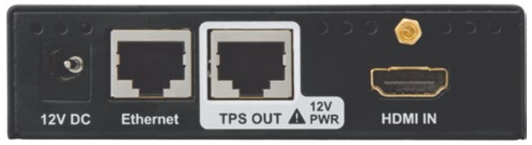
visual engineering
LIGHTWARE

Quick Start Guide

HDMI-TPS-TX95
HDMI-TPS-RX95
DVI-HDCP-TPS-TX95
DVI-HDCP-TPS-RX95

Front view

Rear view

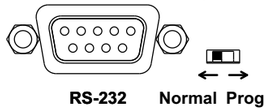


ℹ *Transmitter and receiver have the same construction and connectors.*

The product is compatible with HDBT™

Connecting steps – transmitter and receiver

1. Power off all devices. (Installing with powered devices may harm them.)
2. Check the RS-232 switches on the TX and RX; they must be in Normal position.



3. Set the desired TPS link mode with the TPS link mode switch on the front side.

4. Set the desired TX remote power mode with the jumpers on the right side of the TX.
5. Connect a CATx cable to the TPS OUTPUT on the TX.
6. Connect the video source and the desired accessory devices to the TX.
7. Set the desired RX remote power mode with the jumpers on the right side of the RX.
8. Connect the other end of the CATx cable to the TPS INPUT on the RX.
9. Connect the video sink and the desired RS-232, IR and Ethernet devices to the RX.
10. Supply the extenders with 12V 2A DC: firstly connect to the extenders, then secondly to the AC power socket. If the remote power is enabled on both sides only one local adaptor can be used, otherwise both units must be powered by local adaptors.
11. Supply the other connected devices.

Maximum twisted pair distances

Resolution	Pixel clock rate	Cable lengths (Auto / Long reach TPS mode)		
		CAT5e AWG24	CAT7 AWG26 **	CAT7 AWG23
1024x768@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*
1920x1200@60Hz	152.9 MHz	100 m / NA	90 m / NA	120 m / NA
1600x1200@60Hz	162 MHz	100 m / NA	90 m / NA	120 m / NA
1920x1080@60Hz (36bpp)	223 MHz	70 m / NA	70 m / NA	100 m / NA
3840x2160@30Hz UHD	297 MHz	70 m / NA	70 m / NA	100 m / NA
4096x2160@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.

** AWG 26 cables are not recommended with remote powering.

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.

ℹ *CAT7 SFTP AWG23 cable is always recommended.*

Important safety instructions

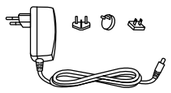
Please read and keep the information in the attached safety instructions supplied with the product before start using the device.

Introduction

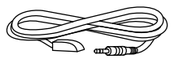
The HDMI-TPS-RX/TX95 and DVI-HDCP-TPS-RX/TX95 are DVI 1.0 and HDMI 1.4 compatible long distance-extenders. The difference between HDMI and DVI-HDCP models is just the HDMI and DVI connector. The units offer bi-directional RS-232, Infra-Red (IR), and Ethernet signal pass-through on the same CAT5e...CAT7 cable that carries the uncompressed HDMI video and audio signal.

Box contents

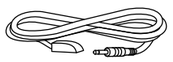
Extender unit



12V DC power adaptor with interchangeable plugs



Infrared detector unit (for RX95)



Infrared emitter unit (for TX95)

Safety and Warranty info, Quick Start Guide

TPS link modes

- HDBaseT™ (HDBT): more bandwidth (higher resolutions), shorter CATx cable length. If no video present, the units change to LPPF mode automatically.
- Long reach (LR): Longer CATx cable length, less bandwidth (limited resolution). The LPPF mode is not available in LR TPS link mode.
- Low Power Partial Functionality (LPPF): Only Ethernet, RS-232 and IR are extended.

Toggling between TPS link modes

The extenders have a toggle switch with two states: Auto and LR. If any unit has LR state both of them switch into LR mode (go into LPPF mode is available only from HDBT mode). If both units have Auto state and there is valid video signal on the transmitter the common mode will be HDBT. If the video signal disappears devices go into LPPF mode.

Setting	Transmitter	Receiver	TPS link mode
1	LR	don't care	LR
2	don't care	LR	LR
3	Auto	Auto	HDBT / LPPF

If an extender and a TPS matrix board are paired the board forces the extender to use the settings of the matrix. The extender's TPS mode switch has no effect.

ℹ *Always use the Auto mode with third-party devices!*

Front panel LEDs

HDCP

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

VIDEO

- OFF: no video signal transmission.
- ON: video signal transmission.

LINK

- OFF: TPS connection failed between the devices.
- BLINKING: TPS connection is detected and LPPF link mode is active.
- ON: TPS connection is detected and HDBT or LR link mode is active.

LIVE

- OFF: no power supply or out of order.
- BLINKING: device is powered and ready to use.

TPS link modes

If an extender and a TPS matrix board are paired the board forces the extender to use the settings of the matrix. The extender's TPS mode switch has no effect. For detailed information about the TPS link modes in case of matrix boards see the user's manual of the matrix.

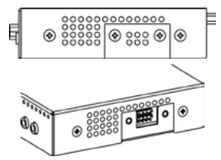
Installation of the extender with a matrix

1. Power off all devices. (Installing with powered devices may harm them.)
2. Check the RS-232 switch(es) on the extender(s); they must be in Normal position.
3. The state of the TPS link mode switch makes no difference on the extender because the connected board forces the extender to use the settings of the matrix.
4. Set the remote power mode of the matrix boards with the jumpers on them. Every port can be set for remote powering separately. To enable the remote power function place the jumper block onto all the pinheads of the desired port. To disable it remove the jumper block. For detailed information, see the user's manual of the matrix.
5. Set the extenders' remote power mode with the same method as it mentioned in the standalone case.
6. Pair the extender(s) and the matrix board(s) with CATx cable(s). The transmitters' TPS OUT with the input boards' TPS IN and the receivers' TPS IN with the output boards' TPS OUT.
7. Connect the video source(s), sink(s) and the desired accessory device(s) to the matrix (MX-TPS boards don't support the IR pass-through).
8. Connect the video source(s), sink(s) and the desired accessory device(s) to the extenders.
9. Supply that matrix boards with 12V 6,67A DC which have ports with enabled remote powering.
10. Supply the extenders with 12V 2A DC. If the remote power is disabled on the connected matrix card's port, local adaptor must be used for the extender.
11. Connect the power cord of the matrix into the outlet and switch on the matrix.
12. Supply the other connected units.

Remote power options

The TPS extenders can be powered remotely by its extender pair or a TPS matrix board. This feature can be enabled or disabled with jumper settings. Switch off the extenders. Loose the screws and remove the small plate from the right side of the enclosure. To enable the remote power function place the jumper block onto all the pinheads. To disable it place the jumper block onto the upper line pinheads only. In case of enabled remote power on both extenders the local adaptor can be placed at any side.

	TX side	RX side
Enabled		
Disabled (default)		



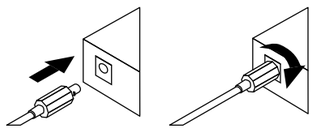
⚠ ***The TPS remote powering must be used only with 95 series TPS extenders and MX TPS matrix boards. Using it with other devices may damage both units.***

⚠ ***Do not connect any device to the TPS connector unless you are sure they are compatible! Connecting incompatible devices with similar connectors may cause harm to the devices.***

⚠ ***Never connect any third party device to the extender with remote powering!***

ℹ *AWG 26 cables are not recommended with remote powering (reduce cable distances).*

Locking DC plug



Twist 90° clockwise to lock.

Infra-Red (IR)

One IR emitter and one detector are supplied with the TX and the RX. One emitter and one detector is enough for controlling only one IR sink device. If there is an IR sink device to be controlled next to the TX and the other one is next to the RX, two emitter-detector pairs are needed. The IR emitter and the detector have standard 3.5 mm TRS (jack) connectors. The emitter's plug has two poles (mono) and the detector's one has three poles (stereo).

3 pole, 2 ring
IR receiver

2 pole, 1 ring
IR transmitter

ℹ *The second emitter and detector pair can be ordered from Ligtware separately.*

ℹ *IR extension is available only with point-to-point connection of the extenders.*

Bi-directional pass-through data lines

The direction of the video extension is fixed from TX towards RX but the pass-through data lines are bi-directional. It means the RS-232, IR, Ethernet source and sink devices can be connected either to the TX or the RX.

Ethernet

The Ethernet port on the RX or on TX can be connected to a LAN hub, switch or router with a LAN cable. The other side behaves as an Ethernet uplink port. Extenders support 10/100 Mbit/sec data transfer rate. The direct access is also supported with crosslink cable. The Ethernet port has auto crossover function. It is able to recognize and handle both cable types: patch and cross TP cables.

RS-232

Third party devices with standard RS-232 port are supported as the extenders work in „pass-through" mode. TX and RX provide 9-pole D-sub female connector. Use straight-serial cable to connect a DTE device to an extender and use a cross serial cable in case of pairing a DCE device to the other TPS extender. The RS-232 options – the baud rate and the parity bits are set on the third party devices and it can be anything. The extenders support any kind of serial settings.

ℹ *Please read the user's manual of the RS-232 device to get its type. The extenders work as DCE devices.*

Further information

The User's manual of this appliance is available at www.lightware.eu.
See the Downloads section on the website of the product.

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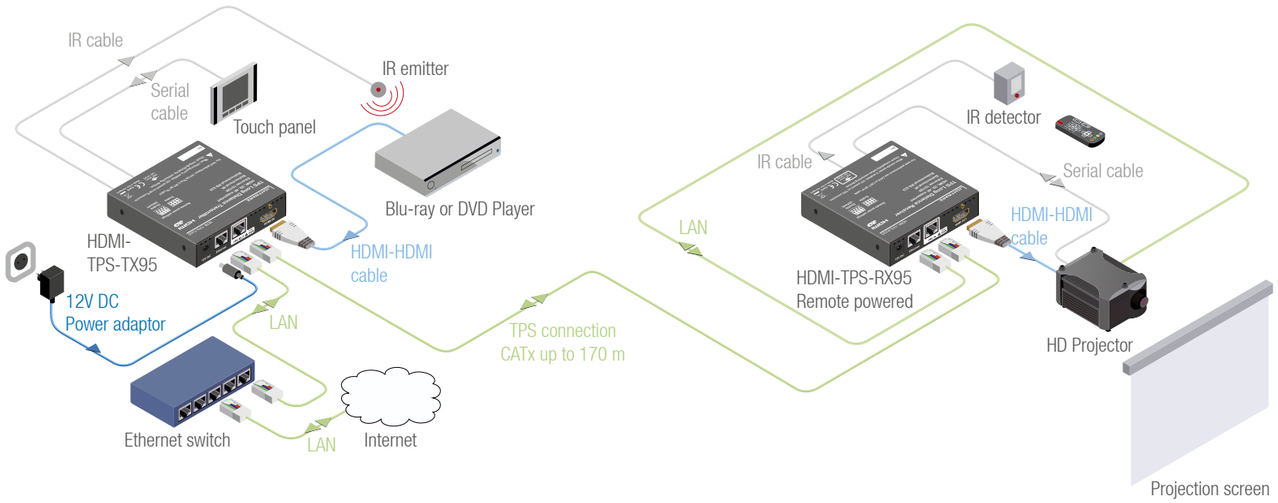
Typical standalone application – the transmitter and the receiver



Remote power options

The TPS extender can be powered remotely by the connected TPS matrix board or its extender pair. This feature of the board can be enabled or disabled with jumper settings for every port separately. Switch off the matrix. Remove the desired cards. Pinheads are behind of the TPS connectors. To enable the remote powering function of the port place the jumper block onto all the corresponding pinheads. Connect the external 12V DC 6,67A power adaptor to the card separately. Finally, set the extenders' desired power modes. To disable the remote powering function for a port remove the jumper block from the corresponding pinheads.

Jumper settings

Place the jumper blocks onto all the pinheads of those units which you want to be powered remotely. For disabling the remote powering remove the jumper blocks and place them onto the upper line pinheads only.

Legend

(A) Standalone with local powering

(B) Standalone with remote powering for RX

(C) Standalone with remote powering for TX

(D) Integrated with local powering

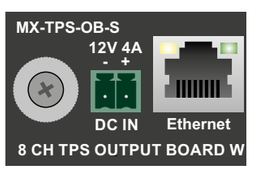
(E) Integrated with remote powering for RX and TX.

⚠ Read carefully all the detailed instructions about remote powering devices! Never use remote powering with third-party units!

ℹ AWG 26 cables are not recommended with remote powering (reduce cable distances).

ℹ For detailed instruction read the user's manual of the MX-TPS cards.

ℹ The PSU-12VP power supply adaptor is an optional accessory and can be ordered separately.



	TX side	RX side
Enabled		
Disabled (default)