

# VEO-MXH44

VIDEO MATRIXES HDMI 2.0 4X4 18GBPS Matrix with Audio De-embedders



# **USER MANUAL**

VEO-MXH44



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# **1. IMPORTANT REMARK**



WARNING: SHOCK HAZARD - DO NOT OPEN AVIS: RISQUE DE CHOC ÉLECTRIQUE - NE PAS OUVRIR



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING (If applicable): The terminals marked with symbol of " Z" may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by an instructed person or the use of ready-made leads or cords.

**WARNING:** To prevent fire or shock hazard, do not expose this equipment to rain or moisture.

**WARNING:** An apparatus with Class I construction shall be connected to a mains socket-outlet with a protective earthing connection.

# 2. IMPORTANT SAFETY INSTRUCTIONS

- **1.** Read these instructions.
- **2.** Keep these instructions.
- 3. Heed all warnings.
- **4.** Follow all instructions.
- 5. Do not use this apparatus near water.
- 6. Clean only with dry cloth.



- **7.** Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- **8.** Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- **9.** Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- **10.** Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and at the point where they exit from the apparatus.
- **11.** Only use attachments/accessories specified by the manufacturer.
- **12.** Unplug the apparatus during lightening sorts or when unused for long periods of time.
- **13.** Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- **14.** Disconnecting from mains: Switching off the POWER switch all the functions and light indicators of the amplifier will be stopped, but fully disconnecting the device from mains is done unplugging the power cord from the mains input socket. For this reason, it always shall remain readily operable.
- **15.** Equipment is connected to a socket-outlet with earthing connection by means of a power cord.
- 16. The marking information is located at the bottom of apparatus.
- **17.** The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on apparatus.

**NOTE**: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



**WARNING:** This product must not be discarded, under any circumstance, as unsorted urban waste. Take to the nearest electrical and electronic waste treatment centre.



**NEEC AUDIO BARCELONA, S.L.** accepts no liability for any damage that may be caused to people, animal or objects due to failure to comply with the warnings above.

# 3. IMPORTANT NOTE

Thank you for choosing our Ecler VEO-MXH44 video matrix!

It is **VERY IMPORTANT** to carefully read this manual and to fully understand its contents before any connection in order to maximize your use and get the best performance from this equipment.

To ensure optimal operation of this device, we strongly recommend that its maintenance be carried out by our authorised Technical Services.

All ECLER products are covered by warranty, please refer to <u>www.ecler.com</u> or the warranty card included with this product for the period of validity and conditions.

# 4. INTRODUCTION

Ecler VEO-MXH44 is a 4x4 HDMI Matrix for high dynamic range (HDR) formats. It is HDCP 2.2 and 1.4 compliant and supports 4K/UHD video @ 60 Hz with 4:4:4 chroma sampling, as well as HDMI signals with bandwidth up to 18 Gbps. It is the ideal solution for applications requiring 4K/UHD and HDR sources and displays. VEO-MXH44 includes analogue audio de-embedding feature and EDID management. The HDMI selection can be manual via frontal panel, or remote via serial commands, TCP/IP, and IR. The integrated web GUI allows to configure and control the unit in a very user friendly way.

# Features:

- 4x4 Ultra High Definition sources selector compliant with HDMI 2.0 standards
- Video formats up to 4096x2160@60Hz YUV 4:4:4 and 3D video formats.
- Supports HDR and 3D contents
- HDCP2.2/1.4 Compliant
- Supports 48 bit Deep Color
- Support EDID audio management (2CH/5.1CH/7.1CH selectable)
- Support PCM, Dolby TrueHD, DTS-HD Master Audio up to 7.1CH
- 4 stereo analogue audio output for audio de-embedding
- TCP/IP, RS232 Control, IR control
- Supports up to 18Gbps video data rate



# 5. PACKAGE CONTENTS

- 1 x HDMI 4x4 Matrix
- 1 x 5VDC 3A International Power Supply
- 1 x IR Rx cable
- 1 x HDMI IR Remote
- 5 x 3pin Euroblock plugs
- 1 x Mounting Kit

# 6. PANEL DESCRIPTIONS

#### 6.1. FRONT PANEL



- 1. IR receiver: Infrared sensor for remote control.
- **2.** Input selection LED indicator: It provides information about the current HDMI Input selected.
- **3.** Selection button: It allows changing the HDMI input selection for each HDMI output.
- *Note:* Turn ON/OFF DHCP function: press for 3 seconds select buttons from OUTPUT 1 and OUTPUT 2.



### 6.2. REAR PANEL



#### 1. Unbalanced Stereo Audio Output

When selected audio option on EDID configuration is 2.0, it provides a deembedded stereo analogue audio signal of the related HDMI output.

2. HDMI 2.0 Input Ports

#### 3. IR port for External IR receiver

3.5mm Minijack to connect the external remote IR sensor included



4. 4. HDMI 2.0 Output Ports

#### 5. 5. RS-232 Port

For serial remote control and/or firmware update

# 6. Reserved Micro USB Port

Service port for firmware update purpose

- 7. RJ45 for LAN connection and IP/Web remote control
- 8. 5V DC Power Connector



# 7. CONNECTION AND INSTALLATION

- **1.** Connect a HDMI signal sources (such as PC, STB etc) to the VEO-MXH44 HDMI Input ports.
- 2. Connect the VEO-MXH44 HDMI Output ports to the displays.
- **3.** Connect Audio and Control devices if required.
- **4.** Power up VEO-MXH44, display and sources.
- **5.** In order to control the VEO-MXH44 through the included IR Remote, please connect the IR Receiver to the corresponding port.

# 8. IR REMOTE CONTROL



## 1. Stand-by Mode

# 2. Output/Input selection buttons

In order to route INPUT-Y to OUTPUT-X, press OUTPUT-X (X is output 1 to 4) and press INPUT-Y (Y is input 1 to 4)

# All Outputs selection button In order to route INPUT-Y to all outputs, press ALL and press INPUT-Y (Y is input 1 to 4)

# 4. Cancel button

It allows to cancel an ongoing routing operation

# 5. PTP Button

It allows to mirror inputs and outputs (Input 1 to Output 1, Input 2 to Output 2...)



# 9. WEB CONTROL

9.1. Connecting your PC to VEO-MXH44

VEO-MXH44 comes by default with 192.168.1.168 static IP address.

Change the IP address of your PC

- **1.** Click Start  $\rightarrow$  Control Panel  $\rightarrow$  Network and Sharing Center.
- 2. Click Change Adapter Settings.
- **3.** Highlight the Internet Protocol Version 4 option and double-click to change settings; use a IP on the same network of the matrix:

etworking Sharing	General	
Connect using:	You can get IP settings assigned automatically if your network sup	ports
1 Intel(R) 82579V Gigabit Network Connection	this capability. Otherwise, you need to ask your retwork administr for the appropriate IP settings.	rator
Configure	Obtain an IP address automatically	
This connection uses the following items:	Use the following IF address:	
Client for Microsoft Networks	IP address: 192 . 168 . 1 . 2	
QoS Packet Scheduler	Subnet mask: 255 . 255 . 255 . 0	
File and Printer Sharing for Microsoft Networks	Default gateway:	
Internet Protocol Version 4 (TCP/IPv4)		
Link-Layer Topology Discovery Mapper I/O Driver	Obtain DNS server address automatically	
Link-Layer Topology Discovery Responder	Output Description of the server addresses:	
Install Uninstall Properties	Preferred DNS server:	
Description	Alternate DNS server:	
TCP/IP version 6. The latest version of the internet protocol that provides communication across diverse interconnected networks.	Validate settings upon exit	ed

**4.** Click OK to confirm

Once that your PC is in the same network of the VEO-MXH44, open your Internet browser and digit 192.168.1.168 to visualize the control webpage.



#### 9.2. Port Set page

☑ VEO-MXH44     x +				- 5 ×
Port Set	EDID Config	IP Config	Firmware Upgrade	
	Pe Output1: Input 1 Input 2 Output2: Input 1 Input 2 Output3: Input 1 Input 2 Output4: Input 1 Input 2 Output4: Input 1 Input 2	rt Set page 2 Input 3 Input 4 1 2 Input 3 Input 4 2 2 Input 3 Input 4 3 2 Input 3 Input 4 4 2 Input 3 Input 4 4 2 Input 3 Input 4 1		

#### Matrix switching control page.

9.3. EDID Config page

VEO-MI0H44 × + ← → C ① No es seguro 192.168.1.120					– ø × Q Å () :
	Port Set	EDID Config	IP Config	Firmware Upgrade	
		Import HDM11:     4K3K.@66Het[VC420       HDR     3D     10BH     12BH       Import HDM11:     4K3K.@66Het[VC420     12BH       HDR     3D     10BH     12BH       Import HDM12:     4K3K.@66Het[VC420     12BH       Import HDM13:     4K3K.@66Het[VC420     12BH       Import HDM14:     4K3K.@66Het[VC420     12BH       HDR     3D     10BH     12BH       Import HDM14:     4K2K.@66Het[VC420     12BH       HDR     3D     10BH     12BH	D Set page Apply 168# 0 7.1Ch 0 5.1Ch 0 2.0Ch Apply 168# 0 7.1Ch 0 5.1Ch 0 2.0Ch Apply 168# 0 7.1Ch 0 5.1Ch 0 2.0Ch Apply 168# 0 7.1Ch 0 5.1Ch 0 2.0Ch		
			CLEC EO SYSTEMS		

On this page it will be possible to set all the EDID options both for Video and Audio formats.

*Note:* Analogue audio outputs are active only when 2CH is selected. When other formats are selected, the multi-channel audio is passing through the HDMI and the analogue output will be muted.



#### 9.4. IP Config page

VEC-MXH44 ×	+				- a ×
← → C ① No es seguro   192	2.168.1.120				Q 🕁 🌔 :
	Port Set	EDID Config	IP Config	Firmware Upgrade	
		IP Con	<u>ilig page</u>		
		MAC Address:	00:1A:96:FE:04:4C		
		Host IP Address:	192.168.1.120		
		Net Mask Address:	255.255.0.0		
		Router IP Address:	0.0.0		
		Device Name:	VEO-MXH44		
		DHCP			
		A	pply		
			CLEC O SYSTEMS		

# 10. RS-232 and TCP/IP CONTROL FOR THIRD PARTY

VEO-SWH44 can be controlled by third party control systems via serial commands through the RS-232 Euroblock port on the rear panel, or via LAN using a TCP/IP connection.

#### **Default Serial Settings:**

Baudrate:	115200 bps
Data Width:	8bit
Parity:	None

Stop: 1 bit

### **Default Network Settings**

Default IP:	192.168.1.168

TCP/IP port: 5000

*Note:* The end of line command is #. CR or LF chars are not required.



# 10.1. Command strings list

Source Selection on Output 1	
Input 1	@W 00 00#
Input 2	@W 00 01#
Input 3	@W 00 02#
Input 4	@W 00 03#
Source Selection on Output 2	
Input 1	@W 01 00#
Input 2	@W 01 01#
Input 3	@W 01 02#
Input 4	@W 01 03#
Source Selection on Output 3	
Input 1	@W 02 00#
Input 2	@W 02 01#
Input 3	@W 02 02#
Input 4	@W 02 03#
Source Selection on Output 4	
Input 1	@W 03 00#
Input 2	@W 03 01#
Input 3	@W 03 02#
Input 4	@W 03 03#
Read Source on Outputs	
Output 1	@R 00#
Output 2	@R 01#
Output 3	@R 02#
Output 4	@R 03#
PTP Function	
Input N to Output N	@W 04 00 01 02 03#
Reboot Function	@W 50#
Factory Reset	@W 51#
<u>Stand-by</u>	
Stand-by ON	@W 0F 00#
Stand-by OFF	@W 0F 01#



EDID commands		
EDID setting	@W2	XX AA BB#
XX identifies the input:	05	Input 1
	06	Input 2
	07	Input 3
	08	Input 4
AA identifies the resolution:	00	1080P
	01	4K@30Hz 4:4:4
	02	4K@60Hz 4:2:0
	03	4K@60Hz 4:4:4

*BB* identifies the following functions:

	HDR	48bit	36 bit	30 bit	7.1 CH	5.1 CH	2.0 CH	3D
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Active	1	1	1	1	1	1	1	1
Inactive	0	0	0	0	0	0	0	0

<u>E.g: 11001001</u> = HDR, 48Bit, 7.1CH, 3D

Convert Binary code "11001001" to hexadecimal format "C9".

E.g: @W05 03 C9#

The EDID of input 1 is: 4K@60Hz 4:4:4, HDR, 48Bit, 7.1CH, 3D



# **11. CONTROL CENTER UTILITY**

#### 12.1. Software Connection

VEO-MXH44 Control Center utility allows connecting and controlling the matrix both via RS-232 or TCP/IP connection.

EO-MXH44 Control Cen	er	
Port: COM1 - Search Connect	Port Set   EDID Config   IP Config   Net Config   System Config   Current PC Information IP Address: 192.168.1.2 Ports: 5001	Connect
Device Name		
Get Edit		
lev:A4-1.2.0123		

#### 12.2. RS-232 connection

After pressing *Search* button on *COM Setting*, the software will automatically detect the first COM port available on your operating system; in alternative, it is possible to select the port manually.

Once the right COM port is selected, after pressing *Connect* button the settings in use are read by the software and it will be possible to control the matrix.



#### 12.3. Network connection

Select *Net Config* tab on Control Center; *Current PC information* shows the IP address in use by the PC and allows to set the TCP/IP used by the software to receive commands. If there are no particular network needs, use the default 5001 port.

Press Connect button and Search Device.

COM Setting Port: COM1 -	Port Set   EDID Config   IP Config   Net Config   Sy	vstem Config	Q	
Search Connect	Ourrent PC Information   IP Address:   192   168   1	Ports: 5001	Disconnect	
Device Name	Host Device Information	Connect	Search Device	
Get Edit	DESKTOP-T0DT6NB 192.168.1.2	Sel Device	1	
		CLEAR	IE	
Rev:A4-1.2.0123				



If the PC and the matrix are in the same network range, the unit will be discovered and the IP address will be shown as follows:

0010-#		1 ecle
Port: COM1+	Port Set   EDID Config   IP Config   Net Config   System Config	VIDEO SYSTEMS
Search	Current PC Information       IP Address:     192 . 168 . 1 . 2     Ports:     5001     Di	sconnect
Connect	Host Device Information	
Device Name	IP Address: 192 . 168 . 1 . 120 Connect Sear	ch Device
Get Edit	1->IP=192.168.1.120 Name=VEO- MXH44 Sel Device 1	<b>•</b>
	CLEAR	
Rev:A4-1.2.0123		

After pressing *Connect* on *Host Device Information* the software will be online and ready to control the matrix.

# 12.4. Port Set Page

ort: COM1 -	Port Set EDID Config   IP Config   Net Config   Syster	n Config VIDEO SYST
Search Connect	Output 1 1 2 3 4 1	Status Clear
Device Name	Output 2	Load All config data success! Set success! Load All config data success!
Get	Output 3	
	Output 4	
	Output All	× *

Matrix switching control page.



# 12.5. EDID Config Page

Search			Set Ir	nput HDMI	1		
Connect	EDID Mode:	4K2K@60Hz (Y0	C420)	-	Read		Apply
	THDR 7	3D 🗆 10Bit	□ 12Bit	□ 16Bit	C 7.1 CH	○ 5.1 CH	@ 2.0 CH
ce Name			Set Ir	nput HDMI	2		
	EDID Mode:	4K2K@60Hz (Y0	C420)	•	Read		Apply
Get	T HDR F	3D □ 10Bit	□ 12Bit	⊏ 16Bit	⊂ 7.1 CH	○ 5.1 CH	© 2.0 CH
Lan			Set Ir	nput HDMI	3		
	EDID Mode:	4K2K@60Hz (Y0	C420)	•	Read		Apply
		3D □ 10Bit	□ 12Bit	□ 16Bit	⊂ 7.1 CH	○ 5.1 CH	@ 2.0 CH
			Set Ir	nput HDMI	4		
	EDID Mode:	4K2K@60Hz (Y0	C420)	•	Read		Apply
	T HDR 🔽	3D □ 10Bit	□ 12Bit	□ 16Bit	⊂ 7.1 CH	C 5.1 CH	@ 2.0 CH

On this page it will be possible to set all the EDID options both for Video and Audio formats. *Note:* <u>Analogue audio outputs are active only when 2CH is selected. When other formats are selected, the multi-channel audio is passing through the HDMI and the analogue output will be muted.</u>

#### 12.6. IP Config Page

OM Setting F	Port Set EDID Config IP C	Config Net Config System Config	
Search	IP Address Setting	192 . 168 . 1 . 120	
lavias Nama	Net Mask:	255 . 255 . 0 . 0	
/EO-MXH44	Router IP	0.0.0.0	
Edit	MAC 00:1A	x: 96 : FE : 04 : 4C <b>F DHCP</b>	
		Save IP Config	
	Get IP Config	g ouven ooning	
	Get IP Config		

On this page you can modify the network settings or activate the DHCP function.



## 12.7. System Config Page:

VEO-MXH44 Control Cer	nter	- 🗆 X
COM Setting Port: COM1	Port Set   EDID Config   IP Config   Net Config System Config	
Search Connect	Command	Apply
Device Name	Reset On OFF	
Get Edit	Default	
Rev:A4-1.2.0123		

System configuration page give the access to functions like Reboot, Factory Default, and Power ON/OFF. Furthermore, using the command line available on this page, it will be possible to test the commands mentioned on chapter 9. for third party control systems.



# **12. FIRMWARE UPGRADE**

### **12.1** Instructions

Connect a PC to the same network than the **VEO-MXH44** and open the configuration webpage just writing the device IP address in the PC's web browser.

The default IP address is **192.168.1.168**:

Port Set	EDID Config	IP Config	Firmware Upgrade
	Pc Output1: Input 1 Inpu	rt Set page t 2 Input 3 Input 4 1	
	Output2: Input 1 Inpu	t 2 Input 3 Input 4 2	
	Output3: Input 1 Input	t 2 Input 3 Input 4 3	
	Output4: Input 1 Input	t 2 Input 3 Input 4 4	
	Output All: Input 1 Input	It 2 Input 3 Input 4 1	
		CLEC DEO SYSTEMS	



Select the *Firmware Upgrade* button and, after the download, choose the firmware file with .slg extension:



Press **START UPGRADE** and wait until the process is finished; the device will automatically reboot with the new firmware version.

12.2. Release notes

- Version 1.00.00 (March 2020)
- Version 1.01.00 (May 2020)
  - DHCP bug fixed



# **13. TECHNICAL CHARACTERISTICS**

Resolutions	480p@60hz, 576P@50hz, 720P@60hz, 1080P@24hz, 1080P@50hz, 1080P@60hz, 4K@24hz, 4K@30hz, 4K@60hzYUV4:2:0, 4K@ 60hzYUV4:4:4				
Colorspace	YCbCr, RGB				
Chroma Subsampling	4:4:4, 4:2:0				
Color depth	8-bit, 10-bit, 12-bit, 16bit				
HDR	HDR10				
Signal Bandwidth	18 Gbps				
HDCP	2.2, 1.4 Compliant				
Audio Formats	PCM 2Ch, LPCM 5.1, LPCM 7.1, Dolby Digital, DTS 5.1, Dolby TrueHD, DTS-HD Master Audio, Dolb <sup>,</sup> Atmos				
Sample Rate	32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz				
Bit rate	up to 24-bit				
Distance HDMI	up to 10 meters with Ecler VEO cables				
Operating Temperature	-5°C - 45°C / 23°F - 113°F				
Humidity	20 - 90% RH (no condensation)				
Power Consumption	13 W MAX				
Supply Input:	AC100~240V 50/60Hz Output: DC 5V/3A				
Dimension H x W x D	216 x 105 x 34 (mm) / 8.5" x 4.13" x 1.34"				
Weight	720g / 1,59 lbs				





All product characteristics are subject to variation due to production tolerances. **NEEC AUDIO BARCELONA S.L.** reserves the right to make changes or improvements in the design or manufacturing that may affect these product specifications.

For technical queries contact your supplier, distributor or complete the contact form on our website, in <u>Support / Technical requests</u>.

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