



Quick Start Guide

UCX-4x3-TPN-TX20
UCX-2x1-TPN-TX20

Important Safety Instructions

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

Introduction

Lightware's universal Transmitter switchers exploit SDVoE technology and USB-C connectivity for a simplified extension of up to 100m of 4K video, audio, control signals and power from a single source to multiple destinations through 10G Ethernet networks, providing meeting participants with easy host switching, video resolution capabilities up to 4K@60Hz at 4:4:4, as well as comprehensive and secure Ethernet features.

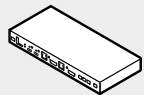
The Transmitters are featured with audio de-embedding function via the 5-pole Phoenix® Combicon analog audio ports.

Beyond the benefits of sending high-resolution video over long distances, the Transmitters are also capable of handling various connectivity standards, including bi-directional RS-232, GPIO and OCS as well.

The Gigabit Ethernet port is also a valuable addition, allowing users to connect an additional device to the network directly through the TPN extender.



Box Contents



Transmitter device



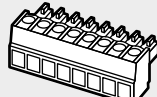
24V power adaptor with IEC power cable



Phoenix® Combicon 3-pole connector



Phoenix® Combicon 5-pole connector



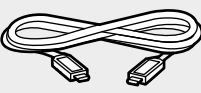
Phoenix® Combicon 8-pole connector



Phoenix® Combicon 3-pole male connector



Safety & Warranty Info; Quick Start Guide

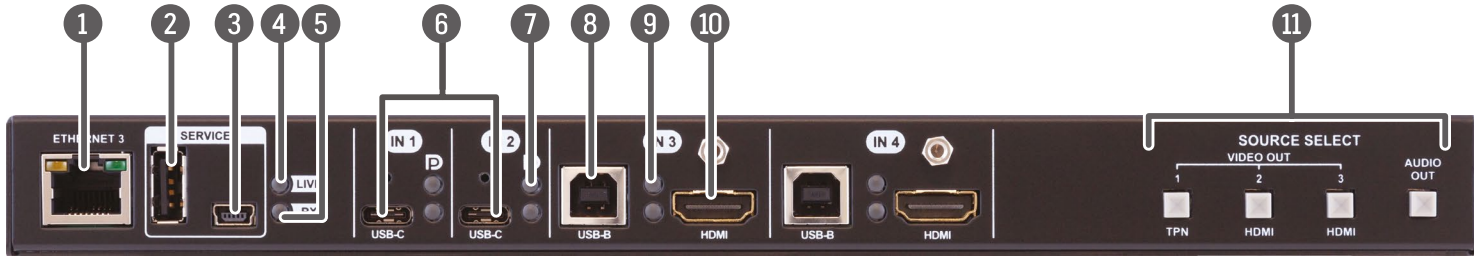


Type C (USB-C) to Type C (USB-C) Cable, 1m



2 pcs of M3x4 flat head screws

Front view (UCX-4x3-TPN-TX20)



- Configurable Ethernet port** RJ45 connector for configurable 1GBase-T Ethernet communication.
- USB-A port** The SERVICE-labelled USB-A connector is designed for service functions.
- Micro USB port** The SERVICE-labelled USB mini-B port is designed for service functions.
- LIVE LED** blinking The device is powered on and operational.
 off The device is not powered or out of operation.
- RX LED** Function will be implemented in a later release.
- USB-C ports** USB-C port for receiving video and audio signals, as well as USB data from the host device.

- Status LEDs** For the details, see the table on the right.
- USB-B ports** Upstream ports for connecting USB host devices (e.g. computer).
- Status LEDs** For the details, see the table on the right.
- HDMI input ports** HDMI input port for receiving video and audio signals.
- Input selection buttons** For more details on the button functionality, see the table on the other side. When the LEDs blink green three times after pressing the button, they show that the front panel lock is enabled.

⚠ Always use the supplied power supply. Warranty void if damage occurs due to use of a different power source.

Rear view (UCX-4x3-TPN-TX20)



- DC input** DC input for local powering. Connect the output to the 2-pole Phoenix connector. For more details, see the powering options on the next page.
- USB-A ports** Downstream ports for connecting USB peripherals (e.g. camera, keyboard, multitouch display).
- TPN output port** RJ45 connector for AVX output signal transmission. See more details about the connector in the Status LEDs section.
- HDMI output ports** HDMI output ports for sending video and audio signals to the receiver.
- Status LEDs** For more information, see the table on the right.
- Analog Audio output port** Audio output port (5-pole Phoenix®) for balanced analog audio output signal. The signal is de-embedded from the selected video signal.
- RS-232 ports** 3-pole Phoenix® connectors for bi-directional RS-232 communication.
- GPIO port** 8-pole Phoenix® connector for configurable general purpose. Max. input/output voltage is 5V, see the details on the next page.
- Configurable Ethernet ports** RJ45 connectors for configurable 1GBase-T Ethernet communication.

ⓘ The overall power supply of the USB-A connectors is beyond 1.5A, which makes it possible to supply devices with higher voltage requirements.

ⓘ UCX-2x1-TPN-TX20 has no HDMI output ports.

Powering options

The UCX-4x3-TPN-TX20 is capable of charging a device with 100W over one USB-C port and another device with 20W over the other USB-C port, or charging with 60W over both ports.

Network Requirements

The UCX-TPN 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

Ventilation

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

Factory default settings (UCX-4x3-TPN-TX20)

IP address	Dynamic (DHCP is enabled)
Hostname	lightware-<serialno>
Video Crosspoint setting	I1 on O1, I2 on O2, I3 on O3
HDCP mode (in)	HDCP 2.2
HDCP mode (out)	Auto
Signal type	Auto
Emulated EDID	F47 - (Universal HDMI with PCM audio)
Audio Crosspoint setting	I1 on O4
Analog audio output levels	Volume (dB): 0.00; Balance: 0 (center)
Video Autoselect	Disabled
USB-C Power Limit	60W / 60W
DP Alternate Mode Policy	Auto
Port Power Role	Dual Role
USB Autoselect	Follow video O1
D1-D4 Power 5V Mode	Auto
RS-232 port setting	9600 BAUD, 8, N, 1
RS-232 serial over IP	Enabled
HTTP, HTTPS	Enabled
HTTP, HTTPS authentication	Disabled
LARA	Disabled

Front Panel Status LEDs

Video Input Status LED (the upper one)		
	on	There is a valid video signal on this port.
	off	There is no valid video signal on this port.
	blink once	The port is selected by a button press.
USB Status LED (the lower one)		
	on	The USB Host is connected and selected.
	off	No USB Host or deselected port.
	blink once	Port selected by a button press.
VIDEO SIGNAL		
	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.

RJ45 Port LEDs

TPN OUTPUT		
	off	No connection is established between the transmitter and the receiver units.
	on (green)	Connection is established with 10G / 5G / 2.5G bandwidth.
TPN OUTPUT		
	off	No data transmission on the port.
	blinking (green)	Data transmission is active.
GIGABIT ETHERNET - LEFT LED		
	on (green)	Connection is established with 100Mbps bandwidth.
	blinking (green)	Data transmission is active.
GIGABIT ETHERNET - RIGHT LED		
	on (green)	Connection is established with 1Gbps bandwidth.
	blinking (green)	Data transmission is active.

Rear Panel LEDs

Video Output Status		
	on	The video signal is present.
	off	The signal is not present or muted.

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



Lightware Visual Engineering PLC.
Budapest, Hungary

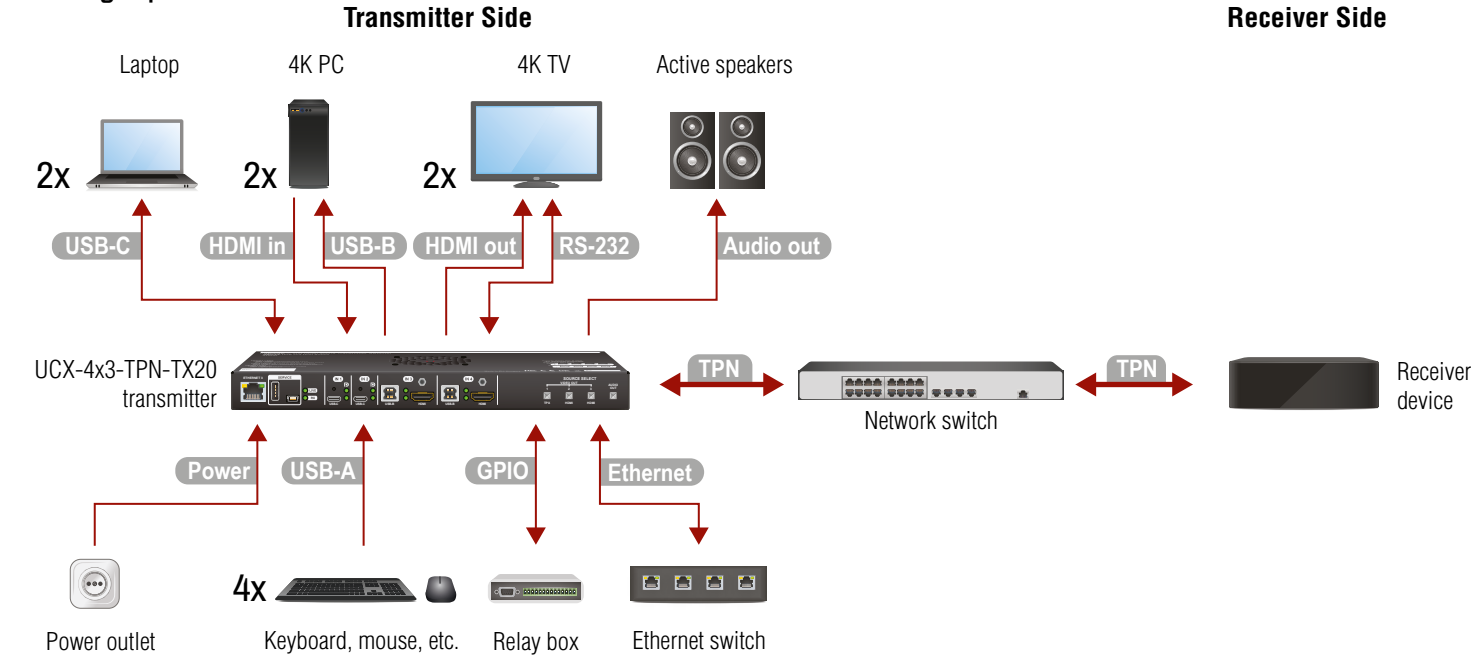
✉ sales@lightware.com ☎ +36 1 255 3800

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

Connecting steps

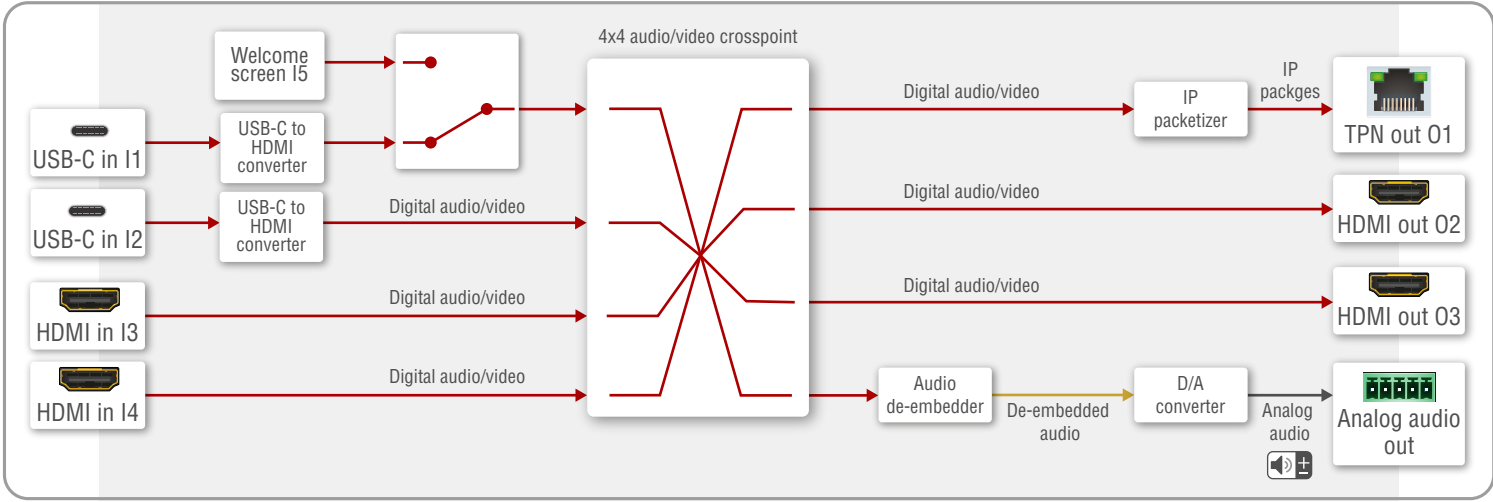


TPN	Connect a CATx cable between the TPN output port of the transmitter and the RJ45 port of the 10G network switch. ⚠ User Ethernet is also transmitted over the TPN interface, so be sure not to create a network loop.
USB-C	Connect a USB-C source to the USB-C input port. The applied cable shall be certified for Displayport Alternate mode HBR2 (4x5.4Gbps) applications.
HDMI in	Connect a source to the HDMI input port of the transmitter by a HDMI cable.
USB-B	Optionally connect the USB host.
HDMI out	Connect a sink to the HDMI input port of the transmitter by a HDMI cable.
RS-232	Optionally for RS-232: connect a device to the RS-232 port.
Audio out	Optionally for analog output: connect an audio device to the analog audio output port by an audio cable.
USB-A	Optionally connect USB peripherals to the USB-A ports with USB cables.
GPIO	Optionally connect a controller/controlled device to the GPIO port.
Ethernet	Optionally connect the device to a LAN network. ⚠ User Ethernet is also transmitted over the TPN interface, so be sure not to create a network loop.
Power	Powering on the devices is recommended to do as the final step during the installation. Please check the <i>Power Supply Options</i> section for the details.

⚠ Only connect one of the devices to the LAN, in order to avoid creating a network loop!

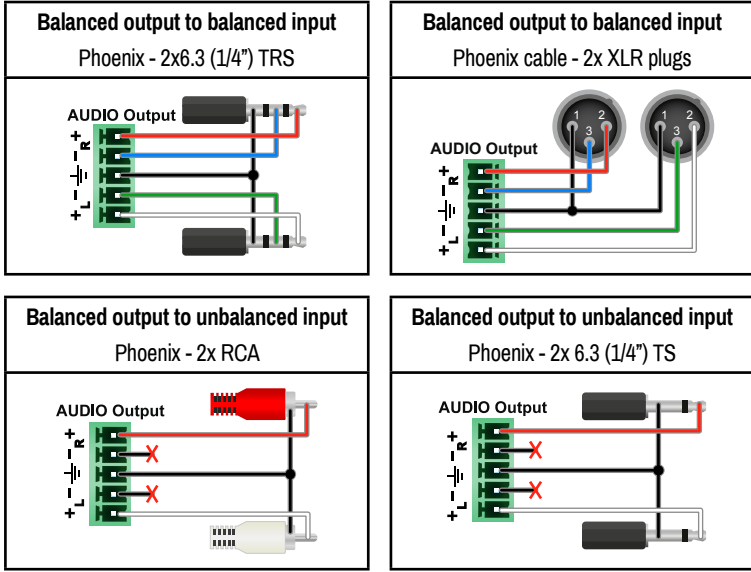
Receiver Side

Port diagram for video / audio (UCX-4x3-TPN-TX20)



Audio Cable Wiring Guide

The UCX-TPN series devices are built with a 5-pole Phoenix® output connector. See a few examples below of the most common assembling cases.



GPIO (General Purpose Input/Output Ports)

The device has seven GPIO pins that operate at TTL digital signal levels and can be set to high or low level (Push-Pull). The direction of the pins can be input or output (adjustable). The signal levels are the following:

	Input voltage (V)	Output voltage (V)	Max. current (mA)
Logic low level	0 - 0.8	0 - 0.5	30
Logic high level	2 - 5	4.5 - 5	18

Plug pin assignment 1-6: Configurable, 7: 5V (max. 500 mA); 8: Ground

The recommended cable for the connectors is the AWG24 (0.2 mm² diameter) or the generally used ‘alarm cable’ with 4x0.22 mm² wires.

ⓘ The maximum total current for the six GPIO pins is 180 mA, the max. supported input/output voltage is 5V.

RS-232

The switcher provides a 3-pole Phoenix® connector for bi-directional serial communication. The signal levels are the following:

	Output voltage (V)
Logic low level	3 - 15
Logic high level	-15 - 3

Plug pin assignment: 1: Ground, 2: TX data, 3: RX data

Button functionality - Video Source Selection

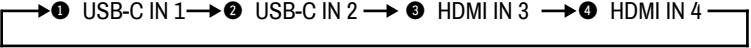
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Push the **OUT1** button to set the video input to the TPN OUT1 port.

Push the **OUT2** button to set the video input to the HDMI OUT2 port.

Push the **OUT3** button to set the video input to the HDMI OUT3 port.

Push the **AUDIO OUT** button to set the audio source of the analog audio output. The sequence is the following (both for the video and audio switching):

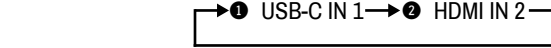


UCX-2x1-TPN-TX20

Push the **IN1** button to select the USB-C port as input for the TPN output port..

Push the **IN2** button to select the HDMI port as input for the TPN output port.

Push the **AUDIO OUT** button to set the audio source of the analog audio output. The sequence is the following for the video switching:



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.

