VEO-MXH44

VIDEO MATRIXES

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

USER MANUAL

v.20200515

INDEX

1. IMPORTANT REMARK 3

2. IMPORTANT SAFETY INSTRUCTIONS 3

3. IMPORTANT NOTE 5

4. INTRODUCTION 5

5. PACKAGE CONTENTS 6

6. PANEL DESCRIPTIONS 6

6.1. FRONT PANEL 6

6.2. REAR PANEL 7

7. CONNECTION AND INSTALLATION 8

8. IR REMOTE CONTROL 8

9. WEB CONTROL 9

9.1. Connecting your PC to VEO-MXH44 9

9.2. Port Set page 10

9.3. EDID Config page 10

9.4. IP Config page 11

10. RS-232 and TCP/IP CONTROL FOR THIRD PARTY 11

10.1. Command strings list 12

11. CONTROL CENTER UTILITY 14

12.1. Software Connection 14

12.2. RS-232 connection 14

12.3. Network connection 15

12.4. Port Set Page 16

12.5. EDID Config Page 17

12.6. IP Config Page 17

12.7. System Config Page: 18

12. FIRMWARE UPGRADE 19

12.1 Instructions 19

12.2. Release notes 20

13. TECHNICAL CHARACTERISTICS 21

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 “ ” 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.

Ecler **VEO-MXH44** comes with a **3-year warranty**.

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:

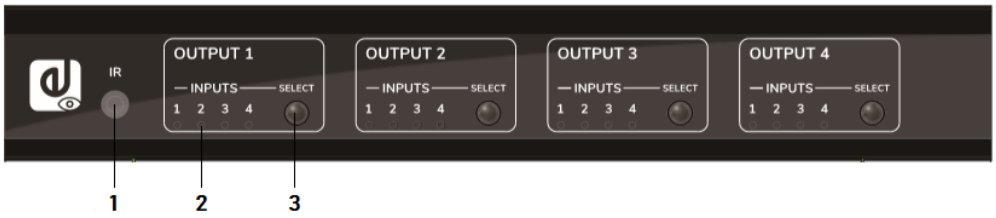
- 4x4 Ultra High Definition sources selector compliant with HDMI 2.0 standards
- Video formats up to 4096x2160@60Hz YUV 4:4:4 and 3D video formats.
- Supports HDR and 3D contents
- HDCP2.2/1.4 Compliant
- Supports 48 bit Deep Color
- Support EDID audio management (2CH/5.1CH/7.1CH selectable)
- Support 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



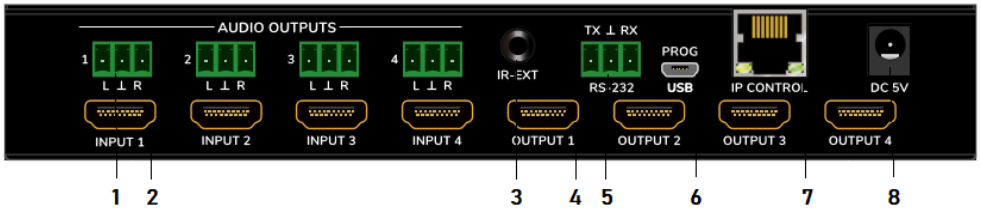
1. **IR receiver:** Infrared sensor for remote control.

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**.

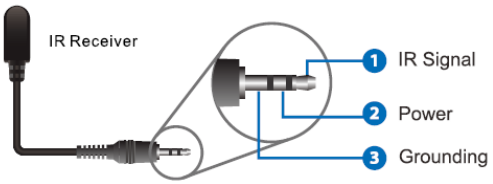
6.2. REAR PANEL



1. **Unbalanced Stereo Audio Output**
   When selected audio option on EDID configuration is 2.0, it provides a de-embedded 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

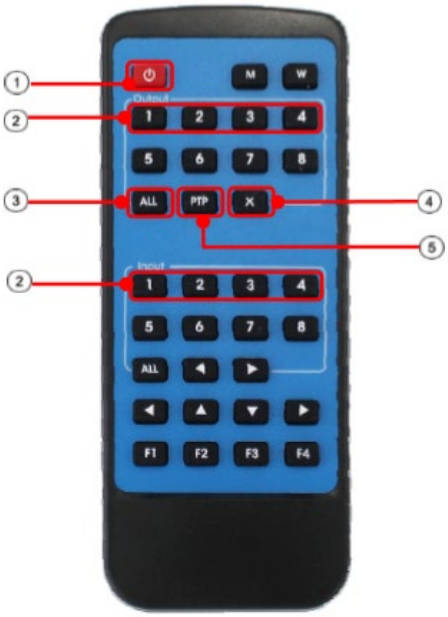
7. **RJ45 for LAN connection and IP/Web remote control**

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)
3. **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...)

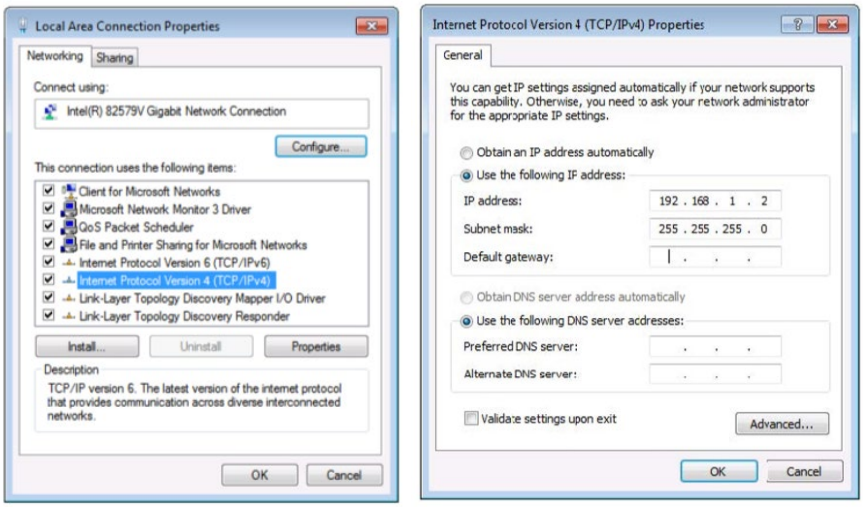
9. WEB CONTROL

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 → Control Panel → 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:



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

Matrix switching control page.

9.3. EDID Config page

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

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#
Stand-by	
Stand-by ON	@W 0F 00#
Stand-by OFF	@W 0F 01#

EDID commands

EDID setting @W *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

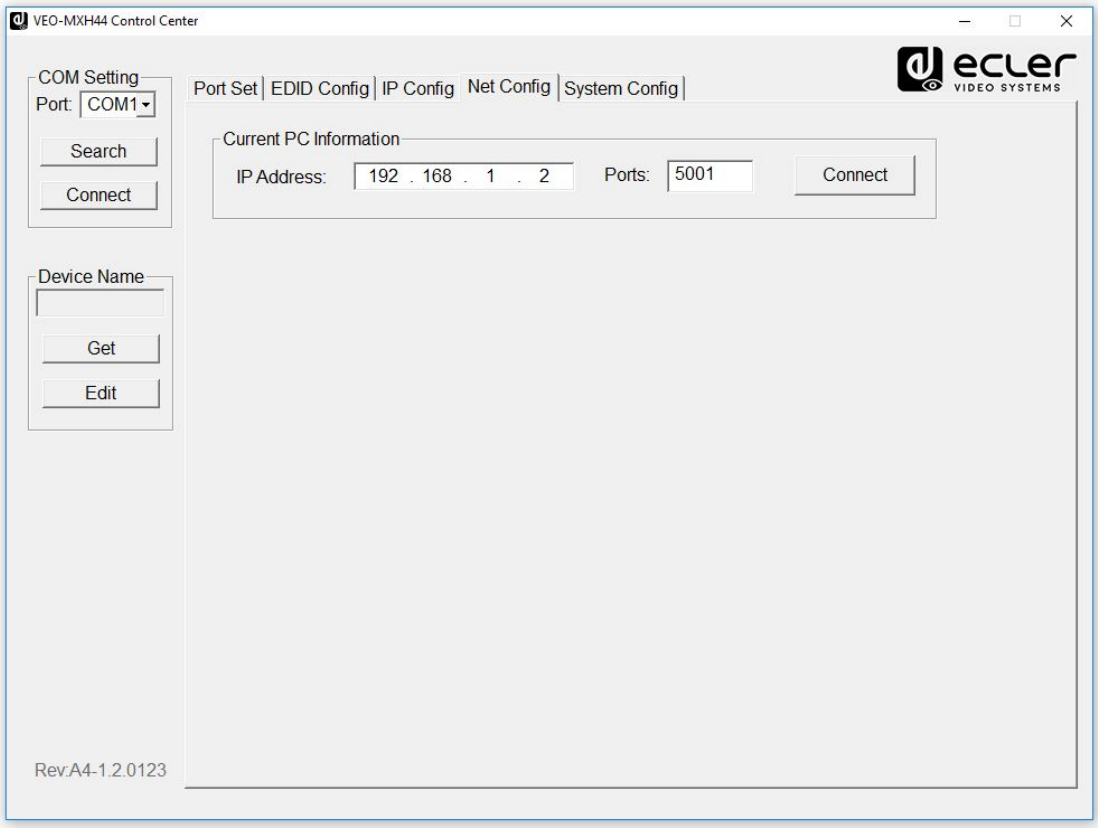
E.g: 11001001 = HDR, 48Bit, 7.1CH, 3D
Convert Binary code “11001001” to hexadecimal format “C9”.

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.



12.2. RS-232 connection

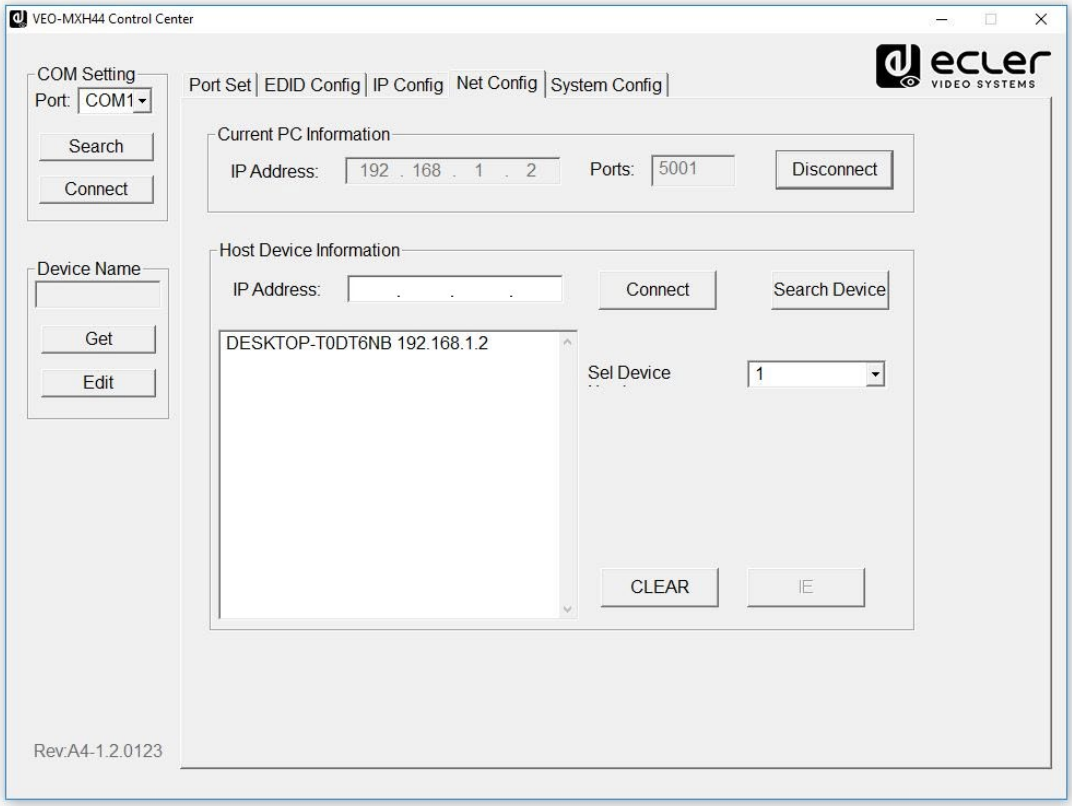
After pressing *Search* button on *COM Setting*, the software will automatically detect the first COM port available on your operating system; in alternative, it is possible to select the port manually.

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.

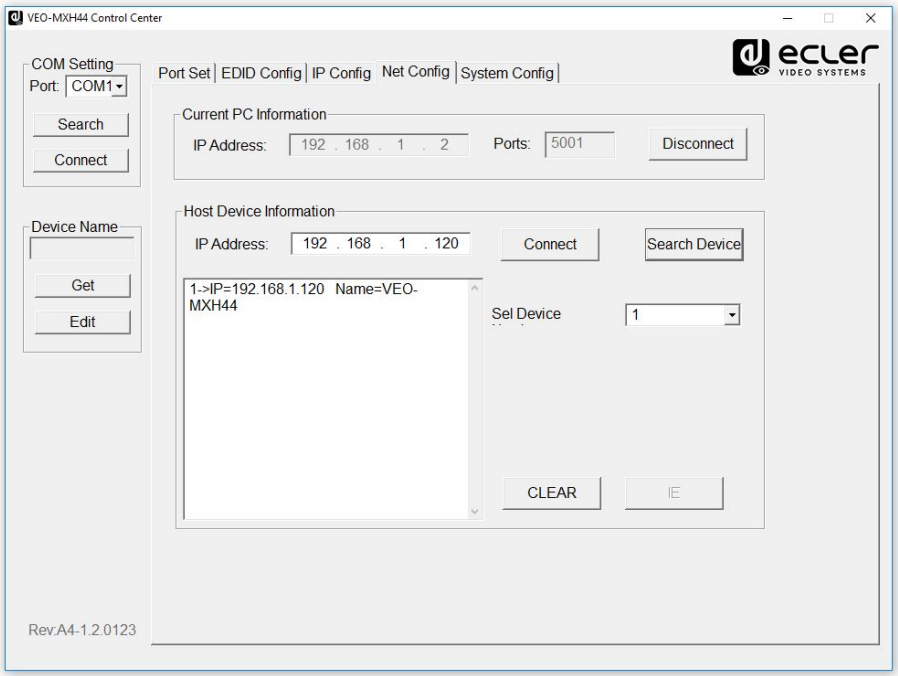
12.3. Network connection

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*.

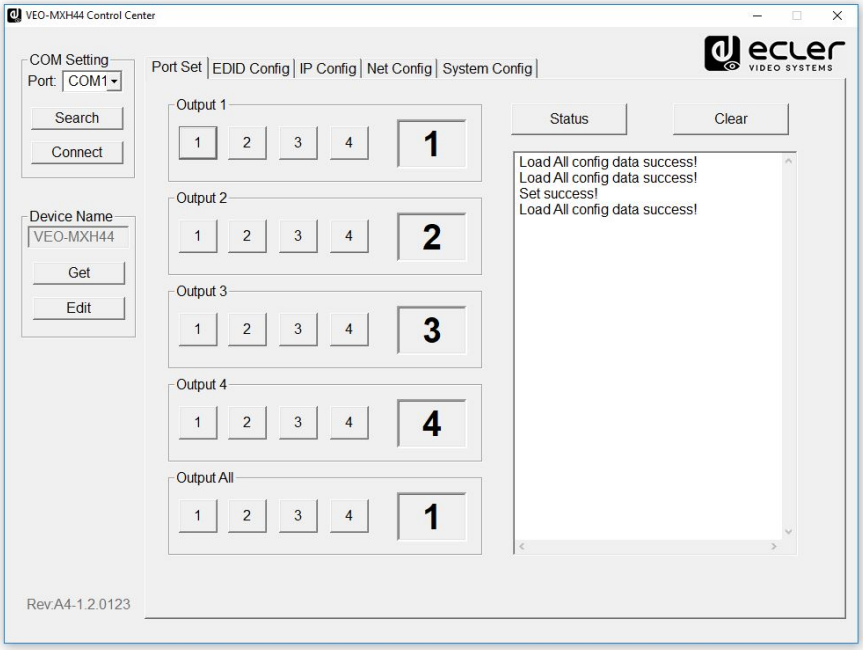


If the PC and the matrix are in the same network range, the unit will be discovered and the IP address will be shown as follows:



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

12.4. Port Set Page

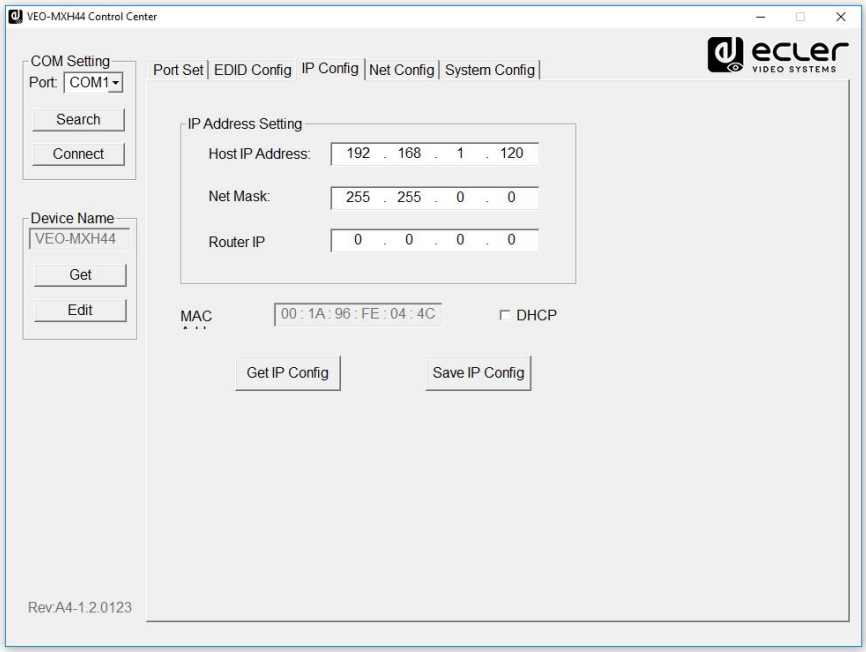


Matrix switching control page.

12.5. EDID Config Page

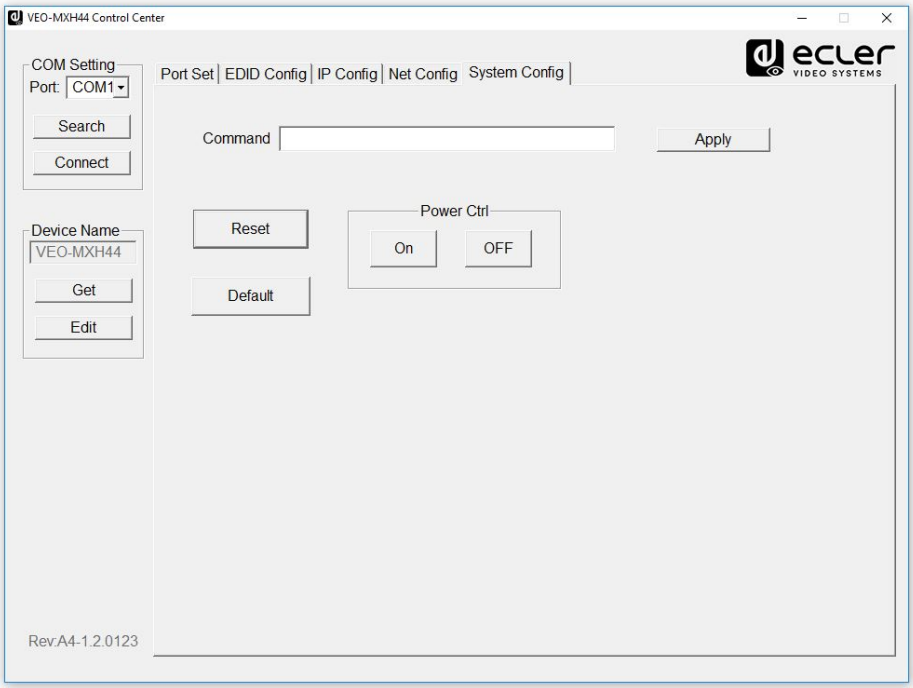
On this page it will be possible to set all the EDID options both for Video and Audio formats. **Note:** Analogue audio outputs are active only when 2CH is selected. When other formats are selected, the multi-channel audio is passing through the HDMI and the analogue output will be muted.

12.6. IP Config Page



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

12.7. System Config Page:



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.

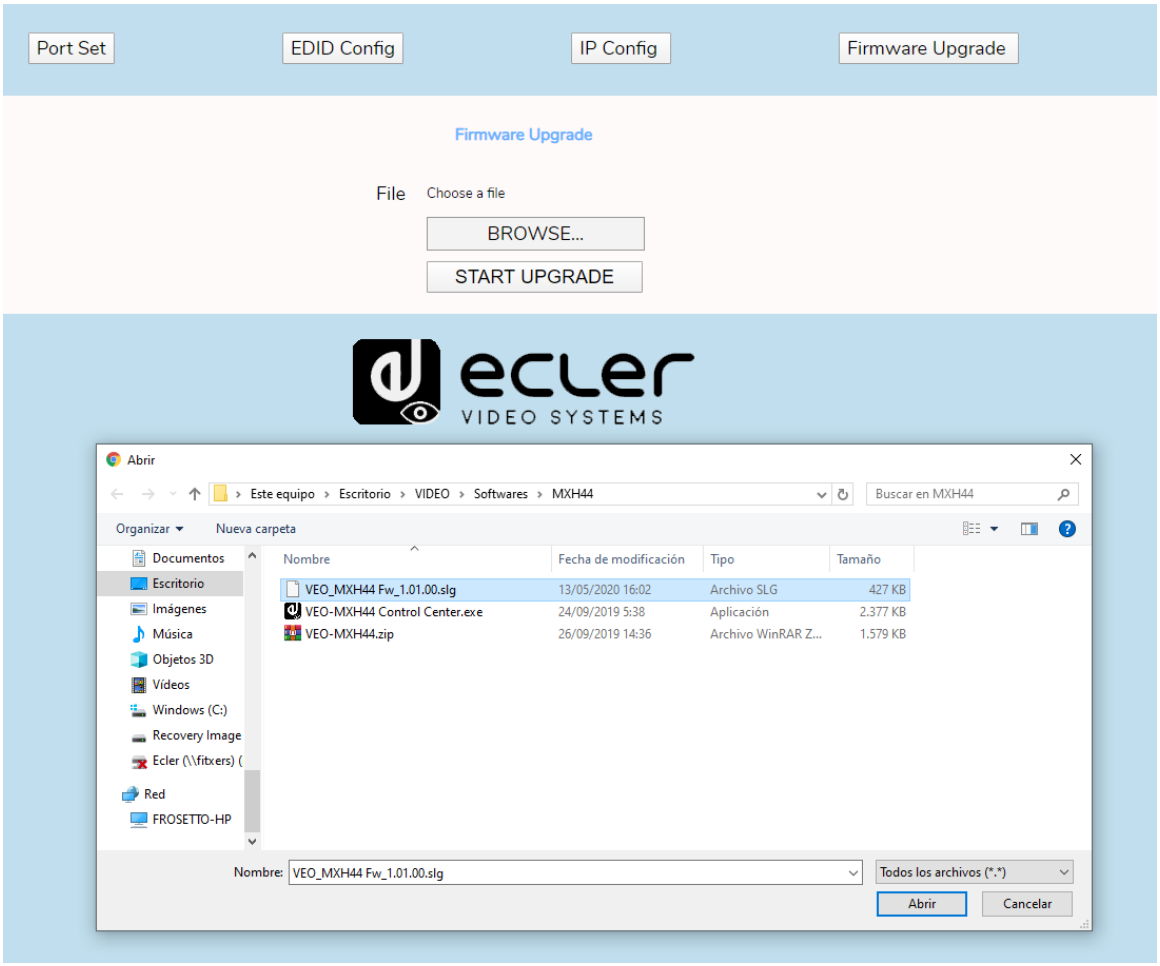
12. FIRMWARE UPGRADE

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:**

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, Dolby 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℃ - 45℃ / 23℉ - 113℉
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 Support / Technical requests.

Motors, 166-168 08038 Barcelona - Spain - (+34) 932238403 | information@ecler.com | www.ecler.com