LIGHTWARE MMX8X8-HT440 HDMI and TPS Matrix Switcher User Guide

Contents

visual engineering LIGHTWARE

LIGHTWARE MMX8X8-HT440 HDMI and TPS Matrix Switcher

Important Safety Instructions

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

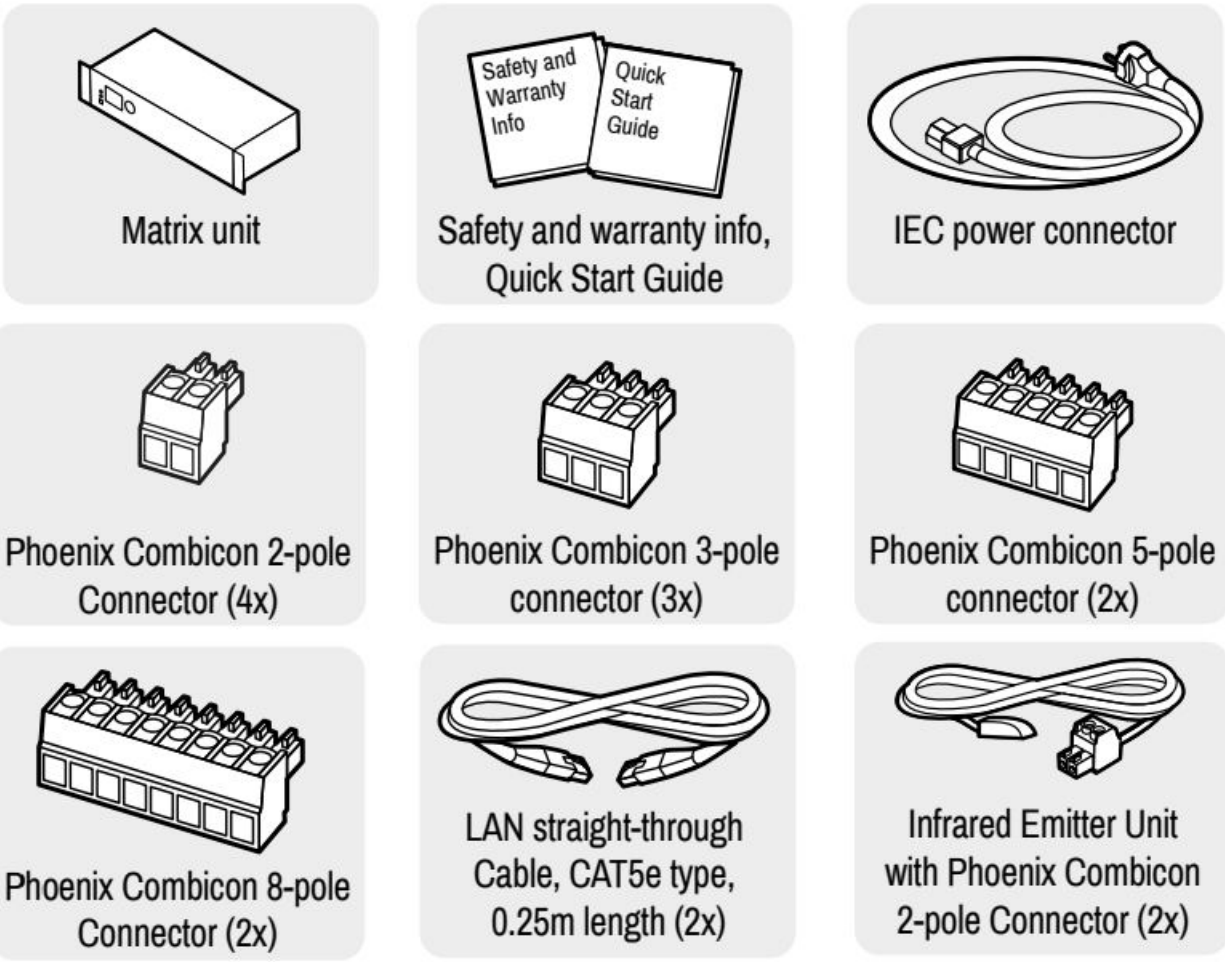
Introduction

The MMX8x8-HT440 is a standalone matrix switcher offering eight video inputs (four HDMI and four TPS) and eight video outputs (four HDMI and four TPS). 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. HDBaseTTM and the HDBaseT Alliance logo are trademarks of the HDBaseT Alliance.

Box Contents

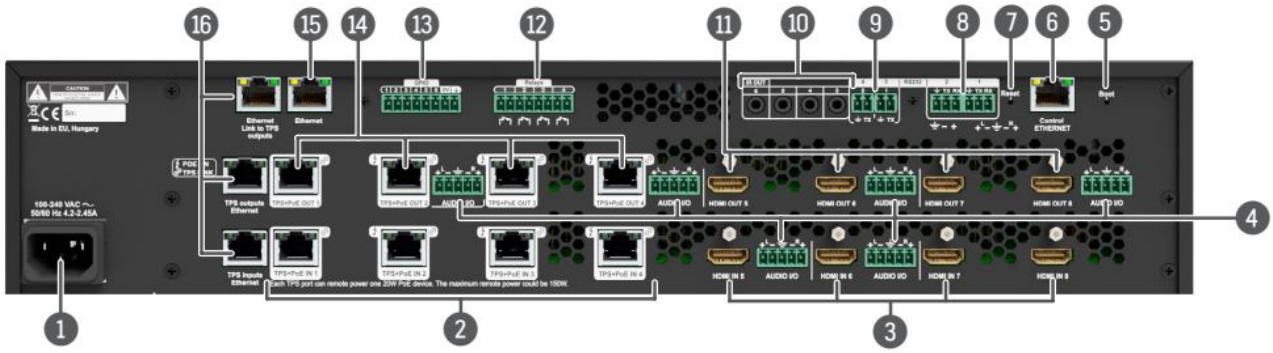


OVERVIEW

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 Browse the menu by turning the knob, click on the desired item to check or change it. knob

Rearview

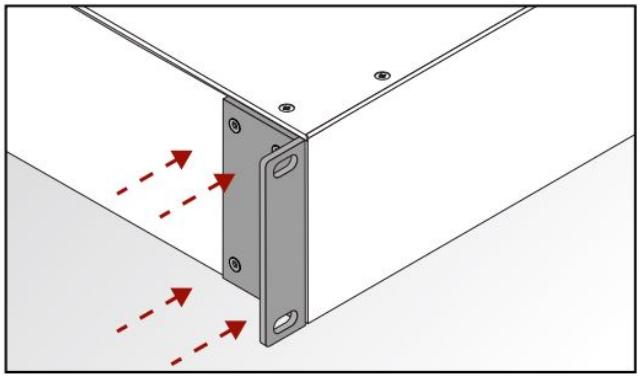


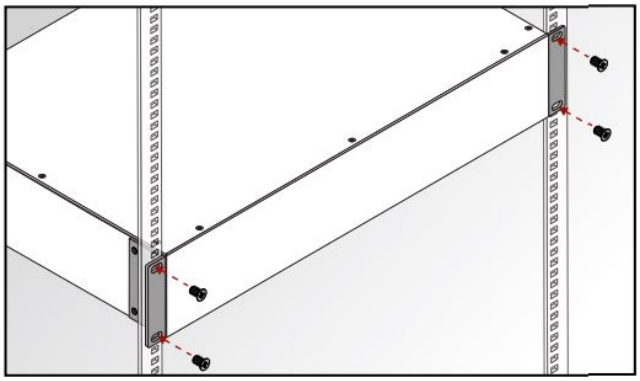
1. AC connector Standard IEC connector accepting 100-240 V, 50 or 60 Hz.
2. TPS inputs RJ45 connectors (4x) for incoming TPS signal; PoE-compliant.
3. HDMI inputs HDMI input ports (4x) for sources.
4. Audio I/O ports 5-pole Phoenix connector for balanced analog audio; depending on the configuration, it can be input or output. Output audio is the de-embedded HDMI signal from the nearby HDMI port.
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. HDMI outputs HDMI output connectors for sink devices.
12. Relay 8-pole Phoenix connectors for relay ports.
13. GPIO 8-pole Phoenix connector for configurable general purpose input/output ports.
14. TPS outputs RJ45 connectors for TPS signal; PoE-compliant.
15. Ethernet port Locking RJ45 connector for Ethernet connection to the matrix.
16. TPS Ethernet Locking RJ45 connector to supply Ethernet communication for the TPS lines – it 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.

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

- 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

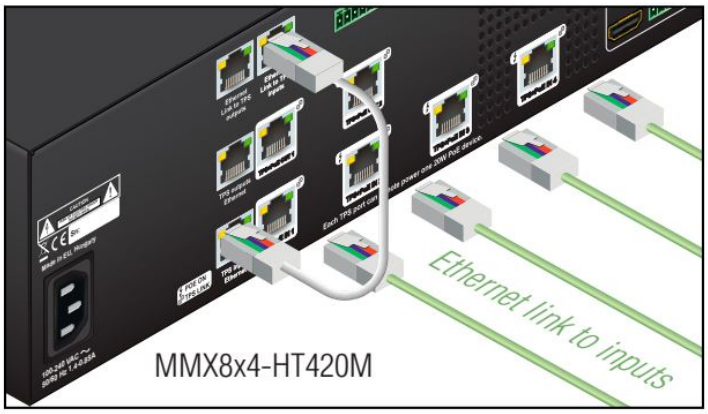
Using a receiver with at least 1k impedance to any voltage between 0V and 5V to get the voltages,but not compatible with the phased-out TPS-90 extenders.

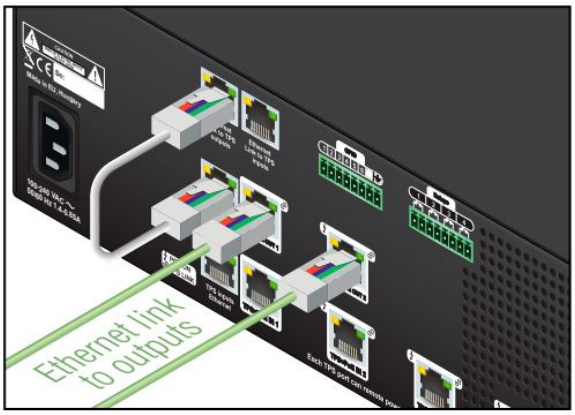
Ethernet Link to TPS inputs and TPS outputs

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

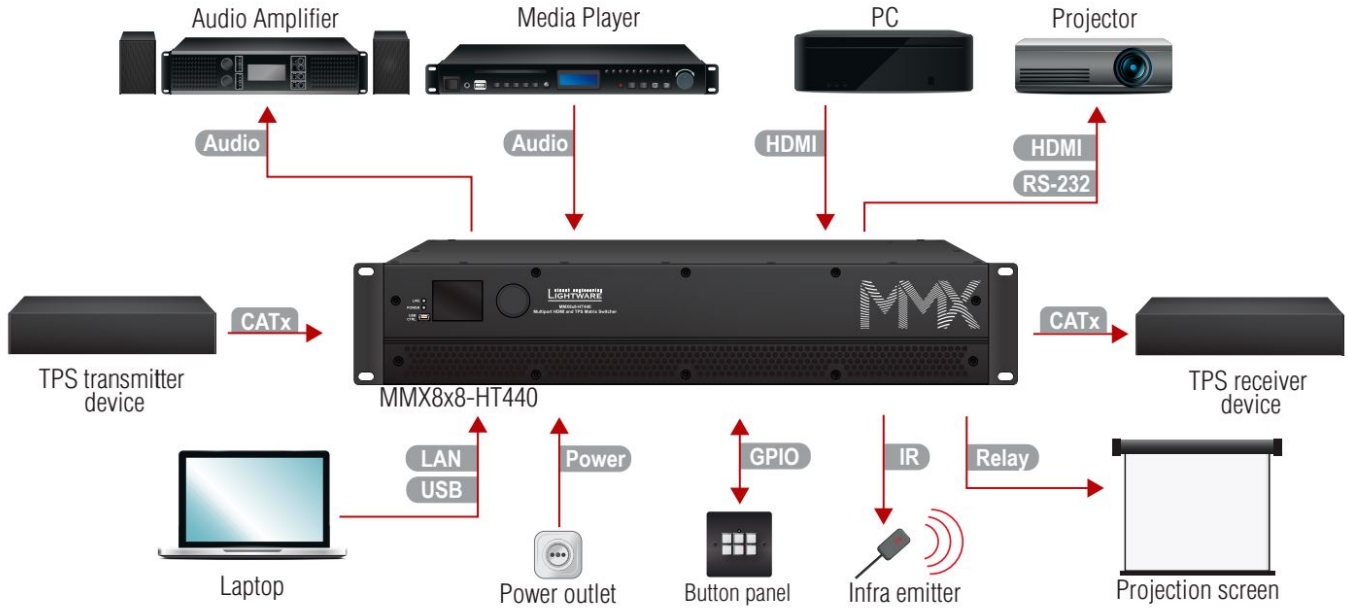
- Ethernet Link to TPS inputs and TPS inputs Ethernet labeled RJ45 connectors or
- Ethernet Link to TPS outputs and TPS outputs Ethernet labeled RJ45 connectors to create a link.





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.

Connecting Steps

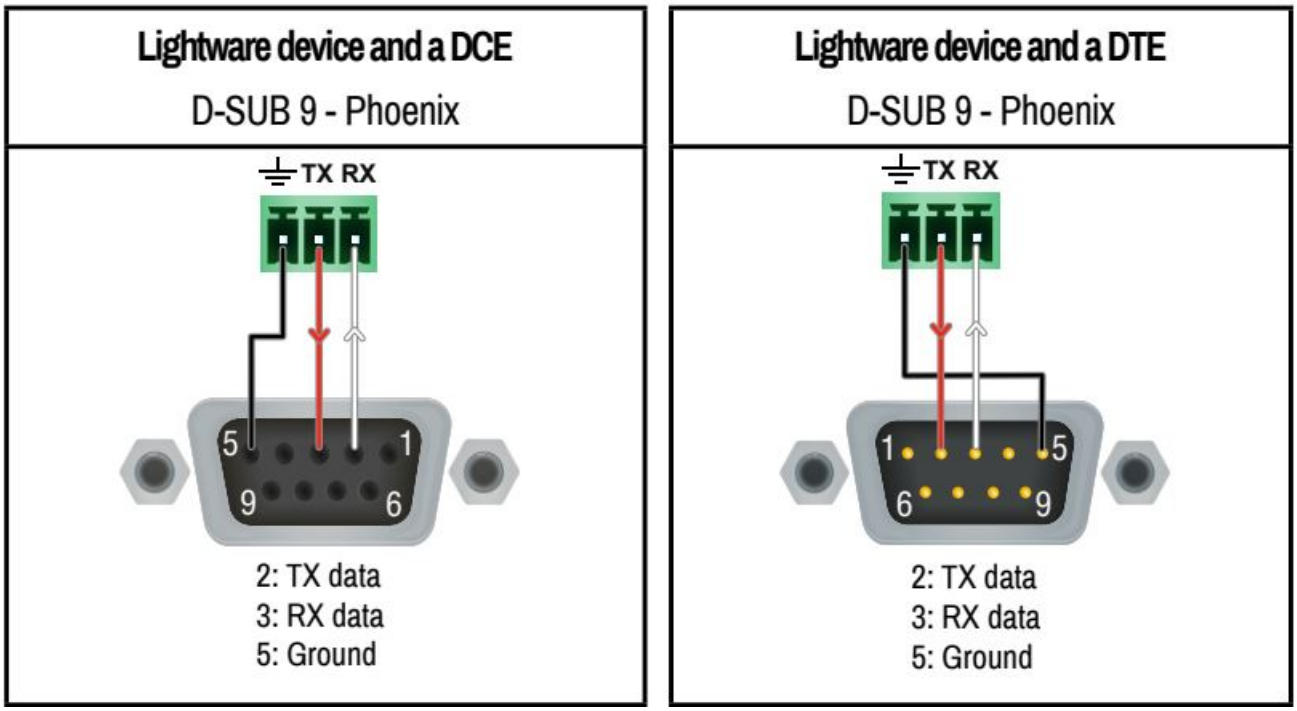


- **CATx**
  Connect an HDBase-TTM -compatible transmitter or matrix output board to TPS input port. PoE-compliant.
- **HDMI**
  Connect an HDMI source (e.g. PC) to the HDMI input port.
- **HDMI**
  Connect an HDMI sink (e.g projector) to the HDMI output port.
- **Audio** Optionally for analog output 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:

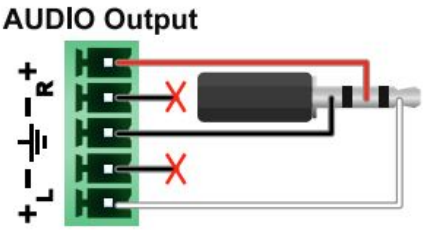


For more information about the cable wiring, see the user's manual of the device or Cable Wiring Guide on our website **www.lightware.com/support/guides-and-white-papers**.

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.

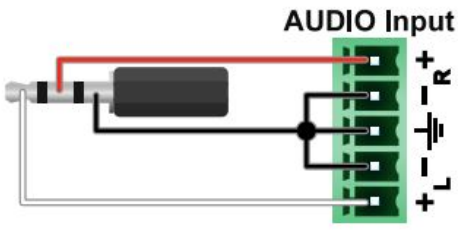
From balanced output to unbalanced input

Phoenix - 3.5 (1/8”) TRS



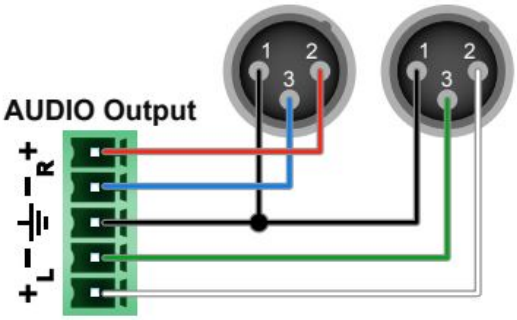
From unbalanced output to balanced input

3.5 (1/8”) TRS - Phoenix



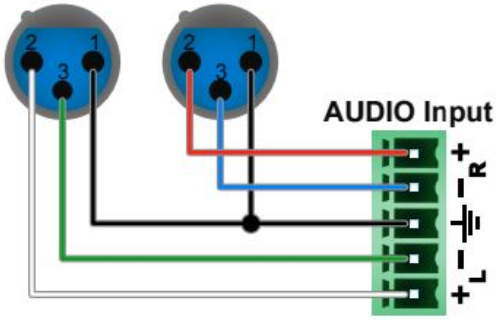
From balanced output to balanced input

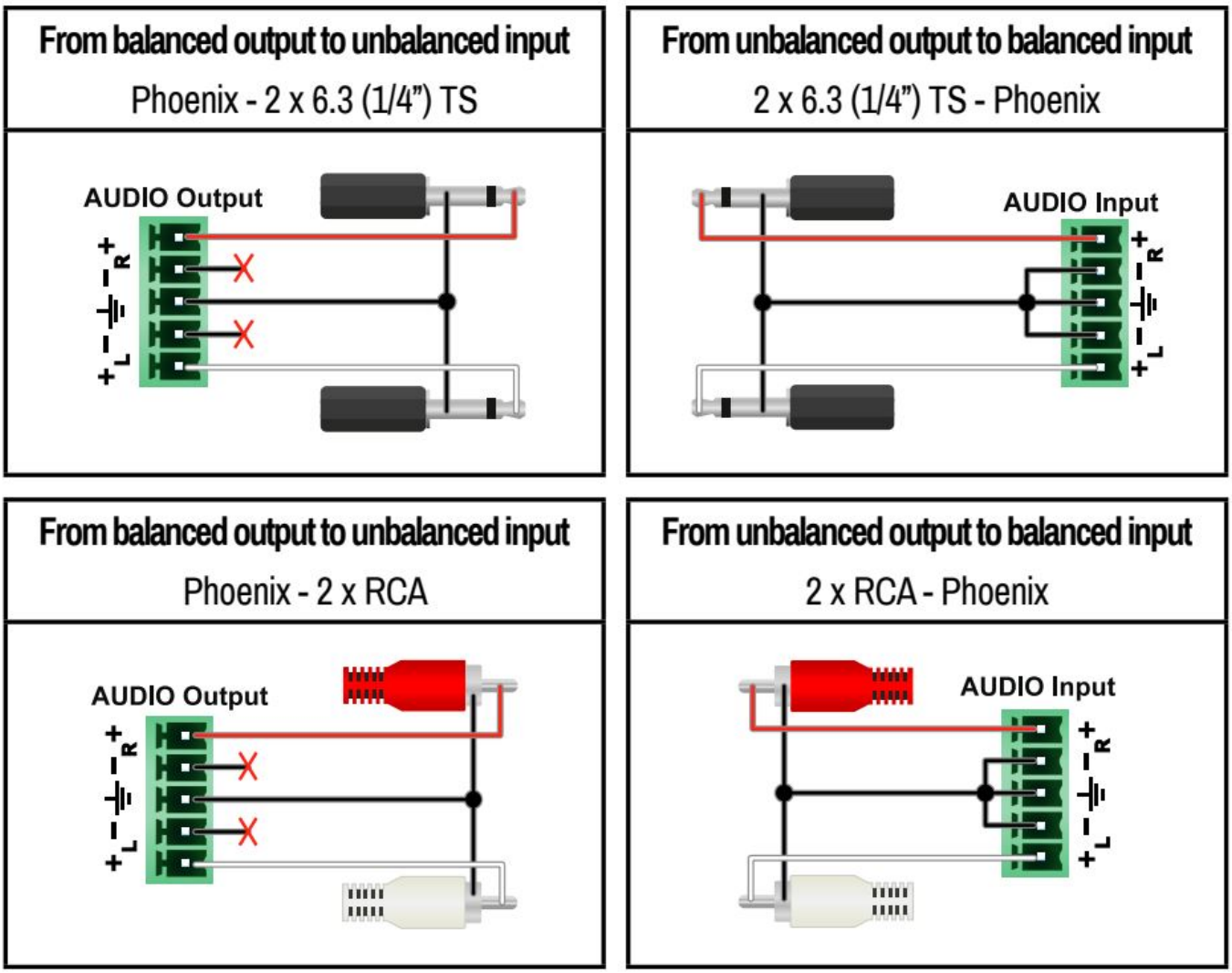
Phoenix - 2 x XLR



From balanced output to balanced input

2 x XLR - Phoenix

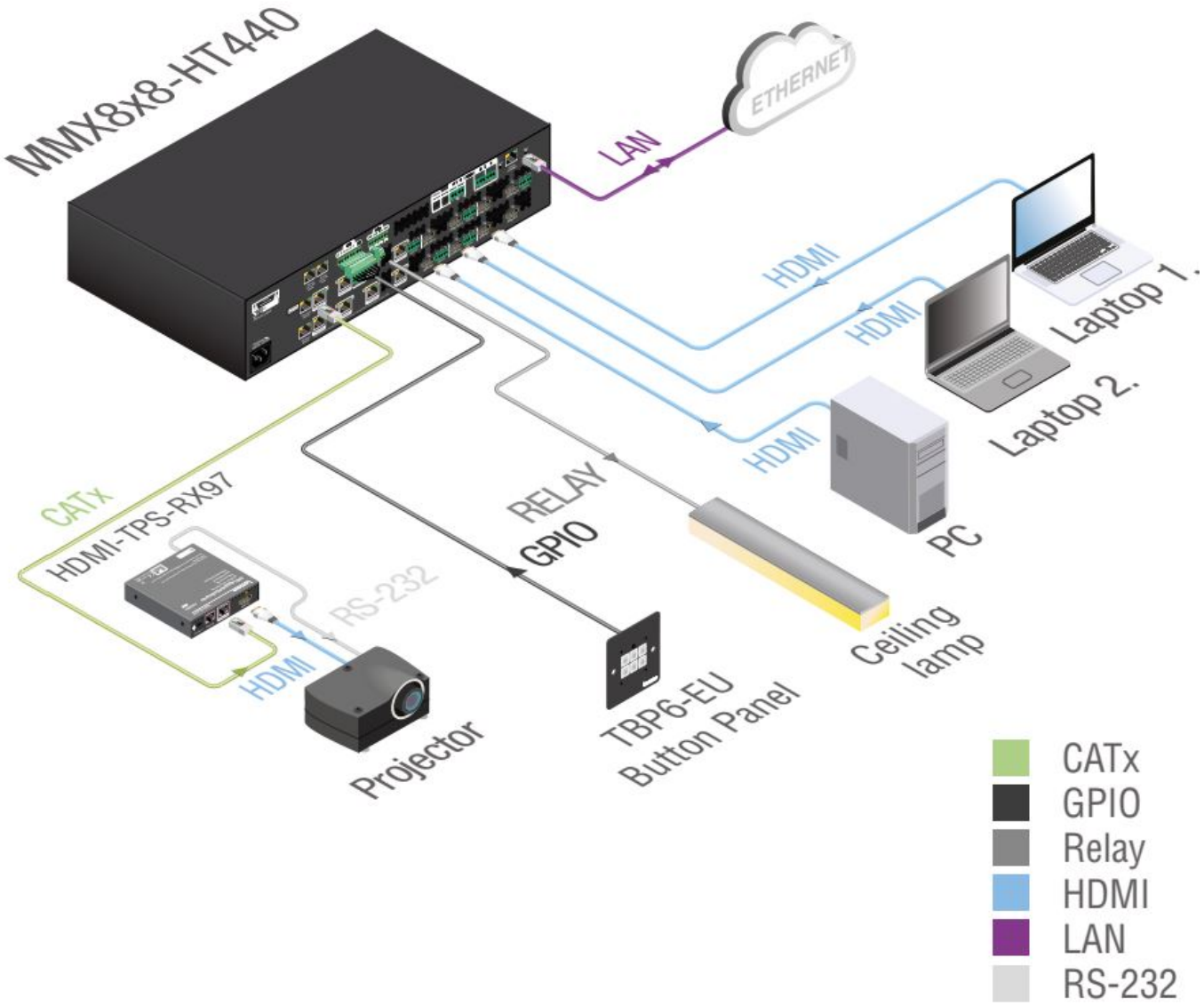




Software Control – Using Lightware Device Controller (LDC)
The device can be controlled from a computer using the Lightware Device Controller software. The application is available at www.lightware.com, install it on a Windows PC or a macOS and connect to the device via LAN, USB,or RS-232.

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.

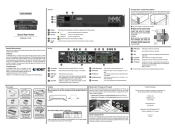
Typical Application


MMX8x8-HT440
ETHERNET
LAN
HDMI
HDMI
HDMI
Laptop 1.
Laptop 2.
PC
CATx
HDMI-TPS-RX97
RELAY
GPIO
RS-232
HDMI
Ceiling
lamp
TBP6-EU
Button Panel
Projector
CATx
GPIO
Relay
HDMI
LAN
RS-232

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

Further Information
The User's manual of this appliance is available on **www.lightware.com**.
See the Downloads section on the dedicated product page.
Contact Us
sales@lightware.com
+36 1 255 3800
support@lightware.com
+36 1 255 3810
Lightware Visual Engineering LLC.
Peterdy 15, Budapest H-1071, Hungary
Doc. ver.: 1.0
19200224

Documents / Resources

	**LIGHTWARE MMX8X8-HT440 HDMI and TPS Matrix Switcher** [pdf] User Guide MMX8X8-HT440, HDMI and TPS Matrix Switcher, MMX8X8-HT440 HDMI and TPS Matrix Switcher

References

- Lightware Visual Engineering
- Guides and White Papers