**Manuals+** — User Manuals Simplified.

# ecler NXA Series Digital Matrixes and Processors User Manual



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**ecler NXA Series Digital Matrixes and Processors**

**IMPORTANT REMARK**

The lightning flash with the 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 the 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 hazards, 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.

## 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 the 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 a 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 the 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.

**IMPORTANT NOTE**

Thank you for choosing one of our Powered Digital Audio Managers, NXA Serie,! It is VERY IMPORTANT to carefully read this manual and to fully understand its contents before any connection in order to maximize your use and get the best performance from this equipment. To ensure optimal operation of this device, we strongly recommend that its maintenance be carried out by our authorised Technical Services. Ecler NXA Series comes with a 3-year warranty.

**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 for more information.

### 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 WPmVOL and WPmVOL-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**.

## INSTALLATION

The equipment must be correctly grounded (ground resistance, Rg = 30  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.

### 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.

### Mains connection

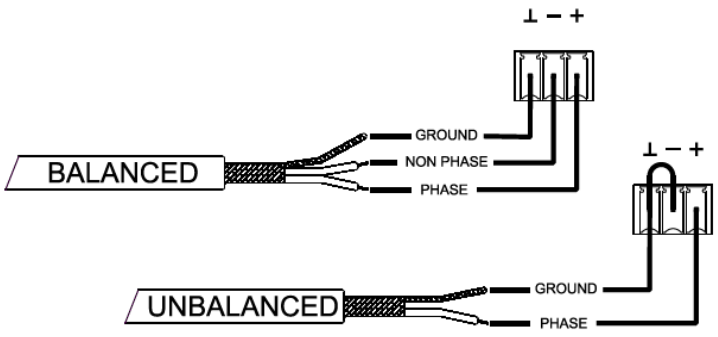
NXA series products are powered by 110-120, 220-240VAC, 47 / 63Hz, depending on the country (see nameplate on the device). The mains cables must not be near the shielded cables carrying the audio signal, as this could cause humming.

### 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 for more information on **www.ecler.com.**

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

| | | |
|---|---|---|
| HOT or direct signal | > | Pin + |
| COLD or inverted signal | > | Pin - |
| GROUND | > | Pin ⊥ |




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 (balanced). This impedance makes possible to parallel

several amplifiers without loosing audio quality.

**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 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 2.5mm2 and for superior distances 4mm2.

**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. Refer to the EclerNet Manager manual and TP-NET protocol for more information, on **www.ecler.com**

**Factory Preset Network settings**
The factory default network settings for EclerNet Manager compatible devices are as follows:

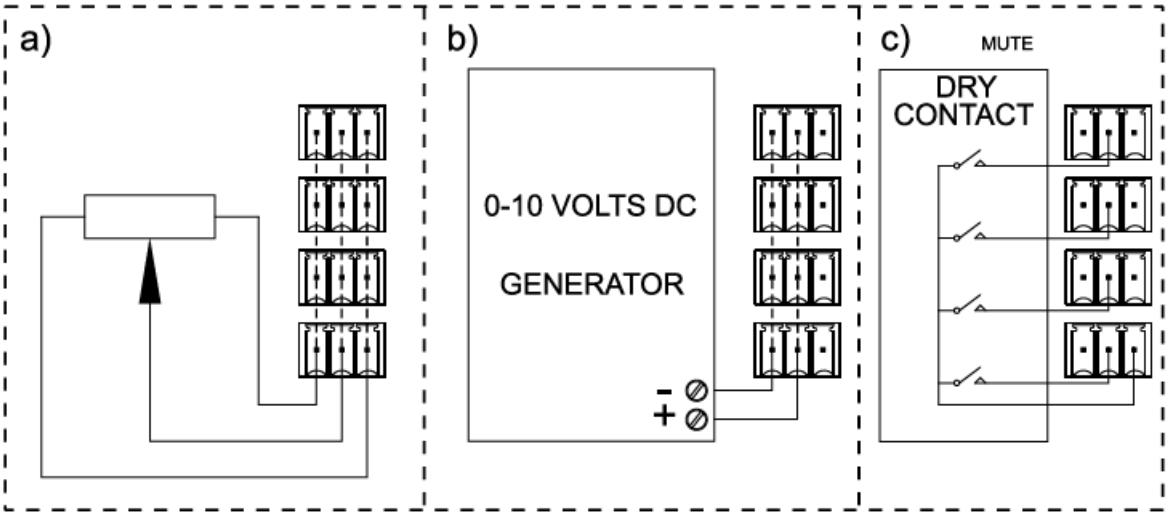
- IP: 192.168.0.100
- Mask: 255.255.255.0
- Gate: 192.168.0.1
- UDP Port: 2210

**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 WPm 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)

**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)** A potentiometer with a nominal value between 10k and 50k (e.g. WPM series wall panels).
**b)** Using a device that generates a control voltage from 0 to 10V DC.
**c)** 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 0.5mm2 is used. Consult the available accessories at your ECLER dealer or on [www.ecler.com](http://www.ecler.com)

**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.).

## OPERATION AND USAGE

**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.

**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 for more information, on **www.ecler.com**

**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.

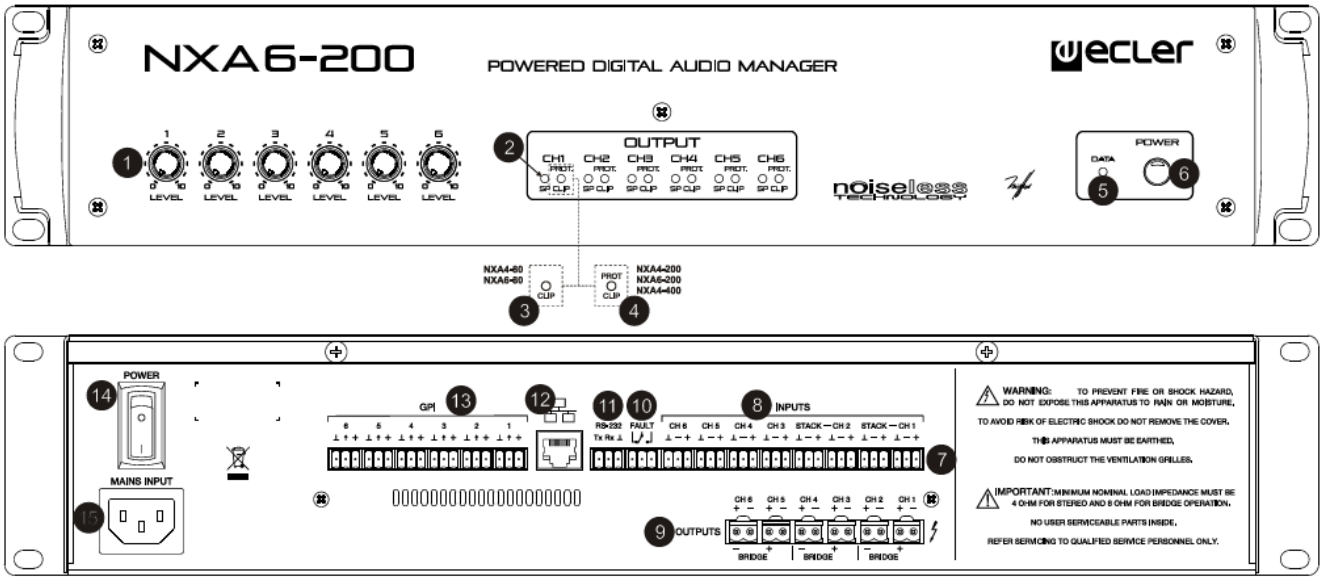
After turning on and once the boot sequence completed, the device is available for use in normal conditions. Each front panel LEVEL knob (4 or 6, depending on the model) can be linked to the volume control of one or more audio inputs or one or more audio outputs of the unit. The linking, like the other device setup settings, is made from the EclerNet Manager application. See the EclerNet Manager manual for more information, on www.ecler.com 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)

**CLEANING**
The front panel should not be cleaned with dissolvent or abrasive substances because silk-printing could be

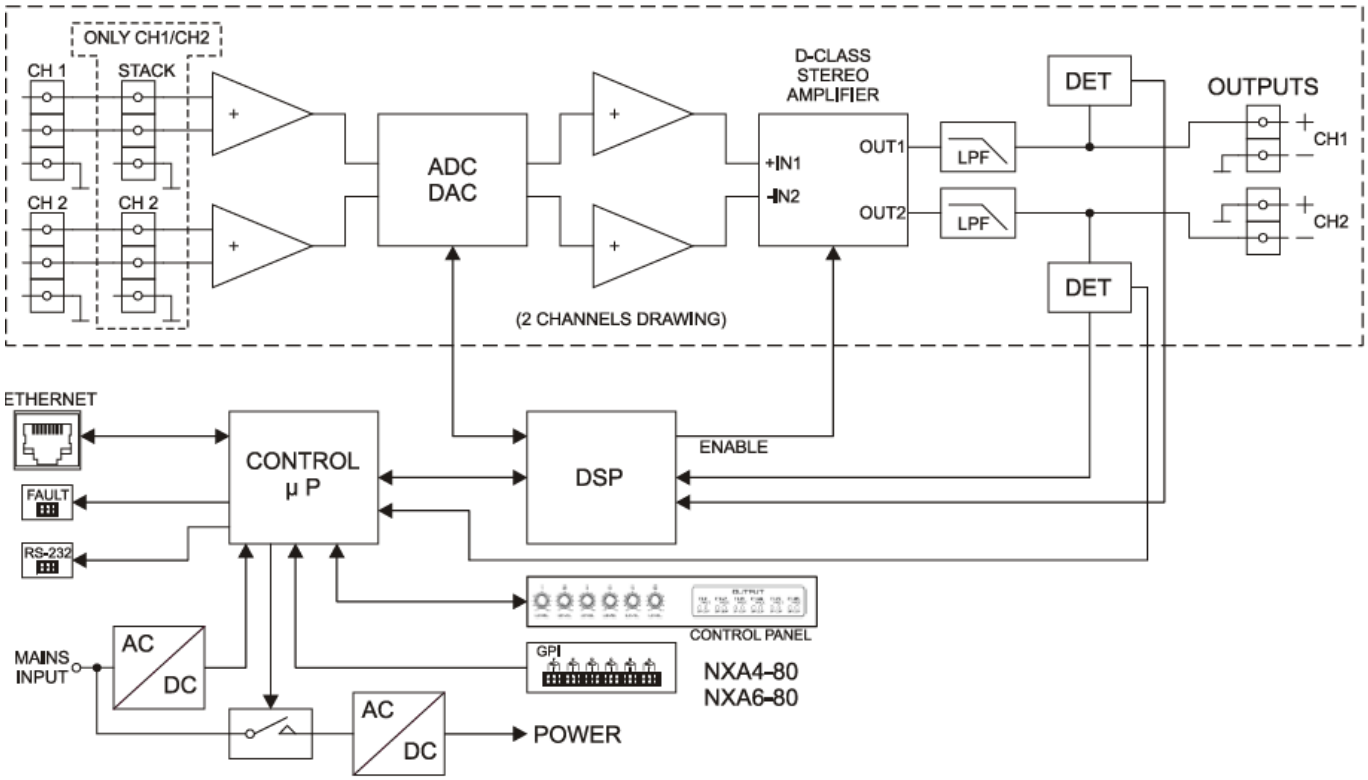
damaged. To clean it, use a soft cloth slightly wet with water and neutral liquid soap; dry it with a clean cloth. Be careful that water never gets into the amplifier through the holes of the front panel.

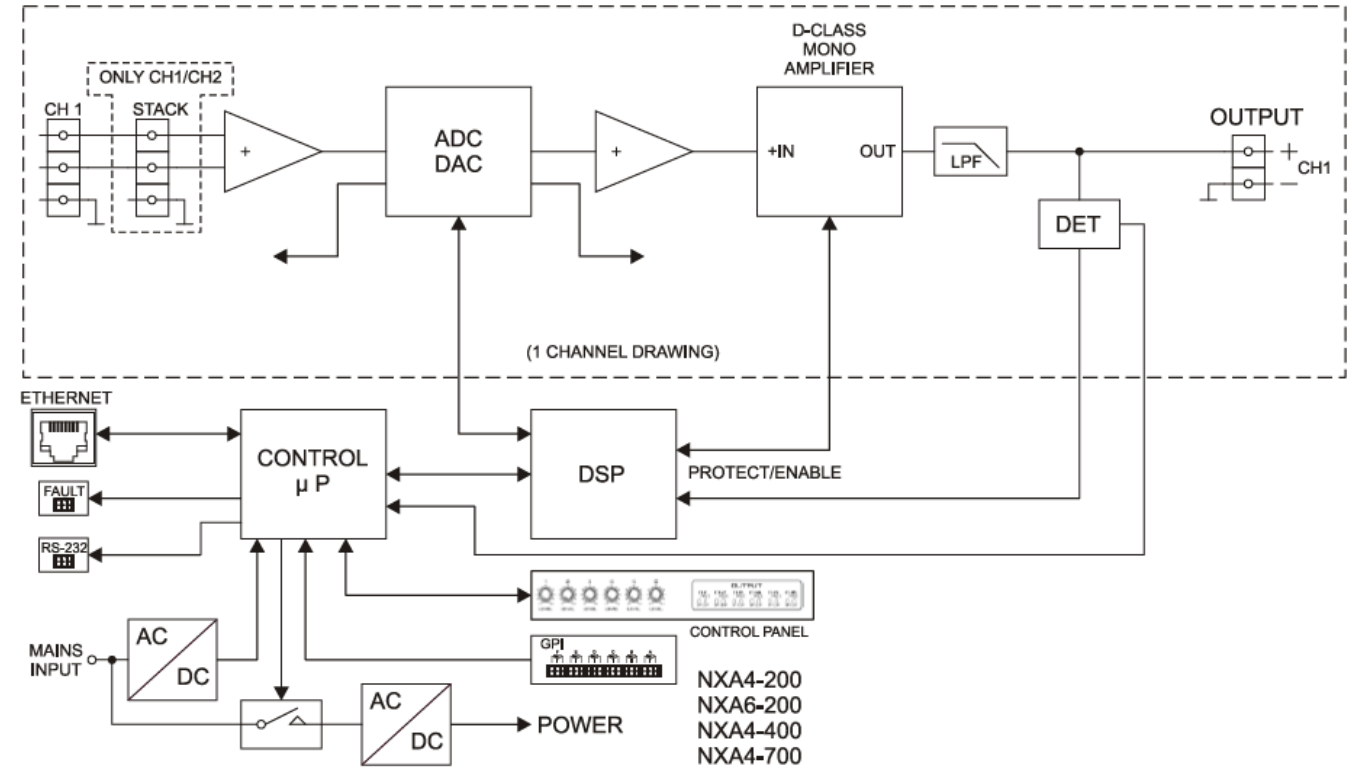
**DIAGRAMS and FUNCTION LIST**




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

**BLOCK DIAGRAM**




## TECHNICAL CHARACTERISTICS

| | NXA4-80 | NXA6-80 | NXA4-200 | NXA6-200 | NXA4-400 | NXA4-700 |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| POWER 20Hz-20kHz 1% THD | | | | | | |
| 1 Channel @ 2W (RMS) | | | | | | 1220 W |
| 1 Channel @ 4W (RMS) | 85 W | 84 W | 202 W | 218 W | 426 W | 730 W |
| 1 Channel @ 8W (RMS) | 51 W | 49 W | 121 W | 126 W | 230 W | 406 W |
| All Channels @ 4W (RMS) | 66 W | 65 W | 168 W | 163 W | 330 W | 530 W |
| All Channels @ 8W (RMS) | 43 W | 42 W | 107 W | 105 W | 205 W | 327 W |
| 1 Bridge channel @ 8W (RMS) | 160 W | 158 W | 383 W | 395 W | 760 W | 1180 W |
| 1 Bridge channel @ 4W (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 @ 8W | >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) | | | | | |
| POWER CONSUMPTION | | | | | | |
| (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 | | | | | |
| GENERAL | | | | | | |
| 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 –¥ to +0dB |
| Input Impedance: | Balanced, 22kW |
| Maximum Delay: | 1s (343.4m) for each channel |
| Delay resolution: | 20.8µs (6mm) |
| Compressor / Limiter: | |
| Threshold | from -36dBV to +18dBV |
| Ratio | 1:1 to ¥: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**

| | |
|---|---|
| **EclerNet** Software | – Realtime full GUI of all functions and controls thru Ethernet with interactive graphical display |

| | |
|---|---|
| | – Grouping mode channels or devices |
| | – Automated report generation |
| | – Remote power on with programmable delay. |
| | – Up to 256 devices on same net. |
| | – Autodiscovery devices feature |
| | – Routing capability through NAT gateways. |
| | – Real time metering at input/output (DSP) |
| | – Device “Finder” feature |
| | – Save & Recall setup and preset functions |
| | – Firmware update capability thru Ethernet |
| | – Password protection |
| | – Default Network configuration: |
| | IP: 192.168.0.100 |
| | Mask: 255.255.255.0 |
| | Gate: 192.168.0.1 |
| | UDP Port: 2210 |
| Operating System: | Windows®: XP Prof. (SP3); Vista (SP1); W7(SP1), W8, W10 and W11. |
| Minimum **EclerNet** System Requirements: | Pentium IV ® 2GHz |
| | 500MB RAM |
| | 100MB HDD free space |
| | 1024×768 pixels & 16bits colour display |
| | 10/100/1000 Ethernet Network card |

All product characteristics are subject to variation due to production tolerances.
NEEC AUDIO BARCELONA S.L. reserves the right to make changes or improvements in the design or manufacturing that may affect these product specifications.
For technical queries contact your supplier, distributor or complete the contact form on our website, in Support / Technical requests
**Motors, 166-168 08038 Barcelona - Spain - (+34) 932238403**
information@ecler.com www.ecler.com

## Documents / Resources

| | |
|---|---|
| | ecler NXA Series Digital Matrixes and Processors [pdf] User Manual<br>NXA4-80, NXA6-80, NXA4-200, NXA6-200, NXA4-400, NXA4-700, NXA Series Digital Matrixes and Processors, NXA Series, Digital Matrixes and Processors, Matrixes and Processors, Matrixes, Processors |

## References

- Ecler pro AV Solutions | Shaping Sound for Life Spaces
- Ecler pro AV Solutions | Shaping Sound for Life Spaces
- Ecler Support & Community: expert assistance, FAQs, news and more

Manuals+,