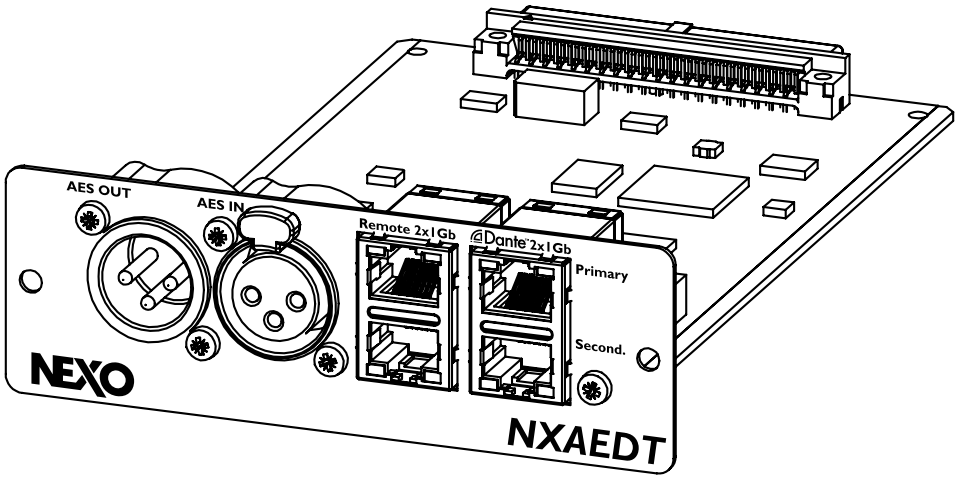
NXAEDT

Extension Card



User manual

Thank you for choosing NEXO products. We hope you will be entirely satisfied using them.

PRESENTATION

The NEXO NXAEDT extension card adds a new connectivity Dante (or AES67) and AES/EBU to the NEXO amplifiers NXAMP4x1mk2, NXAMP4x1mk2 and NXAMP4x4mk2.

Interfaces

- Four configurable Gigabit Ethernet ports
- Switched network or redundant network
- Remote access through the Dante network or via an independent network
- One AES/EBU input on XLR connector, 2 channels
- One AES/EBU buffered output on XLR connector, with fail-safe relay

Dante Functionality

- Native Dante Protocol, low latency
- Compatible with AES67 networks
- Four audio input channels
- 44.1kHz, 48kHz, 88.2kHz or 96kHz sampling rate (48 kHz only for AES67 streams)
- Audio routing with the Dante Controller applications
- Dante Primary / Secondary networks available

AES/EBU Functionality

- AES/EBU Protocol, input/output isolated by transformers
- Two audio input channels with buffered output
- 44.1kHz, 48kHz, 88.2kHz or 96kHz sampling rate

Ethernet port available for remote control by using the NEXO NeMo application through the Dante audio network or by using a separated network/

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CONFORMITY INFORMATION

FCC Information (U.S.A.)

IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by NEXO-SA may void your authority, granted by the FCC, to use the product.

IMPORTANT:

When connecting this product to accessories and/or another product use only high-quality shielded cables. Cable(s) supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

NOTE:

This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class “A” digital devices.
Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices.

This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the user manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations, which can be determined by turning the unit “OFF” and “ON”, please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 Ohms ribbon lead, change the lead-in to co-axial type cable.
If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact the After Sales department of NEXO-SA, Parc d’Activité du Pré de la Dame Jeanne, B.P.5, 60128 PLAILLY, FRANCE.

CE Information (Europe)

This product is compliant with the European directive 2014/30/UE and have passed with success the certification number: EN 55032 (2015) / EN 55035 (2017) / EN 61000-6-2 (2019).

It is an electronic product that does not contain harmful substances in accordance with the RoHS directive 2011/65/EU.



The symbol on products, packaging and/or accompanying documents means that used electrical or electronic products should not be mixed with normal household waste. For proper treatment, recovery and recycling of waste electrical and electronic equipment, please deposit them at the collection points provided for this purpose, in accordance with national regulations and Directives 2002/96/CE.

By disposing of waste electrical and electronic equipment correctly, you will help save valuable resources and prevent potential negative effects on human health which could occur from inappropriate waste handling. For more information about the collection and recycling of waste electrical and electronic equipment, please contact your municipality, your waste disposal service or the point of sale where you purchased the products.

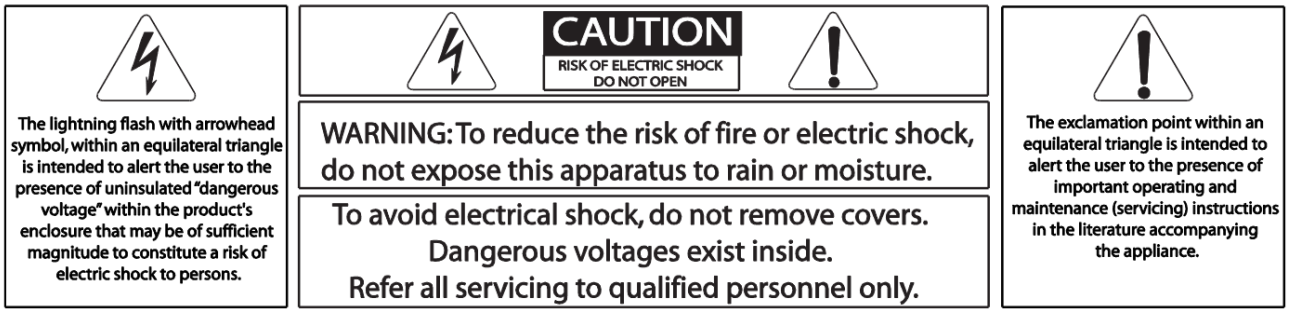
[For Professional and/or Company inside the European Union]

If you wish to dispose of waste electrical and electronic equipment please contact your dealer or supplier for more information.

[Information for recycling electronic product outside the European Union]
This symbol is only valid in the European Union. If you wish to dispose of waste electrical and electronic equipment, please contact the local authorities or your supplier and ask for the appropriate disposal method.

CAUTIONS AND SECURITIES

Please read this manual carrefully before using the product. Keep this manual without time limit.



The above warning is located on the top of the unit.

Please always observe the basic precautions listed below to avoid the risk of serious injury or death from electric shock, short circuit, damage, fire or other hazards. This list of precautions is not exhaustive:

1. Handle the NXAEDT card with care, if possible without touching electronic components.
2. Do not use the NXAEDT card in any device other than those mentioned in this manual.
3. Do not clean the card with any liquid, only a dry cloth.
4. Check that the amplifier is connected to an appropriate socket, providing a ground connection. Improper grounding can cause an electric shock.
5. Disconnect the mains plug from the wall socket when the device is not used for a long time, or during a thunderstorm.
6. Disconnect the mains plug in case of installation, replacement of the extension card.
7. To disconnect the appliance from the mains, unplug the electrical cable(s).
8. Even if the Standby/On switch is in the Standby position (the screen is off), the device is still powered on, and use a very low intensity. If you are not using the device for a long time, be sure to unplug the electrical power cable(s).
9. Do not open the device, do not attempt to disassemble it or modify in any way. It does not contain any parts user serviceable. If the device appears to be malfunctioning or if it appears damaged, stop using it immediately and please send the product to the local NEXO after Sales service.

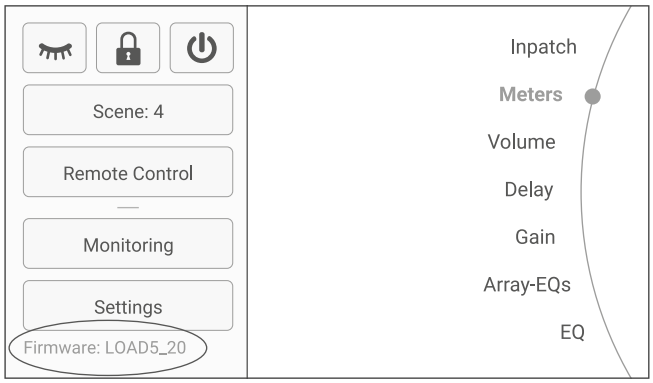
INSTALLATION

Prerequisite

Before installing and starting the product, the firmware of the NEXO NXAMPmk2 host should be updated: **LOAD5_20 minimum**.

The NXAEDT card and its remote control port are functional from firmware NXAMPmk2 LOAD5_20 or higher. If your NXAMPmk2 has an older firmware version, it is imperative to update it before inserting the NXAEDT card. Please follow the instruction below:

1. Check the firmware version of the NXAMPmk2. To do so, press the main button to access the menu. The firmware version is indicated at the bottom left.

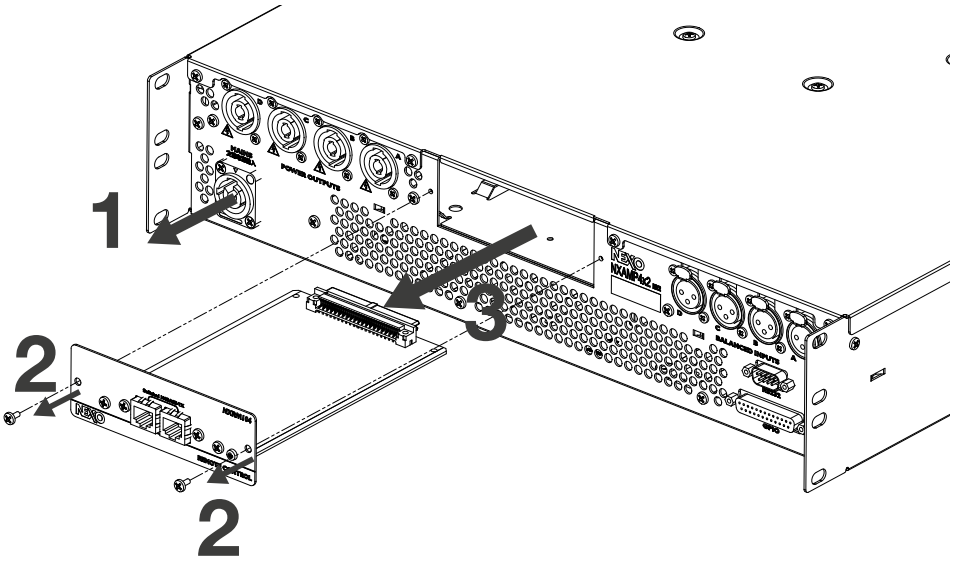


2. If the firmware version is lower than LOAD5_20, update the firmware using the expansion board currently fitted into the NXAMPmk2 among NXRM104, NXAE104 and NXDT014mk2 (see instruction below).
3. Connect the NXAMPmk2 to your local network.
4. On a computer connected to this local network, please download and use the software NEXO NeFu, available for free at www.nexo-sa.com, to update the amplifier firmware.

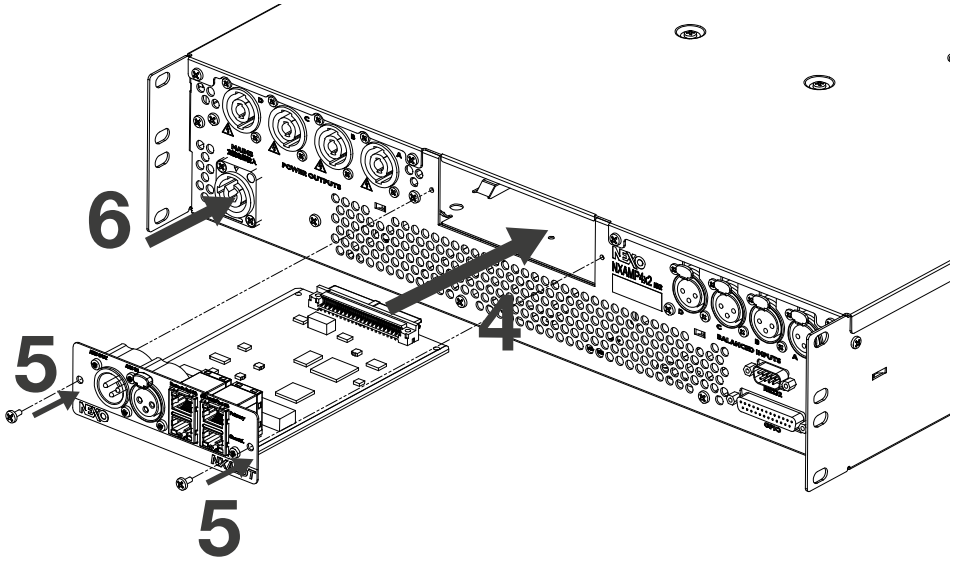
Hardware Installation

The NXAEDT card is to be inserted into the rear slot of NEXO NXAMPmk2 amplifiers . To do so:

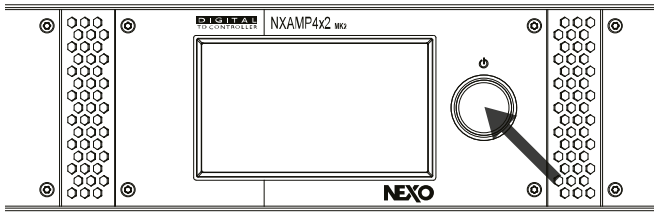
1. Disconnect the NXAMPmk2 from the mains.
2. Remove the two fixing screws of the existing extension card, as shown in the figure below.
3. Carefully remove the currently installed extension card by following the rails.



4. Insert the NXAEDT card.
5. Replace the screws previously removed in step 2.
6. Connect the NXAMPmk2 to the Mains using the power cable(s).

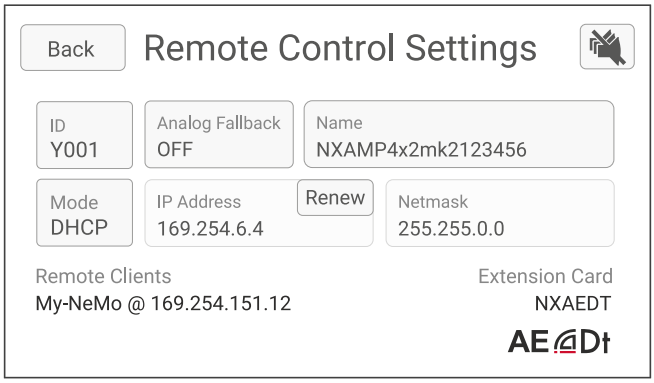


The installation operation is complete, you can now press the main button for two seconds to start the NXAMPmk2.



To check that the NXAEDT card has been correctly installed into the NXAMPmk2, press the main button to display the menu, then go in Options > Remote Control Settings. The newly inserted extension card is displayed at the bottom right of the

screen.



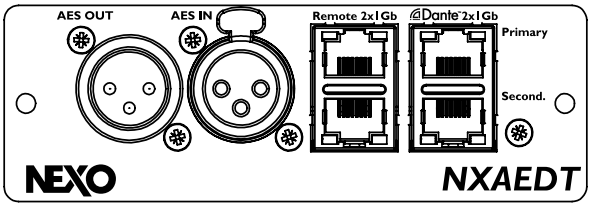
This window also gives a set of important information such as the IP address and addressing mode of the NXAMPmk2 on the connected Ethernet network.

The NXAEDT extension card is now installed and ready to use.

CONFIGURATION

Rear panel connectors

The NXAEDT board is shown in the view below:

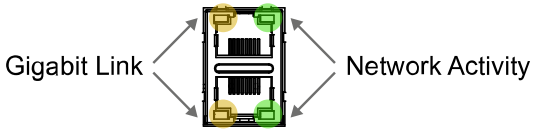


It is composed with:

- Four Gigabit Ethernet ports,
- 100/1000 Mbps speed LED for each Ethernet port,
- Link + Activity status LED for each Ethernet port,
- A Female XLR connector dedicated to AES/EBU input signals,
- A Male XLR connector dedicated to AES/EBU output signals.

Note that the AES/EBU output is a pass-through of the AES input signals. There is no audio routing possible between the Dante protocol and the AES/EBU section.

Additional information for Ethernet connectors



Nota

It is recommended to use the NXAEDT card on a Gigabit network. 10Mb/s networks are not suitable for low latency Dante audio network.

Switch mode configuration

The NXAEDT card is equipped with four Ethernet ports which can be configured through the Dante Controller application. The Ethernet ports can be configured as a flat switch, or by separating the networks (VLAN), Dante Primary, Dante secondary with or without the remote control of the NXAMPmk2 (REMOTE network).

For more information on Dante Primary/Secondary management, please consult Audinate's website.

It is possible to apply a configuration according to the four following modes:

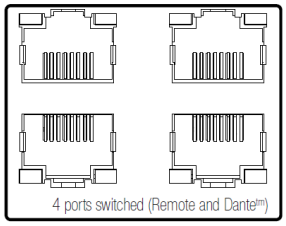
– “Switched” Mode,

– “Redundant” Mode,

– “Switched_RemotePortIsolated” Mode,

– “Redundant_RemotePortIsolated” Mode.

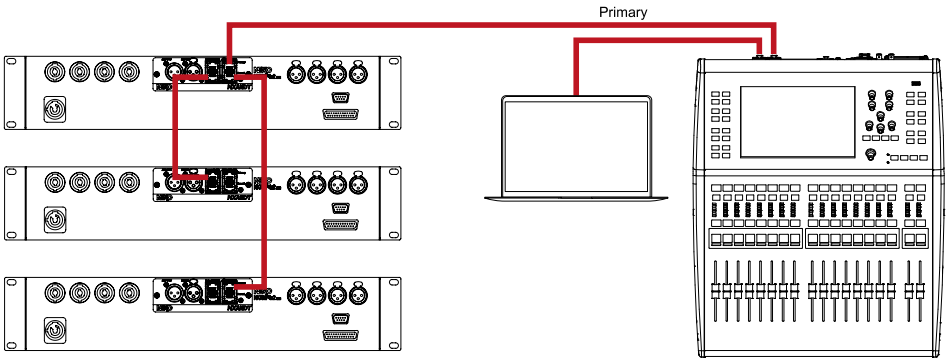
“Switched” Mode



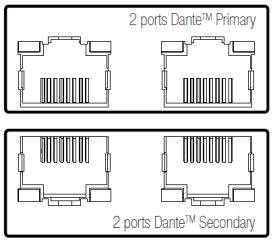
All four ports are placed on the same network.

In this mode, the Dante and the REMOTE ports of the amplifier are on the same network. This configuration uses two IP address.

Use case with a mixing console and a Dante network. A computer can be connected at the control room level while controlling the amplifiers via the REMOTE link.



“Redundant” Mode



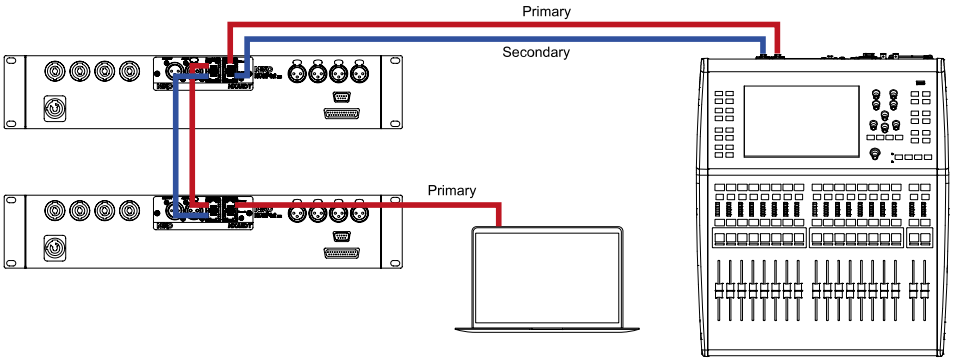
By selecting “Redundant” Mode, the Dante network is secured through two independent network links. A “Primary” network and a “Secondary” network.

Two Ethernet ports are assigned to the Dante Primary network, and two Ethernet ports to the Dante Secondary network. The “Primary” networks and “Secondary” are two independent networks that are not connected together.

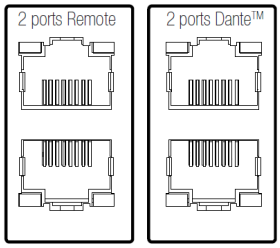
In this mode, the REMOTE link is accessible from the Dante network Primary. They

take a total of three IP addresses.

Use case with a mixing console and a Dante redundant network. A computer can be connected [1] at the control room on the Primary network while controlling the amplifiers via the REMOTE link.



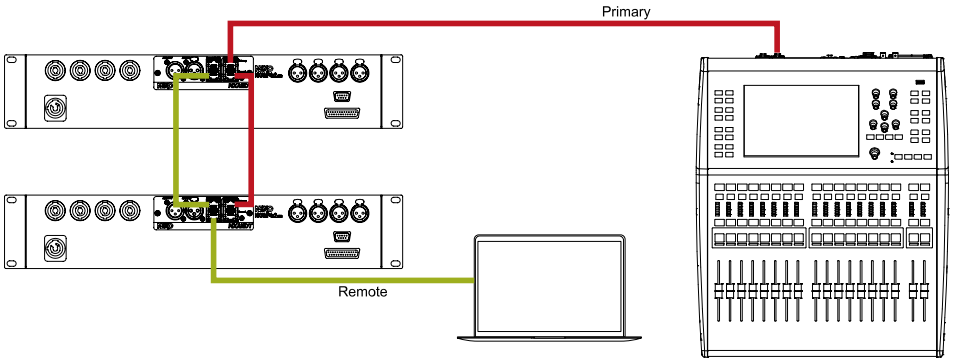
“Switched_RemotePortIsolated” Mode



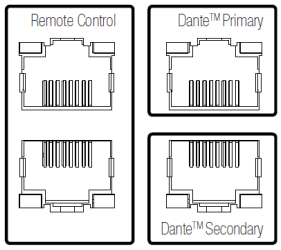
It is possible to separate the REMOTE link from the Dante network by activating the “Switched_RemotePortIsolated” Mode. In this case, the Dante network and REMOTE are independent.

The Dante link uses the Primary only. They take altogether two IP addresses.

Use case with a mixing console and a Dante network. A computer can be connected using a new network cable while controlling the amplifiers via the REMOTE link.



“Redundant_RemotePortIsolated” Mode

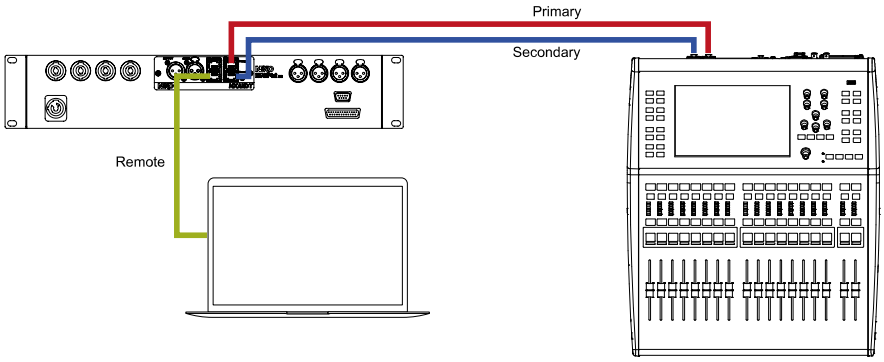


This last mode provides Dante redundancy while separating the REMOTE link.

Three networks are created and are independent. A Dante Primary network, a Dante Secondary network and a REMOTE network.

They take a total of three IP addresses.

Use case using the three independent networks.

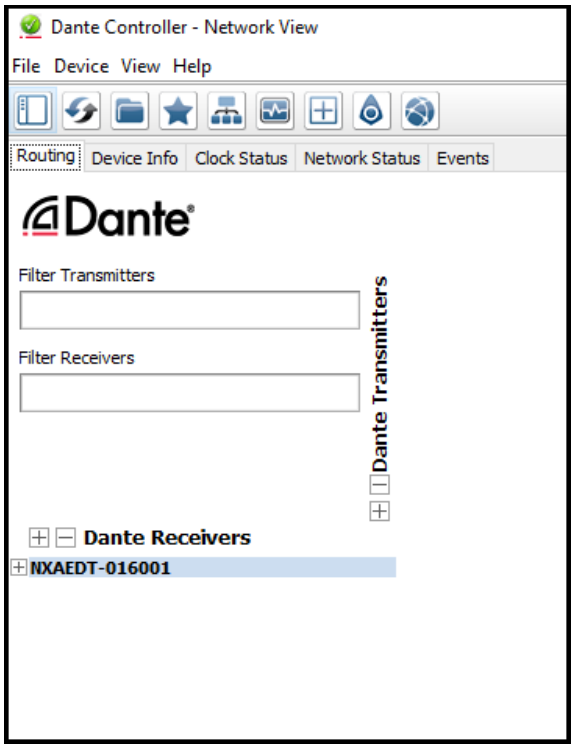


Changing the Switch Mode

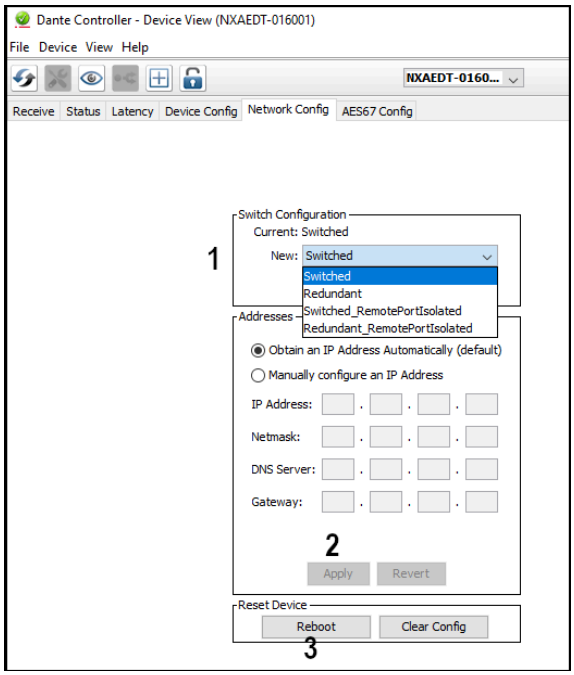
To change the network configuration mode, it is imperative to have the Dante Controller application installed on a computer. This application can be downloaded for free from Audinate's website.

Connect your computer to the Dante Primary network. The symbol "P" at the bottom left of the home screen should be green.

Launch the application and wait for Dante devices to be detected.



Double-click on the Dante device *NXAEDT-xxxxxx*. A new popup appears, Go to the **[Network Config]** Tab.



To change the network configuration mode:

1. Select the desired mode,
2. Press **[Apply]**,
3. Press **[Reboot]**.

After this manipulation, the NXAEDT card will restart and may not be visible in the application for a few seconds. After reboot, the new configuration is applied.

Network IP Address Configuration for NXAEDT

The NXAEDT card is compliant with the Dante IP addressing specifications. The card is compatible with three address types :

– Dynamic IP with or without DHCP server,

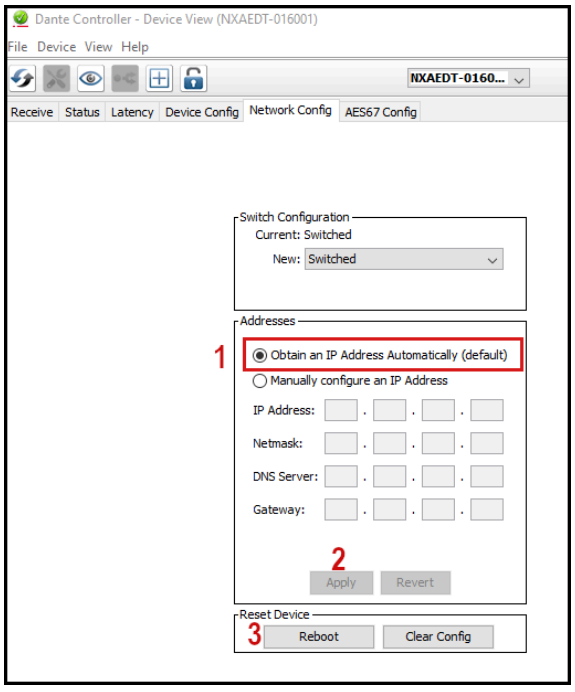
– Static IP, configured by advanced user.

Dynamic IP

Dynamic IP Addressing is the easiest and simplest method to configure a Dante network. It requires little knowledge to set up the network. This is the default addressing mode for NXAEDT.

If the network is equipped with a DHCP server, the NXAEDT card will contact the DHCP server to obtain an IP address on the network. The address is the same during a specific time interval provided by the server. On expiration, the IP address will be automatically renewed. The DHCP server is responsible for the consistency of IP addressing within the network. In the case of a redundant network, it will be necessary to configure the DHCP server to have authority to all affected subnets.

If the network is not equipped with a DHCP server, the NXAEDT card will automatically assign itself an address regarding the protocol APIPA. This method is possible to connect approximately 65,000 devices per network. The APIPA address as “Primary” network is 169.254.x.x. In the case of a redundant network, the “Secondary” APIPA network pool will be 172.31.x.x. The subnet mask will be 255.255.0.0 (/16 equivalent).



To configure the NXAEDT in Dynamic IP Addressing:

1. From the Dante Controller application, double-click on the device *NXAEDT-xxxxxx* and go to the **[Network Config]** tab. Choose **[Obtain an IP Address Automatically]**.

2. Press **[Apply]**.

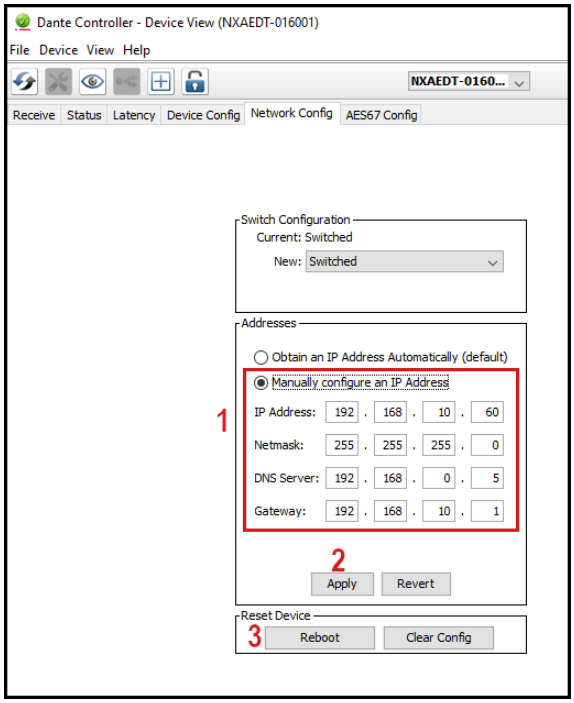
3. Press **[Reboot]**.

After this manipulation, the NXAEDT card will restart and may not be visible in the application for a few seconds. After reboot, the new configuration is applied.

Static IP

A static IP address is directly set by the user. It should only be considered by experienced users with advanced knowledge of IP networking to avoid mistakes when configuring devices on the network.

Before proceeding with the change, prepare the IP address of the device, subnet mask, gateway address and optionally a DNS server available on the network.

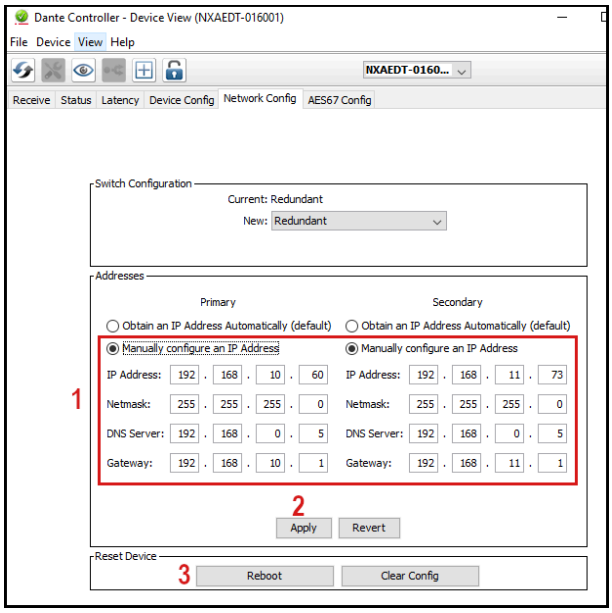


To configure the card in Static IP Addressing:

1. From the Dante Controller application, double-click on the device *NXAEDT-xxxxxx* and go to the **[Network Config]** tab. Choose **[Manually configure an IP Address]**, then enter the device parameters.
2. Press **[Apply]**.
3. Press **[Reboot]**.

After this manipulation, the NXAEDT card will restart and may not be visible in the application for a few seconds. After reboot, the new configuration is applied.

In case of a redundant network, and after having selected a redundant mode as in the previous chapter, it will also be necessary to fill-in parameters of the secondary network.



To configure the redundant network in Static IP Addressing:

1. Choose **[Manually configure an IP Address]**, then enter the device parameters.
2. Press **[Apply]**.
3. Press **[Reboot]**.

After this manipulation, the NXAEDT card will restart and may not be visible in the application for a few seconds. After reboot, the new configuration is applied.

Note that the NXAEDT card must have started a first time in redundant mode before having access to the IP parameters.

NXAMPmk2 IP Address Configuration

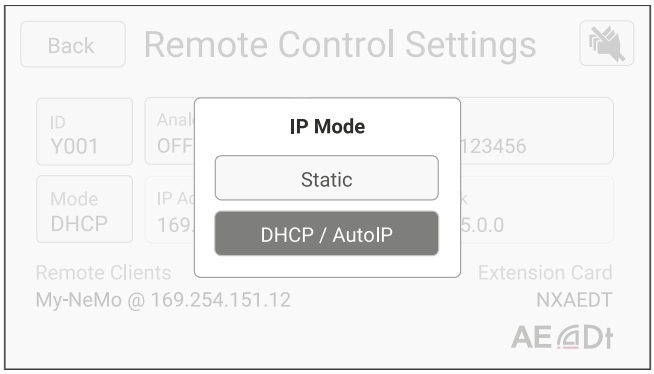
The NXAMPmk2 IP address is configured from the tactile screen of the amplifier's front panel. This parameter corresponds to the REMOTE access in order to control the amplifier from a computer by using the NEXO NeMo application, available for free at www.nexo-sa.com

Press the main button once to enter the main menu, then using the touch screen, go to *Options* > *Remote Control Settings*.

By default the amplifier is in DHCP / AutoIP (APIPA) mode.

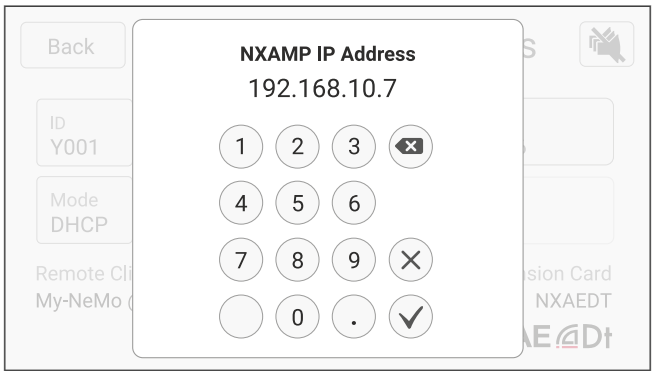
Dynamic IP

To modify the IP address configuration in dynamic mode, press **[Mode]** and choose **[DHCP/AutoIP]**.



Static IP

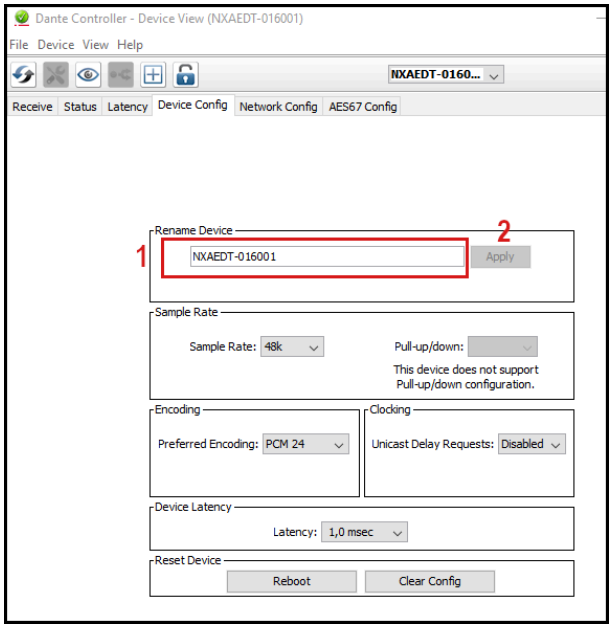
To modify the IP address configuration in static mode, press **[Mode]** and choose **[Static]**. Then, fill-in **[IP Address]** and **[Netmask]**.



For more information, please refer to the NXAMPmk2's user manual.

Rename the Device on the Dante Network

It is possible to edit the name of the NXAEDT card displayed in the Dante Controller application. To do so:



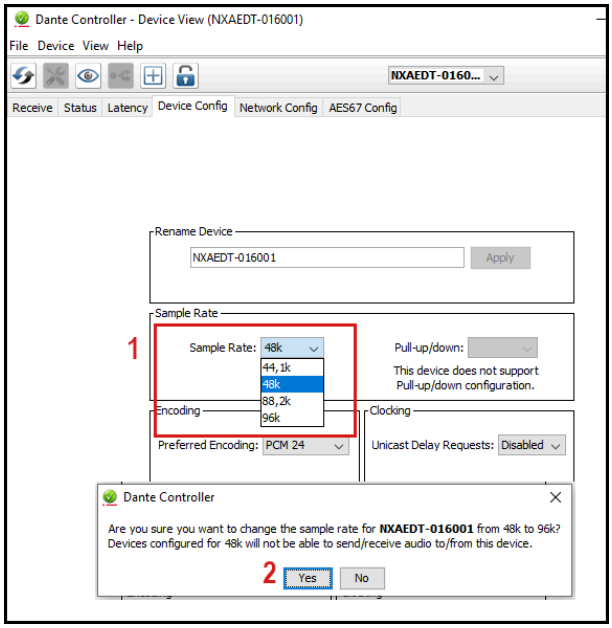
1. From the Dante Controller application, double-click on the device *NXAEDT-xxxxxx*

and go to the **[Device Config]** tab. Edit the proposed name in the *Device Name* field,

2. Press **[Apply]**. The new name is directly applied.

Sampling Rate Configuration for Dante

The NXAEDT board has the possibility to configure up to four different sampling rates: 44.1khz, 48khz, 88.2khz, 96khz.



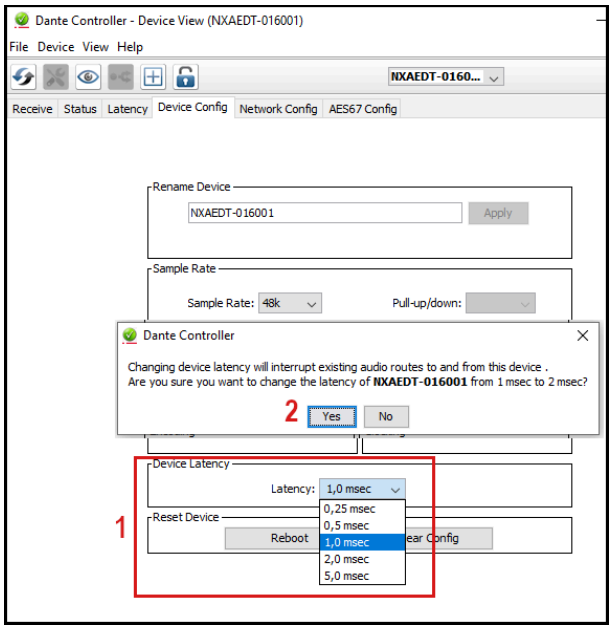
To change the sampling rate:

1. From the application Dante Controller, double-click on the device *NXAEDT-xxxxxx* and go to the **[Device Config]** tab. Choose a sampling rate in the **[Sample Rate]** list.

2. Validate your choice by pressing **[Yes]**. The new parameter is directly applied.

Dante Device Latency Configuration

It is possible to change the latency according to the performance of the network and the architecture. A point-to-point link can have a very low latency. The addition of a switch on the network will increase the latency by 0.5ms. By default, NXAEDT's latency is 1 ms, which is the standard for a simple architecture.



To change the latency:

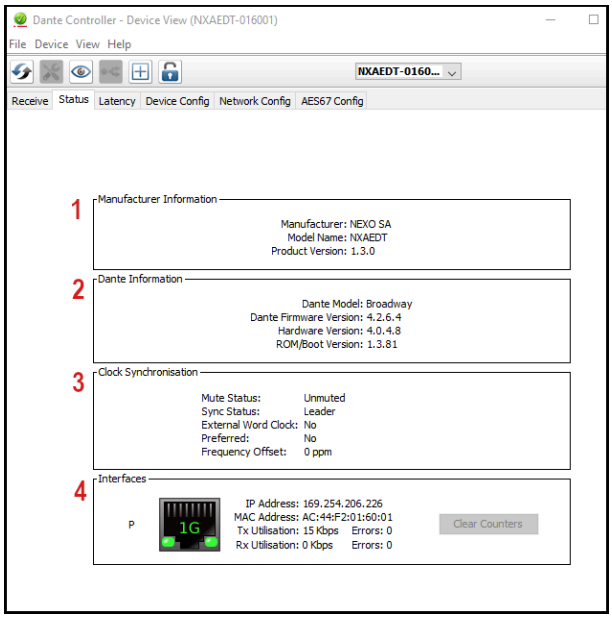
1. From the application Dante Controller, double-click on the device *NXAEDT-xxxxxx* and go to the **[Device Config]** tab. Choose a latency in the **[Latency]** list.
2. Validate your choice by pressing **[Yes]**.
3. Press **[Reboot]** to apply the new value.

After this manipulation, the NXAEDT card will restart and may not be visible in the application for a few seconds. After reboot, the new configuration is applied.

Status Page and Dante firmware version.

From the application Dante Controller, it is possible to fetch a set of information that can help the user configuring and analyzing the Dante network.

Launch the Dante Controller application, double-click on the device *NXAEDT-xxxxxx*. From the **[Status]** tab:



1. Manufacturer name, model and NEXO firmware version,
2. Dante protocol platform and firmware version,
3. Mute audio, Leader or Follower audio synchronization.
4. Active Ethernet interface including IP address, physical address (MAC) and the network traffic in real time.

Note that if the NXAEDT card is configured as a redundant network, two network interfaces will be available with all the informations above for each interface.

Footnotes

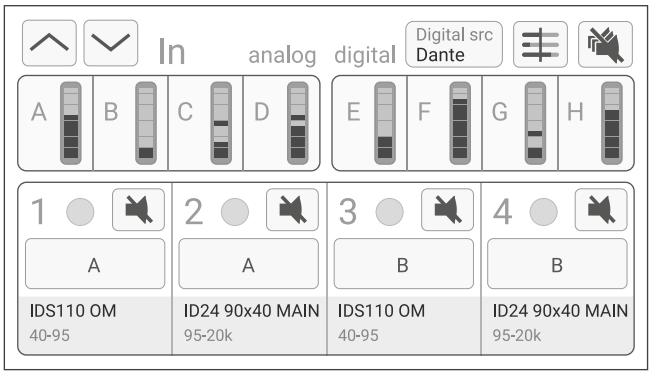
1. The figure does not mention the addition of an Ethernet switch at the level of the mixing console to connect the computer to the Primary network ↵

AUDIO ROUTING

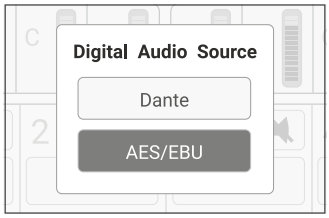
Dante or AES/EBU Digital Input Selection

The NXAEDT card is equipped with both Dante and AES/EBU protocols. You can select either the Dante signal or the AES/EBU signal as input source. To do so:

1. From the NXAMPmk2's front panel, press the main button to display the menu, then turn it until **[Inpatch]** is highlighted. Press to validate.



2. Press **[Digital src]** at the top right of the touch screen. On the newly-displayed popup, choose the desired protocol.

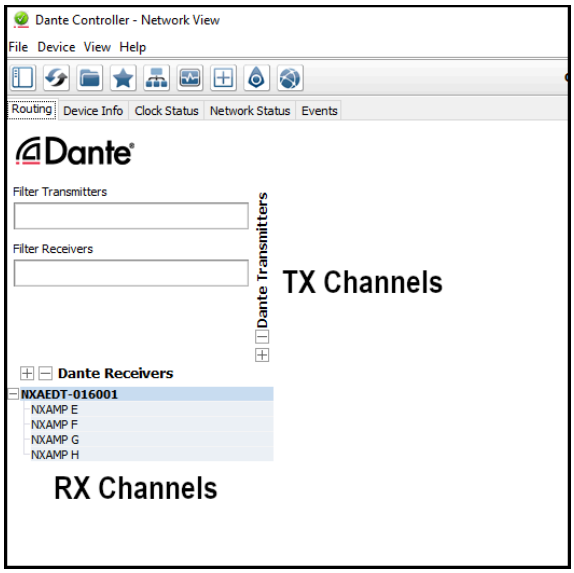


3. Upon validation, the input source is now selected.

Dante Audio Routing

Audio Routing consists of connecting the output channels of a transmitter to the input channels of a receiver through the Dante network. To do this, use the Dante Controller application.

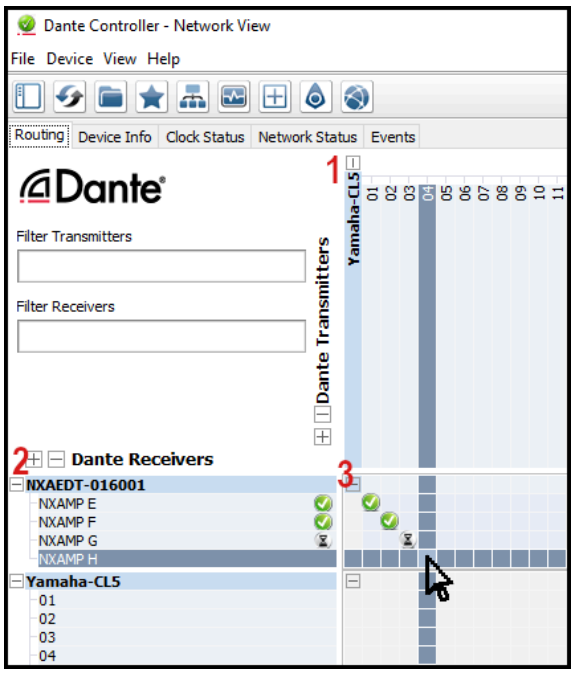
The Dante Controller home screen lists compatible devices found on the network.



The NXAEDT card is shown with its four input channels. This card does not have output channels.

The input channels are automatically routed to the digital inputs E, F, G, H of the NXAMPmk2.

To assign an input audio channel from another Dante device, connect the sending device into the same network and wait for it to appear in Dante Controller's list.



When a transmitter and a receiver are available:

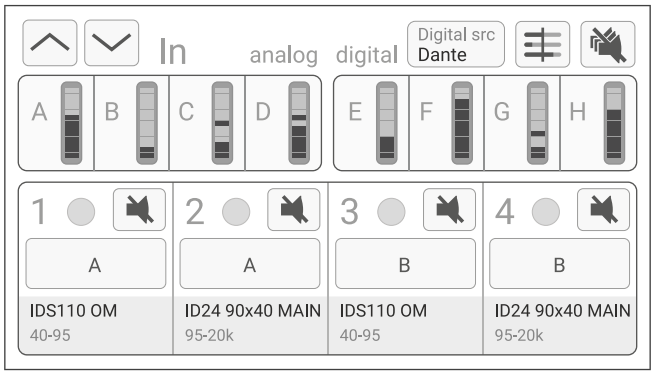
1. Press the drop-down "+" button to show the channels of the transmitter,
2. Press the drop-down "+" button to show the channels of the receiver,
3. Press the junction between the desired transmitter channel and the desired receiver channel.

: The audio link is in progress.

: The audio link is established.

Once the link is established within the Dante protocol, the audio routing can be set at the NXAMPmk2's level.

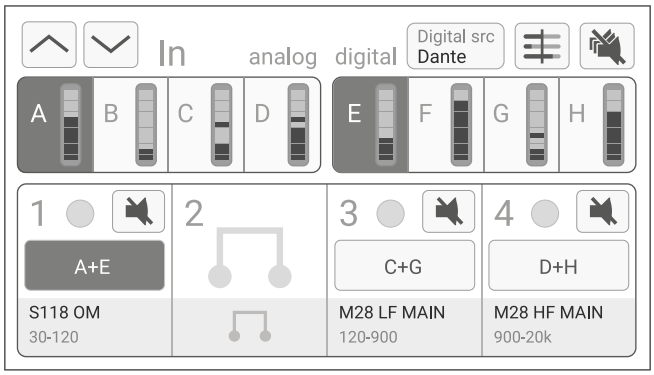
From the NXAMPmk2's front panel, press the main button to display the menu, then turn it until **[Inpatch]** is highlighted. Press to validate.



The top row (A, B, C, D, E, F, G, H) represents the audio inputs. The bottom row (1, 2, 3, 4) represents the amplifier outputs.

The E, F, G, H digital inputs correspond to the Dante Digital inputs seen previously in the Dante Controller application.

To assign inputs to an output, from the touch screen, press an output channel (e.g. channel 1, its background is highlighted). Then, press on one or more inputs channel to connect them to this selected output channel (e.g. A and E). Press again the output channel to deselect it. Repeat the operation as many times as necessary until you obtain the desired audio patch.



Press again an input to disconnect it from the selected output.

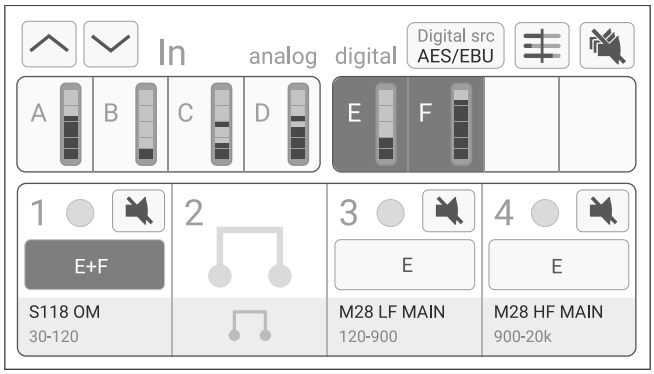
Press again an output to deselect it.

For more information, please refer to the NXAMPmk2's user manual.

Audio Routing AES/EBU

The AES/EBU protocol allows a 2-channel digital signal as input, using an XLR line whose cable impedance is specially dedicated to digital connections.

After having selected the AES/EBU input source using the **[Digital src]** button, the stereo signal is available on inputs E and F of the NXAMPmk2. Inputs G and H are not available.



To assign inputs to an output, from the touch screen, press an output channel (e.g. channel 1, its background is highlighted). Then, press on one or more inputs channel to connect them to this selected output channel (e.g. E and F). Press again the output channel to deselect it. Repeat the operation as many times as necessary until you obtain the desired audio patch.

Press again an input to disconnect it from the selected output.

Press again an output to deselect it.

For more information, please refer to the NXAMPmk2's user manual.

APPENDICES

Technical Characteristics

Digital Audio Inputs #1	
Protocol	Dante networks (or AES67)
Media type	Standard TCP/IP over minimum 100 Mb / recommended 1 Gb Ethernet network
Number of channels	4 Dante channels from up to 4 different Dante (or AES67) devices
Resolution	24 Bits
Sampling rate	44.1, 48, 88.2 or 96 kHz (48 kHz only for AES67 streams)
Latency	0.25 ms to 5.0 ms (typical 1 ms for both Dante and AES67)
Digital Audio Inputs #2	
Protocol	AES/EBU
Media type	110 Ohm - 2 twisted and shielded wires with XLR connectors
Number of channels	2 channels
Resolution	24 Bits
Sampling rate	44.1, 48, 88.2 or 96 kHz
Latency	<0.07 ms
Remote Control	
Network format	Standard TCP/IP
Device addressing	DHCP, AutoIP
Front Panel	
Digital audio inputs #1	4 Shielded 1 Gb/s RJ45 connectors
Digital audio inputs #2	1 XLR-F and 1 XLR-M buffered output with fail safe relay.
LEDs on network ports	Link/Activity (Green) and Gigabit (Orange)
General Specifications	
Height x Width x Depth (Net)	40mm x 120mm x 170mm (1.6” x 4.7” x 6.7”)
Height x Width x Depth (Gross)	56mm x 166mm x 225mm (2.2” x 6..5“ x 8.9”)
Weight (Net)	160g
Weight (Gross)	300g
Operating temperature range	0°C - 40°C (32°F - 104°F)
Storage temperature range	-20°C - 60°C (-4°F - 140°F)
EMC Certification	CE, FCC, ICES
Green Status	ROHS and REACH
Ecosystem	
Compatible Host	NXAMPmk2 Powered TD Controller

AES/EBU Performance

For proper use of an AES/EBU link, pairs inside cables must be shielded. Cable should have a line impedance of 110 ohms. Ground must be connected on both sides. Depending on the sampling rate, the link cable should have a maximum length according to the table below:

The NXAEDT card is equipped with a termination resistor. That means the longest cable should be connected to the AES/EBU input, for example, between a mixing console and the NXAEDT. Pass-through outputs should accommodate very short cables only. The distances presented below are characterized by the total length between a transmitter and one or more receivers in cascade.

SR	50M / 164ft	100M / 328ft	150M / 492ft	200M / 656ft
44.1k	✔	✔	✔	✔
48k	✔	✔	✔	
96k	✔			

Total cable length depending on the Sampling Rate

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