

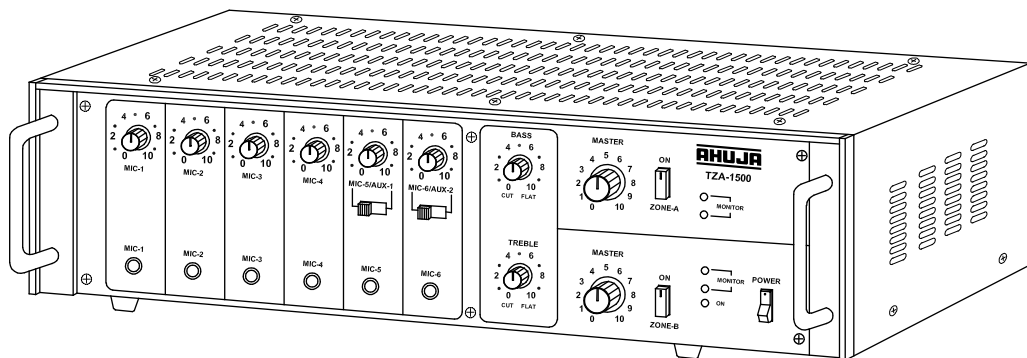
# AHUJA®

# PA AMPLIFIER

160W RMS/200W Max.

OPERATION MANUAL

## TZA-1500

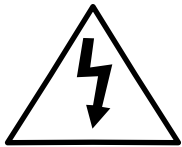


- ◆ Thank you for purchasing the AHUJA PA Amplifier.
- ◆ Please read this manual thoroughly before making connections and turning on the power. Following the instructions in this manual will enable you to obtain optimum performance from your new AHUJA PA Amplifier.
- ◆ Please retain this manual for future reference.

## • Safety Instructions

**CAUTION:** To reduce the risk of electric shock, do not remove the top cover. No user serviceable parts inside. Refer servicing to qualified personnel only.

**WARNING:** To reduce the risk of fire or electrical shock, do not expose this equipment to rain or moisture.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure, that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual.

**Detailed Safety Instructions:** All the safety instructions in this manual should be read before operating this equipment.

**Retain Instructions:** The operation manual should be kept for future reference.

**Follow Instructions:** All operation and safety instructions should be followed.

**Water and Moisture:** In order to prevent any fire or shock hazard, do not expose this equipment to rain or moisture.

**Power Source:** The equipment should be connected to a 220-240V 50Hz AC or 1 × 12V DC power source. For 220V AC operation, a tap on the power transformer is available, which should only be changed by an authorized Ahuja dealer.

**Power-cord Protection:** Do not cut, kink, damage or modify the power supply cord supplied with the equipment. Keep the power supply cord away from heaters & harmful chemicals. Do not place heavy objects on the power cord.

**Operation on Generator:** When operating the amplifier on a generator, make sure it is switched 'OFF' till the generator voltage has stabilized and then only switch the amplifier 'ON'.

**Ventilation:** The amplifier should be situated so that its location or position does not interfere with its proper ventilation. Also do not insert or drop anything into the ventilation holes.

**Protection Against Shocks:** The cover strip of the 100V output terminals and 4ohm/8ohm output terminals should be replaced after making connections. Failure to do so may result in exposure to voltage of upto 100V. Also do not insert or remove the power supply plug with wet hands so as to avoid electric shock.

**Prevention of Loss in Speaker Cables:** Always use thick cables for speaker connections. Use of cable type 40/36 or thicker is recommended for connecting low impedance speakers to avoid power loss in the cables, as heavy current flows through the cables.

**Proper Selection of Output Terminals:** When 100V line is being used, do not connect speakers to 4ohm or 8ohm tap. Similarly do not connect speakers to 100V line when 4ohm or 8ohm tap is being used.

**Grounding or Earthing:** The equipment must be earthed properly before operating it to avoid electric shock. A wire from the Earth Terminal must be connected to either water pipe or to electrical earth for safe operation.

**Replacing AC Mains Fuse:** After disconnecting the AC mains and rectifying the defect in the amplifier, change the fuse with another of the specified rating only. Insert and tighten the fuse holder completely to avoid any loose contact.

**Exposure to Hot Region:** Do not touch the Heat Sink while the amplifier is in operation.

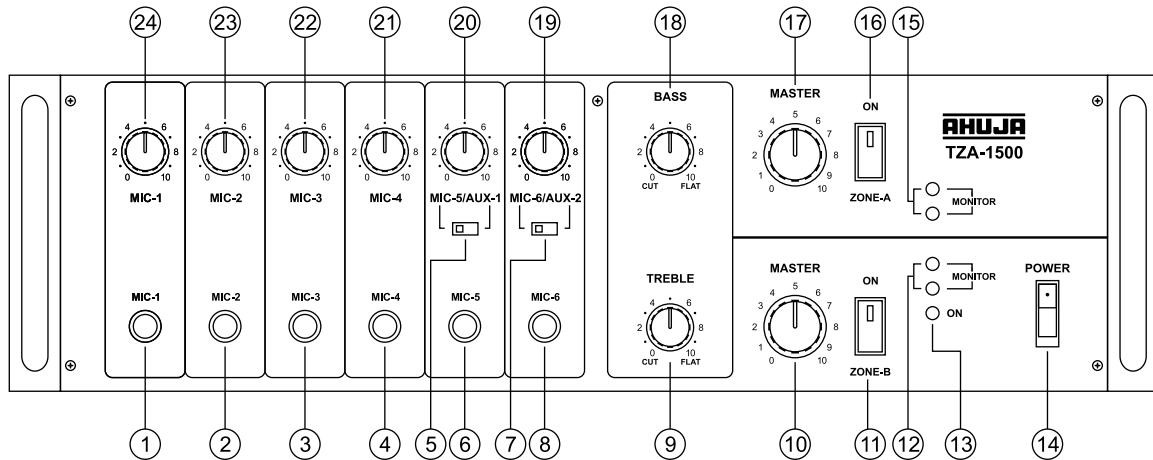
## • **Table of Contents**

<b>Contents</b>	<b>Page No.</b>
• <b>Features/General Description of Product</b> .....	4
• <b>Front Panel Controls &amp; Features</b> .....	5
• <b>Rear Panel Controls &amp; Features</b> .....	6
• <b>Interconnections</b> .....	7
• <b>Speaker Connection Guidelines</b> .....	9
• <b>Typical Applications</b> .....	12
• <b>Specifications</b> .....	16

## • **Features/General Description of Product**

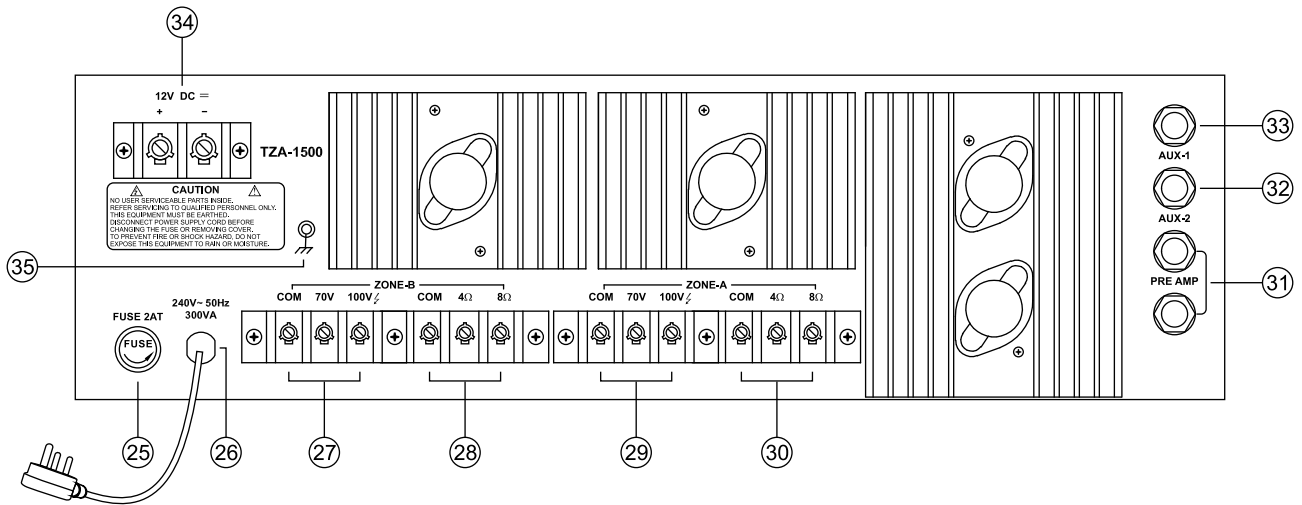
- Ideal for use in a wide variety of 2- Zone PA applications where some loudspeakers are required to operate indoors and some outdoors at different volume levels with On/Off facility.
- TZA-1500 is a 160 Watts 2 zone amplifier offering 4 independent unbalanced Mic Inputs & 2 unbalanced Mic Inputs alternate to 2 Aux Inputs to feed one or both zone and with combined tone controls and individual master controls.
- Volume level of each zone can be adjusted independently to any desired level and can be switched On or Off without disturbing its volume level settings.
- Preamplifier Output is provided for connecting to a Booster Amplifier and for recording the programme.
- Power losses in speaker wirings are reduced as the Two zones share the delivering of 160W of power.
- Provision for automatic changeover from AC to battery operation ensuring continuity of program.
- Protection provided against the reverse polarity of battery connections.
- Ease of operation, combined with service accessibility has been optimized in the design.

## • Front Panel Controls & Features



1. **MIC-1 Input Jack Socket**  
For accepting unbalanced signal from a low impedance microphone.
2. **MIC-2 Input Jack Socket**
3. **MIC-3 Input Jack Socket**
4. **MIC-4 Input Jack Socket**
5. **MIC-5/AUX-1 Selector Switch**
6. **MIC-5 Input Jack Socket**
7. **MIC-6/AUX-2 Selector Switch**
8. **MIC-6 Input Jack Socket**
9. **TREBLE Control**  
For cutting or boosting the signal level of high frequencies.
10. **MASTER Volume Control Zone-B**  
For adjustment of the overall volume level of Zone-B.
11. **ZONE-B On/Off Switch**
12. **MONITOR LEDs Zone-B**  
These indicate the output level of Zone-B.
13. **POWER LED**  
This LED glows when the amplifier is switched ON.
14. **POWER Switch**
15. **MONITOR LEDs Zone-A**  
These indicate the output level of Zone-A.
16. **ZONE-A On/Off Switch**
17. **MASTER Volume Control Zone-A**  
For adjustment of the overall volume level of Zone-A.
18. **BASS Control**  
For cutting or boosting the signal level of low frequencies.
19. **MIC-6/AUX-2 Volume Control**
20. **MIC-5/AUX-1 Volume Control**
21. **MIC-4 Volume Control**
22. **MIC-3 Volume Control**
23. **MIC-2 Volume Control**
24. **MIC-1 Volume Control**

## • Rear Panel Controls & Features



### 25. AC MAINS FUSE (Rating 2 AMP 250V)

This protects the amplifier from any excessive current flow.

### 26. 3 CORE AC MAINS CABLE With Plug

### 27. SPEAKER Terminal Block for Zone B (70V, 100V)

For connecting speakers with 100V line matching transformers.

### 28. SPEAKER Terminal Block for Zone B (4 ohm and 8 ohm)

For connecting low impedance speakers.

### 29. SPEAKER Terminal Block for Zone A (70V, 100V)

### 30. SPEAKER Terminal Block for Zone A (4 ohm and 8 ohm)

### 31. PREAMPLIFIER Output Jack Sockets

For connecting to the Aux input of another amplifier or a Cassette Recorder for recording purpose. Two jack have been provided in parallel.

### 32. AUX-2 Input Jack Socket

For accepting an unbalanced signal from an auxiliary source like a Tuner, Cassette Player, Echo or Audio Mixer etc.

### 33. AUX-1 Input Jack Socket

### 34. BATTERY Terminal Block

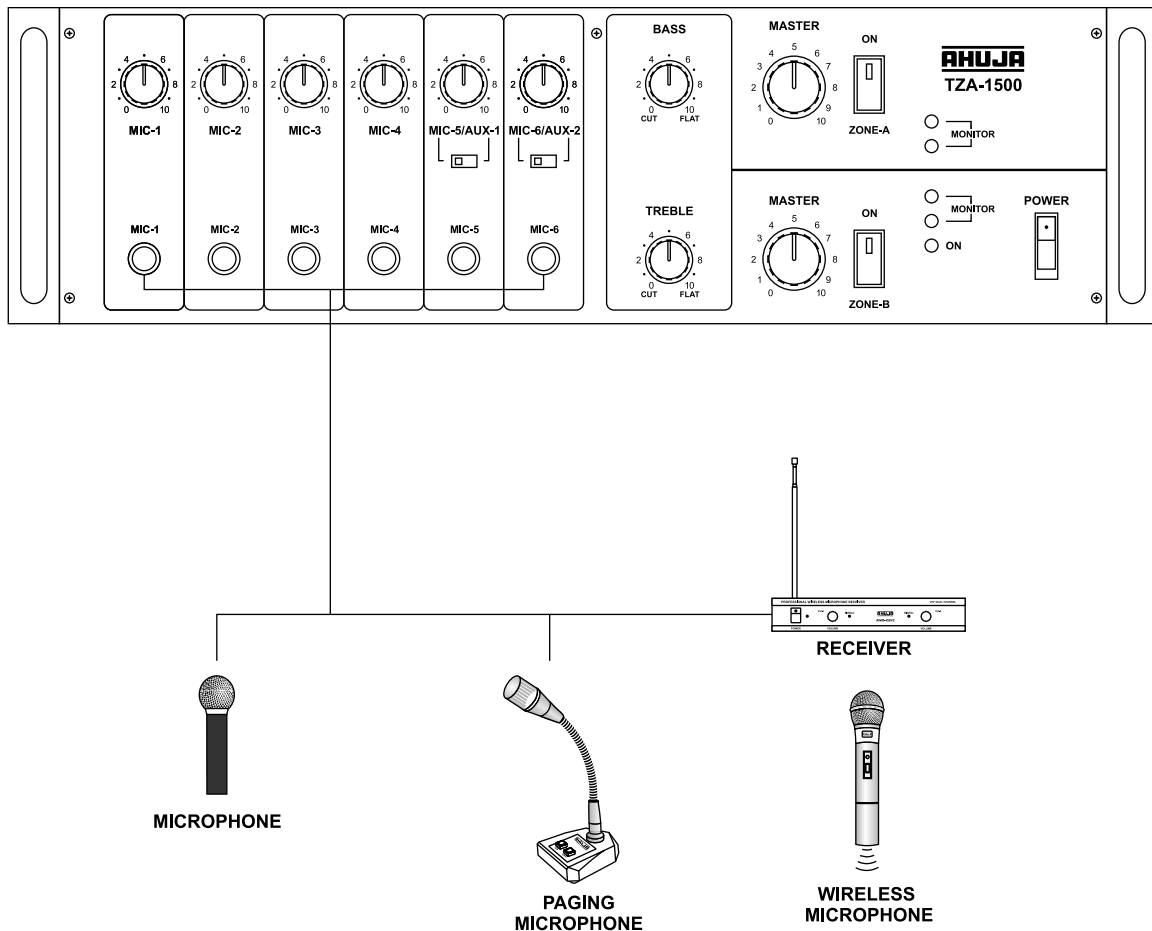
For connecting a 12V Car Battery as standby power source.

### 35. EARTH Terminal

## • Interconnections

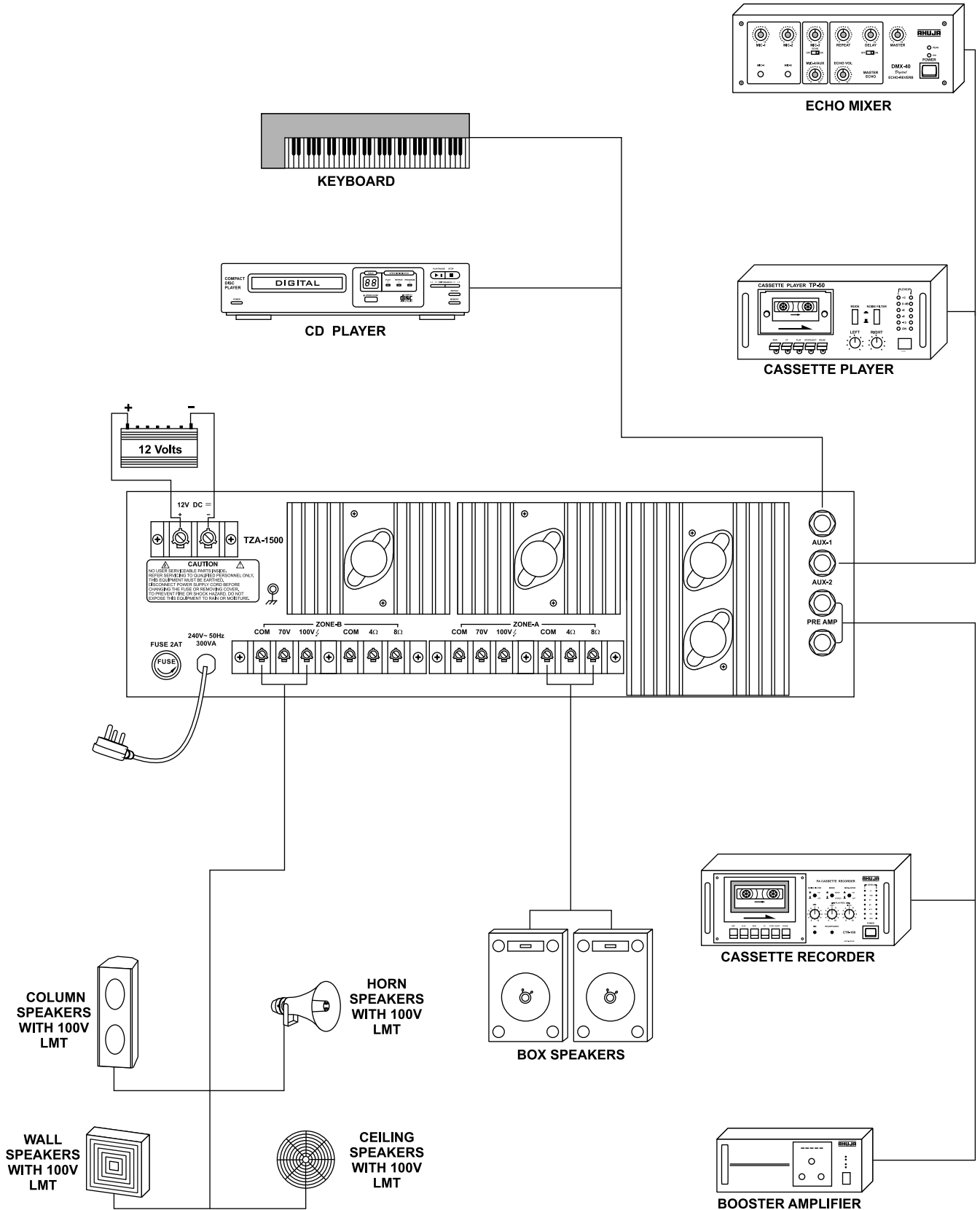
- The amplifier can be placed as a tabletop unit. Considerable heat is generated inside the amplifier during continuous use, therefore, the amplifier should be situated so that its location or position does not interfere with its proper ventilation.
- The amplifier must be powered through an AC earthed mains outlet.
- All connections must only be carried out or changed with the amplifier switched OFF.
- The amplifier may be operated from a DC supply of 12 Volts car battery.
- To avoid loud switching noise, always switch ON the power amplifier after all other units of the audio system have been switched ON. After operation switch it OFF First and then the other units.
- The connection diagram below, displays the typical types of input sources (Mics, Keyboards, Cassette Players, Mixers, CD Players etc.) and speakers (Wall, Ceiling, Box, Horn, Column) which can be connected to the amplifier. For correct connection and operation check the specification of the connected equipment.

### FRONT PANEL - TZA-1500



# Interconnections...

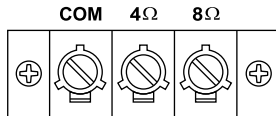
## REAR PANEL - TZA-1500





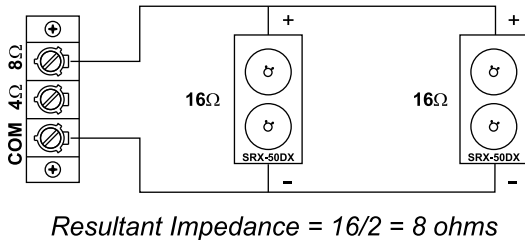
## • Speaker Connection Guidelines

TZA-1500 is a medium power amplifier. Therefore it is very important that correct loudspeaker connections are made to avoid damage to the amplifier or speakers.



### Low Impedance Speaker Connections

- Box type Speakers can be directly connected to Com-4 ohm / 8 ohm Terminal Strip.
- No Driver Units / Horn Speakers / Column Speakers (with 100V LMT) should be connected to Com-4 ohm / 8 ohm



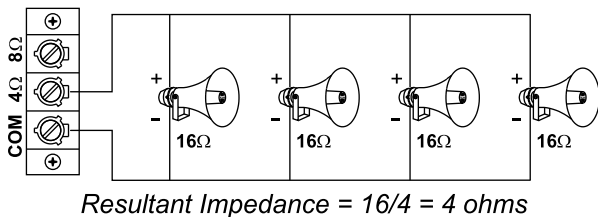
### Connecting Two SRX-50DX Speakers on Each Zone

Two SRX-50DX Speakers (Each speaker can handle 50W of power) should be wired in parallel as shown in figure. The resulting impedance of the speaker system is 8 ohm. Thus they should be connected to the 8 ohm Tap of the amplifier.



### Connecting One SRX-120DX Speaker on Each Zone

One SRX-120DX Speaker (Speaker can handle 100W of power) should be connected to 8 ohm tap on each zone as shown in figure.



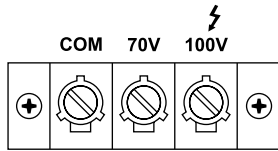
### Connecting Four Driver Units on Each Zone

Four Driver Units like AU-40 (40W) or AU-60 (60W) should be wired in parallel to each zone as shown in figure. The resulting impedance will be 4 ohm. The speaker system should be connected to the 4 ohm tap of each zone of the amplifier.

### ⚠ Caution

- When speakers are connected to COM-4 ohm / 8 ohm Terminal Strip NO speakers should be connected to the Red Terminal Strip marked COM-70V/100V of the same zone.
- Speakers should be connected only to either COM - 4 ohm or COM - 8 ohm terminals of the same zone as illustrated above but never to more than one set of terminals.

# Speaker Connection Guidelines....

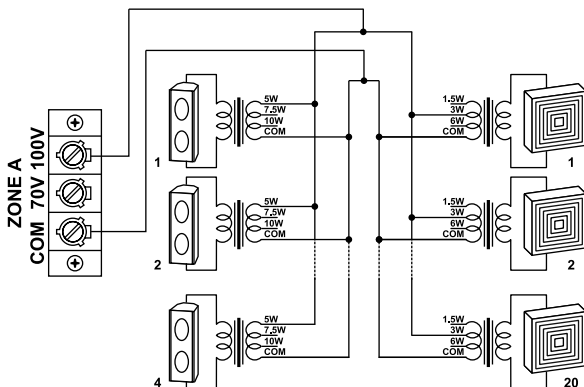
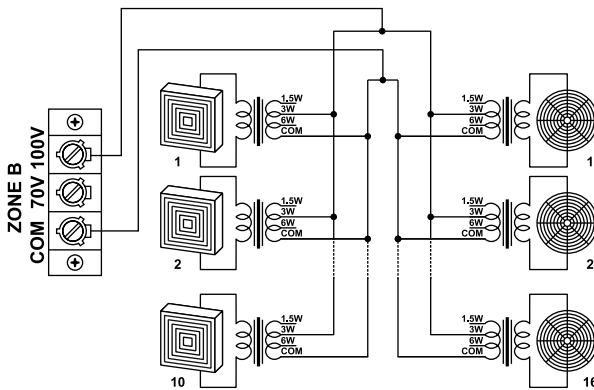
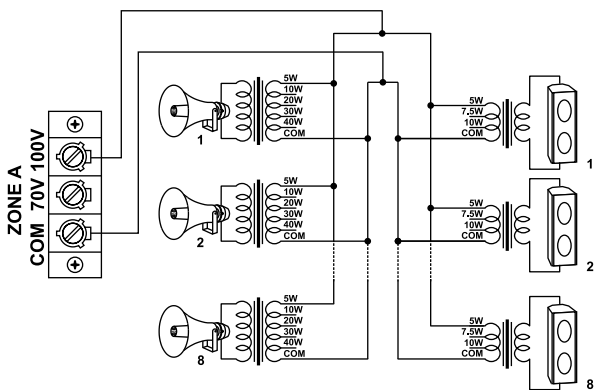


## High Impedance Speakers or Speakers Using A 100V Line Matching Transformer

- Driver Units / Horn Speakers / Column Speakers with 100V Line Matching Transformers are only to be connected to Com-70V / 100V Terminal Strip.
- When any of the above speakers are connected to the Com-70V/100V Terminal Strip of a zone then No Box Speakers should be connected to the COM - 4 ohm - 8 ohm Terminal Strip of that zone.
- The power drawn from the amplifier should not exceed 80 Watts from each zone.

## Connecting a combination of Driver Units and Columns Speakers with 100V LMTs on Zone A, Wall Speakers & Ceiling Speakers with 100V LMT on Zone B

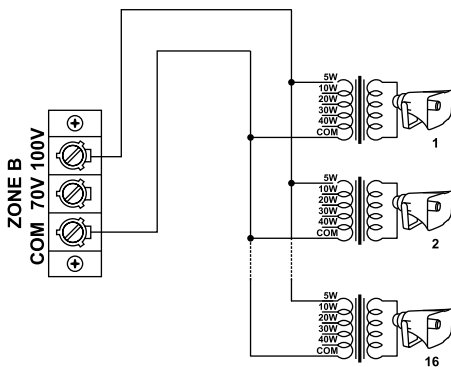
- 8 Driver Units with 100V LMTs connected at 5W and 8 Columns Speakers with 100V LMTs connected at 5W can be operated on Zone A.
- 10 Wall Speakers with 100V LMT connected at 3W and 16 Ceiling Speakers with 100V LMT connected at 3W can be operated on Zone B.



## Connecting a combination of Column Speakers and Wall Speakers with 100V LMTs on Zone A, Horn Speaker with 100V LMT on Zone B

- 4 Column Speakers with 100V LMT connected at 5W tap and 20 Wall Speakers with 100V LMT connected at 3W can be operated on Zone A.

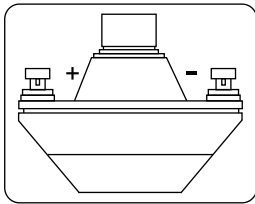
## Speaker Connection Guidelines....



- On Zone B, 16 Horn Speakers with 100V LMT connected at 5W can be operated.

### Use of 70 Volt Line

A loudspeaker / Driver Unit with its LMT adjusted to the 15W tap, when connected to COM and 100V terminals on the amplifier's Terminal Strip will draw 15W from the amplifier but when the same is connected to COM and 70V it will only draw half power or 7.5W. A good use of 70V line tap can be made in installations where large number of speakers / driver units are to be installed for more even distribution of sound.



### Correct Phasing of Loudspeakers

- When two or more Speakers/Units installed in the same area and are facing the same direction, it is essential that their cones/diaphragms act in unison. Otherwise the sound level of one speaker will be canceling the sound level of the other. To avoid any mistake, the terminals of Box speakers and the Driver Units are marked '+' & '-'. Always connect the COM of the Amplifier to '-' of speaker & 4/8 of the amplifier to the '+' of the speakers.
- In case of LMTs the COM of all the LMTs should be connected to the COM of the red strip terminal of the amplifier and the power tap to 100V line as shown in figure.

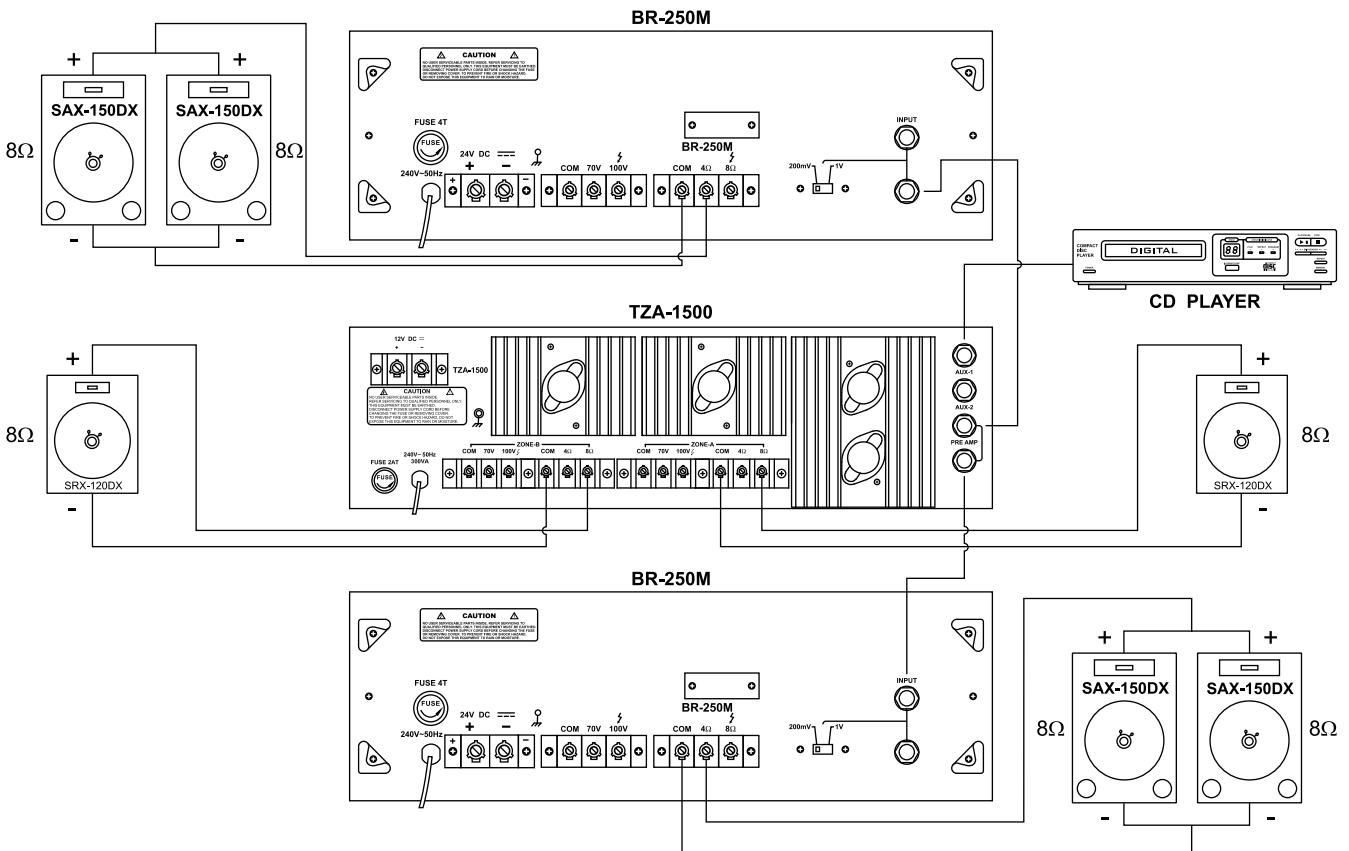
### Caution

- When 70/100 Volt line is being used, no speakers / driver unit should be connected to 4 ohm / 8 ohm (Low Impedance) Tap of the same zone.
- Loudspeaker / driver unit should be connected to either COM-100V or COM-70V terminals, but never to more than one set of terminals.

# Typical Applications

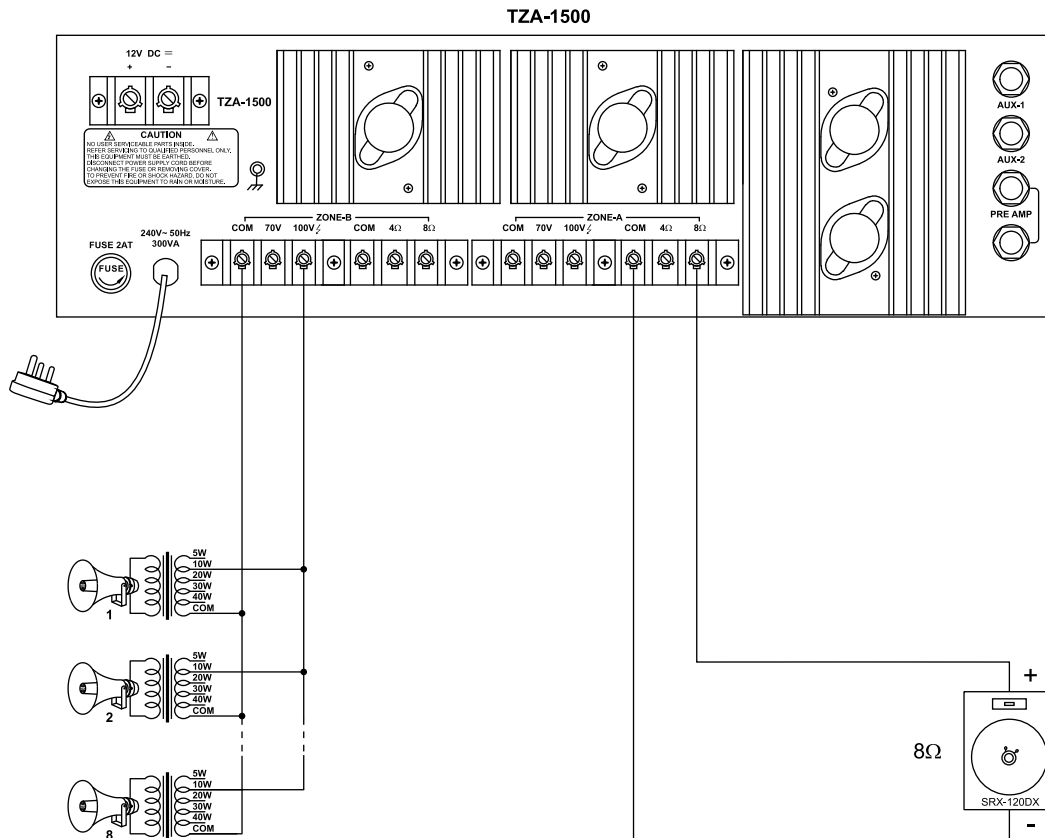
## Connecting BR-250M On Each Zone To Make A 660W PA System

1. Connect the Output of the CD Player to the Aux Input of TZA-1500 i.e. the Source Amplifier using a patch-cord with ¼" phone plug on one end and two RCA plug on other end.
2. Connect the Pre-amp output from TZA-1500 to the Input of first BR-250M, using a patch-cord with ¼" phone plugs at both ends. Similarly connect Pre-amp output from TZA-1500 to the input of second BR-250M. Keep the Input Switch on BR-250M at 200mV sensitivity.
3. In this manner the CD Player will feed all the three amplifiers creating a 660W PA System.
4. Loudspeaker connections to the amplifiers should be done independently.
5. The left and right speaker stacks comprise of two sets of two SAX-150DXs and two SRX-120DXs. Two SAX-150DXs should be connected in parallel to each BR-250M and one SRX-120DX should be connected to each zone of the TZA-1500.
6. Speaker system impedance should be matched to the output impedance of the amplifier and thus should be connected to the corresponding tap of the amplifier.
7. The Box Speaker / Driver Unit selector switch on both BR-250M should be set to the Box Speaker side.
8. Finally when operating the system, the Bass and Treble controls of the TZA-1500 should be set to flat and any adjustments in the tonal quality of the sound should be adjusted as per requirement.



## Connecting Similar/Different Types of Speakers for Indoor and Outdoor applications

1. In places where box type speakers are to be used for inside the hall and driver units with 100V line matching transformer are to be installed for the outside.
2. Here box type speakers are connected on one zone and driver units are connected on the other zone.
3. The volume of both the zones can be adjusted with the help of respective Master Controls. The box speakers are to be operated on low volume inside the hall. The driver units are to be operated on a higher volume level of the outside.
4. The tonal quality can be adjusted by Bass and Treble Controls.



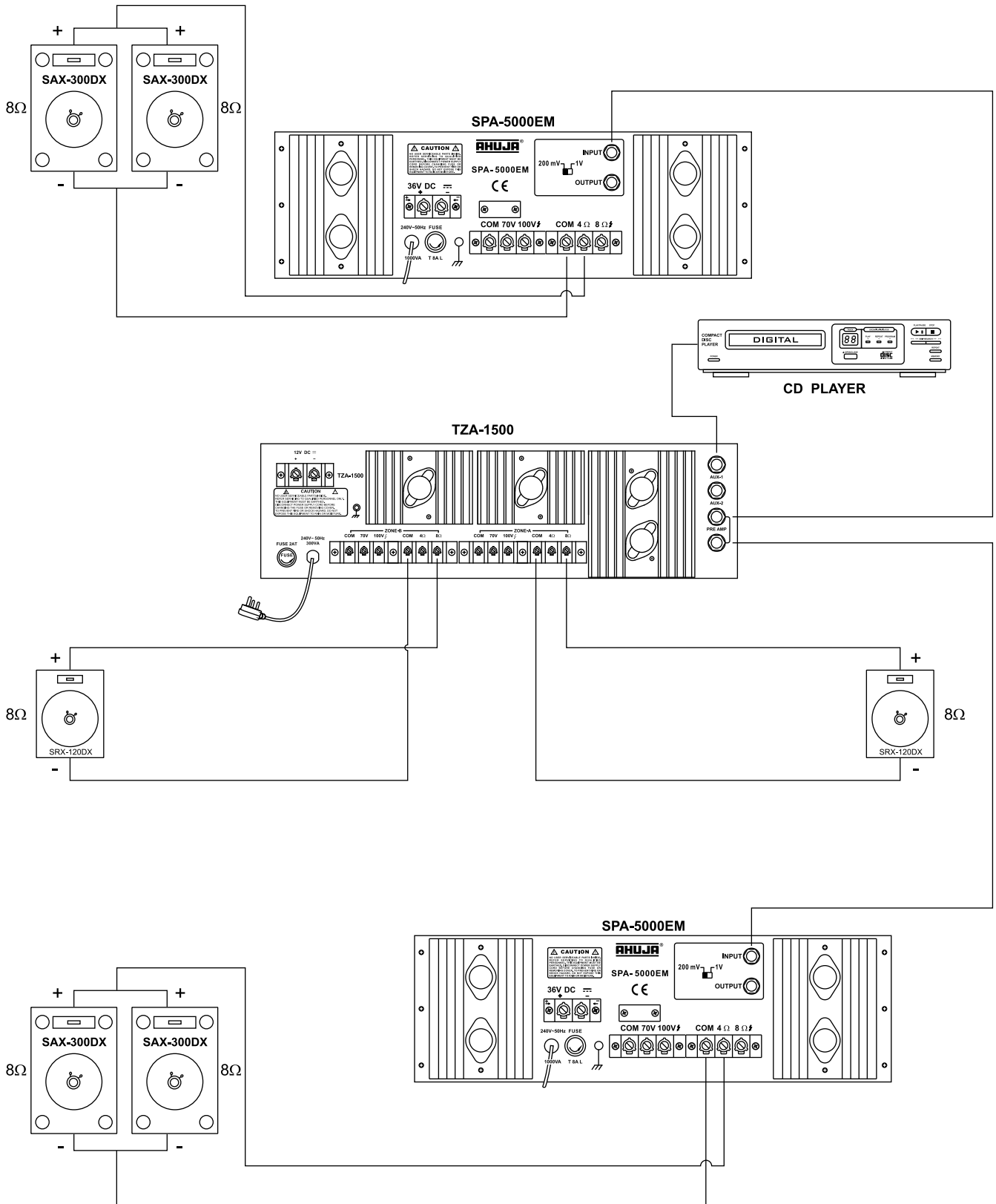
## ***Typical Applications....***

### **Connecting SPA-5000EM On Each Zone To Make A 1160W PA System**

1. Connect the Output of the CD Player to the Aux Input of TZA-1500 i.e. the Source Amplifier using a patch-cord with ¼" phone plug on one end and two RCA plug on other end.
2. Connect the Pre-amp output from TZA-1500 to the Input of first SPA-5000EM, using a patch-cord with ¼" phone plugs at both ends. Similarly connect Pre-amp output from TZA-1500 to the input of second SPA-5000EM. Keep the Input Switch on SPA-5000EM at 200mV sensitivity.
3. In this manner the CD Player will feed all the three amplifiers creating a 1160W PA System.
4. Loudspeaker connections to the amplifiers should be done independently.
5. The left and right speaker stacks comprise of two sets of two SAX-300DXs and two SRX-120DXs. Two SAX-300DXs should be connected in parallel to each SPA-5000EM and one SRX-120DX should be connected to each zone of the TZA-1500.
6. Speaker system impedance should be matched to the output impedance of the amplifier and thus should be connected to the corresponding tap of the amplifier.
7. The Box Speaker / Driver Unit selector switch on both SPA-5000EM should be set to the Box Speaker side.
8. Finally when operating the system, the Bass and Treble controls of the TZA-1500 should be set to flat and any adjustments in the tonal quality of the sound should be adjusted as per requirement.

*(Refer to page 15 for illustration)*

Connecting SPA-5000EM On Each Zone To Make A 1160W PA System



## • Specifications

Model TZA-1500	ZONE-A	ZONE-B
<b>Power Output</b>	100W RMS Max. 80W RMS at 10% THD 70W RMS at 5% THD 60W RMS at 2% THD	100W RMS Max. 80W RMS at 10% THD 70W RMS at 5% THD 60W RMS at 2% THD
<b>Output Regulation</b>	≤2 dB no load to full load at 1kHz	
<b>Input Channels</b>	Mic (1-6) 0.6mV / 4.7kΩ (Mic Source Imp. 50Ω to 1kΩ) Aux 1 & 2 : 100mV / 470kΩ	
<b>Frequency Response</b>	65Hz – 15,000 Hz ±3dB	65Hz – 15,000Hz ±3dB
<b>S/N Ratio</b>	60dB	60dB
<b>Tone Controls</b>	Bass: -10dB at 100Hz	Bass: -10dB at 100Hz
	Treble: -10dB at 10kHz	Treble: -10dB at 10kHz
<b>Preamp Output</b>	200mV / 600Ω	
<b>Output Taps for Speaker Matching</b>	4 & 8Ω (for direct connections) 70 & 100V Line (for use with LMT)	4 & 8Ω (for direct connections) 70 & 100V Line (for use with LMT)
<b>Power Supply</b>	AC : 220-240V 50/60Hz DC : 12V (1×12V Car Battery)	
<b>AC Power Consumption</b>	300VA	
<b>DC Power Consumption</b>	3A	3A
<b>Dimensions</b>	W460 x H155 x D310 mm	
<b>Net Weight</b>	14.2kg (approx.)	

- Design and Specifications are subject to change without notice owing to continuous product upgradation.
- Technical specifications are subject to production tolerances.

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