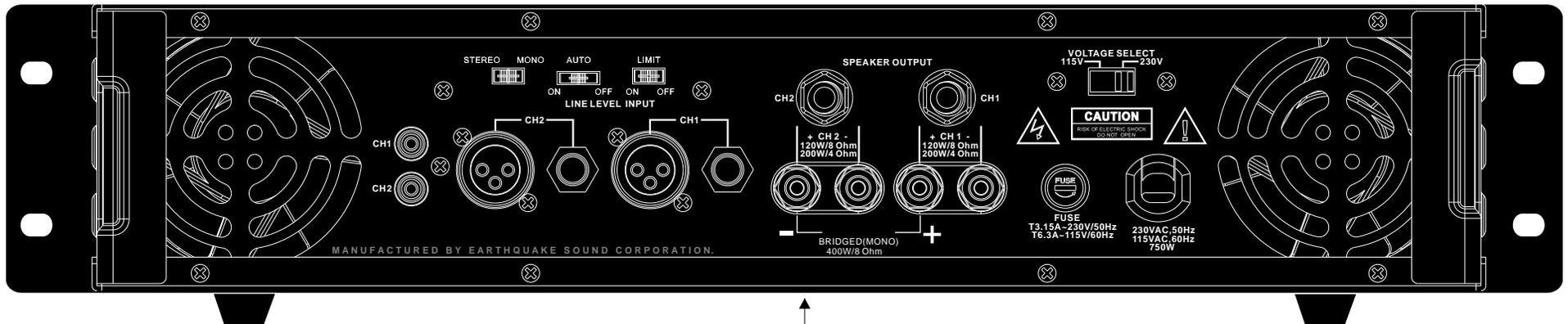
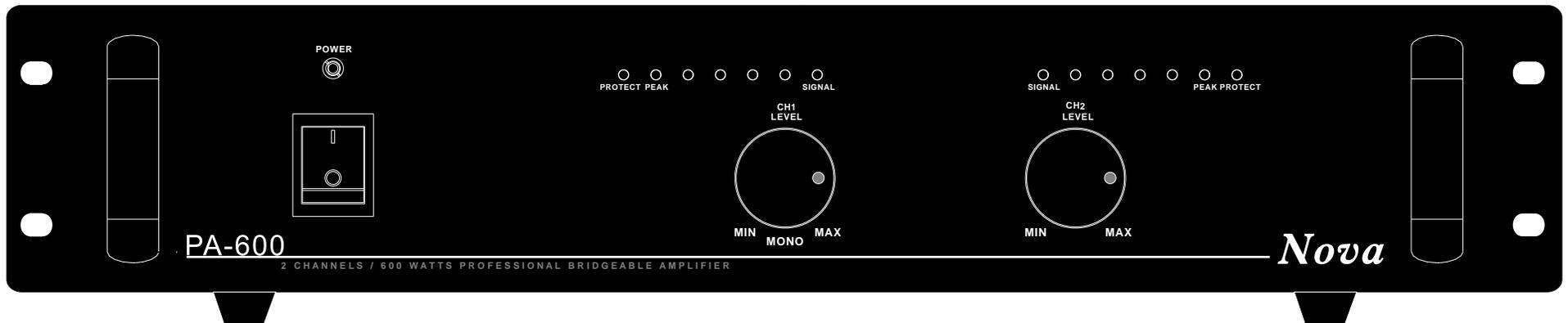


# Nova

Power From The Heavens

## PA-600 Professional Amplifier Operation Manual & Technical Guide



Earthquake Sound Corporation. 2727 Mc Cone Avenue, Hayward, CA 94545. [www.earthquakesound.com](http://www.earthquakesound.com).



DEAR VALUED CUSTOMER.

Earthquake Sound Corporation specializes in manufacturing high end Home and Car audio products ranging from the smallest driver to the loudest subwoofer system. In its dedication to excellence, Earthquake has maintained extensive programs in research and development to provide you with the highest quality audio products.

The PA-600 is a ruggedly constructed high quality professional amplifier. The amplifier mounts into a standard 19" rack, requiring only two rack spaces (3-1/2 inches, vertically). Two automatic variable-speed internal cooling fans use the sides, rear and the front of the amplifier - not the top and bottom - for its air intake and exhaust, allowing you to stack multiple amplifier closer together in a rack mount situation. Additional rack support holes have been provided along the rear of the amplifier for the most secure installation possible. (Use of these additional supports is strongly recommended.)

The PA-600 produce up to 300 watts of power per channel @ 2 ohms, 200 watts per

channel @ 4 ohms stereo mode or 110 watts per channel @ 8 ohms (stereo mode); 560 watts @ 4 ohms, 380 watts @ 8 ohms (bridged mono mode). Several "professional" features, such as 1/4" and XLR input jacks with electronically balanced Low or Medium impedance operation have been built into the amplifier. Limiting circuitry with LED indicators constantly monitors the output level of each channel and provides protection from clipping, thus preventing the generation of speaker-damaging square waves. A built-in protection circuit protects the amplifier from overloads, short circuits, and overheating. In addition, each channel features a Signal LED to assist in hookup and troubleshooting and a Fault LED which indicates when the internal protection circuitry is activated.

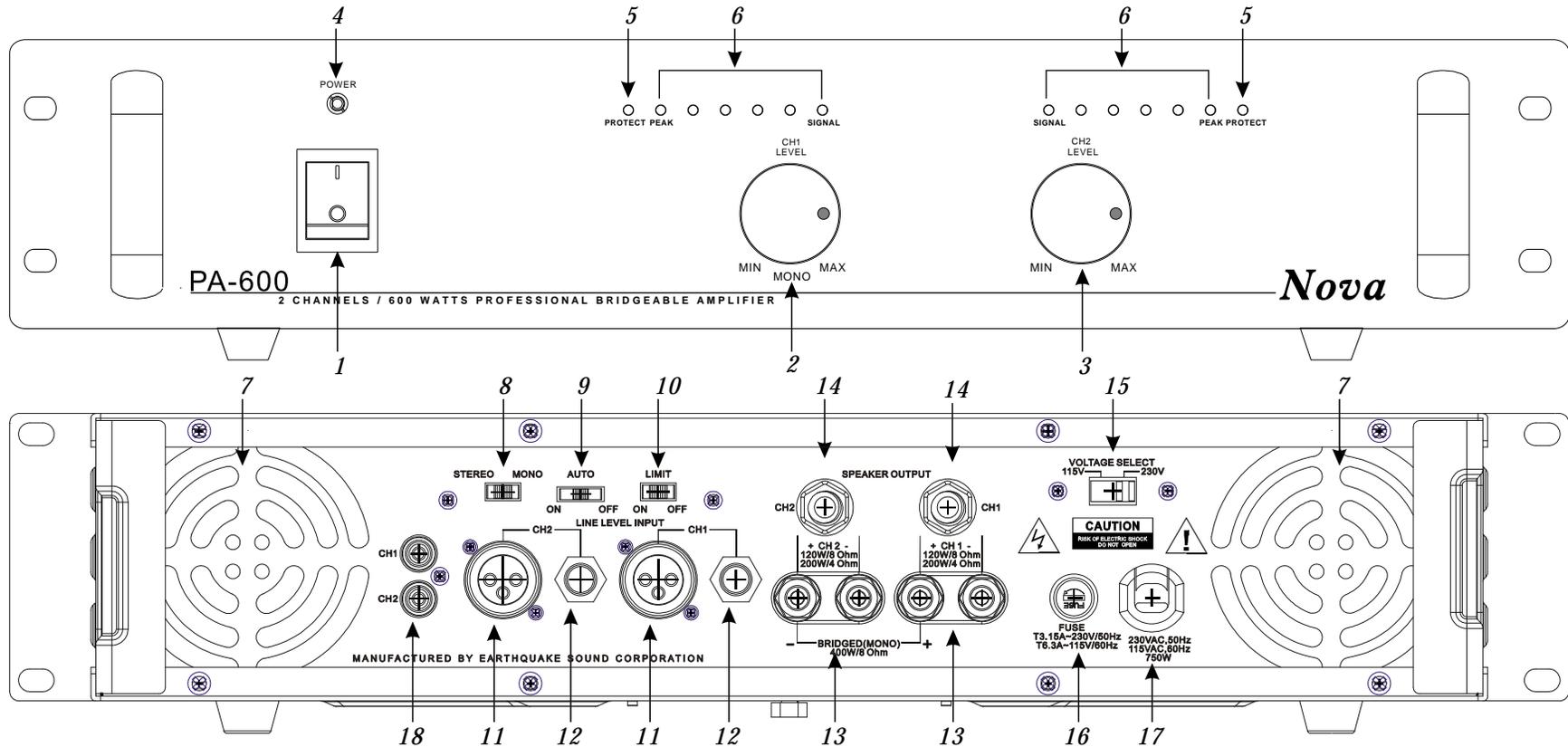
This owners manual is designed to better acquaint you with the PA-600 pro-amplifier. It is imperative that you read this manual in its entirety. EARTHQUAKE technicians and staff are looking forward to answer any questions you might have, please call (1-800-576-7944).



<u>SOUND LEVEL</u> <u>DBA</u>	<u>DURATION</u> <u>IN HOURS</u>	<u>THE CHART (ON THE SIDE) SHOWS THE U.S. GOVERNMENTS</u> <u>OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)</u> <u>REGULATIONS WHICH WERE IN EFFECT AT THE TIME OF THIS</u> <u>PUBLICATION FOR PERMISSIBLE NOISE EXPOSURE.</u> <u>PER 29CFR1910.95, TABLE G-16.</u>
90	8	
92	6	
95	4	
97	3	
100	2	
102	1 - 1 1/2	
105	1	
110	1/2	
115	1/4 or less	

**CAUTION:** the PA-600 is capable of generating high sound pressure levels. You should exercise caution when operating this amplifier system. Long term exposures to high levels of sound pressure will cause permanent damage to your hearing. Sound pressure levels exceeding 85dB can be dangerous with constant exposure. Set your audio system to a comfortable loudness level. Earthquake Sound Corporation does not assume liability for damages resulting from the direct use of the PA-600, and urges users to play the PA-600 in moderate levels.

**PA-600 AMPLIFIER FRONT & REAR PANELS FUNCTIONS/CONNECTION.**



**1. POWER SWITCH:**

This switch turns the amplifier on in the up position ("I" pressed in) and off in the down position. When AC power is applied to the amplifier, the power indicator led (#4) illuminates.

**2. LEVEL CONTROL (CH-1) & MONO:**

This rotary potentiometer controls the sensitivity or gain of (CH-1). Set them to the level needed for the desired output. When amplifier is set in the bridge mono mode, only this level control (CH-1) is active in this mode.

**3. LEVEL CONTROL CH2:**

This rotary potentiometer controls the sensitivity or gain of CH2. Set them to the level needed for the desired output. When amplifier is set in the bridge mono mode, this level control is not active.

**4. POWER INDICATOR LED:**

This Led illuminates when AC power is applied by means of the Power Switch (#1)

**5. PROTECT INDICATOR LED'S:**

These LED's illuminate whenever the internal protection relay for the channel is activated. The protection relay is activated for a short period upon initial turn-on and at turn-off to prevent transient "spikes" from being reproduced through your speakers. A protect condition is also indicated if the unit gets too hot, or if DC voltages are present at the output. During thermal protection, both channels are shut down. In the event of DC voltage on the output, only the affected channel will be disconnected. The circuitry associated with the LED indicators provides valuable protection for both the amplifier and your speakers.

**6. SIGNAL INDICATOR LEDS:**

These LED's illuminate when signal is detected at the amplifier's output terminals, providing accurate visual confirmation of signal presence, which is helpful in hookup, and troubleshooting. The output signal must be at least 5% of the amplifier's full rated output to make the LED's illuminate.

**7. COOLING FAN EXHAUST VENT:**

The PA 600 employs a pair of variable-speed internal cooling fans to draw air through the unit and keep it running cool even under extreme operating conditions. The air is drawn in through the unit's side and rear intake vents and is forced out through the front panel exhaust vent. This method of cooling draws air out from the interior of the rack and provides more efficient cooling methods, which bring air in from the front and exhaust it through the back. Keep these vents clear and free from obstruction at all times to insure proper cooling.

**8. STEREO/MONO SWITCH:**

This switch connects the channels to work together for more power output. In the "STEREO" position the amplifier is in the STEREO MODE; with the switch in "MONO" MODE the amplifier is in the Bridge MONO MODE. In the Bridge Mono Mode, connect input to Channel 1 (Channel 2's inputs are disconnected.) Both amp channels are internally bridged together to create a single-channel amplifier of increased output power. Use the two red BINDING POSTS (labeled "Mono/Biamp") or pins 1+/2+ of the BIAMP/MONO (middle) Phone jack.

**9. NEW AUTO ON/OFF:**

The new auto sensing circuitry immediately senses signal as it reaches the amplifier; when the music stops it will automatically fall asleep. While in sleep mode the PA-600 consumes less energy than commonly sold Pro Amps.

**10. LIMIT SWITCH:**

Switch to "ON" position to activate the limit circuit to prevent the amplifier from clipping. Signal indicator LED's will all be illuminated whenever the input signal attempts to overdrive the amplifier's output section. Not only does clipping produce harsh sounding distortion, it is also capable of damaging speaker components-particularly high frequency drivers.

**11. XLR BALANCED INPUT JACKS:**

These jacks will accept any balanced or unbalanced low or medium impedance line level source by means of a three-pin XLR plug. The wiring for the plug is as follows:  
Pin#1= Ground,  
Pin#2= Signal (+),  
Pin#3= Signal (-).

**12. ¼" PHONE JACK INPUTS:**

These jacks accept line level signal sources by means of cables fitted with standard ¼" phone plugs. Low or medium impedance balanced or unbalanced sources are acceptable for these inputs. Balanced inputs are wired as follows: Tip = Signal (+), Ring = Signal (-), Sleeve = Ground. Unbalanced inputs may be wired: Tip = Signal, Sleeve = Ground, using a "mono" plug.

NOTE: The input channel circuitry requires a line level signal of 1.1V RMS or greater to drive the amplifier to full output.

**13. BINDING POST OUTPUT:**

These output connectors offer an excellent method of connecting the amplifier to your speakers using cables terminated with spade lugs, banana plugs, or bare wire. When using the amplifier in the Mono Mode, you must use either the two red binding posts or the BIAMP/MONO (middle) Phone jack (#13). The Binding Posts are wired in parallel with the Phone Jacks.

**14. SPEAKER OUT JACKS:**

These heavy-duty output jacks are to be used to connect the amplifier to your speakers using cables terminated with Phone type plugs. These jacks are wired in parallel with the BINDING POSTS: channel 1 and 2 Phone Jacks are wired with pin#1(+) positive or "in phase", and pin#1(-) ground or "out of phase" (wired 1+ 1-). The MONO/BIAMP jack has channel 1 wired to 1+ and 2+, with 1+ "in phase".

**15. VOLTAGE SELECTOR:**

Selection of AC 115V/60Hz or AC 230V/50Hz voltage source. Before connecting the power plug to the wall AC outlet, make sure your local power line AC voltage matches the voltage setting of amplifier.

**16. FUSE:** Use only the type of fuse specified on the back of amplifier.

**17. POWER CORD:**

This heavy duty power cord must be connected to a grounded Ac outlet of the proper voltage for the amplifier to operate. TO REDUCE THE RISK OF ELECTREC SHOCK, DO NOT REMOVE OR BYPASS THE GROUND PRONG OF THE POWER CORD.

**18. RCA INPUT:** this is the simplest / most common way to drive an audio signal into the PA-600 amplifier.

**NEW:**

Ultra sensitive input pre-amp stage circuitry. Some products on the market can produce enough voltage to drive an amp but most don't. Earthquake increased sensitivity by giving you more output with less input signal. This new circuitry will allow you to drive the amp to full stage with as little as 60milivolt.

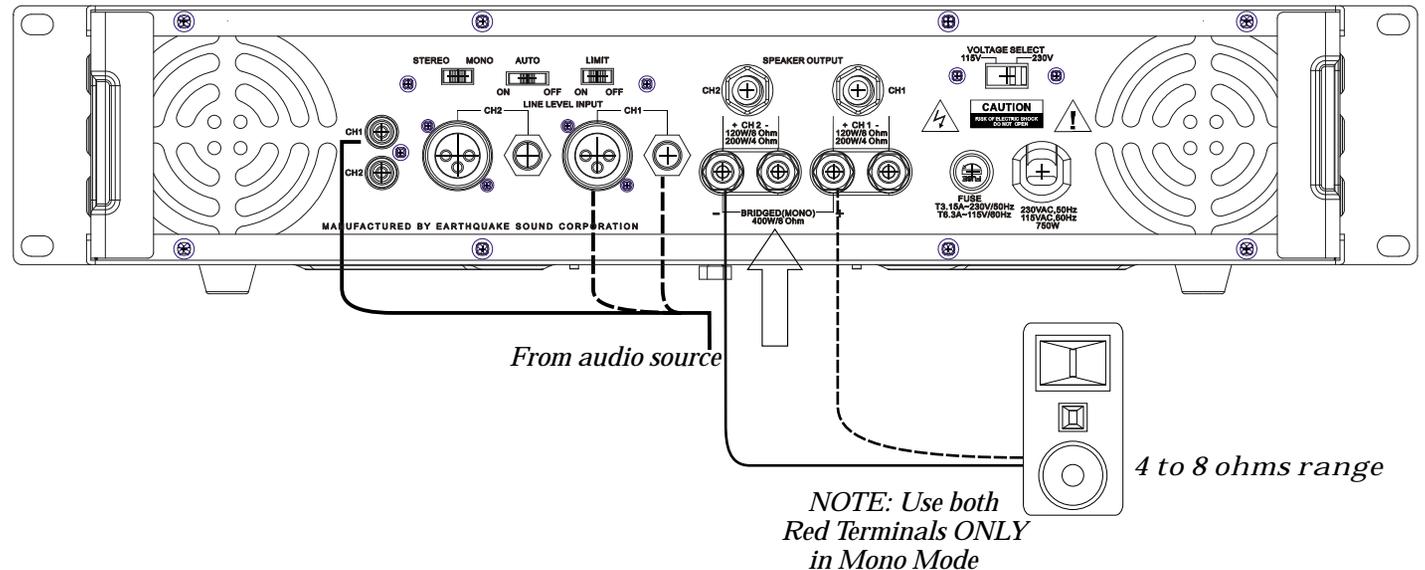
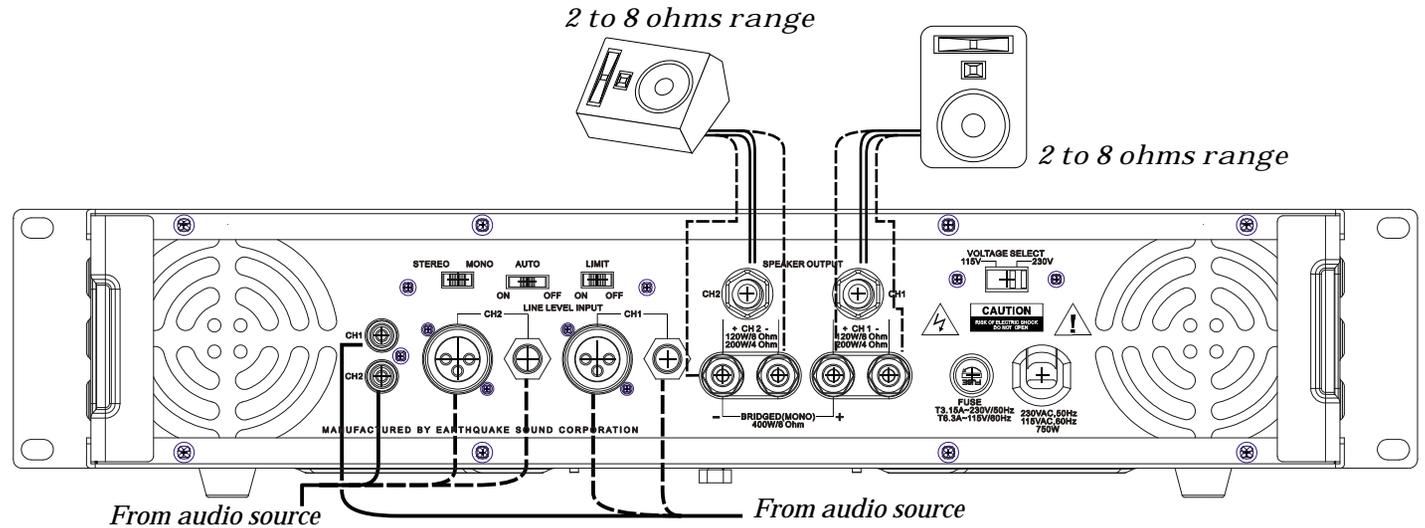
**PA-600 AMPLIFIER CONNECTION (STEREO & MONO)**

The PA-600 can be used in Stereo Mode as two separate power amplifiers, each capable of driving loads down to 2 ohms. Each channel operates independently and has its own input connectors, sensitivity level controls, signal indicator LEDs, limiter circuitry, fault protection circuitry, power amp, and speaker outputs.

In Stereo Mode, the STEREO/MONO SWITCHES must be in the "STEREO" position. Either the binding posts or the Phone jacks may be used to connect the amplifier to the speakers. Both inputs must be active (plugged) in stereo mode; either XLR input, RCA input, or the Phone Jack input can be used.

The two internal power amplifiers may be bridged together to form a single, higher-powered amp. In the Bridged Mono Mode, the amplifier uses channel #1 INPUT jacks and LEVEL CONTROL; channel #2 inputs are disconnected. Channel #2 power amp receives its signal from channel #1 input. This signal is connected to channel 2 prior to its Limiter, so each channel is independently protected. The STEREO/MONO SWITCH must be in the MONO position. Because both channels are being used (bridged in series), the minimum load impedance is 4 ohms.

The RED binding post terminals (ch 1= "+", ch 2= " + ") or the middle Phone jack (ch #1) must be used to connect the amplifier to the speakers.

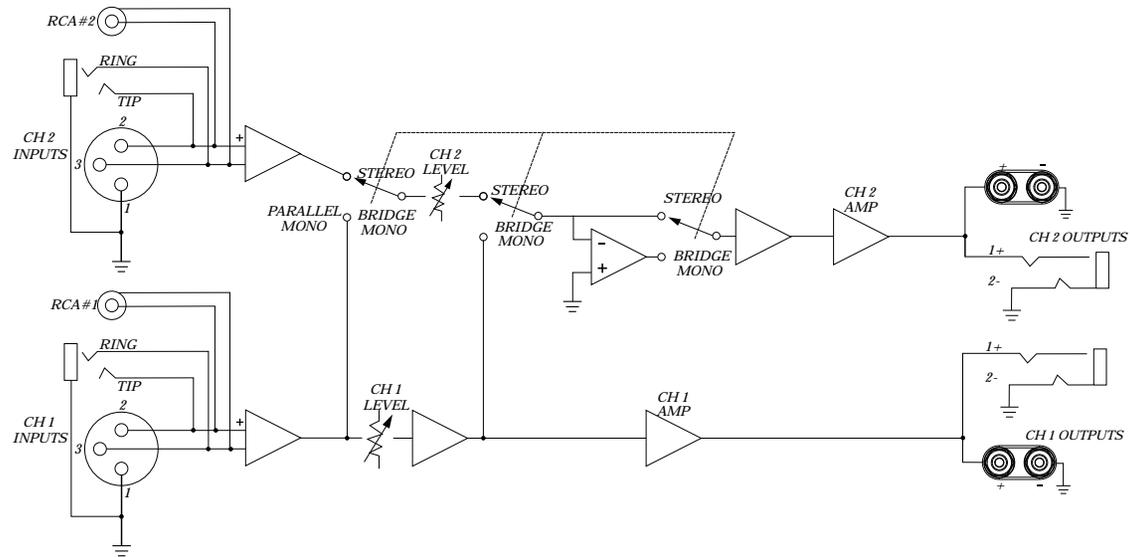


The following diagrams are excerpts from the system block diagrams and are intended to provide a simplified view of the operating modes of the amplifier.

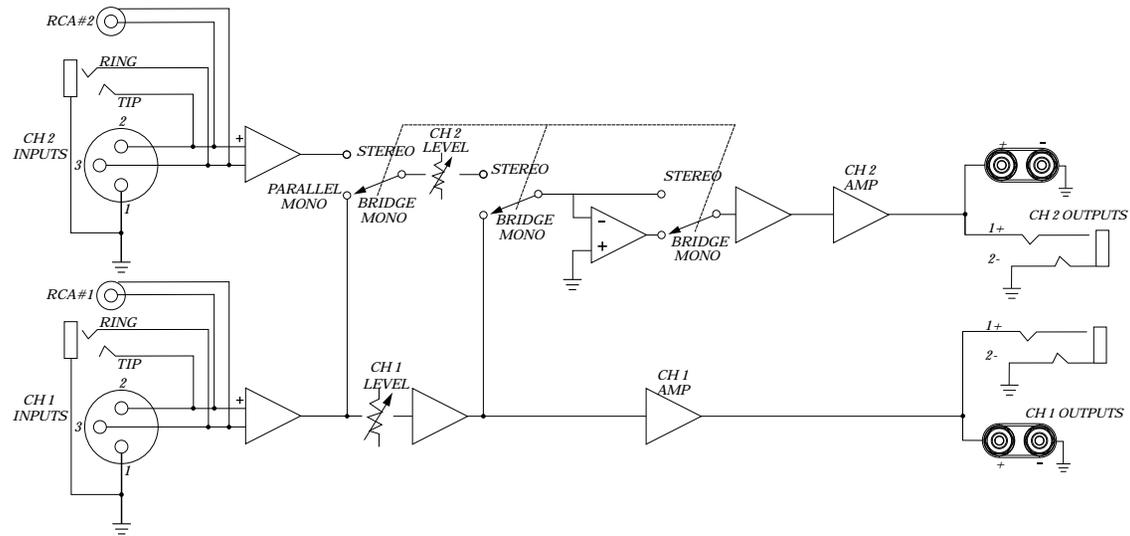
**BRIDGE MONO SWITCH:** This switch connects the channels to work together for more power output. With the switch in "MONO" Mode the amplifier is in the Bridge Mono Mode. In the Bridge Mono Mode, connect input to Channel 1 (Channel 2's inputs are disconnected). Both amp channels are internally bridged together to create a single-channel amplifier of increased output power.

Use the two red BINDING POSTS (labeled "Mono/Biamp") or pins 1+/2+ of the BIAMP/MONO (middle) Phone jack.

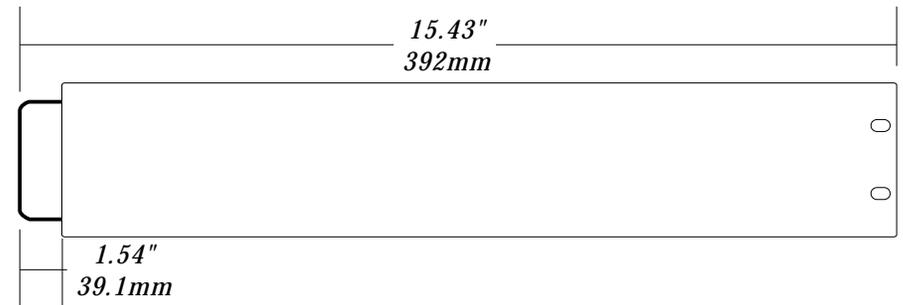
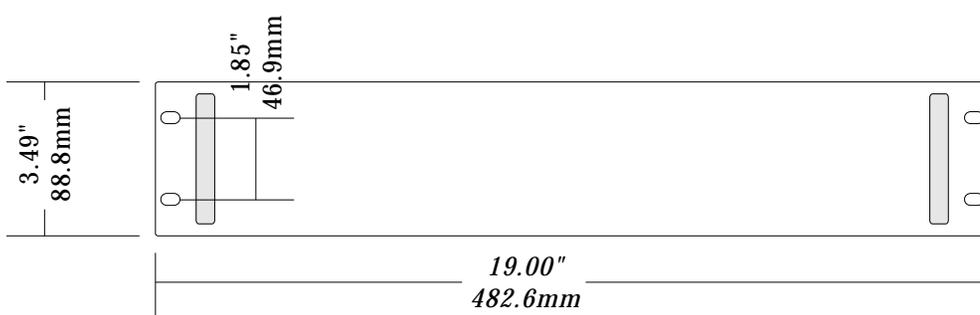
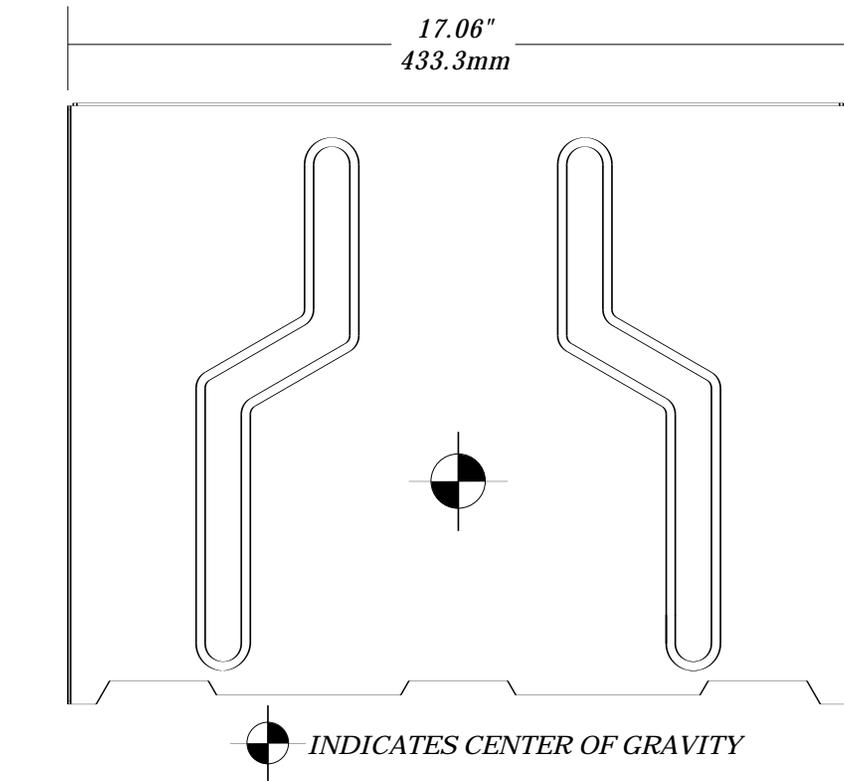
**Stereo Mode:**



**Bridge Mono Mode:**



The PA-600 is specifically designed to be rack mounted, either as a permanent fixture or in a "mobile" rack. As with any large, heavy object, a proper installation could mean the difference between success and disaster. The front of the unit is designed to attach to standard rack rails. The four outermost holes correspond to the screw on standard rack rails (2 rack spaces in height). Use only 10-32 threaded rack screws with large heads (such as a truss heads). The use of nylon rack mount washers between the screw heads and the faceplate will keep the faceplate from being scratched. Due to the depth and weight of the PA-600 a set of rear support holes have been provided. It is highly recommended that the installer use these holes to support the rear of the amplifier. A support rail, shelf, or bracket can be attached to the amplifier and then to the installation enclosure. One thought to keep in mind when considering the related hardware for this: more is better when it comes to a secure installation - a little extra time spent on installing a heavy object more than offsets the possible losses that could be incurred if the object were to be damaged due to inadequate support. The dimensions below are provided to assist you and/or your installation engineer in mounting the amplifier securely.



*PA-600 AMPLIFIER SPECIFICATIONS*

<i>POWER OUTPUT</i>	<i>2 x 120 watts RMS @ 8 ohms 20Hz-20kHz (stereo mode)</i>
	<i>2 x 200 watts RMS @ 4 ohms 20Hz-20kHz (stereo mode)</i>
	<i>2 x 300 watts RMS @ 2 ohms 1kHz (stereo mode)</i>
	<i>380 watts RMS @ 8 ohms 20Hz-20kHz (mono mode)</i>
	<i>600 watts RMS @ 4 ohms 1kHz (mono mode)</i>
<i>FREQUENCY RESPONSE</i>	<i>+0/-0.5dB, 20Hz-20kHz</i>
<i>TOTAL HARMONIC DISTORTION</i>	<i>&lt;0.05%, 20Hz-20kHz</i>
<i>SLEW RATE</i>	<i>40 volts / microsecond</i>
<i>SIGNAL TO NOISE RATIO</i>	<i>&gt; 89dB ref 200 watts /4 ohms (20kHz equivalent bandwidth)</i>
<i>LOAD IMPEDANCE</i>	<i>2 ohms or greater in stereo mode</i>
	<i>4 ohms or greater in mono mode</i>
<i>DAMPING FACTOR</i>	<i>Typical 300 (1kHz, 8 ohms)</i>
<i>CONTROLS</i>	<i>Two Front panel level setting knobs, one power switch</i>
<i>INPUT CONNECTIONS</i>	<i>XLR, RCA and 1/4" phone (tip/ring/sleeve), one each channel</i>
<i>OUTPUT CONNECTIONS</i>	<i>Binding posts each channel, Phone jacks(one each channel)</i>
<i>MODE SWITCHES</i>	<i>Mono Bridge mode select, Limiter "on"/"off"</i>
<i>PROTECTION CIRCUITRY</i>	<i>Short circuit, open circuit, RF burnout, over temp, speaker protection relays, turn on/off transient protection, DC protection, limiter circuitry</i>
<i>COOLING</i>	<i>Variable speed forced air fan cooling rear/side intake, front exhaust</i>
<i>POWER REQUIREMENTS</i>	<i>110 VAC 60Hz, 750VA</i>
	<i>100-120 VAC 50/60Hz, 750VA</i>
	<i>220-240 VAC 50/60Hz, 750VA</i>
<i>SIZE AND WEIGHT</i>	<i>19" W x 3.49" H x 15.43" D; 29 lbs.</i>
	<i>482.6mm W x 88.8mm H x 392mm D; 13.2 Kg.</i>

## 5-YEAR LIMITED WARRANTY

Earthquake warrants the original purchaser that all Factory Sealed New Audio Products be free from defects in material and workmanship, under normal and proper use, for a period of five (5) years from the date of purchase (as shown on the original bill of sale with serial number affixed/written on it). The five (5) years warranty period is valid only if the product is properly installed by an Earthquake authorized party, and the warranty registration card is properly filled out and sent to Earthquake Sound Corporation. If the product is installed by a non-authorized party, a ninety (90) days warranty period applies.

### (A) Five (5) years limited warranty plan coverage guidelines:

- First year: Earthquake pays for labor, parts, and ground freight (only in U S mainland, not including Alaska and Hawaii) back to customer.
- Second year: Earthquake pays for labor and parts only, customer must pay freight both ways.
- Third, fourth & fifth year: Earthquake pays labor only. Customer must pay for parts and freight both ways.

### (B) Warning:

Products (sent for repair) that are tested by Earthquake technicians and deemed to have no problem, will not be covered by the five (5) years limited warranty. Customer will be charged a minimum of one (1) hour of labor (ongoing rates) plus shipping charges back to customer.

### (C) Earthquake agrees to repair or replace - at our option - all such defective products/parts subject to the following provisions:

- Defective products/parts have not been altered or repaired by other than a n Earthquake factory approved technician.
- Products/parts are not subjected to negligence, misuse, improper use, or accident, damaged by improper line voltage, used with incompatible products, or have its serial number or any part of it altered, defaced or removed, or have been used in any way that is contrary to Earthquake's written instructions.

### (D) Warranty Limitations:

Earthquake warranty does not cover products that have been modified or abused. Including but not limited to the following:

- Damages to speaker cabinet and cabinet finish due to misuse, abuse, or u s e of improper use of cleaning materials/methods.
- Bent speaker frame, broken speaker connectors, holes in speaker cone, surround & dust cap, burnt speaker voice coil.
- Fading, deterioration of speaker components & finish due to improper exposure to elements.
- Bent amplifier casing, damaged finish on the casing due to abuse, misuse, or improper use of cleaning material.
- Burnt tracers on PCB.
- Product/part damaged due to poor packaging or abusive shipping conditions.

- Subsequent damage to other products.

A warranty claim will not be valid if the warranty registration card is not properly filled & returned to Earthquake with a copy of the sales invoice.

### (E) Service Request:

To receive product/s service, contact Earthquake service department at (510) 732-1000 and request an RMA number (Return Material Authorization), items shipped without a valid RMA number will be refused. Make sure you provide us with your complete/correct shipping address, a valid phone number, and a brief description of the problem you are experiencing with the product. In most cases, our technicians might be able to resolve the problem over the phone, thus eliminating the need to ship the product.

### (F) Shipping Instructions:

Product/s must be packaged in its original protective boxe/s to minimize transport damage. Shipper claims regarding items damaged in transit must be presented to carrier. Earthquake Sound Corporation reserves the right to refuse product improperly packed. Original bill of sale must accompany product returned for service. We encourage you to include with the package a written description of the problem. Ship product to: Earthquake Sound Corp. 2727 Mc Cone Avenue, Hayward, CA 94545. Ph (510) 732-1000. You are responsible for the cost of shipping the product to Earthquake Sound Corporation.

### (G) Disputes Resolution:

All disputes - between clients and Earthquake Sound Corporation - resulting from the five (5) years limited warranty policy must be resolved according to the laws & regulations of the county of Alameda -California.



From: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Place  
Stamp  
Here

To: Earthquake Sound Corporation.  
2727 Mc Cone Avenue,  
Hayward, California 94545.  
Ph (510) 732-1000.

