LIGHTWARE
INNOVATIVE, RELIABLE, MADE IN EUROPE.



Quick Start Guide

MMX8x8-HT080

Important Safety Instructions

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

Introduction

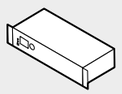
The MMX8x8-HT080 is a standalone matrix switcher offering eight HDMI video inputs and eight TPS video outputs. Additional analog audio input and output connectors allow to embed a different audio signal in the HDMI stream or break out the audio signal from the HDMI stream on the output. 4K / UHD (30Hz RGB 4:4:4, 60Hz YCbCr 4:2:0), 3D capabilities and HDCP are fully supported. The matrix is compatible with the HDMI 1.4 standard. The feature allows to switch video signals up to 4K@30Hz 4:4:4 color space from any input to any output.

Compatible Devices

The MMX8x4-HT420M matrix is compatible with other Lightware TPS devices, matrix TPS and TPS2 boards, 25G boards, as well as third-party HDBaseT-extenders, but not compatible with the phased out TPS-90 extenders.

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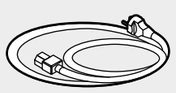
Box Contents



Matrix unit



Safety and warranty info, Quick Start Guide



IEC power connector



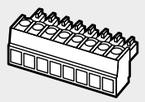
Phoenix Combicon 2-pole Connector (4x)



Phoenix Combicon 3-pole connector (3x)



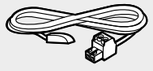
Phoenix Combicon 5-pole connector (2x)



Phoenix Combicon 8-pole Connector (2x)



LAN straight-through Cable, CAT5e type, 0.25m length (2x)



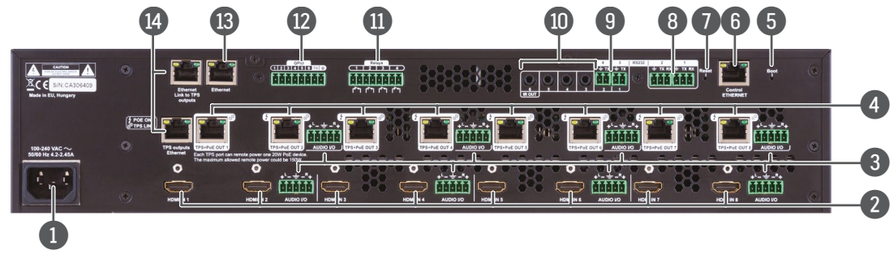
Infrared Emitter Unit with Phoenix Combicon 2-pole Connector (2x)

Front view



1	**USB port**		USB mini-B port for controlling the unit locally by the Lightware Device Controller software.
2	**POWER LED**	on	Power LED indicates that the unit is powered on.
3	**LIVE LED**	blinking slow	The unit is on and operates properly.
		blinking fast	The unit is in bootload mode.
4	**LCD screen**		Displays the front panel menu. Basic settings are available.
5	**Jog dial knob**		Browse the menu by turning the knob, click on the desired item to check or change it.

Rear view

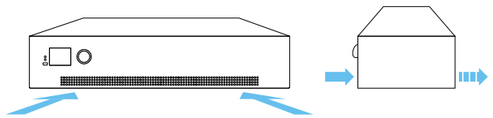


1	**AC connector**	Standard IEC connector accepting 100-240 V, 50 or 60 Hz.
2	**HDMI inputs**	HDMI input ports (4x) for sources.
3	**Audio I/O ports**	5-pole Phoenix connector for balanced analog audio; depending on the configuration, it can be input or output. Output audio is the de-embedded HDMI signal from the nearby HDMI port.
4	**TPS outputs**	RJ45 connectors (8x) for outgoing TPS signal; PoE-compliant.
5	**Boot button**	Resetting or powering on the device while keeping the hidden button pressed puts the matrix in bootload mode.
6	**Control Ethernet port**	RJ45 connector to control the matrix via LAN.
7	**Reset button**	Reboots the matrix; the same as switching it off and on again.
8	**RS-232 ports**	3-pole Phoenix connectors (2x) for bi-directional RS-232 communication.
9	**Serial/Infra outputs**	2-pole Phoenix connectors (2x) for IR output or TTL output serial signal.
10	**Infra outputs**	3.5 mm TRS (Jack) plugs for infra signal transmission.
11	**Relay**	8-pole Phoenix connectors for relay ports.
12	**GPIO**	8-pole Phoenix connector for configurable general purpose input/output ports.
13	**Ethernet port**	Locking RJ45 connector for Ethernet connection to the matrix.
14	**TPS Ethernet**	Locking RJ45 connectors to supply Ethernet communication for the TPS lines – they can be separated from the LAN communication (controlling functions) of the matrix. **Not** PoE-compliant.

The infrared emitter and detector units are optionally available accessories.

Ventilation

To ensure the correct ventilation and avoid overheating, leave enough free space around the appliance. Do not cover the appliance, leave the ventilation holes free on both sides.



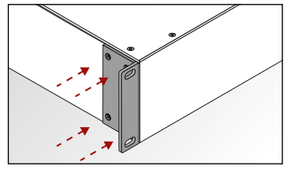
Serial Output Voltage Levels (TTL and RS-232)

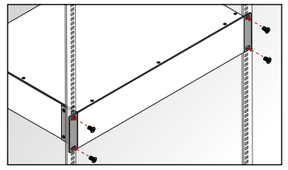
	TTL*	RS-232
Logic low level	0 .. 0.25V	3 V .. 15 V
Logic high level	4.75 .. 5.0V	-15 V .. -3 V

*Using a receiver with at least 1k impedance to any voltage between 0V and 5V to get the voltages, but not compatible with the phased out TPS-90 extenders.

Mounting Options - Standard Rack Installation

Two rack ears are supplied with the product, which are fixed on left and right side as shown in the picture. The default position allows mounting the device as a standard rack unit installation.



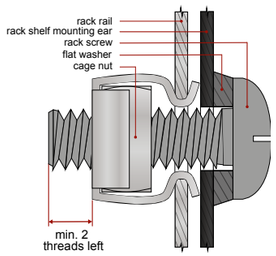


The matrix switcher is 2U-high and one-rack wide.

Always use all four screws for fixing the device ears to the rack rail. Choose properly sized screws for mounting. Keep a minimum of two threads left after the nut screw.

Ventilation

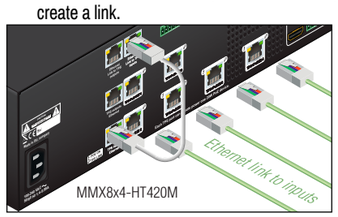
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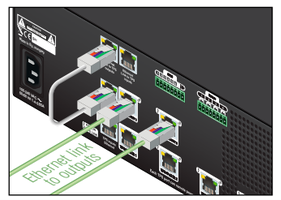


Ethernet Link to TPS inputs and TPS outputs

TPS lines do not transmit Ethernet signal, but they can be transmitted on the TPS input and output ports, if there is a physical link between the motherboard and the input or the output board. This makes it possible to control a third-party device or to supply Ethernet via TPS. Connect a patch cable between

- **Ethernet Link to TPS inputs** and **TPS inputs Ethernet** labeled RJ45 connectors or
- **Ethernet Link to TPS outputs** and **TPS outputs Ethernet** labeled RJ45 connectors to create a link.





Remote Powering (PoE 48V)

The matrix is PoE-compatible (in accordance with IEEE 802.3af standard) and is able to send remote power to connected TPS devices via the TPS connection (through the CATx cable). No local power adaptor is required for the connected PoE-compatible TPS extender. The PoE 48V feature is enabled on TPS ports as factory default.

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

Lightware Visual Engineering PLC.
Budapest, Hungary

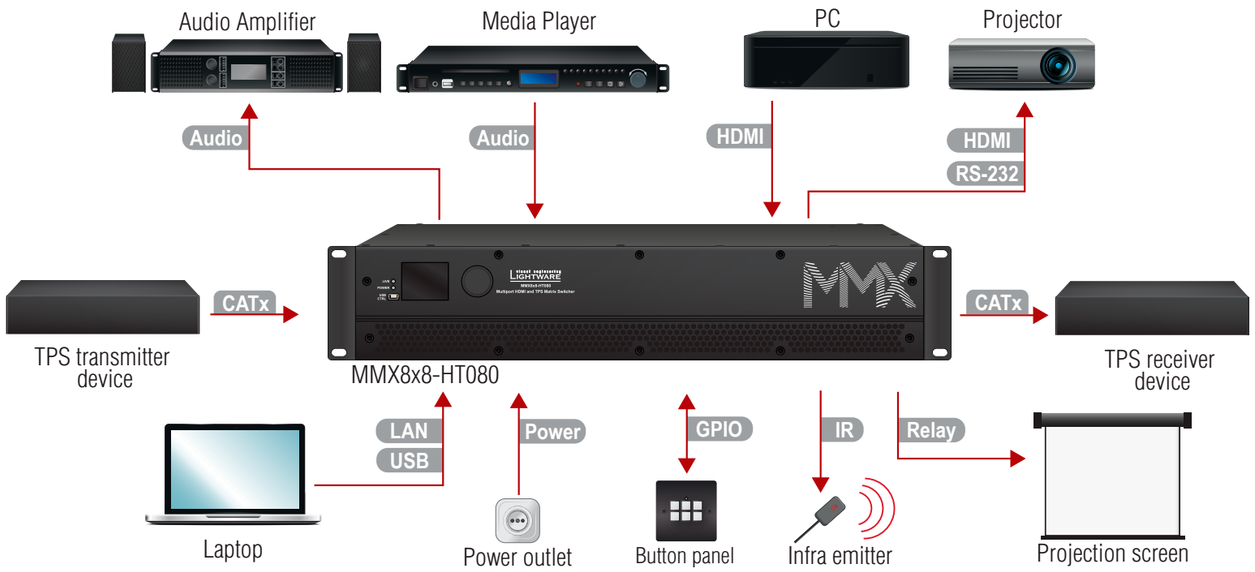
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support@lightware.com +36 1 255 3810

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

Doc. ver.: 1.2
19210075

Connecting Steps

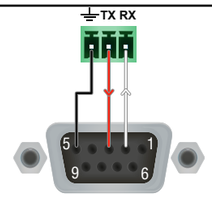
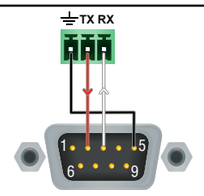


CATx	Connect a HDBase-T™ -compatible transmitter or matrix output board to TPS input port. PoE-compliant.
HDMI	Connect an HDMI source (e.g. PC) to the HDMI input port.
HDMI	Connect an HDMI sink (e.g projector) to the HDMI output port.
Audio	Optionally for analog output port: connect an audio device (e.g. audio amplifier) to the analog audio output port by an audio cable.
Audio	Optionally for audio input: connect the audio source (e.g. media player) to the audio input port by an audio cable.
USB	Optionally connect the USB cable in order to control the matrix switcher via the Lightware Device Controller software.
LAN	Optionally connect the UTP cable (straight or cross, both are supported) in order to control the matrix switcher via the Lightware Device Controller software.
Relay	Optionally for relays: connect a controlled device(s) (e.g. a projection screen) to the relay port.
IR	Optionally connect the infra emitter to the infra output port (2-pole Phoenix or 1/8" Stereo Jack connector) to transmit infra signal.
GPIO	Optionally connect a controller/controlled device (e.g. button panel) to the GPIO port.
Power	Connect the power cord to the AC power socket to the matrix unit.

Powering the device is recommended as the final step.

Wiring Guide for RS-232 Data Transmission

MMX8x4 series matrix is built with a 3-pole Phoenix connector. See the examples below of connecting to a DCE (Data Circuit-terminating Equipment) or a DTE (Data Terminal Equipment) type device:

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

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

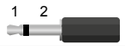
Software Control – Using Lightware Device Controller (LDC)

The device can be controlled from a computer using the Lightware Device Controller software. The application is available at www.lightware.com, install it on a Windows PC or a macOS and connect to the device via LAN, USB, or RS-232.

Firmware Update

Lightware Device Updater 2 (LDU2) is an easy and comfortable way to keep your device up-to-date. Establish the connection to the device via Ethernet. Download and install LDU2 software from the company's website www.lightware.com, where you can find the latest firmware package as well.

Pin Assignment of 2-pole IR Emitter Connector (1/8" TS)

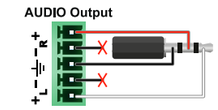


1 Tip	+5V
2 Ring	Signal (active low)
3 Sleeve	

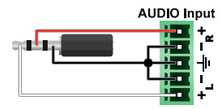
Audio Cable Wiring Guide

MMX8x4 series matrix is built with 5-pole Phoenix input and output connectors. See a few examples below of the most common assembling cases.

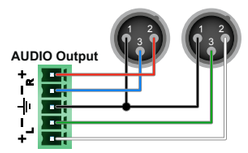
From balanced output to unbalanced input
Phoenix - 3.5 (1/8") TRS



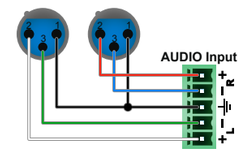
From unbalanced output to balanced input
3.5 (1/8") TRS - Phoenix



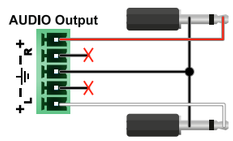
From balanced output to balanced input
Phoenix - 2 x XLR



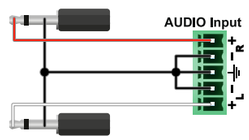
From balanced output to balanced input
2 x XLR - Phoenix



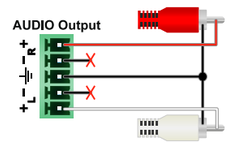
From balanced output to unbalanced input
Phoenix - 2 x 6.3 (1/4") TS



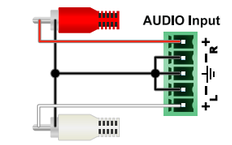
From unbalanced output to balanced input
2 x 6.3 (1/4") TS - Phoenix



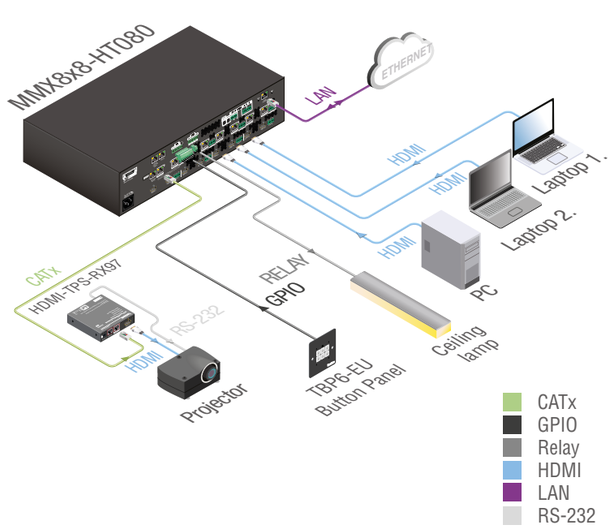
From balanced output to unbalanced input
Phoenix - 2 x RCA



From unbalanced output to balanced input
2 x RCA - Phoenix



Typical Application



IP address	Dynamic (DHCP is enabled)
RS-232 port setting	57600 BAUD, 8, N, 1
Control protocol (RS-232)	LW2
Crosspoint setting	input 1 on all outputs
I/O Ports	Unmuted, unlocked
TPS mode	Auto
PoE 48V enable	Enable
HDCP enable (input)	Enable
HDCP mode (output)	Auto
Color space / color range	Auto / Auto
Signal Type	Auto
HDMI mode	Auto
Emulated EDID	F49 - (Universal HDMI, all audio, deep color support)
Audio source	embedded audio
Audio mode	HDMI audio passthrough