SAE

Components For The Connoisseur

8300 8-Channel Amplifier

Operator's Manual

PLEASE READ FIRST

***CAUTION**: To reduce the risk of electrical shock, do not remove the cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.*

***WARNING**: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.*

WARNING TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

The lightning flash with arrowhead, 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 electrical shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operation maintenance (servicing) instructions in the literature.

PRECAUTIONS:

The SAE 8300 amplifier is a wide-band design with substantial power output capability. Certain precautions must be taken to ensure proper operation.

- Never expose the amplifier to moisture.
- Never plug an input cable into the amplifier while the unit is turned on.
- Never apply the "thumb test" (touching the "hot" lead of the input cable with your finger) to the tip of the input cable or input jack of the SAE amplifier. RF rectification and/or hum will be created and could cause damage to the loudspeakers. SAE will not be responsible for damage to the loudspeakers due to improper use of the equipment.
- Under no circumstances should the output terminals of the SAE 8300 be short-circuited.
- Avoid restricting the airflow around the 8300 amplifier. Good airflow is necessary to ensure proper cooling and trouble-free operation.
- Ensure that the rated impedance of loudspeakers connected to the 8300 amplifier can handle the output power of the amplifier. The warranty on the 8300 amplifier does not cover damage to loudspeakers that have inadequate power handling capabilities.
- Do not stack other system components or any other materials directly on top of the 8300 amplifier. The heat dissipating system of the amplifier depends on free flowing air around its chassis.

SAFETY INSTRUCTIONS

Read all the safety and operating instructions before connection or using the SAE 8300.

- All warnings on the unit and in this operating manual should be adhered to.
- All operating instructions should be followed.
- Do not place/use the unit near water; for example, near a bathtub, washbowl/sink, laundry tub, decorative water features (waterfalls/fountains), in a wet basement or near a swimming pool.
- This unit is not intended for outdoor use.
- This unit should be installed so that its location or position does not interfere with its proper ventilation. For example, it should not be situated on a bed, sofa, rug or similar surface that may block its ventilation openings. It should also not be placed in a built-in enclosure, such as bookcase or cabinet, that may impede the flow of air through its ventilation openings.
- The unit should be situated away from heat sources such as radiators, fireplaces, hot air ducts, heat registers, stoves and/or other devices (including amplifiers) that produce heat.
- The unit should be connected to a power-supply outlet only of the voltage and frequency marked on its rear panel.
- The AC power cord should be routed so that it is not likely to be walked on or pinched, especially near the plug, convenience receptacles or where the cord exits from the unit.
- Clean unit only as recommended in this instruction manual.
- The unit's AC power cord should be unplugged from the wall outlet when the unit is to be unused for a long period of time.
- Care should be taken so that objects do not fall, and liquids are not spilled, into the unit through any openings.
- The unit should be serviced by qualified service personnel only when:
    a. The power cord or plug has been damaged; or
    b. Objects have fallen, or liquid has been spilled, into the unit; or
    c. The unit has been exposed to rain or liquids of any kind; or
    d. The unit does not appear to operate normally or exhibits a marked change in performance; or
    e. The device has been dropped or the enclosure damaged.
- To prevent electric shock, do not use a ground lift plug/adapter. Also, do not use the polarized plug with an extension cord, receptacle or other outlet unless all the blades can be fully inserted to prevent blade exposure.

Amplifier Identification Record

This information is for your records and for future identification of the 8300. Please take a moment to fill out all pertinent data now, and as upgrades and/or options are installed. **Whenever upgrades, inquiries and/or changes are requested, the serial number will be required.**

SERIAL NUMBER _____

DATE PURCHASED _____

DEALER'S NAME _____

DEALER'S ADDRESS/PHONE _____

IMPORTANT

Save all packaging in a dry place away from fire hazards. Your amplifier is a precision electronic instrument and should be properly packaged any time shipment is made. In the unlikely event that you have to return your 8300 to the factory or dealer for service or updating, the original packaging will best protect the unit from shipping damage.

In order to achieve the fullest flexibility and enjoyment from your SAE 8300, we recommend that you read this manual in full before connecting the unit to your audio system.

Note: While the 8300 amplifier is fan cooled, Ii is imperative that the amplifier be operated in a well-ventilated environment and that the immediate external temperature be maintained as specified.

Warning: Each channel of the 8300 is a balanced bridge amplifier, thus the negative speaker terminal is NOT a ground, and cannot be connected to a system ground or a loudspeaker system with a common ground. Consult your speaker manufacturer to ensure that any speaker in your system that will be connected to the SAE 8300 does NOT have internal circuitry with a common ground.

PREFACE

CONGRATULATIONS. You have just acquired one of the most advanced audio components ever developed. Your SAE 8300 8-channel amplifier was designed to set new standards in virtually every performance category. Each channel uses a dual-differential balanced design with a 4-quadrant input stage to nudge the edge of the art in such categories as signal-to-noise ratio, slew rate and low distortion

Other significant advances in the amplifier include:

1. Dual design with separate and independent power transformers, power switches and line cords for each channel bank;
2. High temperature (Class F rated) toroidal transformers;
3. Dual temperature sensors and low-speed cooling fan to maintain proper operating temperatures.
4. Four layer circuit boards used throughout; each with separate power and ground planes;
5. Current feedback for improved amplifier control and virtually unlimited slew rate;
6. Double transistor input stage;
7. Dual-DC Servos virtually eliminate any DC offset;
8. ThermalTrak output devices optimize bias in real-time;
9. All protection circuitry is optically coupled and outside the circuit path. It is self-resetting;

INTRODUCTION

Getting to know your SAE 8300

This SAE 8300 amplifier has been put through a rigorous and unique testing procedure that ensures that it will last for many years with minimal service requirements. This procedure includes the following:

- All assembled circuit boards are given a thorough visual inspection and are then tested in a bench-reference amplifier.
- The tested, assembled circuit boards are then installed in a new 8300 and the whole unit is tested for every function and parameter.
- The unit is put on a burn-in torture rack to test for any possible component failures.
- The amplifier then undergoes a critical listening and functional test.
- The unit has all remaining chassis components installed and then undergoes a complete visual inspection, which assures that all SAE amplifiers meet visual specifications.

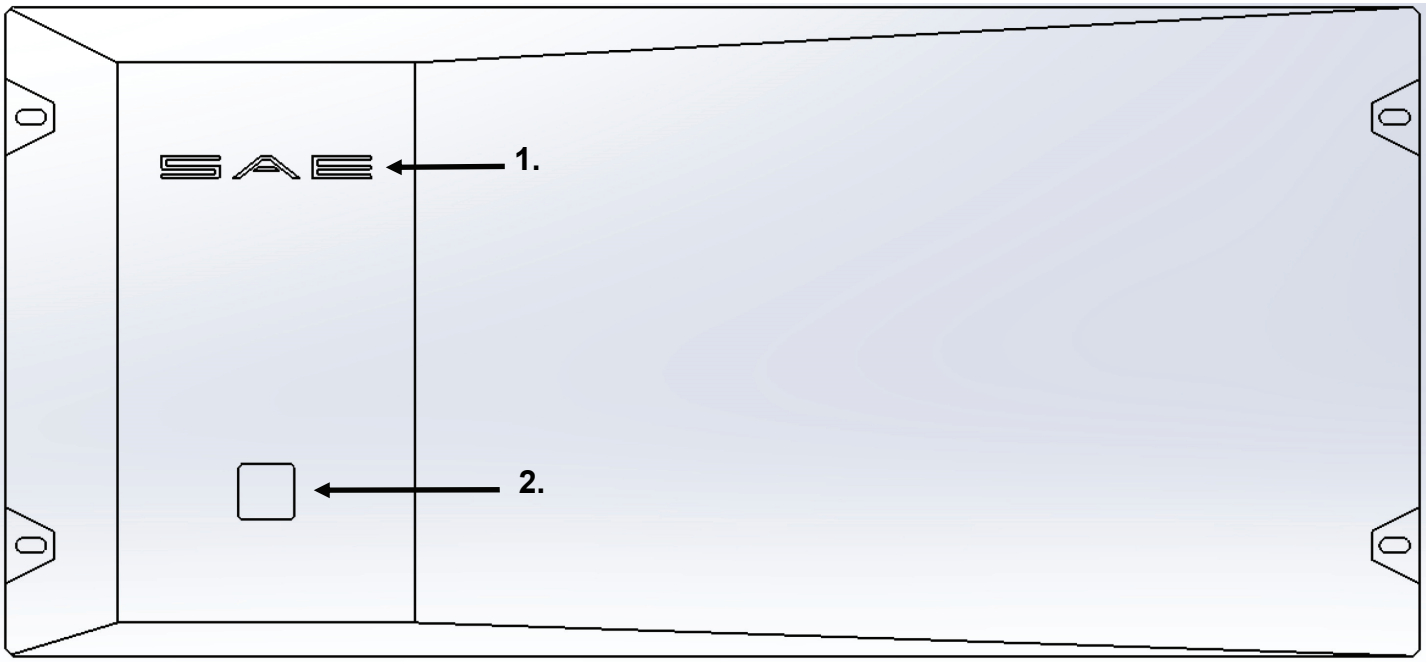
Burn-In/Break-In Time

This unit has a break-in period of about 1 week during which continuous improvement in sound quality will be observed. It is recommended that music be played continuously through the unit during this time to expedite the break-in period.

Reference Manual Conventions

For clarity purposes, references to buttons and LED's will be shown in bold capital letters.

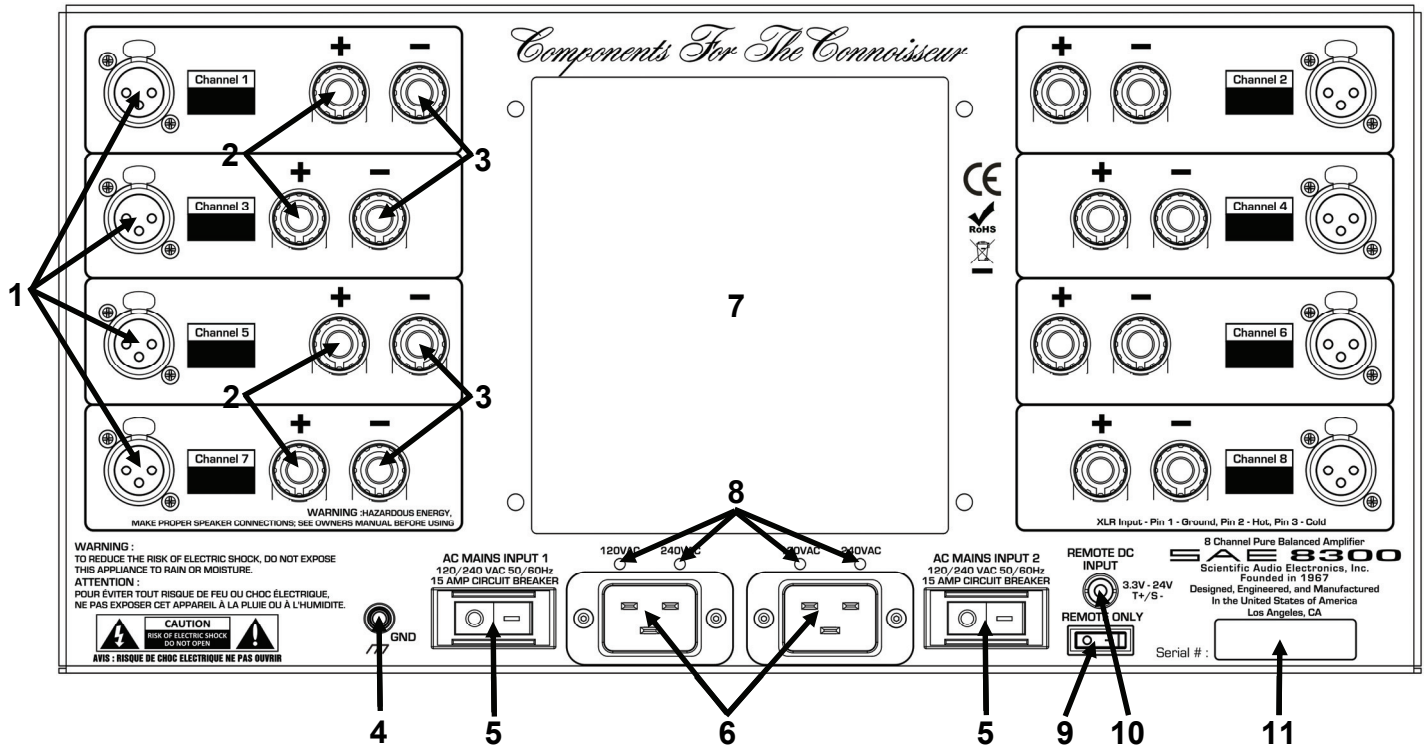
Front Panel Layout



1. ILLUMINATED LOGO. Illuminates when the amplifier exits the STANDBY Mode.

2. STANDBY SWITCH. After the rear panel **MAIN POWER** switch(es) are turned on, touch the front panel button to exit the standby mode and enter the operational mode. Press again to return to **STANDBY**.

Rear Panel Layout



Rear Panel Layout

1. **BALANCED (XLR)** Input jack

2. **POSITIVE (+) BINDING POST** Connect positive speaker wire for one speaker to this post.

3. **NEGATIVE (-) BINDING POST** Connect negative speaker wire for one speaker to this post.

4. **GROUND TERMINAL** Use to interconnect component chassis when necessary.

5. **MAIN POWER SWITCH AND MAGNETIC CIRCUIT BREAKER**. Disconnects AC to one 4-channel bank of the amplifier. It is recommended that this be left ON at all times during regular use with the exception of whenever cables are connected/disconnected or when the unit is not going to be used for an extended period of time. In the rare case where amplifier protection is needed, this switch may turn the unit off. An independent duplicate switch controls the second 4-channel amplifier bank.

6. **AC POWER INLET(S)** Use the included power cords to connect each amplifier bank to an appropriate AC power source.

7. **FAN OUTLET.** Forced air used for cooling exits the amplifier here.

8. **VOLTAGE INDICATORS** The 8300 amplifier is equipped with circuitry that automatically detects the AC voltage and sets the amplifier appropriately. These indicators show the discovered voltage. 120VAC is shown for line voltage of 100 to 130V; 240VAC is shown for 200 to 260V. Please operate both amplifier banks from the same voltage.

9. **REMOTE TURN-ON ONLY SWITCH** Disables the front power switch. When engaged the amplifier will only turn-on when the main power switch is engaged ***and*** a remote turn-on signal is received at the Remote DC Input.

10. **REMOTE DC INPUT JACK** With the main power switch(es) set to ON, when the rear panel **REMOTE DC INPUT JACK** receives a 5-12 VDC signal the amplifier will exit the Standby mode and turn on. When the signal is removed, the amplifier will return to Standby.

11. **SERIAL NUMBER** Shows the unit's serial number.

OPERATION

Before turning on the 8300, ensure that all precautions and warnings have been carefully reviewed and adhered to. Damage to the amplifier caused by improper operation, wiring and/or ventilation will not be covered under warranty and SAE will not be liable for any consequential damage or loss.

Connecting your 8300 Amplifier

With the amplifier's rear panel main power switches turned off, connect the signal outputs of the preamp/processor to the input (XLR) of the amplifier. If your preamplifier has only RCA outputs, you will need to use adapter plugs or adapter cables to convert RCA to XLR. Please check with your dealer if you have questions concerning appropriate adapters. Connect the amplifier's output to the input of the speaker that is intended to be driven. Please refer to figure 5.

Connect a 12V trigger source to the **STANDBY** trigger input of the 8300 using a cable with a 3.5 mm monophonic plug to enable remote turn-on and turn-off.

Setup and Operation

Turn the output volume of the preamp/processor, or other source device, down all of the way.

Turn on SAE 8300's **MAIN POWER** switches, located on the rear panel.

When the end of the switch with | indicating "ON" is depressed that half of the amplifier is in the STANDBY mode. When in standby, the amplifier draws less than 1 watt from the wall outlet.

Touch the front-panel power button. Both the switch and the SAE logo illuminate. After a wait of about 45 seconds, the soft-start turn-on sequence is complete and the amplifier is ready for use.

Slowly bring the output volume of the preamp/processor up to an audible level.

Remote Triggers

When the rear panel **STANDBY** trigger jack receives a 5-12 VDC signal, the 8300 will change its operating state from Standby to On. When the signal is removed, the amplifier will return to **STANDBY.**

In some installations the front panel switch is not available for normal operation. In that case it may be desirable to engage the rear panel **REMOTE ONLY** switch. In this case, turn-on the rear panel power switch. With the Trigger Cable attached to the **REMOTE DC INPUT JACK**, press the front panel power switch to turn on the unit and then engage the **REMOTE ONLY** switch. The front panel switch is disabled and the amplifier will only power on or off via the **REMOTE TRIGGER**.

Appendix A Troubleshooting Guide

If the 8300 should function abnormally during operation, please review the items in the following checklist. Please be sure to thoroughly check all other connected components such as speakers and preamplifiers, as well as cables. If the problem persists, please consult your dealer or distributor.

Symptom	Possible Cause(s)	Remedy
No power or front panel lights and no sound.	The power cable is not inserted 100% into AC input connector.	Ensure that the AC cord(s) are fully inserted into the amplifier and that the wall outlet is active.
	Circuit breaker is open (AC outlet).	Check the AC outlet circuit breaker and reset, if necessary, or contact your dealer.
No audio output.	Overheating, DC at output, Catastrophic failure	The amplifier will turn off with the rear panel switch indicating O. For any but a catastrophic failure, the amplifier can be reset by removing the fault and completing the turn-on sequence again.
Warm	Normal operation	
Hot	Normal operation	

Appendix B Specifications

Analog Audio Inputs	One Balanced (XLR) jack per channel
Input Impedance	47 kΩ. Balanced for each phase
Input Sensitivity	2.82V RMS input for 300W into 8 ohms
Gain	27.8 dB
Polarity	Balanced; Pin-2 = Positive, Pin-3 = Negative for Non-Inverting Output
Speaker Outputs	Binding posts 2 per channel
Modes /Process	Standby: Amplifier is ready to be turned on via front panel switch or remote trigger.
	Overcurrent, D.C., and/or thermal protection: Amplifier will cycle.
	Catastrophic D.C. or output stage failure: Amplifier will shut down.

Power Output

Per Channel, All Channels Driven	8 ohms	4 ohms
20 Hz-20 kHz, < 0.01% THD	300 WRMS	450 WRMS
1 kHz, 0.01% THD, (Watts)	350 WRMS	500 WRMS
1 kHz, 1% THD	360 WRMS	490 WRMS
CEA 2006 1 kHz Burst Power	500 WRMS	750 WRMS

Distortion

THD + N, 20 Hz—20 kHz	0.03%	0.03%
THD + N at 1 kHz, 1W	0.005%	0.005%

Intermodulation Distortion (SMPTE or Twin-tone)	Less than 0.03%

Frequency Response	+0, -3dB, 5 Hz to 150 kHz, 8 Ω
Damping factor	>600 at 100 Hz;
Signal to noise ratio	125 dB referenced to rated output (A-Weighted)
Slew rate	>60V per microsecond
Crosstalk	> 110 dB
Power Requirements	117V AC; 230V; 50/60 Hz
Power Consumption	Less than 1W x 2 at Standby; 1800W maximum x 2
Trigger Input	3-24 VDC; Steady State
Dimensions (W x H x D)	19” x 9 1/16 x 20 1/4” (483 mm x 222mm x 508 mm) Add 1 inch (25.4mm) for feet and 1 1/2 inches (38mm) for connectors.
Weight	112 lbs; 51 kG

90 DAY LIMITED WARRANTY TERMS AND CONDITIONS

(7-Year Optional Extended Service Contract)

SAE Limited Warranty

Terms and Conditions
All SAE products are warranted against defects in materials and workmanship for 90 days from the date of purchase by the original owner. The date of purchase shall be established by the original owner presenting to the SAE Customer Service Facility the original owner's purchase receipt or sales slip showing from whom the product was purchased, the date of purchase and the purchase price of the unit.

In the event that proof of purchase cannot be established as stated in the preceding sentence, the warranty period shall commence on the date of manufacture, provided the serial number on the unit has not been altered in any manner.

During the warranty period, SAE will repair, or at its option, replace at no charge, components that prove to be defective provided the product is returned in accordance with the shipping instructions that are contained in the unit. The unit is to be sent PREPAID in the original carton and packing along with a detailed description of the problem to SAE in the event it needs factory servicing. SAE will return it prepaid to you upon completion of the service.

Optional Extended Warranty Program
The standard 90-Day Limited Warranty will be extended to a 7-Year Limited Warranty (on all Power Amplifiers) if the following conditions are met:

The SAE product is purchased from an authorized SAE reseller. The customer completes the registration card. The customer returns the completed registration card AND copy of original bill of sale to SAE within 14 days of purchase.

This extended warranty is transferable to subsequent purchasers as long as all Optional Extended Warranty conditions are met.

Transferability
The above warranties are transferable to subsequent owners as long as all the conditions are met under the Optional Extended Warranty Program. The warranty is not transferable if the unit(s) was originally purchased from an unauthorized seller.

The above warranties do not apply if the product has been damaged by accident or misuse or as a result of modification by other than the SAE factory service facility.

SAE shall not be held liable for incidental or consequential damages of any kind arising from the sale or use of its products. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THERE ARE NO WARRANTIES GIVEN BY SAE THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ALL IMPLIED WARRANTIES OF FITNESS FOR PURPOSE SOLD, MERCHANTABILITY, DESCRIPTION, QUALITY PRODUCTIVENESS OR ANY OTHER MATTERS ARE LIMITED TO THE TERM OF THE EXPRESS WARRANTIES HEREIN STATED.

Some states do not allow limitations on how long an implied warranty may last, so the above limitation may not apply to you.

Obligation to Make Changes
Products are sold on the basis of specifications applicable at the time of sale. SAE shall have no obligation to modify or to update products once sold. This warranty gives you specific rights and you may also have other rights that vary from state to state. This warranty is applicable only in the United States.

Warranty Outside the United States
SAE has formal distribution agreements in many countries. The SAE importer in those countries has assumed the responsibility for servicing SAE products. Please contact the dealer or distributor in the country where you purchased your product for service issues.