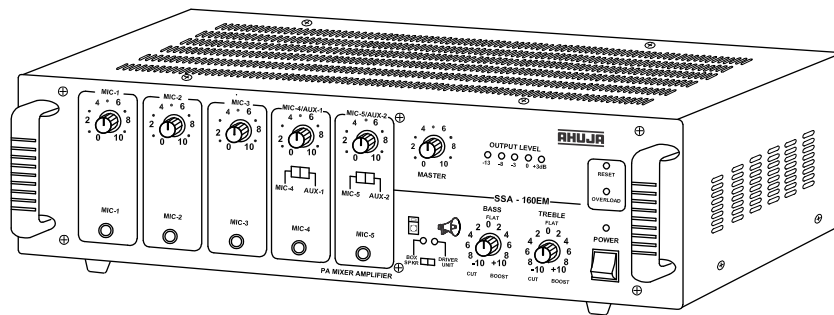


# AHUJA®

## PA Mixer Amplifier

160W RMS/220W Max.

# SSA-160®EM



- ◆ Thank you for purchasing the AHUJA PA Mixer 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 Mixer Amplifier.
- ◆ Please retain this manual for future reference.

## • Safety Instructions

**Read the Instructions:** Please read all the instructions in this section carefully before installation or use of the product. All the safety instructions must be followed.

**Retain the Instructions:** Please retain this Instruction Manual for future reference.



This symbol, wherever it appears, alerts you to the presence of uninsulated hazardous voltage that may be sufficient to constitute a risk of electric shock. External wiring to any terminal marked with this symbol must be done by a trained and instructed person only.



This symbol, wherever it appears adjacent to a component, alerts you that the concerned component can only be replaced by another of the exact same specifications.

### WARNING

- To reduce the risk of electric shock, do not remove the top cover. No user serviceable parts inside. Refer all servicing to qualified personnel only.
- Before replacing any fuse, make sure the set is switched off and disconnected from the AC mains or any other power source. Replace a fuse only with another of exactly same specification.

### CAUTIONS

**Water & Moisture:** To reduce the risk of fire or electrical shock, do not expose this set to rain or moisture. Do not use this set near water or in a wet location. Do not keep any object filled with liquid, such as a vase, on top of this set. Do not insert or remove the AC mains plug with wet hands.

**Power Source:** The voltage & frequency of the AC mains supply, and the voltage of the external battery, (if applicable) to which this set can be connected, is marked on the rear panel of the set. Do not connect this set to any power source other than those specified on the rear panel.

**Power Cord Protection:** Do not cut, kink, damage or modify the AC power cord supplied with this set. Keep the AC power cord away from heaters and harmful chemicals. Do not keep any heavy object on the power cord.

**Operation on Generator:** When operating this set on a generator, make sure the set is switched off till the generator voltage has stabilized.

**Ventilation:** This set should be situated so that its location or position does not interfere with its proper ventilation. Do not cover the ventilation holes / slots. Do not insert or drop anything into the ventilation holes / slots.

**Stability:** This set must be kept in a stable and flat horizontal position, and never in a tilted position. Do not place this set on an unstable stand, tripod, bracket or mount. Do not use attachments which are not supplied or explicitly recommended by the manufacturer.

**Cover Strip:** The cover strip of the 100V / 70V audio output terminal strip, and of any other high voltage output terminal strip, must be replaced after making connections. Failure to do so may result in exposure to hazardous voltages.

**Earthing:** This set must be earthed properly before use. A wire from the Earth terminal on the rear panel must be connected to electrical earth.

**Cleaning:** Disconnect this equipment from the AC mains and external battery before cleaning. Clean with a damp cloth, but do not allow any liquid to enter the set. Do not clean with liquids or aerosols.

**Exposure to Heat:** Do not touch the heatsinks while the set is working.

**• Table of Contents**

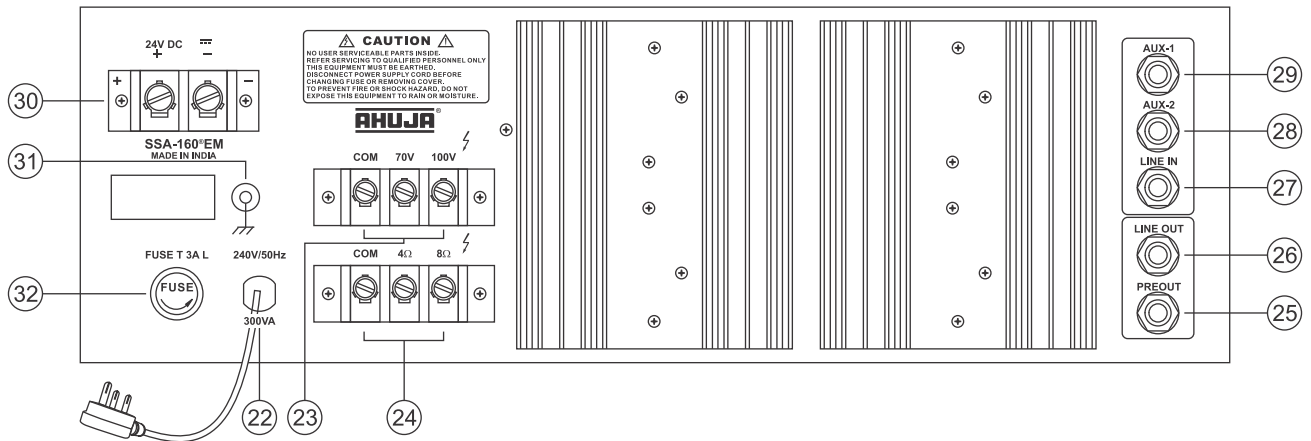
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## • Features/General Description of Product

- Designed for use in a wide variety of PA applications.
- SSA-160®EM is a 160 Watts Mixer Amplifier with Three Unbalanced Independent Mic inputs and Two Unbalanced Mic Inputs alternate to two Auxiliary inputs.
- SSA-160®EM has a Preamp output for recording the program, a Line output for connecting to a Booster Amplifier and a Line input for connecting to an external PA Audio Mixer.
- Box Speaker/ Driver Unit selector switch has been provided for protecting the Driver Unit's diaphragm from unwanted low frequencies. Since Box speakers can reproduce the full spectrum of audio frequencies but Driver Units cannot reproduce very low frequencies, the switch should be positioned to the Driver Unit side when Driver Units, Horns and Column speakers are connected.
- Circuit Protector Device has been provided which safeguards the amplifier against overload and short circuit.
- Provision for automatic changeover from AC to Battery Operation ensuring continuity of program has been provided.
- Protection provided against the reverse polarity of Battery connections.
- Ease of operation, combined with service accessibility has been optimized in the design.



## • Rear Panel Controls & Features



### 22. 3 Core AC Mains Cable With Plug

### 23. SPEAKER Terminal Block (70V, 100V)

For connecting speakers with 100V line matching transformers.

### 24. SPEAKER Terminal Block (4 ohm and 8 ohm)

For connecting low impedance speakers.

### 25. PREAMPLIFIER Output Jack Socket

For connecting to the AUX input of another amplifier or to a recorder for recording purpose.

### 26. LINE Output Jack Socket

For connecting to a booster amplifier to obtain combined higher power output.

### 27. LINE Input Jack Socket

For connecting inputs such as a CD Player. Also for connecting an external Mixer to enhance the number of inputs.

### 28. AUX-2 Input Jack Socket

For accepting an unbalanced signal from an auxiliary source like a Tuner, MP3 Player, Echo or Audio Mixer etc.

### 29. AUX-1 Input Jack Socket

### 30. BATTERY Terminal Block

For connecting two 12V Car Batteries in series (which becomes 24V) as standby power source.

### 31. EARTH Terminal

### 32. AC MAINS FUSE Rating 3 AMP 250V (T 3A L)

This protects the amplifier from any excessive current flow.

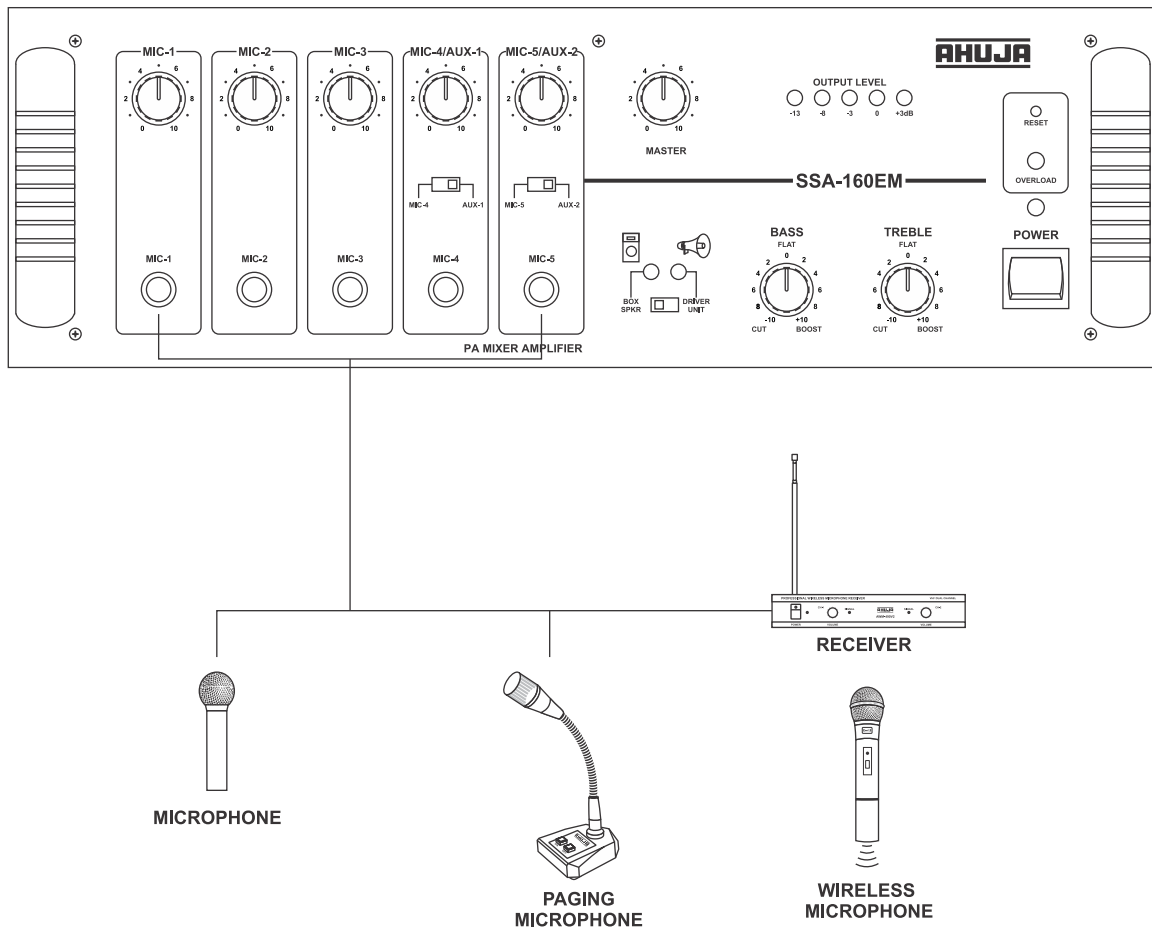
### CAUTION

- The equipment must be earthed properly before operating it to avoid electric shock. A wire from the Earth Terminal must be connected to electrical earth for safe operation.

## • Interconnections

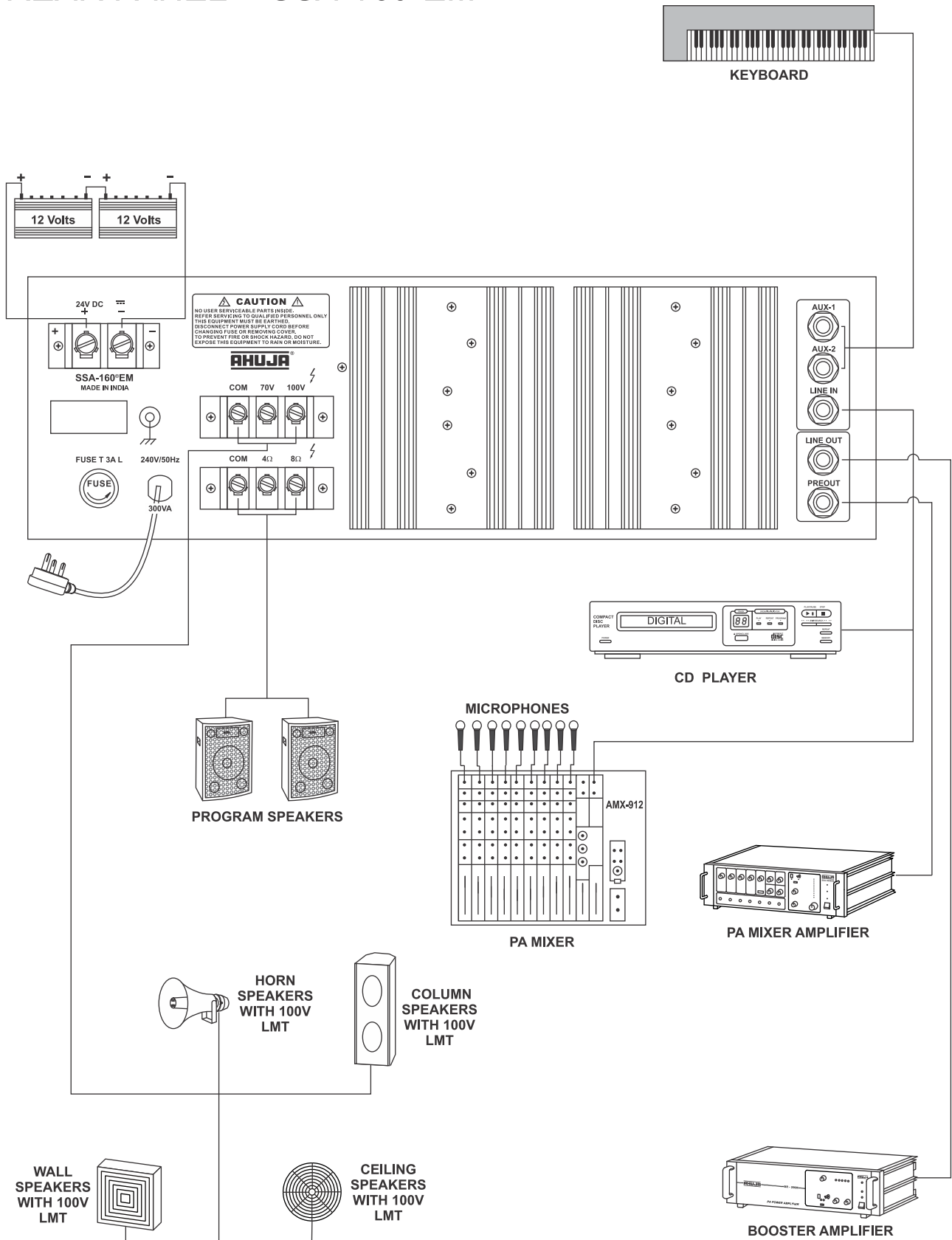
- The amplifier can be placed as a tabletop unit. The amplifier should be situated so that its location or position does not interfere with its proper ventilation.
- The amplifier must be powered through an AC earthed mains outlet.
- All connections must only be carried out or changed with the amplifier switched OFF.
- The amplifier may be operated from a DC supply of 24 Volts (two car batteries connected in series).
- To avoid loud switching noise, always switch ON the amplifier after all other units of the audio system have been switched ON. After operation switch it OFF first, then the other units.
- The connection diagrams that follow display the typical types of input sources (Mics, Keyboard, MP3 Player, Mixer, CD Players etc.) and speakers (Wall, Ceiling, Box, Horn, Column) which can be connected to the amplifier. For correct connections and operation check the specifications of the connected equipment.

### FRONT PANEL - SSA-160<sup>®</sup>EM



# Interconnections....

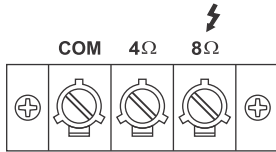
## REAR PANEL - SSA-160<sup>®</sup>EM





## • Speaker Connection Guidelines

SSA-160<sup>®</sup>EM is a medium power PA mixer amplifier. Therefore it is very important that correct loudspeaker connections are made to avoid damage to the amplifiers or speakers.

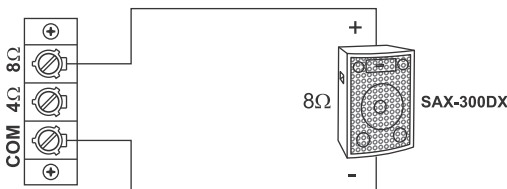


### Low Impedance Speaker Connections

- Box type Speakers can be directly connected to COM-4Ω / 8Ω Terminal Strip.
- The Box Speaker / Driver Unit switch must be kept at Box Speaker position. If by mistake the switch remains in Driver Unit position the quality of sound will not be rich and natural.
- No Driver Units / Horn Speakers / Column Speakers (with 100V LMT) should be connected to COM-4Ω / 8Ω.

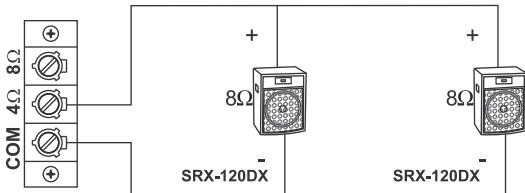
### Connecting SAX-300DX Speaker

SAX-300DX speaker (300W) should be connected to COM & 8 ohm as shown in figure.



### Connecting Two SRX-120DX Speakers

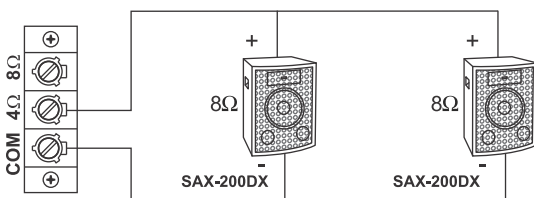
The Two SRX-120DX Speakers (each speaker can handle 100W of power) should be wired in a parallel as shown in figure. The resulting impedance will be 4 ohm. The speaker system should be connected to the 4 ohm tap of the amplifier.



Resultant Impedance =  $(8 \text{ Ohm} / 2) = 4 \text{ ohm}$

### Connecting Two SAX-200DX Speakers

The Two SAX-200DX Speakers (each speaker can handle 200W of power) should be wired in a parallel as shown in figure. The resulting impedance will be 4 ohm. The speaker system should be connected to the 4 ohm tap of the amplifier.

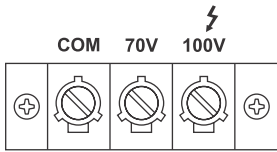


Resultant Impedance =  $(8 \text{ ohm} / 2) = 4 \text{ ohm}$

### IMPORTANT

- When speakers are connected to COM-4Ω/8Ω Terminal Strip, NO Speakers / Driver Units with 100V LMTs should be connected to the Terminal Strip marked COM-70V/100V (fitted with RED cover).
- Speakers should be connected only to either COM-4Ω or COM-8Ω terminals as illustrated above but never to more than one set of terminals.

# Speaker Connection Guidelines....

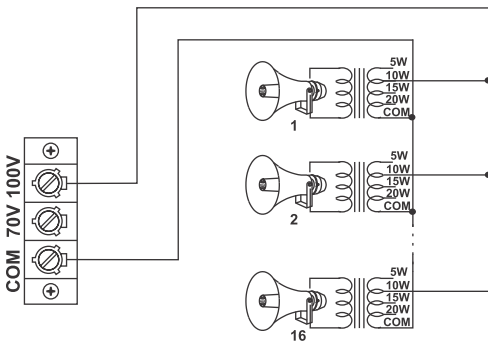


## High Impedance Speakers or Speakers Using A 100V Line Matching Transformer

- Only Driver Units / Horn Speakers / Column Speakers with 100V Line Matching Transformers are to be connected to COM-70V / 100V Terminal Strip.
- The Box Speaker / Driver Unit switch must be kept at Driver Unit position.
- When any of the above speakers are connected to the COM-70V / 100V Terminal Strip then NO Box speakers should be connected to the COM-4Ω / 8Ω Terminal Strip.
- The power drawn from the amplifier should not exceed 160 Watts.

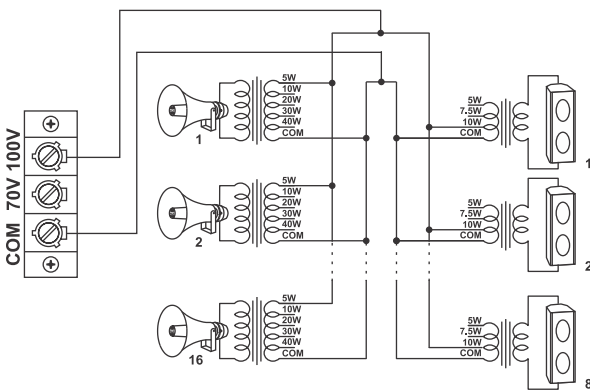
## Connecting Sixteen Driver Units with 100V LMT

16 Driver Units with 100V Line Matching Transformer connected at 10 Watts tap can be operated.



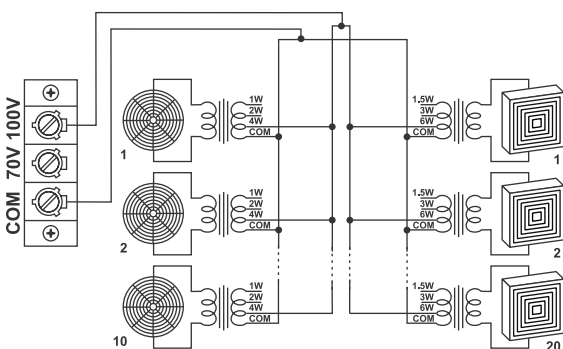
## Connecting a Combination of Driver Units and Column Speakers with 100V LMT

8 Column Speakers with 100V LMT at 10 Watts and 16 Driver Units with 100V LMT at 5 Watts can be connected together. The power drawn from the amplifier should not exceed 160 Watts.



## Connecting a combination of Wall and Ceiling Speakers with 100V LMT

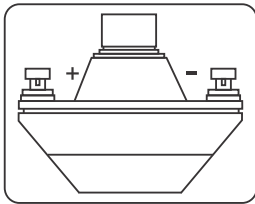
10 Ceiling Speakers with 100V LMT at 4 Watts and 20 Wall Speakers with 100V LMT at 6 Watts can be connected together. The power drawn from the amplifier should not exceed 160 Watts.



## Speaker Connection Guidelines....

### 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 i.e. 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 are 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 cancelling 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 & 4Ω/8Ω of the amplifier to the '+' of the speakers.
- In case of LMT's the COM of all the LMT's 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.

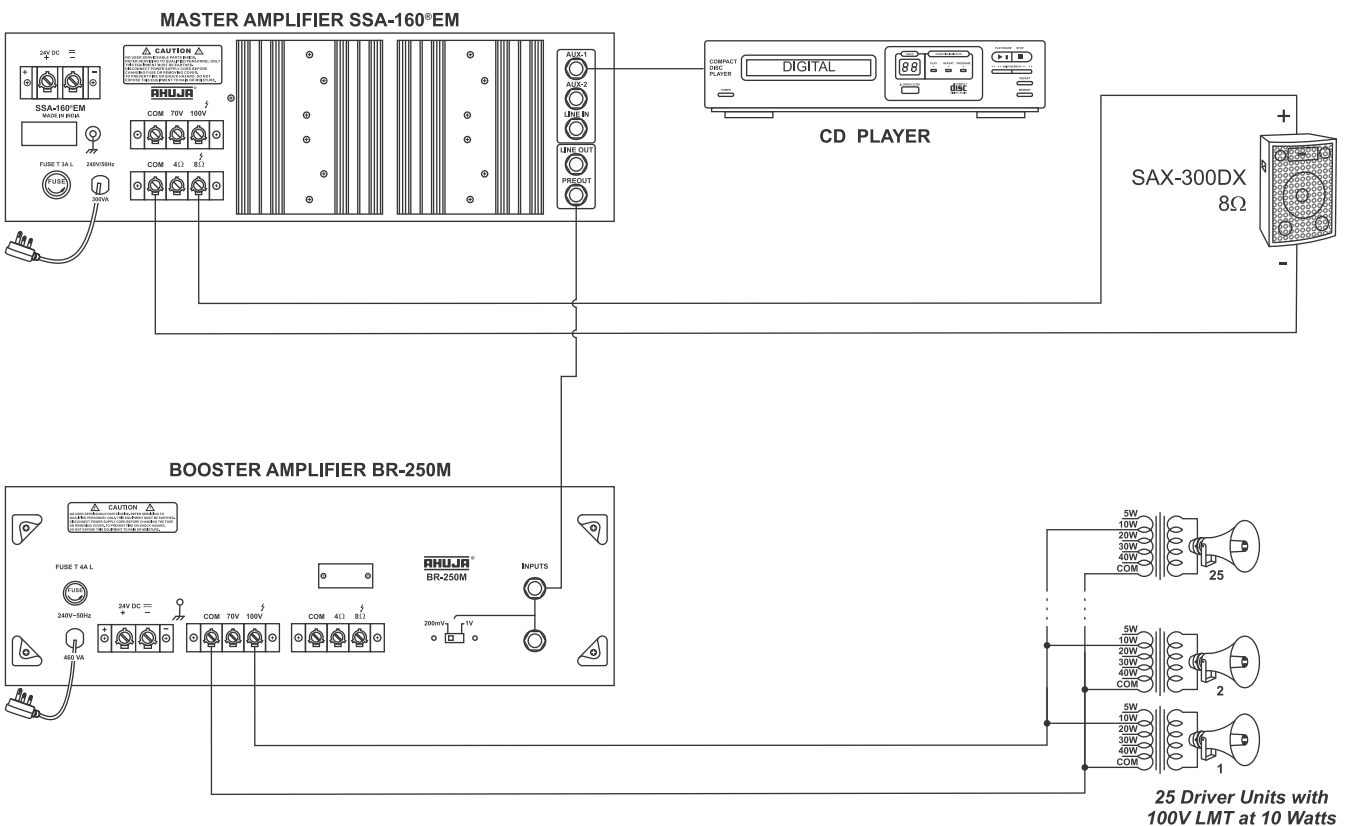
### IMPORTANT

- When 70 / 100 Volt line is being used, no speakers / driver units should be connected to 4Ω / 8Ω (Low Impedance) Tap.
- 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

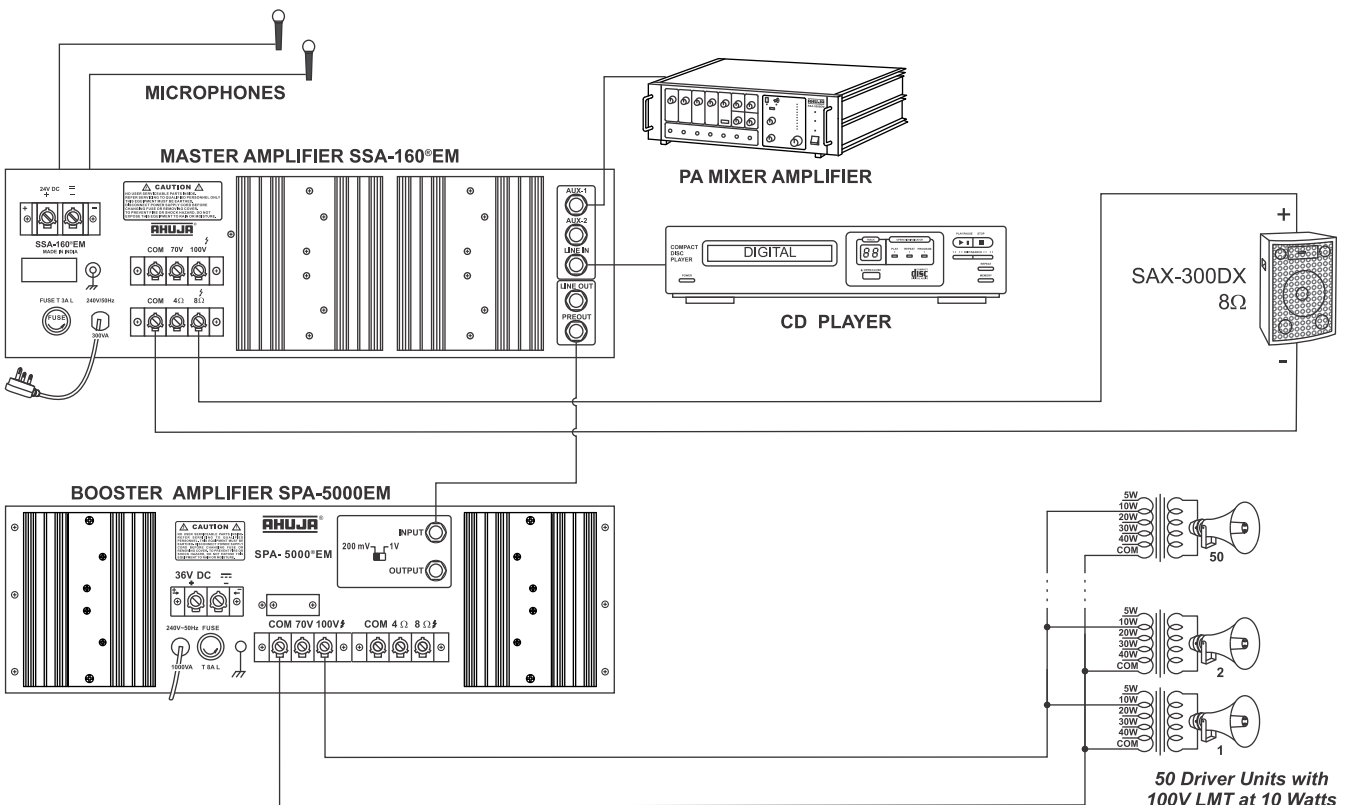
## Connecting SSA-160®EM To One BR-250M To Get A 410W Mono System

1. Connect Microphones and other Program Sources to the input jacks of the MASTERAMPLIFIER, which is the SSA-160®EM.
2. The Pre-Out jack of SSA-160®EM should be connected to the Input jack of the BR-250M. The sensitivity switch of the BR-250M should be be at 200mV.
3. In this manner the inputs connected to SSA-160®EM will feed both the amplifiers creating a 410W output system.
4. Loudspeaker connections to both the amplifiers should be done independently. Each of the amplifiers can be connected to either box type speakers or to speakers using the 100V LMT but NEVER to both together. 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.
5. When connecting box speakers to an amplifier the Box Speaker / Driver Unit switch should be set to the Box Speaker side and when connecting driver units, wall, ceiling or column speakers with 100V LMT, the switch should be turned to the Driver Unit side.
6. When speakers with 100V LMT are used, total power drawn should not exceed 250W in case of BR-250M & 160W in case of SSA-160®EM respectively.
7. Finally when operating the system, the Bass & Treble controls of the individual amplifiers can be adjusted to give optimum tonal quality of sound to suit the system requirements.
8. This kind of system is ideal where both high and low impedance speakers are being used.



## Connecting SSA-160<sup>®</sup>EM To One SPA-5000EM To Get A 660W Mono System

1. Connect Microphones and other Program Sources to the input jacks of the MASTERAMPLIFIER, which is the SSA-160<sup>®</sup>EM.
2. The Pre-Out jack of SSA-160<sup>®</sup>EM should be connected to the Input jack of the SPA-5000EM. The sensitivity switch of the SPA-5000EM should be be at 200mV.
3. In this manner the inputs connected to SSA-160<sup>®</sup>EM will feed both the amplifiers creating a 660W output system.
4. Loudspeaker connections to both the amplifiers should be done independently. Each of the amplifiers can be connected to either box type speakers or to speakers using the 100V LMT but NEVER to both together. 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.
5. When connecting box speakers to an amplifier the Box Speaker / Driver Unit switch should be set to the Box Speaker side and when connecting driver units, wall, ceiling or column speakers with 100V LMT, the switch should be turned to the Driver Unit side.
6. When speakers with 100V LMT are used, total power drawn should not exceed 500W in case of SPA-5000EM & 160W in case of SSA-160<sup>®</sup>EM respectively.
7. Finally when operating the system, the Bass & Treble controls of the individual amplifiers can be adjusted to give optimum tonal quality of sound to suit the system requirements.
8. This kind of system is ideal where both high and low impedance speakers are being used.



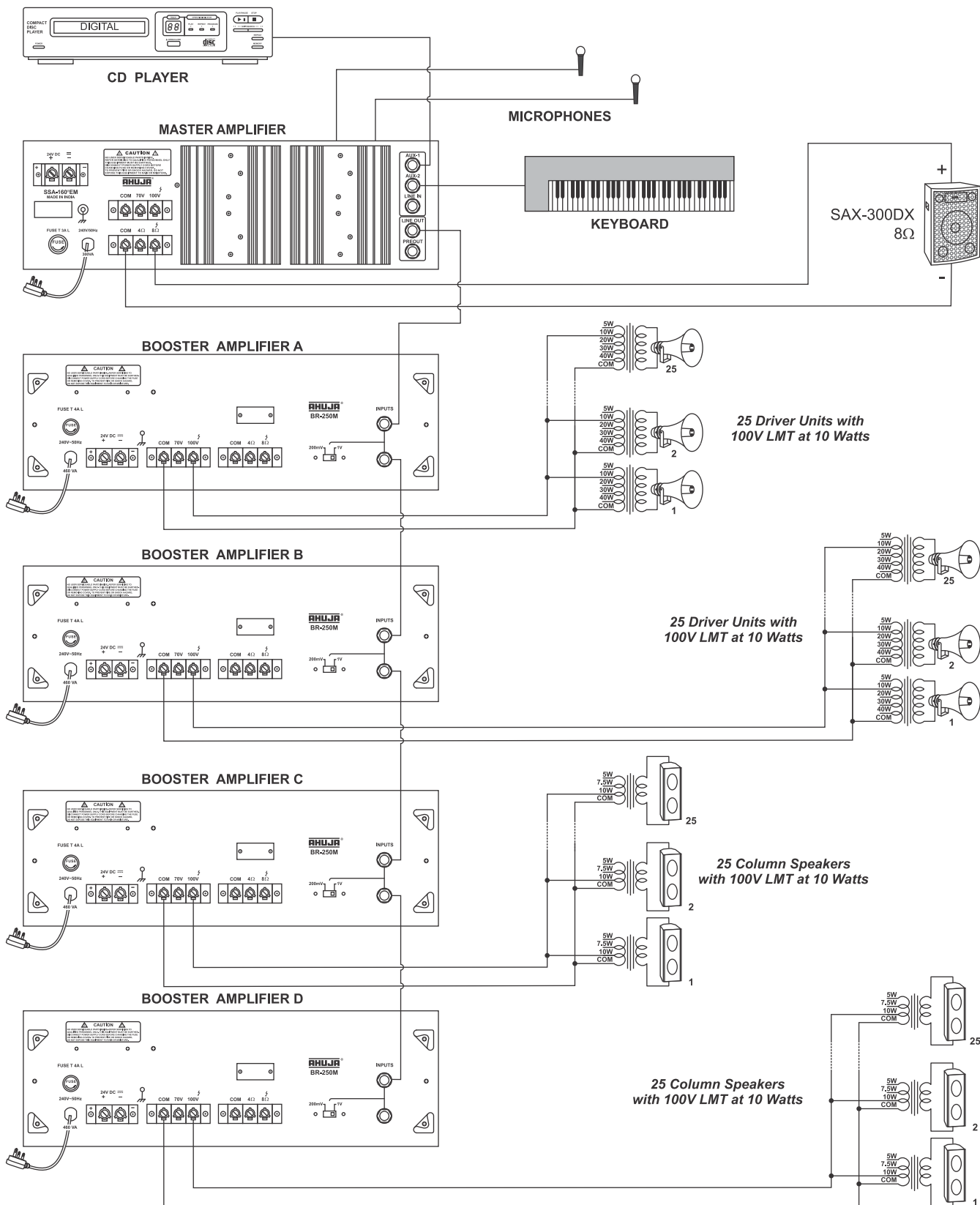
## Typical Applications....

### Connecting Four BR-250M And A SSA-160®EM For Making A 1160 W Mono System

1. Connect Microphones and other Program Sources to the input jack sockets of the Master Amplifier, which is the SSA-160®EM.
2. Connect the Line-Out of the Master Amplifier to the first Input jack socket of the first BR-250M (Booster A) using a patch-cord with ¼" phone plugs at both ends. The sensitivity switch next to the input jack sockets should be towards 1V.
3. Second Input jack socket of Booster A should be connected to the first input jack socket of the second BR-250M (Booster B). The sensitivity switch of the second booster should also be at 1V.
4. The third and the fourth BR-250M (Booster C and Booster D) should be connected in the same way. A maximum of four boosters should be connected in this way otherwise the line output of the Master Amplifier will get loaded.
5. In this manner the inputs connected to the Master Amplifier will feed all the five amplifiers creating a 1160W output system.
6. Loudspeaker connections to each of the five amplifiers should be done independently. Each of the amplifiers can be connected to either Box type speakers or to speakers using the 100V LMT but never to both together. 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. When connecting box speakers to an amplifier the Box Speaker / Driver Unit switch should be set to the Box Speaker side and when connecting driver units, wall, ceiling or column speakers with 100V LMT, the switch should be turned to the Driver Unit side.
8. When speakers with 100V LMT are used, total power drawn should not exceed 250W in case of BR-250M & 160W in case of SSA-160®EM respectively.
9. Finally when operating the system, any adjustments in the tonal quality of the sound if required can be made from the Master Amplifier.

*(Refer to page 15 for illustration)*

## Connecting One SSA-160<sup>®</sup>EM And Four BR-250M For Making A 1160W Mono System



## • Specifications

<b>Model</b>	<b>SSA-160®EM</b>	
<b>Power Output</b>	220W RMS Max. 160W RMS at 10%THD 140W RMS at 5% THD 120W RMS at 2% THD	
<b>Output Regulation</b>	≤ 2 dB no load to full load at 1kHz	
<b>Input Channels</b>	5 × Mic.                      0.65 mV / 4.7kΩ (Mic source impedance 50Ω to 1kΩ) 2 × Aux.-1 & 2              100mV / 470kΩ Line Input                      1V / 50kΩ	
<b>Frequency Response</b>	50 – 15,000 Hz ± 3 dB	
<b>Signal to Noise Ratio</b>	60dB	
<b>Tone Controls:</b>		
<b>Switch at Box Speaker Position</b>	Bass: ±10dB at 100Hz	Treble: ±10 dB at 10kHz
<b>Switch at Driver Unit Position</b>	Bass: -10dB at 100Hz	Treble: ±10 dB at 10kHz
<b>Pre-amp Output</b>	200mV / 600Ω	
<b>Line Output</b>	1V / 1kΩ	
<b>Output Taps for Speaker Matching</b>	4 & 8Ω (for direct connections) 70 & 100V Line (for use with LMT)	
<b>Power Supply</b>	AC: 220-240V 50 / 60Hz; DC: 24V (2 × 12V Car Battery)	
<b>Protection</b>	AC: Fuse 3Amp. (T 3A L); DC: 10Amp. Circuit Protector	
<b>AC Power Consumption</b>	300 VA	
<b>DC Power Consumption</b>	4A	
<b>Dimensions</b>	W420 × H155 × D320 mm	
<b>Weight</b>	13.60 kg approx.	

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

### AHUJA RADIOS

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