

INSTALLATION AND OPERATING INSTRUCTIONS



SR SERIES POWER AMPLIFIERS

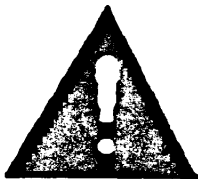
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The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.

CAUTION: To reduce the risk of fire or electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

Introduction

Preface

Thank you for purchasing this JBL/UREI product. We have prepared this instruction manual to enable you to achieve optimum utility and performance from your new Power Amplifier. We encourage you to read and to make use of the material contained in this manual. We welcome your suggestions and comments on our products and on this manual.

Unpacking and Inspection

Your new JBL/UREI Power Amplifier was carefully packed at the factory, and the container was designed to protect the unit during shipment. Nevertheless, we recommend careful examination of the shipping carton and its contents for any sign of physical damage which may have occurred in transit. If damage is evident, do not destroy any of the packing material or the carton, and immediately notify the carrier of a possible claim for damage. Damage claims must be made by you.

The shipping carton should contain:

The JBL/UREI Power Amplifier with model number as shown on the shipping container

This Instruction Manual

An envelope containing Rack Mounting Hardware

Installation

1. Check that the AC Line Voltage at your installation is correct for the Amplifier. All SR Series amplifiers are designed to operate from 120VAC 60 Hz AC Mains. If your AC Supply voltage is different, do not proceed any further with installation.

WARNING: A SIGNIFICANT FIRE AND SHOCK HAZARD MAY EXIST IF THE AMPLIFIER IS CONNECTED TO AN AC POWER SOURCE OTHER THAN THAT FOR WHICH IT IS RATED AND LABELLED.

2. Rack mount your Amplifier with the enclosed rack mounting hardware.

The Amplifier will operate satisfactorily over a range of ambient temperatures from 0° C to +50° C (+32° F to +122° F), and up to 80% non-condensing relative humidity.

If the unit is installed in an equipment rack, console or other area along with high heat producing equipment (such as power amplifiers), adequate ventilation should be provided to assure longest component life. Also, while internal circuitry susceptible to hum pickup is sufficiently shielded from moderate electromagnetic fields, avoid mounting the unit immediately adjacent to large power transformers, motors etc.

3. Note that the Amplifier is fan-cooled with air flow from back-to-front. It is important for correct operation of the Amplifier, and long life of its internal components, that it should receive a free flow of cool air at its air intake and that heated air not be prevented from being exhausted through the front panel air vents. In most cases this will only mean that vent grilles be provided in the rack, but some installations may require additional supplies of cooling air.
4. Connect audio input and output wiring. You have the choice of XL-style or phone plug for input connection. See Signal Wiring and Signal Connections for a complete description of the whys, wherefores and how-tos of wiring the connectors. Set the level controls at the bottom of their range.
5. Set the rear panel Mode Switch to the proper position: Stereo, Dual Mono or Bridged Mono.
6. Turn the power on and the POWER indicator will be illuminated. After a brief delay (3 to 5 seconds) the bypass relay will engage, allowing signal to pass through the unit. Apply program signal to the input.
7. The Level controls may now be adjusted for optimum performance.

Grounding

For safe operation the Amplifier must be connected to a good mechanical ground. This provides a current path for any voltage which might appear on the chassis due to a severe electrical fault in the Amplifier. Without this path the unit might be a shock hazard. In addition, a good quality ground on the chassis provides shielding from external fields and minimizes radiation of internal fields to the outside world. To comply with safety regulations in many localities, and to protect our customers, we provide this product with a ground connection through a three-wire power cord.

In many situations this will present no problem. But there are instances where a hum or buzz will be introduced due to a phenomenon known as a ground loop. This results when there is a significant potential between the audio ground of the previous piece of equipment and the mechanical ground to which the Amplifier has been connected.

If this is the case, the first attempt at a solution should be to remove the strap on the rear panel barrier strip which connects audio ground and chassis. Removal of this strap may have a significant effect on reducing the hum. Audio ground will then be referenced from the signal source, and the chassis ground will be separate but still connected to mechanical ground for shock protection.

In some instances the voltage difference between the grounds will be so great that a direct connection to mechanical ground is not possible without hum in the output. Use of an isolation transformer in the input signal line may allow the signal to be connected while maintaining ground isolation. Check for this using a 3

prong to 2 prong AC adaptor between the power cord and the power outlet, temporarily ungrounding the unit. Try the Amplifier both with and without the ground strap on the barrier strip. Determine which connection works best. Remember, for safety you must still have a connection to chassis ground. This is normally made through a properly grounded third pin connection. However, in some installations some different method of grounding may be acceptable and satisfactory for both safety and noise. Any alternate method of grounding of the amplifier should assume that full line current will flow in the ground wire under fault conditions, and the wire should be sized accordingly.

Input Connections

The Amplifier will not unbalance floating or balanced output sources, since the input circuits consist of balanced, differential amplifiers. Balanced wiring is the preferred style, especially when running long lines, due to the ability of a balanced input to reject signals (such as hum fields) which are induced equally into both of the signal carrying conductors. Even if the previous piece of equipment has an unbalanced output it may be advantageous to wire it to the input of the Amplifier as though it were balanced. This takes advantage of the ability of the input to reject common-mode noise. Wire the connectors according to the table below.

Table 1 Balanced Input Wiring

Signal	XL Pin #	Phone Jack
High	3	Tip
Low	2	Ring
Ground	1	Sleeve

To use an unbalanced source, wire the signal carrying conductor of the cable from that source to the "+" terminal of the phone jack tip or XL connector pin 3, and wire the shield to the phone jack ring or XL connector pin 2. The phone jack sleeve or XL pin 1, may also be connected to shield ground if that is compatible with your system grounding. (See the section on Grounding.)

We recommend that two-conductor shielded cable be used, even in an installation using unbalanced wiring. Do not depend on the shield wire itself to complete the signal connection. Stranded shield wires are more subject to breakage, especially in portable installations, than the more protected internal insulated wires. Using this wiring system, the worst that would happen with a broken shield would be a rise in noise or hum due to the lack of shielding. If the ground connection were completely lost, this would result either in loss of audio or a terrible loud hum.

Using Floating or Balanced Cables for Longer Runs

Shielded cables are recommended for all input signals. Longer input cables should be balanced or floating to reduce susceptibility to RFI and hum. If the output of the device feeding the Amplifier is balanced or floating, no transformer is required at all; simply use a dual-conductor shielded cable. If the input source is unbalanced, an isolation transformer may be necessary at the source device's output.

With shorter cables, particularly where interconnected equipment is mounted in a single rack or is powered by the same AC receptacle, there is less need for balanced or floating input and output cables.

Impedance and Termination for 600 Ohm Lines

In the USA the early history of the audio industry is very closely tied to the history and technology of the telephone industry. Much early equipment used for public address systems, recording, broadcast and reproduction of sound was either designed by or heavily influenced by the scientists and engineers at Bell Telephone Laboratories. The technology that they and others developed has had a lasting influence on the design and specification of all audio products. Among their contributions was the 600 ohm transmission line.

The 600 ohm line was developed because of a need for a standardized impedance for long distance transmission lines. Transmission and reception equipment using vacuum tubes, transformers, and passive equalization and mixing networks require known source and load impedances to achieve predictable results. Because much of the early professional audio equipment was designed by telephone company people or

used similar types of equipment, it is not surprising that the 600 ohm line became a standard in the professional audio industry.

Correct use of the 600 ohm transmission line requires a signal source with an exact 600 ohm source impedance, and a receiving device which also has a 600 ohm input impedance. If a device does not have the correct impedance, it must be modified until it does. In the case of a device with a lower than required source impedance this would require addition of a series buildout resistor (or two in the case of a balanced line). In the case of a higher impedance input a resistor across the input will suffice. Other variations require either a resistive network or transformer to match impedances.

The input impedance of the Amplifier is very high. Therefore, if the Amplifier is to be used in a 600 ohm system, attach a 620 ohm resistor across the input terminals to terminate the source.

Most modern audio systems do not require the use of 600 ohm transmission line practices. This is for two reasons. First, most audio systems are relatively small (especially as compared to a telephone network) and the cabling between parts of the system is under more careful control, and second, modern audio electronic products are no longer designed to require the use of a 600 ohm line. Matching of input and output impedances is no longer necessary because the output impedance of a device may be made very low and the input impedance very high. Multiple inputs may thus be connected in parallel to the same source with ease and no loss of signal level.

Output Wiring

Five-way binding posts are used for connection of Output wiring. The preferred method of connection is to use a dual banana plug on each speaker cable. Plug each speaker plug into the corresponding channel's red and black binding posts. In the absence of a dual banana plug (or two single banana plugs), there are other alternatives. To connect stranded speaker cable, loosen the plastic end of the output connector, insert the stripped and twisted wire end through the hole in the terminal, wrap the wire end clockwise around the terminal and tighten the plastic end of the connector back down on the wire. Another wiring alternative is to crimp a "spade" lug onto the speaker cable, push one leg of the lug through the hole in the terminal and tighten the nut.

Output Polarity Conventions

In normal stereo or dual mono operation a positive-going signal on pin #3 of the XLR or the tip of the phone jack will cause a positive-going signal to appear at the corresponding channel's red output binding post.

In bridged mono operation the two amplifier channels are driven with the same signal, but with Channel B reversed in polarity. The speaker cable is then connected to the two red binding posts (the black binding posts are not used in bridged mono mode). In this case a positive-going signal applied to the Channel A input appears as a positive-going signal at the Channel A red binding post and as a negative-going signal at the red binding post.

NOTE: The two channels' red binding posts are located next to each other to enable bridged mono connection to be made with a standard dual banana plug. **DO NOT CONNECT THE TWO RED BINDING POSTS TO EACH OTHER, and DO NOT GROUND EITHER SIDE OF THE OUTPUT IN BRIDGED MONO MODE.**

Amplifier Mode Switch

A recessed switch on the rear panel provides for convenient change of amplifier mode from stereo to dual mono and bridged mono output. The switch may be actuated by finger tip. The functions are as follows:

Stereo:

Input to Channel A. Output is on Channel A and level is controlled by the Channel A level control.

Input to Channel B. Output is on Channel B and level is controlled by the Channel B level control.

Dual Mono:

If both channels of the amplifier are driving the same signal to different loudspeakers the dual mono mode saves a patch or Y-cord. Input is to Channel A. Output on Channel A is controlled by the Channel A level control. Output on Channel B is controlled by the Channel B level control. Input B is not used.

Bridged Mono:

This mode makes the stereo amplifier into a single mono amplifier with the power of both channels combined. Input is to Channel A. Channel B input is not used. Level control is by Channel A level control and output is taken across the two red binding posts. The A Channel Binding post is in polarity with the input.

Turn On Procedure

After the power is switched on, there is a short delay before any processed signal is passed through the unit. During this time, the fan will operate at high speed to indicate its correct operation and the internal operating points will stabilize.

Specifications

<u>Rated Power</u>	4 Ohm/Ch	8 Ohm/Ch	8 Ohm Bridge	16 Ohm Bridge
6615	150W	90W	300W	180W
6630	300W	190W	600W	380W
6650	500W	300W	1000W	600W

Midband Power

6615	175W	110W
6630	330W	200W
6650	550W	310W

Rated Power is minimum continuous sine wave output per channel, with both channels driving their rated load over a power bandwidth of 20 Hz to 20 kHz. Maximum total harmonic or intermodulation distortion measured at any power level from 250 milliwatts to rated power is less than 0.1%. Maximum Transient Intermodulation Distortion is less than 0.05%.

Midband Power is maximum output power per channel, with both channels driven, at onset of clipping with 1kHz sine wave, THD 1%.

Frequency Response: +0, -1 dB, 20 Hz to 20 kHz, at any level up to rated power.

Noise: At least 100 dB below rated output (15.7 kHz noise bandwidth, A weighted).

Input:	Balanced bridging differential amplifier.
Input Impedance:	Line: 40 k ohms used as balanced input; 20 k ohms used as unbalanced (single-ended)
Maximum Input Level:	+20 dB (7.75 V rms).
Input Sensitivity:	1.1 V for rated output into 8 ohm load.
Voltage Amplification:	Variable; maximum 28dB (6615), 31dB (6630), 33dB (6650)
Rise Time:	Less than 6 microseconds (limited by input filter).
Slew Rate:	Greater than 40 Volts per microsecond
Damping Factor:	Greater than 200 at any frequency from 20 Hz to 1 kHz into 8 ohm load.
AC Power:	Typical Power Consumption: At idle (approx.): 50 W (6615), 60 W (6630), 120W (6650) At rated output (4 ohms both channels): 700W (6615), 1200W (6630), 2200W (6650)
DC Output Offset:	± 10 millivolts maximum.
Polarity:	Positive-going signal on pin 3 of XL or tip of phone jack gives positive-going signal at + output terminal.
Connectors:	Input connectors are Female XL style 3 pin and 3-conductor phone jack wired in parallel. Output connectors are 5-way binding posts on 3/4 inch (19mm) centers.
Controls:	Channel Gain (2), Power, Stereo/Bridge Mono/Dual Mono Switch, Ground Lift Switch
Indicators:	Power, Signal Present (2), Clip (2), Standby
Dimensions:	19 inch Rack Mounting. 3 - 1/2 inches high by 14-1/2 inches deep. 16 inches depth to rear of Rear rack mounting ears.
Net Weight:	6615: 32 lbs., 6630: 34 lbs., 6650: 42 lbs.
Materials:	Chassis is plated and painted steel. Rack ears and handles are painted aluminum.

Maintenance

General

This JBL/UREI Power Amplifier is all solid state, ruggedly constructed and uses the finest components. As such it will provide years of trouble free use with normal care. All parts are conservatively rated for their application. With the exception of routine inspection and cleaning of the fan filters as described in the operation Instructions section, **NO SPECIAL PREVENTIVE MAINTENANCE IS REQUIRED. THERE ARE NO USER SERVICEABLE PARTS INSIDE.**

The metal and plastic surfaces of the Amplifier may be cleaned with a damp cloth. In case of heavy dirt, a non-abrasive household cleaner such as Formula 409 or Fantastik® may be used. **DO NOT SPRAY THE CLEANER DIRECTLY ONTO THE FRONT OF THE UNIT AS IT MAY DESTROY THE LUBRICANTS USED IN THE SWITCHES AND CONTROLS!** Spray onto a cloth and then use the cloth to clean the unit.

Repairs and Warranty

This product is warranted by the manufacturer to the original purchaser against defects in material and workmanship for a period of three years from the date of purchase. Complete terms of the Limited Warranty are stated on the Warranty Card packed with this manual. We suggest that you retain a copy of your dated sales receipt for proof of warranty status should that be necessary.

If you wish to return the unit directly to the factory, please call or write to the Customer Service Department at the Service address listed on the title page of this manual for a Return Authorization Number. All products returned to the factory must be accompanied by a Return Authorization Number, and must be shipped prepaid. COD shipments will not be accepted.

For prompt service, ship the unit to the factory with the RA number marked on the shipping label. Be sure that it is well packed in a sturdy carton, with shock absorbing material such as styrofoam pellets or "bubble-pack" surrounding the unit. Pay particular attention to protecting the controls and switches and make sure that the unit cannot drift around in the shipping box. Shipping damage caused by inadequate packing is not covered by the JBL/UREI warranty. Tape a note to the top of the unit describing the problem, include your name and a phone number where we may contact you if necessary, and give us instructions for returning the product. We will pay return shipping costs on any repair covered under the terms of this warranty.

Field repairs are not normally authorized during the warranty period, and repair attempts by unqualified personnel may invalidate the warranty.

Customers outside the USA should contact their local JBL/UREI Professional Products dealer for warranty assistance. Do not return products to the factory unless you have been given specific instructions to do so.

WARNING: The full AC line voltage, as well as high voltage/high current DC are present at several points inside the chassis. Refer servicing to qualified technical personnel.