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LIGHTWARE MMX4x2-HDMI-USB20-L Compact Size Matrix Switcher User Guide

v i s u a l   e n g i n e e r i n g
LIGHTWARE

Quick Start Guide
MMX4x2-HDMI-USB20-L

Contents

Important Safety Instructions

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

Introduction

MMX4x2-HDMI-USB20-L is an integrator-friendly, 4×2 matrix switcher for HDMI video and USB2.0 peripherals. It has four HDMI inputs and two independent HDMI outputs, as well as a USB 2.0 layer that provides the switching of four external USB peripherals (USB devices such as web camera, speakerphone, multitouch display, etc.) to four dependent host computers or laptops.

The device offers two individual RS-232 interfaces to allow independent control of two separate party devices, such as a Cisco Room Kit Mini or an external display. MMX4x2-HDMIUSB20-L and built-in Event Manager automation make the meeting room easy, intuitive, and hassle-free; it detects powered computers, turns on the screen and camera, and prepares for the next call. Based on the specific configuration it allows auto-switch for USB and video signals. In other cases, the USB may not follow the video, according to the application.

Front View
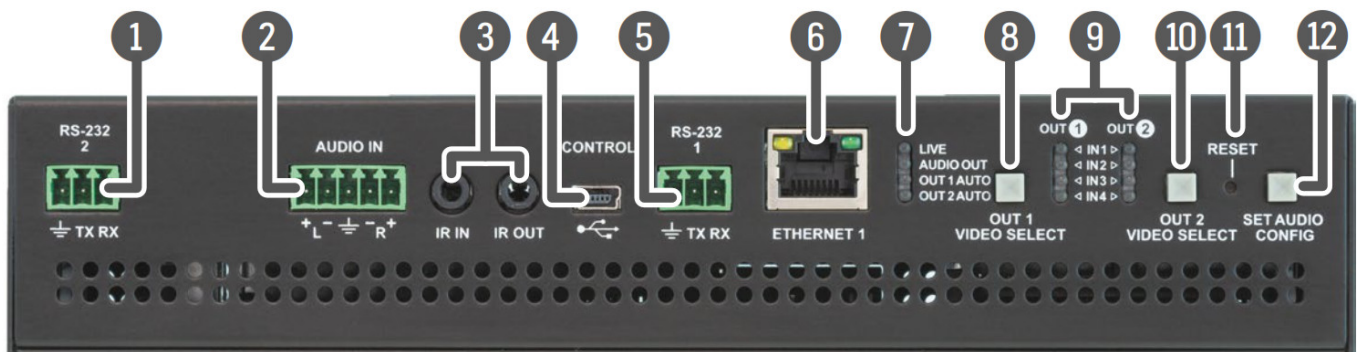
|	
1. RS-232 port (#2)	3-pin Phoenix-type serial port for third-party control systems, or third-party de
2. Audio input port	5-pole Phoenix connector for the balanced or unbalanced analog audio signa R IN)
3. IR input and IR output ports	and IR emitter (IR OUT) connection.
4. USB port	Mini B-type connector for local device control, e.g. by Lightware Device Contr
5. RS-232 port (#1)	3-pin Phoenix-type serial port for third-party control systems, or third-party de
6. Ethernet port	RJ45 connector for network-sharing, applying device control, or performing a
7. Status LEDs	See the details in the attached table.
8. Video select OUT1	Push the button to select a video source for Output 1.
9. Input select LEDs	The LEDs give feedback about the current crosspoint state.
10. Video select OUT2	Push the button to select a video source for Output 1.
11. Reset button	Push the hidden button with a thin tool to reboot the device.
12. Set the Audio Config button	Audio configuration selector and for special functions.

Front Panel LEDs

LIVE		
	off	The device is not powered.
	blinking (slow)	The device is powered and operational.
	blinking (fast)	The device is in bootload (firmware upgrade) mode.
	on	The device is powered but not operational.

AUDIO OUT		
○	off	Embedded audio is not present or muted.
☀	blinking	Embedded audio format is not supported for audio de-embedding.
●	on	Embedded audio is present and de-embedded.
OUT1 AUTO		
●	on	Autoselect is enabled on HDMI Output 1.
OUT2 AUTO		
●	on	Autoselect is enabled on HDMI Output 2.
Crosspoint Status LEDs (OUT1 and OUT2)		
○	on (green)	Input is selected, and the signal is present.
☀	blinking (green)	Input is selected, but the signal is not present.
☀	blinking (amber)	Audio configuration #1..4 is selected, see more details in the Front Panel Operation section.

Rear View
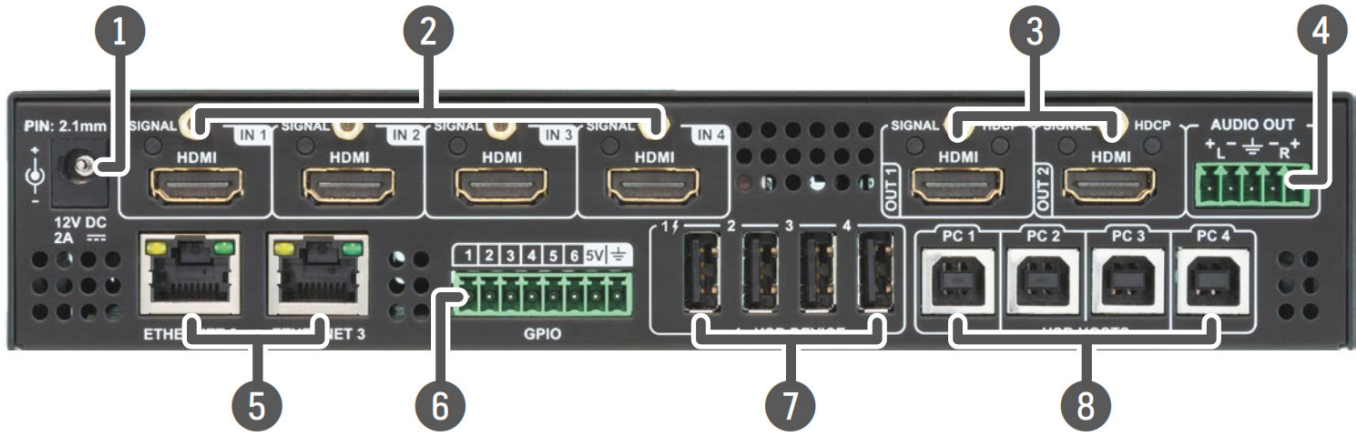
1. 12V DC input connector	12V DC input for local powering.
2. HDMI input ports	HDMI input ports for sources. Applied cable shall not be more than 20 m (22AW
3. HDMI output ports	HDMI output ports for sink devices.
4. Audio output port	5-pole Phoenix connector for the balanced or unbalanced analog audio signal.
5. Ethernet port	RJ45 connector for network-sharing, applying device control, or performing a firmware upgrade.
6. GPIO port	8-pole Phoenix connector with configurable general-purpose input/output pins.
7. USB-A ports	Downstream ports for connecting USB peripherals (e.g.camera, keyboard, mult
8. USB-B ports	Upstream ports for connecting USB host devices (e.g. computer).

Rear Panel LEDs

HDMI inputs (SIGNAL LED)		
○	off	The signal is not present on the input.
●	on	The signal is present on the input.
HDMI outputs (SIGNAL LED)		
○	off	The output signal is not present or muted.
●	on	The output signal is present.
HDMI outputs (HDCP LED)		
○	off	The output signal is not HDCP-encrypted.
☀	blinking	Non-HDCP capable device is connected, and the encrypted signal is replaced with a red screen.
●	on	The output signal is 1-IDCP-encrypted.

Locking DC plug

Twist 90°clockwise to lock.
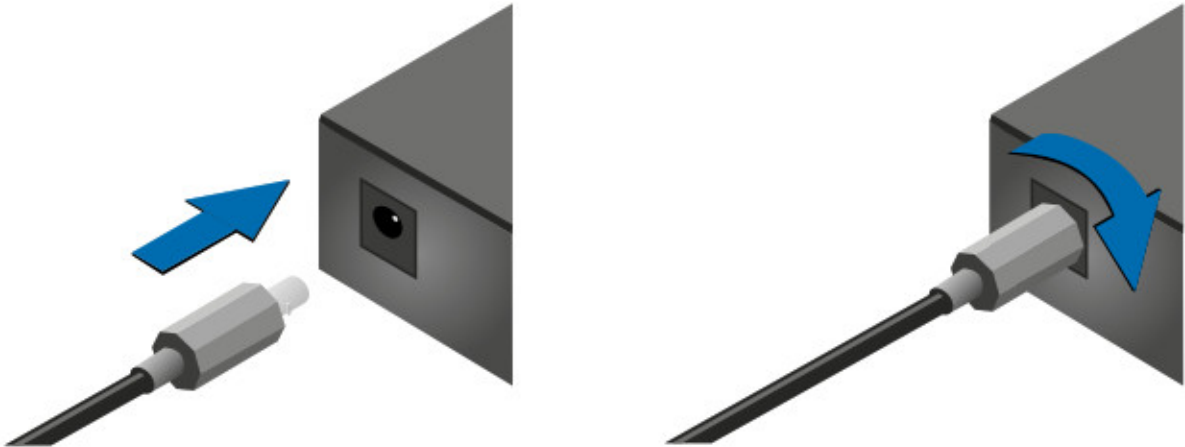
Box Contents
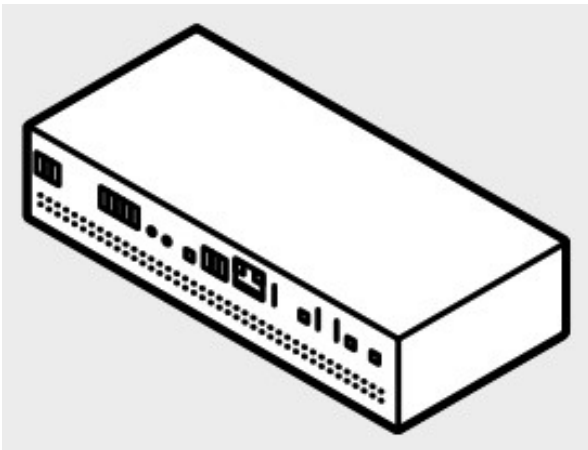
MMX4x2 Matrix Switcher

12V DC adaptor

Phoenix Combicon 3-pole connect

or (2x)

Phoenix Combic

Phoenix Combicon 8-pole connector (1x)

Rack ears for mo

Connecting Steps

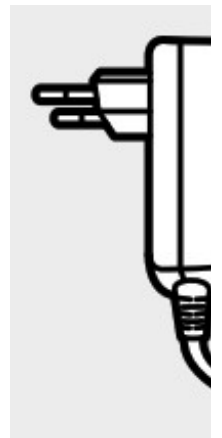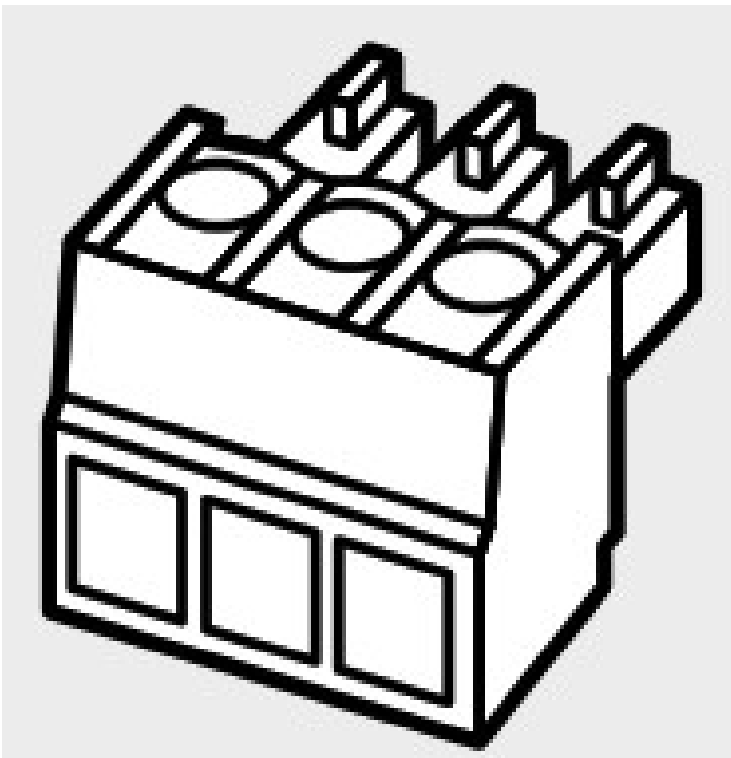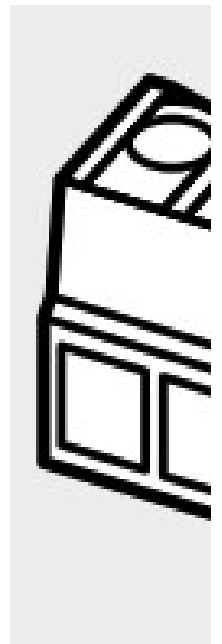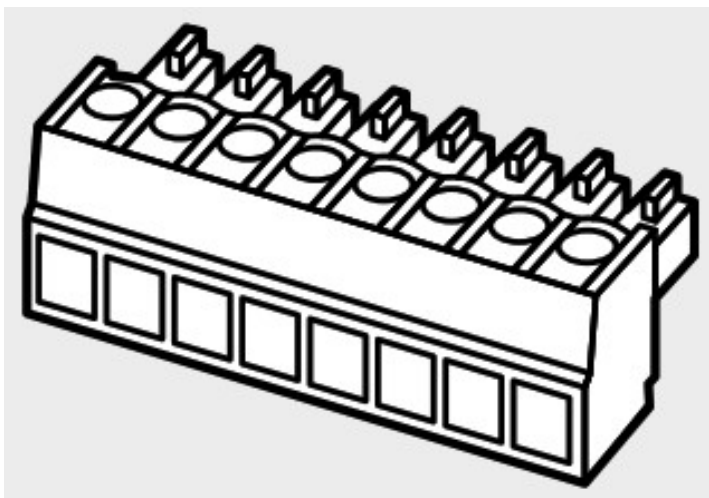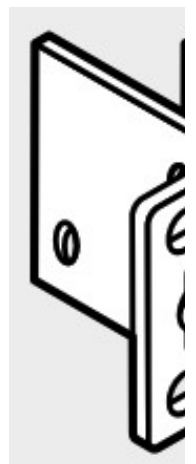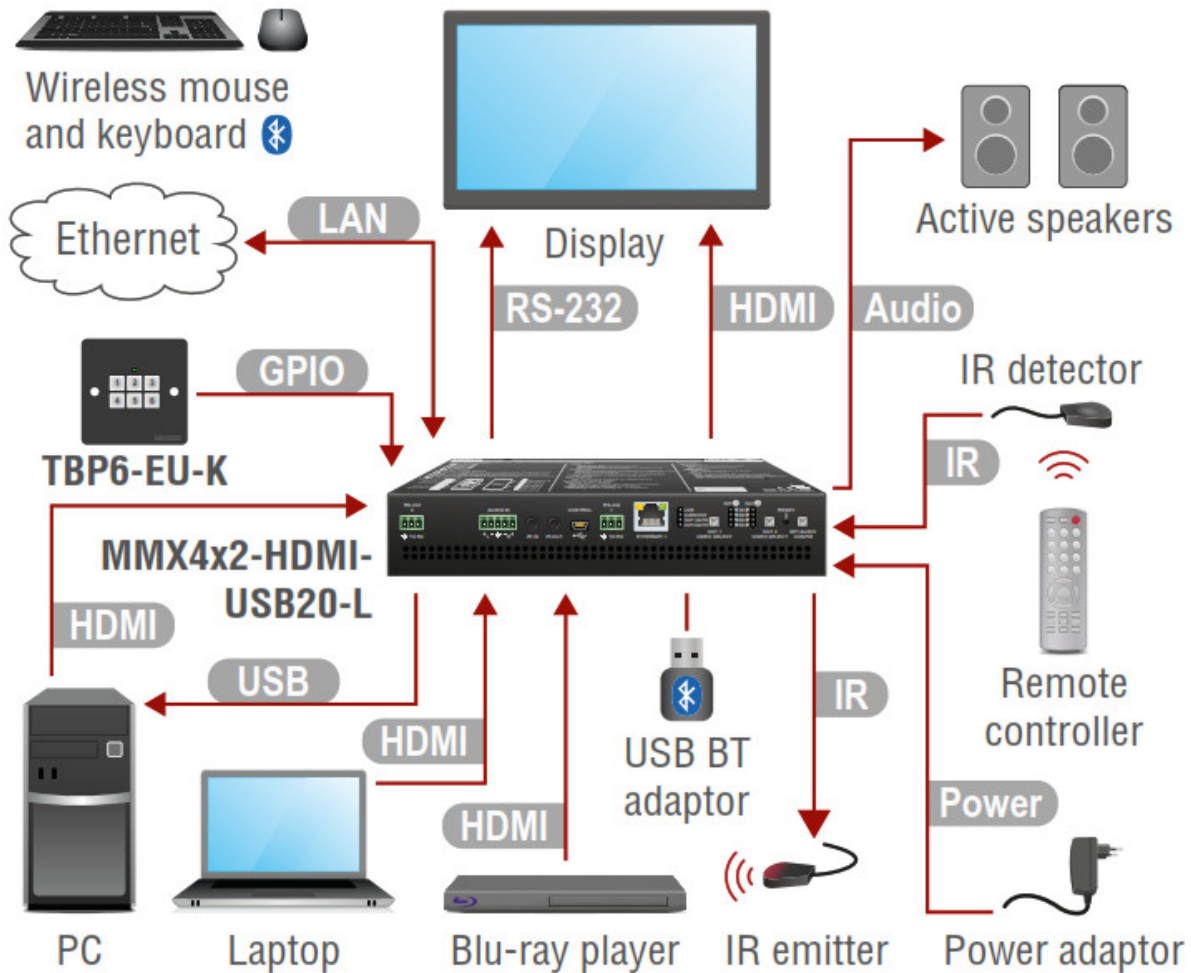| HDMI	Connect the source devices (e.g. PC, Laptop, Blu-ray player) to the HDMI input ports of the ma
HDMI	Connect the sink devices (e.g. Display) to the HDMI output ports of the matrix by HDMI cables.
Audio	Optionally connect an audio device (e.g. Active speakers) to the analog audio output port by an
LAN	Optionally connect the matrix to a LAN in order to control the device and/or to connect further d
RS-232	Optionally connect the Display over RS-232 to send control commands from the matrix.
USB	Connect a USB host device (e.g. PC) to the USB-B (upstream) port of the matrix.
USB	Connect the desired USB peripherals (e.g. Bluetooth adaptor) to the USB-A (downstream) port
IR	Optionally for Infrared extension: ➡Connect the IR emitter to the IR OUT port of the matrix, and/or ➡ Connect the IR detector to the IR IN port of the matrix.
GPIO	Optionally connect a device to the GPIO port (e.g. Lightware's TBP6-EU-K button panel) for roc
Power	Connect the power adaptor to the DC input on the matrix first, then to the AC power socket.

Device concept

The MMX4x2-HDMI-USB20-L device is based on the previous MMX4x2-HDMI multifunctional audio/video matrix switcher (with four HDMI inputs and two HDMI outputs). The new model contains even more features like the built-in switchable USB hub, the GPIO port, and further connectors for additional Ethernet- and RS-232 serial devices.

INPUT

HDMI
Infrared
Analog audio

OUTPUT

HDMI
Analog audio
Infrared

+ Ethernet (3x)
+ USB hub (4×4)
+ Local USB
+ RS-232
+ GPIO

USB Interface

The device contains a built-in USB 2.0 hub. USB host devices (e.g. PC-s) can be connected to the four USB B-type connectors, and USB peripherals (e.g. camera, speakerphone, house, etc.) can be connected to the four USB A-type connectors. You can switch the USB peripherals to connect to one host device. Please note that only one USB host can be active at the same time, thus, all the connected USB peripherals will be connected to the same USB host device. The connected USB peripherals can be powered up to 500mA, except at the first port where max. 1000 mA can be supplied.
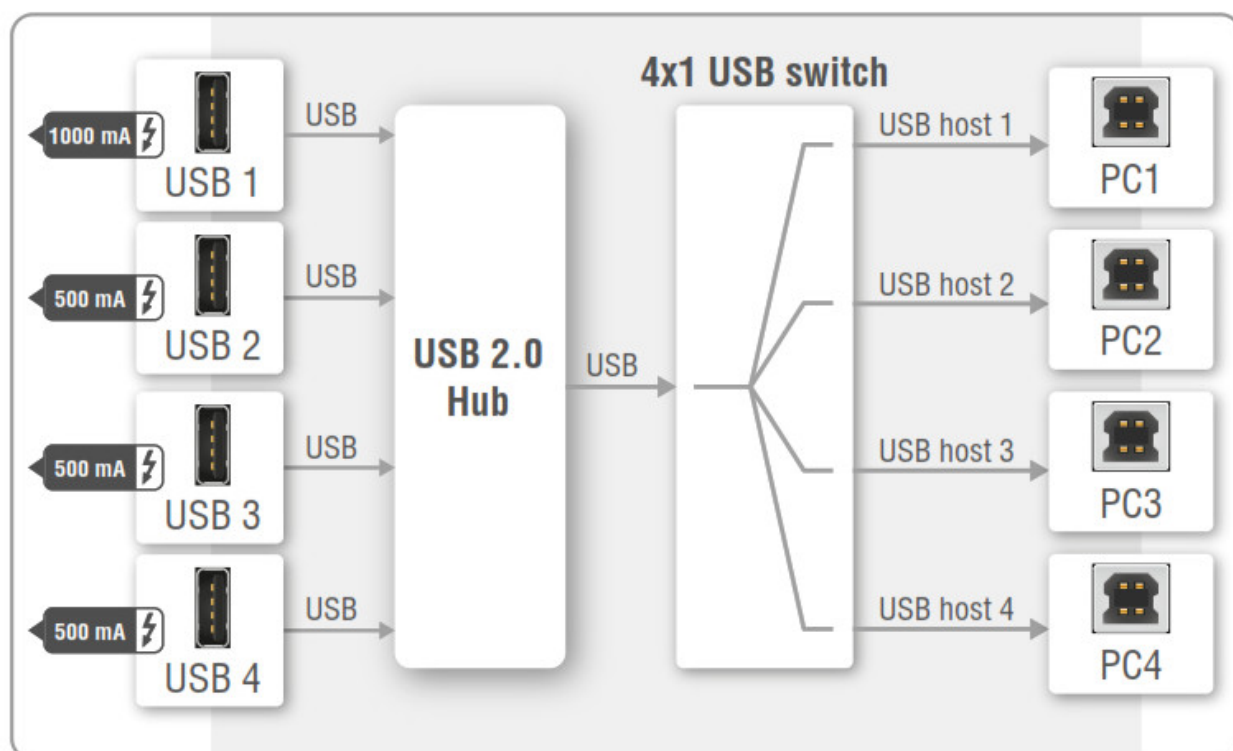
Audio/Video Port Diagram
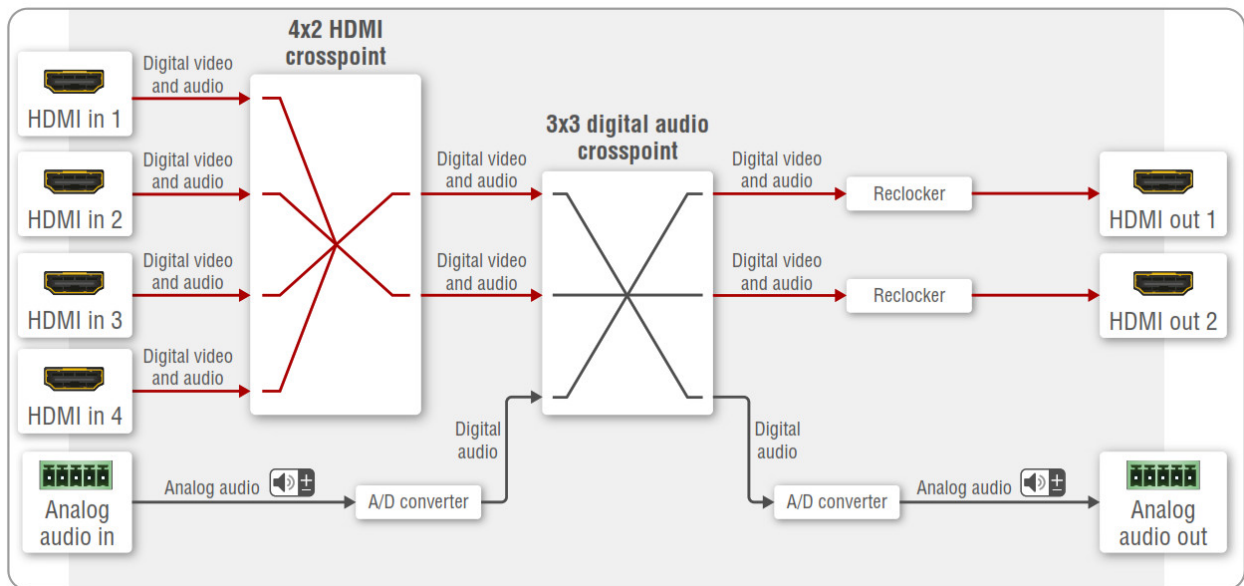
Front Panel Operation

Video Select Buttons

Use the buttons for selecting the video input source. The sequence is the following:

Set Audio Config Button

Use the button to select the audio configuration mode. The sequence is:
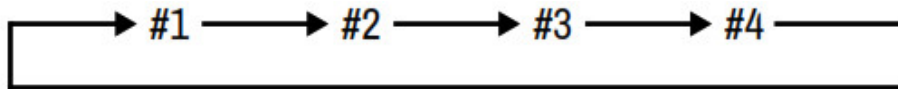
#1: Copy **HDMI OUT 1** audio to HDMI OUT 2 and AUDIO OUT.
#2: Copy **HDMI OUT 2** audio to HDMI OUT 1 and AUDIO OUT.
#3: Use audio from **Analog Input** on all outputs.
#4: Keep **Original Audio** on HDMI outputs, de-embed from HDMI OUT 2 to Analog Audio Output.

Typical Application

GPIO – General Purpose Input/Output Ports

The device has six GPIO pins which operate at TTL digital signal levels and can be set to high or low levels (Push-Pull). The direction of the pins can be input or output (adjustable). The signal levels are the following:

	Input voltage (V)	Output voltage (V)	Max. current (mA)
Logical low level	0 – 0.8	0 – 0.5	30
Logical high level	2 -5	4.5 – 5	18

The total available current for the six pins is 180 mA.

GPIO connector and plug pin assignment

Pin nr.	Function
6-6	Configurable
7	5V (max 500 mA)
8	Ground

Types of IR connectors (1/8" TRS / TS)

3 pole, 2 rings: IR emitter

2 pole, 1 ring: IR detector

Factory Default Settings

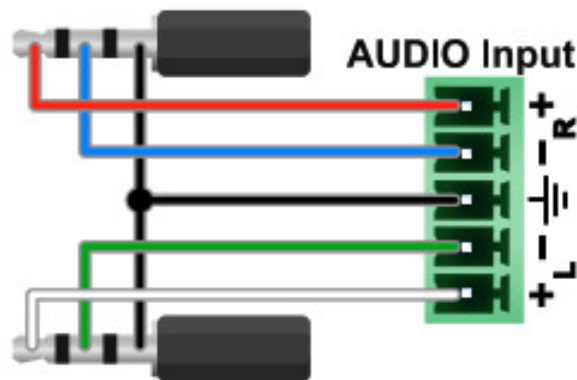| Network Settings	
IP address (static)	192.168.0.100
Subnet mask	255.255.255.0
Static gateway	192.168.0.1
DHCP	disabled
TCPIP port no.	10001/6107
Video Crosspoint Settings	
OUT 1 (HDMI)	IN1 (HDMI)
OUT 2 (HDMI)	IN1 (HDMI)
Audio Crosspoint Settings	
OUT 1 (HDMI OUT 1)	AI (original HDMI embedded audio)
OUT 2 (HDMI OUT 2)	A2 (original HDMI embedded audio)
03 (Analog audio out)	A3 (analog audio input)
Port Properties	
Autoselect	disabled
HDCP mode	auto
Emulated EDID on the inputs	F47: Universal HDMI with PCM audio
RS-232 port setting	57600 BAUD, 8, N, 1, Control mode (LW2)
Active USB-B host port	PC1 pod

Mounting
The device can be mounted by the supplied rack ears. The design allows rotating the ears by 90°; choose the layout that fits the best for the installation.
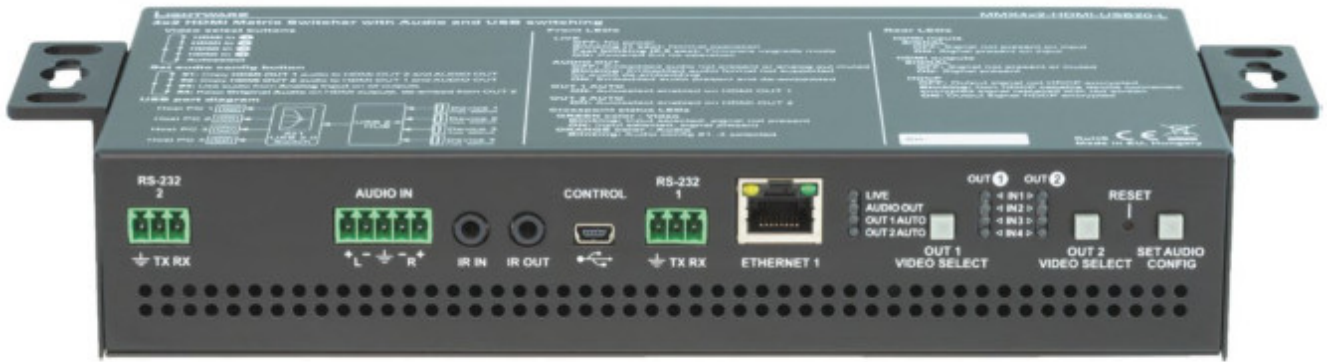
Audio Cable Wiring Guide

The device is built with 5-pole Phoenix connectors for audio input and output signal. Below examples are of the most common causes.
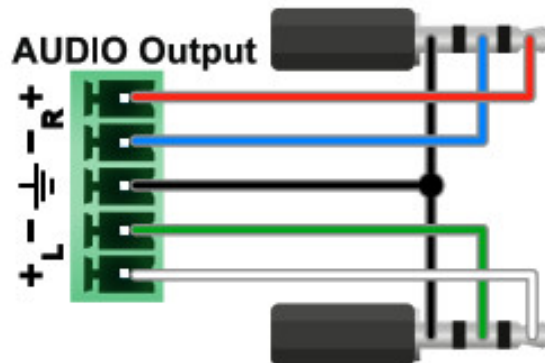
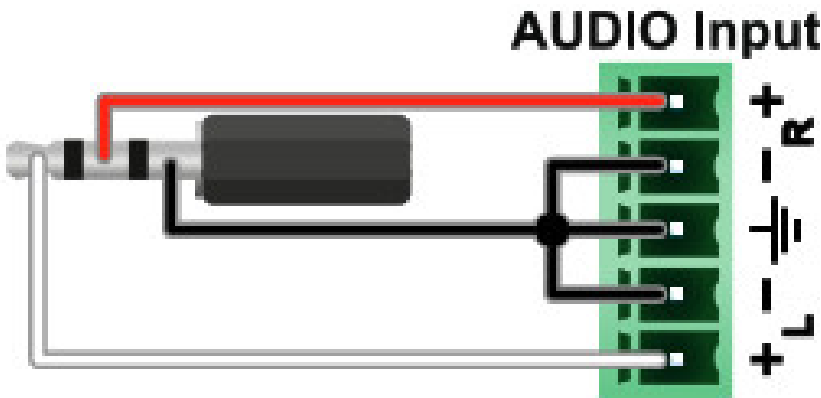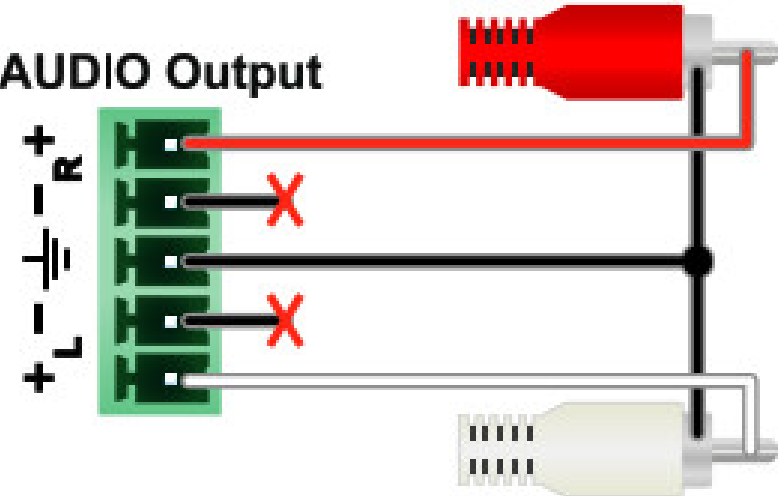| Balanced output to balanced input 2×6.3 (1/4") TRS – Phoenix	Balanced output to bal
Balanced output to balanced input Phoenix – 2×6.3 (1/4") TRS	Balanced output to bal

Unbalanced output to balanced input 3.5 (1/8") TRS – Phoenix

AUDIO Input

Unbalanced output to

Balanced output to an unbalanced input Phoenix – 2x RCA
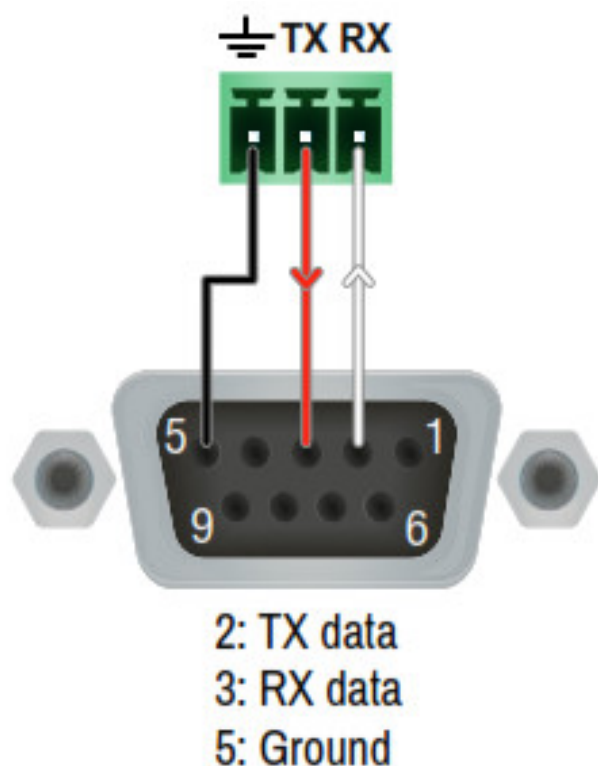
AUDIO Output

Balanced output to an

AUDIO

Wiring Guide for RS-232 Data Transmission
The device is built with a 3-pole Phoenix connector. See the below examples 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   ⏚ TX RX   2: TX data   3: RX data   5: Ground

For more information about the cable wiring, see the user's manual of the device or the Cable **Wiring Guide** on our website.

Further Information
The User's manual for this appliance is available on **www.lightware.com.**
See the Downloads section on the dedicated product page.
Contact Us
sales@lightware.com
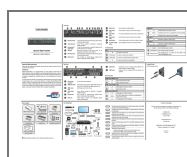**+36 1 255 3800**
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Doc. ver.: 1.1
19200211

Documents / Resources

LIGHTWARE MMX4x2-HDMI-USB20-L Compact Size Matrix Switcher [pdf] User Guide
MMX4x2-HDMI-USB20-L, Compact Size Matrix Switcher, MMX4x2-HDMI-USB20-L Compact Size Matrix Switcher

References

- **Lw** **Lightware Visual Engineering**