

# 12

## Appendix

- ▶ [SPECIFICATIONS](#)
- ▶ [FACTORY DEFAULT SETTINGS](#)
- ▶ [MECHANICAL DRAWINGS](#)
- ▶ [DIRECTION OF THE AIRFLOW](#)
- ▶ [WIRING GUIDE FOR RS-232 DATA TRANSMISSION](#)
- ▶ [AUDIO CABLE WIRING GUIDE](#)
- ▶ [FACTORY EDID LIST](#)
- ▶ [FRONT AND REAR VIEWS WITH PORT NUMBERING](#)
- ▶ [FIRMWARE RELEASE NOTES](#)
- ▶ [FURTHER INFORMATION](#)

### 12.1. Specifications

#### General

Compliance .....	CE
EMI/EMC.....	IEC/EN 55035:2017, IEC/EN 55032:2015
Safety.....	IEC/EN 62368-1:2014
RoHS compliance .....	Yes
Warranty .....	3 years
Cooling.....	by cooling fans, air flows from front to rear
Operating temperature .....	0 to +50 °C (+32 to +122°F)
Operating humidity .....	10% to 90%, non-condensing

#### Power

Power source .....	100-240V AC, 50~60Hz
AC fuse .....	F3.15A
Power consumption * - MX2-8x8-HDMI20-Audio, -L (no signal / max).....	10 W / 75 W
Power consumption * - MX2-16x16-HDMI20(no signal / max. signal) 47 W / 83 W	
Power consumption * - MX2-24x24-HDMI20 (no signal / max. signal).....	53 W / 108 W

\* without 500 mA current, +5V on the HDMI output

#### Enclosure

Display .....	Color LCD (320x240 pixels)
Rack mountable .....	Yes, (rack ears supplied)
Material.....	1 mm steel
Dimensions in mm - MX2-8x8-HDMI20-Audio .....	
.....	442 (482 *) W x 43.7 H x 177.5 D
Dimensions in mm - MX2-8x8-HDMI20-Audio-L .....	
.....	442 (482 *) W x 43.7 H x 277.4 D
Dimensions in mm - MX2-16x16-HDMI20-Audio, -Audio-R, -R.....	
.....	441 (483 *) W x 132.6 H x 280.2 D

\* with rack-mounting ears

Dimensions in mm - MX2-24x24-HDMI20-Audio, -Audio-R, -R.....  
..... 440.5 (483 \*) W x 177 H x 280.2 D

\* with rack-mounting ears

Weight - MX2-8x8-HDMI20-Audio .....	3210 g
Weight - MX2-8x8-HDMI20-Audio-L.....	3250 g
Weight - MX2-16x16-HDMI20-R .....	8540 g
Weight - MX2-24x24-HDMI20.....	9250 g
Weight - MX2-24x24-HDMI20-Audio-R .....	10090 g

#### Control Ports

Serial port connector in (-R suffixed models) .....	D-SUB
Available Baud rates .....	9600, 19200, 38400, 57600, 115200
Serial port connector (in other models) .....	3-pole Phoenix connector
Available Baud rates .....	9600, 19200, 38400, 57600, 115200
Control Ethernet (-R suffixed models) .....	RJ45
Control Ethernet (in other models) .....	Neutrik etherCon

**HDMI Input/Output Ports**

Port connector type ..... 19-pole HDMI type A receptacle  
 Standard ..... DVI 1.0, HDMI 1.4, HDMI 2.0  
 Max. video resolution .....  
 ..... 4096x2160@60Hz RGB 4:4:4 (up to 600MHz pixel clock)  
 ..... 1920x1080@120 Hz, 36 bit  
 Audio formats ..... all formats in line with HDMI 2.0 standard  
 Reclocking ..... Pixel Accurate Reclocking  
 HDCP compliant ..... Yes, HDCP 2.2

**DP Input Ports**

Port connector type ..... 20-pole DisplayPort receptacle  
 Standard ..... DVI 1.0, HDMI 1.4, HDMI 2.0, DP 1.2 (with  
 ..... 18 Gbps bandwidth limitation)  
 Max. video resolution .....  
 ..... 4096x2160@60Hz RGB 4:4:4 (up to 600MHz pixel clock)  
 ..... 1920x1080@120 Hz, 36 bit  
 Audio formats ..... all formats in line with HDMI 2.0 standard  
 Reclocking ..... Pixel Accurate Reclocking  
 HDCP compliant ..... Yes, HDCP 2.2

**Audio Input/Output Ports**

Signal transmission ..... Balanced or Unbalanced audio  
 Gain (input) ..... from -12dB to +35 dB

**EDID management**

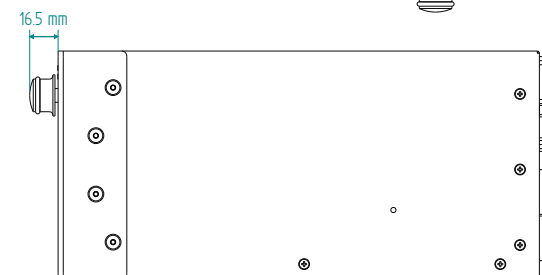
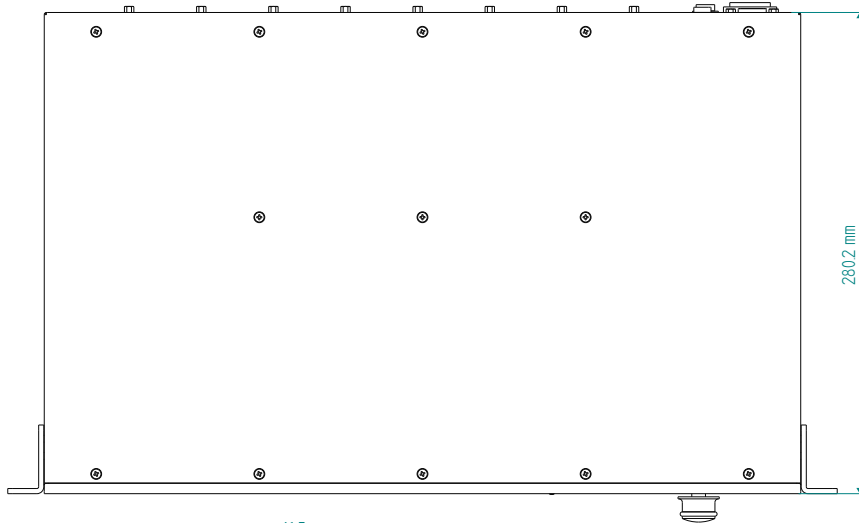
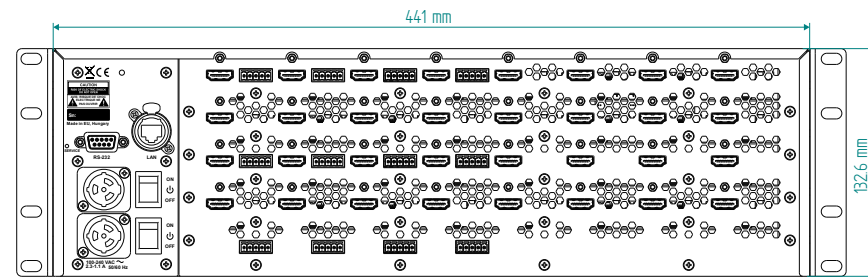
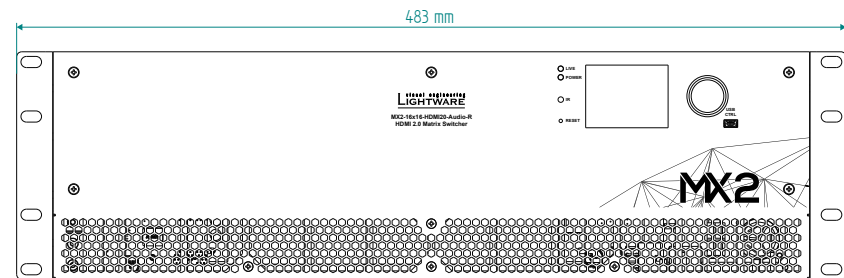
EDID emulation ..... Yes  
 EDID memory ..... 144 factory presets, 100 user-programmable

**12.2. Factory Default Settings**

Parameter	Setting / Value
<b>Network Settings</b>	
IP address	Dynamic (DHCP is enabled)
<b>RS-232 Port</b>	
Port setting	57600 BAUD, 8, N, 1
Control protocol	LW3 protocol
<b>General Video Settings</b>	
Crosspoint setting	Input 1 on all outputs
Emulated EDID	F49 - (Universal HDMI, all audio formats with deep color support) on all inputs
<b>HDMI port</b>	
HDCP enable (input)	Allow HDCP 2.2 and HDCP 1.4
Audio source (input)	HDMI
HDCP (output)	Depends on input
Signal type (output)	Auto
Conversion mode (output)	Passthrough
Audio mode: HDMI port (output)	HDMI
Audio mode: HDMI with analog audio (output)	HDMI+ANALOG
Scrambling	Auto
TMDS clock rate	Auto
Signal type	Auto
<b>DisplayPort</b>	
HDCP enable (input)	Allow HDCP 2.2 and HDCP 1.4
Link data rate (input)	Max. HBR2 (5.4 Gbps)
Link lane count (input)	Max. 4 lane
Audio source (input)	DisplayPort
<b>Audio Input/Output Ports</b>	
Audio source	HDMI
Audio mode (HDMI out)	HDMI
Audio mode (Analog audio out)	HDMI+ANALOG
Analog audio output	Enabled (de-embedding from HDMI signal)
Analog Audio Input Levels	Balance: 0 (center) Gain: 0 dB
Analog Audio Output Levels	Balance: 0 (center) Volume: 0 dB

### MX2-16x16-HDMI20-Audio-R

INFO: The 2RU-high models have the same size: MX2-16x16-HDMI20, -R, -Audio, -Audio-R; MX2-16x16-DH-8DPi-A-R



## 12.7. Audio Cable Wiring Guide

Inputs and outputs of audio devices are symmetric or asymmetric. The main advantage of the symmetric lines is the better protection against the noise therefore, they are widely used in the professional audio industry. Symmetric audio is most often referred to as balanced audio, as opposed to asymmetric, which is referred to as unbalanced audio. Lightware products are usually built with 5-pole Phoenix connectors so we would like to help users assembling their own audio cables. See the most common cases below.

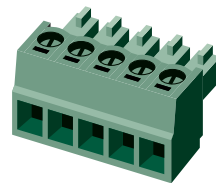
**ATTENTION!** Symmetric and asymmetric lines can be linked with passive accessories (e.g. special cables), but in this case half of the line level is lost.

**ATTENTION!** There are numerous types of regularly used connector and cable types to connect audio devices. Please always make sure that a connector or cable fits your system before use.

**ATTENTION!** Never join the phase-inverted (negative, cold or -) poles (either right and left) to the ground or to each other on the output side, as this can damage the unit.

**INFO:** Use a galvanic isolation in case of a ground loop.

### The Pinout of the 5-pole Phoenix Connector

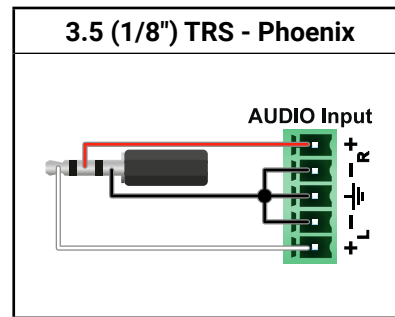
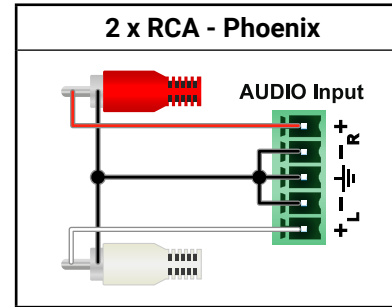
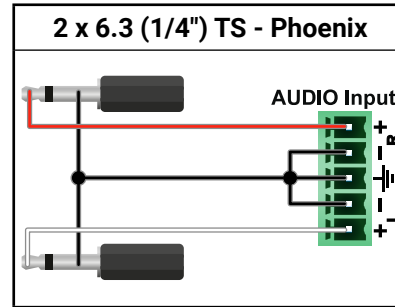


Pin nr.	Signal
1	Left+
2	Left-
3	Ground
4	Right-
5	Right+

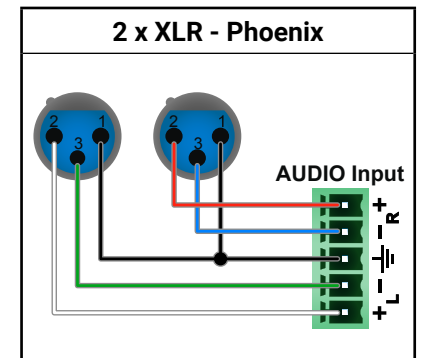
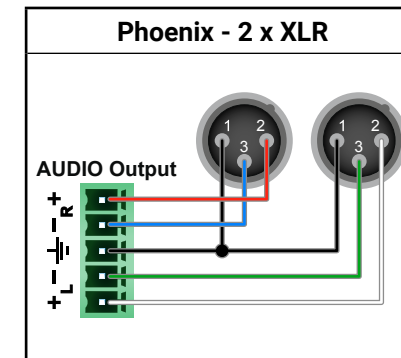
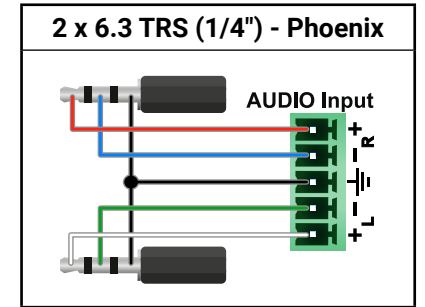
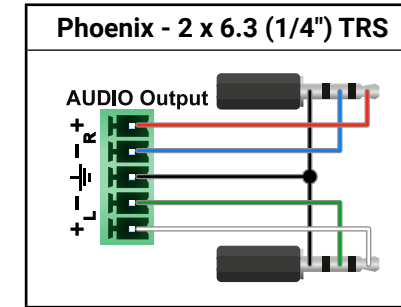
### Compatible Plug Type

Phoenix® Combicon series (3.5mm pitch, 5-pole), type: MC 1.5/5-ST-3.5.

### From Unbalanced Output to Balanced Input



### From Balanced Output to Balanced Input



### From Balanced Output to Unbalanced Input

