



OPERATION MANUAL



ZENITH SERIES

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, 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 cable from being walked on or pinched, particularly at plugs, 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 high gain 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: ZENITH 3000, ZENITH 2400, ZENITH 1800

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.



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Professional Power Amplifier

ZENITH 3000

4-ohm Stereo	1600W
8-ohm Stereo	1000W
8-ohm Bridge-Mono	3000W

*1KHz Power: refers to maximum average power in watts at 1KHz with 0.5% THD.



ZENITH 2400

4-ohm Stereo	1280W
8-ohm Stereo	800W
8-ohm Bridge-Mono	2400W

*1KHz Power: refers to maximum average power in watts at 1KHz with 0.5% THD.

ZENITH 1800

4-ohm Stereo	960W
8-ohm Stereo	600W
8-ohm Bridge-Mono	1800W

*1KHz Power: refers to maximum average power in watts at 1KHz with 0.5% THD.

1 Welcome

The ZENITH Series of power amplifiers from **W audio** represents a new era in affordable, quality power amplification.

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, ZENITH 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, uncoloured 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, mismatched loads, general overheating, high-frequency overloads and internal faults.

- Extremely versatile, handling a wide range of speaker impedances and outputs.

- Features Limit Switch

- Low Cut by 24dB/Octave Linkwitz-Riley Filter

- Low Pass by 24dB/Octave Linkwitz-Riley Filter

- Switchable input sensitivity.

- Proportional speed fan optimizes cooling efficiency.

- Can be mounted in standard 19 inch rack, or stacked on top of each other.

- Features both standard 4-way binding posts and genuine Neutrik 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 packaging.

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. 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 the 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.

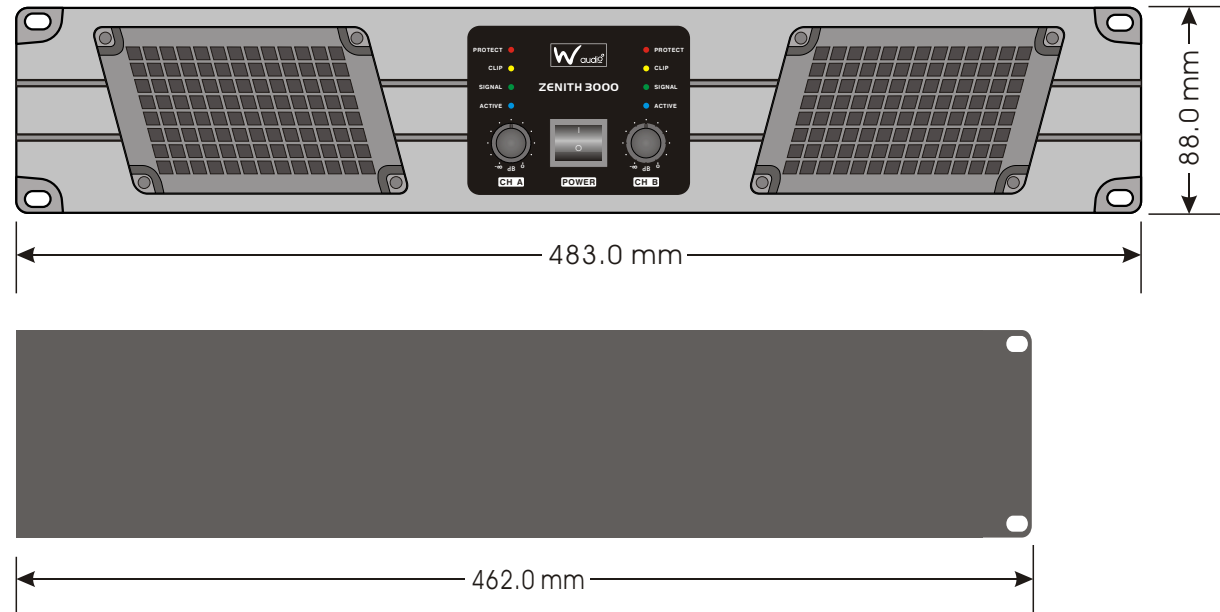


Figure 2.1
Dimensions

Professional Power Amplifier

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, or jack connectors for 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.

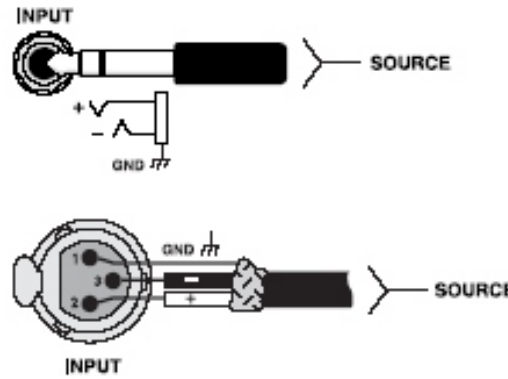


Figure 2.2
Balanced Input
Connector Wiring

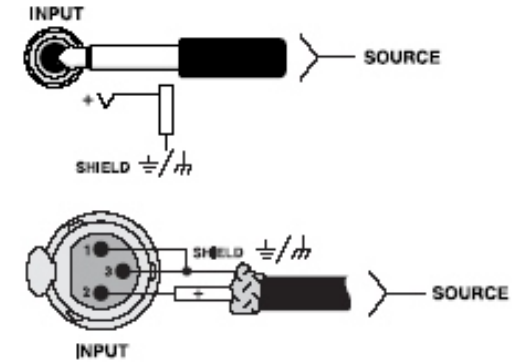


Figure 2.3
Unbalanced Input
Connector Wiring



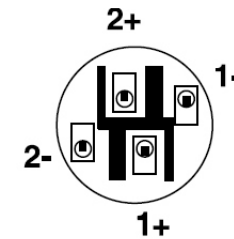
NOTE: Custom wiring should only be performed by qualified personnel.

2.5 Choose Output Wire and Connectors

W audio recommends using pre-built or professionally wired, high quality, 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. To prevent the possibility of short-circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.



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



OUTPUT ASSIGNMENT		
OUTPUT A	PIN 1+ : PIN 1- :	SIGNAL GROUND
OUTPUT B	PIN 1+ : PIN 1- :	SIGNAL GROUND
BRIDGE	Use both red Binding Posts	

CAUTION: Never use shielded cable for output wiring.



2 Setup

2.6 Wire Your System

2.6.1 Stereo Mode

Typical input and output wiring is shown in Figure 2.5.

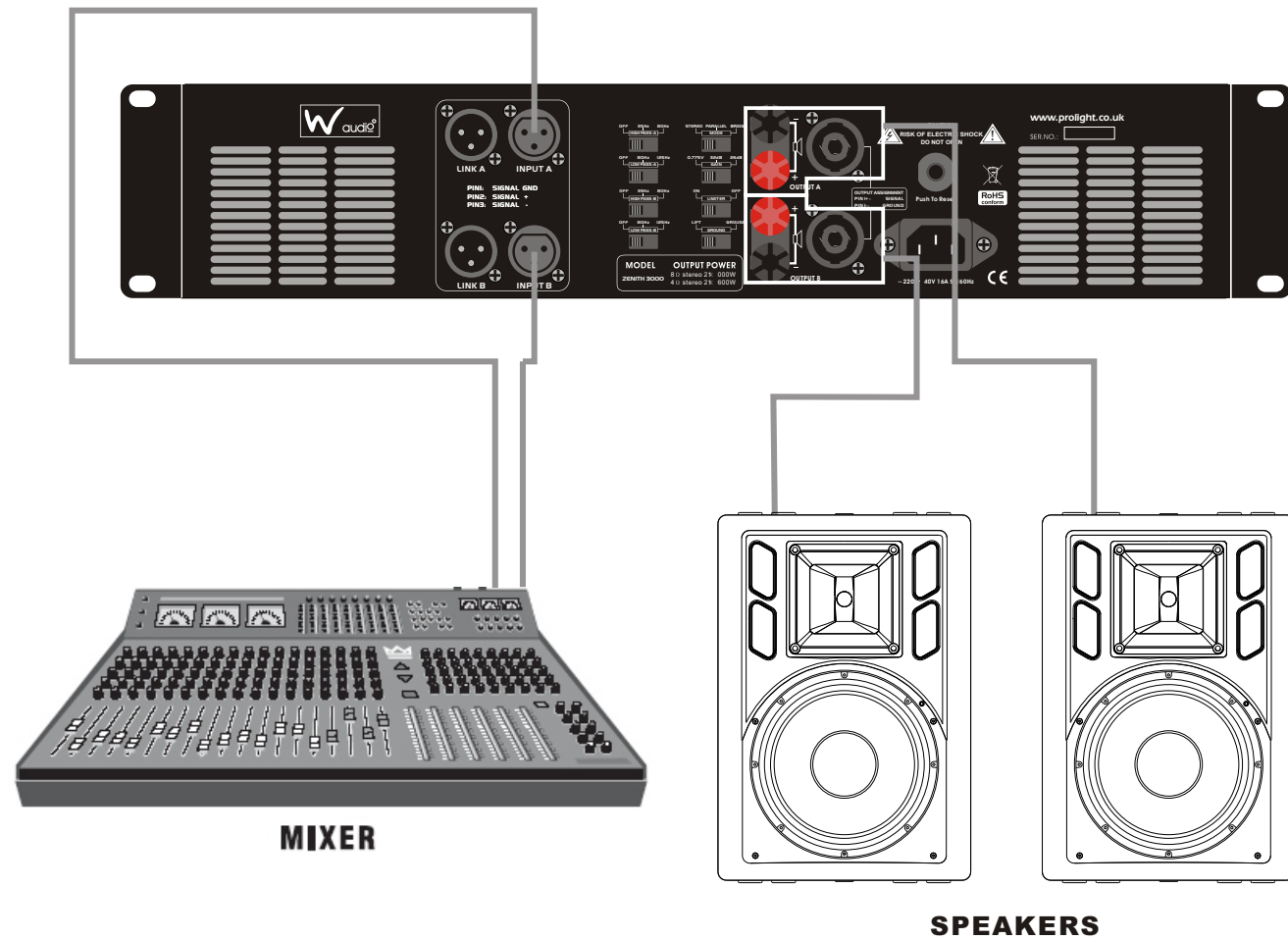


Figure 2.5
System Wiring, Stereo Mode

Professional Power Amplifier

2 Setup

2.6.2 Parallel Mono Mode

Typical input and output wiring is shown in Figure 2.6.

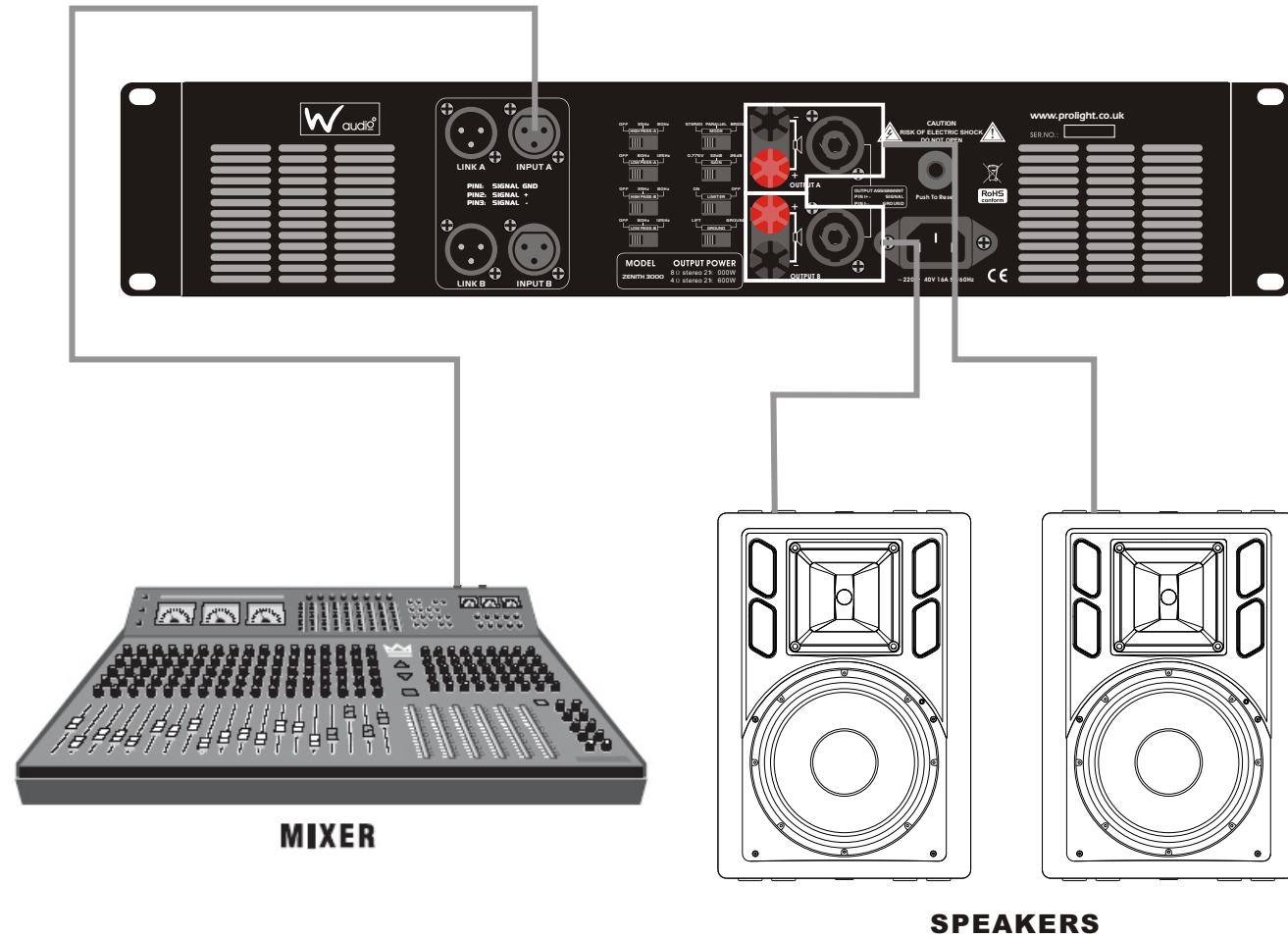


Figure 2.6
System Wiring, Parallel Mode



2 Setup

2.6.3 Bridge-Mono Mode

Typical input and output wiring is shown in Figure 2.7.

2.6.4 Low Cut Filter

Low Cut Filter cuts off signal frequency below 30/80Hz or 50Hz

2.6.5 Low Pass Filter

Low Pass Filter allows only frequencies below 80Hz or 125Hz without the use of external crossovers when driving subwoofers.

2.6.6 Limiter

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

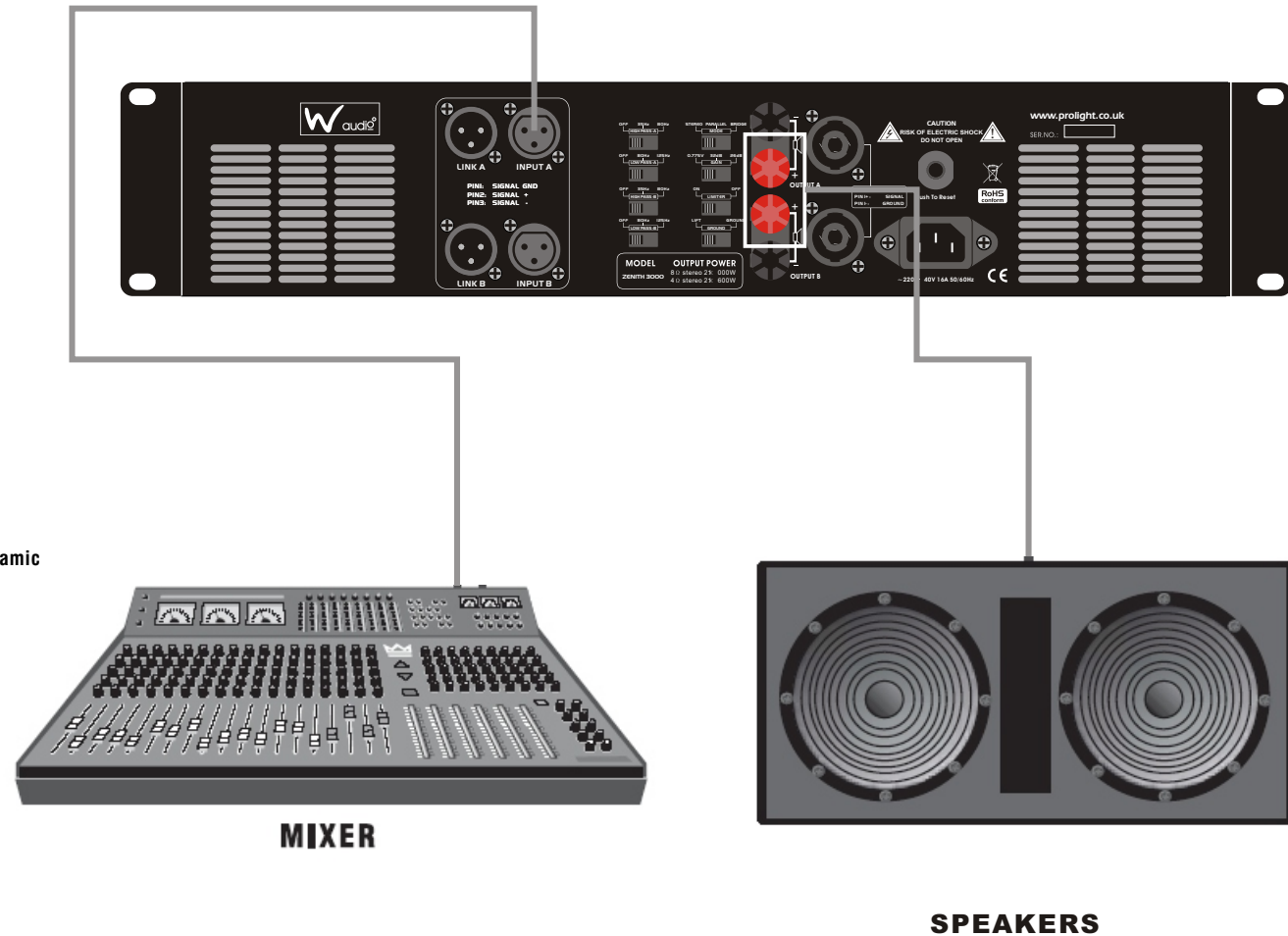


Figure 2.7
System Wiring, Bridge-Mono Mode

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.

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 an 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 connection. Improper wiring can result in serious operating difficulties.
2. Take care when making connections, selecting signal sources and controlling the output level.
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.

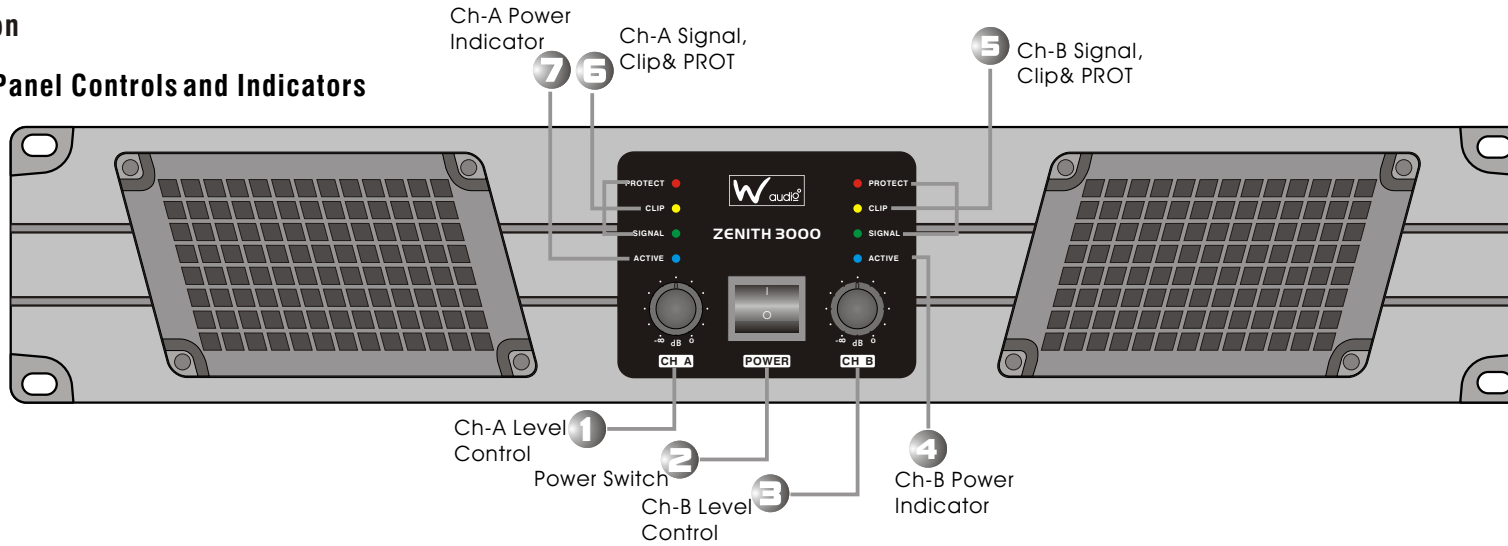


4. **WARNING: Never connect the output to a power supply, battery or power main. Electrical shock may result.**
5. Tampering with the circuitry, or making unauthorized circuit changes may be hazardous and invalidates your warranty.
6. Do not operate the amplifier with the red Clip LEDs constantly flashing.
7. Do not overdrive the mixer, which will cause a 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.

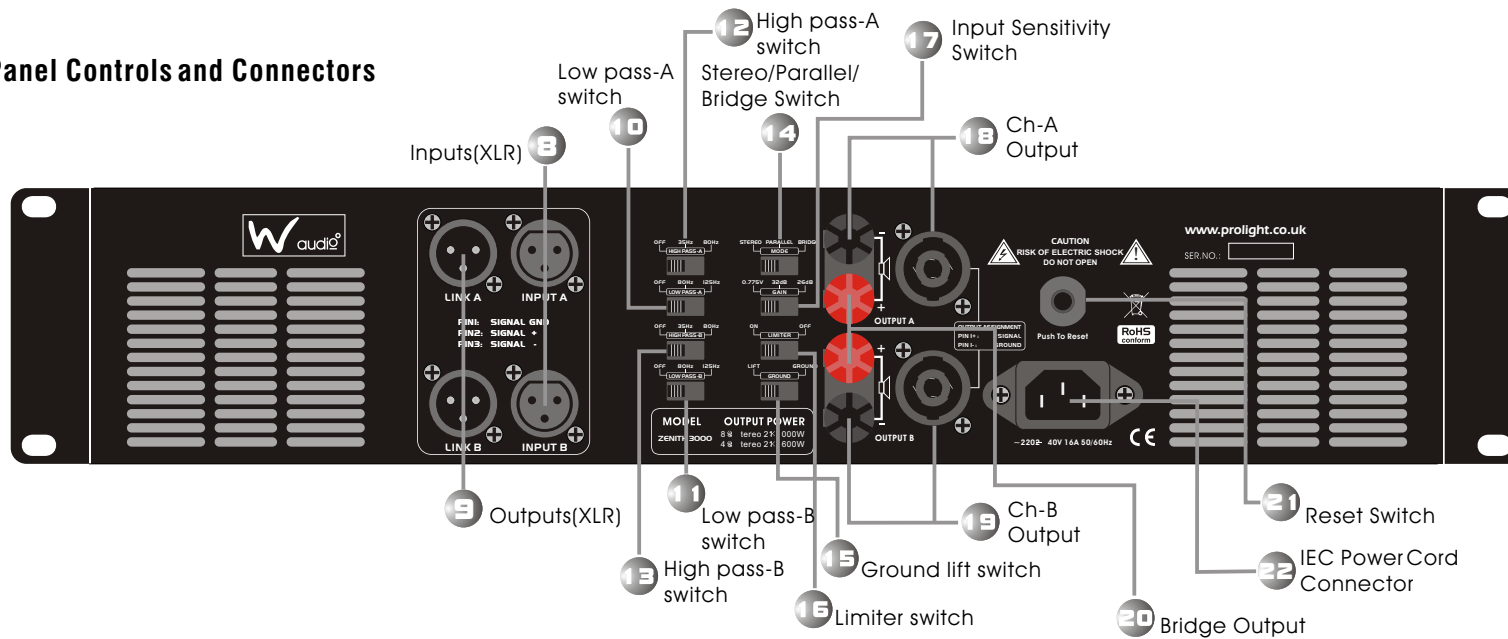
Professional Power Amplifier

3 Operation

3.2 Front Panel Controls and Indicators



3.3 Back Panel Controls and Connectors





4 Specifications

Minimum Guaranteed Power	ZENITH 1800	ZENITH 2400	ZENITH 3000
1 kHz with 0.5% THD Stereo, 4 ohms (per ch.) Stereo, 8 ohms (per ch.) Bridge mono, 8 ohms	960W 600W 1800W	1280W 800W 2400W	1600W 1000W 3000W
Performance	ZENITH 1800	ZENITH 2400	ZENITH 3000
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, 20Hz- 25 kHz)	+0dB, -0.5dB	+0dB, -0.5dB	+0dB, -0.5dB
Phase Response (at 1 watt , 20Hzto 20 kHz)	+10° , -20°	+10° , -20°	+10° , -20°
Signal to Noise Ratio below rated power A-weighted	≥105dB	≥106dB	≥107dB
Total Harmonic Distortion (THD) at 1 full bandwidth power, from 20 Hz to 20 kHz	≤0.1%	≤0.1%	≤0.1%
Intermodulation Distortion (IMD) 60Hz and 7 kHz at 4:1, from full rated output to -35dB	≤0.05%	≤0.05%	≤0.05%
Damping Factor (8ohm): 20 Hz to 400 Hz	≥620	≥680	≥760
Low Cut: Linkwitz-Riley(24dB/Octave)	Off/35Hz/80Hz	Off/35Hz/80Hz	Off/35Hz/80Hz
Low Pass: Linkwitz-Riley(24dB/Octave)	Off/80Hz/120Hz	Off/80Hz/125Hz	Off/80Hz/125Hz
Crosstalk (below rated power, 20 Hz to 20 kHz)	≥-60dB	≥-60dB	≥-60dB
Common Mode Rejection (CMR)(20Hz 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)	39dB gain at 0.775volt sensitivity	40.3dB gain at 0.775volt sensitivity	41.2dB gain at 0.775volt sensitivity



4 Specifications

Performance	ZENITH 1800	ZENITH 2400	ZENITH 3000
Load Impedance 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 ($\pm 10\%$)	~220-240 V and 50/60 Hz	~220-240 V and 50/60 Hz	~220-240 V and 50/60 Hz
AC Line Current (both amplifiers draw no more than 90 watts at idle)	10A	12A	15A
Construction	ZENITH 1800	ZENITH 2400	ZENITH 3000
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 × W × D: 89mm × 483mm × 462mm	H × W × D: 89mm × 483mm × 462mm	H × W × D: 89mm × 483mm × 462mm
Weight Net Shipping	16kg 19kg	18kg 21kg	23kg 26kg



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