



OPERATION MANUAL



SB-300



SB-500



SB-850

This manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance.

The information provided in this manual was deemed accurate as of the publication date.

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Important Safety Instructions

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with a dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with a cart, stand, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 15) To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.



TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP OR BOTTOM COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



MAGNETIC FIELD

CAUTION! Do not locate sensitive highgain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.



WATCH FOR THESE SYMBOLS:

The lightning bolt triangle is used to alert the user to the risk of electric shock.



The exclamation point triangle is used to alert the user to important operating or maintenance instructions.



CE Declaration of Conformity

Equipment Type: Audio Power Amplifiers

Model Names: SB-300,SB-500,SB-850

This product has been assessed against the following applicable Standards,

EMC (89/336/EEC Electromagnetic compatibility):

EN55013:2001 Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement

EN 55020:2002 Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement

EN 61000-3-2:2000

Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)

EN 61000-3-3:1995

Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

LVD (73/23/EEC Low Voltage Directive)

EN60065:2002 Audio, Video and similar electronic-safety requirements.



Table of Contents

Important Safety Instructions	2
Declaration of Conformity	3
1 Welcome	5
1.1 Features	5
1.2 How to Use This Manual	5
2 Setup	6
2.1 Unpack Your Amplifier	6
2.2 Install Your Amplifier	6
2.3 Ensure Proper Cooling	6
2.4 Choose Input Wire and Connectors	7
2.5 Choose Output Wire and Connectors	7
2.6 Wire Your System	8
2.6.1 SB-300/SB-500 Stereo Mode	8
2.6.2 SB-300/SB-500 Parallel Mode	9
2.6.3 SB-300/SB-500 Bridge-Mono Mode	10
2.6.4 limiter Mode	10
2.6.5 SB-850 Stereo Mode	11
2.6.6 SB-850 Parallel Mode	12
2.6.7 SB-850 Bridge-Mono Mode	13
2.6.8 limiter Mode	13
2.7 Connect to AC Mains	14
2.8 Startup Procedure	14
3 Operation	15
3.1 Precautions	15
3.2 SB-300/SB-500 Front Panel Controls and Indicators	16
3.3 SB-300/SB-500 Back Panel Controls and Connectors	16
3.4 SB-850 Front Panel Controls and Indicators	17
3.5 SB-850 Back Panel Controls and Connectors	17
4 Advanced Features and Options	18
4 Advanced Features and Options	19



SB-300

4-ohm Stereo	150W
8-ohm Stereo	100W
8-ohm Bridge-Mono	300W

*1KHz Power: refers to maximum average power in watts at 1KHz with 1.0% THD.

SB-500

4-ohm Stereo	250W
8-ohm Stereo	150W
8-ohm Bridge-Mono	500W

*1KHz Power: refers to maximum average power in watts at 1KHz with 1.0% THD.

SB-850

4-ohm Stereo	425W
8-ohm Stereo	280W
8-ohm Bridge-Mono	850W

*1KHz Power: refers to maximum average power in watts at 1KHz with 1.0% THD.



1 Welcome

The SB Series of power amplifiers from W AUDIO represents a new era in affordable, quality power amplification. The line consists of 3 models in a uniform, rugged chassis, incorporating the best of tried-and-true design principles and innovative features.

Modern power amplifiers are sophisticated pieces of engineering capable of producing extremely high power levels. They must be treated with respect and correctly installed if they are to provide the many years of reliable service for which they were designed.

In addition, SB Series amplifiers include a number of features which require some explanation before they can be used to their maximum advantage.

Please take the time to study this manual so that you can obtain the best possible service from your amplifier.

1.1 Features

- Accurate, uncolored sound with very low distortion for the best in music and voice reproduction.

- Bridge-mono/stereo mode switch allows your amplifiers/speakers to be set up in the configuration that best suits your needs.
- Advanced protection circuitry guards against shorted outputs, open circuits, DC, general overheating and internal faults.
- Extremely versatile, handling a wide range of speaker impedances and outputs.
- Features Limit Switch
- Switchable input sensitivity.
- Proportional speed fan optimizes cooling efficiency.
- Can be mounted in EIA standard 19-in. Rack, or stacked on top of each other.
- Features both standard 4-way binding posts and genuine Speakon output connectors. XLR inputs.

1.2 How to Use This Manual

This manual provides you with the necessary information to safely and correctly setup and operate your amplifier. It does not cover every aspect of installation, setup or operation that might occur under every condition.

We strongly recommend you read all instructions, warnings and cautions contained in this manual.



2 Setup

2.1 Unpack Your Amplifier

Please unpack and inspect your amplifier for any damage that may have occurred during transit. If damage is found, notify the transportation company immediately. Save the shipping carton as evidence of damage for the shipper's inspection.

We also recommend that you save all packing materials so you will have them if you ever need to transport the unit. **Never ship the unit without the factory pack.**

YOU WILL NEED (not supplied):

- Input wiring cables
- Output wiring cables

Rack for mounting amplifier (or a stable surface for stacking)



WARNING: Before you start to set up your amplifier, make sure you read and observe the Important Safety Instructions found at the beginning of this manual.

2.2 Install Your Amplifier



CAUTION: Before you begin, make sure your amplifier is disconnected from the power source, with the power switch in the “off” position and all level controls turned completely down (counterclockwise).

Use a standard 19-inch (48.3 cm) equipment rack (EIA RS-310B). See Figure 2.1 for amplifier dimensions.

You may also stack amps without using a cabinet.

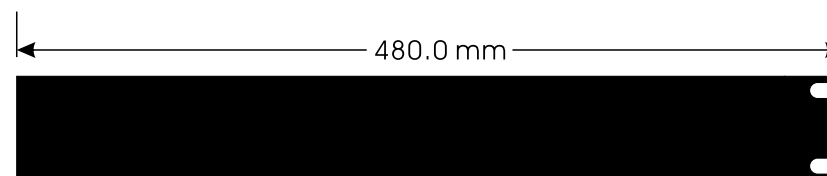
NOTE: When transporting, amplifiers should be supported at both front and back.

2.3 Ensure Proper Cooling

When using an equipment rack, mount units directly on top of each other. Close any open spaces in rack with blank panels. DO NOT block front, rear or side air vents. The side walls of the rack should be a minimum of two inches (5.1 cm) away from the amplifier sides, and the back of the rack should be a minimum of four inches (10.2 cm) from the amplifier back panel.



SB-300/SB-500



SB-850

Figure 2.1
Dimensions

2 Setup

2.4 Choose Input Wire and Connectors

W audio recommends using pre-built or professionally wired, balanced line (two-conductor plus shield), 22-24 gauge cables and connectors. Depending upon which amplifier input you choose, you should use either 3-pin male XLR connectors, TRS phone connectors, or terminal forks at the amplifier inputs.

Unbalanced line may also be used but may result in noise over long cable runs.

Note: Amplifier input connectors not used for audio signal input may be used for daisy-chaining of the audio signal to other components.

Figure 2.2 shows connector pin assignments for balanced wiring, and Figure 2.3 shows connector pin assignments for unbalanced wiring.

NOTE: Custom wiring should only be performed by qualified personnel.

2.5 Choose Output Wire and Connectors

W audio recommends using pre-built or professionally wired, highquality, two- or four-conductor, heavy gauge speaker wire and connectors. You may use two 4-pole Speakon connectors (Figure 2.4 and Table 1) or banana plugs, spade lugs. To prevent the possibility of short-circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.

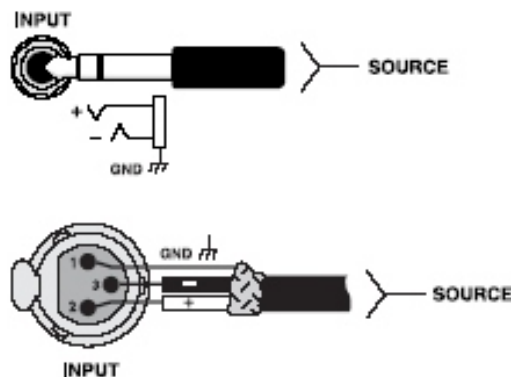


Figure 2.2
Balanced Input
Connector Wiring

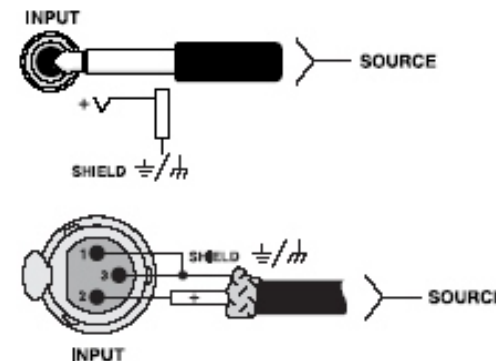
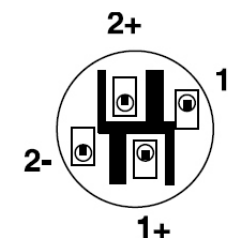


Figure 2.3
Unbalanced Input
Connector Wiring



Figure 2.4
Left: Speakon Output Connector on Back Panel
Right: Speakon Cable Connector



SPEAKON ASSIGNMENT			
OUTPUT A		OUTPUT B	
1+ . 1-	CH A	1+ . 1-	CH B
2+ . 2-	CH B		
1+ . 2+	BRIDGE		

Using the guidelines below, select the appropriate size of wire based on the distance from amplifier to speaker.

Distance	Wire Size
up to 25 ft.	16 AWG
26-40 ft.	14 AWG
41-60 ft.	12 AWG
61-100 ft.	10 AWG
101-150 ft.	8 AWG
151-250 ft.	6 AWG

CAUTION: Never use shielded cable for output wiring.



2 Setup

2.6 Wire Your System

2.6.1 SB-300/SB-500 Stereo Mode

Typical input and output wiring is shown in Figure 2.5.

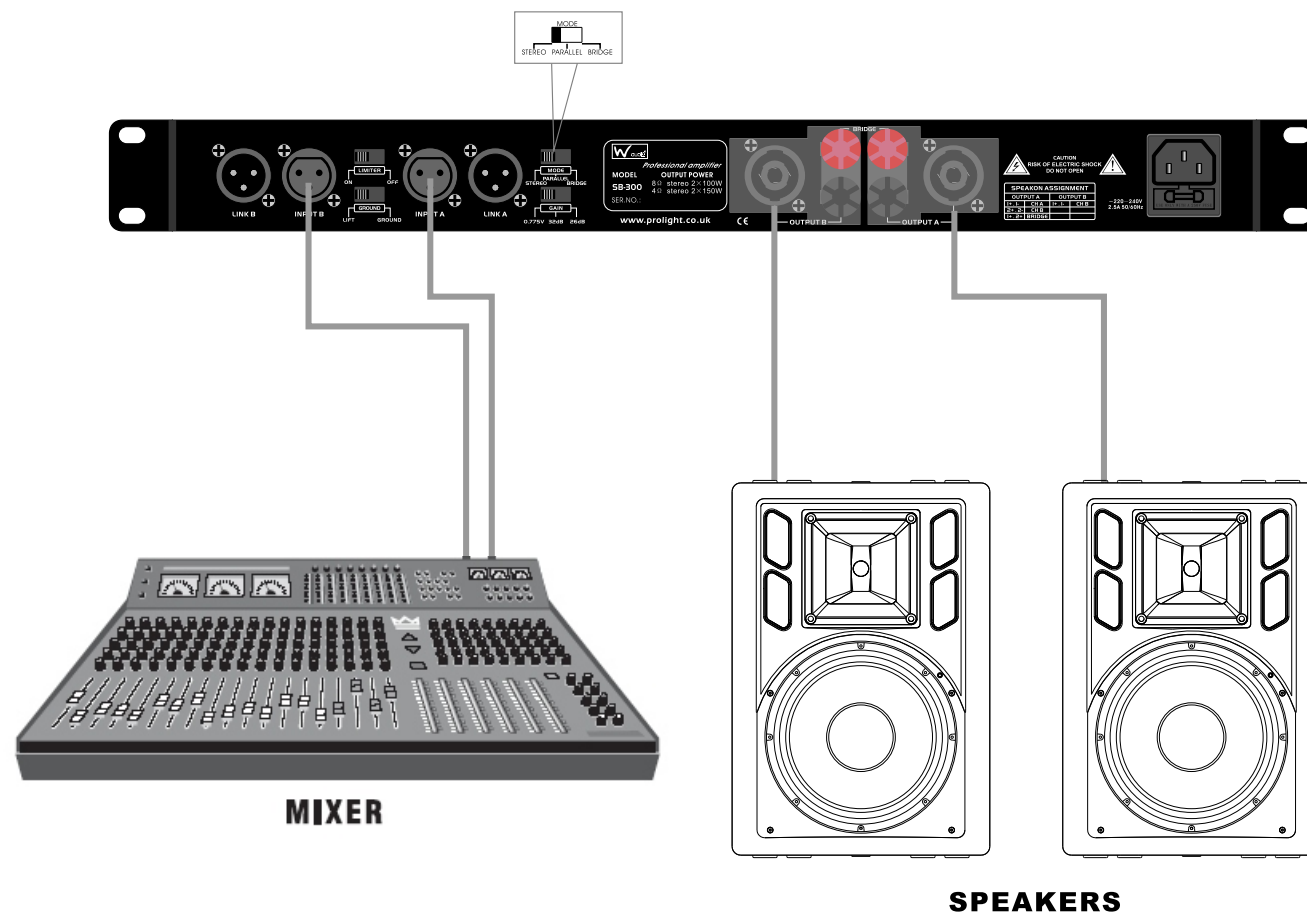


Figure 2.5
System Wiring, Stereo Mode

SB Series Power Amplifiers

2 Setup

2.6.2 SB-300/SB-500 Parallel Mode

Typical input and output wiring is shown in Figure 2.6.

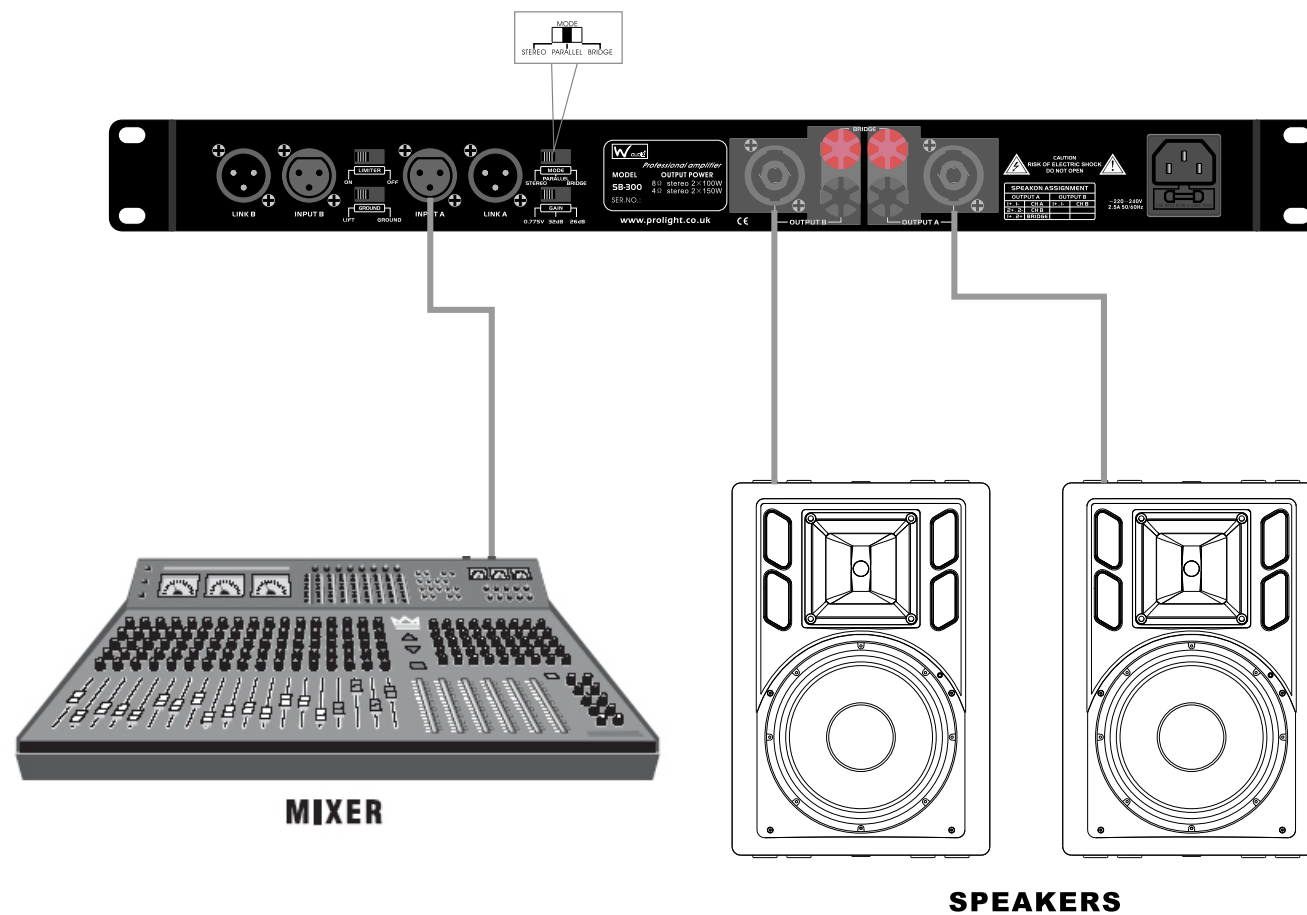


Figure 2.6
System Wiring, Parallel Mode



2 Setup

2.6.3 SB-300/SB-500 Bridge-Mono Mode

Typical input and output wiring is shown in Figure 2.7.

2.6.4 Limiter

To avoid serious clipping when long term operation at dynamic signal input.

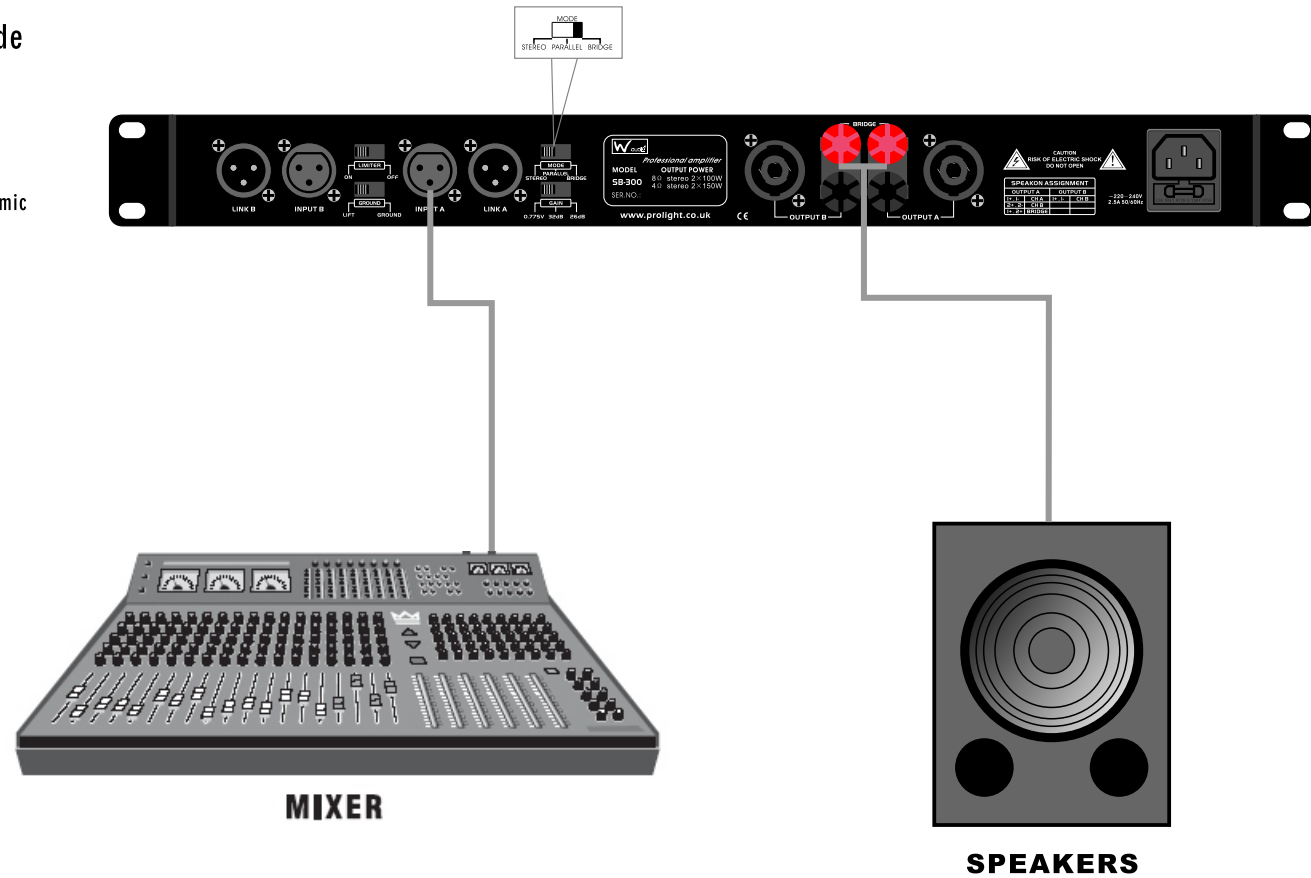


Figure 2.7
System Wiring, Bridge-Mono Mode

SB Series Power Amplifiers

2 Setup

2.6.5 SB-850 Stereo Mode

Typical input and output wiring is shown in Figure 2.8.

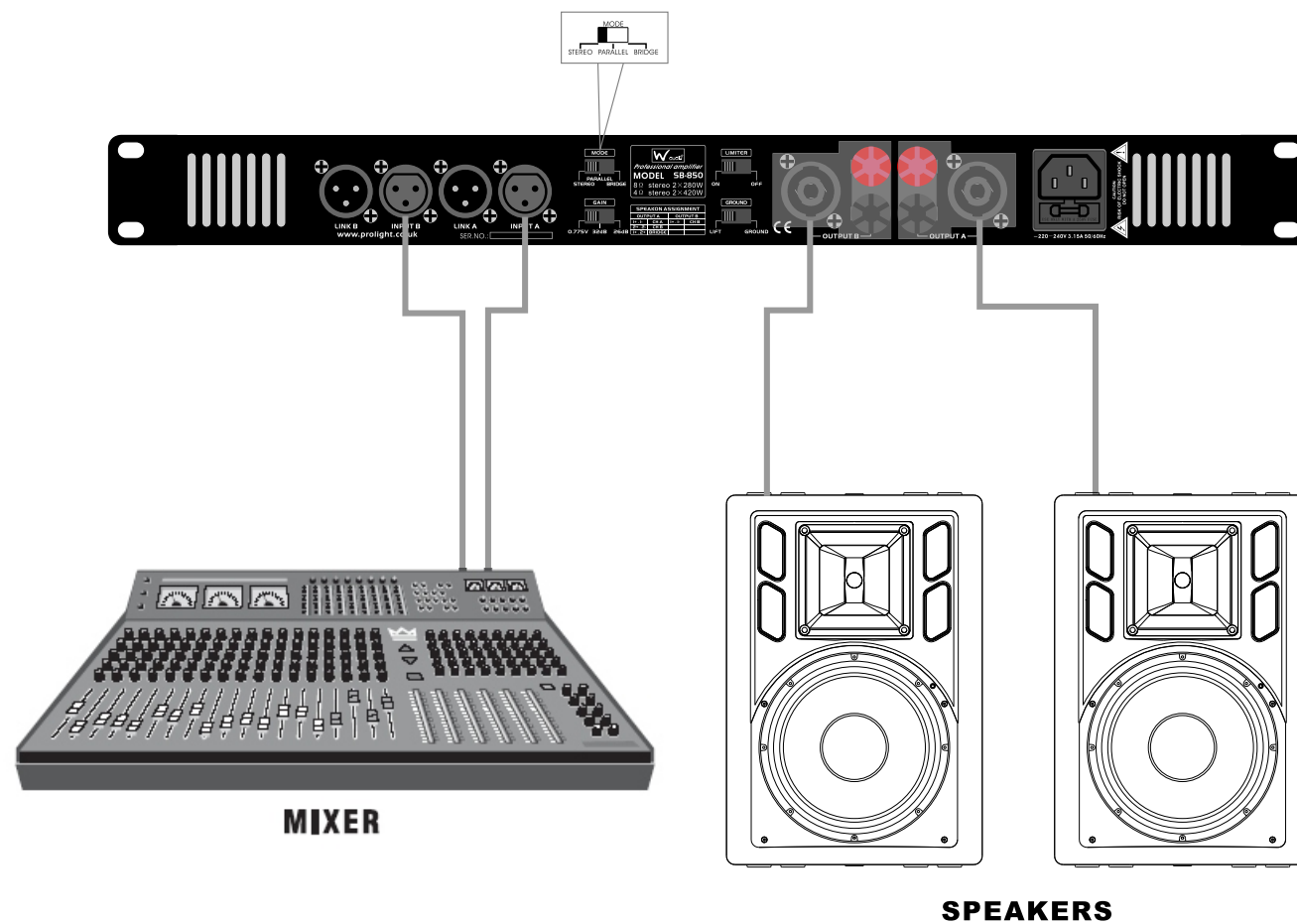


Figure 2.8
System Wiring, Stereo Mode



2 Setup

2.6.6 SB-850 Parallel Mode

Typical input and output wiring is shown in Figure 2.9.

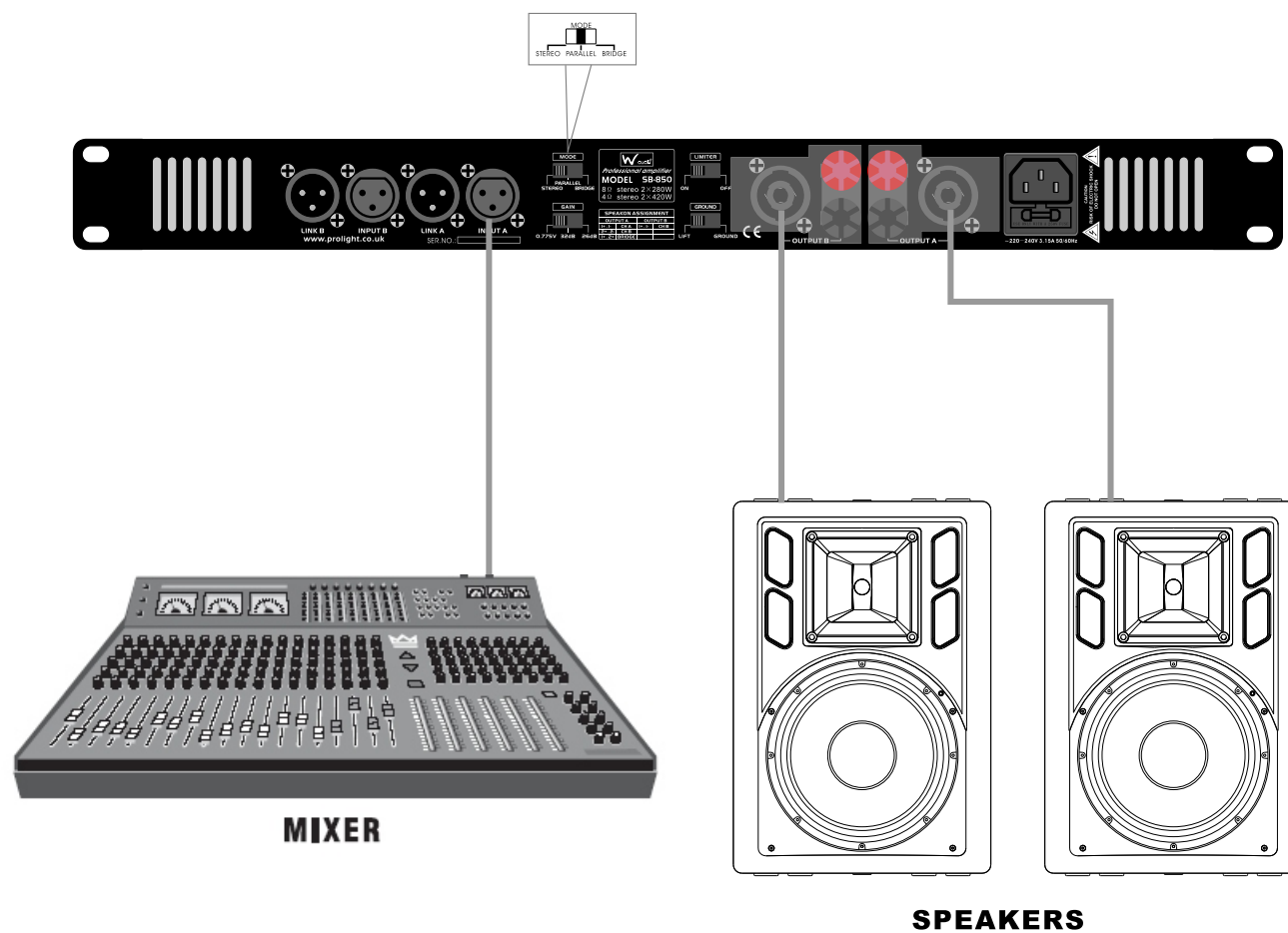


Figure 2.9
System Wiring, Parallel Mode



2 Setup

2.7 Connect to AC Mains

Connect your amplifier to the AC mains power source (power outlet) with the supplied AC power cable. First, connect the IEC end of the cable to the IEC connector on the amplifier; then, plug the other end of the cable to the AC mains.



WARNING: The third prong of this connector (ground) is an important safety feature. Do not attempt to disable this ground connection by using an adapter or other methods.

Amplifiers don't create energy. The AC mains voltage and current must be sufficient to deliver the power you expect. You must operate your amplifier from an AC mains power source with not more than a 10% variation above or a 15% variation below the amplifier's specified line voltage and within the specified frequency requirements (indicated on the amplifier's back panel label). If you are unsure of the output voltage of your AC mains, please consult your electrician.

2.8 Startup Procedure

Use the following procedure when first turning on your amplifier:

1. Turn down the level of your audio source.
2. Turn down the level controls of the amplifier.
3. Turn on the "Power" switch. The Power indicator should glow.
4. Turn up the level of your audio source to an optimum level.
5. Turn up the Level controls on the amplifier until the desired loudness or power level is achieved.
6. Turn down the level of your audio source to its normal range.

If you ever need to make any wiring or installation changes, do not forget to disconnect the power cable.

3 Operation

3.1 Precautions

Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

1. Before use, your amplifier first must be configured for proper operation, including input and output wiring hookup. Improper wiring can result in serious operating difficulties.
2. Use care when making connections, selecting signal sources and controlling the output level. The load you save may be your own!
3. Do not short the ground lead of an output cable to the input signal ground. This may form a ground loop and cause oscillations.



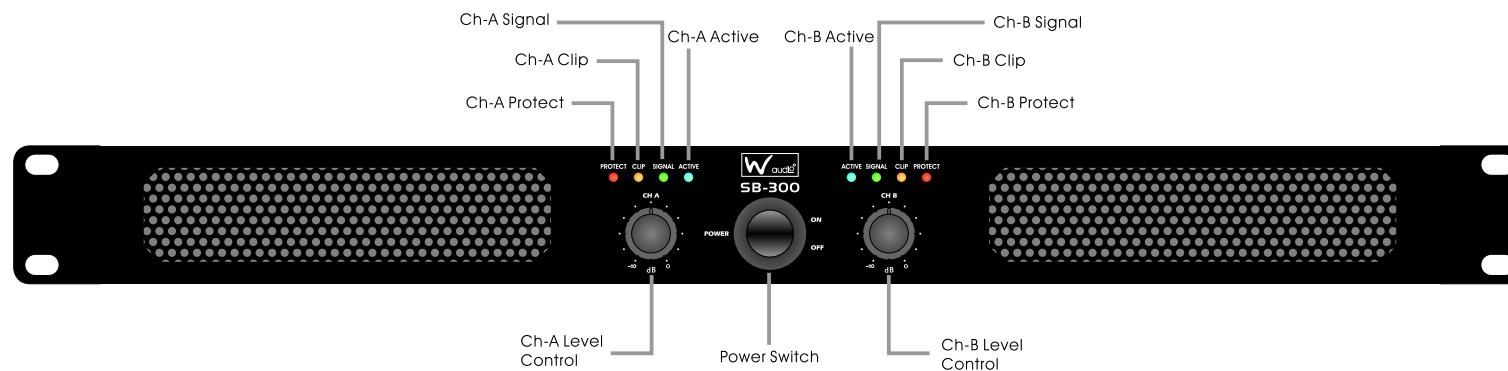
4. WARNING: Never connect the output to a power supply, battery or power main. Electrical shock may result.

5. Tampering with the circuitry, or making unauthorized circuit changes may be hazardous and invalidates the warranty.
6. Do not operate the amplifier with the red Clip LEDs constantly flashing.
7. Do not overdrive the mixer, which will cause clipped signal to be sent to the amplifier. Such signals will be reproduced with extreme accuracy, and loudspeaker damage may result.
8. Do not operate the amplifier with less than the rated load impedance. Due to the amplifier's output protection, such a configuration may result in premature clipping and speaker damage. Remember: W AUDIO is not liable for damage that results from overdriving other system components.

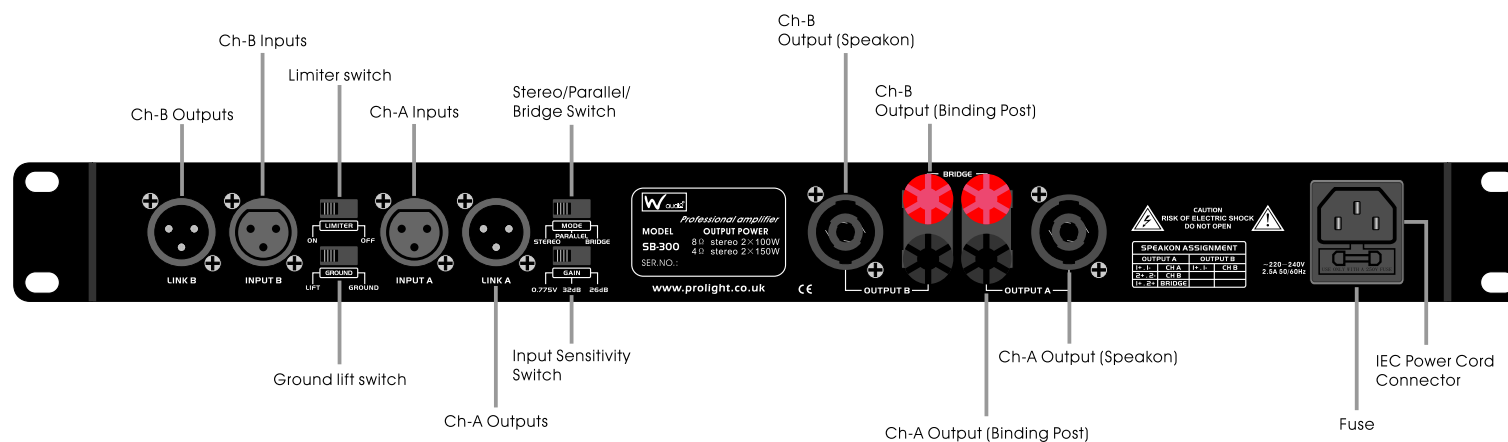
Remember: W audio is not liable for damage that results from overdriving other system components.

3 Operation

3.2 SB-300/SB-500 Front Panel Controls and Indicators



3.3 SB-300/SB-50 Back Panel Controls and Connectors

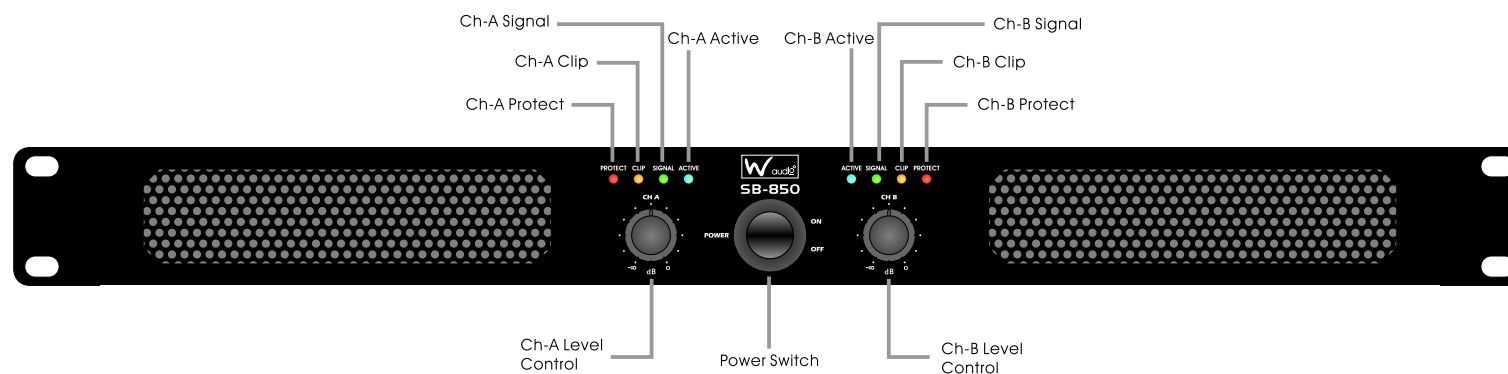


SB Series Power Amplifiers

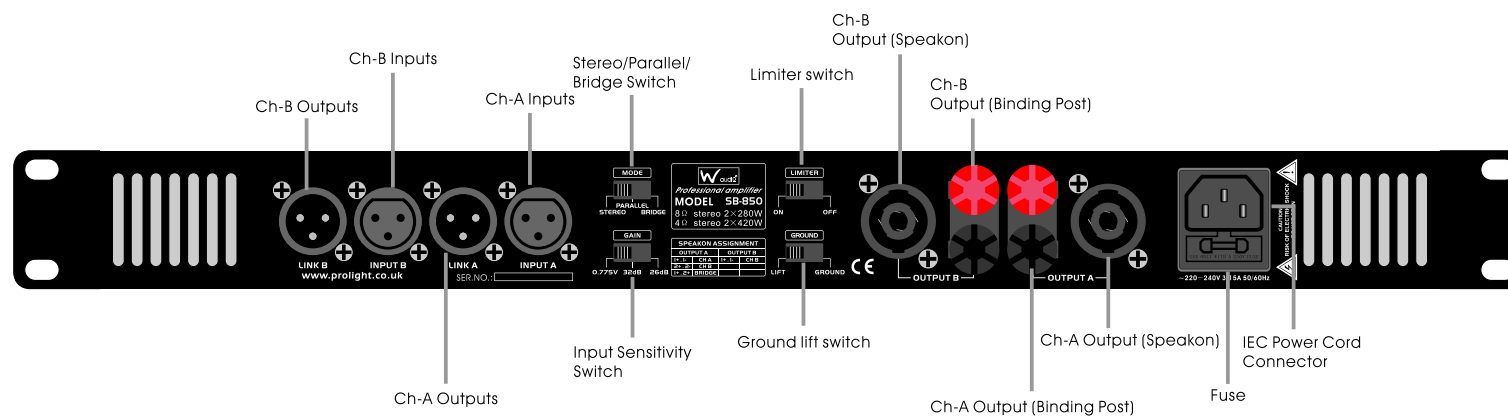


3 Operation

3.4 SB-850 Front Panel Controls and Indicators



3.5 SB-850 Back Panel Controls and Connectors





4 Specifications

Minimum Guaranteed Power	SB-300	SB-500	SB-850
1 kHz with 0.5% THD Stereo, 4 ohms (per ch.) Stereo, 8 ohms (per ch.) Bridge mono, 8 ohms	150W 100W 300W	250W 150W 500W	425W 280W 850W
Performance	SB-300	SB-500	SB-850
Sensitivity (volts RMS) for full rated power at 8 ohms	0.775V, 32dB, 26dB	0.775V, 32dB, 26dB	0.775V, 32dB, 26dB
Frequency Response (at 1 watt, 10Hz - 30 kHz)	+0dB, -0.5dB	+0dB, -0.5dB	+0dB, -0.5dB
Phase Response (at 1 watt, 20Hz to 20 kHz)	+5° , -15°	+5° , -15°	+5° , -15°
Signal to Noise Ratio below rated power A-weighted	≥106dB	≥106dB	≥107dB
Total Harmonic Distortion (THD) at 1 full bandwidth power, from 20 Hz to 20 kHz	≤0.05%	≤0.05%	≤0.05%
Intermodulation Distortion (IMD) 60 Hz and 7 kHz at 4:1, from full rated output to -35 dB	≤0.05%	≤0.05%	≤0.05%
Damping Factor (8 ohm): 20 Hz to 400 Hz	≥500	≥500	≥600
Crosstalk (below rated power, 20 Hz to 20 kHz)	≥-60dB	≥-60dB	≥-60dB
Common Mode Rejection (CMR)(20 Hz to 1 kHz)	≥-65dB	≥-65dB	≥-65dB
DC Output Offset (Shorted input)	≤10mV	≤10mV	≤10mV
Input Impedance (nominally balanced, nominally unbalanced)	20 kilohms, 10 kilohms	20 kilohms, 10 kilohms	20 kilohms, 10 kilohms
Voltage Gain (at maximum level setting)	34.3dB gain at 0.775volt sensitivity	36dB gain at 0.775volt sensitivity	36dB gain at 0.775volt sensitivity

4 Specifications

Performance	SB-300	SB-500	SB-850
Load Impedance (Note: Safe with all types of loads) Stereo Bridge Mono	4-8 ohms 8 ohms	4-8 ohms 8 ohms	4-8 ohms 8 ohms
AC Line Voltage and Frequency Configurations Available ($\pm 10\%$)	$\sim 220-240\text{ V}$ and 50/60 Hz	$\sim 220-240\text{ V}$ and 50/60 Hz	$\sim 220-240\text{ V}$ and 50/60 Hz
AC Line Current (both amplifiers draw no more than 90 watts at idle)	2.5A	3.5A	4.5A
Construction	SB-300	SB-500	SB-850
Ventilation	Flow-through ventilation from front to back	Flow-through ventilation from front to back	Flow-through ventilation from front to back
Cooling	Proportional speed fan	Proportional speed fan	Proportional speed fan
Dimensions	H $\times$ W $\times$ D: 44mm $\times$ 483mm $\times$ 350mm	H $\times$ W $\times$ D: 44mm $\times$ 483mm $\times$ 350mm	H $\times$ W $\times$ D: 44mm $\times$ 483mm $\times$ 480mm
Weight Net Shipping	8kg 9kg	9kg 10kg	14kg 15kg

