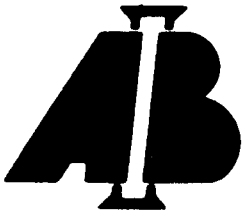
PRECEDENT SERIES
MODEL 400
OPERATING INSTRUCTIONS



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General

AB International amplifier products are designed to deliver uncompromised performance in continuous-duty commercial and professional audio applications. The following operating instructions cover the installation and operation of the model 400. New owners are encouraged to read the entire contents prior to placing amplifiers into service.

Circuit Description

To assure absolute long term reliability, the output section of each channel incorporates 4 Toshiba Multiple Emitter Power Transistors, which provide 600 Watts of power dissipation per channel. The output stage is arranged in a quasi-complimentary format and biased for class AB/2 operation. The bias current is evenly distributed among all output devices. Bias thermal compensation is accomplished by thermally mating a bipolar semiconductor junction to the heat-producing output devices. Triple diffused high power driver transistors are employed along with high speed, high voltage silicon annuar devices for the pre-driver and inverter stages. Utilization of these components provides the required separation of break points for absolute stability. Fully complirnentary current source drive and loading is utilized throughout. Only 20 dB of negative feedback is used to reduce forward transfer distortion to minimum levels. VI type energy limiters are incorporated for short circuit protection of the amplifier. Due to the unusually large safe operating area of the output stage, the limiters do not actuate until driving a forty-five degree reactive load of under 2 ohms at full power.

Construction

The 400 is designed to an all-modular concept permitting rigorous pre-assembly module testing and maximum service accessibility. Each functional module is fully tested before final assembly. Although components of the highest quality are used throughout, each amplifier is burned in prior to shipment at the worst case operating point to eliminate any possibility of component malfunction. Six screws allow removal of the rear panel with the channel amp board intact. All chassis components are precision machined from high quality aluminum and sheet steel stock. The entire package concept is directed toward maximum efficiency of space and structure, accounting for the 400's compact size and light weight.

Installation

All AB International amplifiers are designed for mounting in a standard 19-inch equipment rack, or one of the many 19-inch rack-type portable cases available. The model 400 requires 5¼ inches of vertical panel space, with 11⅞ inches required behind the panel. Total depth, including handles, is 13-5/16 inches. The front panel is machined from solid aluminum stock, with a black anodized grained finish and sturdy rack mount handles.

Placement of the amplifier is not critical for normal operating conditions, provided that sufficient air flow is allowed to reach the heatsink array. If the unit is to be placed on a shelf, or a similar unenclosed area, allow four inches clearance behind the heatsink to permit vertical air flow through the array. For installation in a cabinet, allow an additional two inches above and one inch below the amplifier to permit air to be drawn around the back. If the amplifier is to be mounted in an equipment rack or cabinet with heat-producing equipment, be sure that environmental operating temperatures do not exceed 55 degrees C (131 degrees F). Should over heating occur because of inadequate ventilation, the temperature protection circuitry will automatically protect the amplifier. When a safe operating temperature is restored, the amplifier will return to normal operation.

Because the 400 is capable of delivering high power from a relatively small physical package, considerable heat can develop in cabinets containing several instruments. A good rule of thumb to adopt is to force-cool any enclosure containing four or more instruments.

Power Connections

The 400 includes a power transformer for operation from 100-125 volt 50-60Hz mains supply. (Option 100V, 220V, 240V ac ,50-60Hz)

Equipment for domestic (USA) consumption includes a captive power cord with a three-pin polarized plug. **DO NOT REMOVE THE CENTER GROUND PIN.**

Power Connections (Cont'd)

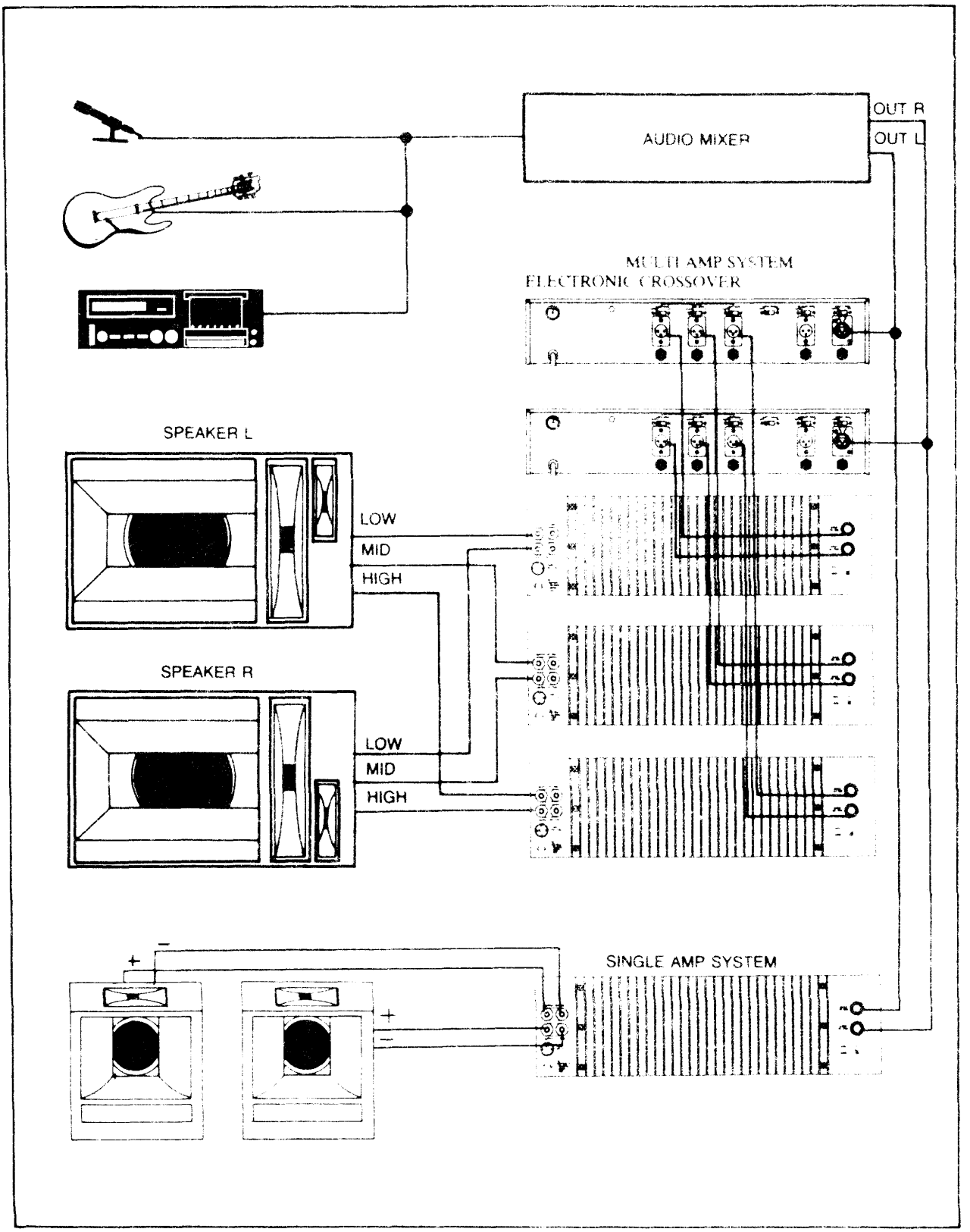
In new installations and portable sound systems, or any situation in which the mains power is suspect, it is wise to confirm appropriate voltage and line polarity BEFORE connecting the instruments to power sources.

Thermal Protection

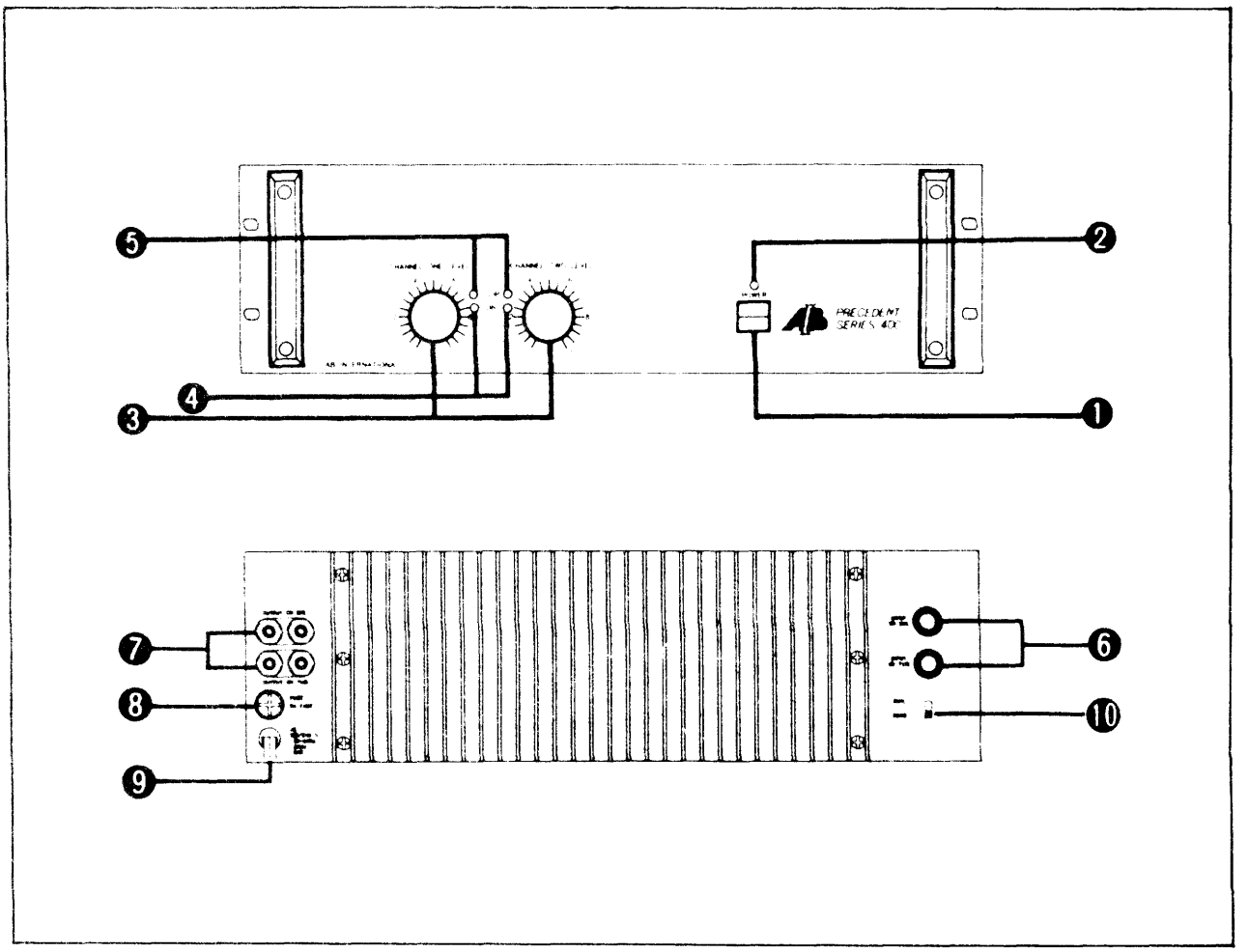
Certain conditions of operation (restricted cooling airflow, sustained high power operation into low impedance loads) can result in a rise in output device case temperature sufficient to affect any amplifier's performance.

Should the heatsink reach 95 degrees C, the output will be automatically disconnected from the (loudspeaker) load, and will remain disconnected until the temperature drops to below 95 degrees C. The action of removing the load has the effect of eliminating the output current, which, in turn, results in an immediate and rapid drop in temperature. The load will automatically be reconnected when the temperature drops to below 95 degrees C.

Rear Panel Connections



Front Panel and Rear Panel Controls



1. POWER SWITCH
   To turn the Amplifier ON or OFF, press the upper or lower of this switch button.

2. POWER INDICATING LED
   This LED indicates power is turned ON.

3. LEVEL CONTROLS
   Each channel has a separate low-noise rotary level control. Rotate controls clockwise to increase level.

4. ON INDICATORS
   Two LED indicators illuminate when the signal input provides greater than 0.5 watts output.

5. CLIP INDICATORS
   Two LED indicators illuminate when the input signal levels exceed maximum output. If the indicators are illuminated regular then rejust the level controls.

6. INPUT CONNECTIONS
   Unbalanced inputs connect directly to the Channel One and Channel Two quarter-inch phone jacks.

7. OUTPUT CONNECTIONS
   Output connections are to five-way binding posts, which are identified as to polarity with a red and a black terminal. We suggest the use of dual banana plugs as a convenient and reliable method of hook-up. They allow rapid removal for polarity reversals, which is handy in the check-out and adjustment of multi-element biamplified and triamplified sound systems. Heavy Class II wire may be used by unscrewing the large plastic portion of the output terminal and inserting the wire into the hole provided. It is extremely important when making wire connections that no wire strand or end touches the adjacent terminal, shorting the output.

   CAUTION:
   Never strap the two red output terminals together (in parallel). Never connect either red output to chassis ground.

8. FUSE HOLDER
   This fuse holder contains AC primary fuse. Fuse should be replaced by same type fuse when this is blown out. If they continuously blow, stop replacing fuse and refer servicing to qualified personnel.

9. AC POWER CORD
   Plug this AC input cord into AC outlet.

10. DUAL/MONO SELECTOR SWITCH
    Bridged mono operation is easily achieved by that toggle switch. The input should be applied to channel one only, and the corresponding front panel gain control is used to set the level.

    CUATION:
    The 400 amplifier is a product of the most advanced technology and manufacturing techniques and is fully protected against overheating, input overload, and short or mismatched loads. But, as this is the case with any precision instrument, some care should be taken in the operation of the 400. The following precautions should be noted, since damage resulting from their omission is not covered under the terms of the warranty.

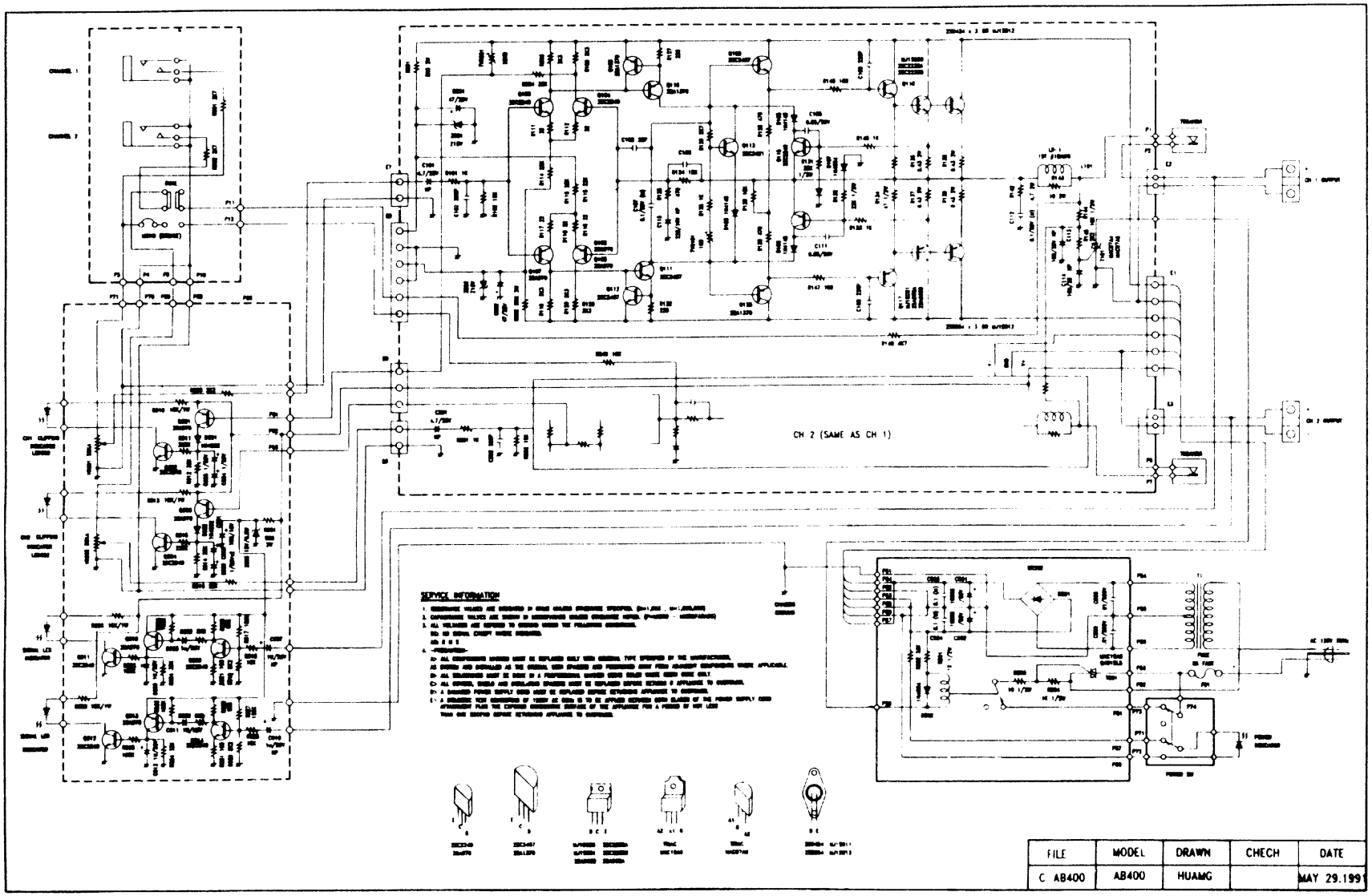
    DO NOT PARALLEL THE TWO OUTPUTS OF EACH CHANNEL BY CONNECTING THEM TOGETHER, OR PARALLEL THEM WITH ANY OTHER AMPLIFIER OUTPUT. NEVER CHANGE A FUSE WITH THE POWER CONNECTED. UNDER NO CIRCUMSTANCES SHOULD THE AMPLIFIER BE OPERATED WITH THE COVER REMOVED. THERE ARE NO USER-SERVICEABLE COMPONENTS INSIDE. TO AVOID A POTENTIALLY DANGEROUS SHOCK, KEEP THE COVER CLOSED.

BRIDGED MONO OPERATION

1. Set the Mode Selector to MONO.
2. Connect a mono input signal to channel one input jack.
3. Connect the speaker load to the two red terminals of each channels. Please confirm the (+) terminal of speaker to channel one and the (−) terminal to channel two.
4. Do not use the black terminals of each channel.
5. Connect the speaker impedance to 8 ohms or above.
6. To adjust level use channel one centrol and leave channel two level at "O".

Specifications

Type:	Two channel audio power amplifier
Gain:	26.5dB (each channel)
Continuous Average Power Output	145 watts per channel at 8 ohms 270 watts per channel at 4 ohms 400 watts at bridged mono at 8 ohms
Frequency Response:	Plus/Minus 0.25dB 20Hz-20KHz
Distortion:	THD — 20-20KHz at rated power less than 0.1% SMPTE-IMD less than 0.01% at rated power
Hum and Noise:	-104dB below rated output (unweighted 20KHz bandwidth)
Slew rate:	Typically 40 volted per microsecond
Input Sensitivity:	1.0V RMS for rated output
Damping factor at 8 ohms:	250, 20Hz to 1KHz at 8 ohms
Input Impedance:	15K ohms nominal unbalanced
Input Connectors:	(2) 1/4-inch phone jacks (unbalanced)
Cooling:	Passive — combined with high efficiency output stage for reduced operating temperature.
Output Connectors:	Dual 5-way binding posts
Controls & Indicators:	(Front Panel) AC main power switch, Power-on LED indicator, Channel One and Two level controls, Signal and Clip indicators, Mono bridge switch
Amplifier & Load protection:	Indefinite short circuit, open circuit and over-temp protection. Stable into reactive and mismatched loads. Inputs protected from overload. DC fault, transient and excess low frequency protection.
Power Requirement:	100-125VAC, 50-60Hz (Option 220VAC 50-60Hz) 90W (idle), 500W (maximum)
Dimensions:	5-1/4"H (13.3cm) 19"W (48.3cm) 11-7/8" (30.2cm) behind panel 13-3/8" (34cm) overall
Weight:	30 lbs (13.6kg)
Shipping Weight:	34 lbs (15.5kg)



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