

Stereo 800

GENERAL DESCRIPTION AND DATA

The Stereo 800 Power Amplifier from SWR Sound Corporation is a high quality, all purpose stereo power amplifier combining high power with light weight and excellent reliability. The Stereo 800 uses a discreet power supply, quasi-complementary power amp design utilizing four 15 amp, 250 volt bi-polar NPN devices per channel direct coupled to the output via an in-line speaker fuse.

The front panel features include, for each channel, a four segment dot display indicating headroom, separate volume controls and an on/off switch. The back panel features include separate balanced and unbalanced inputs for each channel, a ground lift switch for the balanced inputs, a stereo/bridge switch, and individual slave outputs for each channel so that several power amps may be driven from a single signal source. Speaker outputs include two 1/4" phone jacks, one banana jack and one speaker protection fuse for each channel. Also included on the back panel is an external line (mains) fuse. After the initial design was completed in May, 1991, we spent the following months testing and improving reliability, noise, power bandwidth, and distortion for use in sound reinforcement, studio and stereo systems. For use with musical instruments, we made sure it gave the immediate and full response needed for all instruments played by real musicians in the real world. Another parameter important to musicians is the characteristics of an amp when driven into clipping or saturation. The Stereo 800 sounds very smooth under this condition with no unwanted chirps, whistles and crackling (unless

your speaker produces them mechanically). Remember that constant clipping of any power amplifier can eventually damage loudspeakers of any wattage rating.

Part of the process we used to insure reliability was to heat up the power module to over 100 degrees centigrade (yes, we boiled water droplets) then turned the unit off, then on again with a signal that drove the amplifier well into clipping. We have done this at least 17 times with our original prototype and it still works perfectly. It was after these tests that we added a thermostatically controlled fan to insure thermal stability under any circumstance we could think of.

As a historical note, the first "production" unit was shipped overnight to New York for use by Rob Wasserman touring with Lou Reed. After several hours of rehearsing with the Stereo 800, they compared it to the power amp they used on the last tour. Rob and the sound tech felt the Stereo 800 was superior to the competition to the extent they ordered a second Stereo 800 as a back up rather than use the other unit.

RACK MOUNTING TIPS

If you intend to rack mount your Stereo 800, be sure that after installation that neither of the vent holes on the sides are obstructed. When the fan is in operation, air flows in the unit from the right side (when facing the front panel) and exits from the left side. Try and allow for at least one inch of clearance between the inside of the rack case and the outside of the Stereo 800.

The rubber feet on the bottom of the Stereo 800 were chosen so that the unit may be installed in the bottom position of most racks without having to remove them. In this manner, the rubber feet can act as a shock absorber if the rack is dropped upright. If you need to remove the rubber feet, unscrew the feet with a #2 phillips screwdriver, remove the foot from the screw, and REPLACE THE SCREW IN THE VACANT HOLE. This is VERY IMPORTANT as the screws help to hold the bottom panel assembly to the main chassis. Mechanical damage can occur to your amplifier if these screws are not in place.

If you intend to mount your Stereo 800 in a position other than the bottom of the rack, we recommend supporting the rear of the unit. This can be done by securing a block of wood or metal bracket to the inside of the rack case in such a position that it acts as a "shelf" for the rear of the unit to rest on. Although we added an additional steel support bracket near the rack ears of the Stereo 800, a rack that is dropped from a couple of feet can cause the unit to flex at this point and distort or even crack the chassis.

Once the unit is installed in the rack case, don't forget that your amplifier will be subject to vibration from music and transportation. For this reason, you should periodically remove your Stereo 800 from the rack case for cleaning and making sure all external screws are tight. Remember, nobody needs a loose screw!

ELECTRICAL CONSIDERATIONS

In a rack system with a large power amplifier such as the Stereo 800, placement of effects units and preamplifiers with respect to the power amplifier may be important as hum induction may occur. Generally speaking, install a preamplifier so that it is farthest away from the power amplifier with line level effects units, tuners, etc., in between. Whenever possible, leave an empty rack space between the power amplifier and other accessories in the same rack.

All patch cords should be made as short as possible using high quality shielded cable and plugs. Placement of patch cables should not run next to AC power cords and should not be routed in-between different components. In other words, do not run a patch cable from the front of a preamplifier over the top or under the bottom and then to the rear input of a power amplifier. This can also cause hum in the system. If you must run patch cables in this fashion, experiment with the routing so that ideal placement is achieved.

Another consideration in a rack system is a ground loop caused by the chassis' of several pieces of equipment electrically "tied" together by the metal rack rails. Some equipment is built with this situation in mind, such as the Grand Prix Preamp from SWR. It comes with an option of separating certain electrical grounds from chassis earth grounds thus isolating the chassis from the inner workings. This method is far superior than that of using a three prong to two prong adapter on your AC cord. These adapters "lift" the earth ground from your chassis and could make for an unsafe condition. If you are experiencing a system grounding problem (each piece of equipment works good by itself, but connecting them together causes undesirable hum), and using a ground adapter on one piece of equipment solves the problem, consult the manufacturer of that piece of equipment to see if there is a way to isolate the secondary grounds from the primary or

chassis earth ground.

The fuse ratings for the AC line fuse, internal fuse and speaker fuses were selected so that they would blow (open) quickly under adverse conditions. If, for some reason, outside testing is done for maximum power readings, especially in the bridge mode, one of these fuses may open NOT due to any electrical problem. The fuses will not blow under normal use with music sources, but it is always wise to have spare fuses on hand. Refer to the Speaker fuse and Line fuse section of this manual for proper size and ratings.

We sincerely hope that the Stereo 800 exceeds your expectations in the area for which it was chosen.

FRONT PANEL FEATURES

RACK HANDLES

The rack handles were chosen to comfortably carry your Stereo 800 from place to place. They will also protect the front panel controls in the event the unit is dropped on its face. In some type of racks, the handles may need to be removed before installation. The handles may be removed by the four screws holding them to the front panel.

VOLUME CONTROLS

Individual volume controls are supplied for both the left and right channels. The Volume control affects the amount of signal driving the power amplifier. With the knob indicator in the full counter-clockwise or "min" position, turning the control clockwise will gradually increase the level the power amp sees and thus increase volume. In most cases, we suggest you run the Stereo 800 with the volume controls set near maximum and control the level from your signal source (i.e. preamplifier, console, etc.). This will result in less knobs to worry about and insure repetitive gain structures. In any event, always keep an eye on the dot bar display to make sure the Stereo 800 is not being over driven (+3 red LED continuously lighting) as this can result in damage to your speakers due to DC content in a clipped wave-form. Turning down the Volume control will alleviate this situation.

FOUR SEGMENT DOT BAR DISPLAY

Each channel of the Stereo 800 has its own dot bar display. The Dot Bar Display can be thought of as a "headroom" indicator whose markings are in dB increments. For example, running the Stereo 800 with the "0" yellow LED lighting on the musical peaks or transients gives the user a maximum of 3db of headroom available before the amplifier reaches clipping or maximum undistorted power as indicated by the following red LED marked +3. The user has reached maximum power from the Stereo 800 when the red LED is activated. Running the Stereo 800 with the +3 LED lighting continuously will not harm the power amp but can eventually harm your loudspeaker components. When the Stereo 800 is used in the Bridge or mono mode, both Dot Bar displays will be operational.

POWER ON/OFF SWITCH

Pushing the ON/OFF switch to the top position will activate the electronics in the Stereo 800 as indicated by the red LED being lit.

REAR PANEL FEATURES

INPUTS

NOTE: IF YOU INTEND ON USING THE STEREO 800 IN THE BRIDGE MODE, YOU MUST USE THE BALANCED OR UNBALANCED LEFT CHANNEL INPUT ONLY.

BALANCED INPUTS

Electronically balanced inputs are provided for each side of the Stereo 800. Input impedance for the balanced input is 10K ohms. Maximum input level is 8 volts RMS.

Pin out for the Balanced inputs is:

Pin 1 = ground Pin 2 = + Pin 3 = - (American standard)

GROUND LIFT

A ground lift is provided for the Balanced inputs. In the normal (out) position of the push switch, pin 1 on the XLR connector is grounded. In the Lift (in) position, the ground on Pin 1 is disconnected. When using the Balanced inputs, always be aware of the position of the ground lift switch. This function does not affect the unbalanced inputs.

UNBALANCED INPUTS

One unbalanced input is provided for each channel of the Stereo 800. This input utilizes a 1/4" standard phone jack. Input impedance for the unbalanced input is 33K ohms. Maximum input level is 16 volts RMS.

STEREO/BRIDGE PUSH SWITCH

The Stereo/Bridge switch selects the mode you wish to operate your Stereo 800. Check the position of this switch each time you operate the Stereo 800 to be sure it is in the desired position. In the Stereo (out) position, the Stereo 800 operates as any stereo power amplifier. If you have a stereo source, run two shielded patch cables from the left and right outputs of the source (preamp, electronic crossover, etc.) to the left and right inputs of the Stereo 800. Use the appropriate Volume controls on the front panel to set individual levels. Use the stereo speaker output jacks for your loudspeaker hookups.

To operate the Stereo 800 in the Bridge/Mono mode, the Stereo/Bridge switch should be in the "IN" position. In this mode, one set of banana jacks are provided for your speakers. These are the top two jacks indicated + and - on the back panel in the "speaker outputs" section. Next, make sure your signal source is connected to one of the LEFT speaker inputs (balanced or unbalanced). The volume in the Bridge mode is controlled by the Left volume control on the front panel. Any signal source plugged into the Right inputs will not be heard through your speakers.

CAUTION!!

Be sure that the speakers you connect to the Bridge output can handle the wattage delivered by the Stereo 800. Under clipping, the Stereo 800 delivers a MINIMUM of 700 Watts RMS @ 8 ohms and 800 watts RMS @ 4 ohms. We recommend consulting the manufacturer of your speaker system if you are unsure BEFORE using them in this mode.

SLAVE OUTPUTS

Left and right Slave outputs are provided in the event you want to "daisy chain" more than one power amp at a time. To use the slave output(s) to run an additional power amp, run shielded patch cords from either or both the left and right slave outputs to the inputs of the additional power amp(s). The Volume controls on the Stereo 800 DO NOT affect the level of the Slave outputs.

If you have a mono signal source and wish to run the Stereo 800 in the stereo mode, plug your signal source in the left channels balanced or unbalanced input. Now run a short shielded patch cable from the LEFT slave output to the RIGHT channel unbalanced input. Make sure the Stereo/Bridge switch is in the out (stereo) position.

The Slave outs can also be used as an unbalanced record out or a monitor send.

SPEAKER OUTPUT SECTION

RIGHT AND LEFT SPEAKER FUSES

The left and right speaker fuses are provided to protect the power amplifier from faulty speaker cables, improper loads or hookup procedures. They will also protect your speakers in the unlikely event of a power amp failure. Proper size and rating of the speaker fuses is 3AG (physical size), 10 amp fast

blo. Depending on the load, a large transient or spike sending the power amp well into clipping could cause the speaker fuse to open (blow). It is always wise to carry extra speaker and line fuses with you at all times.

Do not defeat the purpose of this feature by using a fuse of a higher amperage. It can only cause more misery if a fault lies in the system.

RIGHT AND LEFT STEREO SPEAKER JACKS

Two 1/4" phone jacks and one banana jack is provided per channel for speaker hookups and connections. Your speaker cable should be made with a minimum of 18 gauge wire or heavier (the heavier the wire, the LOWER the gauge). When hooking up several speakers, especially if you are using the banana jacks, always double check to make sure all speakers are in phase. Two (or more) speaker cabinets out of phase with each other will cancel and cause a tinny sound with no body. If you are suspicious of phasing, unplug one cabinet. If one cabinet sounds louder than both together, chances are they are out of phase. At this point, check the connections of your phone jacks and/or the polarity of the banana jacks.

Minimum load per channel on the Stereo 800 is 2 ohms. This is the equivalent of 2- 4 ohm cabinets, or 4- 8 ohm enclosures. In the STEREO mode, the Stereo 800 will work on all loads from two ohms to infinity (no speakers at all, which is how your parents would probably prefer it). Therefore, you may operate the Stereo 800 using the speaker outputs of just one channel and not the other. In the MONO/BRIDGE mode, minimum load is FOUR (4) ohms. If you try and use a load of less than 4 ohms in the bridge mode, one or more of the protection fuses will probably blow (open).

In the STEREO mode, and as indicated on the back panel, the banana jacks should be used in the vertical positions (+ or hot being on the top, ground or negative being on the bottom). In the BRIDGE mode, use the top two banana jacks (horizontally). Plus (+) polarity is on the left and minus (-) is on the right. Once again, this is all indicated on the rear panel. The two bottom banana jacks are NOT used in the bridge mode.

CAUTION: As mentioned under the Stereo/Bridge switch section, each time you use your Stereo 800, check the position of this switch (out for stereo, in for bridge). With speakers plugged into the bridge output and the switch in the stereo mode, essentially shorts out both power amps and may result in one of the speaker fuses opening. Speakers plugged into the stereo outs with the switch in the bridge position will cause the left and right channels to be out-of-phase with each other causing your Stereo 800 to sound like a cheap transistor radio.

A/C (MAINS) FUSE

This fuse is provided to protect the amplifier from possible power surges, improper use, etc. It can also open if there is a

fault within the amplifier. If, when you turn on the power switch, the red LED does not come on, check the condition of this fuse. Proper size and rating of the AC fuse is 3AG (physical size), 8 amp slo blo. Do not defeat the purpose of this fuse by using a fuse of a higher amperage rating.

A/C LINE CORD RECEPTACLE

Accepts a standard A/C power cable (supplied with the Stereo 800), used with almost all current musical, professional and household electronic devices. We recommend taking great care when packing up. If you disconnect the AC cord from your amplifier, put the cable in your instrument case, accessory case, etc. If it does become misplaced, replacement will be easy at almost any appliance store, super market or the like.

PLEASE NOTE: the rating for this cable is 3 conductor, 10 amperes minimum. This is a rating of the current capacity of the cable, designated for higher power-drawing devices like amplifiers. If replacement is necessary, or if you wish to buy a longer cable, look for the rating on the cable and be sure it is at least 10 amps.

CAUTIONARY ADVISEMENTS:

CAUTION: TO PREVENT ELECTRIC SHOCK. DO NOT OPEN THE CHASSIS OF THE STEREO 800. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD. DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK HAZARD, REPLACE ALL FUSES WITH THE SAME TYPE OF FUSE AND RATING.