

VEO-XTI2L / VEO-XRI2L

VIDEO DISTRIBUTION OVER IP

Low latency 4K over IP Video Extenders with KVM and Videowall



TCP/IP CONTROL MANUAL

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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 “” 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 the main 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 lightning 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 **VEO-XTI2L / VEO-XRI2L low latency 4K over IP video extenders**. Please read the User Manual before making 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.

The **VEO-XTI2I & VEO-XRI2I** come with a **3-year** warranty.

4. INTRODUCTION

VEO-XTI2L and VEO-XRI2L represent a very versatile solution for audio, video and control signal distribution over Local Area Network (LAN). They can be used as 4K audio video and KVM extenders over IP in multiple configurations such as point to point, point to multi-point, multi-point to multi-point and video wall composition. They also include control features like USB, RS-232 and IR pass-through, with easy setup and management with Web GUI and PC GUI.

5. THIRD PARTY CONTROL PROTOCOL: CONNECTION AND LOGIN

VEO-XTI2L and VEO-XRI2L can be controlled by third party devices or third party control systems via TCP/IP.

By default, transmitters and receivers come with “Auto IP” settings that provide automatic IP address assignment when more devices are connected to the same network. The default IP subnet is 169.254.x.y.

Please consult VEO-XTI2L and VEO-XRI2L User Manual in order to discover the devices connected to your LAN network and change the IP address accordingly with your network.

Once a static IP address is set, open a TCP/IP connection on **port 24** using the device IP address; the devices will send a welcome message like follows:

```
UDP Setup | Serial | TCP Client | TCP Server | UDP | Test Mode | About |
Received/Sent data
Connecting to 169.254.8.137 ...
Connected to 169.254.8.137
NVT: FF FD 01
NVT: FF FD 1F
NVT: FF FD 21
NVT: FF FB 01
NVT: FF FD 01
NVT: FF FB 03
{0D}{0D}{0A}ast3-client82AC6B76B590 login: root
```

After “welcome message” is sent, you can login using **root** as username (no password needed).

Once the “/ #” command prompt is shown, the device is ready to receive control commands.

After each command, a **carriage return** CR char is required (0x0D in hex).

6. CONTROL COMMANDS

In a typical installation scenario where multiple transmitters and receivers are connected to the network, each transmitter creates a multicast video stream on a predefined channel (displayed on the front panel display). Please remember to change the casting mode in multicast (default is unicast).

Each transmitter must be set on a different channel and the receivers can receive one of the streams just selecting the correspondent channel. The following commands are all intended for **VEO-XRI2L receivers**.

6.1. SET Channel:

- e e_reconnect::0002

This command, sent to a receiver, allows to select a streaming channel (02 in this case). All the services active on the transmitter set on channel 02 are extended to the receiver.

6.2. SET Channel for a specific service:

Using the following commands it is possible to create independent routing of different services. For example, a receiver can receive a video stream from the transmitter set on channel 01 and a audio stream from the transmitter set as channel 02.

- `e e_reconnect::0001::v`
- `e e_reconnect::0002::a`

Each service can be specified as follows:

- **a:** audio over IP
- **v:** video over IP
- **s:** serial over IP
- **r:** IR over IP
- **u:** USB over IP

`e e_reconnect::0001` will restart all the services from the same transmitter (channel 01 in this case).

NOTE: Display indication on the front panel of receivers follows the channel selected for video service.

6.3. GET channel for a specific service

- `Imparam g CH_SELECT_S`

This command allows getting the channel number of a specific service (RS-232 in the example). The services can be specified as follows:

- **A:** audio over IP
- **V:** video over IP
- **S:** RS-232 over IP
- **R:** IR over IP
- **U:** USB over IP

After sending `e e_reconnect::0002` without specifying any service, all the services will answer 0002.

6.4. SET Stop_link command:

- e e_stop_link

This command allows to stop all the services on a receiver. It is possible to stop a specific service by choosing between the following:

- **a:** audio over IP
- **v:** video over IP
- **s:** RS-232 over IP
- **r:** IR over IP
- **u:** USB over IP

For example:

- e e_stop_link::ru

It stops IR and USB services on the receiver.

6.5. SET reconnect command

- e e_reconnect

This command allows restarting all the services on a receiver. It is possible to start a specific service by choosing between the following:

- **a:** audio over IP
- **v:** video over IP
- **s:** RS-232 over IP
- **r:** IR over IP
- **u:** USB over IP

For example:

- e e_reconnect::0010::ru

It restarts IR and USB services from transmitter 10 on a receiver.

6.6. SET HDMI Output ON command

- echo 0 > /sys/devices/platform/display/screen_off

It switches HDMI out ON.

6.7. SET HDMI Output OFF command

- `echo 1 > /sys/devices/platform/display/screen_off`

It switches HDMI out OFF.

6.8. SET Video stream Pause ON

- `echo 1 > /sys/devices/platform/videoip/pause`

It allows freezing the video stream to the last frame shown before sending the command.

6.9. SET Video stream Pause OFF

- `echo 0 > /sys/devices/platform/videoip/pause`

It allows restoring the normal video streaming reception.

6.10. Reboot command

- `reboot`

It allows to reboot the devices from remote. This command can be used both for **transmitters** and **receivers**.

7. VIDEO WALL COMMANDS

The following set of commands allows creating and managing a video wall system. Each screen that composes a video wall, needs to be connected to a VEO-XRI2L.

Each receiver **must** be set as “multicast” mode before sending the following commands (please check VEO-XTI2L VEO-XRI2L user manual on page 19).

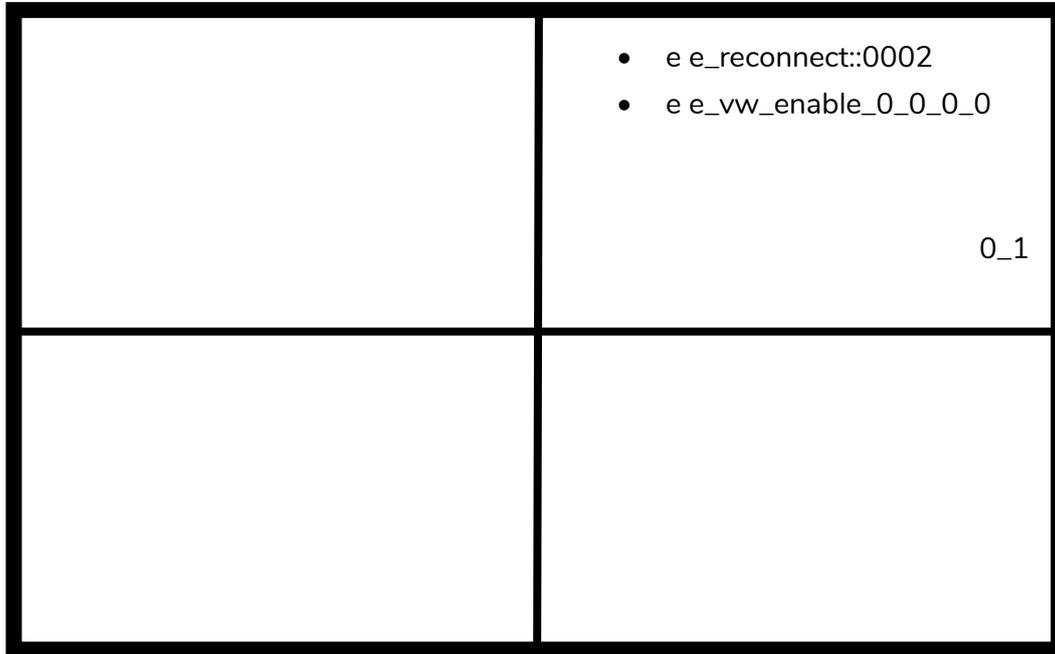
Screens are numbered as row_column from 0 to N-1, where N is the total number of screens per row and per column (max 8x8). This example shows the required commands to send to each receiver in order to create a 2x2 video wall:

<ul style="list-style-type: none"> • e e_reconnect::0001 • e e_vw_enable_1_1_0_0 <p style="text-align: right;">0_0</p>	<ul style="list-style-type: none"> • e e_reconnect::0001 • e e_vw_enable_1_1_0_1 <p style="text-align: right;">0_1</p>
<ul style="list-style-type: none"> • e e_reconnect::0001 <p>e e_vw_enable_1_1_1_0</p> <p style="text-align: right;">1_0</p>	<ul style="list-style-type: none"> • e e_reconnect::0001 • e e_vw_enable_1_1_1_1 <p style="text-align: right;">1_1</p>

- e e_vw_enable_1_1_0_0

This command informs the receiver about video wall size (1_1 stands for 2x2) and about its own position (0_0).

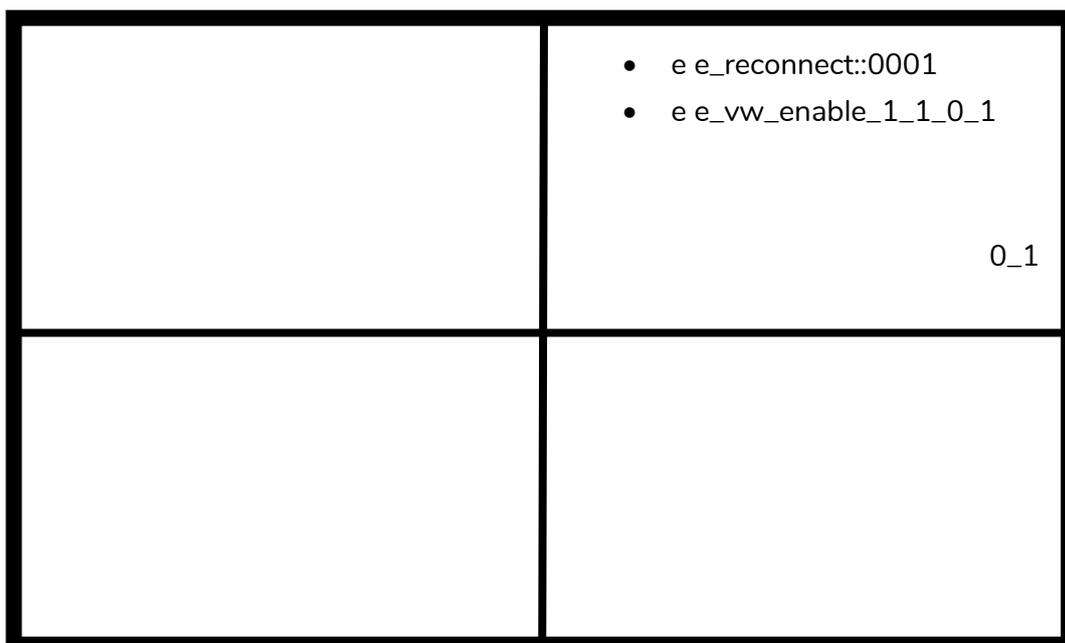
It is also possible to manage each screen individually, in order to create custom compositions. The following example shows how to obtain a Picture in Picture using the top right screen. In this case this monitor is no longer a part of the video wall and operates as an independent screen receiving another channel (0002).



- e e_vw_enable_0_0_0_0

This command is used to switch from video wall mode to single display mode.

To return to the previous condition (video wall), simply send the previous command.



- **e e_vw_rotate_5**

This command allows to rotate the image by 90 degrees clockwise. The image will be automatically scaled to the new resolution (portrait mode).

- **e e_vw_rotate_6**

This command allows to rotate the image by 90 degrees counterclockwise. The image will be automatically scaled to the new resolution (portrait mode).

- **e e_vw_rotate_3**

This command allows to rotate the image by 180 degrees.

- **e e_vw_rotate_0**

This command allows to orient the image at normal position.

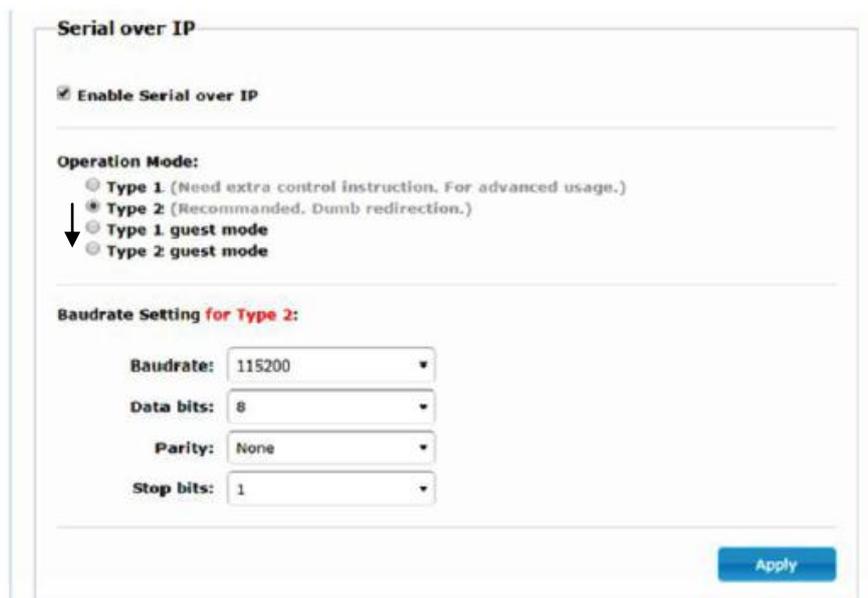
8. HOW TO USE VEO-XTI2L and VEO-XRI2L as a TCP/RS232 converter

The RS-232 port of the VEO-XTI2L and VEO-XRI2L devices is configured by default to perform a bidirectional RS-232 extension between transmitters and receivers.

It is however possible to use the RS-232 port of VEO-XTI2L and VEOXRI2L extenders as a control port for third-party devices, just sending the desired command via TCP / IP and using the VEO devices as protocol translators.

To activate this feature it is necessary to change the serial port default settings through VEO device control web page.

Once the IP address of the device has been discovered (see User Manual on page 23), open the *Functions* page and on "Serial over IP" change the "Operation mode" option from "Type 2" to "**Type 2 guest mode**".



Serial over IP

Enable Serial over IP

Operation Mode:

- Type 1 (Need extra control instruction. For advanced usage.)
- Type 2 (Recommended. Dumb redirection.)
- Type 1 guest mode
- Type 2 guest mode

Baudrate Setting for Type 2:

Baudrate: 115200 ▼

Data bits: 8 ▼

Parity: None ▼

Stop bits: 1 ▼

Apply

After pressing the "Apply" button and rebooting the device, it is necessary to create a TCP/IP connection using **device IP address** and **port 6752**.

Once the connection is created, commands sent via TCP / IP will be forwarded in transparent mode through the serial port of VEO device.

9. HOW TO SEND CONTROL COMMANDS USING ECLERNET MANAGER

All the commands described above can be sent via 3rd party control systems or using the User Control Panels (UCP) on Ecler Net Manager.

The different options of control that include touch screens and mobile device, allow creating a very user friendly and cost effective control system.

Here below some examples about how to send control commands to VEO-XRI2L receiver devices using Net Strings Buttons on Ecler Net Manager.

9.1 Ecler Net Manager Net String Syntax

When a Net String Button is used in ENM, the typical TCP command is structured like follows:

```
|tcp|192.168.1.19|24|\d1root\re e_reconnect::0002\r\d1|
```

|tcp|: indicates the type of communication. The two available options are **tcp** or **udp**: VEO devices only accept TCP connection,

|192.168.1.19|: indicates the IP address of the device to control (TCP server).

|24|: indicates the port of the TCP socket or UDP port.

\d1: this string is used to introduce a time delay multiple of 100mS in sequences of commands. In this case it is necessary to introduce a delay before the login in order to wait that the “welcome message” is finished. It is also needed before the connection is closed to ensure that all the commands have been received.

```
\d1=\D1=100mS
```

```
\d9=\D9=900mS
```

```
\d9\d3=\D9\D3=1200mS
```

root: login username. Specific username for VEO-XRI2L devices (no password needed).

\r: **CR** Carriage Return command; it is equal to **\x0D** in hex.

e e_reconnect::0002 VEO-XRI2L command to set the receiving channel (02).

Other useful chars are:

\n **LF** Line Feed that is equal to **\x0A** in hex.

\0 **NUL** Null char that is equal to **\x00** in hex.

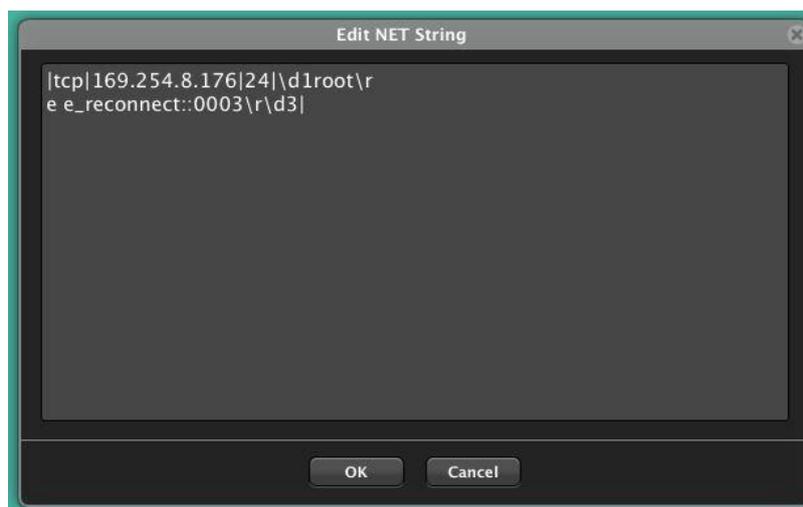
\xHH=\XHH the sequence **\x** allows to send commands in hexadecimal code. HH are two hex digits.

**** sending this sequence is equal to send a **** char.

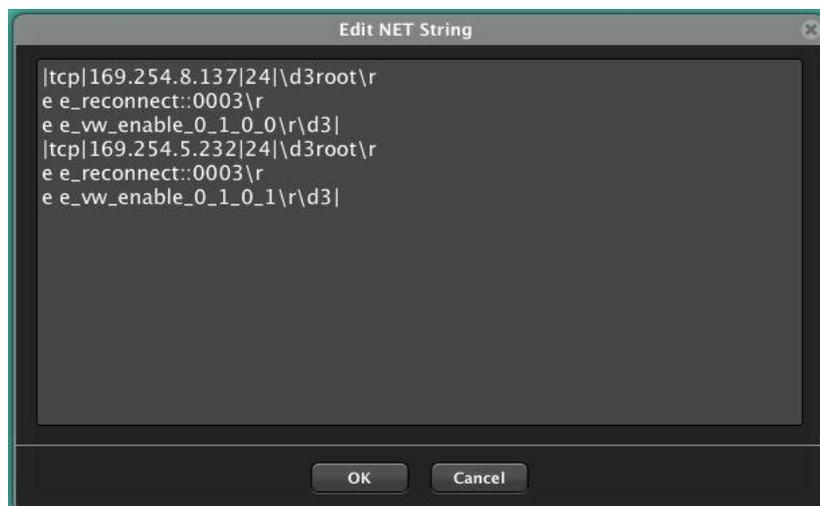
space **STX** Start of text char; **\x02** in hex.

9.2 Ecler Net Manager Net String Examples

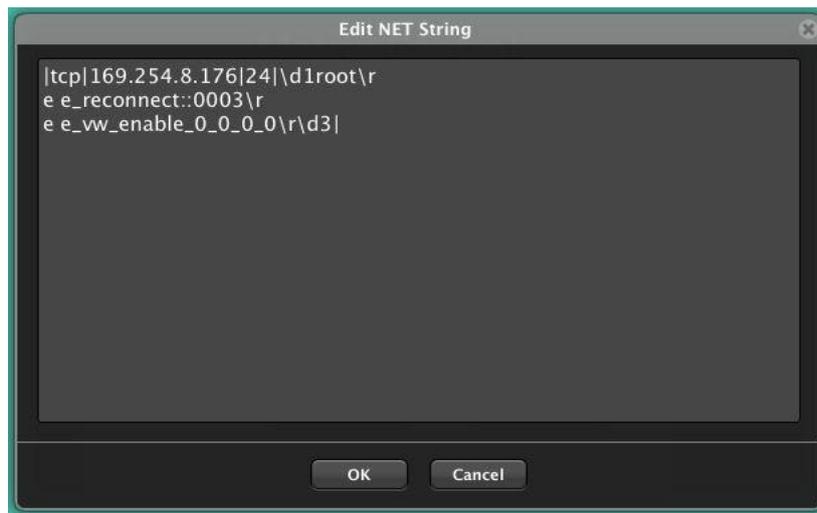
- Set receiving channel 03:



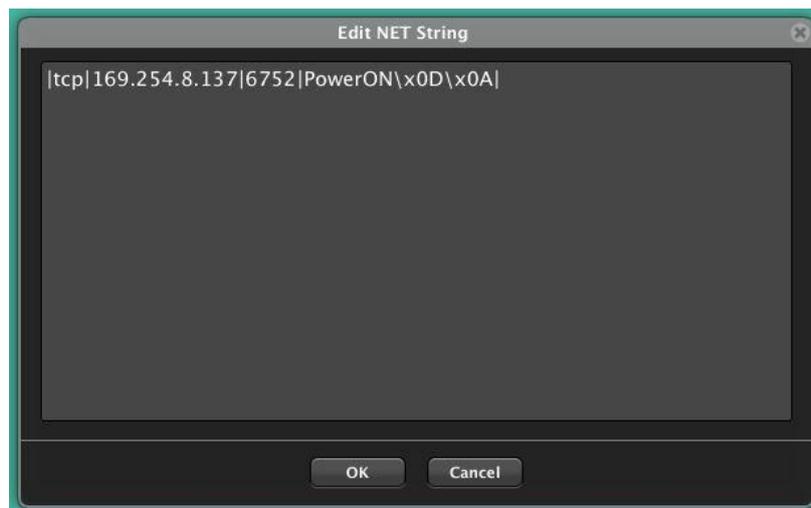
- Create a video wall 1x2 receiving source channel 03:



- Restore one of the screen as independent screen receiving channel 03:



- Send a RS-232 "PoweON" command followed by CR and LF commands to a 3rd party device through the receiver RS-232 port:



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.

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