



Bia 120
Class A Stereo Power Amplifier
Owner's Manual

Please read carefully before
installing and operating this equipment

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Made in the USA
Using US and Imported Parts

Dear Music Lover,

I wanted to personally thank you for your purchase of my Bia 120 Stereo Power Amp.

I have loved music all my life – as a musician, record producer and audio engineer. That makes me fussy about sound. That's a good thing.

Each unit is built by hand with precision and pride to produce the most enjoyable listening experience for you.

I am proud to put my name on it and honored to share this with you.

Wishing you many happy years of listening!

Sincerely,

-- George Counnas, President of Zesto Audio

FYI:

Zesto is Greek for hot

Bia is the Titan Goddess of force and power in Greek mythology

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What's in the box?

Bia 120 Stereo Power Amp
4 KT88 Vacuum Tubes
4 ECC82 (12AU7) Vacuum Tubes
White glove for handling tubes
IEC power cable 6'

Not Included: Interconnect or speaker cables

Warning and Caution

WARNING: The triangle with the lightning flash symbol displayed on the unit advises the user of dangerous uninsulated voltage inside the product's enclosure.

CAUTION: To reduce the risk of electric shock, do not remove the cover. There are no user-serviceable parts inside; it is recommended that only qualified personnel service this component.

1. **OWNER'S MANUAL:** Before powering up the equipment, read all safety and operating instructions and follow them as instructed. Retain the safety and operating instructions for future reference.
2. **ATTACHMENTS:** Use only those attachments recommended by the unit manufacturer, as others may cause hazards.
3. **ACCESSORIES:** Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing injury to a person or damage to the unit. Mount the unit according to the manufacturer's instructions with the suggested mounting accessory.
4. **WALL OR CEILING MOUNTING:** Do not mount the unit on a wall or ceiling.
5. **WATER AND MOISTURE:** Do not use the unit near water (for example, near a swimming pool, bath tub, wash bowl, kitchen sink, or laundry tub) or in a damp environment (like a basement or outside in the rain).
6. **OBJECT AND LIQUID ENTRY:** Do not push objects of any kind into the unit through openings as they could touch dangerous voltage points and short-out parts, possibly resulting in a fire or electric shock. Do not spill liquid of any kind on the unit. If water or any metal object (such as a paper clip, coin, or staple) accidentally falls inside the unit, disconnect it from the AC power source immediately and contact Zesto Audio for further instructions.
7. **HEAT:** Position the unit away from heat sources such as radiators, heat registers, stoves, or other units (including amplifiers) that produce heat.

8. **VENTILATION:** Slots and openings in the enclosure create ventilation to protect the component from overheating. All of these openings must remain unobstructed. Allow at least 12 inches of clearance above the unit, 1 inch below and an opening behind the unit for airflow. Do not place the unit on a bed, sofa, rug, built-in bookcase, or rack without adequate ventilation.
9. **GROUNDING OR POLARIZATION:** As a safety feature, the unit may be equipped with a polarized alternating current line plug in which one blade is wider than the other and has an additional grounding blade. This plug will fit into the power outlet only one way. If you cannot insert the plug fully into the outlet, try reversing the plug. If the plug still will not fit, contact a licensed electrician to update your outlet. Do not defeat the safety purpose of the polarized plug.
10. **POWER SOURCES:** Operate the unit only from the power source indicated on the marking label on the back of the unit. If you are unsure of the type of power supplied to your home, consult your unit dealer or local power company.
11. **POWER CORD PROTECTION:** Arrange power supply cords so that they do not suffer from foot traffic or pinching by items placed on or against them. Pay close attention to cords where plugs enter the AC outlet and where they exit from the unit.
12. **LIGHTNING:** For added protection during a lightning storm or when the component is idle for long periods of time, unplug the unit from the wall outlet. This will help protect the unit from lightning and power line surge damage.
13. **POWER LINES:** Do not locate an outside antenna system in the vicinity of overhead power lines or other electric light or power circuits. When installing an outside antenna system, take extreme care to avoid touching the power lines or circuits; contact with them could be fatal.
14. **OVERLOADING:** Do not overload wall outlets, extension cords, or integral convenience receptacles as this increases the risk of fire or electric shock.
15. **REPLACEMENT PARTS:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or those having the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock or other hazards.
16. **SAFETY CHECK:** Upon completion of any service or repairs to the unit, ask the service technician to perform safety checks to ensure the unit is in proper operating condition.
17. **IMPORTANT SAFETY NOTE:**
 - Before connecting a new product such as the Bia 120 to your audio or home theater system, turn off all other equipment (preferably unplugging them from the AC power source). Many audio components feature automatic turn-on circuits that may activate during an installation, potentially causing damage to electronic components or speakers. This type of damage is not covered by product warranties, and Zesto Audio specifically disclaims responsibility for any such damage.
 - **Power Cord:** The removable IEC power cord provided with your unit was specifically designed for use with this product, but other AC cords may be used. Consult your dealer for advice on AC power cords and high quality wire in your system.
 - **AC Fuse:** The fuse is located inside the IEC power entry connector and is user replaceable. Only replace fuse with the exact same type that was removed. Only use slow blow fuse. If the unit does not power up, contact an authorized service representative.
 - **Wiring:** Cables running inside walls should have the appropriate markings to indicate compliance and listing by the UL, CSA or other standards required by the UL, CSA, NEC, or your local building code. Questions about cables inside of walls should be directed to a qualified custom installer, licensed electrician, or low-voltage contractor.

18. **RECORDING COPYRIGHT:** Recording of copyrighted material for other than personal use is illegal without permission of the copyright holder.

19. **FCC INFORMATION FOR USER:**

- **CAUTION:** Any changes or modifications not expressly approved by Zesto Audio could void the user's authority to operate the equipment.
- These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy, and if not installed and used in accordance with the instructions it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the equipment.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from where the receiver is connected.

Front and Rear Panel Inputs, Outputs and Controls



- Power ON/OFF switch Turns the unit ON/OFF
(located on front panel).
- Front panel LED lights Red indicates high voltage,
Amber indicates low voltage
(Both lights will remain on when unit is in use)
- IEC Power entry connector 110/120V AC power input with 6.3 Amp slow blow fuse.
Fuse installed in mains inlet connector.
Optional factory installed 220V, 230V/240V mains with
3.15 Amp slow blow fuse.
- Inputs Left and Right..... RCA Single Ended (SE) High quality recessed
gold pin connectors
- Inputs Left and Right XLR True floating balanced transformer inputs.
- Left and right Ground ON/OFF switch Connects or disconnects the ground (pin 1)
to the Balanced inputs
- Outputs Left and Right..... 5 way binding posts with 4, 8 and 16 Ohm
taps with Black common
- Outputs fuses..... Individual 8, 5 & 4 Amp slow blow fuses
for each output tap

Specifications

Output

- Pure Class A
- 60 Watts per channel
- 4, 8 and 16 Ohm output taps
- 8, 5 and 4 Amp Slow-blow fuses for outputs
- Eight 5 way binding posts
- Non inverting output polarity
- Push-Pull Ultra-Linear design

Inputs

- Transformer floating balanced XLR inputs
- Left and Right Balanced inputs (pin 2 hot), impedance 12K Ohms
- Left and Right Single Ended inputs, impedance of 100K Ohms
- Independent ground lift switches on left & right BAL inputs
- 2 Volts RMS input to reach rated output

Detailed Specs

- Dual Mono
- Auto bias
- No negative feedback
- Frequency response 20Hz to 50Khz ~ 1dB
- Total Harmonic Distortion ~ 0.22% at 1W into 8 Ohms
- Gain of 23dB
- Noise level > 0.2 mV RMS into 8 Ohms with input shorted
- 1% metal film resistors throughout
- Polypropylene capacitors throughout the signal path

Power

- Custom Toroidal power transformer with global mains
- Choke based power supply design
- 120 Volts AC mains
- Optional factory installed 220V, 230V/240V 50/60Hz
- Power consumption at rated output 300 Watts
- Power consumption at idol 289 Watts
- On/Off switch conveniently located on front panel
- 3 pin IEC power connector with fuse

Active Components

- Matched quad set of four (4) KT88's vacuum tubes
- Four (4) Gold pin ECC82 (12AU7) vacuum tubes
- High quality gold plated ceramic sockets

Other Features

- Each unit is made by hand
- 50 hour factory burn in on all circuits and vacuum tubes
- Dimensions 17" W X 20" D X 10" H
- Weight 66 lbs. (30Kg)
- 16 and 14 gauge Zinc plated steel enclosure
- Chrome plated spike feet
- Two year limited warranty
- Six months warranty on Vacuum Tubes

Proper Care of your Bia 120 Power Amp

Very Important Read First

- The simple rule to remember is to **“turn on your preamp first before turning on your power amp and turn off the power amp before turning off the preamp.”**
Not doing so may create a very loud noise that could damage your speakers or other equipment.
- It is customary for vacuum tube equipment, when it is first turned on, while the unit is powering up, to have a brief initial “hum” coming from the unit, not from the speakers.
- It is very important that all of your audio equipment is **turned off** or unplugged from the main power before attempting to install this unit.
- The unit is ready to listen to within a few minutes after powering up, however for best performance allow at least 30 minutes of warm up.

It is **not recommended** to drive the Bia 120 directly from a DAC or to use a passive volume control. The Bia is designed to be driven by a powered preamp.

Burn-in

Like all high end audio equipment, this Vacuum Tube Amplifier can take **100 or more hours to break in**. For circuit testing and quality assurance, Zesto Audio ships all the Bia 120 Amps with at least **50 hours of factory burn-in**.

Installing Tubes

- This Bia 120 ships with a matched quad of KT88's so they can go in any socket V1 thru V4. KT88's have a key and can only go in one way. **Tip: The logo and the key on the tube faces forward.**
- **Caution! Do not ROCK the tube, install straight up and down holding the metal collar.** If you look at the bottom of the tube there is a black plastic cylinder in the center of the pins with a key. This plastic is fragile and can easily break if you rock the tube. **Broken keys are not covered under warranty.**
- **Warning! You can blow up a power amp with considerable drama by inserting a KT88 power tube incorrectly.** This happens when you break the plastic key and do not insert the pins with the proper orientation into the socket.

Hookup, Settings and Adjustments

Before you start you will need:

RCA or XLR Interconnect, power and speaker cables to your system.

Output

Using speaker cables connect the speakers to the common and either 4, 8 or 16 Ohm output binding posts.

Input

Using RCA or XLR interconnect cables; connect your preamp to the inputs of the power amp. If you have a choice, **balanced cables are preferred** for sonic reasons as well as it will allow you to use the ground lift switches if you encounter any ground loop problems.

Power

Important! Power amps need good clean power.

For best results it is recommended to plug the Bia 120 directly into an AC wall outlet with a proper ground and not through any power conditioner, extension cord or power outlet strip. Carefully plug in the AC power cable to the power amp first then into the wall outlet.

Turn it on

Turn on the power amp using the ON/OFF switch located on the front right logo plate. The amber LED indicates low voltage and the red LED indicates high voltage. Both lights will go on together and will remain illuminated while the unit is on. The eight tubes should start glowing.

If they don't glow, turn off the unit at the power switch and unplug the power cord. After waiting a few minutes unplug each vacuum tube in turn (using the glove provided) and make sure that none of the pins are bent. If the pins are bent please contact Zesto Audio for instructions

Tips and Tricks

A few things to know about tube power amps

- When the amp is first turned on there is a brief inrush of power (your lights may dim for an instant). After that, the amp draws a lot less power.
- The best Audiophile accessory to buy for a power amp is good clean dedicated power with a proper ground to your system.

Safety Tips

Fuses:

- There are many safety features built into a Zesto power amp. The purpose of a fuse is to protect the amplifier, sometimes they wear out and sometimes the fuse will blow. The mains fuse is the most likely fuse to blow. It is located in the IEC power inlet connector. All fuse types are not created equal. For example, a Slow Blow fuse is not the same as a Standard fuse.
- **Warning!** The BIA is designed for "Slow Blow" fuses. If you install a standard fuse, it is likely to blow when you turn the amp on.
- For 120 Volt mains we use a 6.3 Amp Slow blow fuse. (Not a 5 Amp Slow Blow)
- For 220, 230, 240 Volt mains we use a 3.15 Amp Slow blow fuse.
- Generally if a fuse blows you need to replace it with the same fuse. If it blows again contact your dealer

More Safety

- **Caution:** Tube electronics should not be turned ON, then OFF, then ON again quickly. This could blow a fuse. Once the unit is ON, it is safe to wait a minute (60 seconds) before switching OFF, then another 60 seconds before you can turn it back on. If you blow a fuse replace with the same slow blow fuse and don't do that again.
- Power amps output tubes (KT88) get very hot when operating properly; tubes can exceed 300 degrees Fahrenheit.
- **Never** move an amplifier with hot tubes. Tubes are the most vulnerable when they are hot and it will break the filament not the glass.
- It's important to provide adequate ventilation of at least 12" above the unit and on all sides.
- To protect your speakers, turn the power amp OFF when changing any cables in your system.
- If you break a tube, turn unit off immediately. Wait at least 1 hour for the high voltage to discharge completely to replace it.
- If you spill any liquids on the unit, turn off immediately and call the factory.

Grounding

Grounding switches apply to the XLR Balanced inputs only.

The grounding switches do not affect the RCA SE inputs.

If you have XLR inputs, start with both ground switches up.

The ground switches work independently. You can adjust them for the least amount of noise.

Example;

- Right channel up, left channel down
- Right channel down, left channel up
- Right channel up, left channel up
- Right channel down, left channel down

Tube Rolling

Important! The wrong type of the tubes can cause considerable damage.

Your unit is designed to work safely with any KT88. It will also work with KT120's, but with auto bias it will not provide more power, just sound different. Class A design provides plenty of power.

Warning! 6550 tubes will NOT work in this unit. Because they have a lower power rating, **6550's** will cause **DAMAGE** to the power amp and the tubes.

Any damage caused by tube rolling is not covered by the manufacturer's warranty.

Warranty

All Zesto Audio equipment is covered by a 2 year limited warranty for parts and labor to cover defects in materials and workmanship and 6 month warranty on the original vacuum tubes from date of purchase.

To obtain this original owner warranty the completed warranty registration card must be received at the factory within 15 days from date of purchase. The warranty is not transferable.

This warranty is void if the product has not been used in accordance with the instructions found in this owner's manual, or if it has been misused, abused, damaged by accident or neglect, or in transport once in possession of purchaser. The warranty is also void if the product has been tampered with or has been repaired or modified by anyone other than Zesto Audio or its specifically authorized representatives. This limited warranty only applies to Zesto Audio equipment and carries no responsibility for any other equipment attached to this unit.

To return the product it must be packed in its original packaging and returned to Zesto Audio or its authorized representative via insured freight at the owner's expense. Returned products must be accompanied by written description of the defect and a return authorization number that is available from Zesto Audio or the authorized representative. Upon receipt of the defective product Zesto Audio or the authorized representative agrees to repair the product without charge for parts and or labor if within the 2 year warranty period, except for vacuum tubes if the unit is more than 6 months old. The product will then be returned via prepaid insured freight with a carrier at the sole determination of Zesto Audio or the authorized representative.

Zesto Audio and its partners reserve the right to modify their products or change specifications at any time without obligation or liability to previous purchasers.

Warranty will cover ownership outside the USA, but shipping is the sole responsibility of the owner. See your local dealer for factory approved service in your area.

Factory service on non-warranty items will be billed at an hourly rate to be quoted before work is done.