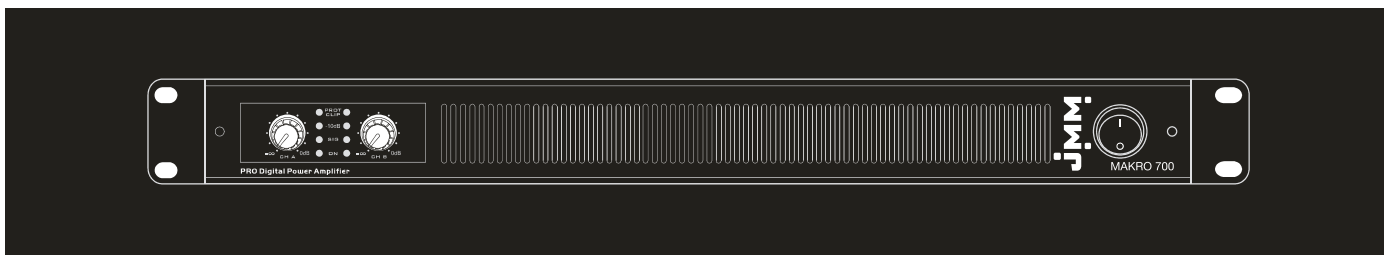




# Professional Power Amplifier

MAKRO 450/MAKRO 700



# Owner's Manual

# IMPORTANT SAFETY INSTRUCTIONS

Please read the basic protective measure as below before using.

1. Please read all the safety instruction before using the product.
2. This product must be earthed. If it should be malfunction or break down, grounding provides a path of least resistance for electric current to reduce risk of electric shock.
3. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and earthed in accordance with all local codes and ordinance.

**DANGER - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product - if it will not fit the outlet; have a proper outlet installed by a qualified electrician.**

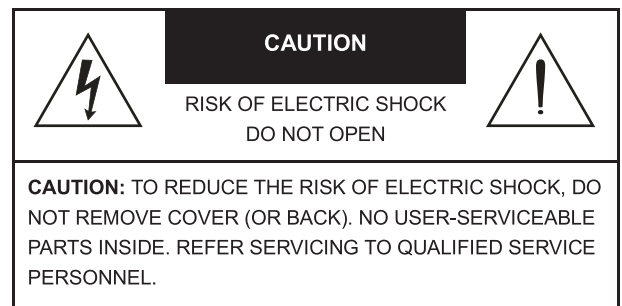
4. To reduce the risk of injury, close supervision is necessary when the product is used near children.
5. Do not use this product near water-for example, near a bathtub, wash bowl, kitchen sink, in wet basement or near a swimming pool or the lake.
6. Whether used this product alone or connected to the power amplifier, speaker or headset, excessive volume may cause permanent hearing loss. Don't use for a long time in large or any volume may cause discomfort. If you feel any hearing loss or tinnitus, Please seek medical advice.
7. This product should be located so that its location or position does not interfere with its proper ventilation.
8. This product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
9. The product should be connected to a power supply only of the type described on the operation instructions or as marked on the product.
10. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time. When unplugging the power-supply cord, do not pull on the cord, but grasp it by the plug.
11. Care should be taken so that object do not fall and liquid are not spilled into the enclosure through opening.
12. The product should be serviced by qualified service personnel when:
  - a) The power-supply cord or the plug has been damaged;
  - b) Objects have been fallen, or liquid has been spilled into the

product;

- c) The product has been exposed to rain;
  - d) The product does not appear to operate normally or exhibits a marked change in performance;
  - e) The product has been dropped or the enclosure damaged.
13. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

**WARNING- Do not place objects on the product's power cord or place it in a position where anyone could trip over, walk on or roll anything over it. Do not allow the product to rest on or to be installed over power cords of any type. Improper installations of this type create the possibility of fire hazard and/or personal injury.**

14. The power-supply cord should be unplugged from the outlet when the product is completely power off from the electric power sources and electric networks.



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 product.



Applies only to altitudes below 2000m area safety.



Applies only in Non-tropical area safety.

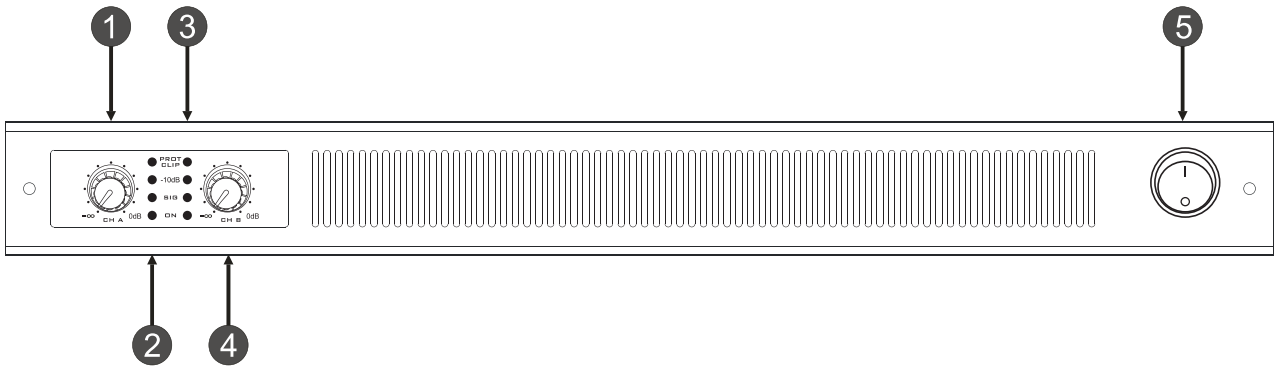
# 1. Introduction

Thank you for your purchase of the Series Power Amplifier. These series amplifiers fully incorporate renowned technological expertise, and offer high reliability, rock-solid stability, and superb acoustic characteristics—all in a trim, 1U-sized package.

## Features

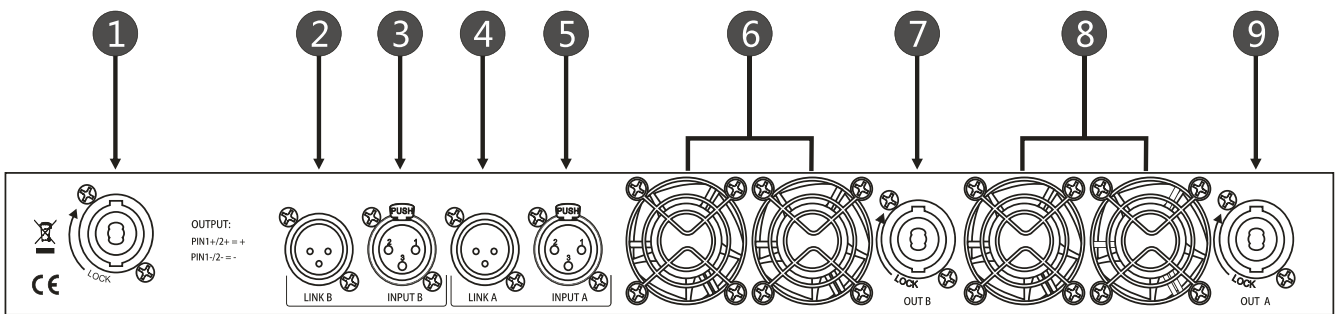
- a. Applies the classical PWM circuit design and new technology protection circuit.
- b. Applies excellent power-supply design, reliable circuit, high efficiency and low distortion.
- c. New modulation mode helps to taking sample of extremely small signal, to improve and perfect the method of sampling.
- d. High switch mode frequency, precise controlling of dead-time makes the distortion of the amplifier much lower, the sound quality reaches and even passes the traditional transformer amplifier.
- e. It has high reliability and applicability, big dynamic range, small size, lightweight, high efficiency, low distortion, big output power, etc.

### 1-1 Front Panel Controls and functions



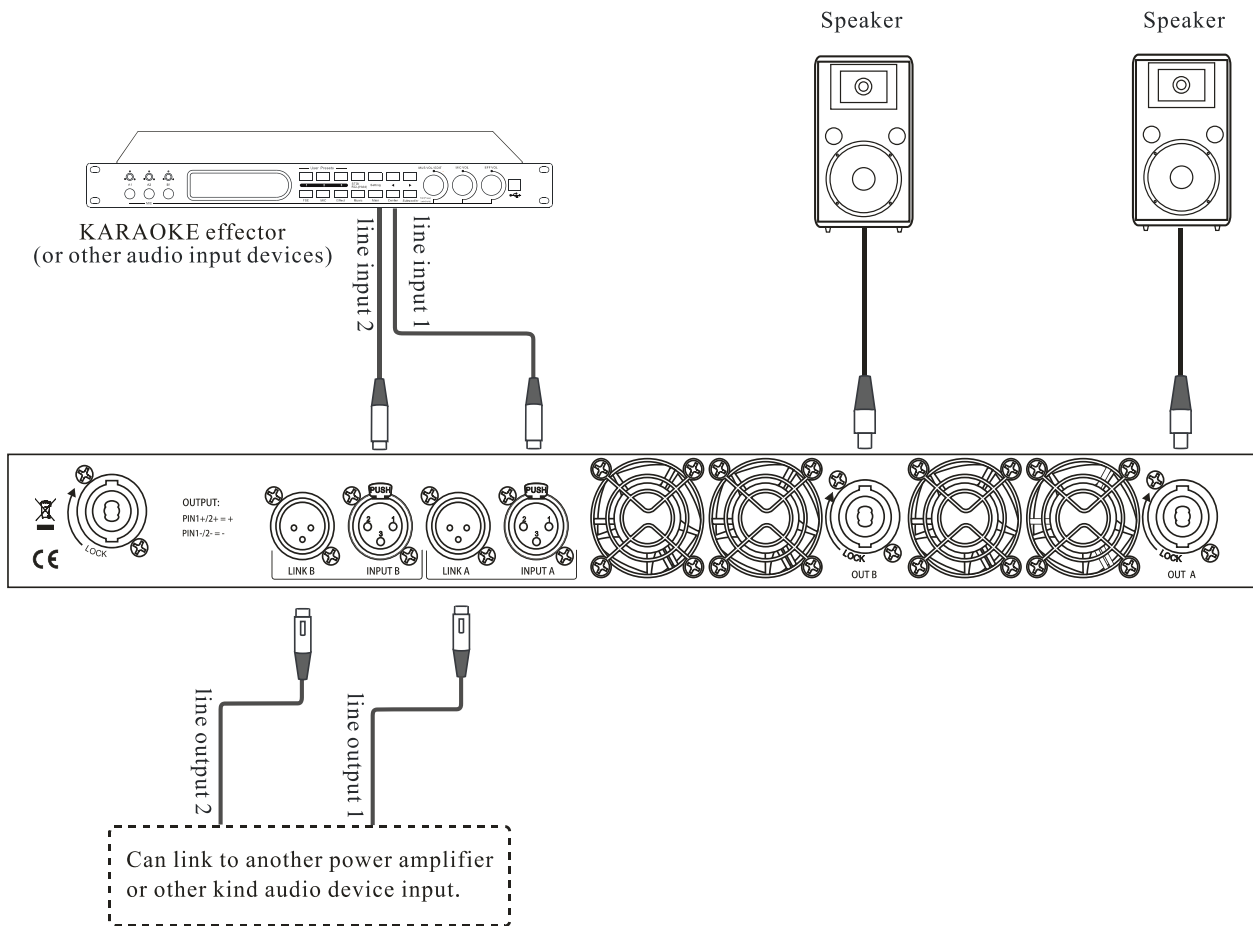
- ① Channel A Volume Control Knob
- ② Channel A level indicator
- ③ Channel B level indicator
- ④ Channel B Volume Control Knob
- ⑤ Power Switch

### 1-2 Rear Panel Controls and functions



- ① Mains input connector
- ② Channel B signal link connector
- ③ Channel B signal input connector
- ④ Channel A signal link connector
- ⑤ Channel A signal input connector
- ⑥ Cooling fan outlet
- ⑦ Channel B output connector
- ⑧ Cooling fan outlet
- ⑨ Channel A output connector

## 1-3 Systems Connections



## 2. Operation Instructions

### 2-1 Starting steps:

1. Setting and connect the wire correctly.
2. Check the output and the input wire, to ensure that no short-circuit
3. Check out if local mains voltage and frequency is matching with the product.
4. Make sure the Power Switch is the OFF position. Turn down the volume to the minimum.
5. Connect the power supply, sequentially turn on the audio source device, switch on the amplifier power and clockwise turn the volume knob to the appropriate position.

### 2-2 Shut down steps:

1. Turn the Volume Control Knobs counterclockwise to the minimum.
2. Power off.

### 2-3 Troubleshooting:

Issues	Possible cause
All the wires are connected, but no sound output	① No power or socket connection is bad. ② Burn out a fuse. ③ Volume is not turned on. ④ No input signal.
Boot correctly, there is alarm when use	① Short-circuit load or damaged. ② Supply voltage is not stable, too low or too high. ③ Heavy load.
No sound output when in normal use	① The temperature is too high, the device is under protection. ② Poor electrical connection.

### 3. General Specifications

Model	MAKRO 450	MAKRO 700
Number of channels	2	2
Output Power ( All Channels driven output power, THD=1%)		
8Ω Stereo	450W×2	700W×2
4Ω Stereo	700W×2	1300W×2
2Ω Stereo	900W×2	1600W×2
Frequency Response	20Hz-20kHz, ±0.3dB (@8Ω)	
Slew Rate	50V/us	
THD+N	< 0.3%	
IMD-SMPTE	< 0.3%	
SNR	> 105dB	
Crosstalk	< 75dB	
Damping Factor	> 800 (8Ω,20Hz-200Hz)	
Sensitivity	1V	
Input Impedance	20kΩ(Balance), 10kΩ(Unbalance)	
Voltage Gain	36dB	40dB
Efficiency	> 85%	
Cooling	Forced air cooling, air flow from the front to the rear.	
Height	1U	
Product Dimensions	483×375×45 (W×D×H, mm)	
Packing Dimensions	530×530×90 (W×D×H, mm)	
Net Weight	7.0 kg	8.0 kg
Gross Weight	8.6 kg	9.6 kg