

INSTALLATION INSTRUCTIONS MODEL PA-250 AND PA-500 BOOSTER AMPLIFIER

GENERAL:

The Series PA-250 and PA-500 Watt Booster Amplifiers are designed to be driven from a line-level preamplifier source, (i.e. Series MX-8 Mixer or the line output of any Wheelock paging amplifier). The PA-250 and 500 offers a choice of two different inputs, one low impedance balanced 600 Ohm input and one high impedance unbalanced LINE IN input. Use of the LINE IN will automatically disconnect the balanced input. The input is buffered and available at the BOOSTER OUT.

The amplifier features a VOLUME control and an OUTPUT PEAK indicator for the amplifier on the front panel. On the rear panel there is a power ON/OFF switch with a switched auxiliary AC receptacle.

All inputs and outputs are connected at the rear panel. Screw terminals are used for the 600 Ohm input (see Figure 2). Phono jacks are used as input and output for LINE IN and BOOSTER OUT (see Figure 2). The audio power output is connected via screw terminals (see Figure 3).

The amplifier operates from 115VAC, 60Hz and has a power consumption of 350 Watts and 700 Watts respectively. <u>There is no external fuse or circuit breaker</u>. IN THE EVENT THE AMPLIFIER DOES NOT POWER UP, HAVE THE TROUBLE INVESTIGATED BY AN AUTHORIZED SERVICE TECHNICIAN OR RETURN UNIT TO FACTORY.

NOTE: READ THESE INSTRUCTIONS CAREFULLY. FAILURE TO COMPLY WITH ANY OF THE FOLLOWING INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN RISK OF ELECTRICAL SHOCK, IMPROPER APPLICATION OR INSTALLATION.

NOTE: All CAUTIONS and WARNINGS are identified by the symbol. All warnings are printed in bold capital letters.

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

1. UNPACKING:

The amplifier was carefully checked before leaving the factory. Inspect shipping container and unit carefully for indication of improper handling. If the unit has been damaged, make an immediate claim to the carrier.

2. MOUNTING INSTRUCTIONS:

The amplifier is provided with five mounting feet for placement on a shelf and comes equipped with a Rack Mount Kit (PA-RMK) for mounting in standard EIA 19" racks. Refer to Figure 7 for mounting instructions.

CAUTION: These devices are not intended for use in hazardous locations as defined by the National Electrical Code (NEC).

3. POWER AND GROUNDING (SEE FIGURE 1):

The 115VAC line cord has a three-prong plug which should be plugged into a three wire grounded electric outlet. It is very important to maintain the amplifier ground for safe and trouble-free operation. If there is no grounded electric outlet, connect a wire from the GND terminal on the OUTPUT terminal strip to a water or steam pipe.

4. POWER SWITCH AND RECEPTACLE (SEE FIGURE 1):

The ON/OFF power switch located on the rear panel, controls both the internal power of the amplifier and the accessory IEC female outlet.

Note: The accessory to be attached and controlled by the ON/OFF switch must not exceed 3 Amps at 115VAC.

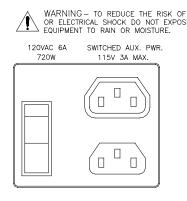


Figure 1: Power Connections

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5. SPECIFICATIONS:

Table: 1							
Description	PA-250	Tolerance	Comments				
1. Power Output				90-132VAC			
at 1KHz	250 Watts RMS	500 Watts RMS	±1dB	50Hz/60Hz			
2. Total Harmonic				Rated Output			
Distortion	1% at Full Rated	d Output at 1KHz	±1%	at 1KHz at 8 Ohms			
3. Outputs	250 Watts 8 Ohms, 25V,	500 Watts 70.7V, 100V	±1dB				
Inputs	Line	∍ In		Isolated to 1500V			
4. Impedance	10K	Ohms		at 1KHz			
5. Sensitivity	1	V	Line ±20%	To Produce Rated Output			
6. Frequency Response	50Hz-	20KHz	±2dB	Ref. 1KHz at 1W -3dB Roll-Off			
7. Signal to Noise				No "Hum"			
Ratio		dB	-3dB	Not Weighted			
8. Type of Input	Unbalanced						
9 Booster Out	Buff	Phono Jack					
10. Controls		Front Panel					
11. Indicators		Front Panel					
12. Regulation	No Load to Less th			Amp Stability			
13. RFI Protection	RFI Test: Use CB in Same Room - Mi Amplifier -	nimum 20 Ft. from	Do Not Operate with NO LOAD	Amp Stability			
14. Input Power	90V-132VAC	50/60Hz	Power Factor Corrected				
15. Consumption	350 Watts	700 Watts					
16. Environmental		-49 Degrees C Noncondensing					
17. Weight	21.1	25.2 lbs.					
18. Dimensions	3.5"(H) 17'	"(W) 14"(D)		Rack Mount 19"(W)			
19. FCC		z 15					
20. UL	81	13					
21. CSA (Pending)	CAN/CSA C22.	2 No. 1-M-90					

INPUT CONNECTIONS:

6. LINE IN (SEE FIGURE 2):

Connect line level audio source (i.e. MIC/LINE mixer) to the LINE IN phono jack. For balanced line level source, connect to 600 OHM terminal block. **Note**: The 600 OHM from the terminal block is disconnected when a phone plug is inserted in the LINE IN phono jack.

7. BOOSTER OUT (SEE FIGURE 2):

The BOOSTER OUT signal allows for cascading amplifiers. The BOOSTER OUT is the LINE IN signal buffered and available at the BOOSTER OUT phono jack.

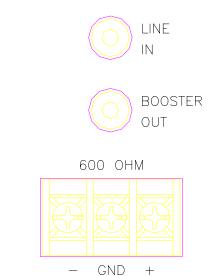


Figure 2: Input Connections for PA-250 and PA-500

8. AUDIO OUT (SEE FIGURE 3):

Connect (2) output wires from the speaker load, to the COM screw terminal and the selected constant voltage terminal, (i.e. 25V, 70.7V or 100V). The constant voltage distribution method facilitates the use of multiple speakers in parallel with a single amplifier. Note that each speaker must have its own 25V, 70.7V or 100V line-matching transformer. Select the wattage tap on the line matching transformer of each speaker for the power (volume) desired. An 8 Ohm speaker load may be connected to the COM and the 8 Ohm terminals. The audio output is available at the rated output of 250 or 500 Watts for an 8 Ohm load, for a 25V, 70.7V or 100V. The GND terminal of the AUDIO OUT terminal block is chassis ground. The shield of audio output shielded cable should be terminated to this GND (if applicable). The COM and GND of AUDIO OUT terminal are connected to chassis ground.

Note: The wattage rating of the speaker loads should not exceed total power rating of the amplifier. The following Table 2 below will provide the appropriate line loss that should be calculated for those expected speaker loads.

CAUTION: Do not operate amplifier without a proper load attached to audio out terminals.

CAUTION: Do not connect, disconnect wiring or cabling with power applied.

9. PROPER WIRE SIZE/LENGTH:

To minimize power loss in the system cabling, use a wire gauge suitable for the power being distributed and the length of cable. Use the following table as a guide.

	Table 2: 2 Wire Copper Cable Lengths for Speaker Lines at 0.5dB Loss in SPL (12.5% Power Loss in Watts)													
AWG Size	Max Power	Low Impedance Speaker Line		70 Volt Speaker Line Nominal Power in the Load Length in Feet					AWG Size					
	AWG	8 Ohms	10W	15W	20W	40W	60W	100W	125W	200W	250W	400W	500W	
10	Per NEC	240	15,000	9,900	7,500	3,750	2,500	1,500	1,180	730	590	370	290	10
12	Per NEC	150	9,100	6,200	4,680	2,340	1,560	940	730	460	370	230	180	12
14	1,060W	95	5,600	3,800	2,880	1,440	960	600	450	280	220	140	110	14
16	420W	60	3,600	2,400	1,870	930	620	370	290	180	140	90		16
18	210W	40	2,300	1,500	1,150	570	380	230	180	110				18
20	70W	25	1,400	960	730	360	240							20
22	35W	15	900	600	460									22

Notes

1) For 25V line divide all 70.7V lengths by 8. 2) For 100V line multiply all 70.7V lengths by 2.0. 3) To allow for future expansion and distribution cable line loss, it is recommended that the total system wattage should not exceed 85% of the amplifier's rated output. (i.e. 212 and 425 Watts for the PA-250 and PA-500 respectively). 4) The total system wattage requirement is the summation of the wattage tap selections of all system speakers and horns.

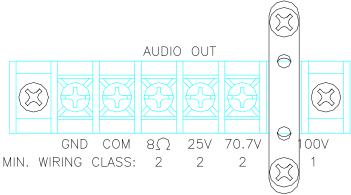


Figure 3: Output Connections

WARNING: THE COVER FOR THE 100V AUDIO OUTPUT TERMINAL MUST BE ATTACHED AT ALL TIMES. THE POWER CORD MUST BE DISCONNECTED BEFORE CONNECTING TO THE 100V TERMINAL. THE COVER MAY BE REMOVED TO CONNECT A WIRE TO THE TERMINAL, BUT IT MUST BE REATTACHED AFTER CONNECTING THE WIRE(S). FAILURE TO MAINTAIN THE TERMINAL COVER IN PLACE COULD EXPOSE YOU AND/OR OTHERS TO ELECTRICAL SHOCK WHICH COULD RESULT IN SERIOUS INJURY AND/OR DEATH.

10. CASCADING AMPLIFIERS (SEE FIGURE 4):

The BOOSTER OUT of the PA-250 or PA-500 amplifier, which is the buffered LINE IN audio signal, can be used as a LINE IN input to additional PA-250's or PA-500's to expand existing systems or to distribute large speaker loads.

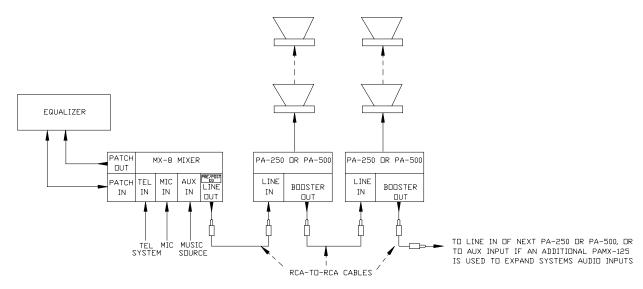


Figure 4: Cascading Amplifiers

Note: Use shielded cable for all interconnections.

OPERATION:

WARNING: DO NOT OPEN COVER! NO USER SERVICEABLE INTERNAL COMPONENTS! REFER TO QUALIFIED SERVICE TECHNICIAN. IF UNIT IS OPENED, WARRANTY IS VOIDED.



Figure 5: PA-250 or PA-500 Front Panel

11. POWER INDICATOR:

Green LED indicator illuminates when AC power is applied to the amplifier.

12. VOLUME CONTROL:

Adjusts the total output level of the amplifier.

13. OUTPUT PEAK INDICATOR:

The indicator, as the amplifier output is increased, illuminates within 2dB of full rated output.

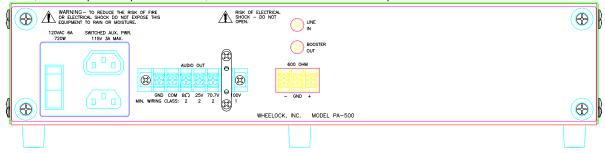


Figure 6: PA-250 or PA-500 Rear Panel

14. POWER ON/OFF SWITCH AND RECEPTACLE:

The amplifier is designed to operate from a line voltage of 115VAC at 50/60Hz. The IEC 320 receptacle has a male input to connect a grounded line cord and female output for attaching a switched external auxiliary load. The external auxiliary load is not to exceed 3 Amps at 115VAC.

15. AUDIO OUT OUTPUTS:

The audio output is available at the rated output of 250 Watts (PA-250) or 500 Watts (PA-500) for an 8 Ohm load, for a 25V, 70.7V or 100V. The GND and COM terminals of the AUDIO OUT terminal block are chassis ground. The shield of the audio shielded cable is to be terminated to this GND. Connect (2) output wires from the speaker load, to the COM screw terminal and the selected constant voltage terminal, (i.e. 25V, 70.7V or 100V). The constant voltage distribution method facilitates the use of multiple speakers in parallel with a single amplifier. **Note:** Each speaker

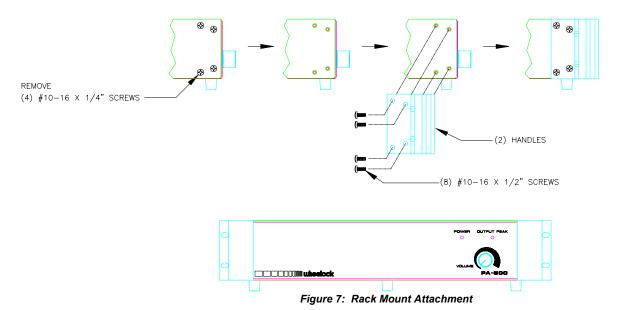
must have its own 25V, 70.7V or 100V line-matching transformer. Select the wattage tap on the line matching transformer of each speaker, for the power (gain) desired. An 8 Ohm speaker load may be connected to the COM and the 8 Ohm terminals.

16. LINE LEVEL IN/OUT:

LINE IN is a high impedance line level input into phono jack; 600 Ohm is a balanced screw terminal input. When a phono plug is inserted into the LINE IN phono jack the balanced input is disconnected. The BOOSTER OUT is the LINE IN signal buffered and available at a phono jack.

17. RACK MOUNT ATTACHMENT:

- 1. Mounting hardware for the PA-RMK is supplied.
 - (2) Handle Brackets
 - (8) #10-16 1/2" Screws
- 2. Using a #2 Phillips head screwdriver, remove (4) screws located on each side of the cover.
- 3. Attach mounting bracket with screws supplied as shown in Figure 7.



CAUTION: Do not block air flow, stack units or operate vertically. When rack mounting, it is necessary to have a minimum of 1.75" above and 1.75" below unit to allow for adequate air flow. Failure to do so could result in excessive heat which could damage the amplifier.

18. TROUBLESHOOTING:

Symptom	Possible Solution				
No Output	- Verify unit is receiving AC power.				
	- Check input source functionality and level.				
	 Output may not be connected or connected incorrectly. 				
Low, High, or Distorted Level	- Input signal may be too high or too low.				
	- Check gain control on unit.				
	- Input or output impedance may be mismatched.				

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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