LIGHTWARE MMX8x8-HDMI-4K-A Matrix Switcher User Guide

Contents

visual engineering LIGHTWARE

LIGHTWARE MMX8x8-HDMI-4K-A Matrix Switcher

Important Safety Instructions

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

Introduction

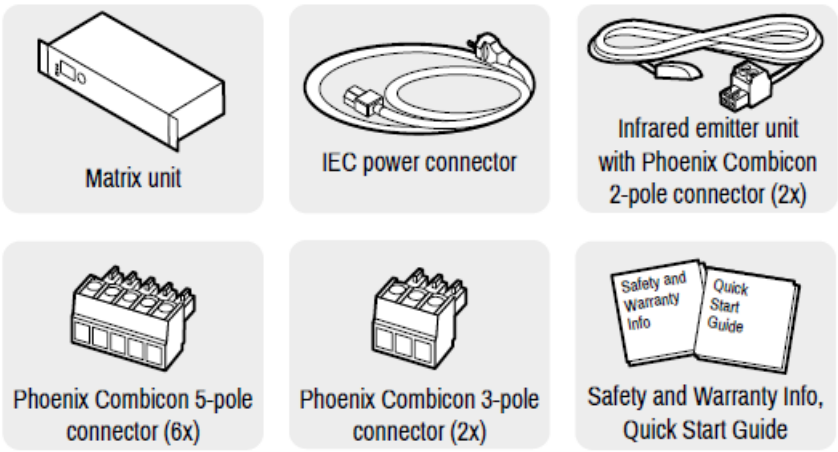
The MMX8x8-HDMI-4K-A is a standalone matrix switcher with eight HDMI video inputs and eight HDMI video outputs. 4K / UHD (30Hz RGB 4:4:4, 60Hz YCbCr 4:2:0), 3D capabilities and HDCP are fully supported. MMX8x8-HDMI-4K-A has four balanced, 5-pole Phoenix audio inputs for embedding purposes and two balanced, 5-pole Phoenix audio outputs for de-embedding.

Device Concept

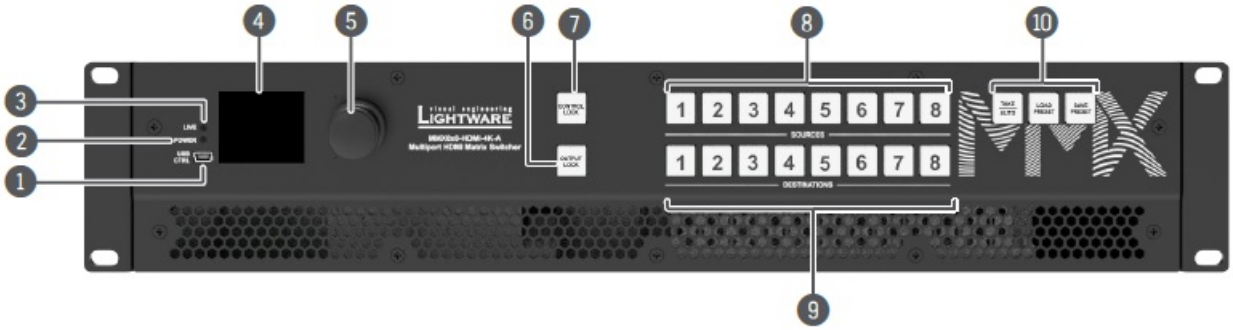
The matrix is compatible with the HDMI 1.4 standard. The feature allows to switch video signals up to 4K@30Hz 4:4:4 color space from any input to any output. Additional analog audio input and output connectors allow to embed a different audio signal in the HDMI stream or break out the audio signal from the HDMI stream on the output.

- + Control Interfaces: Ethernet
- USB
- RS-232

Box Contents

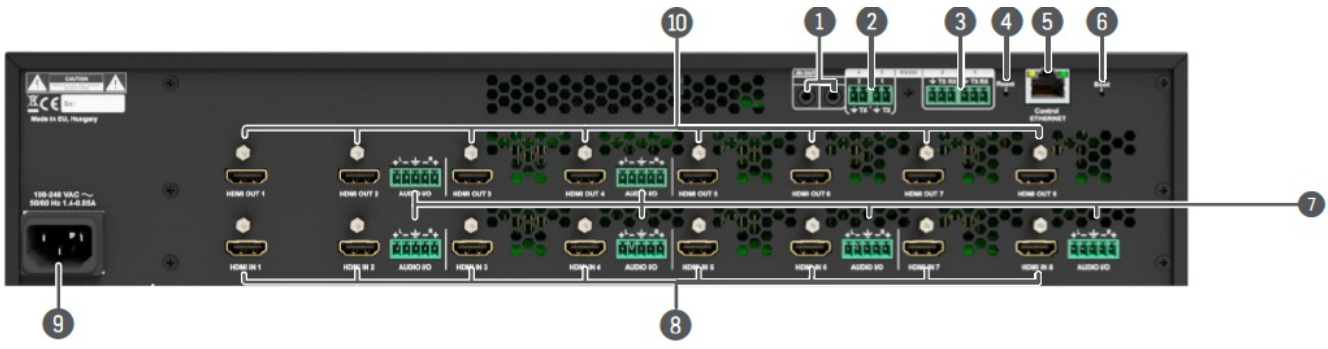


Front View



1. USB port USB mini-B port for controlling the unit locally by 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.
6. Output Lock Locking one or more outputs.
7. Control Lock Disable or enable front panel operations. Red light means the switching and function buttons are disabled.
8. Sources Buttons to select an input, to select a preset number or to view the state of the selected input port.
9. Destinations Buttons to select an output or to view the state of an output.
10. Function Buttons Switching between working modes (Take / Autotake) and performing Preset operations.

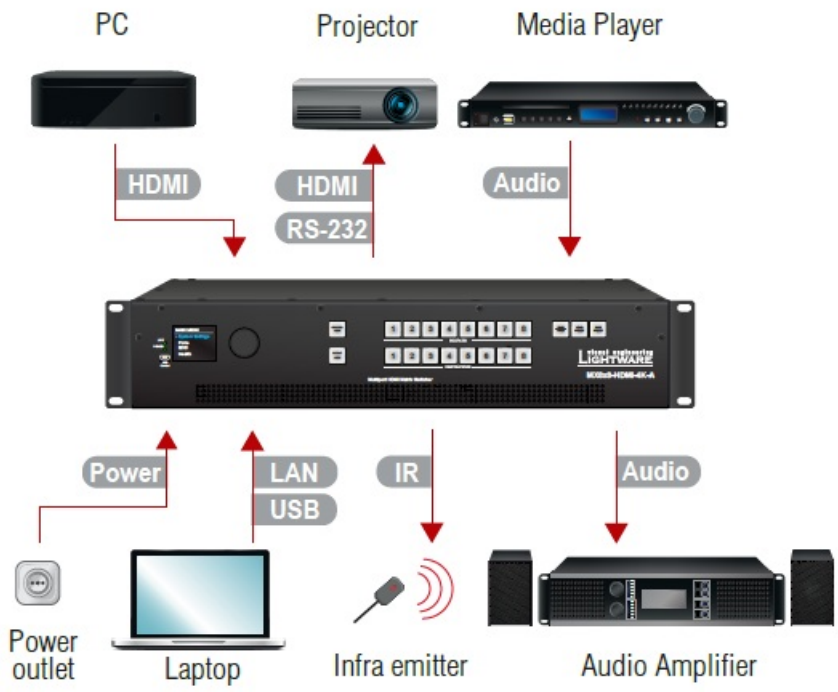
Rear View



1. Infra output ports 3.5 mm TRS connectors (Jack plugs) for infra signal transmission.

2. Serial/Infra output ports 2-pole Phoenix connectors (2x) for IR output or TTL output serial signal.
3. RS-232 ports 3-pole Phoenix connectors (2x) for bi-directional RS-232 communication.
4. Reset button Reboots the matrix; the same as switching it off and on again.
5. Ethernet port RJ45 connector to control the matrix via LAN.
6. Boot button Reset or power on the device while keep pushing the hidden button takes the matrix in bootload mode.
7. 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.
8. HDMI inputs HDMI input ports (8x) for sources.
9. AC connector Standard IEC connector accepting 100-240 V, 50 or 60 Hz.
10. HDMI outputs HDMI output connectors for sink devices.

Connecting Steps

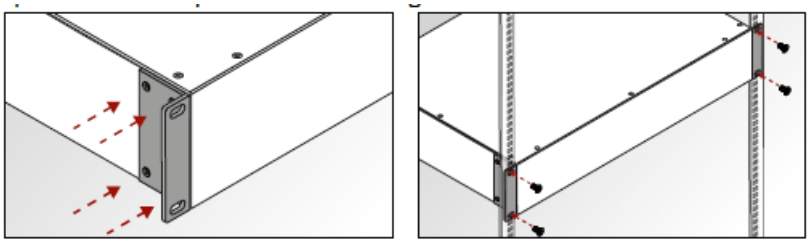


- HDMI Connect an HDMI source (e.g. PC) to the HDMI input port.
- HDMI Connect an HDMI sink (e.g projector) to the HDMI output port.
- Audio Optionally for analog output ports: connect an audio device (e.g. audio amplifier) to the analog audio output port by an audio cable.
- Audio Optionally for audio output ports: connect the audio source (e.g. media player) to the audio input port by an audio cable. RS-232 Optionally connect a serial device (e.g projector) to the 3-pole Phoenix connector to transmit RS-232 commands.
- IR Optionally connect the infra emitter to the infra output port (2-pole Phoenix or 1/8” Stereo Jack connector) to transmit infra signal.
- 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.
- USB Optionally connect the USB cable in order to control the matrix switcher via the Lightware Device Controller software.

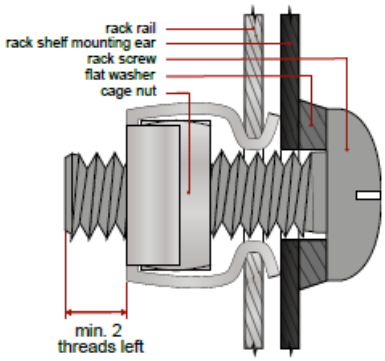
- Power Connect the power cord to the AC power socket to the matrix unit.
- Powering the device is recommended as the final step.
- The infrared emitter and detector units are optionally available accessories.

Mounting Options – Standard Rack Installation

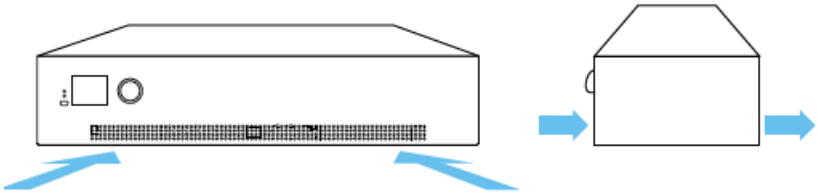
Two rack ears are supplied with the product, which are fixed on left and right side as shown in the picture. The default position allows mounting the device as a standard rack unit installation.



Z 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



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.

Software Control – Using Lightware Device Controller (LDC)

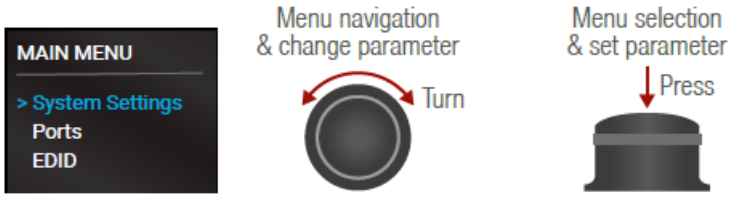
The device can be controlled from a computer using the Lightware Device Controller software. The application is available at www.lightware.com, install it on a Windows PC or a Mac OS X and connect to the device via LAN, USB, or RS-232.

Firmware Upgrade

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

Front Panel Operations – LCD Menu and Navigation

The front panel has a color LCD showing the most important settings and parameters. The jog dial control knob can be used to navigate between the menu items or change the value of a parameter. The knob can be pressed to enter a menu or edit/set a parameter.



Front Panel Operations – AUTOTAKE Mode

Press and hold the Take button for two seconds to change between Take and Autotake modes. When the Take button continuously illuminates green, Autotake mode is selected.

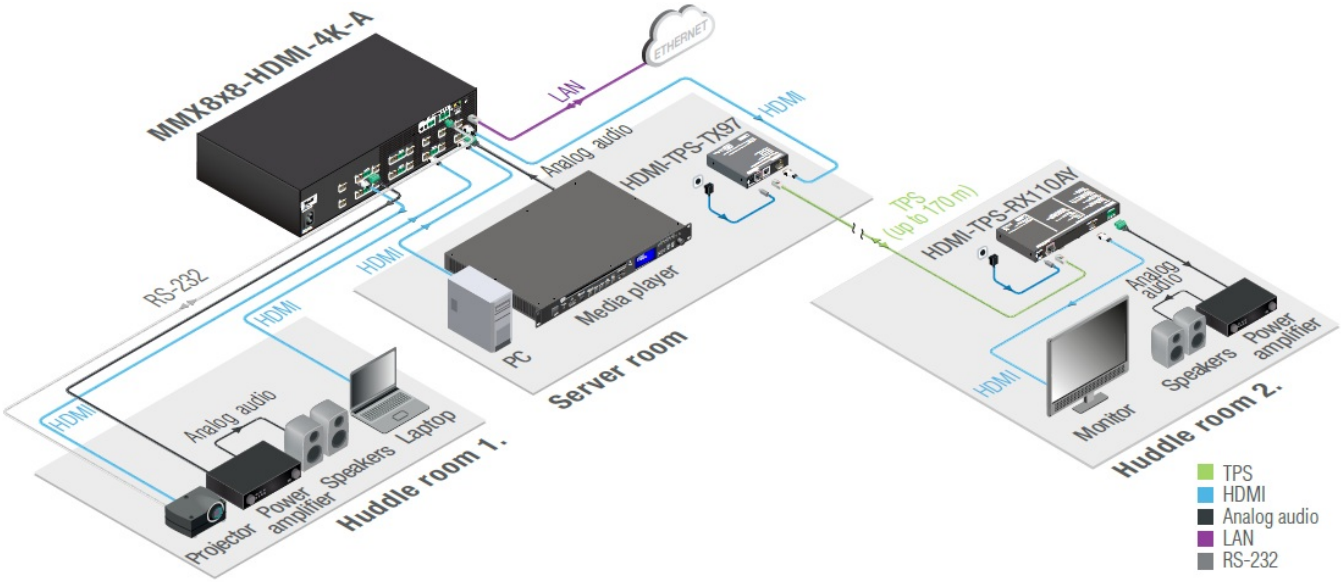
Autotake mode is useful when immediate actions must be take or fast switching is needed between sources on a particular destination. In this mode switching occurs immediately upon pressing one of the input selector buttons.

Switching Operations	1. Press and release the desired **destination button**. The pressed destination button and the actually connected source button light up green. If no source is connected (the output is muted) no source button will light up.	
	2. Press and release the desired **source button**. The switch action will be executed immediately. Switching between sources to the selected destination can be done directly.	
Locking an Output	1. Press and release the required **destination button**. Now the selected destination button and the currently configured source button light up (view mode).	
	2. Press and release the **Output Lock** button; it lights up in red, and lock function is activated at once. No source can be changed at the locked destination.	

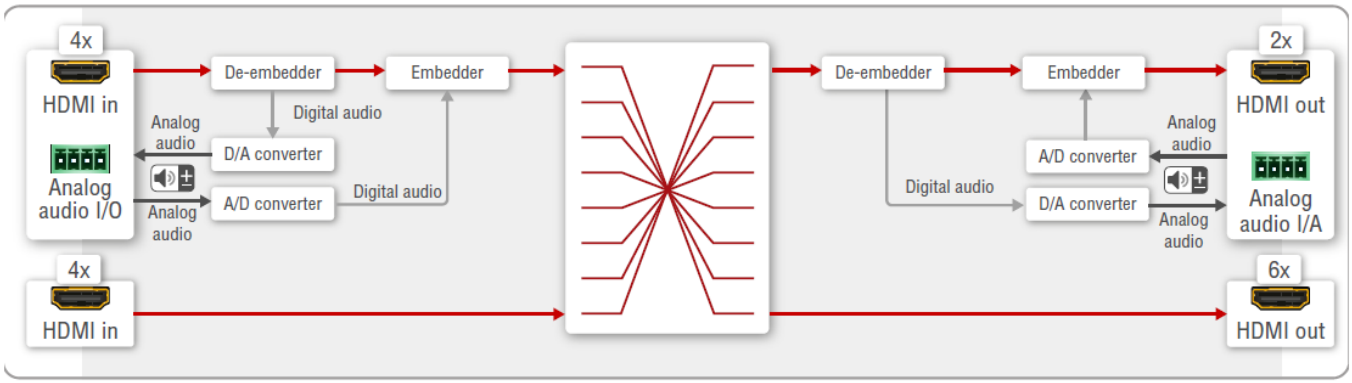
Front Panel Operations – TAKE Mode
Take mode allows the user to connect or disconnect multiple outputs to an input at once. This mode is useful when multiple switching is necessary. The commands are only realized when the Take button is pressed.

Switching Operations	1. First press and release the desired **source button**. The pressed source button and all destination buttons which are currently connected to the source light up.	
	2. Press and release the desired **destination buttons** which have to be (dis)connected from/to the selected source. The preselected destination buttons will blink.	
	3. Press and release the **Take** button. The selected input is switched to the selected output(s).	
Locking an Output	1. Press and release the **Output Lock** button. It starts to blink and all the buttons of any locked destinations light up (view state).	
	2. Press and release a **destination button.** It starts to blink (more destinations can be selected sequentially).	
	3. Press and release the **Take** button. The selected destinations are now locked.	

Typical Application



Port Diagram



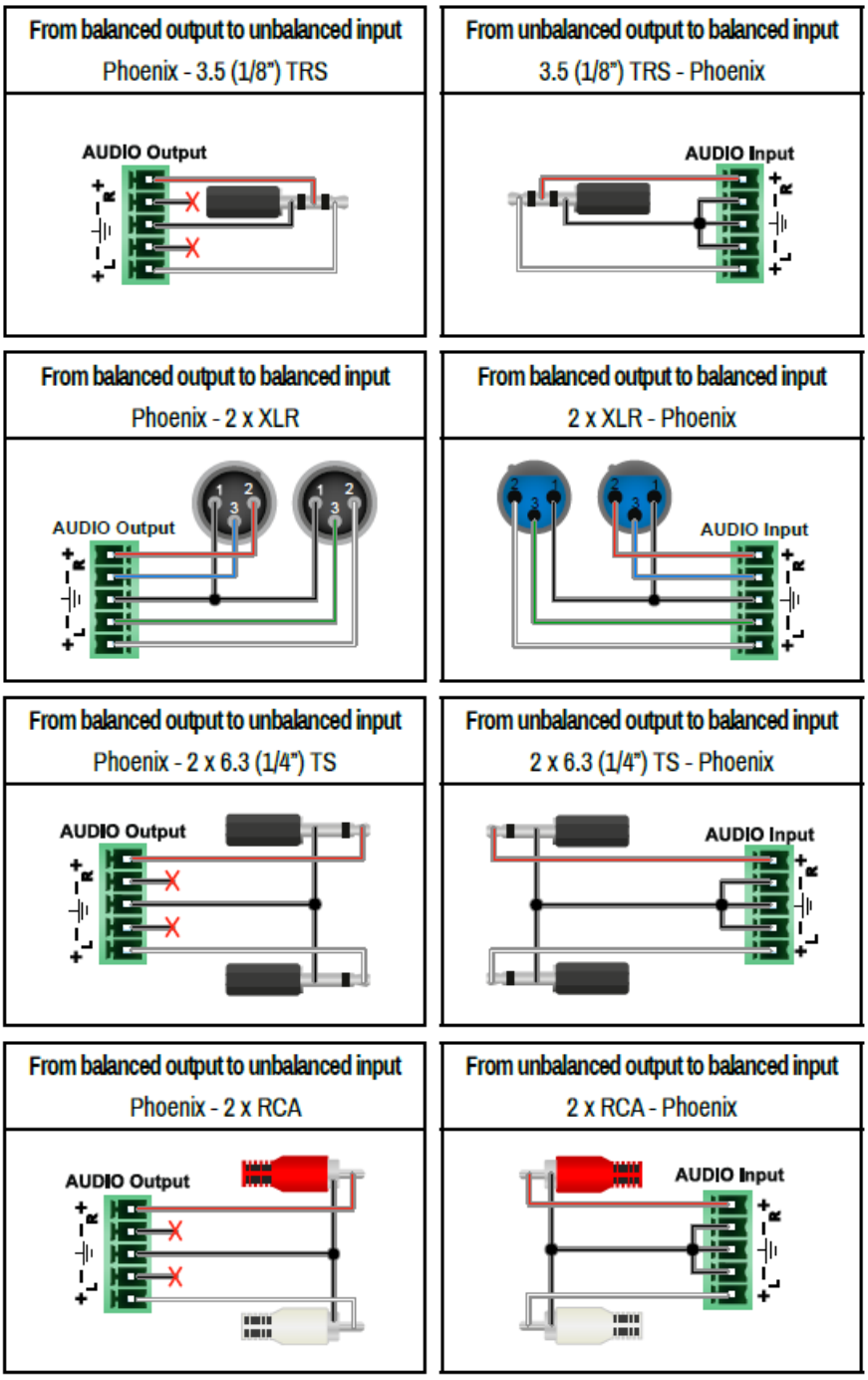
Factory Default Settings

IP address	192.168.0.100
LW3 / LW2 port number	6107 / 10001
Video I/O Ports	Unmuted, unlocked
Crosspoint setting	Input 1 on all outputs
HDCP enable (input)	Enable
HDCP mode (output)	Auto
Signal Type	Auto
Power 5V mode	Auto
Emulated EDID	F47 – (Universal HDMI, all audio)
Audio mode	HDMI audio passthrough
Analog audio input levels	Volume (dB): 0.00; Balance: 0; Gain (dB): 0.00
Analog audio output levels	Volume (dB): 0.00; Balance: 0
RS-232 port setting	57600 BAUD, 8, N, 1, Command injection mode
Control protocol (RS-232)	LW2
RS-232 port nr.	8001, 8002, 8003, 8004
IR operation mode	Command injection mode
IR port nr.	9001, 9002, 9003, 9004

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

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

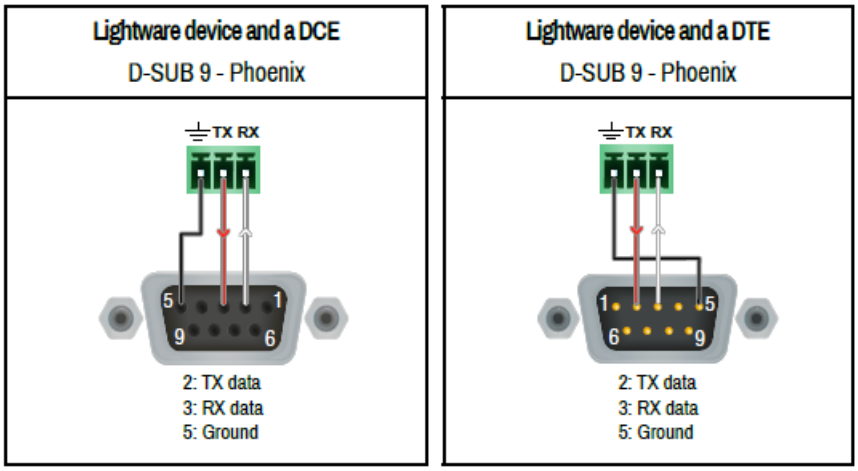
Audio Cable Wiring Guide



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

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:



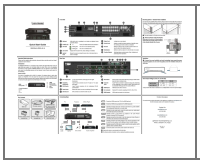
For more information about the cable wiring, see the user's manual of the device or Cable Wiring Guide on our website www.lightware.com/support/guides-and-white-papers.

Further Information

The product brief and further information of this appliance is available on www.lightware.com. See the Downloads section on the website of the product.

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.: 1.3
19200215

Documents / Resources

	[LIGHTWARE MMX8x8-HDMI-4K-A Matrix Switcher](#) [pdf] User Guide MMX8x8-HDMI-4K-A Matrix Switcher, MMX8x8-HDMI-4K-A, Matrix Switcher

References

- Lightware Visual Engineering
- Guides and White Papers