

## NXA Series

DIGITAL MATRIXES AND PROCESSORS

*Powered Digital Audio Managers*



## USER 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 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 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: When switching off the POWER switch, all the functions and light indicators of the unit will be stopped, but fully disconnecting the device from mains is done by unplugging the power cable from the mains input socket. For this reason, it always shall remain easily accessible.
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 the unit.
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.



**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 one of our **Powered Digital Audio Managers, NXA Series** !

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 [www.ecler.com](http://www.ecler.com) or the warranty card included with this product for the period of validity and conditions.

### 4 INTRODUCTION

The NXA series consists of four models with 4 channels and two models with 6 channels:

- **NXA4-80:** 4 x 80 W RMS @ 4
- **NXA4-200:** 4 x 200 W RMS @ 4
- **NXA4-400:** 4 x 420 W RMS @ 4
- **NXA4-700:** 4 X 730 W RMS @ 4
- **NXA6-80:** 6 x 80 W RMS @ 4
- **NXA6-200:** 6 x 200 W RMS @ 4

All models are equipped with **convection** cooling, without fan, a feature allowing a very quiet operation, suitable for installation in noise sensitive environments.

The output (amplified) channels can work independently or paired, two operating modes being then available: BRIDGE (one pair behaves as a single higher power amplifier) or PARALLEL (one pair has two amplified outputs, but both receive and deliver identical signals, simultaneously managed).

It also incorporates significant technological innovations regarding digital processing and remote management via Ethernet and RS-232, making it the perfect candidate to undertake mobile applications and fixed installations, centralized or distributed, requiring **highly integrated remote control and monitoring with standard Ethernet networks.** NXA units are delivered with an internal DSP processing module and matrix functions, as well as EclerNet remote management, that allows the physical connection of the amplifier to an Ethernet network and its remote management and monitoring from anywhere on this one, using **EclerNet Manager** (\*) Windows® application. Please refer to the EclerNet Manager software manual at [www.ecler.com](http://www.ecler.com) for more information.

#### 4.1 Main features of NXA Series

- 4/6 analogue audio inputs
- 4/6 amplified output channels (SINGLE (independent), PARALLEL or BRIDGED modes)
- 4/6 GPI remote control ports (compatible with 0-10VDC analogue devices, such as WpaVOL and WpaVOL-SR wall panels). A GPI port can control one or more inputs or outputs (volume) or manage the recall of presets 1 to 5 (GPI-1 only)
- Class D amplifiers (optimal energy consumption)
- Auto stand-by function (optimal energy consumption)
- 100% silent, thanks to unforced convection cooling (no fan)
- First class digital audio codecs, with excellent signal-to-noise ratio
- Ethernet interface, supporting EclerNet Manager software platform and UCP (User Control Panels) web server-web client remote control system
- RS-232 Interface
- TP-NET external remote control protocol, via Ethernet and RS-232 (compatible with Crestron®, AMX®, RTI®, VITY®, etc..)
- POWER ON / OFF button and / or front panel volume controls can be deactivated by software, preventing unauthorized tampering
- Front panel volume controls are assignable to one or more audio inputs or one or more amplified outputs
- Self-diagnosis function for correct operation of the amplifier, with FAULT relay: allows the device failure detector to switch to an external redundant system
- Integrated "Anti-clip" system
- Rack format (2RU)
- Integrated DSP processor, configurable from EclerNet Manager. Main functions:
  - Each channel has a dedicated audio input mixer that enables you to generate a separate mix from the ones made in the other channels
  - Independent controls per channel: VOLUME, MUTE, SOLO, PHASE INVERSION, MAX. VOL (upper volume limit) and MIN. VOL (lower volume limit)
  - LP and HP crossover filters, up to 4th order, per channel
  - Bank of 8 parametric EQ filters, per channel
  - Compressor with THRESHOLD, COMP. RATIO, ATTACK, RELEASE, KNEE and MAKE-UP GAIN settings, per channel
  - Delay, up to 1000 milliseconds, per channel
  - DUCKER function (priority): an input can be configured with highest priority, being able to reduce and replace the audio content of any channel, when its signal exceeds the detection threshold. This feature is vital in emergency / evacuation systems, which should play a specific alarm message and / or evacuation instead of the regular audio program when detecting an emergency scenario
  - 5 configuration memories (presets) are available

\* EclerNet Manager software is available on [www.ecler.com](http://www.ecler.com)

## 5 INSTALLATION



The equipment must be correctly grounded (ground resistance,  $R_g = 30\Omega$  or less). The environment must be dry and dustless. Do not expose the unit to rain or water splashes, and do not place liquid containers or incandescent objects like candles on top of the unit. Do not obstruct the ventilation grilles with any kind of material.

If the device requires any intervention and/or connection/disconnection, it must be first powered off.

Do not handle the speaker output terminals with your device turned on, there are voltages up to 400Vpp. The output cabling should be connected by a qualified technician. Otherwise only use pre-made flexible cables. There are no user serviceable parts inside the amplifier.

**WARNING: Non-compliance with the instructions or neglecting warnings may cause malfunction or even damage the unit:**

1. Avoid turning on the device without the speakers connected to its outputs and without having previously set the volume/gain controls to minimum level.
2. Always use shielded cables to make connections between devices.
3. In an amplifier, avoid placing the speaker output cables close to other signal cables (micro, line...). This may cause the system to oscillate, damaging the amplifier and speakers.

### 5.1 Location, assembly, ventilation

NXA series products have a 19" rack format (2RU).

It is **very important** not to enclose the amplifier or expose it to extreme temperatures as it generates heat. **It's also necessary to promote the passage of fresh air through the ventilation holes of the chassis, leaving at least one rack unit off (two in case of NXA4-700) between each device and installed above and below it in the rack frame.**

If multiple products are installed in the same rack or in a cabinet with closed doors, it is highly recommended to install fans in their upper and lower ends for a forced airflow from the bottom up. This upward air flow will help to dissipate the heat generated inside.

In order to optimize as much as possible the correct thermal dissipation of equipment installed in a closed rack, it is advisable not to place power amplifiers under other appliances, but upon these ones.

All NXA series products are supplied with plastic washers in order to be mounted in a rack without damaging the mounting ears.

## 5.2 Mains connection

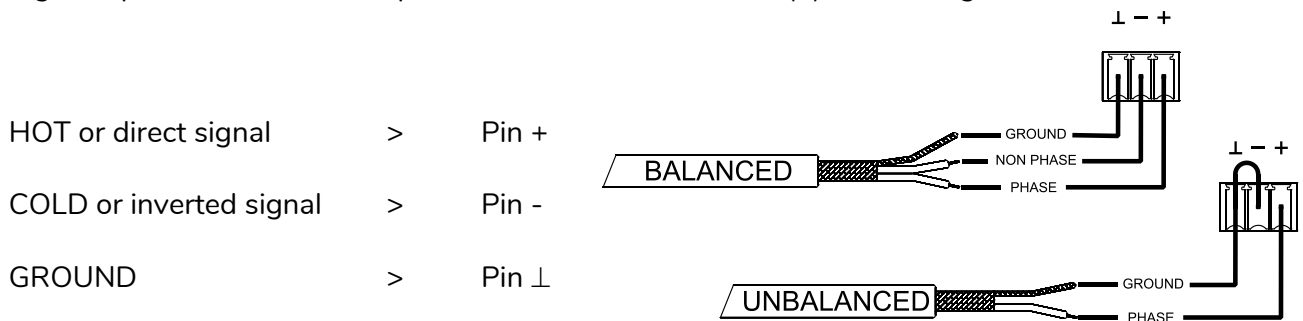
NXA series products are powered by 110-120, 220-240VAC, 47 / 63Hz, depending on the country (see nameplate on the device).

The mains cables must not be near the shielded cables carrying the audio signal, as this could cause humming.

## 5.3 Signal input connections

NXA series rear panel provides analog, balanced, line level signal inputs. The selection of hardware inputs and their routing and mixing towards either amplifier channel is performed from the [EclerNet Manager control application](#). Please refer to the EclerNet Manager software manual at [www.ecler.com](http://www.ecler.com) for more information.

Signal input connectors are 3 position screw terminal block (7). The wiring is:



For unbalanced connection short-circuit pin ⊥ to pin -.

STACK outputs (8) available for inputs 1 and 2 are parallel to the input and serve to re-send the signal of these inputs (INPUTS, CH1 / CH2) to other input channels, amplifiers or sound systems.

The input impedance is 22K $\Omega$  (balanced). This impedance makes possible to parallel several amplifiers without loosing audio quality.



## 5.4 Output connections

The rear panel *OUTPUTS* section is fitted with two position screw terminal block (9) for each amplifier channel (4 or 6, depending on model). Always respect the relative polarity for outputs (+ and - on each output connector), wiring and speakers. In bridge mode, follow the wiring and polarity standard indicated near the output screw terminal block and labeled as "BRIDGE".

SINGLE / PARALLEL / BRIDGE operating modes are selected from EclerNet Manager control application. Please refer to the EclerNet Manager software manual at [www.ecler.com](http://www.ecler.com) for more information.

The connection cable that joins the amplifiers outputs and the loudspeakers must be of good quality, sufficient section and as short as possible. This is most important when the distances to cover are long ones i.e. up to 10 meters it is recommended to use a section not inferior to 2.5mm<sup>2</sup> and for superior distances 4mm<sup>2</sup>.

## 5.5 Ethernet and RS-232 ports

An RJ-45 connector (12) allows the connection to an Ethernet network and its management from EclerNet Manager application, or its control from a third party equipment, thanks to the TP-NET external control protocol.

A 3-pin Euroblock connector for the integrated RS-232 (11) interface also allows the device remote control using the TP-NET protocol.

Please refer to the EclerNet Manager software manual at [www.ecler.com](http://www.ecler.com). and [TP-NET protocol](#) for more information.

### 5.5.1 Factory Preset Network settings

The factory default network settings for EclerNet Manager compatible devices are as follows:

- IP: 192.168.0.100
- Mask: 255.255.255.0
- Gate: 192.168.0.1
- UDP Port: 2210

## 5.6 GPI remote control ports

The NXA series rear panel provides 4 or 6 (depending on the model) 0-10VDC remote control ports (13), labeled "GPI 1-6", to which you can connect analogue devices such as the Wpa series wall panels. With the EclerNet Manager application, a function can be assigned to each of these ports: a GPI port can control one or more inputs or outputs (volume) or manage the presets #1-5 recall (GPI-1 only).

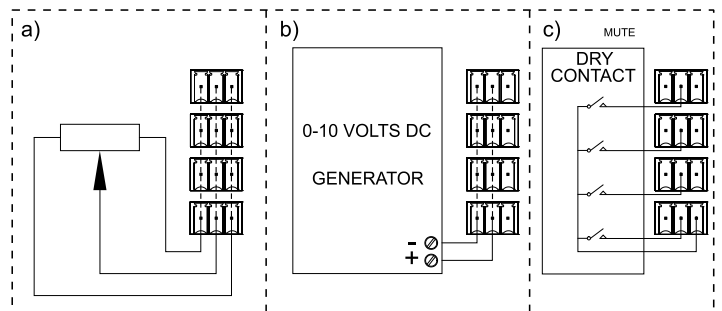
The level of each amplifier channel or output volume is determined by the sum of values of:

- its front rotary control (if it has one assigned)
- its channel fader (slider) (in EclerNet Manager)
- its GPI remote control port (if it has one associated with its volume control)

## 5.7 Connecting the GPI remote control ports

By linking a remote port to a volume control, the amount of attenuation applied to the assigned input(s) or output(s) can be determined using three types of external devices:

- A potentiometer with a nominal value between 10k $\Omega$  and 50k $\Omega$  (e.g. WPa series wall panels).
- Using a device that generates a control voltage from 0 to 10V DC.
- Using remote relays/dry contacts.



**NOTE:** You can connect up to 16 remote control ports in parallel to the same hardware control potentiometer. Ground connections of all devices those ports belong to must be joined.

The connection cables can be up to 500m long if a section of 0.5mm<sup>2</sup> is used.

Consult the available accessories at your ECLER dealer or on [www.ecler.com](http://www.ecler.com)

## 5.8 FAULT port (equipment self-diagnosis)

The rear panel FAULT connector (10) is a NO / NC dry contact linked to the self-diagnosis function of the unit. This function measures from time to time if each amplifier channel is indeed working properly and delivering the correct amplified program to its output terminals. If the test result is correct, i.e. if the amplifier is perfectly operating, the FAULT contact remains at its default position, adopted immediately after the boot sequence. If, on the contrary, and for whatever reason, the amplifier is not functional or is not correctly operating, the FAULT contact toggles (a closed contact opens and an opened contact closes).

Thus, an external device can monitor whether a NXA device is working properly or not, and in the latter case it can report the fault and / or switch to a redundant equipment.

You can activate this function from the EclerNet Manager application and determine the integrity test frequency (every minute, every hour, etc.).

# 6 OPERATION AND USAGE

## 6.1 Start up

When the rear panel POWER switch (14) is pressed, the amplifier is powered by the network and can be switched on, briefly holding the front POWER button (6) or remotely from the EclerNet Manager application or with the TP-NET protocol.

In a complete audio installation, it is important to start up the equipment in the following sequence: sound sources, mixer, equalizers, active filters, processors and finally power amplifiers. To turn them off the sequence should follow an inverse pattern.

## 6.2 Front panel LED indicators

NXA series products have the following LEDs on their front panel:

- **SP indicators** (2): indicate a signal presence in the amplification channels. These indicators light up when the input signal exceeds a -40dB threshold.
- **CLIP / PROTECT indicators** (4): (available only on models 4-200, 6-200, 4-400 and 4-700).

They light up for two possible reasons:

- When the signal delivered to the speaker is close to the actual clipping level. The CLIP detection system considers possible voltage fluctuations of power supply, always giving a real indication even if they exist. It is normal for CLIP indicators to be lit at the bass frequencies rhythm for high

operating levels, as these frequencies have the higher energy content. You must take care that these indicators do not permanently light up during normal operation of the equipment.

- To indicate the absence of signal at the amplified output of the unit in the following cases:
  - During the startup process up to the end of the *STANDBY* time necessary to stabilize the amplifier internal tensions, before being finally operational.
  - The equipment enters protection mode if it detects a low frequency signal that may damage the speakers, excessive internal temperature, a short circuit at the amplified output or a possible internal damage.
  - In any case, if these indicators permanently light up, it is a sign of malfunctioning and its cause should be investigated.

- **CLIP indicators** (3): (available only on models 4-80 and 6-80)

They light up when the signal delivered to the speakers is near clipping. The *CLIP* system considers possible voltage fluctuations of power supply, always giving a real indication even if they exist. It is normal for *CLIP* indicators to be lit at the bass frequencies rhythm for high operating levels, as these frequencies have the higher energy content. You must take care that these indicators do not permanently light up during normal operation of the equipment.

- **DATA transfer indicator** (5): blinks to indicate a data transfer activity between the device and the remote control PC running EclerNet Manager.

**Note:** all front panel LEDs blink when the "Device Finder" function is activated in EclerNet Manager application. That's useful for identifying a physical device from its virtual counterpart in this application. Please refer to the EclerNet Manager software manual at [www.ecler.com](http://www.ecler.com) for more information.

### 6.3 Front panel controls

The front panel includes a series of knobs and a on/off button.

The equipment can be locally switched on by holding down the *POWER* key until the startup sequence begins. Shutdown also requires holding down the same key during a brief period.

The *POWER* key has an integrated LED that lights up in orange when the amplifier is in standby mode (*STANDBY*), in green during operation (*ON*), and in red during the startup sequence or when the amplifier is in protection mode.

After turning on and once the boot sequence completed, the device is available for use in normal conditions.

Each front panel *LEVEL* knob (4 or 6, depending on the model) can be linked to the volume control of one or more audio inputs or one or more audio outputs of the unit. The linking, like the other device setup settings, is made from the [EclerNet Manager application](#). Please refer to the EclerNet Manager software manual at [www.ecler.com](http://www.ecler.com) for more information.

Moreover, the EclerNet Manager application allows the DSP processing management (volume, phase, EQ, compression, delay, customised input mixes for each output channel, priority or *DUCKER* function, etc..) for each channel, each channel being used independently (*SINGLE*) or in pairs (*BRIDGE*, *PARALLEL* modes) and remotely managed individually or by groups of channels and / or amplifiers from a remote Ethernet location.

In *BRIDGE* and *PARALLEL* modes, the output level control of each channel pair from a front *LEVEL* knob is done using the first channel of the pair only (*CHANNEL 1* for 1 & 2, *CHANNEL 3* for 3 & 4 and *Channel 5* for 5 & 6).

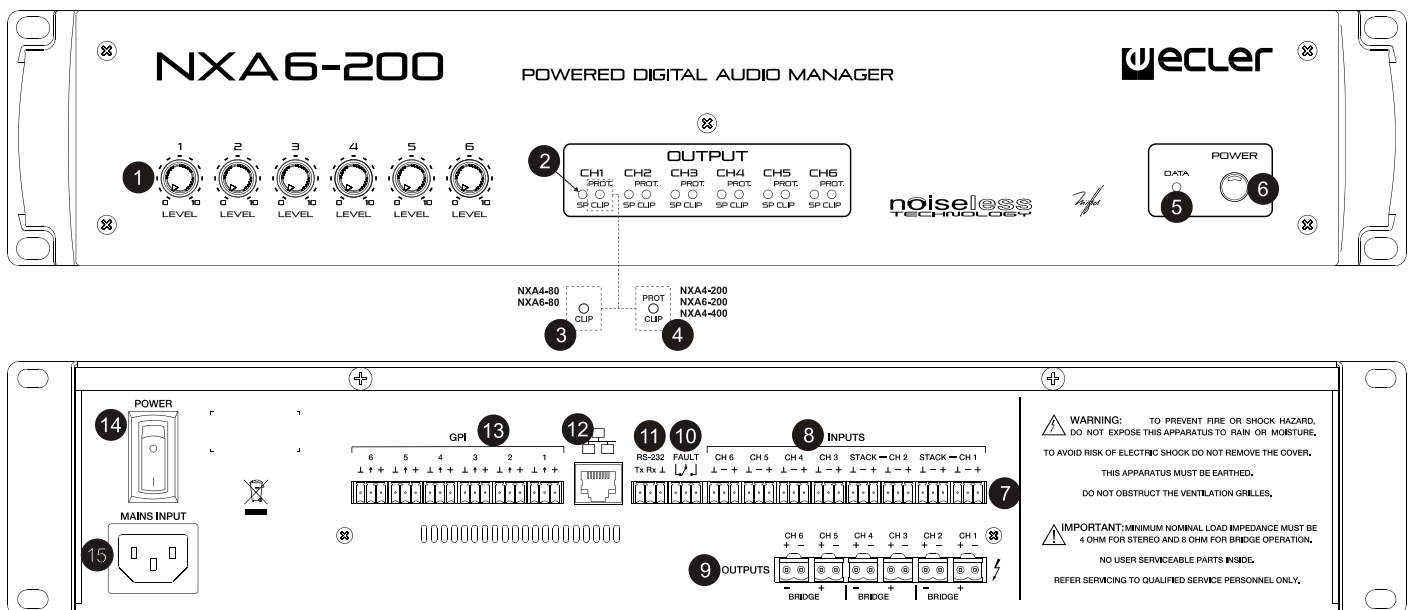
GPI ports also allow to remote control the input or output volume from a potentiometer or another external hardware device. Remember that the final level of each amplifier channel or output volume is determined by the sum of values of:

- its front rotary control (if it has one assigned)
- its channel fader (in EclerNet Manager)
- its GPI remote control port (if it has one associated with its volume control)

## 7 CLEANING

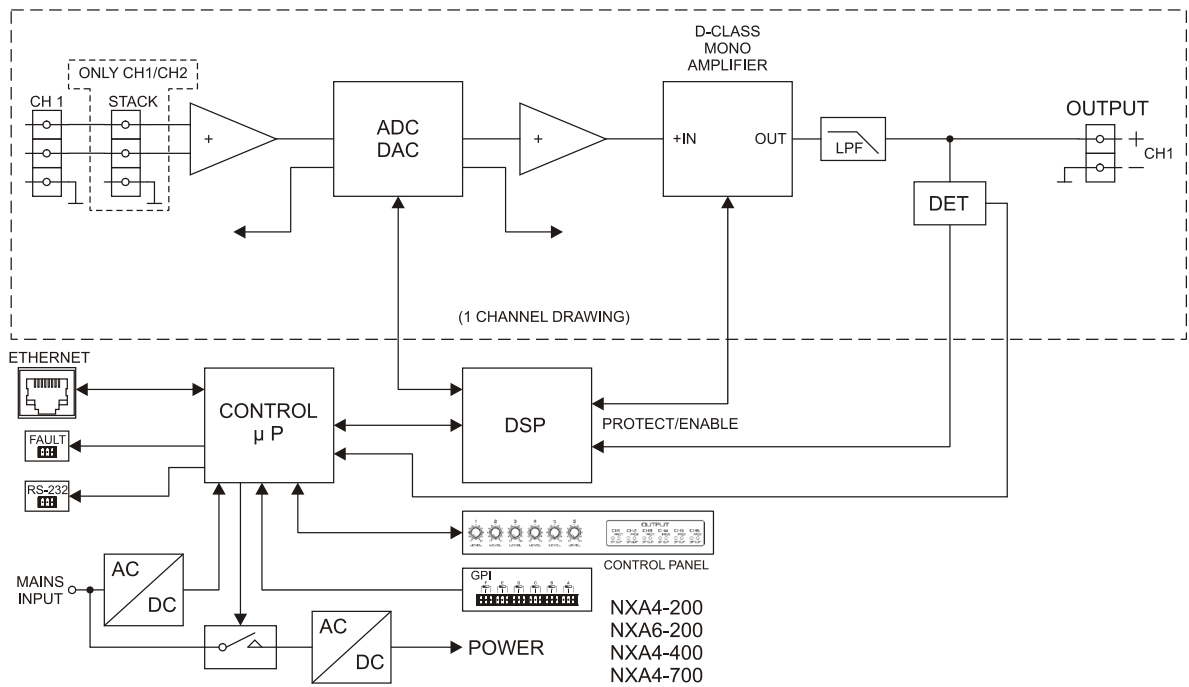
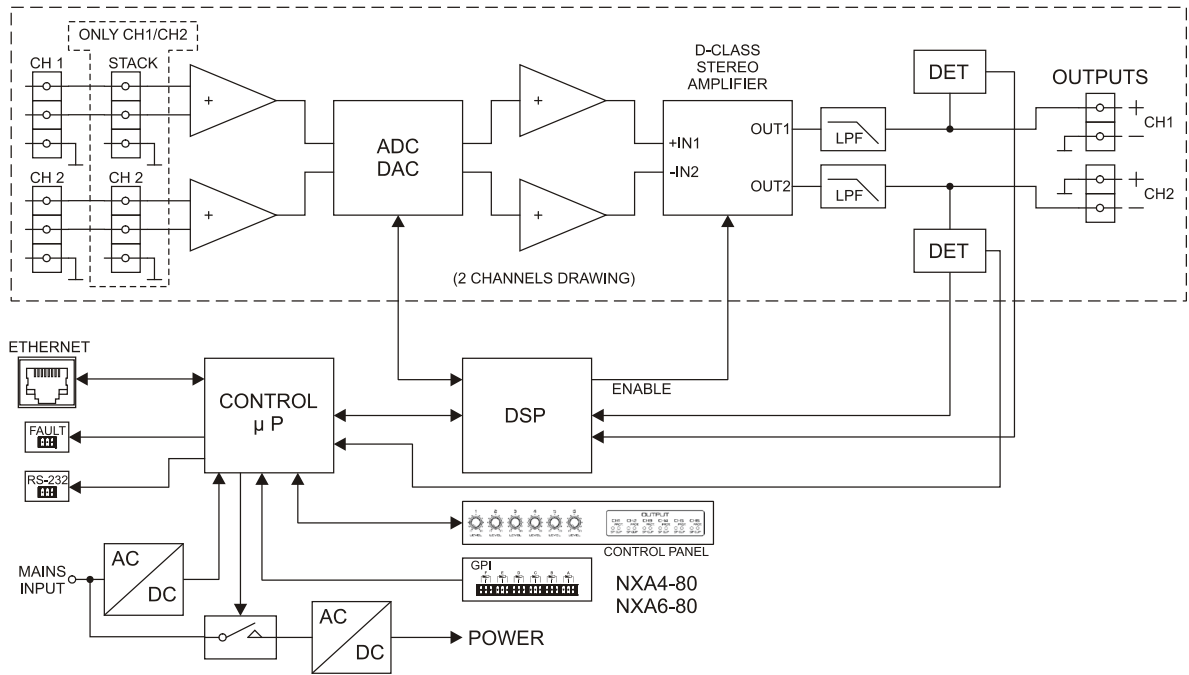
The front panel should not be cleaned with dissolvent or abrasive substances because silk-printing could be damaged. To clean it, use a soft cloth slightly wet with water and neutral liquid soap; dry it with a clean cloth. Be careful that water never gets into the amplifier through the holes of the front panel.

## 8 DIAGRAMS and FUNCTION LIST



- |   |   |    |   |
|---|---|----|---|
| 1 | Input attenuator                                  | 7  | Input terminal block                      |
| 2 | Signal present indicator, SP                      | 8  | Terminal block to other amplifiers, STACK |
| 3 | Clip indicator, CLIP                              | 9  | Output terminal block                     |
| 4 | Combined clip and protection indicator, CLIP/PROT | 10 | FAULT terminal block                      |
| 5 | Data transfer indicator, DATA                     | 11 | RS-232 terminal block                     |
| 6 | On / Off key, POWER ON                            | 12 | Ethernet port                             |
|   |   | 13 | Terminal block for remote control device  |
|   |   | 14 | Start-up switch                           |
|   |   | 15 | Mains socket                              |

## 9 BLOCK DIAGRAM



## 10 TECHNICAL CHARACTERISTICS

	NXA4-80	NXA6-80	NXA4-200	NXA6-200	NXA4-400	NXA4-700
<b>POWER 20Hz-20kHz 1% THD</b>						
1 Channel @ 2Ω (RMS)						1220 W
1 Channel @ 4Ω (RMS)	85 W	84 W	202 W	218 W	426 W	730 W
1 Channel @ 8Ω (RMS)	51 W	49 W	121 W	126 W	230 W	406 W
All Channels @ 4Ω (RMS)	66 W	65 W	168 W	163 W	330 W	530 W
All Channels @ 8Ω (RMS)	43 W	42 W	107 W	105 W	205 W	327 W
1 Bridge channel @ 8Ω (RMS)	160 W	158 W	383 W	395 W	760 W	1180 W
1 Bridge channel @ 4Ω (RMS)						2070 W
Overall Voltage Gain	+26 / +32 dB					
Frequency response (-1dB, -3dB)	10Hz – 25kHz					
THD + Noise @ 1kHz Full power	<0.05%		<0.08%			
Noise Floor (FFT) 20Hz – 20kHz	>100dB (110dB typ.)					
Damping factor 1kHz @ 8Ω	>150	>140	>400	>350	>600	>200
Channel Crosstalk @ 1kHz	>75dB					
Input connectors	Terminal block (Symmetrical)					
Input CMRR/ref. Max. PWR	>50dB					
Signal present indicator	Lit at -40dBV					
Output connectors	Terminal block					
Anticlip limiter	Soft / Mid / Hard					
Volume remote control	(0-10VDC) (0.1A max.) 0V = no attenuation / +10V = full attenuation					
Remote control connectors	Terminal block					
Mains	115V/230V. Voltage changed internally (NOT BY SWITCH)					
<b>POWER CONSUMPTION</b>						
(pink noise, 1/8 power @ 4ohm)	107VA	144VA	225VA	312VA	431VA	729VA
(pink noise, 1/3 power @ 4ohm)	208VA	290VA	490VA	684VA	948VA	1610VA
Stand-by mains consumption	<3W					
<b>GENERAL</b>						
Panel Dimensions	482.6x88mm					
Depth(Handles and knobs excluded)	373mm	373mm	373mm	373mm	373mm	423mm
Weight	9.2kg	10.2kg	12.6kg	14.1kg	16.0kg	19.0kg



## DIGITAL

Processing:	
A/D & D/A	24 bit, 48kHz. 115dB AKM Codec
DSP	32/64 bits
Latency	2ms
Analog Input headroom:	+18 dBV = +21dBu
Digital Input attenuator:	Stepless from $-\infty$ to +0dB
Input Impedance:	Balanced, 22k $\Omega$
Maximum Delay:	1s (343.4m) for each channel
Delay resolution:	20.8 $\mu$ s (6mm)
Compressor / Limiter:	
Threshold	from -36dBV to +18dBV
Ratio	1:1 to $\infty$ :1 (limiter)
Attack time	Auto or from 0.1ms to 500ms.
Release time	Auto or from 1ms to 5s.
Output peak voltage limiter:	
Peak voltage upon model (auto settings)	From 10Vpk to 70Vpk
High & Low pass Crossover filters	Butterworth in 6/12/18/24dB/oct. Bessel in 12/18/24dB/oct Linkwitz-Riley in 12/24dB/oct.
Parametric Eq. types (8 max. per output)	- Bypass / On-Off all channels - Param. Eq. 20Hz-20kHz; -60/+12dB; Q from =.3 to 200 - Low & High Shelf 6/12 dB/oct - Low & High Pass 6/12 dB/oct. - All-Pass 1/2 order
Built In signal generator	- Sine (20Hz to 20kHz) - Polarity(10/20Hz to 10/20kHz) - White - Pink
Signal Mute	Yes
Signal Polarity Invert	Yes
Connectivity:	- Ethernet Base-Tx 10/100Mb, Auto X-Over, Cat5 - RS232 57600(fixed)-8-N-1-N

## SOFTWARE

<b>EclerNet Software</b>	<ul style="list-style-type: none"><li>- Realtime full GUI of all functions and controls thru Ethernet with interactive graphical display</li><li>- Grouping mode channels or devices</li><li>- Automated report generation</li><li>- Remote power on with programmable delay.</li><li>- Up to 256 devices on same net.</li><li>- Autodiscovery devices feature</li><li>- Routing capability through NAT gateways.</li><li>- Real time metering at input/output (DSP)</li><li>- Device “Finder” feature</li><li>- Save &amp; Recall setup and preset functions</li><li>- Firmware update capability thru Ethernet</li><li>- Password protection</li><li>- Default Network configuration:<ul style="list-style-type: none"><li>IP: 192.168.0.100</li><li>Mask: 255.255.255.0</li><li>Gate: 192.168.0.1</li><li>UDP Port: 2210</li></ul></li></ul>
<b>Operating System:</b>	Windows®: XP Prof. (SP3); Vista (SP1); W7(SP1), W8, W10 and W11.
<b>Minimum EclerNet System Requirements:</b>	Pentium IV @ 2GHz 500MB RAM 100MB HDD free space 1024x768 pixels & 16bits colour display 10/100/1000 Ethernet Network card

# TP-NET PROTOCOL

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SOFTWARE

*Third-Party NET*

## USER MANUAL

## 11 TP-NET PROTOCOL INTRODUCTION

The TP-NET protocol lets a client device (control device) get and/or set the values of several parameters of the **EclerNet compatible devices** (MIMO and MIMO SG series digital matrices, DUO-NET PLAYER, **NXA digital audio manager series**, NZA amplifier series, NPA amplifier series, etc.), like volumes, mutes, alarms, etc. It's as well available for eMIMO1616 digital matrix, HUB series digital zoner, MIMO7272DN and MIMO4040CDN digital matrix.

The communication with these digital audio devices can be established using Ethernet and the UDP/IP transport protocol, always by means of the **5800** UDP port.

A second option for this communication is using the RS-232 interface that some of these compatible devices do also have (MIMO series, DUO-NET PLAYER, NXA series, etc.). In this case, the serial connection must fulfil the following specifications:

- Baud rate: **57600** (fixed, no autonegotiation) for all the devices, except for DUO-NET PLAYER, eMIMO1616, HUB series and MIMO4040CDN, which use **115200** baud rate)
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

In case the Ecler device has an Euroblock connector for the RS-232 interface, the serial cable wiring, from the device's connector to a standard DB9 serial interface connector, must be the following:

WIRING RS232 – DB9	
RS232	DB9
Tx	Pin 2 (RxD)
Rx	Pin 3 (TxD)
Gnd	Pin 5 (Signal Gnd)

The protocol is simple and direct, making it easy to read, write and modify the generated code. It is based on messages with no begin and end delimiter: each message is self-delimited by the UDP packet size, which is defined with a maximum of **80 characters**. All the messages must be written in capital letters.

To let some control systems (like CRESTRON®, EXTRON®, AMX®, RTI®, VITY®, MEDIALON®, etc.) process the messages more easily, the EclerNet device adds the character **LF (0x0A)** to the end of each message. This way the client can buffer the messages to process them, if it's required. The EclerNet device can also handle several messages received in a single message packet by using the **LF** delimiter.

The available messages are built with one or more fields separated with blank spaces ( = blank space):

`<TYPE> [PARAM1] [PARAM2] [PARAM3] [PARAM4][LF]`

The first field (**TYPE**) defines the **message type** and then, the required parameters for it (each kind of message requires a given number of parameters). The field **TYPE** can have these values:

- **SYSTEM**
- **GET**
- **SET**
- **INC**
- **DEC**
- **SUBSCRIBE**
- **UNSUBSCRIBE**
- **DATA**
- **ERROR**

At the end of this document you'll find all the available messages and their parameters for each model of the EclerNet compatible devices.

The **SYSTEM, GET, SET, INC, DEC, SUBSCRIBE & UNSUBSCRIBE** messages can be sent from the client to the EclerNet device. The **DATA & ERROR** messages can be sent from the device to the client. The only exception is the **SYSTEM PING** message, that is a **SYSTEM** type message that is sent from the EclerNet device when the initial message from the client to the device was **SYSTEM CONNECT PINGPONG**.

The communication (using UDP or RS-232) starts when a client sends the message **SYSTEM CONNECT** to the EclerNet device. As far as the UDP communication requires no connection (unlike the TCP), the EclerNet device stores this client's IP address, and then uses it as the destination IP address for the messages that it generates (**DATA & ERROR**). After receiving the **SYSTEM CONNECT** message, the device dumps its entire configuration using several consecutive **DATA** messages.

**Note:** if the configuration data dump process (usually a huge list of parameters & values) wants to be avoided after a **SYSTEM CONNECT** message, a **SYSTEM CONNECT ONCE** message can be used instead.

The communication can be terminated by two methods:

- **Manually:** when the client sends the **SYSTEM DISCONNECT** message, cancelling all the subscriptions and stopping the **DATA & ERROR** messages

- **Automatically:** in case the initial message was **SYSTEM CONNECT PINGPONG** and the client didn't get any **SYSTEM PONG** message in a period longer than 10 seconds (presuming a communication breakdown)

The **SET** messages don't have an automatic acknowledgement with a **DATA** message sent from the EclerNet device after it has processed the **SET** command. The client must update the values itself and must send the needed **GET** message if it requires confirmation from the device.

#### NOTES:

- The numerical values are always integer numbers without +, -, comma or dot symbols.
- **[PINGPONG]** is an optional parameter used to configure the device-client communication with a periodical check, to see whether the client or the device have terminated it. When configured this way, the device sends a **SYSTEM PING** once per second, and the client must answer with a **SYSTEM PONG** message. If anyone doesn't get these messages along a 10 seconds period, the communication will be considered terminated.
- **[ONCE]** is an optional parameter used to start the device-client communication without a full data dump process (usually a huge list of parameters & values).
- **<Input Channel>** & **<Output Channel>** are numerical values that identify an input or output channel of the EclerNet device. For the NXA series it can be within the [1..4] or [1..6] range, for 4 or 6 channel amplifiers.
- **<Preset Number>** is a numerical value that identifies one available Preset stored in the EclerNet device's memory. For the NXA and NZA series it can be within the [1..5] range.
- **<Level>**, **<Pre Vumeter Level>** y **<Post Vumeter Level>** are numerical values in the [0..100] range that define values in a scale equivalent to [-inf..0] dB.
- **<GPI>** & **<GPO>** are numerical values. For the NXA series GPI values can be within the [1..4] or [1..6] range, depending on model.
- **<GPI Value>** is a numerical value within the [0..100] range that indicates the value of an analogue GPI input. For a digital input only 0 or 100 are the possible values.
- **<GPO Value>** is a numerical value within the [0..1] range: it can only be 0 or 1 (opened or closed GPO).
- **<Rate>** is a numerical value within the [1..10] range that sets the VU-meter refresh rate, or the number of times the vumeters' values are sent per second (by default = 3).
- **"<Device Name>"** is the device name inside double quotation marks, to allow for names with blank spaces.
- **<Error ID>** is a numerical value for an error code.

- “<Error Description>” is a text chain inside double quotation marks, containing an error description.
- <Virtual Control> is a numerical value that identifies a Virtual Control.
  - It can be within a [1A..4A] or [1B..4B] range for NXA 4 ch. Models.
  - It can be within a [1A..6A] or [1B..6B] range for NXA 6 ch. Models.

## 12 NXA DIGITAL AUDIO MANAGER SERIES

**IMPORTANT NOTE:** The communication must be started with the client sending **the first message SYSTEM CONNECT** or **SYSTEM CONNECT ONCE** to the EclerNet device. Otherwise, the commands from the client to the EclerNet device will be ignored. See [TP-NET PROTOCOL INTRODUCTION](#) chapter for additional information.

TYPE	PARAM1	PARAM2	PARAM3	PARAM4	DESCRIPTION
SYSTEM	CONNECT	[MASTER]	[PINGPONG]	[ONCE]	<ul style="list-style-type: none"> <li>• MASTER: this parameter, applied in SYSTEM CONNECT, is used to disconnect all clients currently connected to the device, releasing all open and not correctly closed connections, opening a new connection. In this way we guarantee that the client that has set the MASTER option is the only one connected by TP-NET to the device.</li> <li>• PINGPONG: this parameter can be used with the MASTER parameter, the difference is that this parameter performs a periodic check to see if the communication is still open (PING PONG) or if after 10 seconds with no response, the communication has ended (PING).</li> <li>• ONCE: this parameter is used to prevent the device status dump.</li> </ul>
	DISCONNECT				Cancel subscriptions and terminates communication
	SUBSCRIPTION_RATE	<Rate>			Alive message from device
	PING				Alive message from device
	PONG				Alive ACK message from client
GET	ALL				Dumps current device status (with DATA messages)
	POWER				Gets the Device Power status
	PRESET				Gets the current PRESET
	OLEVEL	<Output Channel>			Gets the current LEVEL of an Output Channel
	XLEVEL	<Input Channel>	<Output Channel>		Gets the current LEVEL of a Matrix point
	OMUTE	<Output Channel>			Gets the current MUTE status of an Output Channel



	XMUTE	<Input Channel>	<Output Channel>		Gets the current MUTE status of a Matrix Point
	OVU	<Output Channel>			Gets the VU-meter value of an Output Channel
	ALARM_PROTECT	<Output Channel>			Gets the Protect alarm status of an Output Channel
	ALARM_FAULT	<Output Channel>			Gets the self-diagnosis system alarm status of an Output Channel
	INFO_NAME				Gets the Device Name
	INFO_MODEL				Gets the Device Model
	INFO_VERSION				Gets the Firmware Version
	INFO_MAC				Gets the Device MAC address
	VIRTUAL_CONTROL	<Virtual Control>			Gets the Virtual Control value

TYPE	PARAM1	PARAM2	PARAM3	PARAM4	DESCRIPTION
<b>SET</b>	POWER	ON/OFF			Sets the Device Power status
	PRESET	<Preset Number>			Sets the current PRESET
	OLEVEL	<Output Channel>	<Level>		Sets the current LEVEL of an Output Channel
	XLEVEL	<Input Channel>	<Output Channel>	<Level>	Sets the current LEVEL of a Matrix point
	OMUTE	<Output Channel>	YES/NO		Sets the current MUTE status of an Output Channel
	XMUTE	<Input Channel>	<Output Channel>		Sets the current MUTE status of a Matrix Point
	VIRTUAL_CONTROL	<Virtual Control>	<Value>		Sets the Virtual Control value (Value can range from 1 to 100)
<b>INC</b>	OLEVEL	<Output Channel>	<Value>		Increases the current LEVEL of an Output Channel by Value (Value can range from $\pm 1$ to $\pm 100$ )
	XLEVEL	<Input Channel>	<Output Channel>	<Value>	Increases the current LEVEL of a Matrix point by Value (Value can range from $\pm 1$ to $\pm 100$ )
<b>DEC</b>	OLEVEL	<Output Channel>	<Value>		Decreases the current LEVEL of an Output Channel by Value (Value can range from $\pm 1$ to $\pm 100$ )
	XLEVEL	<Input Channel>	<Output Channel>	<Value>	Decreases the current LEVEL of a Matrix point by Value (Value can range from $\pm 1$ to $\pm 100$ )
<b>SUBSCRIBE</b>	ALL				Subscribes to all VU-meters
	OVU	<Output Channel>			Subscribes to an Output Channel VU-meter
<b>UNSUBSCRIBE</b>	ALL				Unsubscribe to all VU-meters
	OVU	<Output Channel>			Unsubscribe to an Output Channel VU-meter
<b>DATA</b>	POWER	ON/OFF			Shows the Device Power status
	PRESET	<Preset Number>			Shows the current PRESET
	OLEVEL	<Output Channel>	<Level>		Shows the current LEVEL of an Output Channel
	XLEVEL	<Input Channel>	<Output Channel>	<Level>	Shows the current LEVEL of a Matrix point
	OMUTE	<Output Channel>	YES/NO		Shows the current MUTE status of an Output Channel
	XMUTE	<Input Channel>	<Output Channel>	YES/NO	Shows the current MUTE status of a Matrix point
	VIRTUAL_CONTROL	<Virtual Control>	<Value>		Shows the Virtual Control value

	OVU	<Output Channel>	<Pre Vumeter Level>	<Post Vumeter Level>	Shows the VU-meter value of an Output Channel
	ALARM_PROTECT	<Output Channel>	ON/OFF		Shows the Protect alarm status of an Output Channel
	ALARM_FAULT	<Output Channel>	ON/OFF		Shows the self-diagnosis system alarm status of an Output Channel
	INFO_NAME	"<Device Name>"			Shows the Device Name
	INFO_MODEL	<Device Model>			Shows the Device Model
	INFO_VERSION	<Firmware Version>			Shows the Firmware Version
	INFO_MAC	<Device MAC address>			Shows the Device MAC address
<b>ERROR</b>	<Error ID>	"<Error Description>"			Informs about an error

**Note:** INC and DEC commands are replied with a DATA command from the device with the resulting LEVEL value, after it has been increased or decreased. When the INC or DEC command tries to adjust a LEVEL value beyond its minimum or maximum limits, no reply (DATA command) will be produced.

## 13 ERROR CODES FOR ECLERNET DEVICES

### 13.1 COMMON ERROR CODES (to all EclerNet - TP-NET compatible devices)

ERROR ID	DESCRIPTION
0	TPNET_ERROR_NONE = 0,
1	TPNET_ERROR_INVALID_FIELD_TYPE,
2	TPNET_ERROR_INVALID_FIELD_PARAM1,
3	TPNET_ERROR_INVALID_FIELD_PARAM2,
4	TPNET_ERROR_INVALID_FIELD_PARAM3,
5	TPNET_ERROR_INVALID_FIELD_PARAM4,

### 13.2 NXA SERIES SPECIFIC ERROR CODES

ERROR ID	DESCRIPTION
6	UDP_ERROR_TIMEOUT_PONG,
7	UDP_ERROR_CONNECT_WHILE_CONNECTED,
8	UDP_ERROR_DISCONNECT_WHILE_UNCONNECTED,
9	UDP_ERROR_INVALID_CLIENT_IP,
10	UDP_ERROR_MESSAGE_TOO_LONG,
11	UDP_ERROR_UNSUPPORTED_MESSAGE,
12	UDP_ERROR_UNSUPPORTED_PRESET_NUMBER,
13	UDP_ERROR_UNSUPPORTED_INPUT_CHANNEL_NUMBER,
14	UDP_ERROR_UNSUPPORTED_OUTPUT_CHANNEL_NUMBER,
15	UDP_ERROR_UNSUPPORTED_GPI_NUMBER,
16	UDP_ERROR_UNSUPPORTED_GPO_NUMBER,
17	UDP_ERROR_INVALID_LEVEL_VALUE,
18	UDP_ERROR_INVALID_RATE_VALUE,
19	UDP_ERROR_GPO_VALUE,
20	UDP_ERROR_MAX_CLIENTS_REACHED,
21	UDP_ERROR_MASTER_MODE,

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](#).

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