

# HZA4-120F

AMPLIFIERS

*Flexi-power Amplifier*



## USER MANUAL

# INDEX

|   |           |
|---|-----------|
| <b>1. IMPORTANT REMARK</b> .....  | <b>3</b>  |
| <b>2. IMPORTANT SAFETY INSTRUCTIONS</b> .....   | <b>4</b>  |
| <b>3. IMPORTANT NOTE</b> .....  | <b>5</b>  |
| <b>4. INTRODUCTION</b> .....  | <b>5</b>  |
| 4.1. <i>Main Features</i> .....   | 5         |
| <b>5. INSTALLATION</b> .....  | <b>6</b>  |
| 5.1. <i>Placement and mounting</i> .....  | 6         |
| 5.2. <i>Mains connection</i> .....  | 6         |
| 5.3. <i>Signal input connections</i> .....  | 7         |
| 5.4. <i>Output connections and channel linking with the FLEXIPOWER function</i> ..... | 8         |
| 5.5. <i>Internal switches for high-pass filters</i> .....                             | 9         |
| 5.6. <i>Remote control ports for attenuation</i> .....                                | 9         |
| 5.7. <i>REMOTE CONTROL ports connection</i> .....                                     | 9         |
| <b>6. OPERATION AND USAGE</b> .....   | <b>10</b> |
| 6.1. <i>Start up</i> .....  | 10        |
| 6.2. <i>Front panel LED indicators</i> .....  | 10        |
| 6.3. <i>Front panel volume controls</i> .....   | 11        |
| 6.4. <i>AUTO STBY ON/OFF switch</i> .....   | 11        |
| <b>7. CLEANING</b> .....  | <b>11</b> |
| <b>8. CONTROL PANEL FUNCTIONS</b> .....   | <b>12</b> |
| 8.1. <i>Front Panel</i> .....   | 12        |
| 8.2. <i>Rear Panel</i> .....  | 13        |
| <b>9. DIAGRAMS</b> .....  | <b>14</b> |
| 9.1. <i>Configuration Diagram</i> .....   | 14        |
| 9.2. <i>Block Diagram</i> .....   | 14        |
| <b>10. 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: 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 our Ecler **HZA4-120F Flexi-power 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.

**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 HZA4-120F is a four-channel power amplifier with high impedance (100V line) directly amplified outputs.

#### 4.1. Main Features

- Internal structure with four separate mono amplifiers, for 4 different mono input signals.
- The **FLEXIPOWER** technology can be used to link 2, 3 or 4 adjacent channels, adding their individual power, while operating as a single amplifier channel with a total power equivalent to the sum of the channels.
- Independent volume adjustment (per channel) through front panel controls.
- Independent (per channel) 0-10 VDC remote volume control, via screw terminals on rear panel.
- *SPM 100 Technology - Channel N* for direct high impedance amplification (100V line) without output transformers, which has the following benefits compared to traditional 100V line amplification with transformers:
  - Better frequency response in the low band of the audible spectrum (low frequencies or bass) because there is no degradation of this part of the spectrum usually due to the saturation of transformers core.
  - Great efficiency.
  - Reduced weight.
- Convection cooling, without fan, with the following benefits:
  - No background noise.
  - Increased reliability.
- “Auto-standby” function: the amplifier automatically switches to standby mode (low consumption mode) when it remains approximately two minutes without detecting any input signal, then immediately switches back to normal operating mode when an input signal is re-detected.
- Thermal protection.
- Overload protection.
- “Anticlip” system to protect from saturation due to an excessively high signal level.

## 5. INSTALLATION

### 5.1. Placement and mounting

The amplifier is presented as a 2 unit high 19" rack module. It is supplied with plastic washers in order not to damage the unit when tightening the screws.

**Remark:** It is very important that the amplifier is not completely enclosed, covered, or exposed to extreme temperatures, as the amplifier, itself, generates heat. Proper ventilation is necessary, allowing air to pass through the ventilation holes of the chassis. Leaving at least one rack unit free between each device and those installed above and below it in the rack frame is recommended.

If the setup has several amplifiers in the same rack or in a closed cabinet with doors, it is highly recommended to supply them forced ventilation, installing fans at the upper and lower ends. 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.

### 5.2. Mains connection

The HZA4-120F amplifiers are fed with alternate currents, depending on the country, of 110-120, 220-240V 47-63Hz. (see characteristics in the back of the unit).

The amplifier should have an earth connection in good conditions (earth 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 grids with any kind of material.

In case there is some type of intervention and/or connection-disconnection of the amplifier, it is most important to previously disconnect the mains power supply. There are no user or serviceable parts inside the amplifier.

You should avoid that the supply cable twists with the shielded signal cables, as this could lead to unwanted hum.

In order to protect the unit from an eventual electrical overload or momentary power peaks from the internal circuits it carries a fuse. Should it ever blow up, unplug the unit from mains and replace it with an identical one. If the new fuse blows again contact immediately with our Authorized Technical Service.

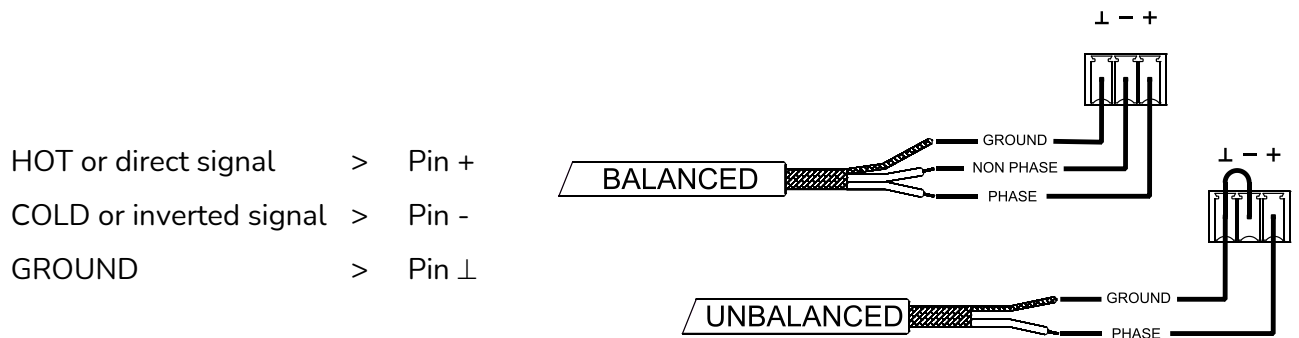


**CAUTION: YOU MUST NEVER USE A HIGHER VALUE FUSE.**

### 5.3. Signal input connections

The amplifier HZA4-120F features 4 balanced and line level analog signal inputs (one per amplification channel) on its rear panel.

Signal input connectors are 3 position screw terminal block (40, 41, 43, 45). The wiring is:



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

TACK outputs (42, 44) 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 20KΩ (balanced) with a nominal input sensitivity of 0dBV(1V). This impedance makes possible to parallel several amplifiers without losing audio quality.

#### 5.4. Output connections and channel linking with the *FLEXIPOWER* function

The rear panel *OUTPUTS* section is fitted with two position screw terminal block (28, 29, 30, 31) for each amplifier channel. Always respect the relative polarity for outputs (0 and 100 on each output connector), wiring and speakers.

The *FLEXIPOWER* Function: a **MERGE switch** is installed between each pair of output connectors:

- When the switch is in the top position, the pair of channels has an independent behaviour; the *FLEXIPOWER* function will not be active
- When the switch is in the lower position (**MERGE**), the two channels will be linked and their individual power will be added:
  - The two outputs of the pair of channels and the speaker lines connected to these channels will be connected in parallel
  - The **MERGE** LED (6, 11, 16) light on the front panel, between the pair of channels, will be lit
  - The audio content of the pair of channels becomes the sound source connected to the input of the channel with a lower number (input 1 for channel pair 1&2, input 2 for channel pair 2&3, input 3 for channel pair 3&4)
  - The active front and remote volume control (if used) of the channel pair becomes that of the channel with a lower number (controls on channel 1 for channel pair 1&2, controls on channel 2 for channel pair 2&3, controls on channel 3 for channel pair 3&4)



**PRECAUTION: DO NOT MANIPULATE THE “MERGE” SWITCHES WHEN THE AMPLIFIER IS SWITCHED ON**

2, 3 or 4 adjacent channels can be linked (with a resulting double, triple or quadruple power), with the following sound source and volume control arrangement:

| FLEXIPOWER inputs routing and associated volume controls |                 |            |            |       |            |            |               |
|--|-----------------|------------|------------|-------|------------|------------|---------------|
|  | MERGED CHANNELS |            |            |       |            |            |               |
|  | Independent     | 1 & 2      | 2 & 3      | 3 & 4 | 1 & 2 & 3  | 2 & 3 & 4  | 1 & 2 & 3 & 4 |
| CHANNEL 1  | IN 1            | <u>IN1</u> | IN1        | IN1   | <u>IN1</u> | IN1        | <u>IN1</u>    |
| CHANNEL 2  | IN 2            |            | <u>IN2</u> | IN2   |            | <u>IN2</u> |               |
| CHANNEL 3  | IN 3            | IN3        | <u>IN3</u> | IN4   | <u>IN3</u> |            |               |
| CHANNEL 4  | IN 4            | IN4        |            |       | IN4        |            |               |



### 5.5. Internal switches for high-pass filters

Inside the amplifier there are four jumpers to activate/deactivate the high-pass filter for each amplifier channel, with a cutoff frequency set at 70Hz and a slope of 18dB/octave. The high-pass filter is recommended for some 100V line applications, especially when audio content is primarily vocal (public address announcements, for example). [See section 9.1. Configuration Diagram for more information.](#)

### 5.6. Remote control ports for attenuation

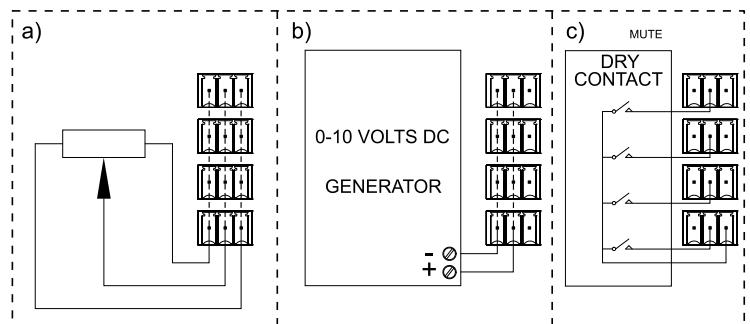
The HZA4-120F features 4 remote control ports labeled “*REMOTE CONTROL*” (35, 36, 37, 38) on its rear panel. You can connect WPm series, REVO control panels etc. to each of these ports to remotely attenuate the input signal (and therefore, the output volume of affected channels).

The maximum level of each amplification channel (and therefore its output volume) that can be reached by the remote attenuator is determined by the position of its front knob (21, 22, 23, 24).

### 5.7. *REMOTE CONTROL* ports connection

The signal remote attenuation level for each input channel can be set by using 3 types of external devices connected to the rear panel *REMOTE CONTROL* ports:

- a) Using a remote potentiometer with nominal resistance between 10kΩ and 50kΩ, WPm series or equivalent.
- b) Using a device that generates a control voltage from 0 to 10V DC.
- c) Using remote relays/dry contacts.



**Remark:** you can connect up to 16 REMOTE CONTROL ports in parallel to the same hardware control potentiometer. You have to merge the ground of all amplifiers belonging to these ports.

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 at [www.ecler.com](http://www.ecler.com).

## 6. OPERATION AND USAGE

### 6.1. Start up

This will be done through the *POWER ON* (25) switch and the built-in indicator immediately lights.

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

The HZA4-120F is equipped with the following front panel LEDs:

- **STBY indicator** (1): illuminates when the amplifier is in standby (low consumption mode), after approximately two minutes without any input signal detected. When an input signal is re-detected, the amplifier automatically switches back to normal operating mode.
- **Signal Presence indicators, SP** (2, 7, 12, 17): warn of the presence of signal at the amplifier inputs. These indicators illuminate when the input signal exceeds -35dB.
- **Overload indicators, OVL** (3, 8, 13, 18): illuminate when the channel reaches its maximum power capacity, due to a too low load impedance.
- **CLIP indicators** (4, 9, 14, 19): illuminate when the speakers output signal is close to the actual clipping level. The CLIP system takes into account possible fluctuations in the supply voltage if they exist, always giving a real indication. It is normal when you work at high power levels that CLIP indicators illuminate to the beat of the low frequencies, which are those with the higher energy content. Make sure this doesn't permanently illuminate indicators during normal operating mode.
- **Thermal protection indicators, TH** (5, 10, 15, 20): indicate that the channel over-temperature protection has been activated; normal operation will be restored when the temperature returns to the correct operating temperature range.
- **MERGE Indicators**: they indicate whether the *FLEXIPOWER* function that links two adjacent channels have been activated with the switches on the rear panel or not.

### 6.3. Front panel volume controls

The front panel features four volume knobs, one per channel, allowing independent adjustment of the maximum output level for each amplifier channel.

Remote control ports also allow to adjust the volume of each amplifier channel from a WPM series panel, a potentiometer or other external hardware device; the actual volume of each channel is the result of the two volume controls position (front panel and remote control).

In the device packaging, you'll find a bag with clear caps to be inserted on the front panel knobs. They protect the input attenuation settings from unsolicited tampering. Once inserted, you must use a flathead screwdriver or a similar tool to remove them.

### 6.4. AUTO STBY ON/OFF switch

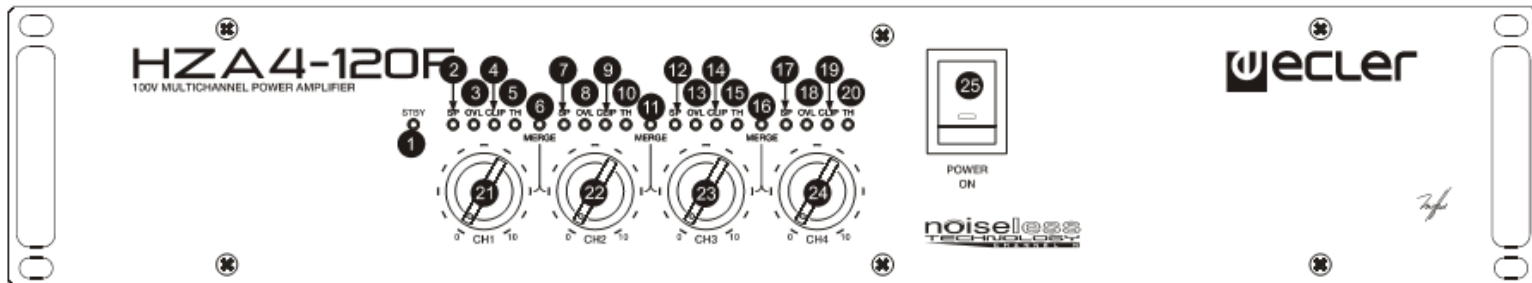
Switch (39) that enables/disables the auto standby mode (sleep or low consumption mode). If this function is activated, the amplifier will switch to standby after approximately two minutes without any input signal detected. When an input signal is re-detected, the amplifier automatically switches back to normal operating mode.

## 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.

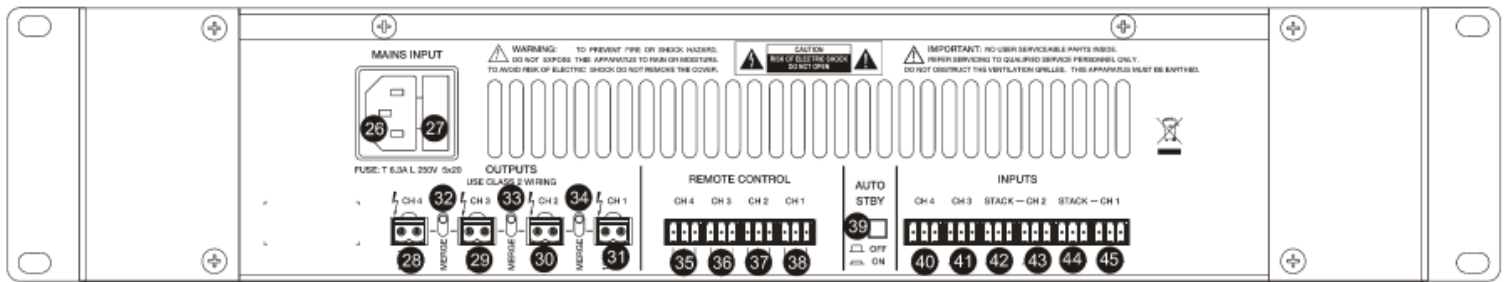
## 8. CONTROL PANEL FUNCTIONS

### 8.1. Front Panel



- |   |   |
|---|---|
| <b>1</b> Automatic power off indicator, STBY    | <b>14</b> Clip indication, CLIP CH 3            |
| <b>2</b> Signal presence, SP CH 1               | <b>15</b> Thermal protection indicator, TH CH 3 |
| <b>3</b> Overload indicator, OVL CH 1           | <b>16</b> Merge indicator, MERGE 3 & 4          |
| <b>4</b> Clip indication, CLIP CH 1             | <b>17</b> Signal presence, SP CH 4              |
| <b>5</b> Thermal protection indicator, TH CH 1  | <b>18</b> Overload indicator, OVL CH 4          |
| <b>6</b> Merge indicator, MERGE 1 & 2           | <b>19</b> Clip indication, CLIP CH 4            |
| <b>7</b> Signal presence, SP CH 2               | <b>20</b> Thermal protection indicator, TH CH 4 |
| <b>8</b> Overload indicator, OVL CH 2           | <b>21</b> Volume, CH 1                          |
| <b>9</b> Clip indication, CLIP CH 2             | <b>22</b> Volume, CH 2                          |
| <b>10</b> Thermal protection indicator, TH CH 2 | <b>23</b> Volume, CH 3                          |
| <b>11</b> Merge indicator, MERGE 2 & 3          | <b>24</b> Volume, CH 4                          |
| <b>12</b> Signal presence, SP CH 3              | <b>25</b> Power switch and pilot light, POWER   |
| <b>13</b> Overload indicator, OVL CH 3          |   |

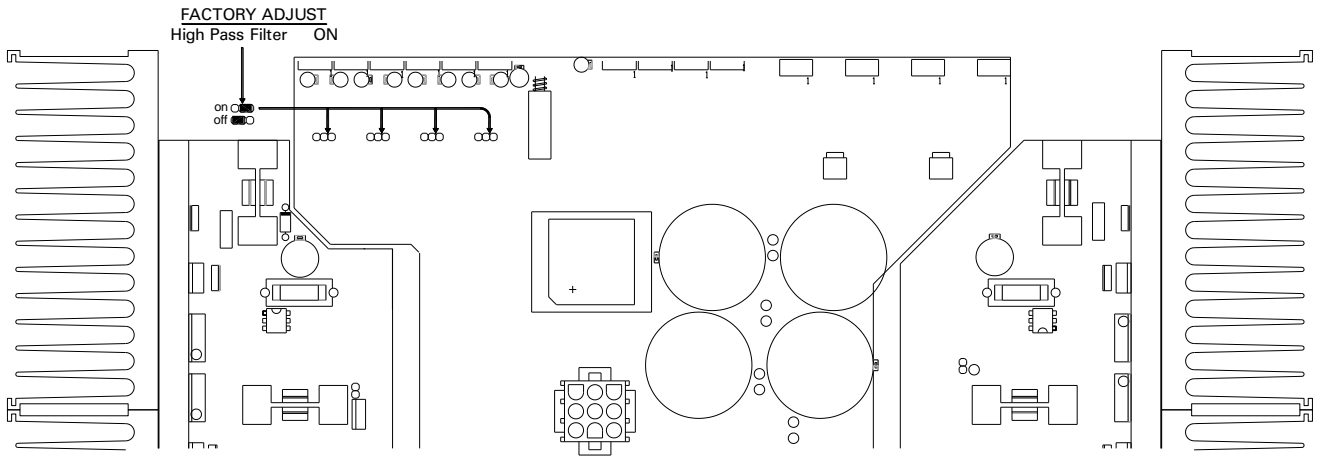
## 8.2. Rear Panel



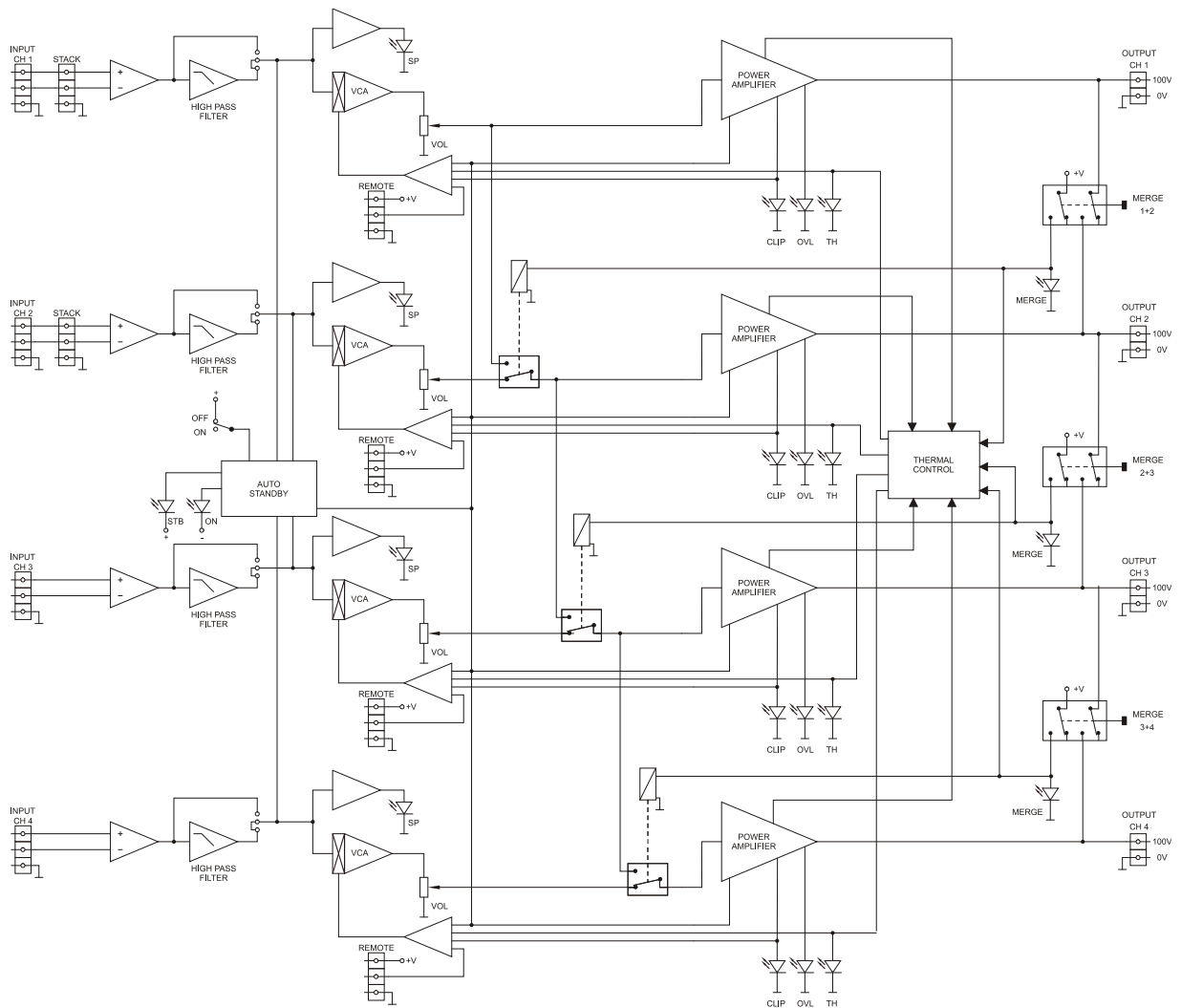
- |   |  |
|---|--|
| <b>26</b> Mains socket                                | <b>37</b> Screwable terminal for remote control, CH 2      |
| <b>27</b> Fuse holder                                 | <b>38</b> Screwable terminal for remote control, CH 1      |
| <b>28</b> Output terminals channel 4, CH 4            | <b>39</b> Standby mode selector, AUTO STBY                 |
| <b>29</b> Output terminals channel 3, CH 3            | <b>40</b> Input terminals channel 4, CH 4                  |
| <b>30</b> Output terminals channel 2, CH 2            | <b>41</b> Input terminals channel 3, CH 3                  |
| <b>31</b> Output terminals channel 1, CH 1            | <b>42</b> Output terminals to other amplifiers, STACK CH 2 |
| <b>32</b> MERGE switch 3 & 4                          | <b>43</b> Input terminals channel 2, CH 2                  |
| <b>33</b> MERGE switch 2 & 3                          | <b>44</b> Output terminals to other amplifiers, STACK CH 1 |
| <b>34</b> MERGE switch 1 & 2                          | <b>45</b> Input terminals channel 1, CH 1                  |
| <b>35</b> Screwable terminal for remote control, CH 4 |  |
| <b>36</b> Screwable terminal for remote control, CH 3 |  |

## 9. DIAGRAMS

### 9.1. Configuration Diagram



### 9.2. Block Diagram



## 10. TECHNICAL CHARACTERISTICS

### HZA4-120F

|  |   |
|--|---|
| Output power @ 1% THD                  |   |
| 1 Channel                              | 114 WRMS @ 100V line                                  |
| 2 Merged Channels                      | 195 WRMS @ 100V line                                  |
| 4 Merged Channels                      | 290 WRMS @ 100V line                                  |
| 4 Merged Channels                      | 356 WRMS @ 100V line                                  |
| Output power @ 10% THD                 |   |
| 1 Channel                              | 145 WRMS @ 100V line                                  |
| 2 Merged Channels                      | 226 WRMS @ 100V line                                  |
| 4 Merged Channels                      | 348 WRMS @ 100V line                                  |
| 4 Merged Channels                      | 430 WRMS @ 100V line                                  |
| Others                                 |   |
| Frequency response (-3dB)              | 30Hz - 55kHz  |
| High pass filter 3rd order Butterworth | 70Hz  |
| THD+Noise @ 1kHz Full Power            | <0.03% typ. 0.2% max.                                 |
| Signal Noise Ratio @ 100V              | >90dB   |
| Channel Crosstalk @ 1kHz/100V          | >90dB   |
| Inputs                                 |   |
| Sensitivity nom / Impedance            | 0dBV/>20kW  |
| Connectors                             | Terminal Block (Symmetrical)                          |
| Outputs                                |   |
| Connectors                             | Terminal Block  |
| Indicators                             |   |
| Power                                  | Green (ON), Red (Standby)                             |
| Signal Present /Clip/Overload/Thermal  | -35dB / Yes / Yes /Yes                                |
| Remote control                         |   |
| DC                                     | 0-10V/0.1A max  |
| No attenuation                         | 0V  |
| Full attenuation                       | +10V  |
| Connectors                             | Terminal block  |
| Auto power                             |   |
| Threshold                              | >-30dB aprox  |
| Time                                   | 100 sec. aprox  |
| Mains voltage                          | 115V/230V. Voltage changed internally (NOT BY SWITCH) |
| Power consumption                      |   |
| pink noise, 1/8 power @ 136Ω           | 340VA   |
| pink noise, 1/3 power @ 136Ω           | 470VA   |
| Standby                                | <3W   |
| Dimensions                             |   |
| Dimensions WxHxD:                      | 482.6 x 88 x 392mm (Handle excluded)                  |
| Weight                                 | 13.60kg   |

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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