# LIGHTWARE MX4x4DVI 4×4 DVI Matrix Switcher User Guide



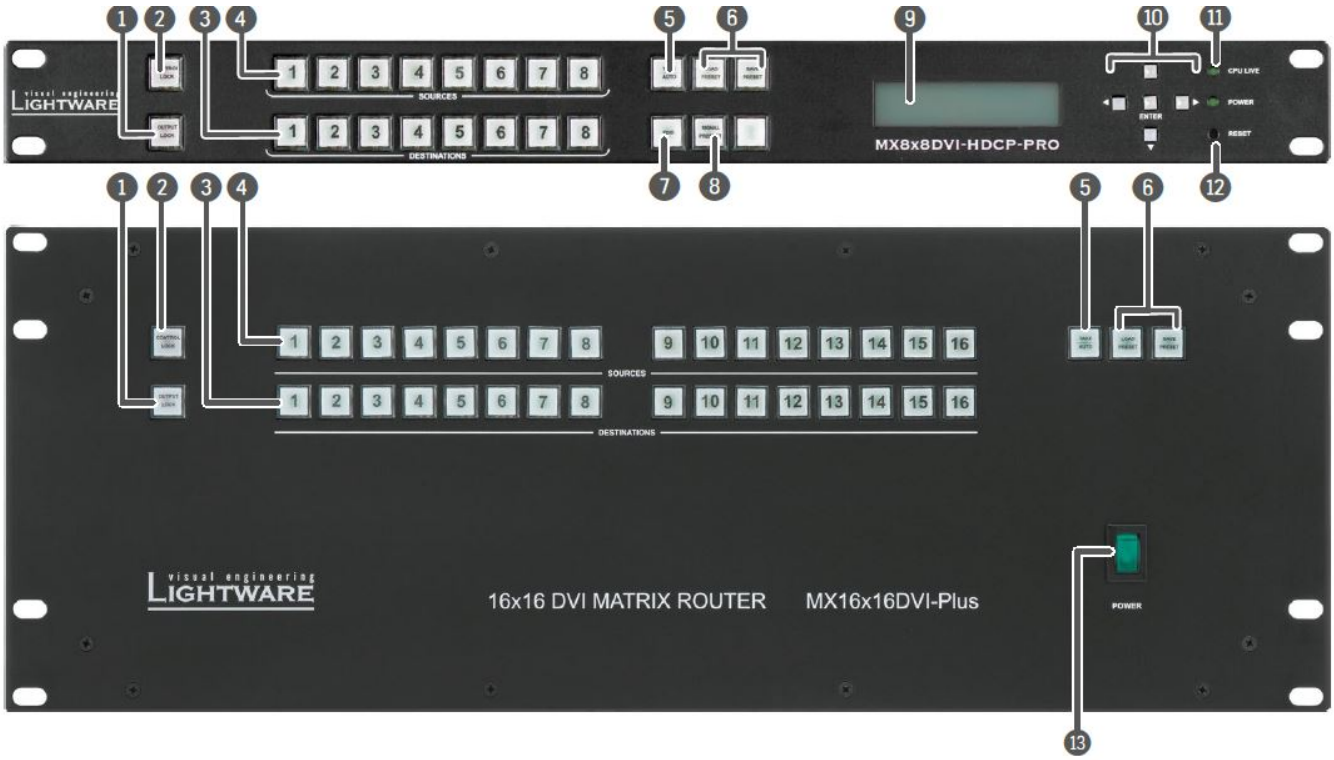
Contents

# LIGHTWARE MX4x4DVI 4×4 DVI Matrix Switcher

## Introduction

Lightware's 4×4 to 16×16 I/O sized standalone matrix switchers are perfect for dynamically changing environments. The switchers handle DVI-D, HDMI signals with HDCP support and can be controlled either by RS-232 port, TCP/IP LAN connection, or by the built-in website – depending on the capabilities of the appliance. Crosspoint switching is done instantly without frame delay or frame latency.

### Front View

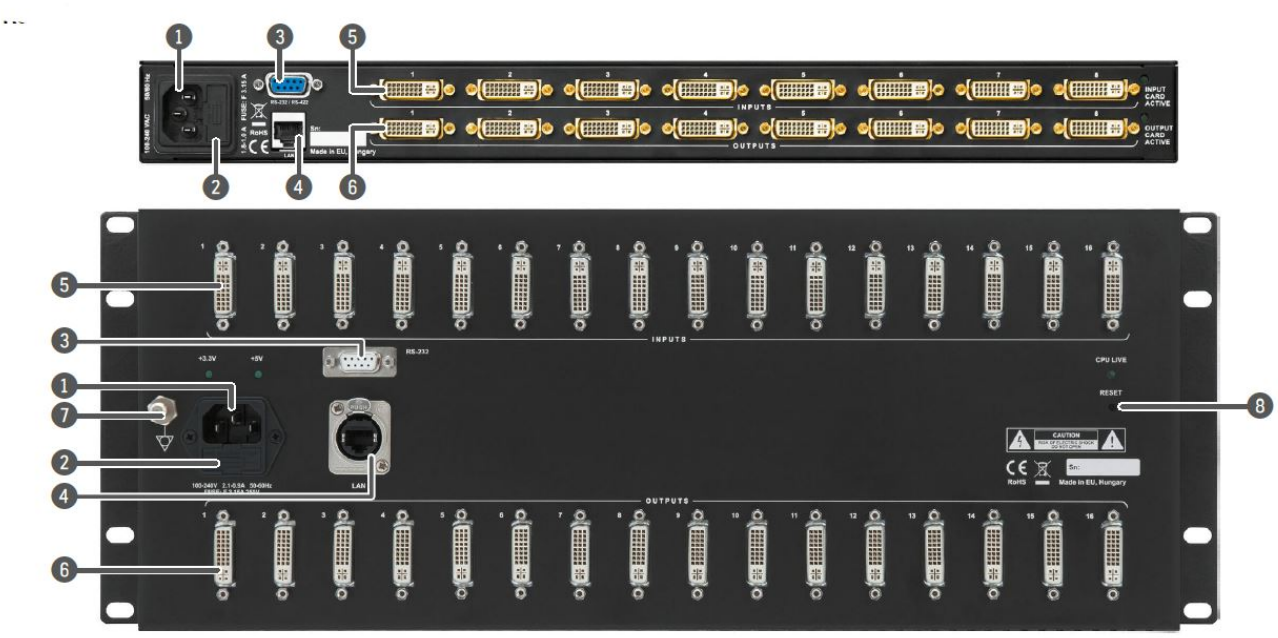



### Front View Legend

1. Output lock Locks and protects one or more outputs.
2. Control lock Disables or enables front panel operations. Red light means the switching and function buttons are disabled.
3. Destinations Buttons to select an output or to see the state of an output.
4. Sources Buttons to select an input, to select a preset number, or to view the state of the selected input port.

5. Take button Switching between Take and Autotake working modes; keep the button pressed for 3 seconds to toggle the modes.
6. Preset buttons Performing preset operations Load and Save.
7. EDID button The EDID mode can be deactivated by the button. The illuminated button shows that the mode is active.
8. Signal present This Signal present mode can be deactivated by the button. The illuminated button shows that the mode is active.
9. Display 2×16 character LCD display for menu operations.
10. Menu navigation Up, down, left, right and enter buttons.
11. Status LEDs Power LED indicates that the unit is powered on. CPU LIVE blinking LED indicates normal operation.
12. Reset button Reboots the matrix; the same as switching it off and on again. Only on MX8x8HDMI-Pro and -DVI-HDCP-Pro switchers.
13. On/Off switch The matrix can be switched on/off by the switch.

**Rear View**

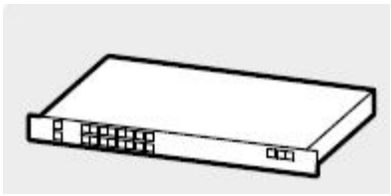



**Rear View Legend**

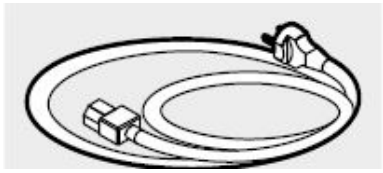
1. AC connector Standard IEC connector accepting 100-240 V, 50 or 60 Hz.
2. Fuse Replace with F3.15A type only when necessary. In the case of DVI-DL series use an F1A fuse.
3. RS-232 port 9-pole D-sub female connector for a standard RS-232 port.
4. LAN Standard RJ45 connector. This port can be connected to a computer directly or to LAN via switch/router.
5. Input ports Standard DVI-I or HDMI connectors for DVI-D or HDMI input signals.
6. Output ports Standard DVI-D or HDMI connectors for DVI-D or HDMI signals.
7. Equipotential connector
    1. Plug connector for potential equalization.
    2. Only in case of Plus and Slim matrix switchers.
8. Reset button

1. Reboots the matrix; the same as switching it off and on again.
2. Only in the case of Slim and Plus matrix switchers.

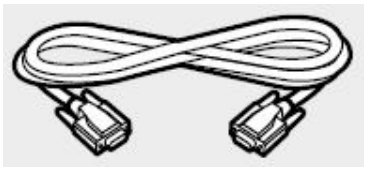
### Box Contents



MX standalone matrix

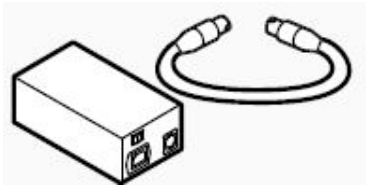


IEC power cable



RS-232 straight cable


Safety and warranty info, Quick Start Guide



Power supply unit, power cable with Neutrik plugs.

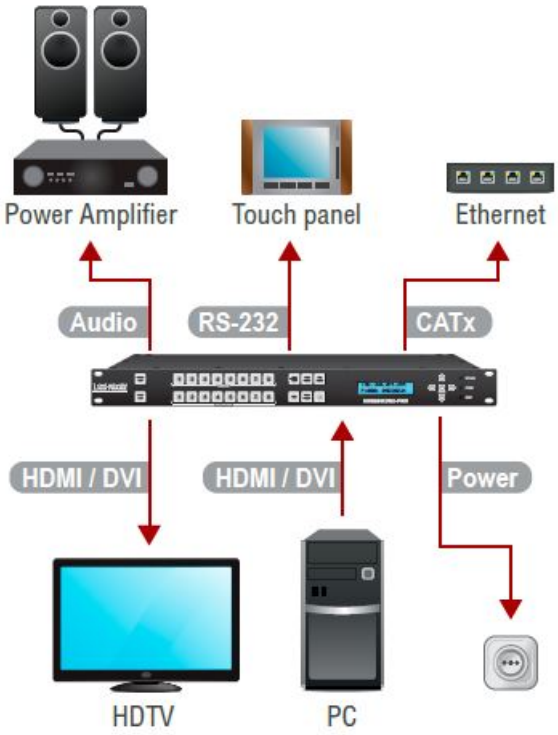
### Mounting with Front Rack Ears

The front rack ears allow mounting the device as a standard rack unit installation.

**Ventilation**

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

## Connecting Steps (MX8x8-HDMI-Pro)

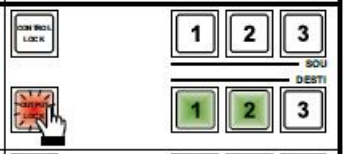
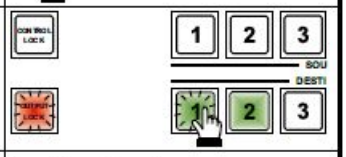



## Powering On

Connect the power cord to the device's IEC C14 standard power input connector. The router is immediately powered on when the power cord is connected to the AC source on Slim matrix switchers the power switch has to be in position ON . If the self-test is finished the last configuration is reloaded and the appliance is ready to use. After switching ON the router reloads the latest settings which had been used before it was turned off. The router has an internal emergency memory that stores all current settings and tie configurations. This memory is independent from presets and invisible for the user. This built-in feature helps the system to be ready immediately in the case of a power failure or accidental power down.

## Front Panel Controls in TAKE Mode

Take mode allows the user to connect or disconnect multiple outputs to an input at once. This mode is useful when time delay is not allowed between multiple switching. 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 to/from 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). |  |
| Lock 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. |  |

**Front Panel Controls in AUTOTAKE Mode**

Autotake mode is useful when immediate actions must be taken 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. |  |
| Lock 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. |  |

**CONTROL LOCK**

If the button illuminates in red the switching- and function buttons are disabled. Press the Control lock button to toggle the state. When the front panel buttons are locked, remote control RS-232, Ethernet is still available.

#### LCD Menu Operation Modes

Valid for the MX8x8DVI-HDCP-Pro, and MX8x8HDMI-Pro switchers.

#### Normal Mode

Most settings can be done in this mode; this is the default mode after powering on.

#### EDID Mode

Use this mode to set up the emulated EDID on the inputs, learn EDID from the outputs or to view the EDID memory. This mode is activated when the EDID button is illuminated. You can enter or exit this mode by pressing the EDID button.

#### Signal Present Mode

This mode is for checking the presence of the display devices and incoming signals. It is activated when the SIGNAL PRESENT button.

## Remote Operation

The matrix can be controlled through various interfaces remotely. The feature allows using functions which are not accessible via the front panel. Also, this helps system integrators and
operators to control multiple devices in a complicated system through a single user interface.

#### Control Interfaces

The user can connect to the matrix through Ethernet (TCP/IP), or Serial port (RS-232). After establishing the connection, generally, there is no difference between the connection types.

| User interface | Ethernet port | RS-232 port |
|---|---|---|
| Lightware Device Controller | YES | YES |
| Built-in website | YES | NO |
| Third party control system | YES | YES |

Ethernet port can be connected to a LAN hub, switch, or router with a UTP patch cable. If connecting to a computer directly, a cross-link UTP cable has to be used!

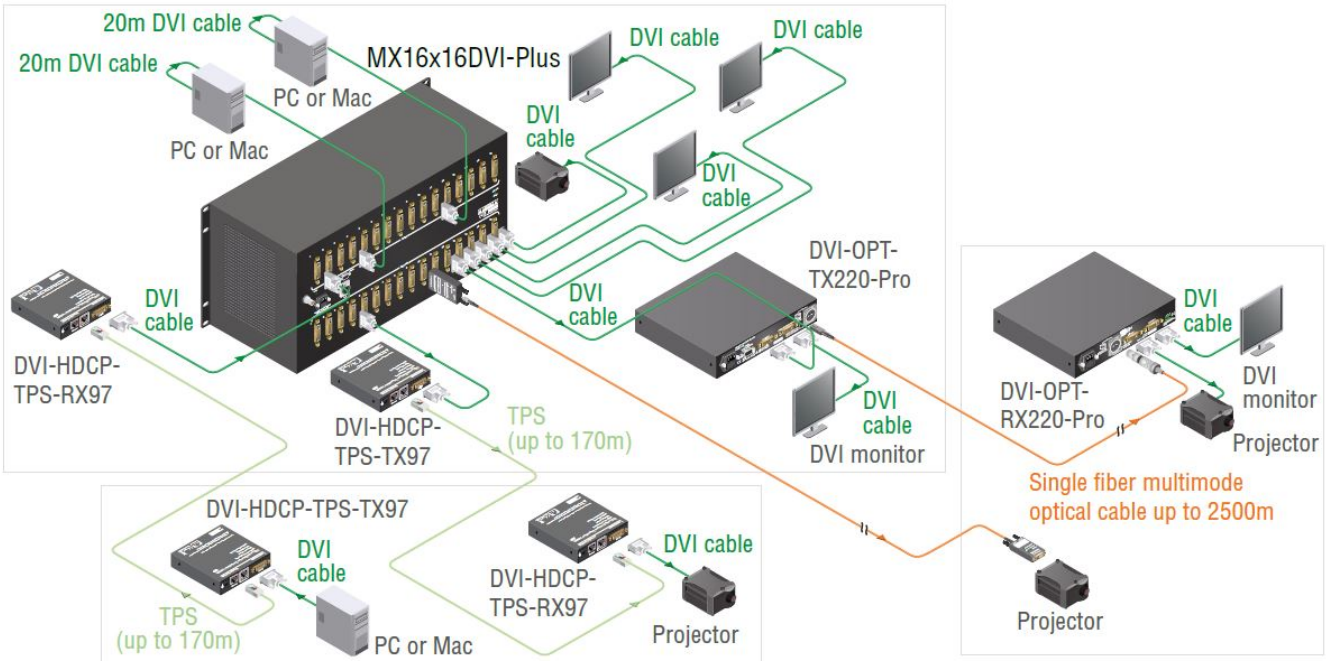
#### Multiple Simultaneous Connections

Ethernet and Serial connections can be used at the same time. However, only one connection is allowed for Lightware Device Controller (LDC) via the Ethernet port.

#### Control Protocols

The matrix can be controlled with multiple control protocols. Lightware routers have a special protocol, but to inter-operate with third-party devices, a secondary protocol is also provided.

## Typical Application MX16x16DVI Plus




## 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. The following ways are available to connect to the device directly.

#### Local RS-232 Port

Connect a serial cable between the matrix and the computer and start the LDC. Press the Query button of the connected COM port to list the device, select it then press Connect. The
factory default RS-232 port settings are the followings: 9600 Baud, 8 data bits, No parity, 1 stop bit.

#### LAN Port

Connect the supplied LAN cross-link cable between the matrix and the computer for direct connection or connect to an Ethernet by a patch cable.

## Web Control Using the Built in Website

The matrix switchers have a built-in web page, which can be accessed over TCP/IP protocol and offers you full control over all settings even if you don't have the opportunity to install new
programs. The router's built-in website is compatible with most widely spread browsers and requires no additional software components. To access the web page just run your preferred
web browser and type the IP address of the router as a URL. The computer and the router have to be in the same subnet. The only way to find out the router's IP address (if it is not known) is to search for devices with the Lightware Device Controller software. If this is not possible for some reason, the IP address can be reset to factory default (192.168.254.254) with the front panel buttons. Only one opened web page is allowed simultaneously. Other TCP/IP connections are prohibited while the web page is opened.

**Establishing the Connection**

If the computer has multiple Ethernet connections (e.g. Wi-Fi and LAN connections are used simultaneously) you will have to know the IP address for the one that is used for
controlling the matrix.

- Connect the matrix switcher and the computer via Ethernet by a LAN patch cable to a Hub, Switch or Router, or Directly by a LAN cross-link cable.
- Change to the desired IP settings if it is needed.
- Type the IP address to the address bar of the web browser. After a few seconds, the Control menu appears. The current state of the crosspoint is displayed.

## Network Settings  Resetting the IP Address with Front Panel Buttons

The factory default IP address or DHCP mode can be set by the front panel buttons quickly. To reset the IP configuration perform the followings

1. Switch the router to Take mode if used previously in Autotake mode by pressing Take button for 3 seconds light will go off.
2. Press and release Control Lock button it lights in up red continuously.
3. Press and keep pressed the Output Lock button the current protocol is indicated.
4. Press and release the
    1. Load Preset button to set the factory default static IP settings
    2. IP address: 192.168.254.254
    3. Port number: 10001
    4. Subnet mask: 255.255.0.0
    5. Gateway: 0.0.0.0
5. Save Preset button to set DHCP enabled dynamic IP address
    1. IP address: Acquired with DHCP
    2. Port number: unchanged
    3. Subnet mask: Get from DHCP server
    4. Gateway: Get from DHCP server
6. Setting a dynamic IP address by the front panel buttons is available only in case of the following products
    1. MX8x8HDMI-Pro, MX8x8DVI-HDCP-Pro
    2. MX Slim and MX
    3. Plus matrix switchers.
7. A light sequence will occur to confirm the command.
8. Take/Auto, Load Preset and Save Preset buttons will light up one after the other.
9. Reinsert the LAN cable to the Ethernet port if it was unplugged.
10. Wait about 20 seconds before connecting the router via Ethernet
11. The factory default IP port no. is 10001.

## Documents / Resources

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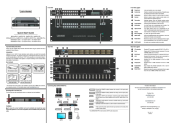
|---|---|
|  | **LIGHTWARE MX4x4DVI 4x4 DVI Matrix Switcher** [pdf] User Guide<br>MX4x4DVI, 4x4DVI-DL, 6x6DVI-DL, 8x8DVI-DL, MX8x4DVI-Pro, 8x8DVI-Pro, 8x8DVI-HDCP-Pro, 8x8HDMI-Pro, MX9x9DVI-Slim, 12x12DVI-Slim, 16x16DVI-Slim, MX9x9DVI-Plus, 12x12DVI-Plus, 16x16DVI-Plus, 4x4 DVI Matrix Switcher, MX4x4DVI 4x4 DVI Matrix Switcher |

## References

- Lightware Visual Engineering