Owner's Manual

Model 150M

MULTICHANNEL POWER AMPLIFIER

audio research
HIGH DEFINITION®

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Contents

Model 150M

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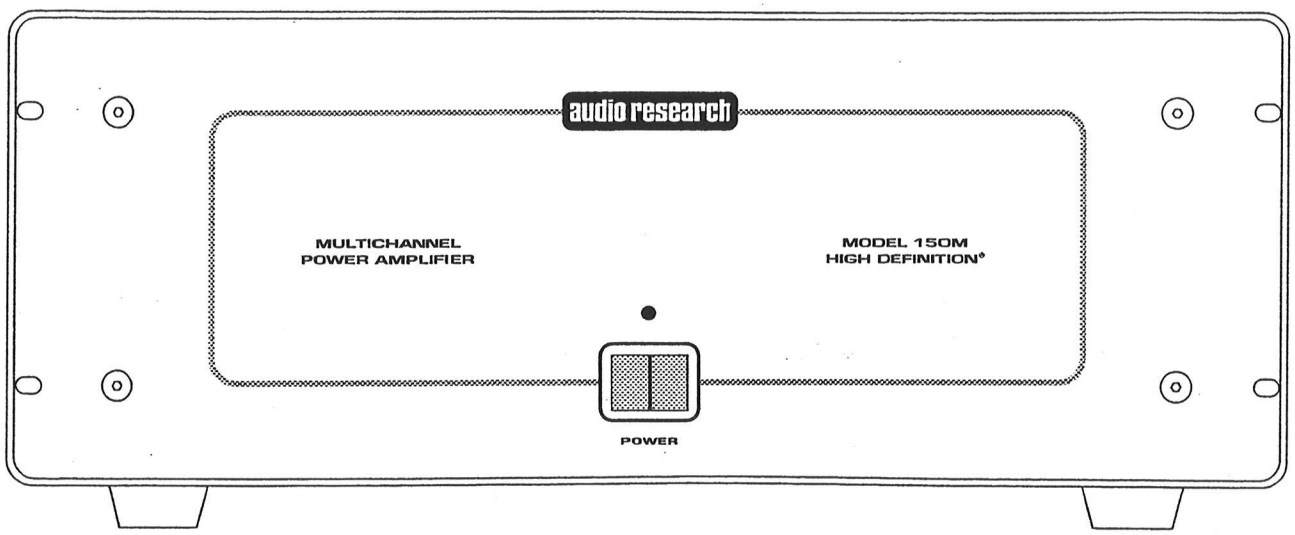
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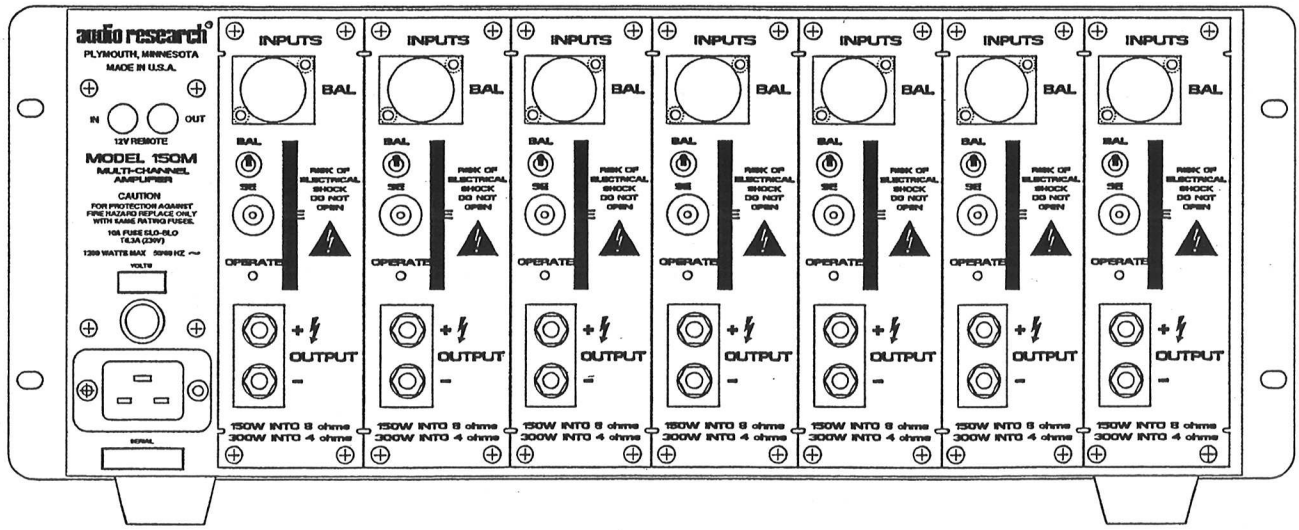
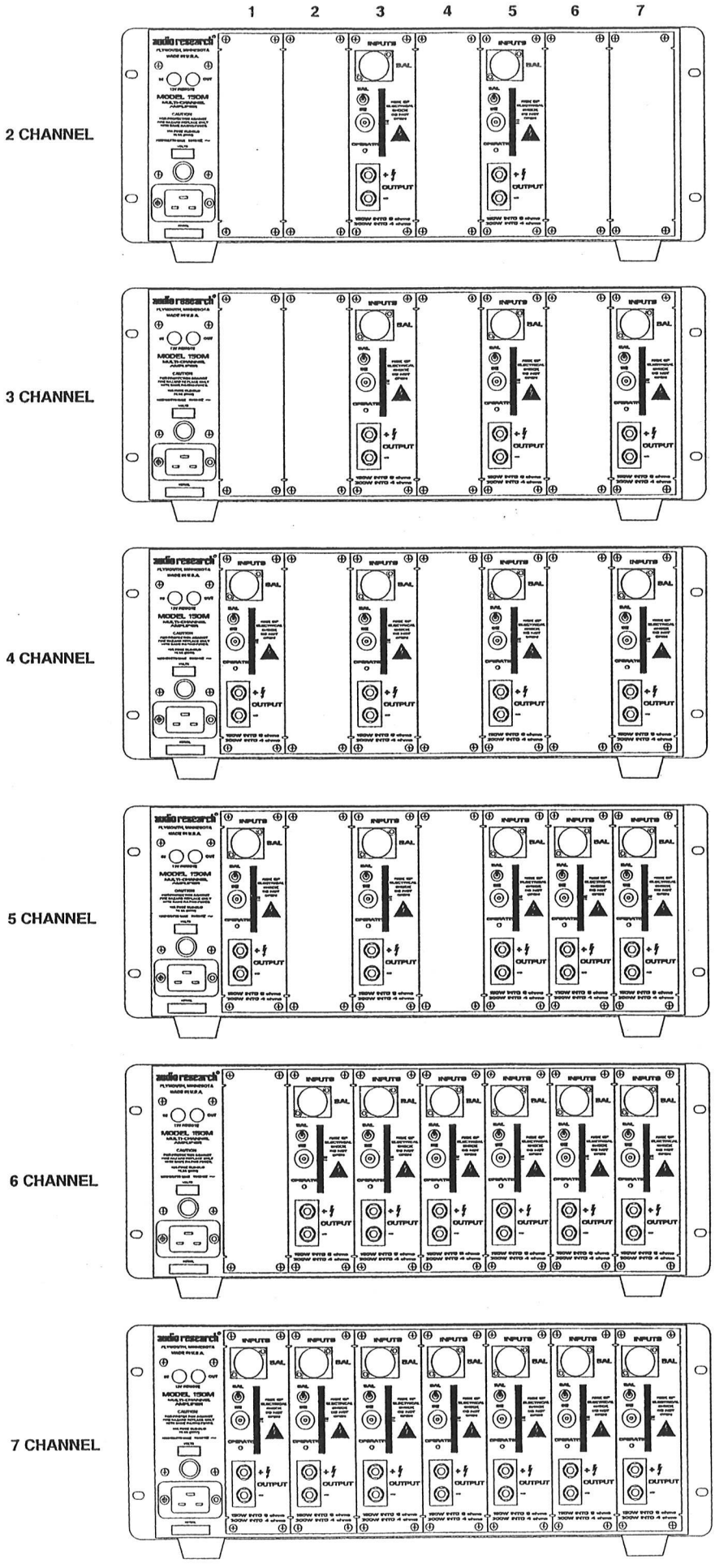
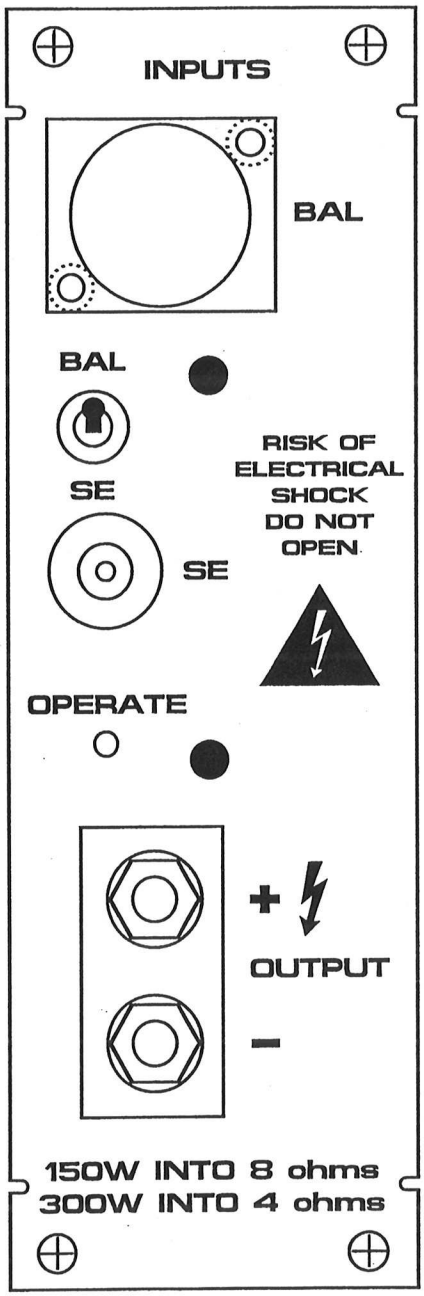

audio research
PLYMOUTH, MINNESOTA
MADE IN U.S.A.
IN
OUT
12V REMOTE
MODEL 150M
MULTI-CHANNEL
AMPLIFIER
CAUTION
FOR PROTECTION AGAINST
FIRE HAZARD REPLACE ONLY
WITH SAME RATING FUSE.
10A FUSE SLO-BLO
(6.3A (230V)
1200 WATTS MAX 50/60 HZ
VOLTS
SERIAL
INPUTS
BAL
OPERATE
RISK OF
ELECTRICAL
SHOCK
DO NOT
OPEN
OUTPUT
150W INTO 8 ohms
300W INTO 4 ohms

Model 150M Amplifier Module Configuration





Model 150M

Preface

Please take time to carefully read and understand the following instructions before you install or attempt to operate this equipment. Becoming familiar with the product and its correct operating procedures will help assure you of maximum musical enjoyment and reliable operation. The effort you invest now will be well rewarded in the years ahead.

Warnings

1. To prevent fire or shock hazard, do not expose this product to rain or moisture.
2. This unit operates on voltages which can cause serious injury or death. Do not operate with covers removed. *Do not attempt to remove or install amplifier power modules.* Any necessary servicing should be carried out by your authorized Audio Research dealer or other qualified personnel.
3. The 12 gauge, 3-conductor 20A power cord on this unit is equipped with a standard 3-prong grounding plug. If used normally, it will provide a safe earth ground connection of the chassis. Refer to section on "AC Power Connections" for detailed information.
4. For safe operation and protection against fire hazard, replace fuses only with those of the same type and rating of fuses as specified.

Packaging

Save all packaging accompanying this product. You have purchased a precision electronic instrument, and it should be properly cartoned any time shipment becomes necessary. It is very possible that this unit could be damaged during shipment if repackaged in cartoning other than that designed for it. The original packaging materials help protect your investment from unnecessary damage, delay and added expense whenever shipment of this unit is required.

Unpacking

The 150M is packed within two cartons (inner and outer) which have foam supports in between. Because of the weight of the unit and because it is a precision electronic instrument it is necessary to take reasonable care during unpacking and preparation for use.

It is best to have a large, open work area with another person available to help. Set the carton upright in the center of the work area and with a small knife carefully slit the taped edges of the outer carton's top flaps. Fold the flaps to the sides and while holding the inner carton in place, roll the unit upside down. You can now lift the outer carton off and set it and the filler panels aside. Now slit the inner carton's taped seams on the bottom (now facing upward). Again, fold the flaps over and while holding the unit in, roll it over as before. You can now lift the inner carton off to find your 150M sitting upright, undamaged and uncartoned. Carefully remove the plastic wrap. Now, while it is fresh in your mind, reassemble the carton system for future use.

Accessories

Spare Fuses:
2 – 10 Amp MDA slo-blo (100 & 120v)
2 – T6.3 Amp slo-blo (220-240V)

Description of Controls

The front panel has:

1 Power line On-Off switch
1 Power "On" LED (Green) indicator

POWER ON-OFF SWITCH: Press the black rocker switch to initiate or terminate AC line power to the amplifier. Upon turn on, the LED will illuminate and the amp is "on" and ready to play.

The 150M amplifier must be turned off while connecting or disconnecting any cables to it.

Connections

Each rear-mounted amplifier power module panel has:

1 – RCA input connector, for single-ended connection,
1 – XLR input connector, for balanced connection,
1 – Bal/SE toggle switch
1 – green operate LED
2 – Output binding posts, (+) and (-) for speaker wire connections

The main rear panel has:

1 – Power line fuseholder
1 – Power line cord IEC connector for removable power cord (supplied)

IMPORTANT: Use the best available speaker wires and interconnects. As your system improves in resolution from the addition of quality components, it becomes increasingly important to avoid the limitations of inferior system interconnections.

It is important sonically that your entire system be connected so that the audio signal arriving at the speakers has correct absolute polarity or phase (i.e. is ***not*** inverted). Connect the black or (-) speaker terminal to the wire that connects to the appropriate-channel (-) gold binding post on the amplifier. Connect the red or (+) speaker terminal to the wire that connects to the appropriate-channel (+) binding post on the 150M. Tighten the binding posts firmly to assure good contact for best sonic results.

For "bi-wired" loudspeaker systems (i.e. running separate wires to bass and treble speaker terminals), simply repeat the above instructions, taking care that all connections have the same (+) or (-) polarity.

AC POWER CONNECTIONS: It is essential that the 150M amplifier be connected to a wall AC power receptacle, or a similar heavy-duty source. Do not connect to convenience receptacles on preamplifiers, etc.. The AC power source for the amplifier should be capable of supplying 15 amperes for 100 or 120 volt units, or 8 amperes for 220 or 240 volt units.

For the very best performance on domestic 100 or 120 volt circuits, the 150M should be connected to its own AC power circuit branch protected by a 20 amp breaker. The preamplifier and other audio equipment should be connected to a different power circuit and breaker. Avoid the use of extension cords. If they must be used on a temporary basis, use 12-gauge or heavier cords.

The 150M utilizes a compatible grounding system that generally does not require a "ground lifter" adapter plug on the AC power cord to minimize hum. The power cord on your 150M has a standard three-prong grounding plug to provide maximum safety when it is connected to a grounded wall receptacle. If there is any question regarding the safety of grounding procedures, be certain to seek competent help with the installation. Do not substitute a lighter gauge power cord for the one supplied with this unit.

If electronic crossovers or other AC powered equipment is used with the amplifier it may be necessary to use "ground lifter" adapters on the power plugs of that equipment to minimize system hum. Generally, the lowest hum is achieved when the only direct connection between audio common "ground" and true earth ground occurs in the preamplifier, through its grounded power cord. Other equipment in the system should have some form of isolation to prevent ground loops and associated hum.

Always place the Power On-Off switch on the front of the 150M in the "Off" (left) position before connecting the power line cord to AC power.

Remote Turn-on Connections

The 150M has a built-in 12VDC remote turn-on/off circuit for operation by a master control system in a home theater or large audio system. Use a 3.5mm (.140") diameter mono mini plug to connect to the +12V IN jack on the rear of the 150M. Two identical paralleled jacks are provided to allow chaining connections to control other equipment.

The +12V IN jack should be connected to the +12VDC output of the master control system, using a continuous +12VDC signal at 12mA for the duration of amplifier on-time. Do not use a momentary or data pulse control signal.

The front power rocker switch on the 150M must be off to use the remote turn-on. The front power rocker switch may still be used when the remote turn-on is connected, but the remote will not turn the 150M off if the front power rocker switch is left on. The front power rocker switch will not turn the 150M off if the remote system is on.

The +12VDC remote jacks have polarity protection, so they will not operate if a -12VDC signal is accidentally connected, or if the control wires are reversed. The 12V remote relay in the 150M has click suppression to protect circuits in the master control system.

Single-Ended Operation

Single-ended inputs should be used with a preamplifier or processor having single-ended outputs which does ***not*** invert overall phase or polarity. When connecting single-ended inputs in normal (non-bridged) operating mode, be sure toggle switch on amplifier power module is set to SE position.

Balanced Operation

Balanced inputs can be used with a preamplifier or processor having balanced outputs. When connecting the balanced inputs in normal (non-bridged) operating mode, be sure toggle switch on amplifier power module is set to BAL position.

Note that for standard (non-bridged) operation BAL and SE inputs have the same gain and may be mixed and matched as needed.

Bridged Operation

Pairs of power modules in the 150M may be bridged at the factory at additional cost to provide greatly increased power: 600 WPC into an 8-ohm speaker load. Connection instructions for bridged operation are provided when the 150M is ordered with this configuration. Contact your Authorized Retailer or Audio Research Customer Service for details.

Installation

The 150M amplifier does not generate a lot of heat. The amplifier may be installed in a rack mount cabinet or a ventilated cabinet; observe the following guidelines to maximize the performance and service of your amplifier.

With proper installation, the 150M may be left on continuously for maximum performance on demand; it will draw approximately 50-100 watts of AC power at idle. However, the 150M has been designed and engineered to minimize any "warm up" necessary for best sonics; generally, a half-hour of actual playing time will bring the amplifier around to more than acceptable performance levels, with some additional improvement noticeable over the next hour or two. Warm-up characteristics will depend upon ambient room temperature at start-up, the nature of the installation and the resolving power of the associated equipment.

Operate the 150M only in the horizontal (upright) position, resting on its feet.

The five (5) non-marring feet provide adequate spacing and mechanical damping only from a smooth, hard surface. ***Never operate the unit while it is sitting on a soft, irregular surface such as a rug or carpet.***

If the unit is to be operated in an enclosure such as an equipment rack, make certain that adequate air flow above and below the unit is provided. The "ambient" operating temperature should never exceed 120° F or 49° C. Improper installation will cause premature component failure and will affect your warranty, as well as the service life of the unit.

Operating Procedure

1. Make sure you have read and followed the INSTALLATION and CONNECTIONS instructions prior to attempting operation.
2. Make sure the amplifier is properly connected to a high-current AC power receptacle via the supplied power cord (see CONNECTIONS).
3. Your preamplifier or processor should be "On" and muted and/or set at minimum gain.
4. Turn Power switch from "Off" to "On". Front panel green LED will light indicating unit is ready to play. Note: if the power indicator LED fails to light, turn the Power switch to "Off" and check the fuse for possible failure. Extra fuses for AC power are included with the unit.
5. Your amplifier should now operate satisfactorily. It may be played immediately, although best sonic performance will in most cases not be achieved for an hour or so (see INSTALLATION for further details).

Start-Up Following "Protect" Shutdown:

The 150M amplifier power modules use a sophisticated, non-fused sensing circuit to protect the amplifier from DC at the input, from thermal overload, and from shorting conditions at the output (e.g. defective speaker leads, etc.). This circuit also helps prevent damage to your loudspeakers.

When the amplifier senses a fault condition from excessive DC or subsonic current output, it will automatically shut off any output from the amplifier power module(s), and indicate this condition by extinguishing the green rear-panel mounted LED on the associated power module(s). To resume normal operation, turn off power to the amplifier for at least 30 seconds to reset the protection circuits. Check for faulty signals from the preamplifier, or processor and turn the amplifier power on.

If the amplifier fails to resume normal operation after attempting resetting due to a fault condition, contact your authorized dealer for further assistance. Normal operation of each power module can be verified by illumination of the green LED on its panel.

Servicing

Because of its careful design and exacting standards of manufacture, your 150M amplifier should normally require only minimal service to maintain its high level of performance.

CAUTION: The 150M amplifier contains sufficient levels of voltage and current to be ***lethal.*** Do not tamper with a component or part inside the unit. Even with the power turned off, a charge remains in the energy storage capacitors for some time. Refer any needed service to your authorized Audio Research dealer or other qualified technician.

Additional questions regarding the operation, maintenance or servicing of your amplifier may be referred to the Customer Service Department of Audio Research Corporation at 763-577-9700 (CST). When ordering a service manual from Audio Research or an authorized dealer, be sure to identify the serial number on your amplifier.

Cleaning

To maintain the new appearance of this unit, occasionally wipe the front panel and top cover with a soft, damp (not wet) cloth to remove dust. A mild, non-alkaline soap solution or dilute isopropyl alcohol may be used to remove fingerprints or similar smudges. Cleaners containing abrasives should ***not*** be used as they will damage the anodized finish of the front panel. A small, soft paint brush is effective in removing dust from bevels, the recessed nameplate and other features of the front panel.

Limited Warranty

Audio Research Corporation products are covered by a 3-Year Limited Warranty, or a 90-Day Limited Warranty (vacuum tubes). This Limited Warranty initiates from the date of purchase, and is limited to the original purchaser, or in the case of demonstration equipment, limited to the balance of warranty remaining after original shipment to the retailer or importer.

In the United States, the specific terms, conditions and remedies for fulfillment of this Limited Warranty are listed on the warranty card accompanying the product in its shipping carton, or may be obtained from the authorized retailer or from the Audio Research Customer Service Department. Outside the United States, the authorized importing retailer or distributor has accepted the responsibility for warranty of Audio Research products sold by them. The specific terms and remedies for fulfillment of the Limited Warranty may vary from country to country. Warranty service should normally be obtained from the importing retailer or distributor from whom the product was purchased.

In the unlikely event that technical service beyond the ability of the importer is required, Audio Research will fulfill the terms and conditions of the Limited Warranty. Such product must be returned at the purchaser's expense to the Audio Research factory, along with a photocopy of the dated purchase receipt for the product, a written description of the problem(s) encountered, and any information necessary for return shipment. The cost of return shipment is the responsibility of the purchaser.

Specifications

POWER OUTPUT: 150 watts per channel into 8 ohms, 300 watts per channel into 4 ohms (1% THD). 600 watts with 2 channels bridged into 8 ohms.

POWER BANDWIDTH: (-3dB Points) 5Hz to 40 kHz into 8 ohms, or 4 ohms.

FREQUENCY RESPONSE: (-3dB points at 1W) 5Hz to 120 kHz

INPUT SENSITIVITY: 1.4V RMS for rated output (27dB Gain) single-ended or balanced.

INPUT IMPEDANCE: 150K ohms single-ended, 300K ohms balanced differential.

OUPUT POLARITY: Non-inverting from single-ended inputs. Balanced pin 2+ (IEC-268).

OUTPUT REGULATION: 0.05dB 8 ohm load to open circuit (Damping factor 200).

OUTPUT CURRENT: 20 amps peak at protective shutdown.

SLEW RATE: 15 volts/microsecond. (20% maximum duty cycle).

RISE TIME: 2.0 microseconds.

HUM & NOISE: 500 microvolts RMS (96dB below rated output IHF A-weighted).

POWER SUPPLY CAPACITANCE: 192,000 uF total.

POWER REQUIREMENTS: 100-125VAC 60Hz (200-250VAC 50Hz) 400 watts at rated output (150WPC 8 ohms), 770 watts at 300WPC 4 ohms, 55 watts idle (Model 150M.2). 120 watts idle, 1200 watts maximum (Model 150M.7).

DIMENSIONS: 19" (48 cm) W (standard rack panel) x 7" (17.8 cm) H x 18 1/2" (47.0 cm) D (front panel back). Output connectors extend 1.0" behind rear panel.

WEIGHT: 45.8 lbs. (20.8 kg) Net; 64 lbs. (29.1 kg) Shipping (Model 150M.2). 56.3 lbs. (25.6 kg) Net; 75 lbs. (34.1 kg) Shipping (Model 150M.7)

Specifications subject to change without notice.