
Owner's Manual

Model LS27

STEREO PREAMPLIFIER

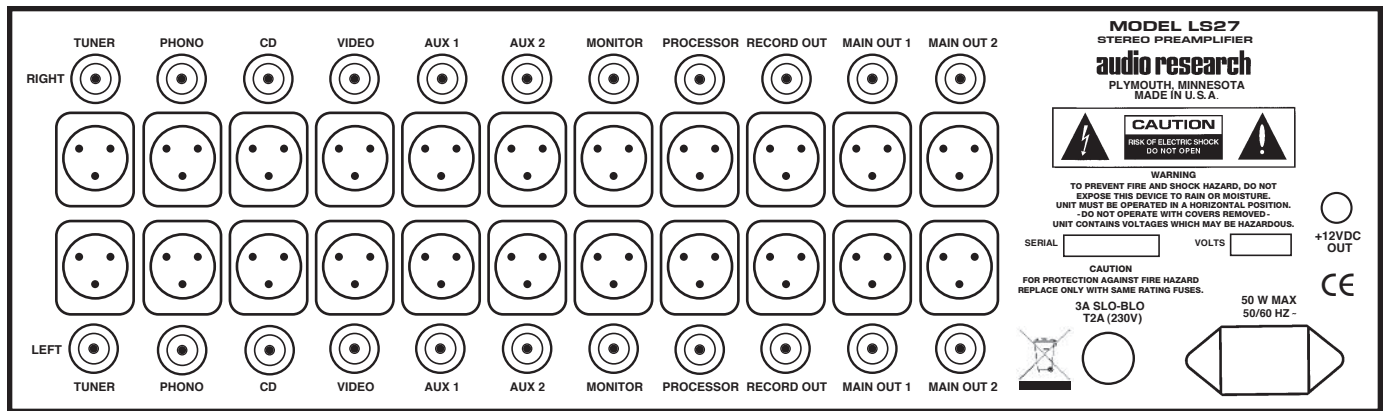
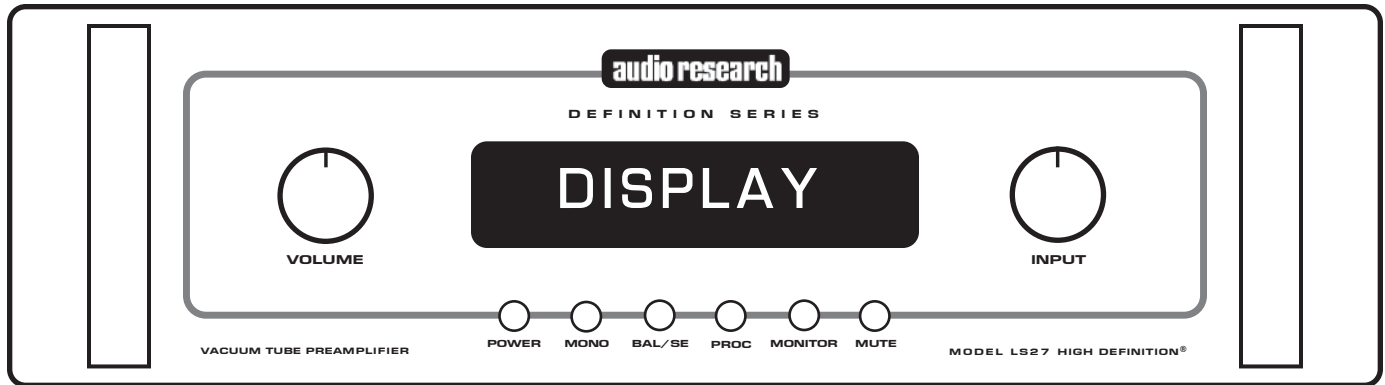
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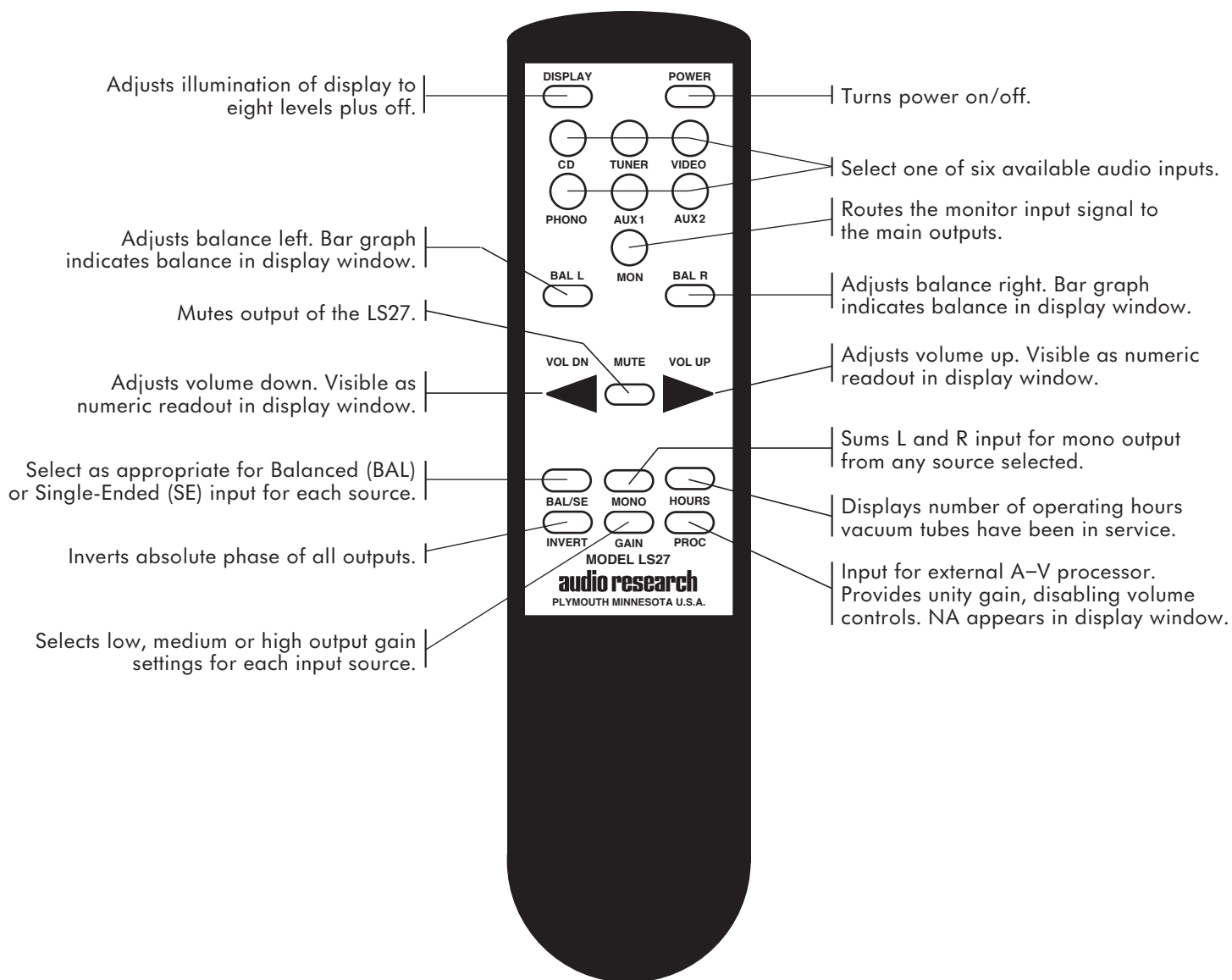
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NOTE: All LS27 functions are available on the LS27R hand held remote controller. All functions are indicated in the display window as they are selected. See "Description of Controls" in this manual for more information.

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Preface

Please take time to carefully read and understand the following instructions before you install or attempt to operate your Audio Research LS27 pre-amplifier. 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. Any necessary servicing should be carried out by your authorized Audio Research dealer or other qualified electronics technician.
3. The power cord supplied with this unit is safety-tested and is equipped with a proper grounding plug. If used normally, it will provide a safe earth ground connection of the chassis. Defeat of the grounding plug or use of a power cord without a grounding plug, or any unauthorized modification of the active circuitry or controls of this unit, automatically voids warranty coverage, and could cause injury or death.
4. For safe operation and protection against fire hazard, replace fuses only with those of the same type and rating as those supplied with this unit.

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.

Installation of Vacuum Tubes

Note: This unit has been shipped with the vacuum tubes installed in a protective foam block under the top cover. Using a phillips-head screwdriver to loosen the fastening screws, remove the top cover and set aside. Remove the tubes carefully from the protective foam block and store the foam block with the carton.

Warning!

Do not attempt to install or replace vacuum tubes unless this unit is first turned off and disconnected from A.C. power outlet. Unit should be connected to A.C. outlet and turned on only after all vacuum tubes have been installed and appropriate panels replaced and fastened. See owner's manual for installation details.

Before replacing vacuum tubes, turn off unit, disconnect from A.C. outlet and allow existing tubes to cool before attempting to remove and replace with new tubes. Hot tubes may cause burns or other injury if not first allowed to cool.

When replacing tubes, do not touch other components, as the circuit may retain sufficient levels of voltage and current to cause injury or death.

Contact Audio Research Customer Service (763-577-9700) if you have any questions about installing or replacing vacuum tubes in this unit.

DO NOT ATTEMPT TO OPERATE THIS EQUIPMENT BEFORE INSTALLING THE NUMBERED VACUUM TUBES IN THEIR RESPECTIVE SOCKETS.

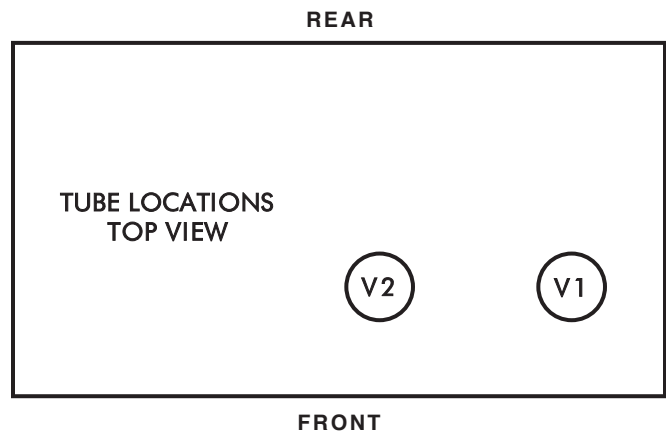


Diagram indicates relative positions of two 6H30 tubes located on circuit board as viewed from the front and looking down from above the preamplifier.

Description of Controls

Front Panel Rotary Controls

The LS27 has two microprocessor-driven rotary controls.

The rotary control on the left adjusts Volume (output level) up or down for both R and L channels. Volume control is also selectable via Vol DN and

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Vol UP buttons on the remote control. Volume adjustment is indicated in the display window by numeric digits on 0–103 scale.

Do not turn volume up beyond normal listening levels when “mute” is engaged to avoid unexpected or possibly damaging sound levels. Reduce volume level whenever changing input sources, even when muted.

The rotary control on the right selects any of six input sources connected to the preamp: CD, Video, Aux 1, Aux 2, tuner and phono. Each of these sources may also be selected via direct access buttons on the remote control. The selected source is indicated in the display window.

Front Panel and LS27R Remote Control Buttons

POWER ON/OFF: Supplies power from A.C. wall outlet to preamp; indicated by active display window. Function also on remote control.

For approximately 50 seconds after start up, “Mute” appears in the display window and flashes until the automatic muting cycle is completed. This also occurs in the event of power interruption. Upon completing the cycle, “Mute” will cease flashing. The preamp will remain muted until normal operation is selected by pressing the “Mute” button.

MUTE: When activated, electrically mutes all output of the preamplifier; indicated by “Mute” in display window. This control should be activated before switching inputs, changing connections or shutting down your audio system to help protect your amplifier and speakers from unexpected signal pulses. When deactivated, “Mute” disappears from the display window allowing normal operation. Function also on remote control.

The LS27 also has automatic muting to help protect system components during A.C. power interruptions or low line voltage. When sensing these conditions, the preamp automatically goes into “Mute” and disables all outputs. The 50-second warm-up timer will restart and “Mute” will flash in the display window when normal power conditions have been restored.

Note that automatic muting is only designed to protect against power line interruptions or severe voltage drop. It will not mute in the event of subsonic transmissions from a faulty input source, amplifier failure or speaker malfunction.

PROCESSOR (PROC): May be selected by button on front panel or on remote control. Selects external

A-V (home theater) processor as input source and controller of volume level for R and L channels. LS27 provides Unity Gain when this input is selected.

When engaged, “PROC” and “UNITY GAIN” will appear in the display, and the volume control is not adjustable because gain is fixed. The preamp will also mute the input after “PROC” is engaged.

WARNING: Before unmuting the “PROC” input, be sure to turn the volume down on the home-theater processor. Never connect a source with a fixed level output (DVD player, tuner, CD, etc.) to the PROC input or the amplifier(s) and speaker system could be damaged when the LS27 is unmuted.

VOLUME UP/DOWN: Increases/decreases overall volume level of both channels equally for whichever input has been selected. Caution: do not turn up volume beyond normal listening levels when “Mute” is engaged to avoid unexpected or possibly damaging sound levels. It is a good idea to reduce volume whenever changing program sources, even when muted. Function available on remote control buttons and front panel rotary control on left. .

BAL/SE: Select as appropriate for each input. For source components having balanced (XLR) connections to the LS27, select BAL. For single-ended (RCA) sources, select SE. Once selected for an input source, the setting is memorized.

MONO: Sums L and R input for mono output from any source selected. Remembers setting for each input.

MONITOR (MON): Selecting MONITOR (“MONITOR” appears on display) routes Monitor input signal to the Main outputs.

The Input Selector indicates what is routed to the Record out. To exit the monitor position and return to program source controlled by input selector (CD, Tuner, Phono, etc.), press monitor switch again.

Note: The gain of the LS27 through the monitor input is not adjustable by gain selector button (on the remote), and is fixed at “High” gain (the gain setting on the display is unlit in the “Monitor” position).

LS27R Remote Control Only

DISPLAY: Selects one of nine display illumination levels, including off. When off, the display can be reactivated for 10 seconds at a low level by pressing any button (except Power) on remote or control on front panel.

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BAL L/BAL R: Adjusts balance left or right. Adjustment appears in display window as movable marker on bar graph. Useful for compensating for uneven speaker placement or imbalanced output from a phono cartridge.

HOURS: When pressed, displays number of operating hours vacuum tubes have been in service. **WARNING:** after replacing tubes, this function should be reset to "0" only by a qualified technician. Hours display can be reset to "0" by pressing black button labeled "Reset Hours" located on lower right corner of circuit board directly behind display window. The preamp must be "On" to reset function—the service technician must be careful to avoid any contact with other circuit components during reset operation. Contact Audio Research customer service (763-577-9700) for information regarding this procedure.

GAIN: The Gain selector limits the input level to the LS27, with resulting Low, Medium and High labeled gain option settings to the outputs. Note that the gain to the single ended outputs at each of the three settings is half of the gain to the balanced outputs at the same setting. The gain options allow limiting the output of "hot" high-gain signal sources to the preamplifier's input circuitry and prevents potential overloading. Properly used, this results in extremely wide signal input range capability while preserving optimum use of the Volume control. For each input source, simply set the Gain selector at the highest of the three gain settings viewed on the display that allows you to use the Volume control over the desired range without audible distortion on peak levels from your program source. Once you have selected the optimum gain setting for a given input, the LS27 will "memorize" it and return to that gain setting each time you select that input. Note that the Gain selector defaults to the "High" setting for each input unless another is selected.

INVERT: Inverts absolute phase of the output signal. Remembers setting for each input.

Connections

INPUT CONNECTORS: The LS27 provides eight pairs of BAL/SE input connectors: CD, Tuner, Phono, Video, Aux 1, Aux 2, Monitor and Processor. The BAL/SE selector button (front panel and on remote) should be selected to match the type of connection used (BAL or SE) on each input.

Connect either the BAL or SE connectors for each input. Never connect the BAL and SE connectors simultaneously for any input.

OUTPUT CONNECTORS: Two pairs of BAL/SE main outputs are provided.

RECORD OUTPUT: The BAL/SE tape outputs should be connected to your recorder's "Record" or "Line" inputs. These outputs provide a fixed-level two-channel signal (R,L) to your recorder from whichever input is selected. The non-variable output level will be the same as the output of the selected source.

It is possible to dub or copy from one recorder to another by connecting the output of the source recorder to an unused set of stereo inputs (Aux 1, Aux 2). The signal will then be routed to the Record Out connectors when that input source is selected.

12V IN/OUT REMOTE START JACKS: The +12V DC input/output jacks provide the ability to remotely turn on and off other linked components such as power amplifiers having similar capabilities.

Installation Instructions

While the LS27 does not dissipate an unusual amount of heat, it is important that it be provided with reasonable airflow to assure long, trouble-free operation. In addition, the following installation guidelines will help insure maximum sonic performance as well as reliable service:

1. Operate unit in upright and horizontal position, preferably on solid, non-metal shelving.
2. Do not stack the preamp on top of a power amplifier: not only could this cause overheating, but hum may be introduced into the preamp from the proximity of the amplifier's power transformer. Do not stack components or other objects directly on top of the LS27.
3. Do not place or operate your preamp on a soft or irregular surface such as a rug. This will prevent proper ventilation.
4. Do not operate your preamp without the top and bottom covers installed. These are required both for safety as well as shielding from interference (except in service operations by qualified personnel).

Operating Procedure

Start-Up:

1. Secure all rear-panel connections between LS27, power amplifier(s) and input sources.
2. Plug three-prong power cord from rear of chassis into grounded AC wall outlet. The Power switch defaults to "off" when the unit is plugged into a power receptacle.
3. Press power switch (either remote or front panel).

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"Mute" will flash in the display window for approximately 50 seconds, then cease flashing and remain in the display. Press "Mute" to initiate operation.

4. Select input source, then BAL or SE as necessary.

Shut-Down:

1. Activate "Mute" function.
2. Set Volume level to "0".
3. Turn off power amplifier(s).
4. Press Power switch to "off".
5. Turn off input sources.

Tape Recording Procedure

When using the LS27 as a control center for recording, the program source to be recorded must be connected to one of the six inputs controlled by the Input selector switch or to the Processor input. This routes the selected program to the Record output.

Note: If the Processor input is activated by selecting the "Processor" switch position, all other inputs will be deactivated. When recording from the Processor input to the Record out of the LS27, the level of the recording will be dependent on the level setting of the processor.

If you own a three-head tape deck, and wish to monitor the actual tape while making a recording (for a true "A-B" comparison of signals before and after recording), connect the tape deck output to the Monitor input.

It is also possible to dub from one tape deck to another. Simply connect the output from one tape deck to an unused set of inputs controlled by the Input selector (Tuner, Phono, CD, etc.) on the LS27. This signal will then be routed to the second tape deck through the Record output when the appropriate input is selected on the Input selector.

Troubleshooting:

It is possible for a static discharge to temporarily disable the microprocessor that allows the controls to function. If this should occur, depress the "Mute" button, then turn off the preamp and unplug the preamp from the A.C. receptacle for 60 seconds. Reconnect the A.C. plug and turn the preamp back on, along with other components. The controls should resume normal operation. If the problem persists, contact your dealer or Audio Research Customer Service at 763-577-9700.

Servicing

Because of its careful design and exacting stan-

dards of manufacture, your LS27 should require no routine maintenance. The remote control's batteries (AAA) should be replaced once a year.

CAUTION: Your LS27 contains sufficient levels of voltage and current to be lethal. Do not tamper with a component or part inside the unit. Refer any needed service to your authorized Audio Research dealer or other qualified technician.

The vacuum tubes inside your LS27 are quality 6H30 dual triode tubes and with normal use should not need to be changed for approximately 4,000 hours of use. Replacement tubes should be of equivalent quality and are available from Audio Research. Note that tube numbers (V1 and V2) match printed numbers next to tube sockets on circuit board.

Should service be necessary, please contact your Audio Research dealer, or Audio Research Customer Service at 763 577-9700.

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 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.



Disposal and Recycling Guidelines

To dispose of this electronic product, do not place in landfill. In accordance with the European Union Waste Electrical and Electronic Equipment (WEEE) directive effective August 2005, this product may contain regulated materials which upon disposal require special reuse and recycling processing.

Please contact your dealer or importing distributor for instructions on proper disposal of this product in your country. Or, contact Audio Research Corporation (763-577-9700) for the name of your importing distributor and how to contact them.

Packing and shipping materials may be disposed of in a normal manner.

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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

FREQUENCY RESPONSE: +0-3dB, 0.2Hz to 160kHz at rated output (Balanced, 200k ohms load)

DISTORTION: Less than .01% at 2V RMS BAL output.

GAIN: Main output: Selectable for each input: 24dB, 18dB, 12dB Balanced output. (18dB, 12dB, 6dB SE output.)
Record output: 0dB (Processor input: 0dB balanced).

INPUT IMPEDANCE: 120K ohms Balanced, 60K ohms SE. Inputs (8): Tuner, Phono, CD, Video, Aux 1, Aux 2, Monitor, Processor (XLR and RCA connectors).

OUTPUT IMPEDANCE: 700 ohms Balanced, 350 ohms SE Main (2), 20K ohms minimum load and 2000pF maximum capacitance. Outputs (3): 2 Main, 1 Record (XLR and RCA connectors).

OUTPUT POLARITY: Non-inverting.

MAXIMUM INPUT: Low Gain: 48V RMS BAL, 24V RMS SE, Medium Gain: 24V RMS BAL, 12V RMS SE, High Gain: 12V RMS BAL, 6V RMS SE.

RATED OUTPUTS: 2V RMS 1Hz to 100kHz into 200K ohm balanced load (maximum balanced output capability is 15V RMS at less than 0.5% THD at 1kHz).

CONTROLS: Rotary volume selector (104 steps) and rotary input selector.
Push buttons: Power, Mono, BAL/SE, Proc, Monitor, Mute. Also remote buttons: Display, Bal L, Bal R, Hours, Invert, Gain.

POWER SUPPLIES: Electronically-regulated low and high voltage supplies. Automatic 50 sec. warm-up/brown-out mute. Line regulation better than .01%.

NOISE: 1.3uV RMS residual IHF weighted balanced equivalent input noise with volume at 1 (100dB below 2V RMS output).

TUBE COMPLEMENT: 2-6H30P dual triode, (Hybrid JFET/tube audio circuit, solid-state power supply.)

POWER REQUIREMENTS: 105-130VAC 60Hz (210-260VAC 50/60Hz) 50 watts maximum.

DIMENSIONS: 19" (48 cm) W x 5.25" (13.4 cm) H (standard rack panel) x 13.3" (33.8 cm) D. Handles extend 1.50" (3.8 cm) forward of the front panel.

WEIGHT: 16.3 lbs. (7.4 kg) Net; 23 lbs. (10.5 kg) Shipping.

Specifications subject to change without notice.

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