

AHUJA®

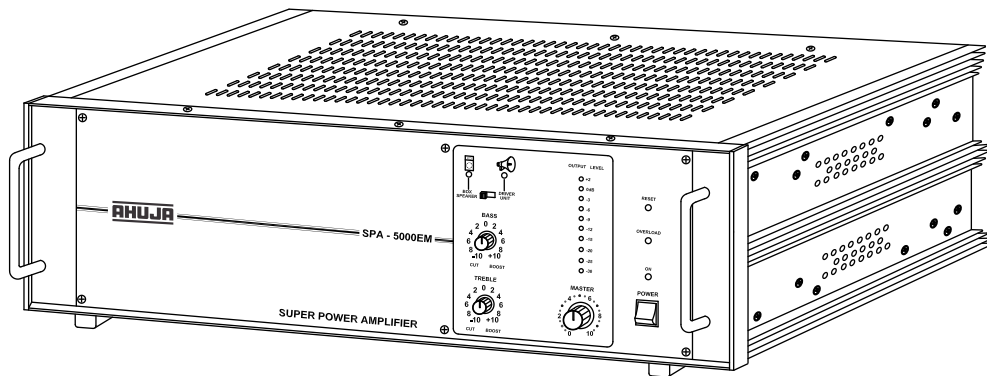
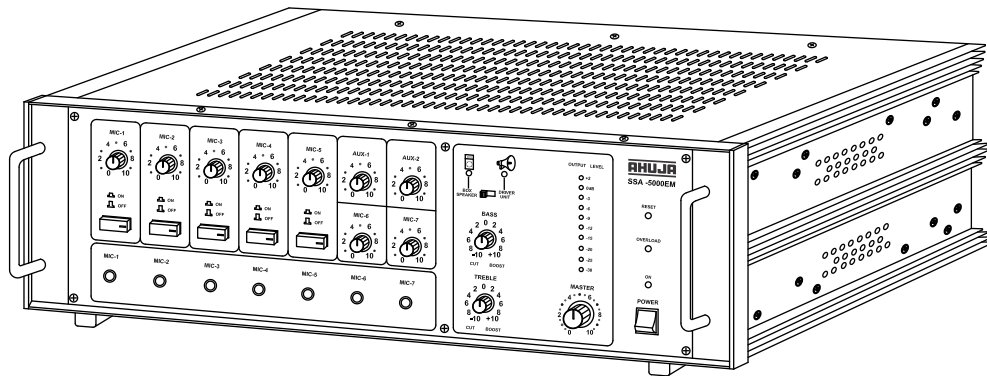
PA AMPLIFIERS

500W RMS / 750W Max.

OPERATION MANUAL

SSA-5000EM

SPA-5000®EM



- ◆ 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

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.

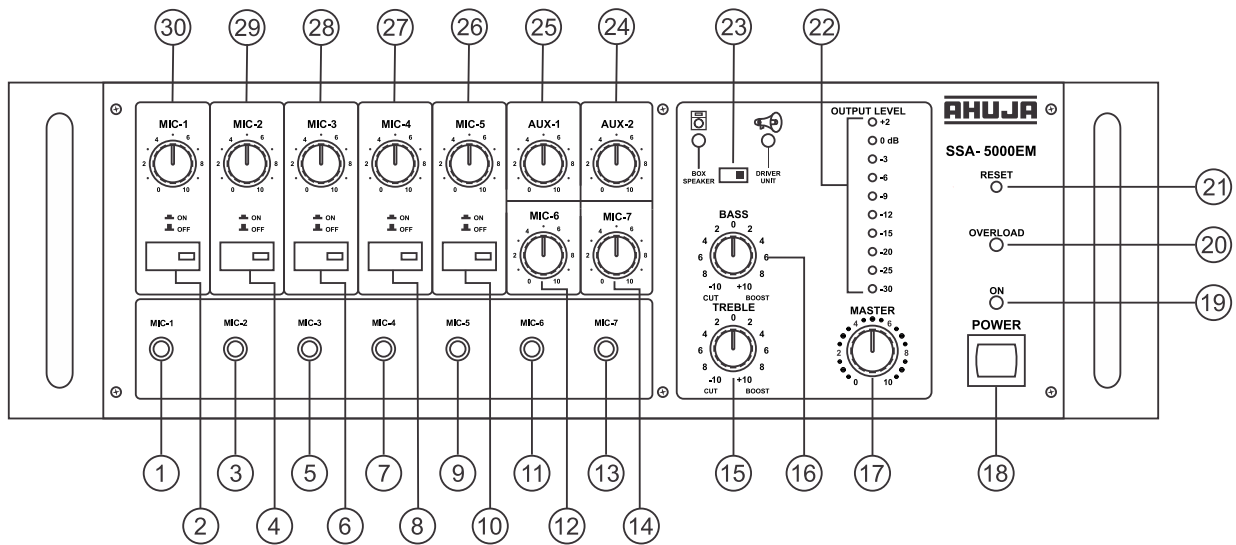
• Table of Contents

Contents	Page No.
• Features/General Description of Product	4
• Front Panel Controls & Features (SSA-5000EM)	5
• Rear Panel Controls & Features (SSA-5000EM)	6
• Front Panel Controls & Features (SPA-5000®EM)	7
• Rear Panel Controls & Features (SPA-5000®EM)	8
• Interconnections	9
• Speaker Connection Guidelines	12
• Typical Applications	15
• Specifications	20

• Features/General Description of Product

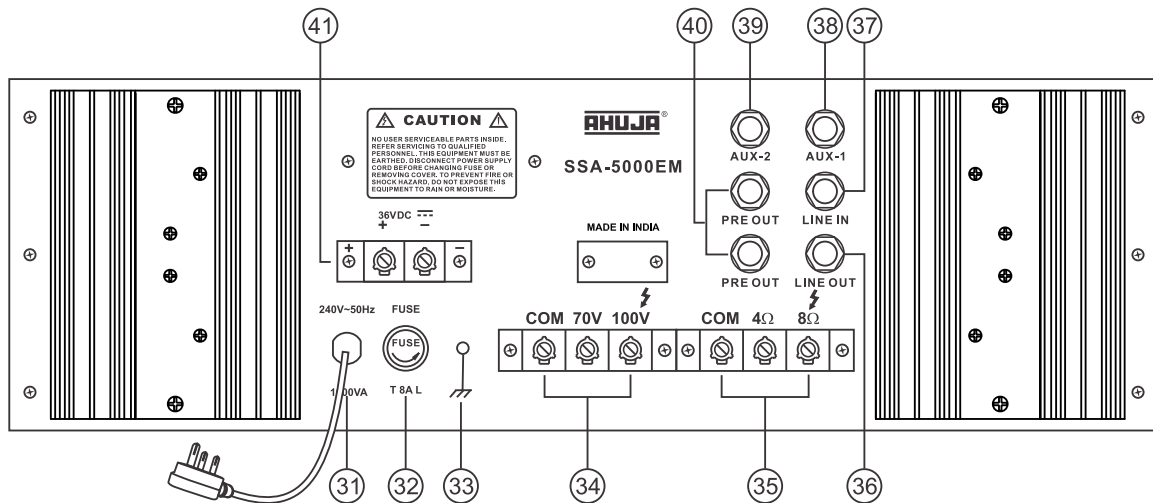
- Designed for use in a wide variety of PA applications.
- SSA-5000EM is a 500 Watts Mixer Amplifier with Seven Unbalanced Independent Mic inputs and Two Independent Auxiliary inputs.
- SSA-5000EM has a Preamp output for recording the program, a Line output for connecting to a Booster Amplifier and a Line input for connecting to an external PA Audio Mixer.
- SPA-5000[®]EM is a 500 Watts Booster Amplifier, which accepts input signals of both 200mV and 1V. It has an Input Sensitivity Selector Switch with the help of which it's input sensitivity can be altered to accept Preamp outputs or Line outputs from other sources.
- SPA-5000[®]EM has two jacks. The Input jack is used to feed an input signal into the amplifier while the Output jack could be used to connect another Booster Amplifier to it for a higher power requirement.
- 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.

• Front Panel Controls & Features (SSA-5000EM)



1. **MIC-1 Input Jack Socket**
For accepting unbalanced signal from a low impedance microphone.
2. **MIC-1 ON/OFF Switch**
3. **MIC-2 Input Jack Socket**
4. **MIC-2 ON/OFF Switch**
5. **MIC-3 Input Jack Socket**
6. **MIC-3 ON/OFF Switch**
7. **MIC-4 Input Jack Socket**
8. **MIC-4 ON/OFF Switch**
9. **MIC-5 Input Jack Socket**
10. **MIC-5 ON/OFF Switch**
11. **MIC-6 Input Jack Socket**
12. **MIC-6 Volume Control**
13. **MIC-7 Input Jack Socket**
14. **MIC-7 Volume Control**
15. **TREBLE Control**
For attenuating or boosting the signal level of high frequencies.
16. **BASS Control**
For attenuating or boosting the signal level of low frequencies.
17. **MASTER Volume Control**
For adjustment of the overall volume level from the amplifier.
18. **POWER Switch**
Push the top part of the knob to switch the amplifier ON. Push the bottom part of the knob to switch the amplifier OFF.
19. **POWER LED**
This LED glows when the amplifier is switched ON.
20. **OVERLOAD LED**
This LED glows when the circuit protector trips.
21. **RESET button**
This button pops out when the circuit protector trips. Rectify the cause and press the RESET button for resetting normal operation of the amplifier.
22. **LED Array**
This indicates the output level of the amplifier.
23. **BOX SPEAKER / DRIVER UNIT Selector Switch**
24. **AUX-2 Volume Control**
25. **AUX-1 Volume Control**
26. **MIC-5 Volume Control**
27. **MIC-4 Volume Control**
28. **MIC-3 Volume Control**
29. **MIC-2 Volume Control**
30. **MIC-1 Volume Control**

• Rear Panel Controls & Features (SSA-5000EM)



31. 3 CORE AC MAINS CABLE WITH PLUG

32. AC MAINS FUSE Rating 8 AMP 250V (T 8A L)

This protects the amplifier from any excessive current flow.

33. EARTH Terminal

34. SPEAKER Terminal Block (70V, 100V)

For connecting speakers with 100V line matching transformers.

35. SPEAKER Terminal Block (4 ohm and 8 ohm)

For connecting low impedance speakers.

36. LINE Output Jack Socket

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

37. LINE Input Jack Socket

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

38. AUX-1 Input Jack Socket

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

39. AUX-2 Input Jack Socket

40. PREAMPLIFIER Output Jack Sockets

For connecting to the AUX input of another amplifier or a cassette recorder for recording purpose. Two jacks have been provided in parallel.

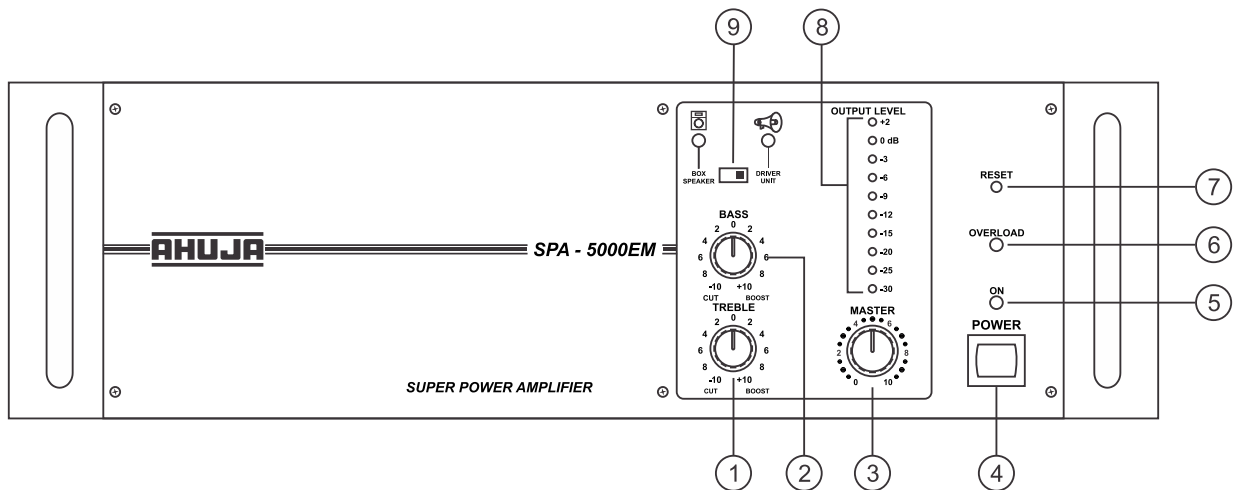
41. BATTERY Terminal Block

For connecting three 12V Car Batteries in series (which becomes 36V) as standby power source.

CAUTION

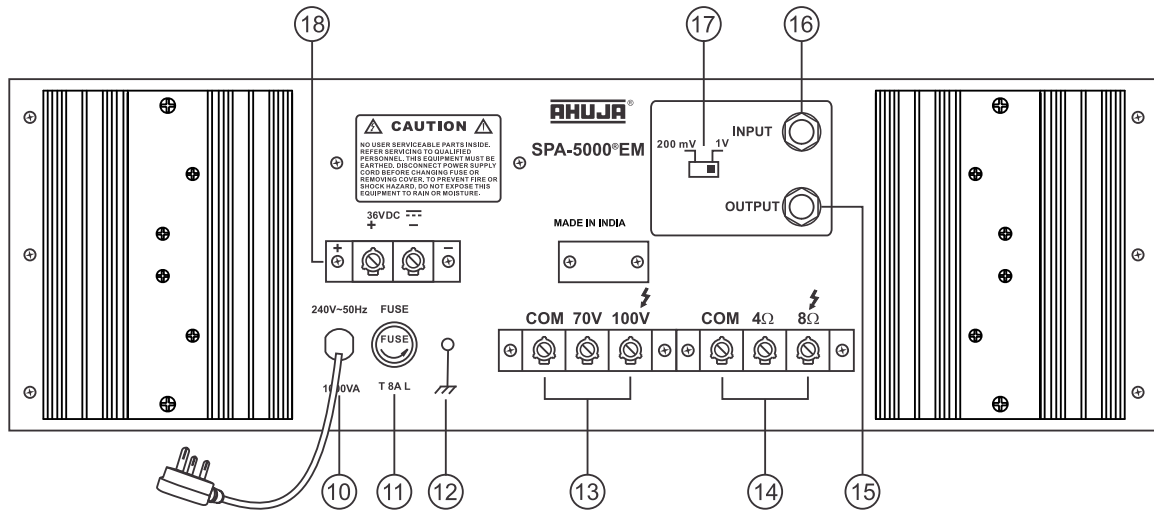
- The equipment must be earthed properly before operating it to avoid electric shock. A wire from the Earth Terminal must be connected to electrical earth for safe operation.

• Front Panel Controls & Features (SPA-5000®EM)



1. **TREBLE Control**
For attenuating or boosting the signal level of high frequencies.
2. **BASS Control**
For attenuating or boosting the signal level of low frequencies.
3. **MASTER Volume Control**
For adjustment of the overall volume level from the amplifier.
4. **POWER Switch**
Push the top part of the knob to switch the amplifier ON. Push the bottom part of the knob to switch the amplifier OFF.
5. **POWER LED**
This LED glows when the amplifier is switched ON.
6. **OVERLOAD LED**
This LED glows when the circuit protector trips.
7. **RESET button**
This button pops out when the circuit protector trips. Rectify the cause and press the RESET button for resetting normal operation of the amplifier.
8. **LED Array**
This indicates the output level of the amplifier.
9. **BOX SPEAKER / DRIVER UNIT Selector Switch**

• Rear Panel Controls & Features (SPA-5000®EM)



10. 3 CORE AC MAINS CABLE WITH PLUG

11. AC MAINS FUSE Rating 8 AMP 250V (T 8A L)
This protects the amplifier from any excessive current flow.

12. EARTH Terminal

13. SPEAKER Terminal Block (70V, 100V)
For connecting speakers with 100V line matching transformers.

14. SPEAKER Terminal Block (4 ohm and 8 ohm)
For connecting low impedance speakers.

15. Output Jack Socket

16. Input Jack Socket

17. Input Sensitivity Selector Switch

18. BATTERY Terminal Block
For connecting three 12V Car Batteries in series (which becomes 36V) as standby power source.

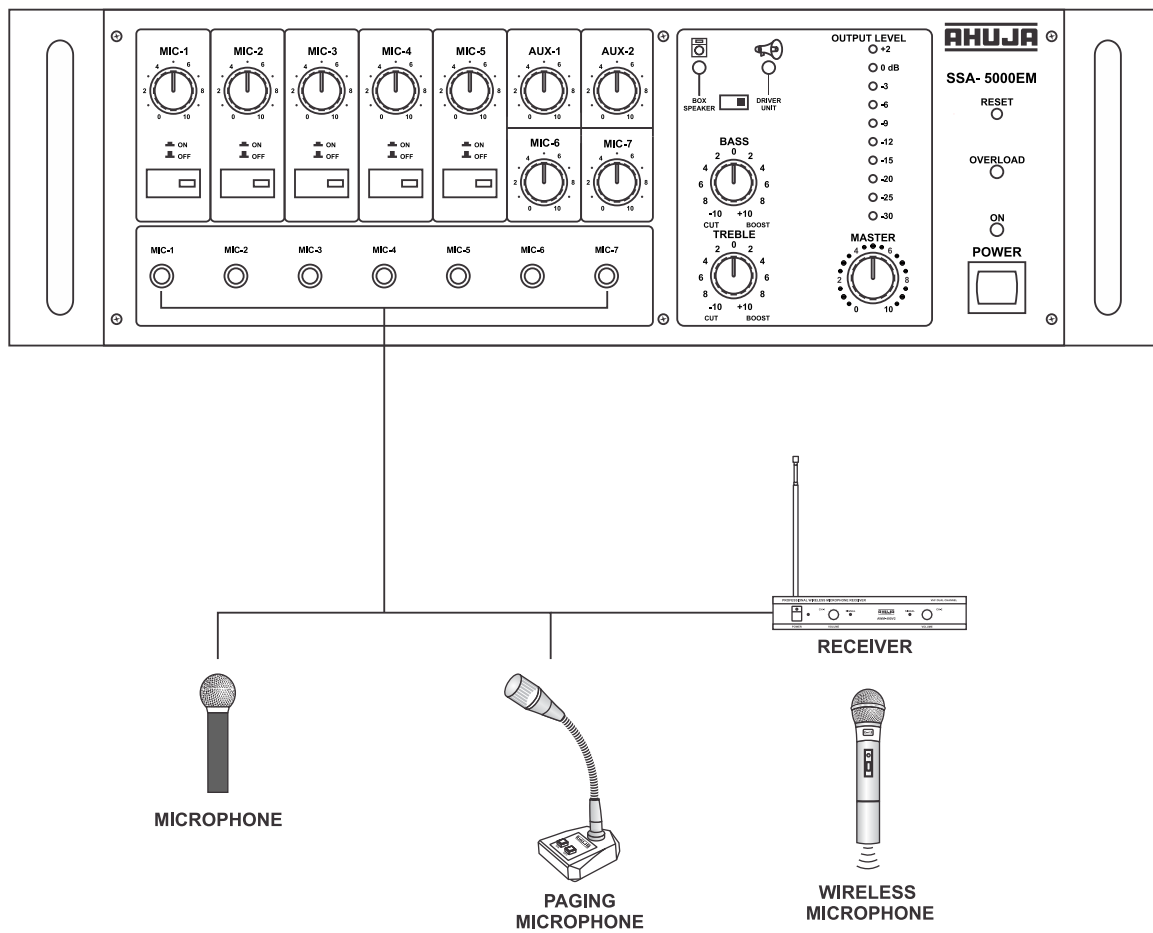
CAUTION

- 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

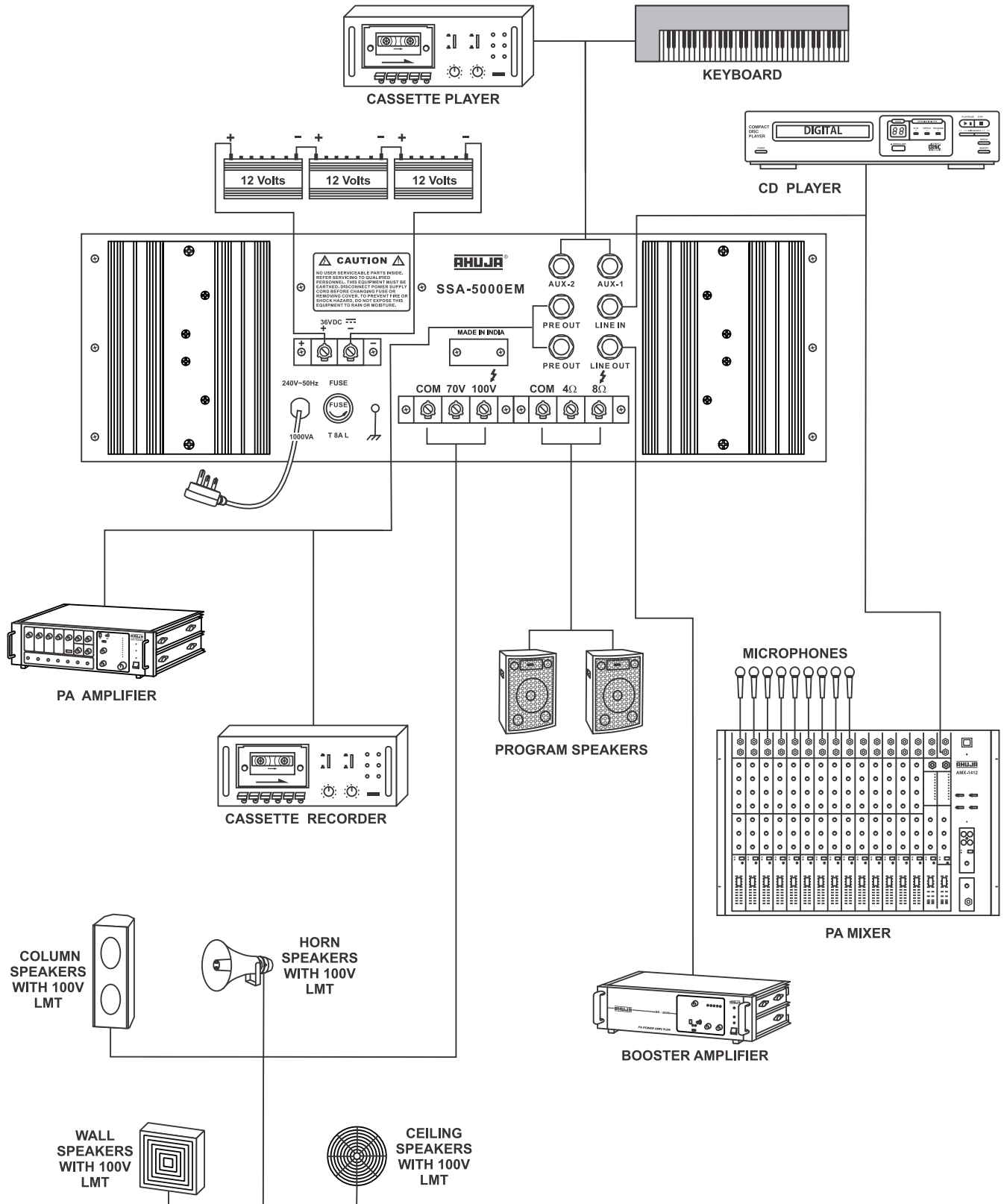
- The amplifier can be placed as a tabletop unit. The amplifier should be situated so that its location or position does not interfere with its proper ventilation.
- The amplifier must be powered through an AC earthed mains outlet.
- All connections must only be carried out or changed with the amplifier switched OFF.
- The amplifier may be operated from a DC supply of 36 Volts (three car batteries connected in series).
- 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, then the other units.
- The connection diagrams that follow display the typical types of input sources (Mics, Keyboard, Cassette Player, Mixer, CD Player 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-5000EM

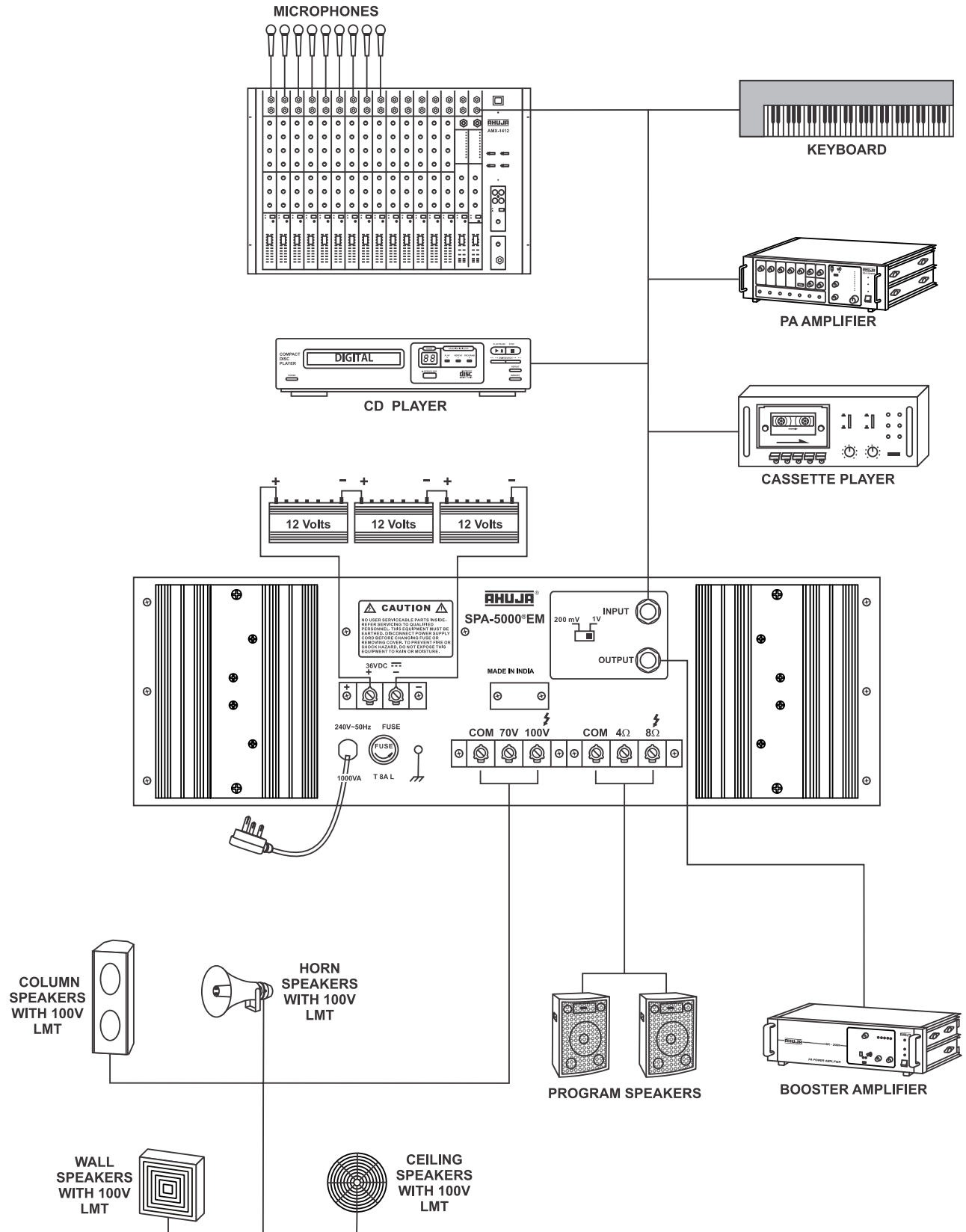


Interconnections....

REAR PANEL - SSA-5000EM

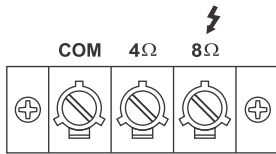


REAR PANEL - SPA-5000[®]EM



• Speaker Connection Guidelines

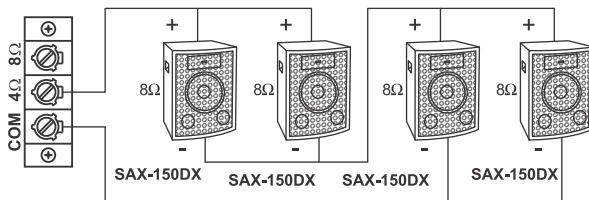
SSA-5000EM & SPA-5000®EM are high-powered amplifiers. Therefore it is very important that correct loudspeaker connections are made to avoid damage to the amplifiers or speakers.



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

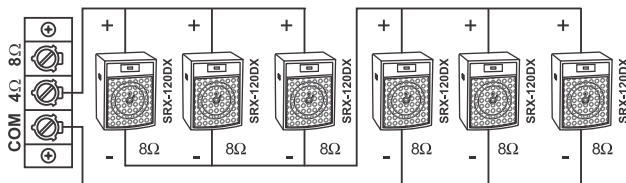
Connecting Four SAX-150DX Speakers



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

The Four SAX-150DX Speakers (each speaker can handle 150W of power) should be wired in a parallel-series combination as shown in figure. Two groups of two speakers each are connected in parallel and then the groups are connected in series. The resulting impedance will be 8Ω. The speaker system should be connected to the 8Ω tap of the amplifier.

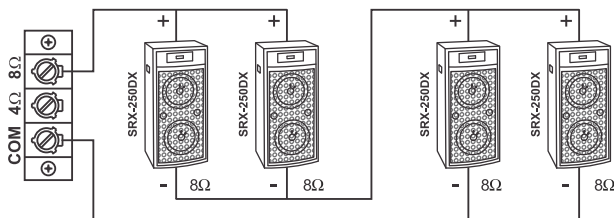
Connecting Six SRX-120DX Speakers



Resultant Impedance = $(8 \text{ ohm}/3) \times 2 = 5.33 \text{ ohm}$

The Six SRX-120DX speakers (each speaker can handle 100W of power) should be connected in parallel-series combination as shown in figure. Two groups of three speakers each are connected in parallel and then the groups are connected in series. The resulting impedance would be 5.33Ω. Thus they should be connected to the 4Ω tap of the amplifier.

Connecting Four SRX-250DX Speakers



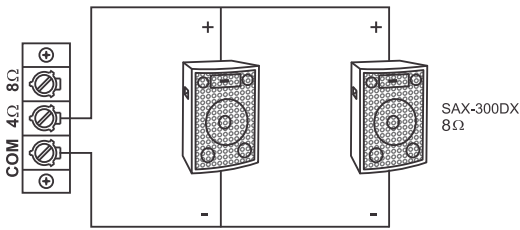
Resultant Impedance = $(8 \text{ ohm}/2) \times 2 = 8 \text{ ohm}$

The Four SRX-250DX Speakers (each speaker can handle 200W of power) should be wired in a parallel-series combination as shown in figure. Two groups of two speakers each are connected in parallel and then the groups are connected in series. The resulting impedance will be 8Ω. The speaker system should be connected to the 8Ω tap of the amplifier.

IMPORTANT

- When Box speakers are connected to COM-4Ω / 8Ω Terminal Strip NO Speakers / Driver Units with 100V LMTs should be connected to the Red Terminal Strip marked COM-70V/100V.
- Box 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.

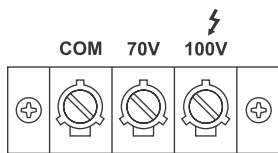
Speaker Connection Guidelines....



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

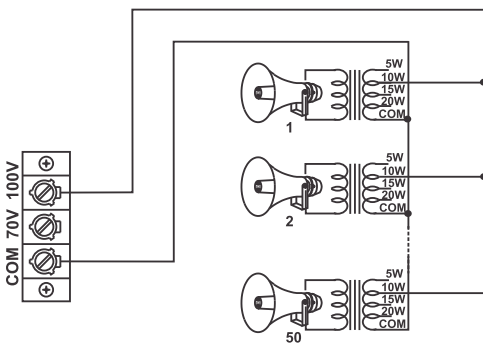
Connecting Two SAX-300DX Speakers

The Two SAX-300DX speakers (each speaker can handle 300W of power) should be wired in parallel as shown in figure. The resulting impedance of the speaker system is 4Ω. Thus they should be connected to the 4Ω tap of the amplifier.



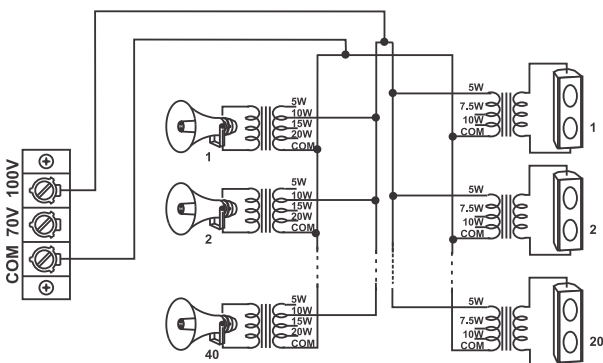
High Impedance Speakers or Speakers Using A 100V Line Matching Transformer

- 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 500 Watts.



Connecting Fifty Driver Units with 100V LMT

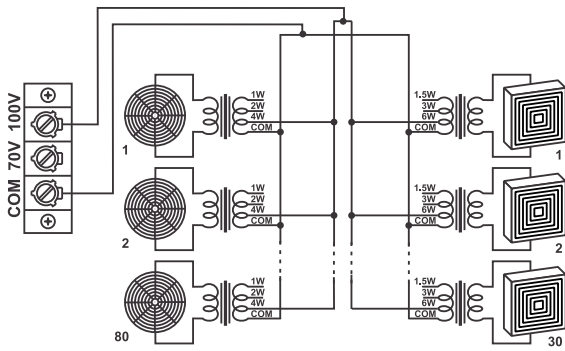
50 Driver Units with 100V Line Matching Transformer connected at 10 Watts tap can be operated.



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

40 Driver Units with 100V LMT at 10 Watts and 20 Column Speakers with 100V LMT at 5 Watts can be connected together. The power drawn from the amplifier should not exceed 500 Watts.

Speaker Connection Guidelines....

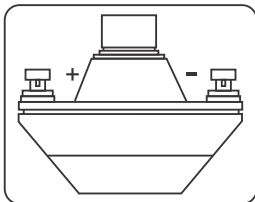


Connecting a combination of Wall and Ceiling Speakers with 100V LMT

80 Ceiling Speakers with 100V LMT at 4 Watts and 30 Wall Speakers with 100V LMT at 6 Watts can be connected together. The power drawn from the amplifier should not exceed 500 Watts.

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.

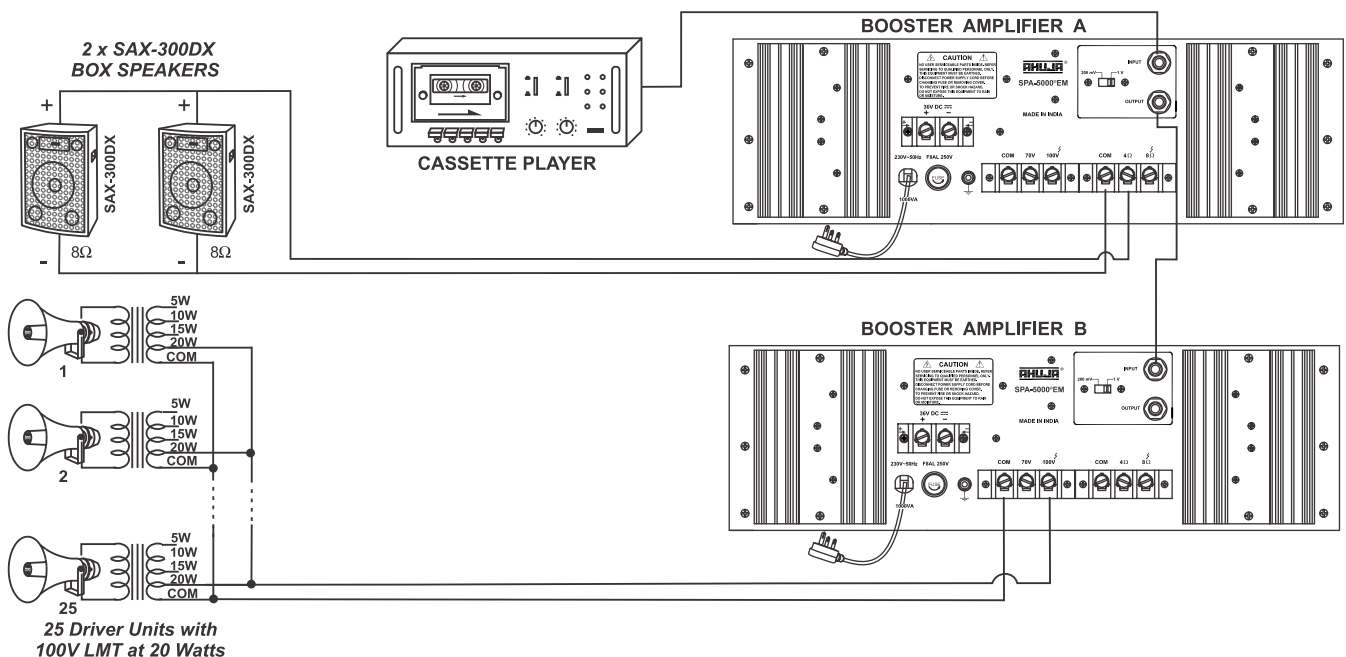
IMPORTANT

- 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 A Cassette Player To Two SPA-5000®EM To Get A 1000W Mono System

1. Connect the pre-out of Cassette Player to the input jack of the first SPA-5000®EM (BOOSTER A) using a patch-cord with ¼" phone plugs at both ends. The sensitivity switch next to the input & output jacks should be towards 200mV.
2. The output jack of BOOSTER A should be connected to the input jack of the second SPA-5000®EM (BOOSTER B). The sensitivity switch of the second booster should also be at 200mV.
3. In this manner the Cassette Player will feed both the amplifiers creating a 1000W output system.
4. A maximum of four boosters should be connected in this way otherwise the output of the CASSETTE PLAYER will get loaded.
5. 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.
6. 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.
7. When speakers with 100V LMT are used, total power drawn should not exceed 500W in case of either of the amplifiers.
8. 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.
9. This kind of system is ideal where both high and low impedance speakers are being used and the Cassette Player does not have its own Bass and Treble controls.



Typical Applications....

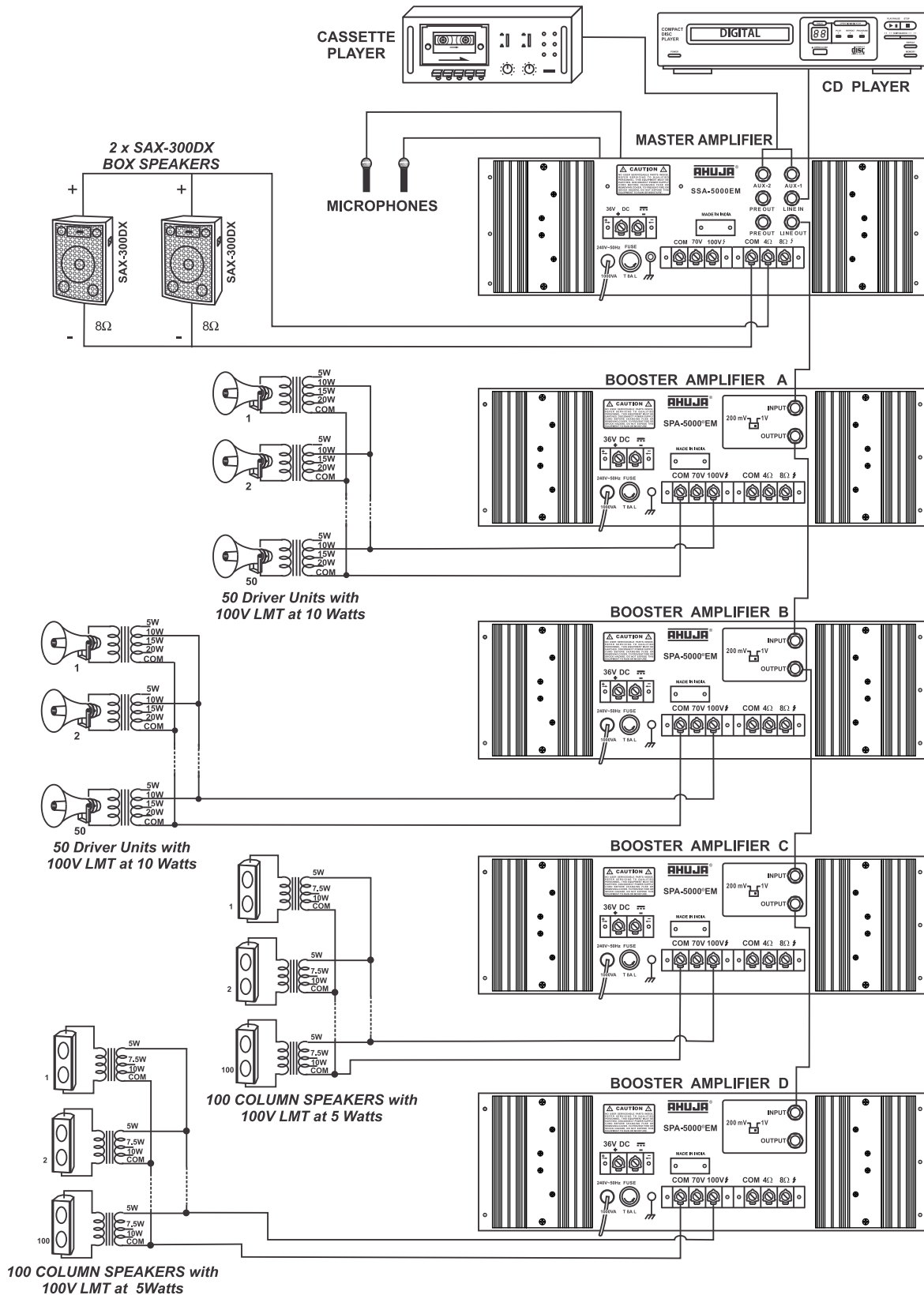
Connecting One SSA-5000EM And Four SPA-5000®EM For Making A 2500W Mono System

1. Connect Microphones and other Program Sources to the input jacks of the MASTERAMPLIFIER, which is the SSA-5000EM.
2. Connect the Line-Out of the MASTERAMPLIFIER to the input jack of the first SPA-5000®EM (BOOSTER A) using a patch-cord with ¼" phone plugs at both ends. The sensitivity switch next to the input & output jacks should be towards 1V.
3. The output jack of BOOSTER A should be connected to the input jack of the second SPA-5000®EM (BOOSTER B). The sensitivity switch of the second booster should also be at 1V.
4. The third and the fourth SPA-5000®EM (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 MASTERAMPLIFIER will get loaded.
5. In this manner the inputs connected to the MASTERAMPLIFIER will feed all the five amplifiers creating a 2500W 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 500W in case of any of the amplifiers.
9. Finally when operating the system, any adjustments in the tonal quality of the sound if required can be made from the MASTERAMPLIFIER.

(Refer to page 17 for illustration)

Typical Applications....

Connecting One SSA-5000EM And Four SPA-5000®EM For Making A 2500W Mono System



Typical Applications....

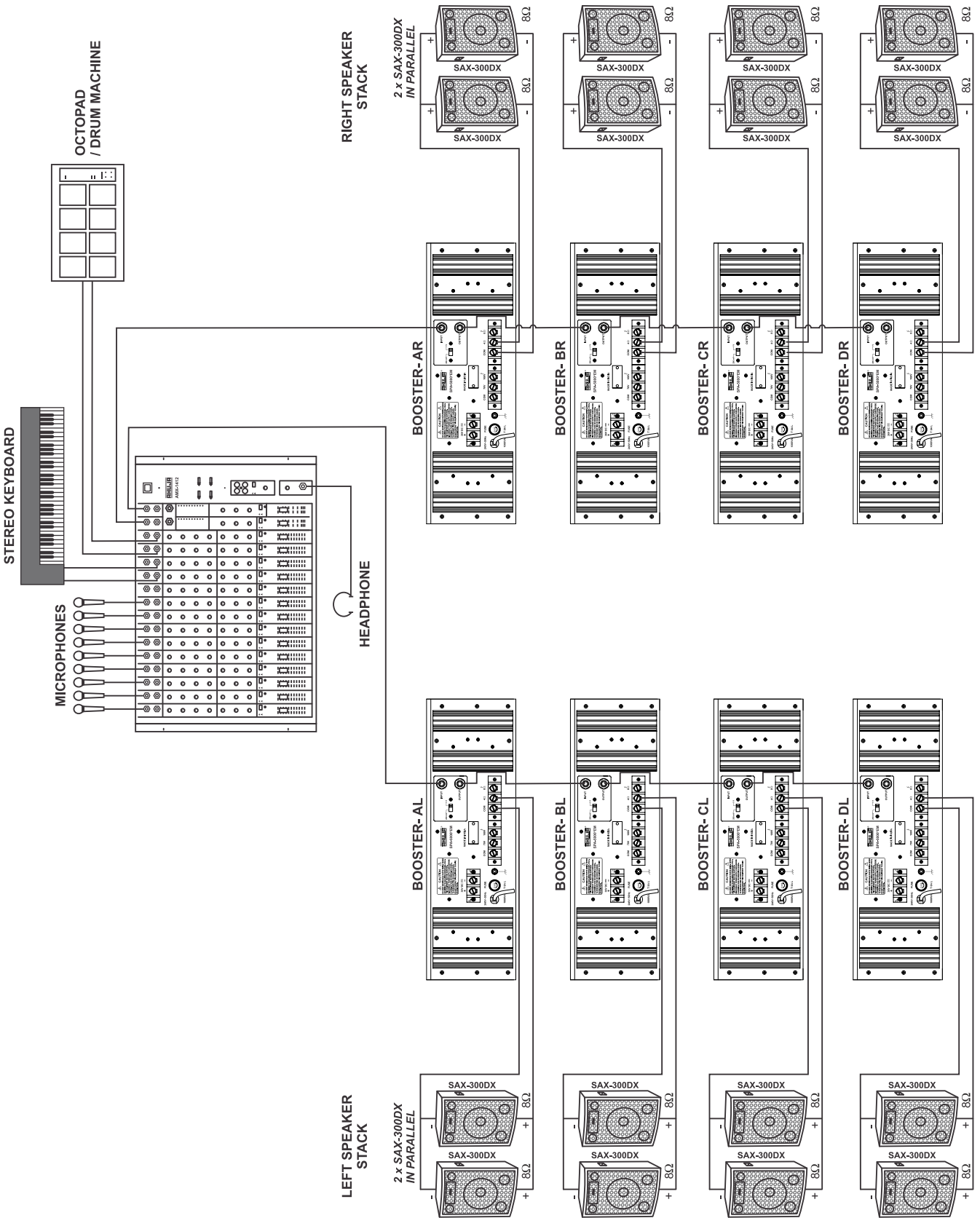
Connecting Eight SPA-5000[®]EM For A Live 4000W Stereo Programme

1. Connect Microphones and other Program Sources such as Keyboard and Octopad to a Mixing Console like AMX-1412, AMX-912 or AMX-812.
2. Connect the Left Line Out Hi of the MIXER to the inputs jack of first SPA-5000[®]EM (BOOSTER-AL) using a patch-cord with ¼" phone plugs at both ends. The sensitivity switch next to the input & output jacks should be towards 1V.
3. The output jack of BOOSTER-AL should be connected to the input jack of the second SPA-5000[®]EM (BOOSTER-BL). The sensitivity switch of the second booster should also be at 1V.
4. The third and fourth SPA-5000[®]EM (BOOSTER-CL and BOOSTER-DL) should be connected in the same way. A maximum of four boosters should be connected in this way otherwise the output of the MIXER will get loaded.
5. Similarly the Right Line Out Hi of the MIXER should be connected to the four right channel SPA-5000[®]EM (BOOSTER-AR, BR, CR, DR) with the inputs cascaded as shown in the diagram.
6. The left and right speaker stacks comprise of eight SAX-300DXs on each side. Each stack will have four columns of two SAX-300DXs placed one on top of each other. The two speakers in each column will be wired together in parallel (resulting impedance is 4Ω). Each column would be independently connected to the COM and 4Ω tap of a SPA-5000EM.
7. Finally when operating the system, any adjustments in the tonal quality of the sound if required can be made from the MIXER.
8. This STEREO system is capable of delivering output power of 2000W per channel and will render high quality rich powerful sound both in large indoor as well as outdoor settings.

(Refer to page 19 for illustration)

Typical Applications....

Connecting Eight SPA-5000®EM For A Live 4000W Stereo Programme



• Specifications

Model	SSA-5000EM	SPA-5000®EM
Power Output	750W RMS Max. 500W RMS at 10%THD 450W RMS at 5% THD 415W RMS at 2% THD	750W RMS Max. 500W RMS at 10%THD 450W RMS at 5% THD 415W RMS at 2% THD
Output Regulation	≤ 2 dB no load to full load at 1kHz	
Input Channels	7 × Mic. 0.8mV / 4.7kΩ (Mic source impedance 50Ω to 1kΩ) 2 × Aux. 100mV / 470kΩ Line Input 1V / 50kΩ	200mV / 100kΩ 1V / 50kΩ
Frequency Response	50 – 15000Hz ±3dB	50 – 15000Hz ±3dB
S/N Ratio	60dB	60dB
Tone Controls: Switch at Box Speaker Position Switch at Driver Unit Position	Bass: ±10dB at 100Hz Bass: -10dB at 100Hz	Treble: ±10dB at 10kHz Treble: ±10dB at 10kHz
Output	- -	200mV / 100kΩ 1V / 50kΩ
Pre-amp Output	200mV / 600Ω	-
Line Output	1V / 1kΩ	-
Output Taps for	4 & 8Ω (for direct connections)	
Speaker Matching	70 & 100V Line (for use with LMT)	
Power Supply	AC: 220 - 240V 50 / 60Hz (110V on request) DC: 36V (3 × 12V Car Battery)	
Protection	AC: Fuse 8Amp. (T 8A L); DC: 20Amp. Circuit Braker	
AC Power Consumption	1000VA	
DC Power Consumption	8A	
Dimensions	W510 × H172 × D385 mm	
Weight	24.5kg approx.	23.5kg 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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 Website: www.ahujaradios.com

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- Technical specifications are subject to production tolerances.
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