

## eHSA4-60

HIGH IMPEDANCE AMPLIFIERS

*Multichannel Amplifier*



## USER MANUAL

# INDEX

<b>1. IMPORTANT REMARK.....</b>	<b>3</b>
<b>2. IMPORTANT SAFETY INSTRUCTIONS .....</b>	<b>3</b>
<b>3. IMPORTANT NOTE .....</b>	<b>5</b>
<b>4. INTRODUCTION .....</b>	<b>5</b>
4.1 Main features .....	5
<b>5. INSTALLATION.....</b>	<b>6</b>
5.1 Placement, mounting, cooling .....	6
5.2 Mains connection .....	6
5.3 Input signal connections.....	7
5.4 Power saving mode .....	7
5.5 Limiter circuit.....	8
5.6 Output connections.....	9
<b>6. OPERATION AND USAGE .....</b>	<b>10</b>
6.1 Start up .....	10
6.2 Input attenuators .....	10
6.3 Indicators .....	10
<b>7. CLEANING.....</b>	<b>11</b>
<b>8. FUNCTION DIAGRAM.....</b>	<b>12</b>
<b>9. FUNCTION LIST .....</b>	<b>13</b>
<b>10. BLOCK DIAGRAM .....</b>	<b>14</b>
<b>11. TECHNICAL CHARACTERISTICS .....</b>	<b>15</b>

## 1. IMPORTANT REMARK



**WARNING: SHOCK HAZARD - DO NOT OPEN**


**AVIS: RISQUE DE CHOC ÉLECTRIQUE - NE PAS OUVRIR**



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING (If applicable):** The terminals marked with symbol of “” may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by an instructed person or the use of ready-made leads or cords.

**WARNING:** To prevent fire or shock hazard, do not expose this equipment to rain or moisture.

**WARNING:** An apparatus with Class I construction shall be connected to a mains socket-outlet with a protective earthing connection.

## 2. IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and at the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug the apparatus during lightening sorts or when unused for long periods of time.
13. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Disconnecting from mains: Switching off the POWER switch all the functions and light indicators of the amplifier will be stopped, but fully disconnecting the device from mains is done unplugging the power cord from the mains input socket. For this reason, it always shall remain readily operable.
15. Equipment is connected to a socket-outlet with earthing connection by means of a power cord.
16. The marking information is located at the bottom of apparatus.
17. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on apparatus.

**NOTE:** *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.*



**WARNING:** This product must not be discarded, under any circumstance, as unsorted urban waste. Take to the nearest electrical and electronic waste treatment centre.

**NEEC AUDIO BARCELONA, S.L.** accepts no liability for any damage that may be caused to people, animal or objects due to failure to comply with the warnings above.

### 3. IMPORTANT NOTE

Thank you for choosing our Ecler **eHSA multichannel amplifier**!

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 **eHSA** comes with a **3-year warranty**.

### 4. INTRODUCTION

eHSA4-60 is a 4x60W multichannel amplifier capable of working on both low impedance lines (8 / 4  $\Omega$ ) and high impedance lines (70/100V). It has the ability to link the input channels, so that the same input signal can be easily distributed to several or all output channels. Independent auto stand-by function per channel.

The Ecler Essentials eHSA line of amplifiers offers the renowned professional reliability of Ecler amplifiers at an affordable price. All models in the series use class D amplification – a very high-performance technology –, auto stand-by function and convection ventilation, only occupying 1 rack unit high.

Equipped with balanced inputs on Euroblock connectors. Outputs also feature Euroblock connectors. It has an electronic limitation system to avoid signal saturation and a thermal protection, as well as a protection system against overload.

#### 4.1 Main features

- 4-channel amplifier
- 60W per channel
- Each channel has independent outputs for low impedance or for high impedance (connection for independent 70 or 100V line).
- Controls for input attenuation in the frontal panel easily accessible.
- Class D amplification, high efficiency
- Auto stand-by switchable by means of front panel selector (energy saving mode in the absence of input signal). Independent by channel, with threshold selection (by means of internal jumper) also individual.
- Linking of adjacent inputs (Input link selector)
- Signal presence (SP), clipping (CLIP), protection against overload (PROT) and thermal protection (TH) indicators.

- Built-in, always active anticlip circuit
- Balanced inputs on Euroblock connectors
- Powered outputs on Euroblock connectors

## 5. INSTALLATION

**Non-compliance with the instructions may cause malfunction and may even damage the unit:**

1. **Avoid turning on the device without speakers connected to its outputs and without having previously adjusted the volume / gain controls at minimum level.**
2. **Always use shielded cables to make connections between devices.**

### 5.1 Placement, mounting, cooling

All eHSA amplifiers are presented in standard 19" rack format and are 1 unit high.

It is important that the amplifier, as a heat source, is not placed next to other equipment nor exposed to high temperatures.



**CAUTION:** The built-in convection cooling requires at least one free rack unit (empty space) both above and below each amplifier to ensure a correct air flow.

It is also advisable not to rack the power amplifiers under other devices, but on top of these, that is to say as high as possible toward the top of the rack cabinet.

### 5.2 Mains connection

The eHSA amplifiers are powered by 100 to 250VAC, 50/60Hz.

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

In order to protect the power amplifier from eventual power consumption overloads, it is protected by a set of fuses. Should a fuse blow, it must be replaced immediately by one with identical rating. Should it blow again please contact our Technical Service Department. **NEVER REPLACE THE FUSE WITH ANOTHER ONE WITH A HIGHER VALUE.**



**CAUTION:** Fuse substitutions have to be performed by a qualified technician.

### 5.3 Input signal connections

The signal input connectors are of EUROBLOCK and electronically balanced. The pin assignment is as follows:

- |                                 |   |        |
|---------------------------------|---|--------|
| • Hot or direct signal          | > | +      |
| • Cold or phase inverted signal | > | -      |
| • Ground                        | > | Ground |

For unbalanced connections, ground the negative terminal on the Euroblock.

In balanced mode, the input impedance is greater than 20k  $\Omega$  (10k $\Omega$  unbalanced), allowing you to connect a large number of stages in parallel without compromising the sound quality.

The inputs can be linked using the Input link switches on the rear panel. When the switch is active (pressed) between two input connectors, the input signal of one of the channels is replicated on the adjacent channel, and the same input signal is available at both amplified outputs, without the need to add external wiring or "bridging" at the inputs.

For example, if there is a connection at the Channel 1 input and the LINK 1-2 switch is activated, the Channel 1 signal will be replicated on Channel 2. If the LINK 2-3 switch is then pressed, the signal on channel 2 (which is identical to the signal on channel 1 in this case), will be available on channel 3. Inputs 1, 2 and 3 will therefore share the same audio signal.

### 5.4 Power saving mode

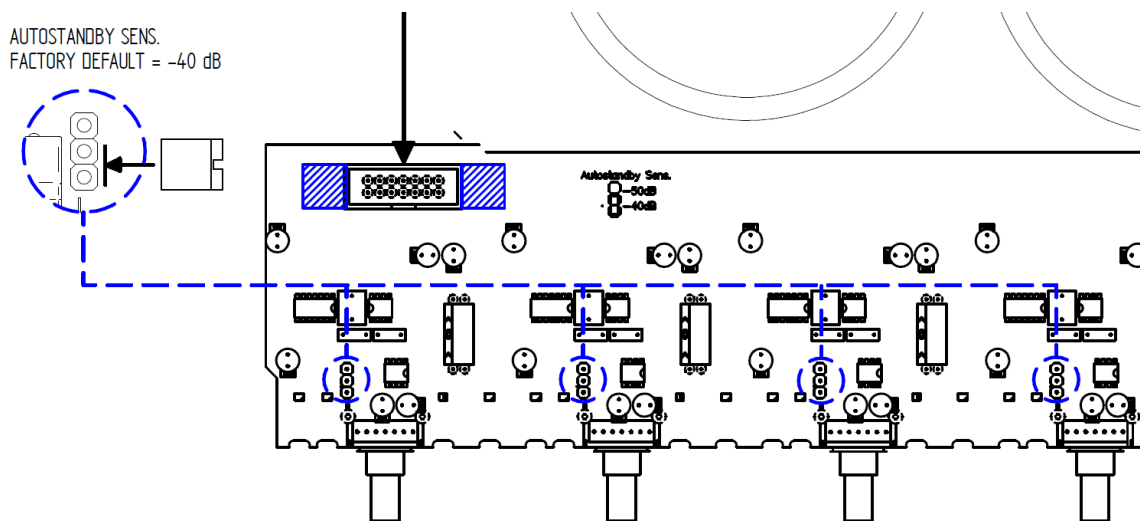
The AUTO STBY switch activates the power saving or low power consumption mode (the PROT/STBY LED is orange when activated), this mode activates automatically when it detects no audio signal from the unit's inputs during more than 90 seconds, and automatically recovers its normal operation when that signal reappears.

This function is independent on each channel, so if one or more of the channels goes into power-saving mode, the rest will continue to function normally.

The detection threshold can be selected independently per channel by means of an internal jumper. By default, it is in the -40dB position. If it is necessary to modify this threshold, it is possible to set it at -50dB. The lower the threshold, the more likely it is that the amplifier channel will come out of standby mode with very low signal levels, or even with background noise in the wiring between the sound source and the amplifier, if this is considerable.

If you detect that the auto standby function is regularly and/or unexpectedly activated (i.e. even if there is valid sound content at the amplifier's input), before changing the threshold, check that the input signal level setting is adequate. For this purpose, the SP (Signal Present) LED should be active when an audio signal is present, and the CLIP LED should not light up or light up occasionally in line with the bass frequencies, which have the highest energy content.

If the problem persists (the input audio signal has a wide dynamic range, for example), change the detection threshold. First, remove the top cover of the unit by unscrewing the screws that hold it to the chassis, to access the connectors inside, then reposition the jumper for the channel you want to change the threshold to.



## 5.5 Limiter circuit

This is an extra protection always enabled in the eHSA series amplifiers. This circuit dynamically limits the input signal to avoid clipping of loud signals at the amplifier output; it automatically reduces the input level not to exceed approximately 5% distortion.

The great utility of this circuit in any type of installation should be noted; the advantage of this system over traditional compressors is that dynamics is practically not altered, due to its time constant.



## 5.6 Output connections

The output section on the rear panel features Euroblock connectors.

Connection to high impedance lines: The loudspeakers line has to be connected to the amplifier's 0V and 70V terminals (70V line) or 0V and 100V terminals (100V line).

Connection on low impedance lines: The connection of the speaker line to the amplifier should be made using the Lo-Z ("+" and "-") terminals.

Each output channel is independent, so you can use your high or low impedance connection regardless of how the other outputs are connected.

If you want to combine, in the same channel, high and low impedance, using the 2 connectors of the same channel, you have to consider the load you are connecting to the terminals, never exceeding the 60W that the amplifier can deliver. Thus, if a load of  $4\Omega$  is connected to the low impedance connectors, it will not be possible to connect any additional load to the 70/100V terminals (the amplifier will be protected), as the maximum power transfer occurs to  $4\Omega$  and the amplifier delivers the available 60W to it. However, if a load of  $8\Omega$  is connected to the low impedance connectors, a line of up to 30W can be connected to the 70/100V terminals, as at  $8\Omega$  half of the available power is delivered. The rest of the available power can be delivered in lines connected to the same channel, never between different channels.

**Note:** the ground of the output connections are independent, never connect the "-" terminal of the Lo-Z output together with the 0V terminal of the 70 / 100V line output.

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.

## 6. OPERATION AND USAGE

### 6.1 Start up

The red "PROT/STBY" LEDs light up when you turn on the power switch. A second after all voltages have been stabilized and the amplifier is operating, "PROT/STBY" indicators turn off.

In a complete audio installation, it is important to power on the equipment according to the following sequence: sound sources (microphones, music players, etc.), mixers, equalizers, active filters and power amplifiers. To power off, follow the reverse sequence.

### 6.2 Input attenuators

This consists of rotating potentiometers, situated on the front panel.

These attenuators allow connecting the amplifier to different types of mixers and processors, independent level control and connection of speakers that can't handle the wattage supplied by the output stage at full power, without risking damage if the volume of the preamplifier-mixer is set too high.

### 6.3 Indicators

eHSA amplifiers include a simple yet effective indication system.

PROT/STBY indicators show the absence of loudspeaker output signal. These indicators may light up for following reasons:

- During start-up, until the STANDBY time has passed. This time period is needed for the internal operating voltages to settle.
- A short circuit is detected at the loudspeaker terminals (PROTECT function).
- When the module enters AUTO-STANDBY mode. In this case, the indicator will illuminate in orange instead of red.

If these indicators remain lit in red, there's a malfunction that should be investigated to find the cause of this lighting.

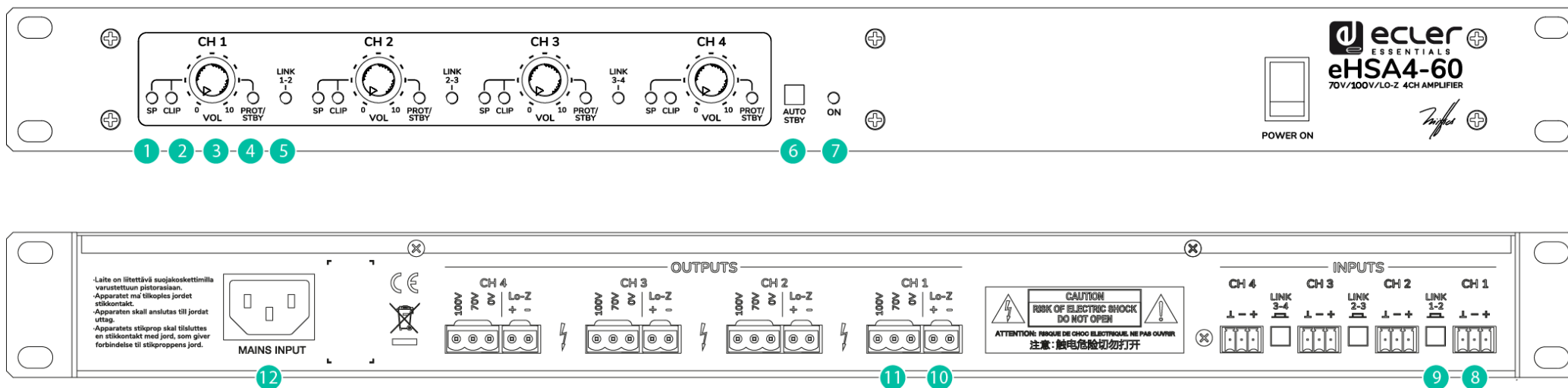
CLIP indicators light up when the signal level feeding the loudspeakers is just below the actual clipping. This CLIP system takes into account possible variations in the supply voltage, always giving a real indication. CLIP indicators light up to the beat of low frequencies when working at high power levels; it's normal as low frequencies are those with higher energy content. You must take care that these indicators do not remain continuously lit.

SP Signal Presence indicators indicate the presence of a valid signal at the amplifier inputs.

## 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.

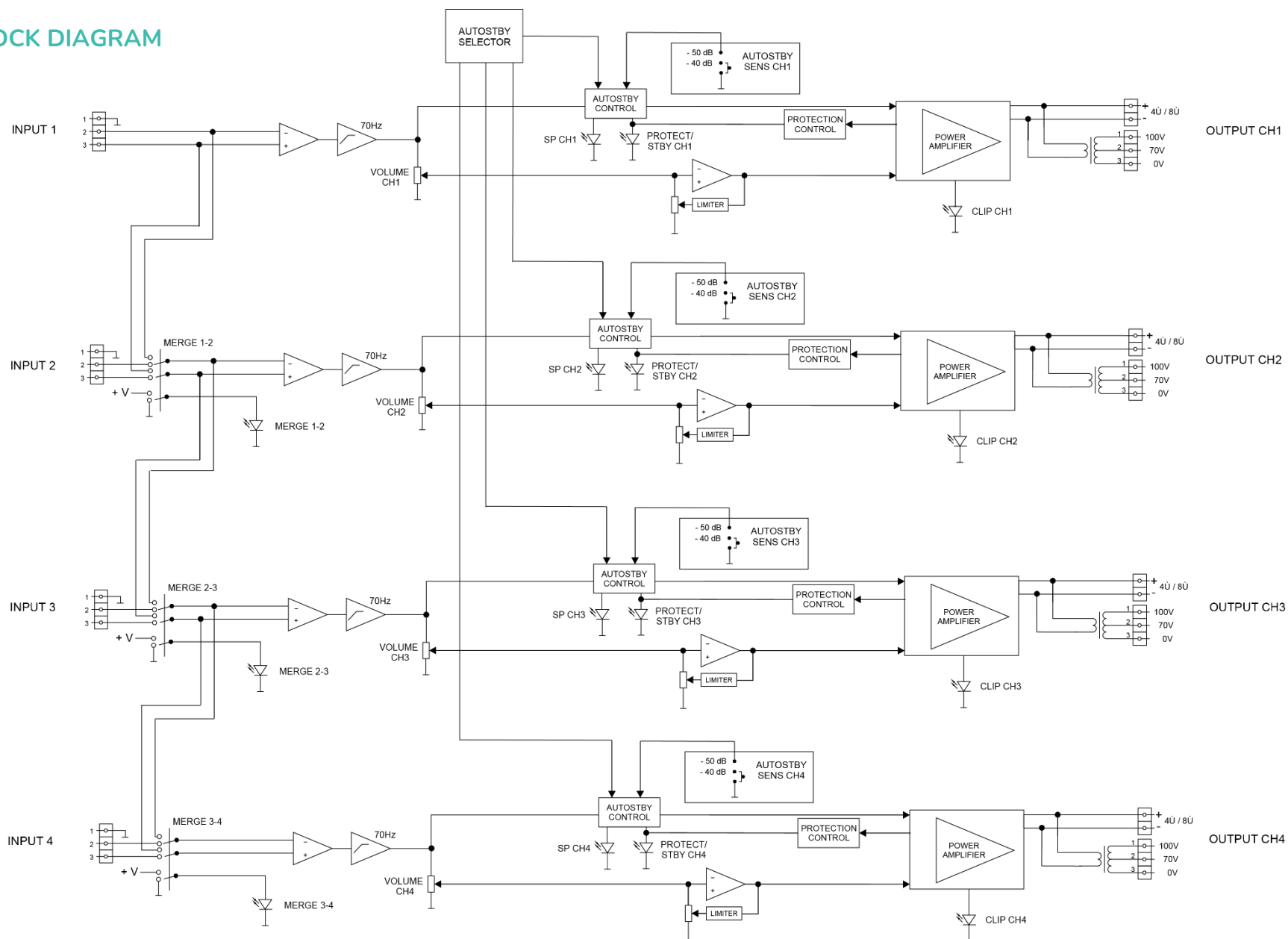
## 8. FUNCTION DIAGRAM



## 9. FUNCTION LIST

1. LED indicator of signal presence at the channel input: SP
2. Channel trim LED indicator: CLIP
3. Channel input attenuator: CH1, 2, 3...
4. LED indicator for overload protection and status STANDBY, PROT/STBY
5. LED indicator for linked inputs, LINK
6. AUTO STANDBY function switch
7. Power indicator ON
8. Euroblock connector channel input
9. LINK input link switch (1-2, 2-3, 3-4)
10. Euroblock connector low impedance Lo-Z channel output
11. Euroblock connector high impedance channel output (70/100V)
12. Network base

## 10. BLOCK DIAGRAM



## 11. TECHNICAL CHARACTERISTICS

<b>eHSA4-60</b>	
<b>Output power</b>	
Max output power <sup>1</sup> @ 4Ω	60W
Max output power <sup>1</sup> @ 100V	60W
<b>Signal</b>	
Input sensitivity	0dBV
Input impedance	>20kΩ
Frequency response	Lo-Z output @ 4Ω: 70Hz - 30kHz (-3dB) Hi-Z output @ 100V: 70Hz - 20kHz (-3dB)
THD + Noise	Lo-Z output @ 4Ω: <0,06% Hi-Z output @ 100V: <0,1%
SNR	Lo-Z output @ 4Ω: >90dB Hi-Z output @ 100V: >70dB
Channel crosstalk	>65dB @ 1kHz
Channel CMRR	>60dB @ 1kHz
<b>AC Mains power</b>	
AC Mains requirement	100 – 240VAC, 50 – 60 Hz (±10%)
<b>Power Consumption</b>	
Power Consumption (1/3 Power, @ 4Ω)	106W / 115VA
Power Consumption (1/8 Power, @ 4 Ω)	52W / 68VA
Power Consumption (IDLE)	15W / 30VA
Power Consumption (STBY)	7,6W / 18VA
<b>Settings</b>	
Auto stand-by threshold	40dB / 50dB, Internally Selectable
Auto stand-by time	90 seconds
<b>Physical</b>	
Dimensions (WxHxD)	482,6 mm x 44mm x 280mm / 19" x 1.7" x 11"
Weight	7,8 kg. / 17.2 lb.

<sup>1</sup>All channels driven @ 1%THD



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 design or manufacture that may affect these product specifications.

For technical queries please contact your supplier, distributor or complete the contact form on our website under Support / [Technical Query](#).

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