LIGHTWARE
visual engineering

Quick Start Guide

UMX4x4-Pro2

Front view

❶	**Control lock**	Disables or enables front panel operations. Red light means the switching and function buttons are disabled.
❷	**Sources**	Buttons to select an input, to select a preset number or to view the state of the selected input port.
❸	**Layer selection**	Audio and video signals are placed on different layers so they can be switched separately or at the same time. Layer select buttons choose the desired signal(s) to be switched.
❹	**Take button**	Switching between Take and Autotake working modes; keep the button pressed for 3 seconds to toggle the modes.
❺	**Preset buttons**	Performing preset operations (Load and Save).
❻	**Display**	2x16 character LCD display for menu operations.
❼	**Menu navigation**	Up, down, left, right and enter buttons.
❽	**Status LEDs**	Power LED indicates that the unit is powered on and CPU LIVE blinking LED indicates normal operation.
❾	**Output lock**	Lock and protect one or more outputs.
❿	**Destinations**	Buttons to select an output or to see the state of an output.
⓫	**EDID button**	The EDID mode can be (de)activated by the button. Use this mode to set up the emulated EDID on the inputs, learn EDID form the outputs, or to view the EDID memory. The illuminated button shows that the mode is active.
⓬	**Signal present**	This Signal present mode can be (de)activaed by the button. Use this mode to check the presence of the display devices and incoming signals. The illuminated button shows that the mode is active.

Network settings on the front panel

Setting a dynamic IP address

1. Navigate to the **IP settings** item and press the **enter** button.
2. Use the **up** and **down** buttons to toggle between the options; set to **Enabled**.
3. Press the **enter** button to save changes.
4. Navigate to the **Save & Exit** item with the **left** and **right** buttons, then press the **enter** button.

```
IP ADDR DHCP
```

Setting a static IP address

1. Disable the **DHCP** setting as described above.
2. Use the **left** and **right** buttons to select the octet; change the value by the **up** and **down** buttons.
3. To apply the settings press the **enter** button.
4. Navigate to the **Save & Exit** item with the **left** and **right** buttons, then press the **enter** button.

```
IP ADDR fixIP
192.168.000.105
```

ⓘ *New IP settings can be applied while an active connection is alive on the Ethernet port but in this case, the active connection will be closed automatically. Establish the connection again to reconnect the Ethernet port.*
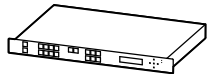

Important safety instructions

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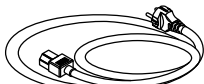
Introduction

Lightware's UMX4x4-Pro2, the all-round universal matrix switcher with four inputs and four outputs, is the perfect solution for ever-changing environments such as small board rooms and classrooms. UMX (Universal MatriX) technology was developed by Lightware to support various analog and digital audio visual formats. VGA, YUV, digital DVI, HDMI with HDCP, stereo analog, and S/PDIF digital audio signals are all supported.
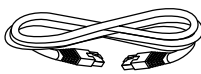
Box contents

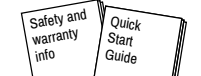UMX4x4-Pro2 matrix switcher

IEC power cable

LAN cross-link cable, CAT5e type, 3m length

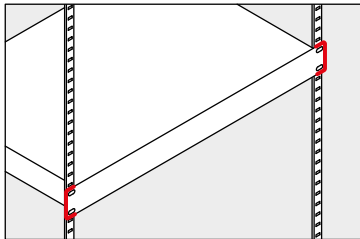RS-232 straight serial cable

VGA to DVI-D adapter cable (4x)

Safety and warranty info, Quick Start Guide

Rear view

❶	**AC connector**	Standard IEC connector accepting 100-240 V, 50 or 60 Hz.
❷	**Fuse**	Replace with F 3.15AL type only when necessary.
❸	**Inputs**	UMX4x4-Pro2 has 4 input ports. Each port has a video, an analog stereo audio, and a digital audio input.
❹	**DVI-I input**	Standard 29 pole DVI-I connectors for input connections accepting analog and digital signals.
❺	**S/PDIF input**	RCA jack connector for S/PDIF digital audio signal.
❻	**Analog audio input**	Double RCA jack connector for unbalanced, analog stereo audio input signal (left and right channels).
❼	**Outputs**	UMX4x4-Pro2 has 4 output ports. Each port has a video, an unbalanced analog stereo audio, and a digital audio output.
❽	**DVI-D output**	Standard 29 pole DVI connectors for outputs - only digital pins are connected.
❾	**S/PDIF output**	RCA jack connector for S/PDIF digital audio signal. Embedded audio is still present on the DVI-D outputs.
❿	**Analog audio output**	Double RCA jack connector for unbalanced, analog stereo audio output signal (left and right channels).
⓫	**Reset button**	Reboots the matrix (the same as disconnecting from the power source and reconnecting again).
⓬	**Ethernet port**	Standard RJ45 connector. This port can be connected to a computer directly or to LAN via switch or router.
⓭	**RS-232 port**	9 pole D-sub female connector for standard RS-232 port.

CONTROL LOCK

If the button illuminates in red the switching- and function buttons are disabled. Press and hold the **Control lock** button for three seconds to toggle the state.

ⓘ *When the front panel buttons are locked, remote control (RS-232, USB, Ethernet) is still available.*

LCD menu - navigation

Front panel LCD has 2 lines and 16 characters in each line. The name of the menu item is always displayed in the first line.

▲ (up)	toggle between menu items
▼ (down)	toggle between menu items
◀ (left)	move the cursor or step back to previous menu
▶ (right)	move the cursor
ENTER	execute changes or enter a submenu

Signal layers

Video and audio signals are in different layers. It means video and audio signals can be switched separately or together. At least a layer is selected all the time. Therefore, the currently selected layer buttons are illuminated. To toggle between the layers' on and off state press the VIDEO and/or the AUDIO signal layer buttons. Before every operation which effects input and output signals (e.g. switching, muting, locking, etc.) the desired layer should be selected.

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.*
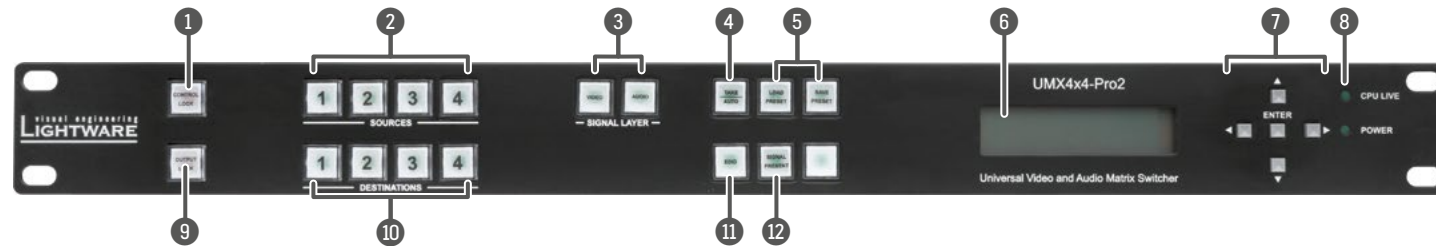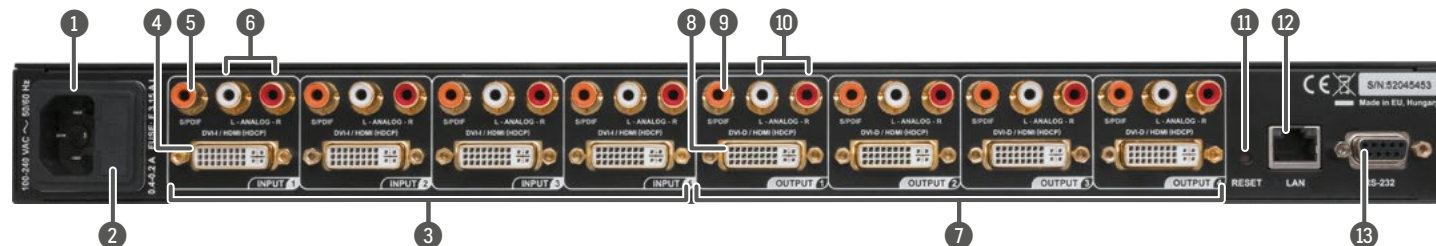
The cooling of the device is ensured by convection only.

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. The matrix beeps two times and **Booting...** appears on the LCD screen while the initial self-test is run. Last configuration is reloaded and the appliance is ready to use. In the case of a hardware failure, an error message is displayed.

ⓘ *After switching ON, the router reloads the latest settings that were 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 the 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 lights 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 **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 done 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.	

ⓘ *Pay attention to the states of the Signal layer buttons which determine the layers when executing switching or locking operations.*

Further information

The document is valid with the following firmware version: 2.0.3
The User's manual of this appliance is available on www.lightware.eu.
See the Downloads section on the website of the product.

Contact us

sales@lightware.eu
+36 1 255 3800

support@lightware.eu
+36 1 255 3810

Lightware Visual Engineering LLC.
Peterdy 15, Budapest H-1071, Hungary

Doc. ver.: 1.0
19200032

Remote operation

UMX4x4-Pro2 can be controlled through various interfaces remotely. That makes it possible to use functions that are not accessible via the front panel. Also, this helps system integrators and operators to control multiple devices in a big system through a single user interface.

Control interfaces

Users 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	✔	✔
Built-in website	✔	✘
Third party control system	✔	✔

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

Multiple simultaneous connections

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

Control protocols

Matrix routers can be controlled with multiple control protocols. Lightware routers have a special protocol, but to interoperate with third-party devices, a secondary protocol is also provided. For detailed information about control protocol, read the User's manual of the device.

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.eu (Support / Downloads section), install it on a Windows PC or a Mac OS X 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 and press **Connect**. See the **Factory default settings** table for the RS-232 port parameters. The Baud rate of the local RS-232 port can be changed via the front panel menu. Navigate to **RS232 baudrate..** menu. The following parameters can be set: Baud rate, Data Bits, Stop Bits and Parity.

LAN port

Connect the supplied LAN crosslink cable between the matrix and the computer for direct connection or connect to an Ethernet by a LAN patch cable. The default network parameters are listed in the table of the Factory default settings.

Web control – Using the built-in website

Lightware matrices 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.

❶ *The IP address of the device is displayed on the LCD. If you do not have the chance to access the front panel, 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 with the front panel buttons.*

❶ *Only one opened web page is allowed simultaneously.*

Establishing the connection

1. Connect the matrix switcher and the computer either via :
   - Ethernet, with LAN patch cable (to a Hub, Switch or Router), or
   - Ethernet, with LAN cross cable (directly to Computer).

❶ *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.*

2. Change to the desired IP settings if it is needed.
3. Check the IP address of the matrix on the front panel LCD.
4. 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 switch is displayed.

Port diagram
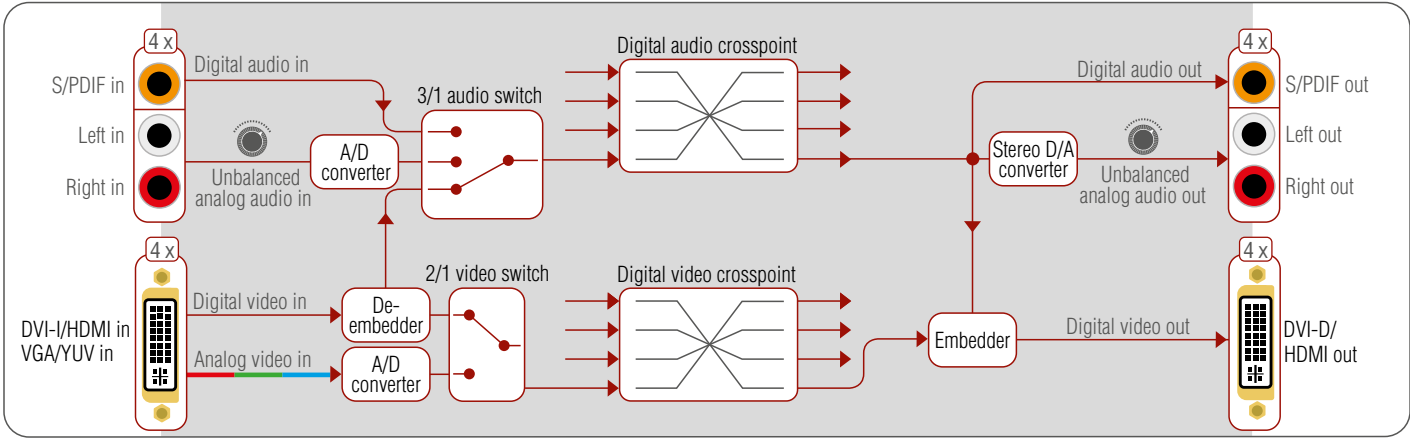
Typical application
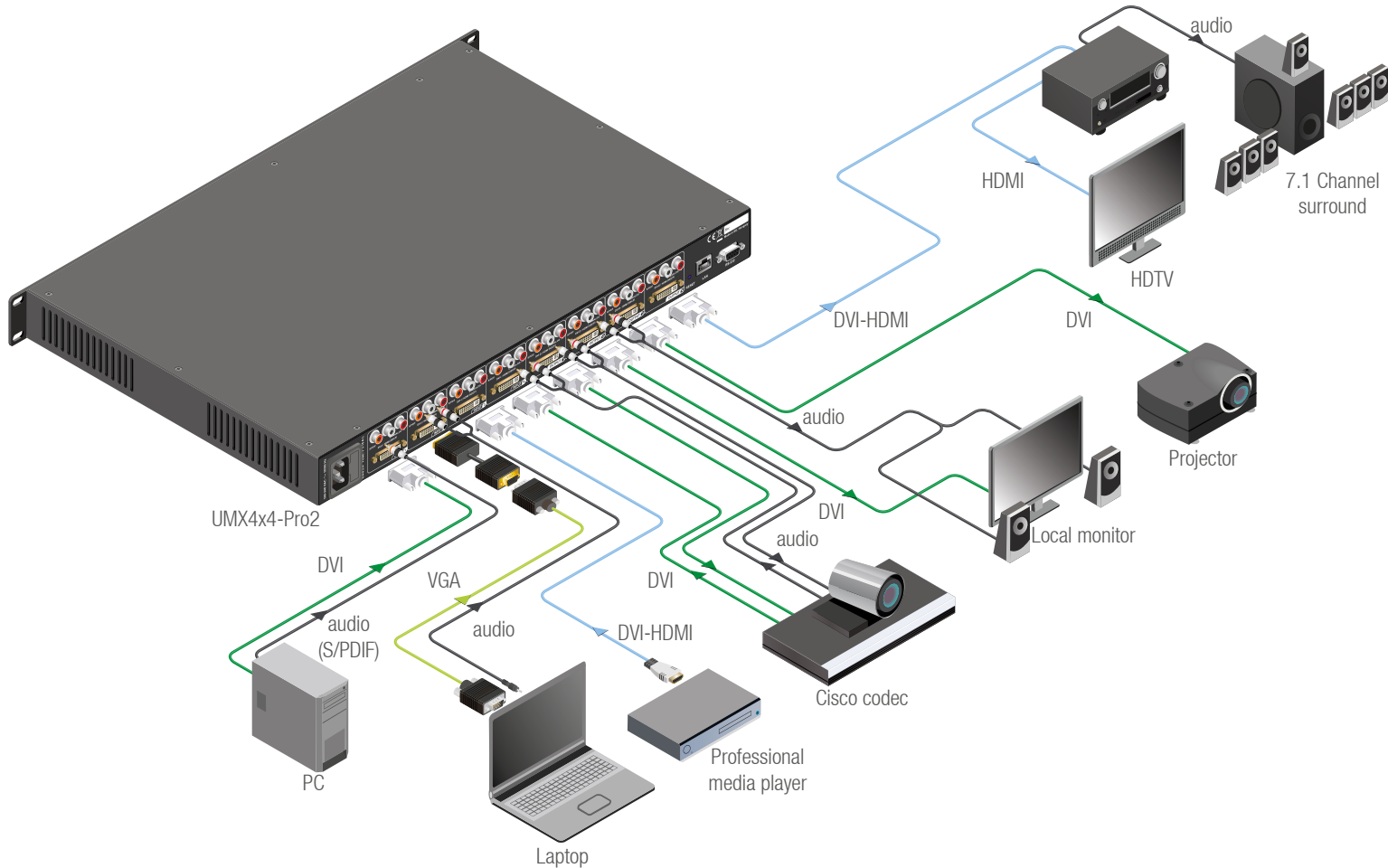
Factory default settings

1. Navigate to **Factory reset** item in the front panel LCD menu and press the **enter**.
2. Select the desired option: IP reset, IO card reset, EDID reset or HDCP key reset and press the **Enter** button.

❶ *The 'IO card reset' option requires to reboot the matrix to apply changes.*

IP address (static)	192.168.254.254
Subnet mask	255.255.0.0
Static gateway	0.0.0.0
DHCP	Disabled
TCP/IP port no.	10001
RS-232 port setting	57600 BAUD, 8, N, 1
Crosspoint setting	All video outputs connected to Input1
	All audio outputs connected to Input1
Emulated EDID	Static F49 at all inputs
Input port video source (analog/digital)	Auto
Input port audio source	Auto (HDMI / SPDIF / Analog)
Input port HDCP setting	Enabled
Analog audio gain (input port)	0 dB
Video output port mode	Auto (DVI or HDMI)
Output port HDCP setting	Auto
Analog audio volume (output port)	0 dBV

Specifications

Power
Power source .... 100-240 V AC; 50~60 Hz; (max. 0.4 - 0.2 A)
Power adaptor .... Internal
Power consumption .... max 40 W (137 BTU/hour)

Enclosure
Material .... 1 mm steel
Dimensions in mm .... 446 (482*)W x 302**D x 44.4H
Dimensions in inch .... 17.6 (19.0*)W x 11.9D x 1.75H
Net Weight .... 4600 g
* with rack mounting ears
** excluding connectors

Control
Serial port connector .... DE-9F (9 pole D-SUB female)
Baud rate .... 9600 - 115200 Baud, 8 bit, 1stop bit, no parity
Ethernet port connector .... RJ45 female connector

Video inputs
DVI connector .... 29 pole, DVI-I, digital and analog
Input cable equalization .... Yes, digital only, max 20 m
EDID emulation .... Yes, analog and digital

Video outputs
DVI connector .... 29 pole, DVI-I, digital only
+5V output current .... 500 mA continuous on each port

Analog audio ports
Signal type .... analog stereo, unbalanced
Connector type .... RCA (for left and right channel)

Digital video signal
Signal standard .... DVI and HDMI standard which supports embedded audio
Color format .... RGB, YCbCr 4:4:4, xvYCC digital video
Color space conversion .... Yes, always from any to RGB
Maximum data rates .... 6.75 Gbps (2.25 Gbps /TMDS channel)
Maximum pixel clock .... 225 MHz
Video delay .... 0 frame
Resolutions .... all between 640x480 and 2048x1080@60 Hz
HDTV resolutions 720p, 1080i, 1080p
Reclocking .... Pixel Accurate Reclocking
EDID Support .... Advanced EDID management (analog and digital)
EDID Emulation .... Yes, 75 factory preset, 50 user programmable
HDCP compliant .... Yes