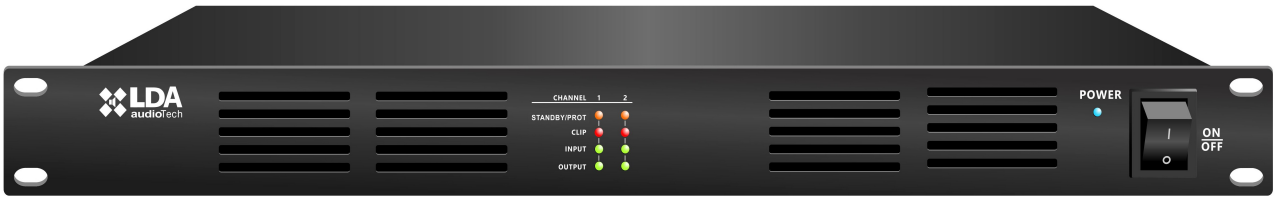
User's Manual



Model: **BA-Series**

LDA audioTech

Table of Content

Figures

Tables

1 SAFETY INSTRUCTIONS

Please read carefully these safety instructions.

1. Keep this User Manual for future reference.
2. Power connector must be accesible, place the power cord where people will not step or stumble. Unplug the equipment from the AC before cleaning..
3. Liquid-filled objects must not be placed on the equipment. Do not use liquid or sprayed detergent for cleaning. Do not expose this equipment to humidity.
4. Free flame sources such as candles must not be placed on the equipment.
5. Install this equipment in a safe surface. If the equipment is not in a safe surface, it may fall and be damaged.
6. The openings on the enclosure are for air convection. DO NOT COVER THE OPENINGS. Leave a 5 cm gap around them to allow the proper air convention.
7. Never open the equipment. For safety reasons, the equipment should only be opened by qualified personnel.
8. The equipment must be connected to plug with protective earth
9. Let staff check the equipment if any of these situations occurs:
    a) The power cord or power plug is damaged.
    b) Liquid has penetrated inside the equipment.
    c) The equipment has been exposed to moisture.
    d) The equipment does not work well or does not work according to the instruction manual.
    e) The equipment was dropped and damaged.
    f) If the equipment has obvious signs of damage.
10. The connections must be made only by qualified personnel. Disconnect the audio inputs and outputs while making connections. Be sure to use the proper cables to make the connections..

2 DESCRIPTION

The SIMAX BA Series amplifiers are specially designed for professional installations where eficiency is a relevant factor. Thanks to its class D amplification technology and its switched-mode power supply achieves a power consumption efficiency of 85%, dissipating less heat and occupying only one height of a 19" rack.

The BA series has two types of two channels amplifiers: 250 W rms (BA-2250) and 500 W rms (BA-2500), that are protected against short circuit and overload. Thanks to its flexible design it allows both 100V high impedance and low impedance stereo 8 ohms (BA-2250) or 4 ohms (BA-2500) public address systems. Each channel integrates a high-pass filter and an automatic standby for noise gate, whose operation can be activated from the rear panel.

1. Universal 230/115V ~ 50/60Hz switched-mode power supply
2. Class D amplifier with an 85% eficiency
3. Two channel amplifier in 19” rack
4. 250W rms (BA-2250) and 500 W rms (BA-2500) power rating per channel
5. Two independent output channels 8Ω / 100V (BA-2250) and 4Ω / 100V (BA-2500)
6. XLR balanced input through phoenix connector
7. Independent gain control per channel
8. High pass filter per channel
9. Automatic standby by integrated noise gate to save energy
10. Independent channel indicators for input and output protection
11. Short-circuit, overload and overheat protection

3 FRONT PANEL

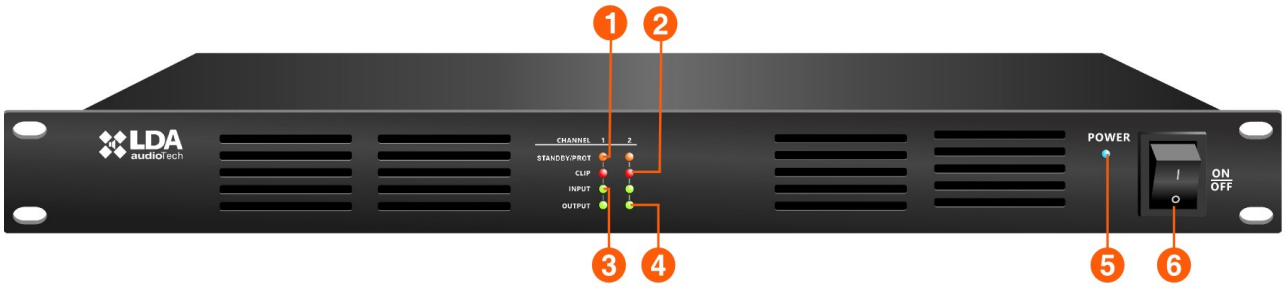


Figure 1: BA Series Front View

1. **PROT/STBY:** This indicator shows two different statuses:

   - PROT: protection indicator. The indicator will light up orange when the amplifier is in protection condition. Protection may be because of a short-circuit in the speaker line, the amplifier overload and when the inside temperature is over 55ºC (131 ºF). There's and independent protection indicator for each channel.

   - STBY: stand-by. The same indicator will light up orange when the amplifier is in stand-by due to not detecting any sinal for more than two minutes.The indicator will switch off when the system detects the signal again. This function is programmable through the switch located on the rear panel.

2. **CLIP:** The clip indicator will light red when the input or output is too high. There ir an independent CLIP indicator for each channel

3. **INPUT:** The input indicator will light green when an input signal is detected. There is an independent input indicator for each channel.

4. **OUTPUT:** The output indicator will light green when there is an output signal. El indicador de salida se iluminará en verde hay señal de salida. There is an independent output indicator for each channel.

5. **POWER:** The power indicator will light blue when the equipment is on.

6. **POWER SWITCH:** It allows to switch the equipment on and off.

4 REAR PANEL

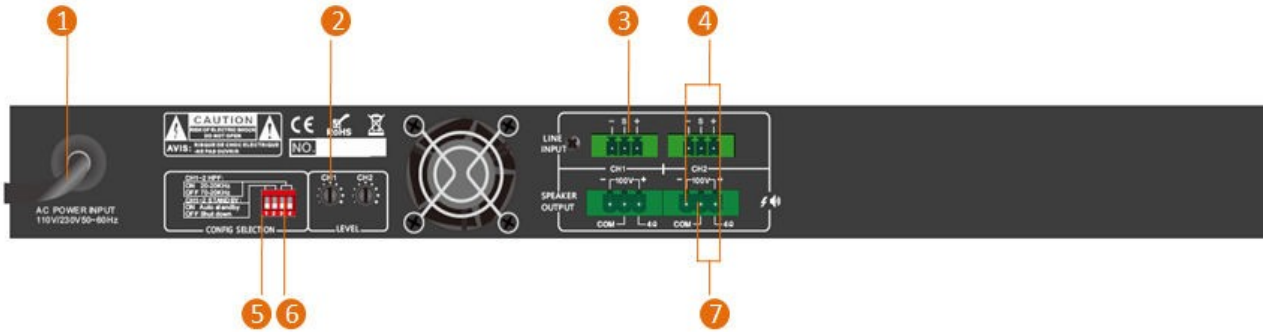


Figure 2: BA Series Rear View

1. **AC POWER CORD:** AC Power Cord to 110V – 230V input. The rated power of the equipment is self-switchable.
2. **GAIN CONTROL:** Allows the adjustment of the input sensitivity. There is an independent gain control for each channel.
3. **LINE INPUT:** The line input supports balanced and unbalanced audio inputs. These inputs are supplied through 3 pin and 3,818mm euroblock connectors (provided with the equipment). Cable section range for each pole of this connector: 0,14 → 1,5mm2 (30 → 14 AWG). There is an independent line per channel.
4. **100V SPEAKER OUTPUT:** The speakers output for high impedance lines (100V) must be connected between the positive and negative terminals of the output connector, according to the speakers' polarity. The amplifier has two independent output channels. These outputs are connected through 3 pin and 5,08mm euroblock connectors (provided with the equipment). Cable section range for each pole of this connector: 0,5 → 2,5mm2 (22 → 12 AWG).

   Never join the positive and negative ends, it can cause a short-circuit.

   Never connect the low impedance speaker to these 100V ends, it could damage the speaker.
5. **HIGH PASS FILTER:** The high pass filter function will activate or deactivate according to the two channel configuration through the dip-switch. There are two high pass filter independent channels.
6. **AUTO-STANDBY:** The auto-standby function will activate or deactivate according to the two channel configuration through the dip-switch. It will activate when no input signal is detected for 2 minutes. The amplifier will activate inmediatly when an input signal over -40dB is detected.
7. 8Ω (BA-2250) or 4Ω (BA-2500) SPEAKER OUTPUT: The speakers output for low impedance lines (8Ω (BA-2250) or 4Ω (BA-2500)) must be connected between the Positive and COM terminals of the output connector, according to the speaker polarity. The amplifier has two independent output channels. These outputs are connected through 3 pin and 5,08mm euroblock connectors (provided with the equipment). Cable section range for each pole of this connector: 0,5 → 2,5mm2 (22 → 12 AWG).

   Never join the positive and negative ends, it can cause a short-circuit.

   Never connect the low impedance speaker to these 100V ends, it could damage the speaker.

5 SPEAKERS CONNECTION

5.1 Low impedance speaker connection. 8Ω (BA-2250) or 4Ω (BA-2500)

To connect conventional 8Ω (BA-2250) or 4Ω (BA-2500) speakers, connect the positive side (+) tp the 8Ω (BA-2250) or 4Ω (BA-2500) terminal. Connect the negative side (-) to the COM terminal.

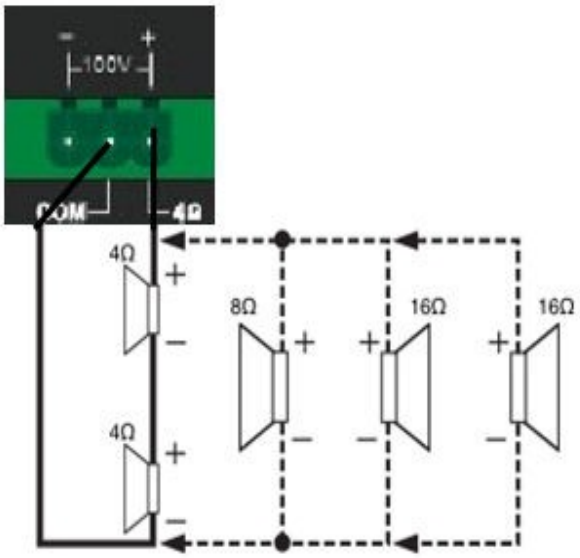


Figure 3: Low impedande speaker connection 8Ω (BA-2250) or 4Ω (BA-2500)

5.2 High impedance speaker connection. 100V

To connect a low impedance speaker system (100V) in parallel, connect the positive side of the speaker (+) to the 100V terminal. Connect the negative side (-) to the COM terminal.

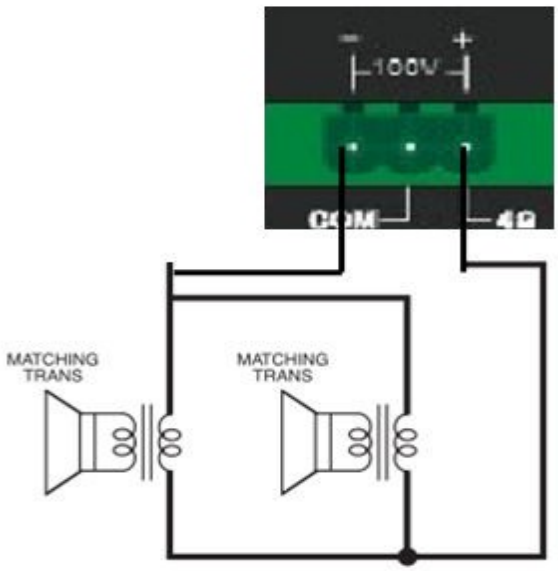


Figure 4: High impedance speakers connection 100V

5.3 Wrong speaker connection

Do not connect high and low impedance speakers simultaneously, it could damage the equipment.

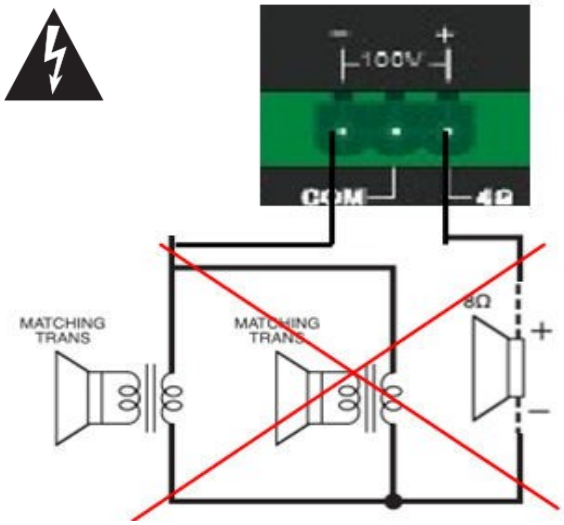


Figure 5: Wrong speaker connection

6 BLOCK DIAGRAM

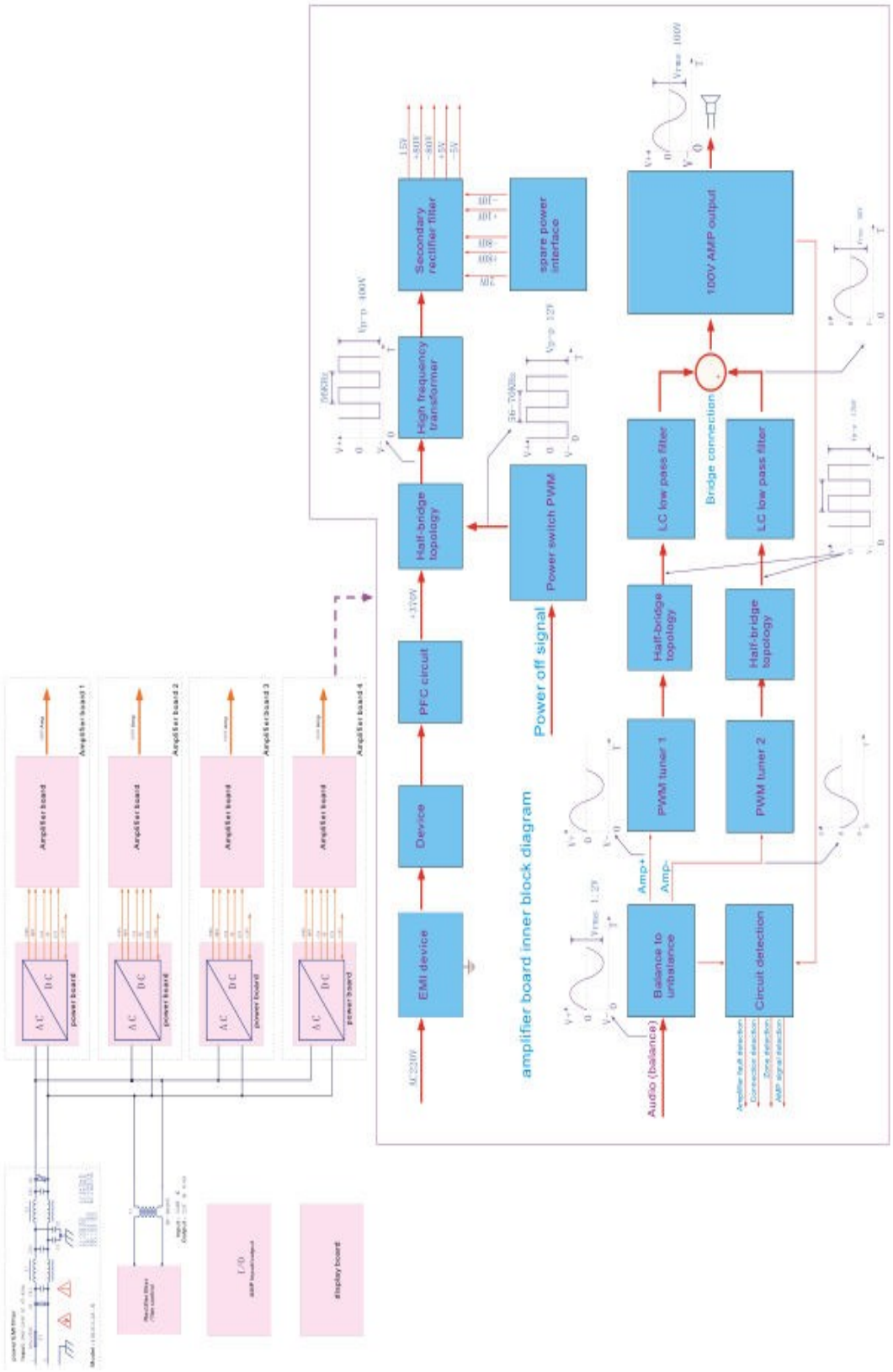


Figure 6: BA Series Block diagram

7 MAINTENANCE

The equipment requires a limited periodic maintenance.

The regularity of the maintenance must be in accordance with the equipment intallation conditions. It is advisable to set at least a maximum period of a year.

Warnings:

- Use only a soft lint free cloth
- Disconnect the equipment from any external power source.
- Disconnect all the external devices.
- Keep the equipment away from any liquid.
- Do not use aerosoles, solvents or abrasive substances.
- Do not spray any cleanser directly on the equipment.

Operations:

- Clean the equipment with a damp cloth.
- Clean the air inlets and outlets of the equipment with a vacuum.
- Check the equipment and ground connections.

8 TECHNICAL SPECIFICATIONS

Model	**BA-2250**		**BA-2500**	
Output Power	115V AC	230V AC	115V AC	230V AC
	2 x D Class, 250 Wrms		2 x D Class, 500Wrms	2 x D Class, 500Wrms
	Min load 40 Ω / 8Ω		Min load 20 Ω / 4Ω	
Distortion (1KHz/-3dBv, 100W)	115V AC	230V AC	115V AC	230V AC
	<0,1%		<0,5% (20 Ohm); <0,2% (4 Ohm)	<0,1% (20 Ohm); <0,2% (4 Ohm)
Frecuency Response	L/H Cut OFF 20Hz-20KHz (+1/-2dB) L/H Cut ON 70Hz-10KHz (+1/-3dB)		L/H Cut OFF 20Hz-20KHz (+1/-3dB) L/H Cut ON 70Hz-10KHz (+1/-3dB)	
Signal to noise ratio	>80dB, A - weighted			
Crosstalk	>60dB, 1KHz, max output			
Speaker outputs	2x100V / 8Ω . 2 Pin, Euroblock type (3 pin connector)		2x100V / 4Ω . 2 Pin, Euroblock type (3 pin connector)	
Audio inputs	2 x Balanced Audio 1Vp, 0,707Vrms. 10 KΩ, 3Pin, Euroblock Type			
Protection	Over-Temperature, DC voltage, Short-circuit, Overload			
Power supply	115 / 230V~ 50/60Hz. Automatic. 2m / 6,56ft (UE type) power cord			
Consumption	550W max / 100W a 1/8 output power		1100W max / 140W a 1/8 output power	
Operating conditions	-5 ºC to +45 ºC / 23 ºF to 113 ºF 5% to 95% Relative humidity (no condensation)			
Finish	Front: Al, Black RAL 9005 Rear: Fe, Black RAL 9005 Box: Fe, Black RAL 9005			
Weight	7,5 Kg / 16 lb		8,5 Kg / 18,7 lb	
Dimensions (W x H x D)	482mm x 44mm x 420mm / 19” x 1,73” x 16,53”			
Accesories	Euroblock male type connectors			

Table 1: Technical Specifications

Appendix A: Cable section for speaker lines

This table shows the maximum advisable lenghts for 100V speaker lines. The type of cable used to calculate them is a copper conductive twin-lead type. This can be used as planification guide, although the appropiate final calculations for each situation are the electrician's responsibility.

This table shows the output power of common amplification channels of 100V constant voltage in RMS. The maximum lenght for 70V lines is half of the ones in the table.

Section			Maximum lenght with a 5% power loss				
AWG	Ø mm	mm^2	60Wrms	120Wrms	240Wrms	480Wrms	960Wrms
6	4,11	13,3	3260	1630	810	405	200
7	3,67	10,6	2600	1300	645	320	160
8	3,26	8,35	2050	1025	510	255	130
9	2,91	6,62	1625	810	405	200	100
10	2,59	5,27	1300	645	320	160	80
11	2,3	4,15	1020	510	255	130	65
12	2,05	3,31	810	405	200	100	50
13	1,83	2,63	645	320	160	80	40
14	1,63	2,08	510	255	130	65	35
15	1,45	1,65	405	200	100	50	25
16	1,29	1,31	320	160	80	40	20
17	1,15	1,04	255	130	65	35	15
18	1,02	0,82	200	100	50	25	13

Table 2: Cable section for 100V lines

Key:

- AWG (American Wire Gauge)
- Ø mm: Cable diameter in milimeters
- mm^2: section cable area in square milimeters

Ver. 2