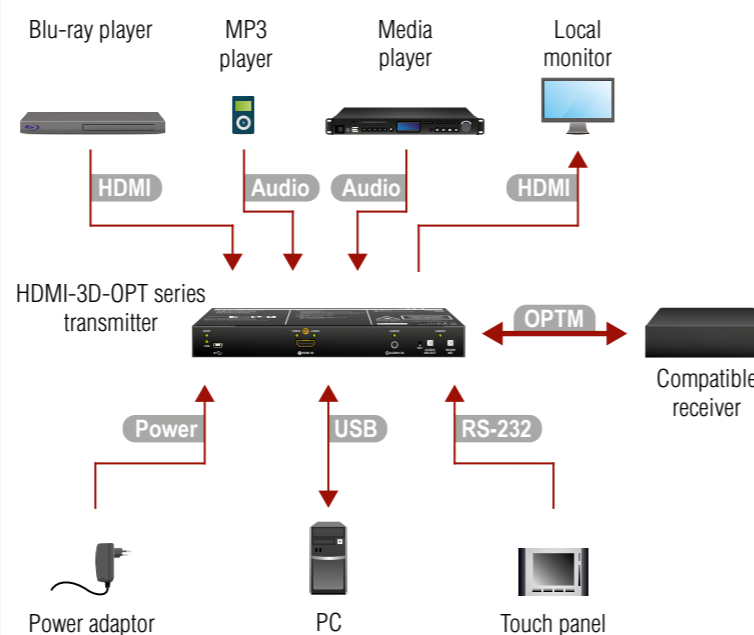- ON (red): laser transmission is enabled.

FIBER LINK

- OFF: no fiber link between transmitter and receiver.
- ON: fiber link is established.

RS-232 (only in case of HDMI-3D-OPT-TX210RAK model)

- OFF: RS-232 ports (local and link) are in Pass-through mode.
- ON: RS-232 ports (local and link) are in Control mode.

Connecting Steps

Blu-ray player   MP3 player   Media player   Local monitor

HDMI-3D-OPT series transmitter

Power adaptor   PC   Touch panel

Compatible receiver

OPTM	Connect the transmitter and the compatible receiver or matrix input board using a multimode single fiber optical cable.
HDMI	Connect the source (e.g. Blu-ray player) to the input port of the transmitter by a HDMI cable.
Audio	Optionally connect an asymmetric audio device with unbalanced audio signal (e.g. an MP3 player) to the 2.5" TRS (jack) audio input port.
Audio	Optionally connect a symmetric audio device with balanced audio signal (e.g. a professional media player) to the 5-pole Phoenix audio input port.
HDMI	Connect the local sink device (e.g. a monitor) to the HDMI output port by an HDMI cable.
USB	Optionally for USB HID extension: connect the transmitter to the computer by the USB mini B-type cable. *
RS-232	Optionally for RS-232 control: connect a controller/controlled device (e.g. a touch panel) to the RS-232 port.
Power	Connect the power adaptor to the DC input on the transmitter first, then to the AC power socket.

* Only HDMI-3D-OPT-TX210RAK model has built with USB KVM function. The USB interface can be used for control purpose only in case of HDMI-3D-OPT-TX210A model.

Optical Extender Concept

HDMI-3D-OPT series transmitters have a multi-mode single fiber output interface which is able to transmit different type of signals at the same time. The device accepts digital video (HDMI) and analog audio sources (jack and 5-pole Phoenix). The analog audio signal can be embedded to the digital A/V output. The unit can be controlled over RS-232 (3-pole Phoenix) and USB interfaces. Besides of these the HDMI-3D-OPT-TX210RAK model has USB KVM function.

ℹ *One audio (original embedded or analog) and one video signals can be transmitted via the optical output at the same time.*

INPUT		OUTPUT
HDMI		HDMI
Analog audio		Analog audio
RS-232 *	→ OPT →	RS-232 *
USB *		USB *

+ Local HDMI output
+ Local USB
+ Local RS-232

* Only in case of HDMI-3D-OPT-TX210RAK model.

Compatible Devices

The transmitter is compatible with the following receivers and input boards:

- HDMI-3D-OPT-RX150RA
- MX modular frames with MX-DVI-OPT-IB and MX-HDMI-OPT-IB cards

Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer through the 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.

Fiber Optical Output Settings

ON: high-speed (AV signal) and low-speed (serial and/or USB) communication are transmitted.

STANDBY: only low-speed (serial and/or USB) communication is transmitted.

Restore Factory Default Settings

1. Keep the **Show Me** button pressed for 10 seconds, the LEDs start to blink faster.
2. Release the button, then press it 3 times quickly; factory default settings are restored:

Crosspoint setting (Video/Audio)	HDMI input
SC laser output	Enabled
Emulated EDID	Dynamic
RS-232 mode	Pass-through
RS-232 control protocol	LW2
RS-232 port setting	57600 BAUD, 8, N, 1

Model Comparison

	Optical interface	
	Serial communication	USB KVM
HDMI-3D-OPT-TX210A	Control mode	-
HDMI-3D-OPT-TX210RAK	Control mode / Pass-through mode	Yes

ℹ *AV signal is always transmitted on fiber optical interface.*

Maximum Extension Distances

	OM1 (62.5/125)	OM2 (50/125)	OM3 (50/125)	OM4 (50/125)
1080p@60Hz 24 bpp	250 m	600 m	1200 m	2500 m
1080p@60Hz 36 bpp	150 m	400 m	800 m	1300 m
4096x2048@30Hz 24 bpp	Not supported	350 m	700 m	1100 m

Typical Application

HDMI-3D-OPT-TX210A

Laptop

HDMI-3D-OPT-RX150RA

RS-232

HDMI

Projector

HDMI

USB

5V DC Power adaptor

5V DC Power adaptor

Analog audio

HDMI-3D-OPT-TX210A

Audio amplifier

Single fiber multimode optical cable up to 2500m

Typical Application

HDMI-3D-OPT-TX210RAK

USB

Mouse

Monitor

Keyboard

USB

RS-232

USB

HDMI

HDMI-3D-OPT-RX150RA

PC

USB

HDMI

5V DC Power adaptor

5V DC Power adaptor

Analog audio

HDMI-3D-OPT-TX210RAK

Audio amplifier

Single fiber multimode optical cable up to 2500m

Port Diagram

HDMI in — Digital audio/video → De-embedder → Digital video → Embedder → Digital audio and video → HDMI splitter → HDMI out

Fiber optical out

Analog audio in 1 — Analog audio → A/D converter → Digital audio

Analog audio in 2 — Analog audio → A/D converter → Digital audio

Digital audio → 3:1 digital audio switch → Digital audio

RS-232 * and USB *

USB — USB control / USB KVM * → Processor → RS-232

* Only in case of HDMI-3D-OPT-TX210RAK model.
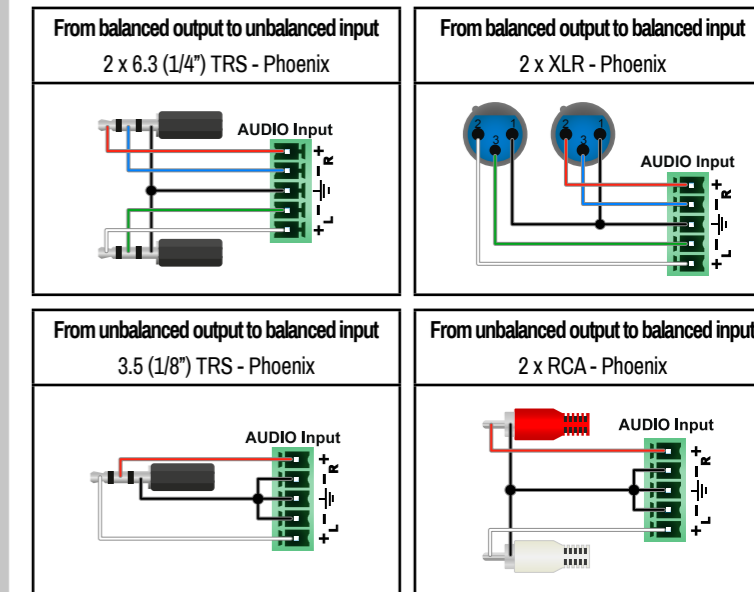
USB KVM Function

HDMI-3D-OPT-TX210RAK transmitter supports HID-compliant (Human Interface Device) devices to transmit USB signal between the source and sink devices. The transmitter connects to the controlled device (e.g. PC) and the controlling devices (e.g. computer mouse, keyboard, touch panel) are connected to the receiver. USB KVM function can be used in two different modes: **Transparent** and **Composite** mode.

	Transparent mode	Composite mode
Device support	Supports all HID-compliant devices.	Supports the following HID-compliant devices: computer mouse, keyboard built with up to 107 keys with or without specific multimedia keys.
Driver software	Driver for all connected USB devices has to be installed on the controlled computer.	No driver is needed for the connected devices.

ℹ *Only HDMI-3D-OPT-TX210RAK model is built with USB KVM function.*
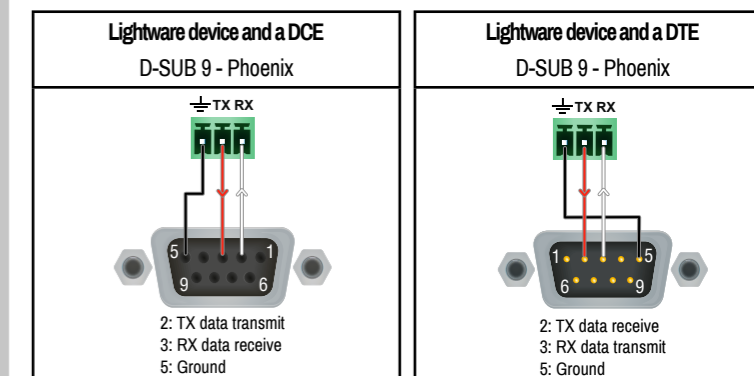
Audio Cable Wiring Guide

HDMI-3D-OPT series transmitters are built with 5-pole Phoenix input connector. See below a few examples of the most common assembling cases.

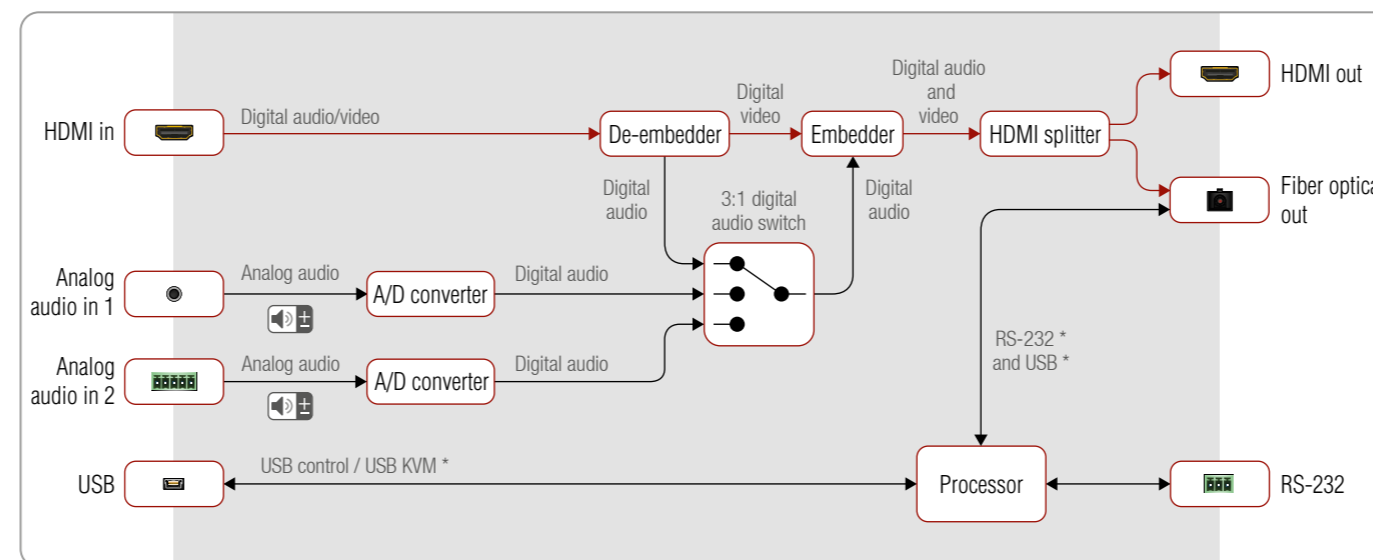| From balanced output to unbalanced input	From balanced output to balanced input
2 x 6.3 (1/4") TRS - Phoenix	2 x XLR - Phoenix
From unbalanced output to balanced input	**From unbalanced output to balanced input**
3.5 (1/8") TRS - Phoenix	2 x RCA - Phoenix

Wiring Guide for RS-232 Data Transmission

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

Lightware device and a DCE	Lightware device and a DTE
D-SUB 9 - Phoenix	D-SUB 9 - Phoenix
2: TX data transmit	2: TX data receive
3: RX data receive	3: RX data transmit
5: Ground	5: Ground

For more information about the cable wiring see the user's manual of the device or the **Cable Wiring Guide** on our website www.lightware.com/support/guides-and-white-papers.