



# OPERATION MANUAL





## M2000

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. However, updates to this information may have occurred. To obtain the latest version of this manual, please visit the AT website at [www.atprofessional.com.au](http://www.atprofessional.com.au).

## 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 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:** M2000

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  $\leq 16$  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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<b>M2000</b>	
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 1.0% THD.	

## 1 Welcome

The M Series of power amplifiers from AT audio represents a new era in affordable, quality power amplification. The line consists of three 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, M 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, 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 EIA standard 19-in. Rack, or stacked on top of each other.

- Features both standard 5-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 set up 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).

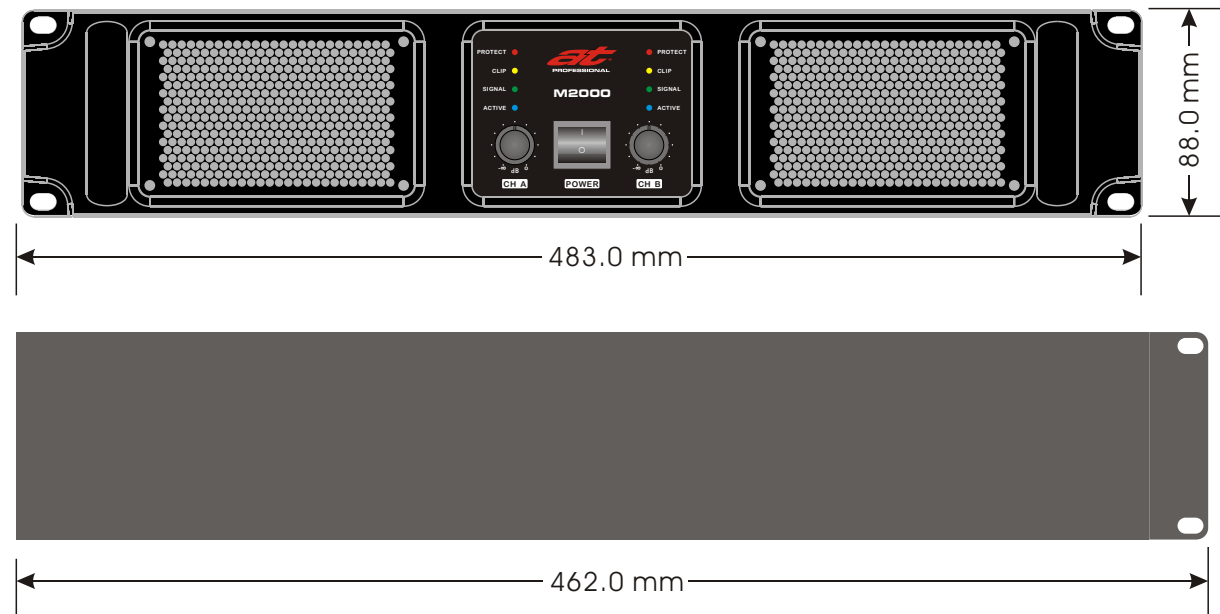
Use a standard 19-inch (48.3 cm) equipment rack (EIARS-310B). See Figure 2.1 for amplifier dimensions.

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 sidewalls 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

## 2 Setup

### 2.4 Choose Input Wire and Connectors

AT 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.

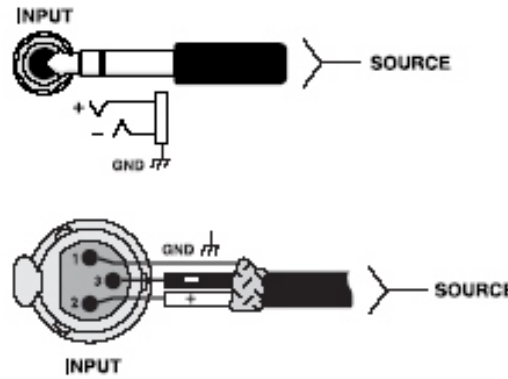


Figure 2.2  
Balanced Input  
Connector Wiring

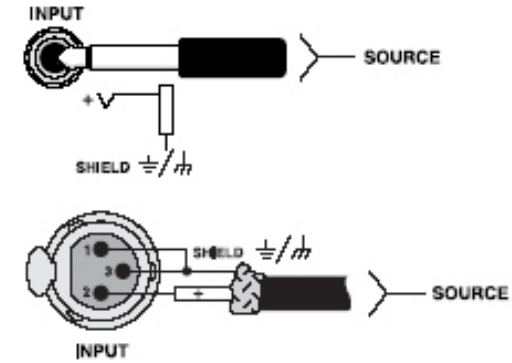


Figure 2.3  
Unbalanced Input  
Connector Wiring

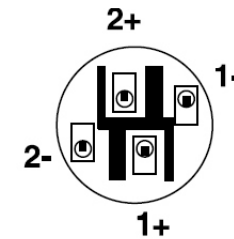
**NOTE:** Custom wiring should only be performed by qualified personnel.

### 2.5 Choose Output Wire and Connectors

AT 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, spade lugs. 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



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.

OUTPUT ASSIGNMENT		
OUTPUT A	PIN 1+ : PIN 1- :	SIGNAL GROUND
OUTPUT B	PIN 1+ : PIN 1- :	SIGNAL GROUND
BRIDGE	PIN 1+ : PIN 1- :	SIGNAL GROUND

2 Setup

2.6 Wire Your System

2.6.1 Stereo Mode

Typical input and output wiring is shown in Figure 2.5.

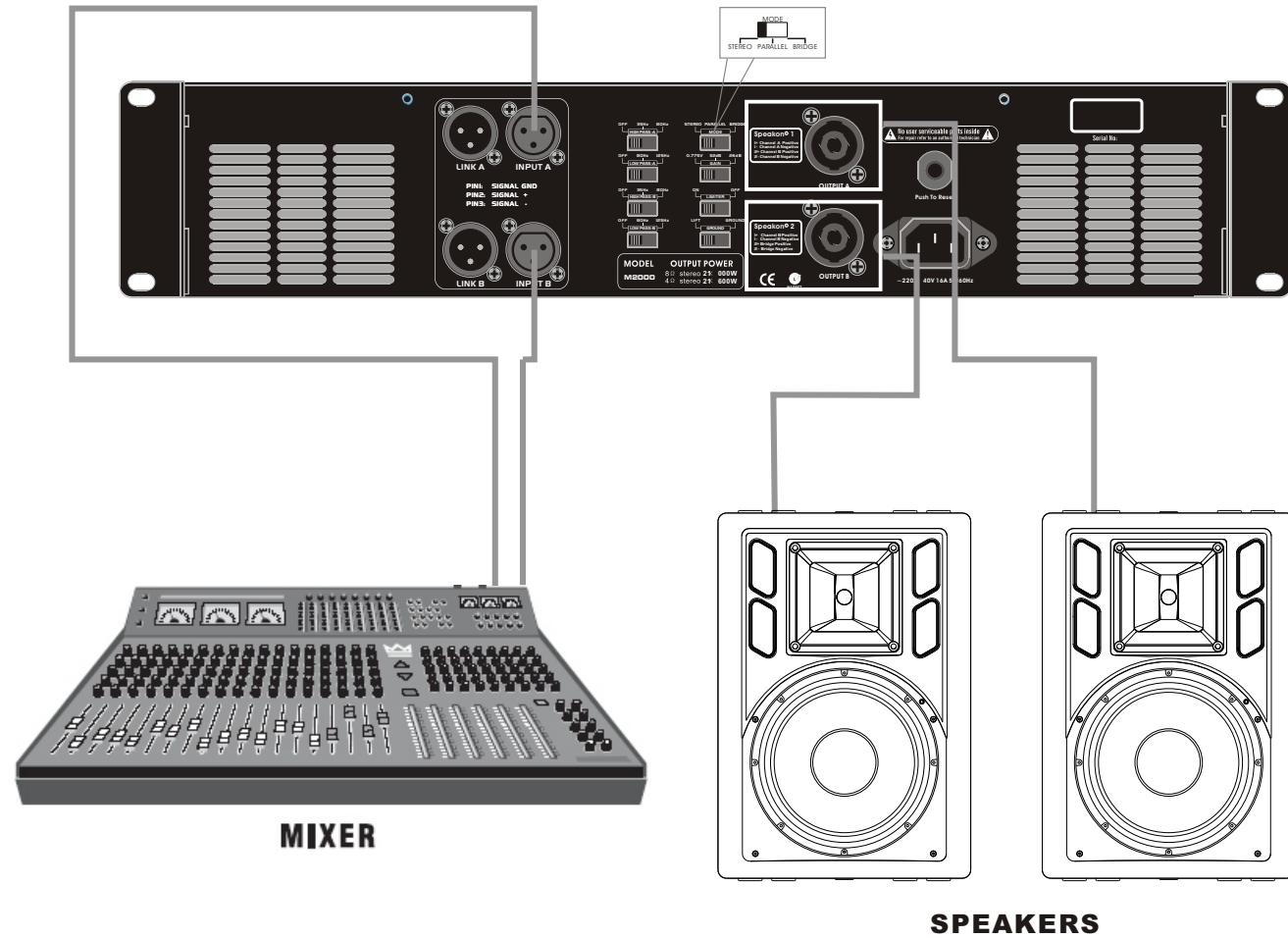


Figure 2.5  
System Wiring, Stereo Mode



# M Series Power Amplifiers



## 2 Setup

### 2.6.2 Parallel Mode

Typical input and output wiring is shown in Figure 2.6.

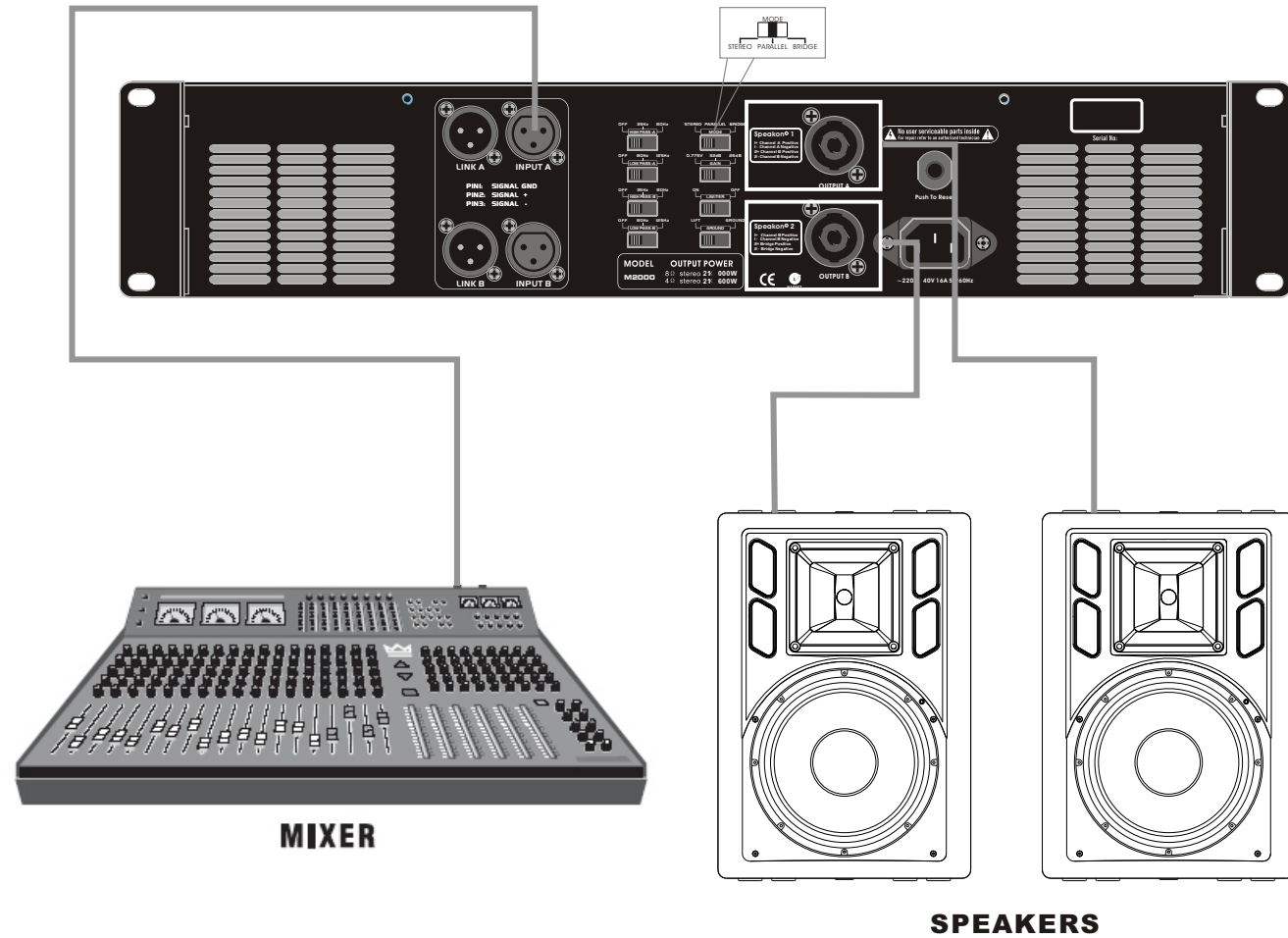


Figure 2.6  
System Wiring, Parallel Mode

2 Setup

2.6.3 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 to avoid it muddy your sound when this amplifier matching some full range speakers.

2.6.5 Low Pass Filter

Low Pass Filter lets it can only response frequency below 80Hz or 125Hz without extra crossovers when matching subwoofers.

2.6.6 Limiter

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

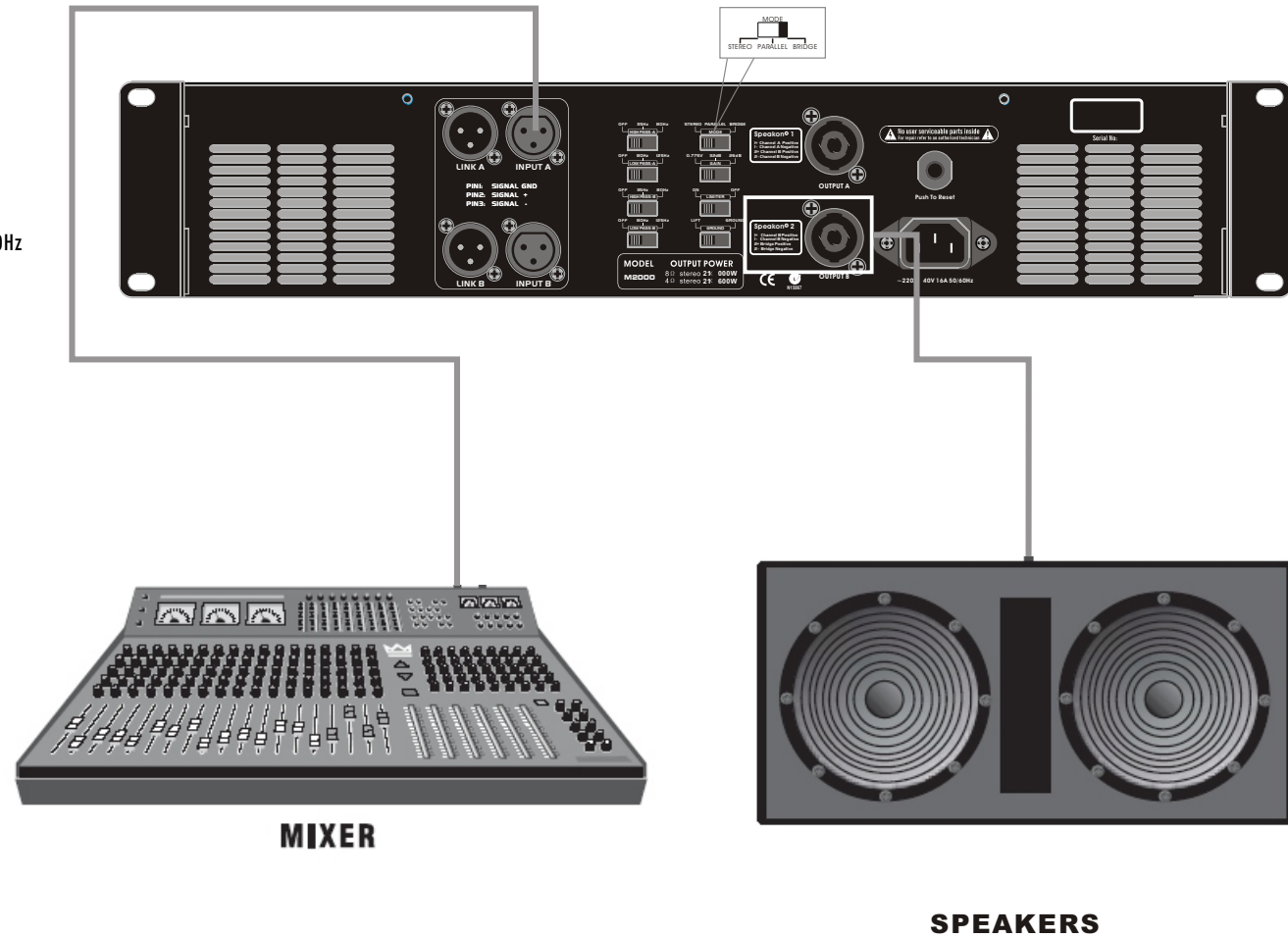


Figure 2.7  
System Wiring, Bridge-Mono Mode

## 2 Setup

### 2.7 Connect to AC Mains

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

## 3 Operation

### 3.1 Precautions

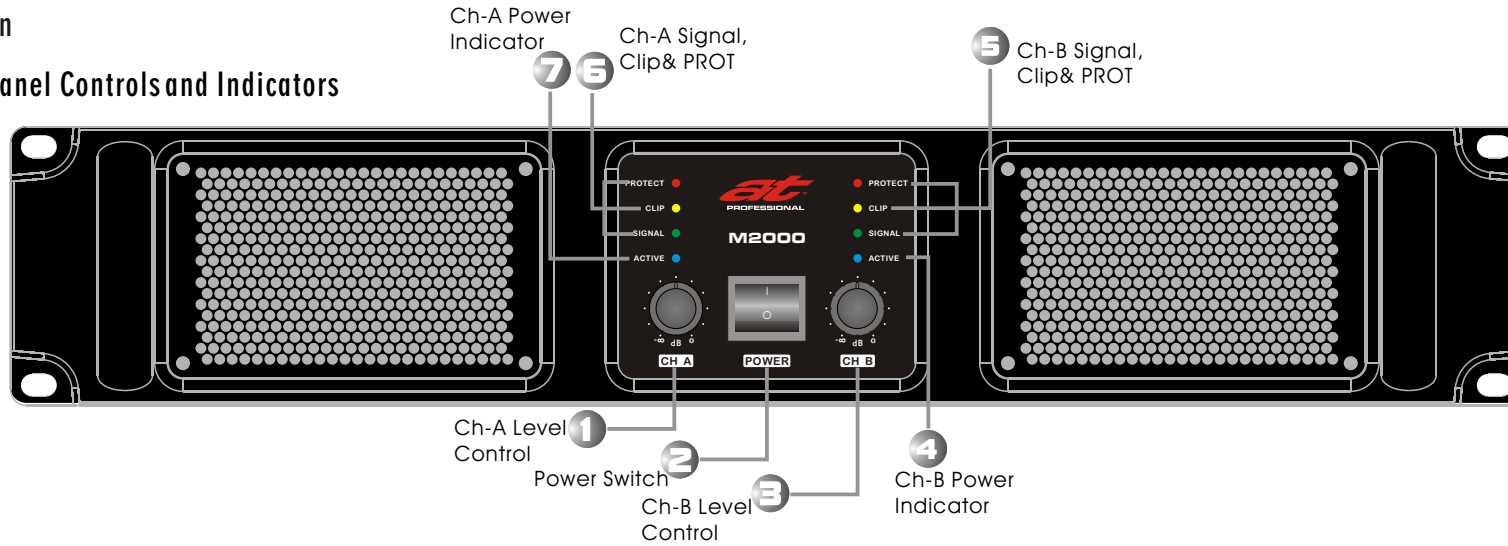
Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

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 all agency listings.
  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: AT is not liable for damage that results from overdriving other system components.

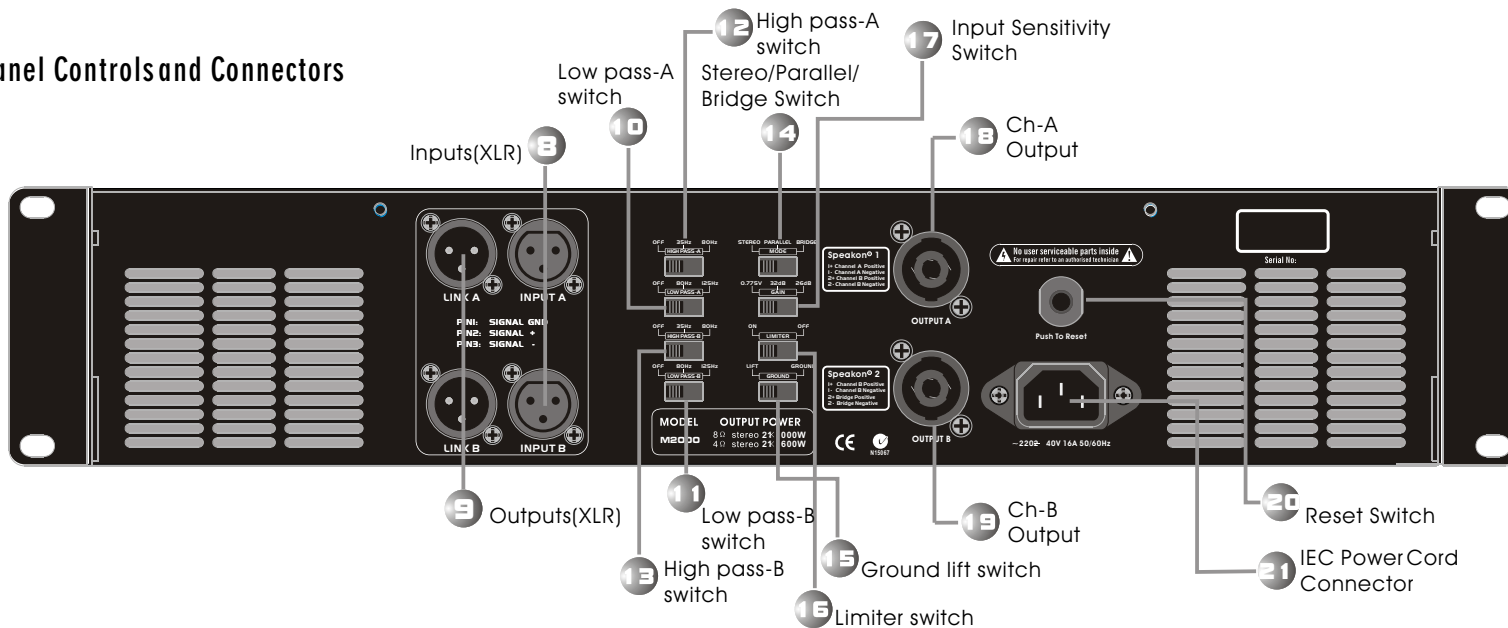
*Remember: AT Audio is not liable for damage that results from overdriving other system components.*

3 Operation

3.2 Front Panel Controls and Indicators



3.3 Back Panel Controls and Connectors



#### 4 Specifications

Minimum Guaranteed Power		M2000
1 kHz with 0.5% THD Stereo, 4 ohms(per ch.) Stereo, 8 ohms(per ch.) Bridge mono, 8ohms		1600W 1000W 3000W
Performance		M2000
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		≥760
Low Cut: Linkwitz-Riley (24dB/Octave)		Off/35Hz/80Hz
Low Pass: Linkwitz-Riley (24dB/Octave)		Off/80Hz/125Hz
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)		41.2dB gain at 0.775 volt sensitivity

4 Specifications

Performance		M2000
Load Impedance (Note: Safe with all types of loads) Stereo Bridge Mono		4-8 ohms 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)		15A
Construction		M2000
Ventilation		Flow-through ventilation from front to back
Cooling		Proportional speed fan
Dimensions		H $\times$ W $\times$ D: 89mm $\times$ 483mm $\times$ 462mm
Weight Net Shipping		23kg 26kg

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