LIGHTWARE DVI-HDCP-TPS-TX210 Extender DisplayPort HDMI User Guide

Contents

LIGHTWARE DVI-HDCP-TPS-TX210 Extender DisplayPort HDMI User Guide

`Front Views

HDMI-TPS-TX220 and HDMI-TPS-TX226

DVI-HDCP-TPS-TX220

DP-TPS-TX220

1. Autoselect LED LED gives feedback about the current Autoselect status.
2. HDCP LED LED gives feedback about the HDCP status of the output signal.
3. DisplayPort input DisplayPort connector for DisplayPort audio/video signal.
4. HDMI input HDMI connector for DVI video or HDMI video and audio.
5. DVI-D input DVI-I connector for DVI-D video and audio.
6. Audio input 3.5 mm Jack connector for unbalanced analog audio input signal.
7. Video select button Button for selecting a video source.
8. Audio select button Button for selecting an audio source.
9. Show me button Special functions can be reached using this button (firmware upgrade (bootload) mode, DHCP settings, restore factory default settings, condition launching in Event Manager).

Video source LED		
○	off	The video source is not selected.
☼	blinking	The video source is selected but not active.
●	on	The video source is selected and active.
Audio source LED		
○	off	The audio source is not selected.
☼	blinking	The audio source is selected but not active.
●	on	**With short pause:** audio source is selected and the port is active but not embedded to the output video stream (DVI output mode). **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
Autoselect LED		
○	off	The autoselect is disabled.
☼	blinking	The autoselect is enabled; searching for signal (audio LEDs also blink).
●	on	The autoselect is enabled; active signal is found (the LED of selected audio also lights).

Important Safety Instructions

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

Introduction

Thank you for choosing Lightware TPS-TX200 series transmitter. The products have HDBaseTTM integration with additional Lightware developments. The devices transmit HDMI/ DVI digital video signal up to 4K resolution, audio and control up to 170 m distance over a single CAT cable (in case of DP-TPS transmitters the DP signal is converted to HDMI).

Compatible Devices

The transmitters are compatible with all Lightware TPS receivers, matrix boards and third party devices based on HDBase-TTM technology.

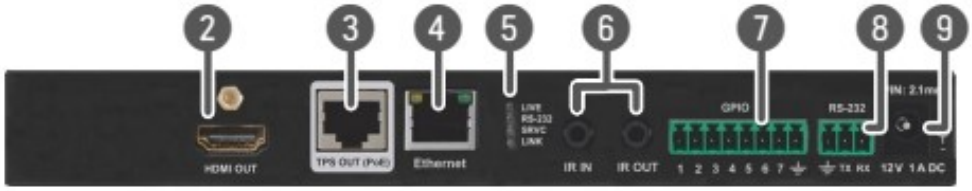
Power Supply Options

The transmitters can be powered:

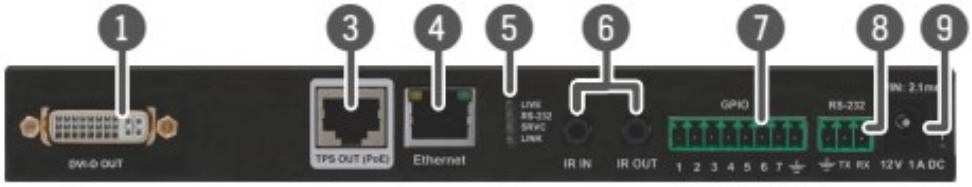
- Locally with the supplied 12V DC adaptor or Lightware's rack mountable PSU, or
- Remotely via the TPS connection over the CATx cable. TX210 and TX220 models are PoE-compatible, but TX226 uses a different kind of remote powering. For more information please turn the paper.

Rear Views

HDMI-TPS-TX220, DP-TPS-TX220



DVI-HDCP-TPS-TX220

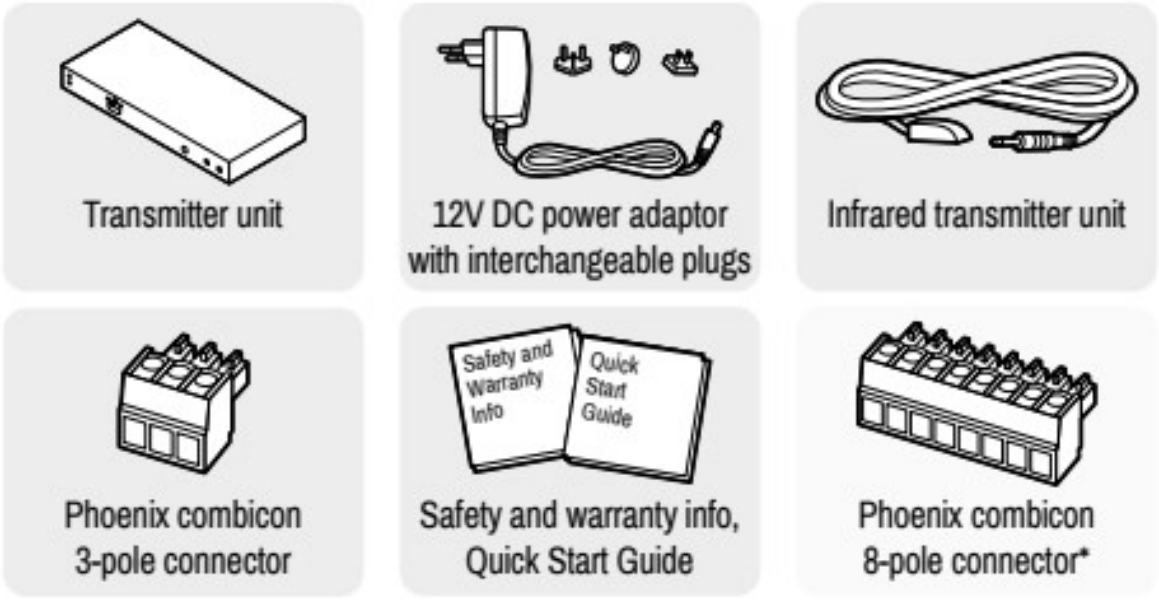


HDMI-TPS-TX226

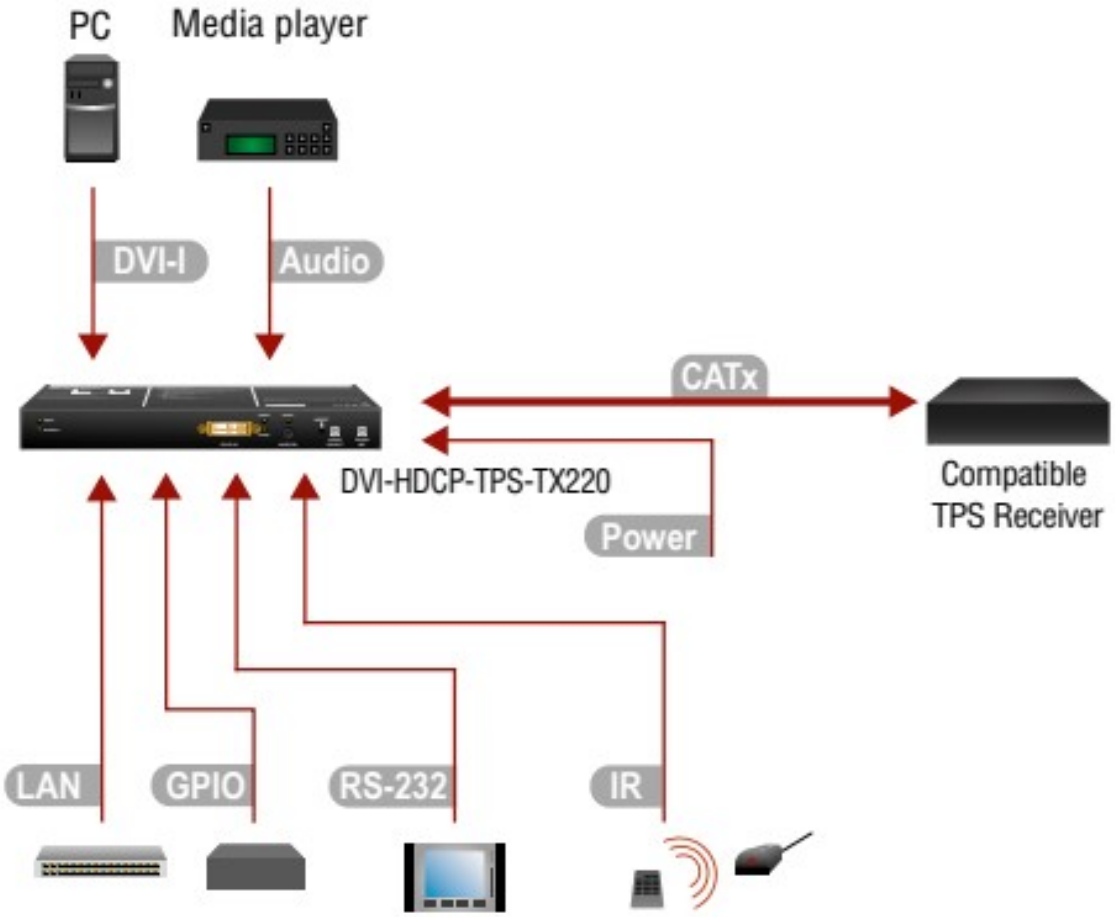
1. DVI-D output Local DVI-D output with the same A/V content as the TPS output.
2. HDMI output Local HDMI output with the same A/V content as the TPS output.
3. TPS output Locking RJ45 connector for HDBaseTTM signal transmission.
4. Ethernet Locking RJ-45 connector for configuring the device using Lightware Device Controller (LDC), or upgrading it using Lightware Device Updater (LDU). Any third-party control system can use this port to control the device.
5. Status LEDs The LEDs give feedback about the actual state of the device.
6. IR IN and IR OUT 3-pole TRS connector, also known as 3.5 mm (1/8") jack plug for optional IR receiver (IR IN) and transmitter (IR OUT) connection.
7. GPIO port 8-pole Phoenix connector for configurable general purpose input/output ports.
8. RS-232 port 3-pole Phoenix connector for controlling the device by LDC or third-party control systems.
9. 12V DC input 12V DC input for local powering

LIVE LED		
○	off	The device is not powered.
☼	blinking	**Slow:** The device is powered and operational. **Fast:** The device is in bootload mode.
●	on	The device is powered but no operation.
RS-232 LED		
○	off	RS-232 ports (local and link) are in Pass-through mode.
☼	blinking	Command injection mode is active.
●	on	The RS-232 ports (local and link) are in Control mode.
SRVC LED		
Reserved for future developments.		
LINK LED		
○	off	No TPS link between the transmitter and the receiver.
☼	blinking	**Slow:** low power mode is active. **Fast:** Ethernet fallback mode is active.
●	on	TPS link is established, HDBaseT or Long Reach mode is active.

Box Contents



Connecting Steps

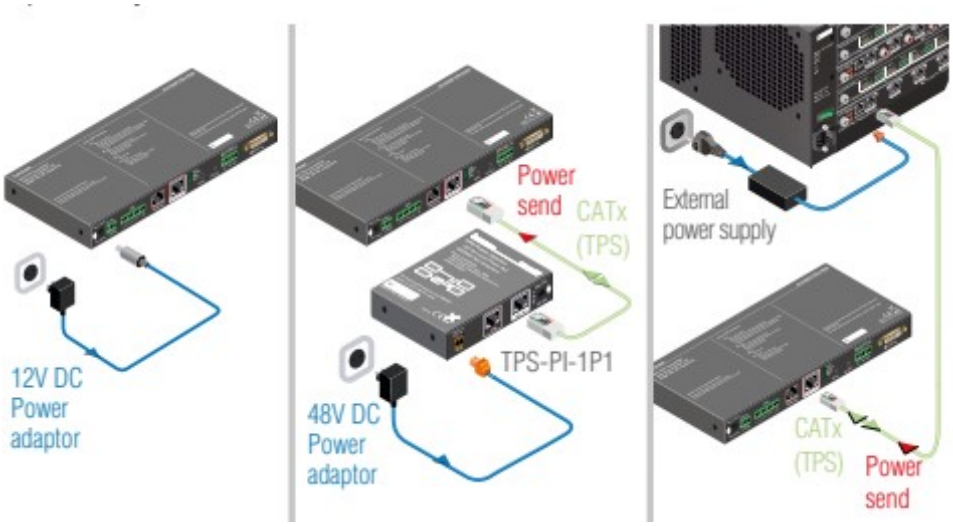


DVI	Connect the source (e.g. a PC) to the DVI-I input port by a DVI cable.
Audio	Connect an audio source (e.g. a Media player) to the 3.5 analog audio input port.
CATx	Connect the TPS output port of the transmitter to a compatible TPS receiver device by a CATx cable.
RS-232	Optionally for RS-232 extension: connect a controller/controlled device (e.g. Touch panel) to the RS-232 port.
IR	Optionally for Infrared extension: ▪ Connect the IR emitter to the IR OUT port of the transmitter, and/or ▪ Connect the IR detector to the IR IN port of the transmitter.
LAN	Optionally connect the transmitter to a LAN.
GPIO	Optionally connect the transmitter to a LAN.
Power	Powering on the devices is recommended to do as the final step during the installation. Please see the **Power Supply Options** sections for the details.

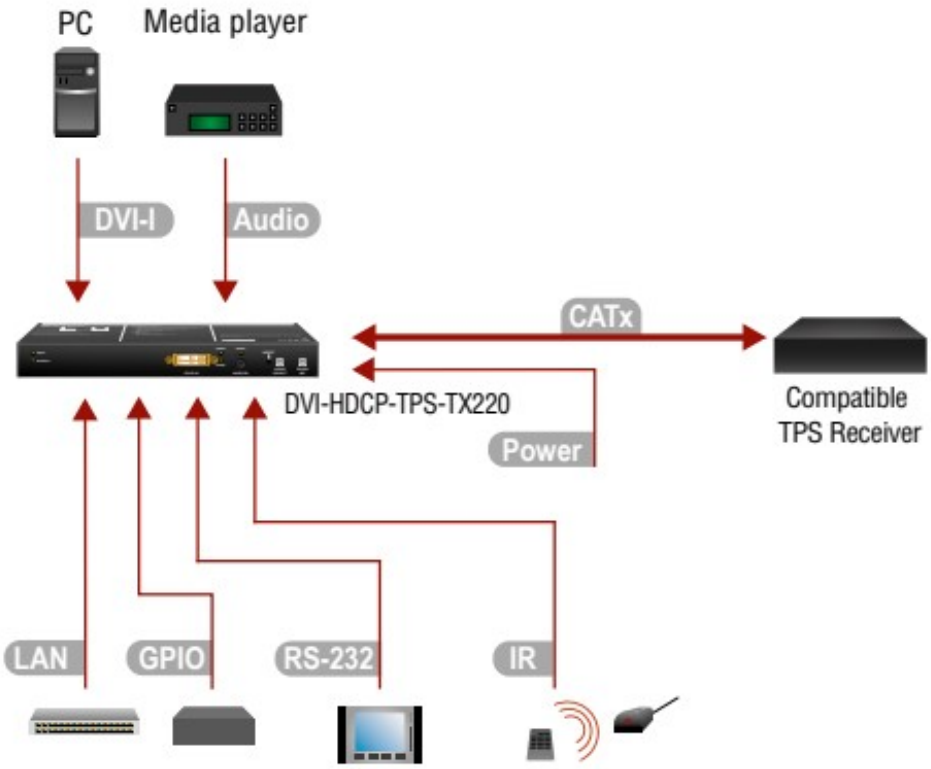
Power Supply Options – HDMI-TPS-TX226

- This transmitter is able to send/receive power over TPS but that feature is not PoEcompatible.
  This transmitter can be powered:
- Locally with the supplied 12V DC adaptor or Lightware's rack mountable PSU, or
- Remotely by an HDMI-TPS-RX96 receiver,

- Remotely by an HDMI-TPS-RX95 or DVI-HDCP-TPS-RX95 receiver with proper jumper setting (see the relevant QSG), or
- Remotely by an MX-TPS-IB, -IB-A, -IB-AS input board (with HW v11) installed in an MX-FR matrix. Output board needs to be powered by an external PSU.



Port Diagram (DVI-HDCP-TPS-TX220



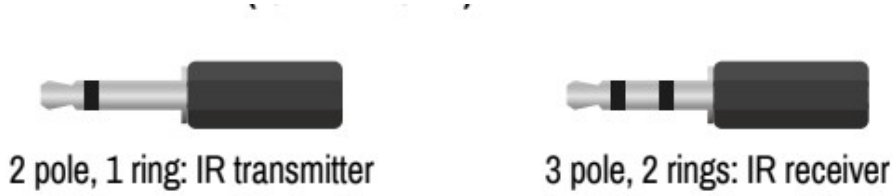
Mounting Options

To mount the device Lightware supplies optional accessories for different usage. There are two kinds of mounting kits with similar fixing method. The transmitter has two mounting holes
with inner thread on the bottom side. Fasten the device by the screws enclosed with the accessory

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.

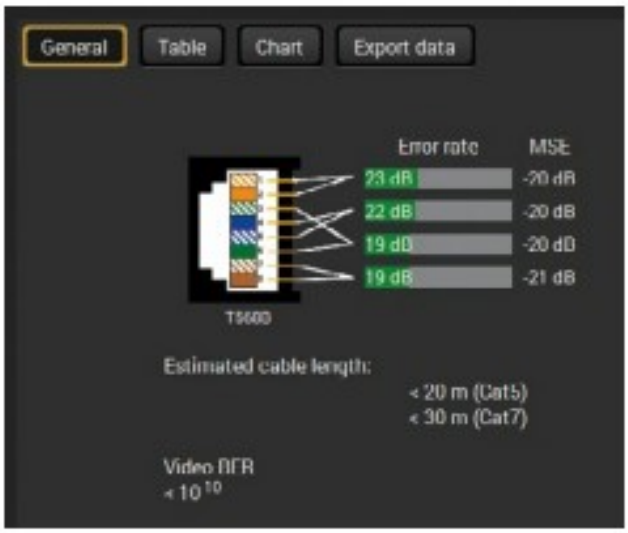
1. Using different (e.g. longer) screws may cause damage to the device.
2. The transmitters are half-rack sized.

Types of IR connectors (1/8” TRS / TS)



Software Control – Using Lightware Device Controller (LDC) The device can be controlled from a computer through the Ethernet port 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 via the Ethernet port. LDC software contains many useful built-in tools which can be used for signal analysis like the followings: TPS Cable Diagnostics

The estimated cable length and the quality of the link are measured periodically and the diagnostic window shows the values in real-time. If the green bars hit the first line in the middle they turn into red. It means the number of the errors – during the extension – is higher than the recommended one. The link might be alive but recovering of the received data is not guaranteed.



Restore Factory Default Settings

1. Keep the Show me button pressed for 10 seconds; after 5 seconds front panel LEDs start to blink but keep the buttons pressed; the LEDs start to blink faster 5 seconds later.
2. Release the button, then press it 3 times quickly; factory default settings are restored:

IP address (fix)	192.168.0.100
Subnet mask	255.255.255.0
Static gateway	192.168.0.1
DHCP	Disabled
TCP/IP port nr. LW2 / LW3	10001 / 6107
Crosspoint setting (Audio)	Embedded audio
Autoselect	Disabled
Output TPS mode	Auto
Emulated EDID	Dynamic
RS-232 mode	Pass-through
RS-232 control protocol	LW2
RS-232 port setting	57600 BAUD, 8, N, 1
Command injection port (local / link)	8001 / 8002
GPIO output level / direction	High / Input

Setting a Dynamic IP Address

1. Keep the Show me button pressed for 5 seconds; front panel LEDs start to blink.

2. Release the button, then press it 3 times quickly. DHCP is now enabled.

Maximum Extension Distances

Resolution	clock rate	CAT5e AWG24	CAT7 AWG26	CAT7 AWG23
1024×768@60Hz	65 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1280x720p@60Hz	73.8 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1920x1080p@60Hz (24bpp)	148.5 MHz	100 m / 130 m*	90 m / 120 m*	120 m / 170 m*
1920×1200@60Hz	152.9 MHz	100 m / NA	90 m / NA	120 m / NA
1600×1200@60Hz	162 MHz	100 m / NA	90 m / NA	120 m / NA
1920×1080@60Hz (36bpp)	223 MHz	70 m / NA	70 m / NA	100 m / NA
3840×2160@30Hz UHD	297 MHz	70 m / NA	70 m / NA	100 m / NA
4096×2160@30Hz 4K	297 MHz	70 m / NA	70 m / NA	100 m / NA

* Long reach TPS mode supports pixel clock frequencies up to 148.5 MHz.

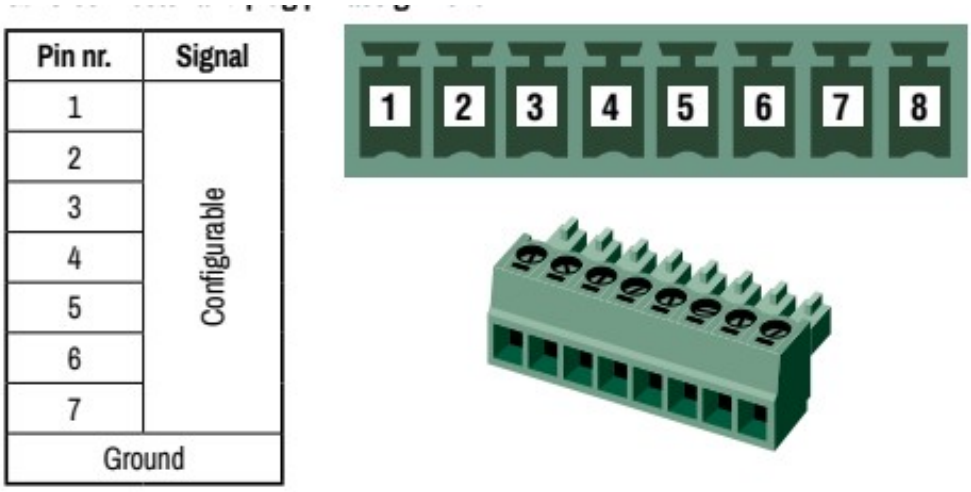
Above values are valid when the transmitter is powered by a local adaptor; distances may decrease depending on the powering mode (local or remote) and cable quality. To specify the accurate extension distances, please also check the documentation of the connected HDBaseT-compatible device.
CAT7 SFTP AWG23 cable is always recommended.

GPIO – General Purpose Input/Output Ports

The TX220 and HDMI-TPS-TX226 transmitters have seven GPIO pins which 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)**
Logical low level	0 – 0.8	0 – 0.5	30
Logical high level	2 -5	4.5 – 5	18

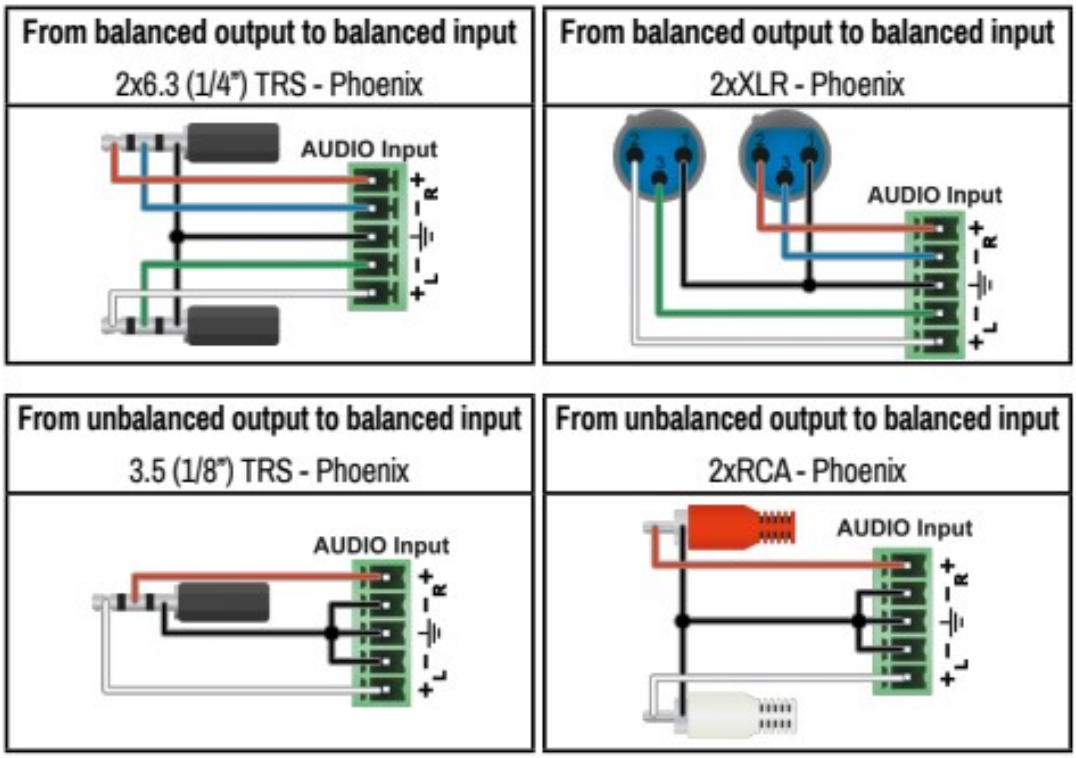
GPIO connector and plug pin assignment



The total available current of the controller is 180 mA.

Audio Cable Wiring Guide

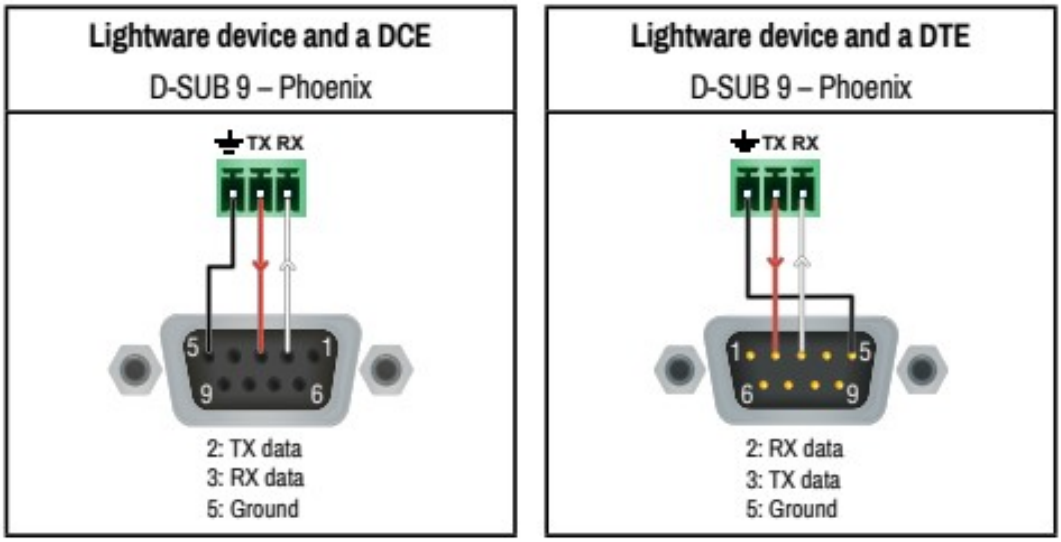
The transmitters are built with 5-pole Phoenix input connector. See below a few example of the most common assembling cases



For more information about audio cable wiring see the user's manual of the device or the Wiring Guide on our website www.lightware.com.

Wiring Guide for RS-232 Data Transmission

The 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:



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.

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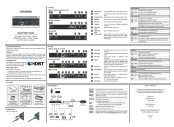
Documents / Resources

	LIGHTWARE DVI-HDCP-TPS-TX210 Extender DisplayPort HDMI [pdf] User Guide DVI-HDCP-TPS-TX210, DVI-HDCP-TPS-TX210 Extender DisplayPort HDMI, Extender Display Port HDMI, DisplayPort HDMI, HDMI