



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) Protect the power cable from being walked on or pinched, particularly at plugs, and the point where they exit from the apparatus.
- 10) Only use attachments/accessories specified by the manufacturer.
- 11) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 12) Refer all servicing to qualified service personnel. Servicing is required if the unit has been damaged in any way, e.g. damaged power cable, liquid, moisture or foreign objects have fallen inside the unit or the unit has been dropped.
- 13) 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 pre-amplifiers 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 pre-amplifier 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 2K5

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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ZENITH 2K5

2-ohm Stereo	1250W
4-ohm Stereo	900W
8-ohm Stereo	540W
4-ohm Bridge-Mono	2500W
8-ohm Bridge-Mono	1800W

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

1 Welcome

The ZENITH Series of power amplifiers from Waudio 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.
- 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.

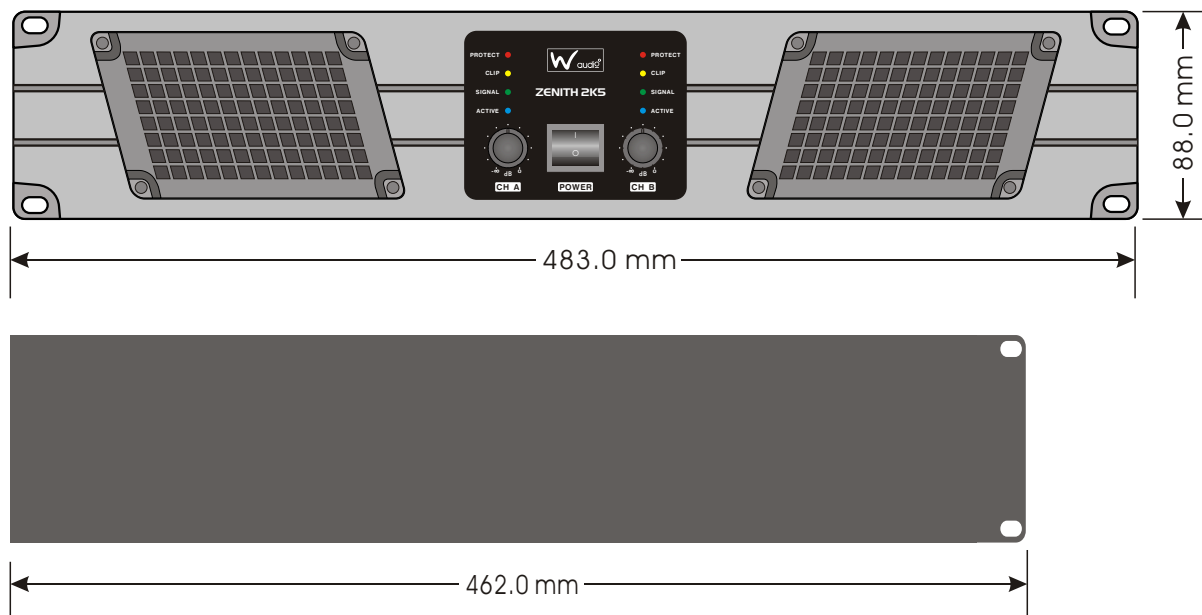


Figure 2.1
Dimensions

Professional Power Amplifier

2 Setup

2.4 Choose Input Wire and Connectors

Waudio® recommends using pre-built or professionally wired, balanced line (two-conductor plus shield), 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 the 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

Waudio® 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 loud speaker cable connectors.

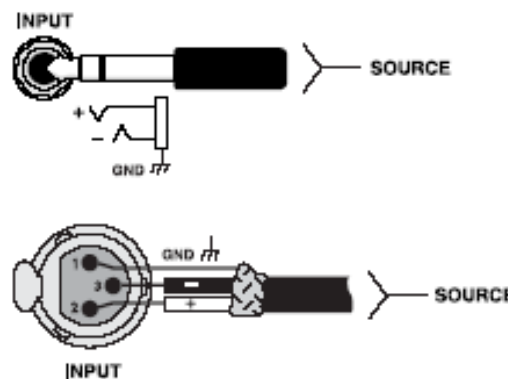


Figure 2.2
Balanced Input
Connector Wiring

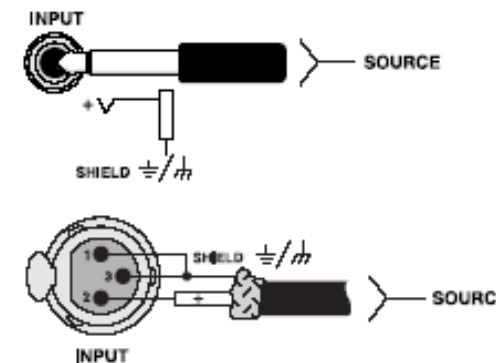
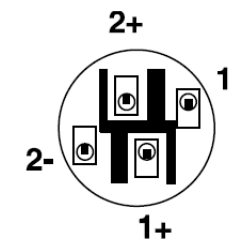


Figure 2.3
Unbalanced Input
Connector Wiring



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



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.



Professional Power Amplifier

2 Setup

2.6 Wire Your System

2.6.1 Stereo Mode

Typical input and output wiring is shown in Figure 2.5.

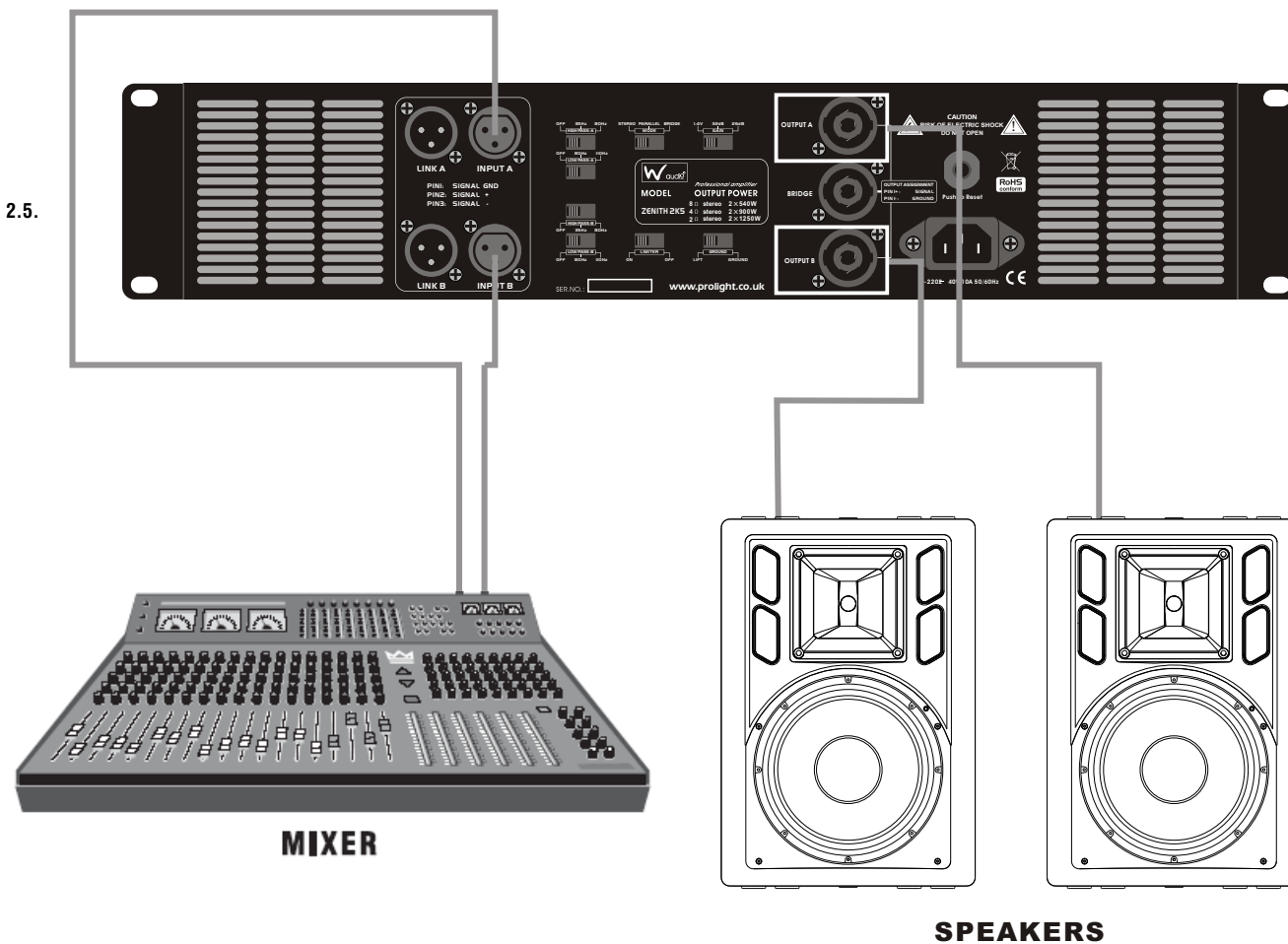


Figure 2.5
System Wiring, Stereo Mode

Professional Power Amplifier

2 Setup

2.6.2 Parallel Mono Mode

Typical input and output wiring is shown in Figure 2.6.

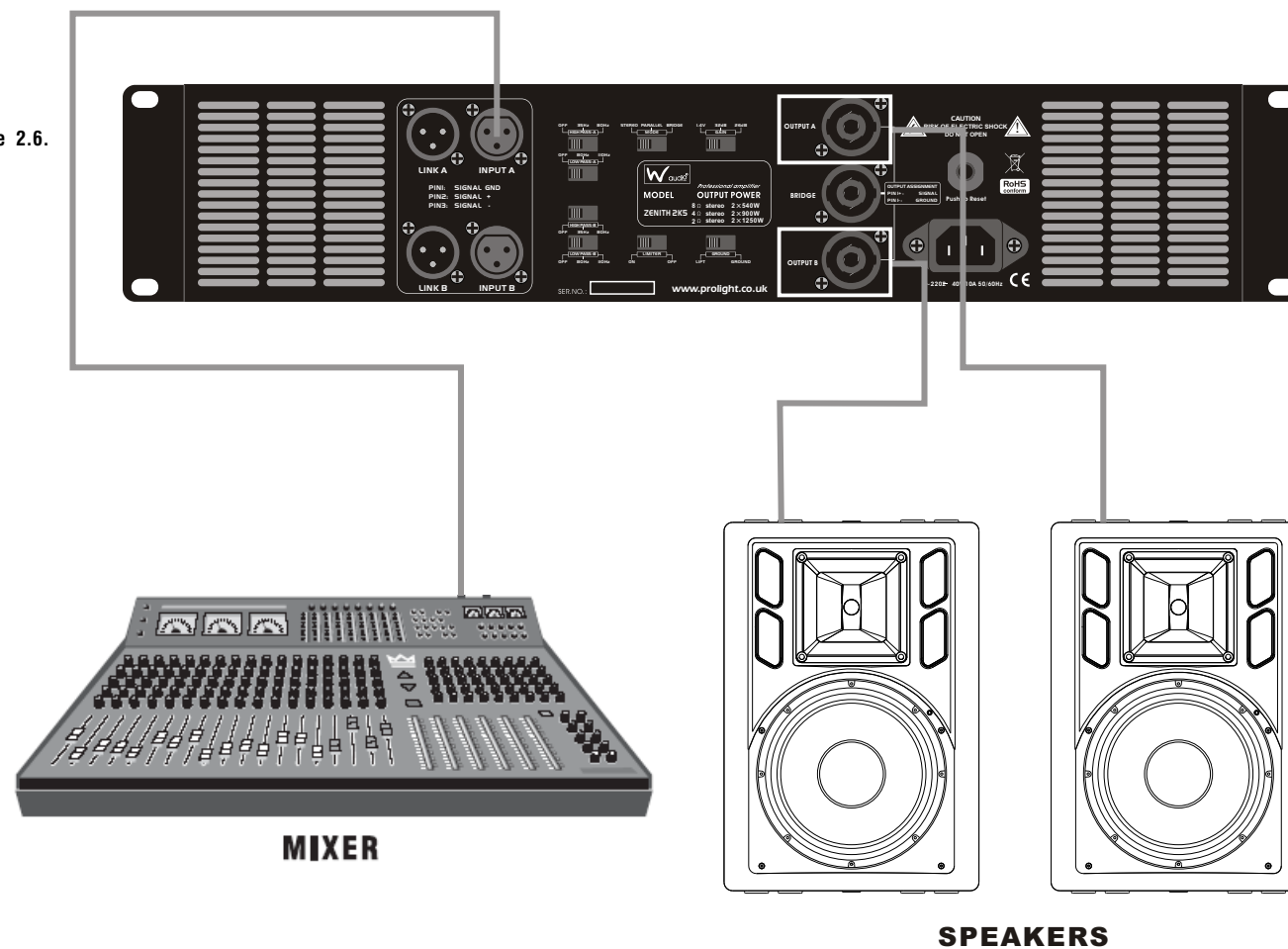


Figure 2.6
System Wiring, Parallel Mode



Professional Power Amplifier

2 Setup

2.6.3 Bridge-MonoMode

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

Prevents serious clipping when the amplifier is over driven.

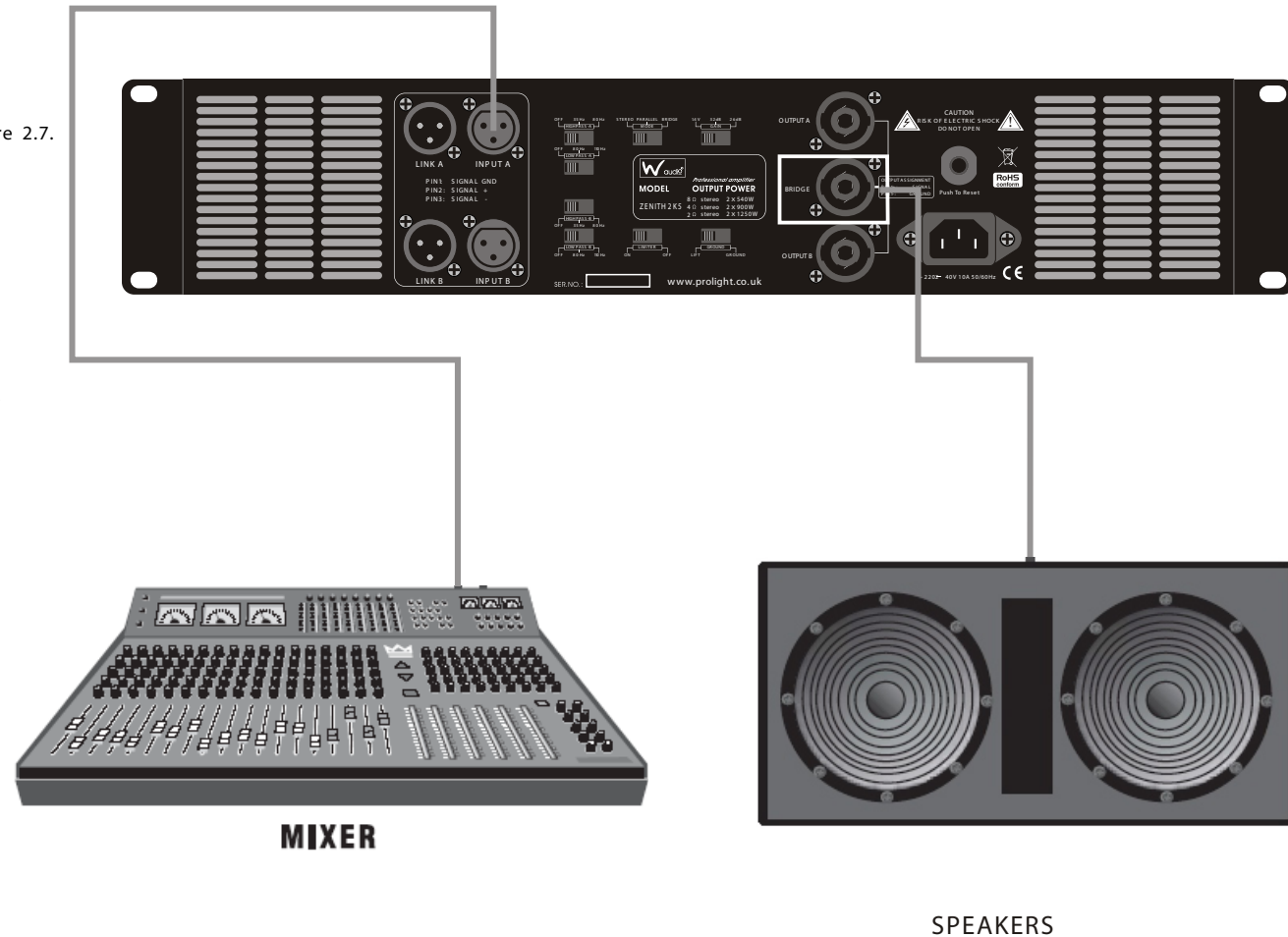


Figure 2.7
System Wiring, Bridge-Mono Mode



2 Setup

2.7 Connection 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

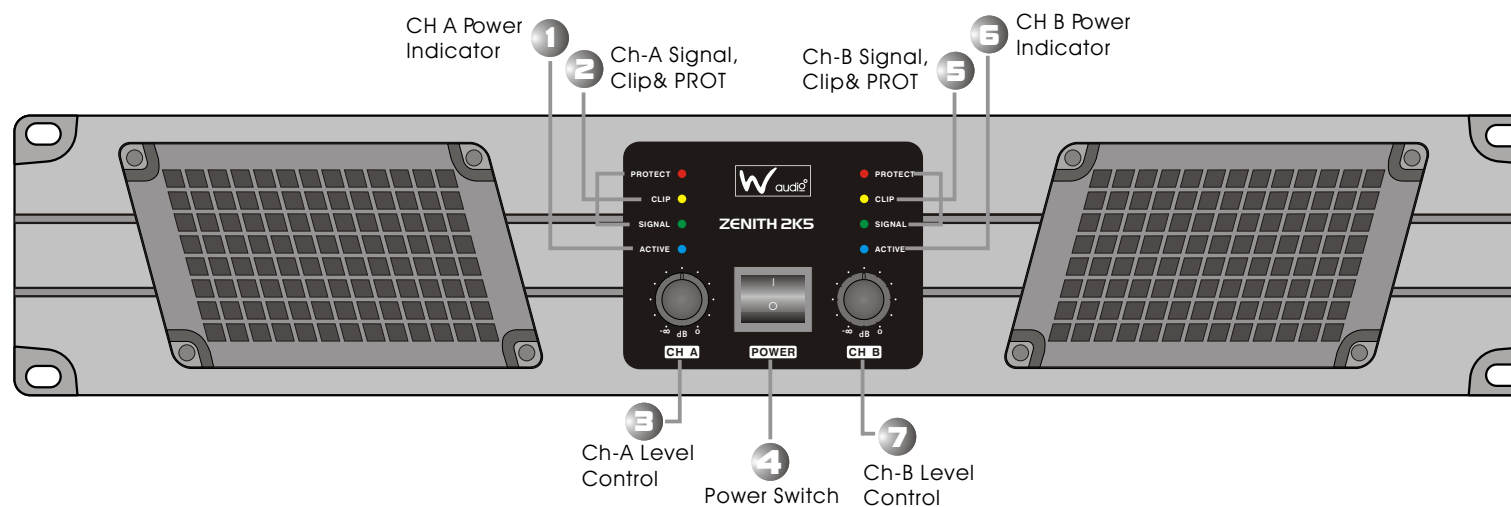
Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

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.
- 
- A black triangle containing a white lightning bolt, indicating a warning or hazard.
4. **WARNING: Never connect the output to a power supply, battery or power output. 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:  is not liable for damage that results from over-driving other system components.

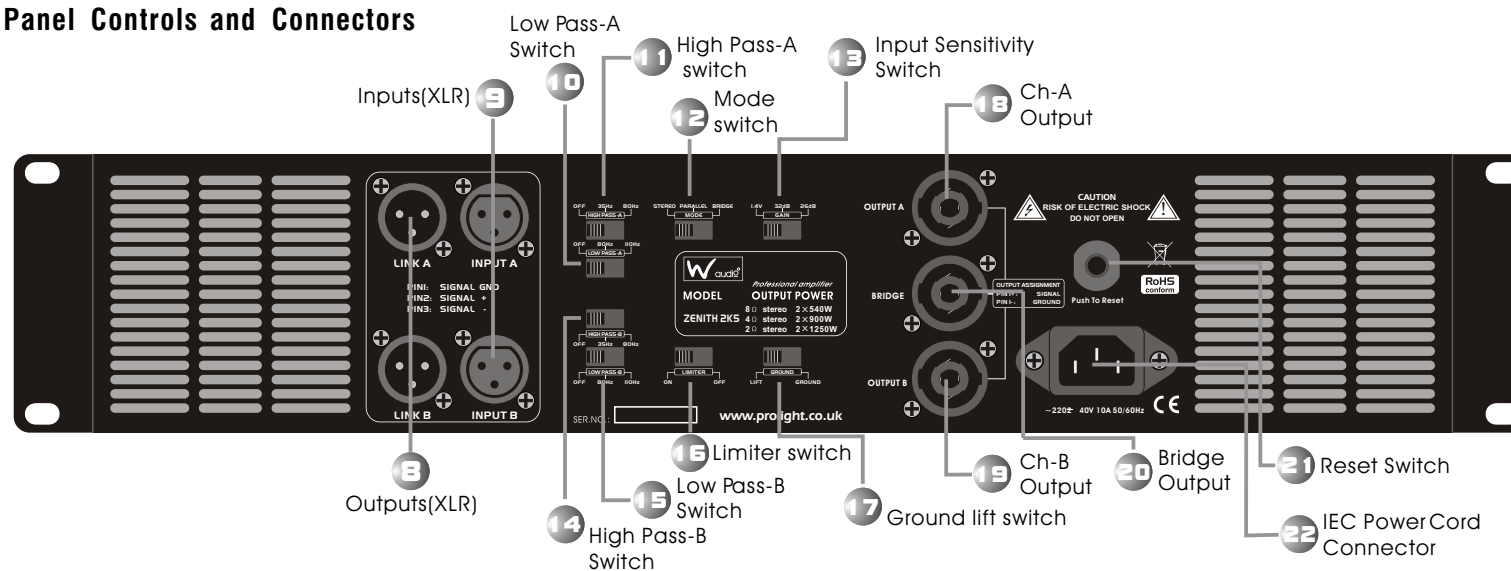
Professional Power Amplifier

3 Operation

3.2 Front Panel Controls and Indicators



3.3 Back Panel Controls and Connectors





4 Specifications

Minimum Guaranteed Power	ZENITH 2K5
1 kHz with 0.5% THD Stereo, 2 ohms (per ch.) Stereo, 4 ohms (per ch.) Stereo, 8 ohms (per ch.) Bridge mono, 4 ohms Bridge mono, 8 ohms	1250W 900W 540W 2500W 1800W
Performance	ZENITH 2K5
Sensitivity (volts RMS) for full rated power at 8 ohms	0.775V, 32dB, 26dB
Frequency Response (at 1 watt, 20Hz - 25 kHz)	+0dB, -0.5dB
Phase Response (at 1 watt, 20Hz to 20 kHz)	+10°, -20°
Signal to Noise Ratio below rated power A-weighted	≥107dB
Total Harmonic Distortion (THD) at 1 full bandwidth power, from 20 Hz to 20 kHz	≤0.1%
Intermodulation Distortion (IMD) 60 Hz and 7 kHz at 4:1, from full rated output to -35 dB	≤0.05%
Damping Factor (8 ohm): 20 Hz to 400 Hz	≥700
High pass:Linkwitz-Riley(24dB/Octave)	Off/35Hz/80Hz
Low Pass:Linkwitz-Riley(24dB/Octave)	Off/80Hz/110Hz
Crosstalk (below rated power, 20 Hz to 20 kHz)	≥-60dB
Common Mode Rejection (CMR)(20 Hz to 1 kHz)	≥-65dB
DC Output Offset (Shorted input)	≤10mV
Input Impedance (nominally balanced, nominally unbalanced)	20 kilohms, 10 kilohms
Voltage Gain (at maximum level setting)	38.8dB gain at 0.775volt sensitivity

4 Specifications

Performance		ZENITH 2K5
Load Impedance (Note: Safe with all types of loads) Stereo Bridge Mono		2-8 ohms 4-8 ohms
AC Line Voltage and Frequency Configurations Available ($\pm 10\%$)		~220-240 V and 50/60 Hz
AC Line Current (both amplifiers draw no more than 90 watts at idle)		10A
Construction		ZENITH 2K5
Ventilation		Flow-through ventilation from front to back
Cooling		Proportional speed fan
Dimensions		H $\times$ W $\times$ D: 89mm $\times$ 483mm $\times$ 496mm
Weight Net Shipping		23kg 26kg



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