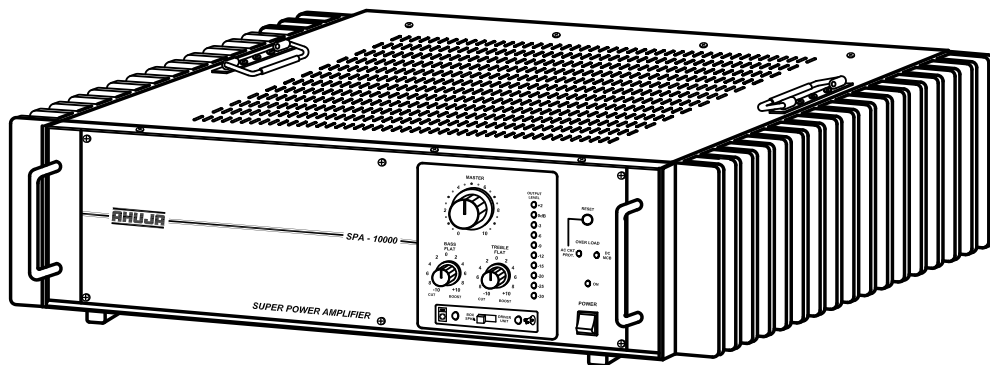


AHUJA[®]

PA AMPLIFIERS
1000W RMS

OPERATION MANUAL

SPA-10000



- 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.

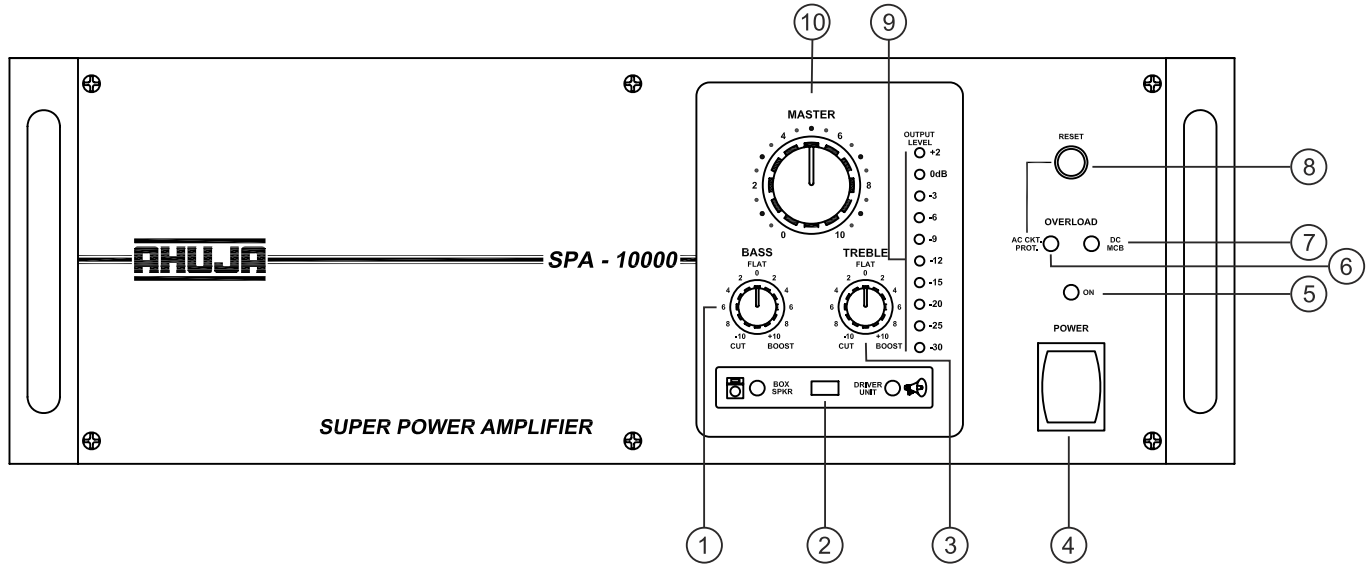
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• Features/General Description of Product

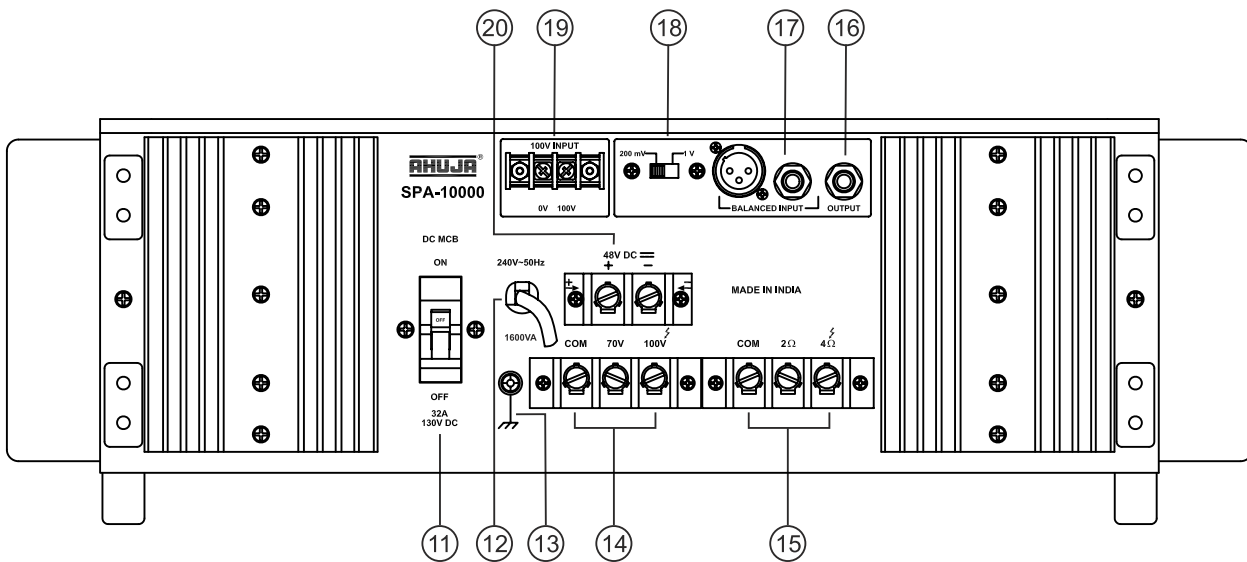
- Designed for use in a wide variety of PA applications.
- SPA-10000 is a 1000 Watts Booster Amplifier, which accepts input signals of both 200mV & 1V. It has an input sensitivity selector switch with the help of which it's input sensitivity can be altered to accept preamp output or line outputs from other sources.
- SPA-10000 has two jacks & one XLR connector. The input jacks or XLR connector is used to feed an input signal into the amplifier while the output jacks could be used to connect another Booster Amplifier to it for higher power requirement.
- SPA-10000 has 100V input facility, two pin terminal strip is used to feed 100V input signal from output terminal strip (100V) of any other amplifier to get full 1000W output from SPA-10000.
- 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 in place of AC fuse & DC circuit breaker (MCB type) have been provided, these 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 (SPA-10000)



1. **BASS Control**
For attenuating or boosting the signal level of low frequencies.
2. **BOX SPEAKER / DRIVER UNIT Selector Switch**
3. **TREBLE Control**
For attenuating or boosting the signal level of high frequencies.
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's**
This LED glows when the AC circuit protector trips.
7. This LED glows when DC MCB trips.
8. **RESET Button**
This button pops out when the AC circuit protector trips. Rectify the cause and press the RESET button for resetting normal operation of the amplifier.
9. **LED Array**
This indicates the output level of the amplifier.
10. **MASTER Volume Control**
For adjustment of the overall volume level from the amplifier.

• Rear Panel Controls & Features (SPA-10000)



11. DC MCB (Rating 32AMP 130V DC)

This switches off when excessive current flows due to overload or short circuit. Rectify the fault & switch on this MCB for normal operation of amplifier. Fault indication is given by overload LED (No.7) in the front panel.

12. 3 CORE AC MAINS CABLE WITH PLUG

13. EARTH Terminal

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

For connecting speakers with 100V line matching transformers.

15. SPEAKER Terminal Block (2 ohm and 4 ohm)

For connecting low impedance speakers.

16. Output Jack Socket

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

17. Input Jack Socket

For connecting balanced input either through XLR connector or stereo jack, connected in parallel External mixer, CD player etc., can be connected as an input source.

18. Input Sensitivity Selector Switch.

19. 100V Input Terminal Strip

100V output any other amplifier can be connected to this amplifier to get 1000W output in long line installation. Input selector switch must be kept at 1V position.

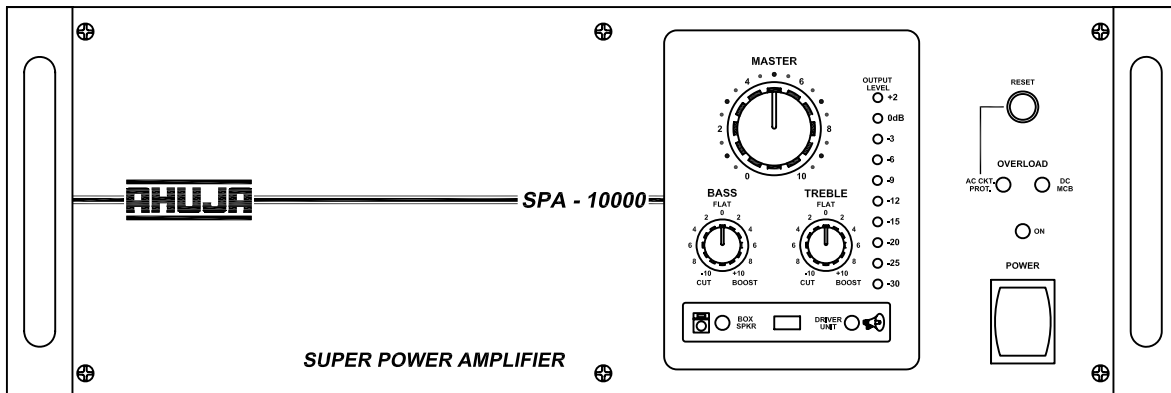
Caution

- 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

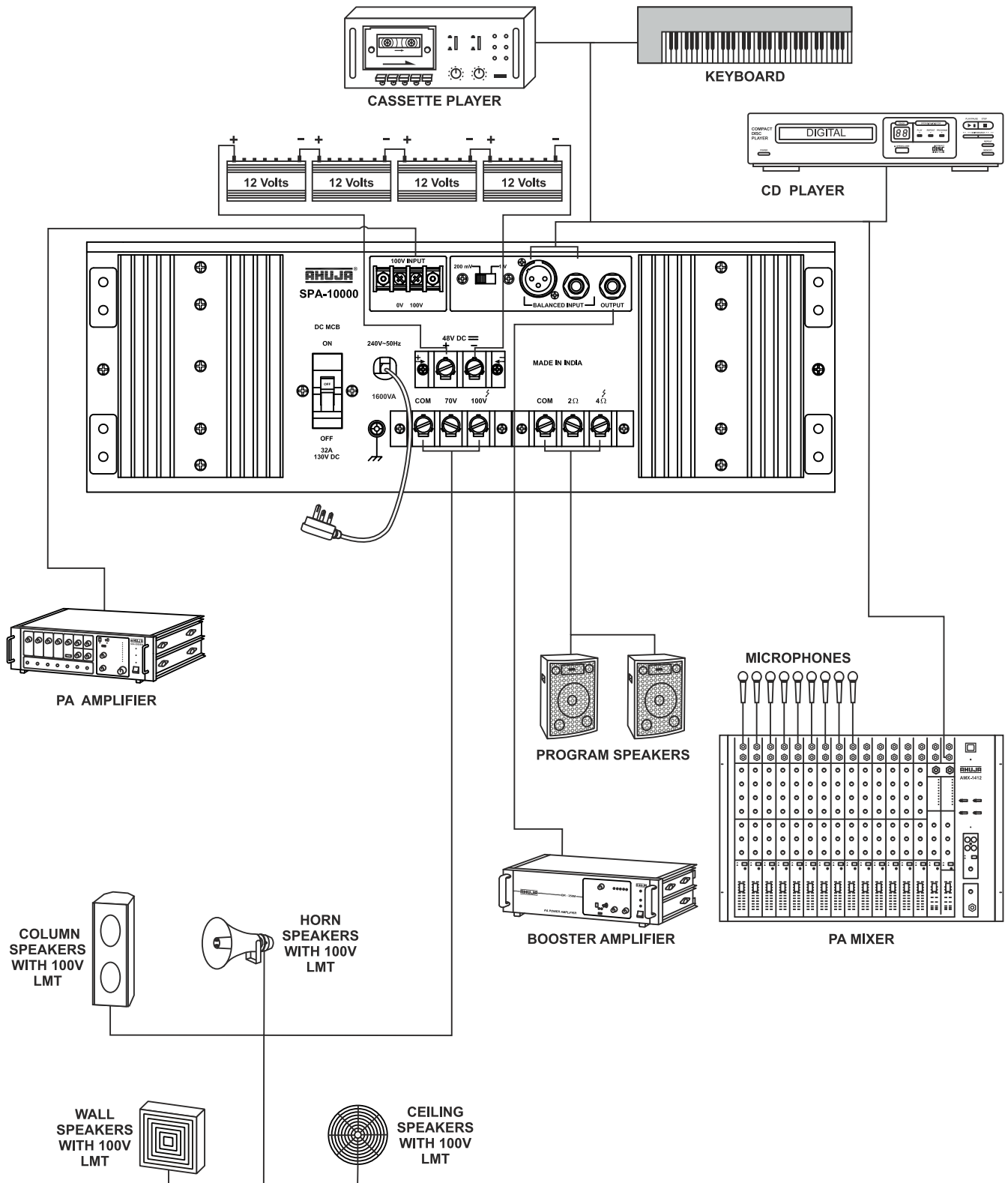
- The amplifier can be placed as a tabletop unit. The amplifier should be situated so that its location or position does not interfere with its proper ventilation.
- The amplifier must be powered through an AC earthed mains outlet.
- All connections must only be carried out or changed with the amplifier switched OFF.
- The amplifier may be operated from a DC supply of 48 Volts (four 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 (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 - SPA-10000



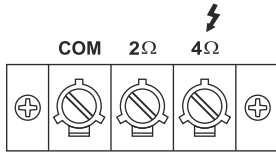
Interconnections....

REAR PANEL - SPA-10000



• Speaker Connection Guidelines

SPA-10000 is high-powered amplifier. Therefore it is very important that correct loudspeaker connections are made to avoid damage to the amplifiers or speakers.

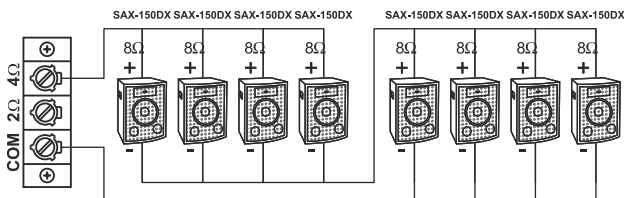


Low Impedance Speaker Connections

Box type Speakers can be directly connected to Com-2Ω / 4Ω 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.

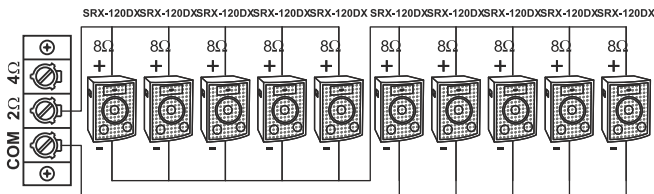
No Driver Units / Horn Speakers / Column Speakers (with 100V LMT) should be connected to Com-2Ω/4Ω



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

Connecting Eight SAX-150DX Speakers

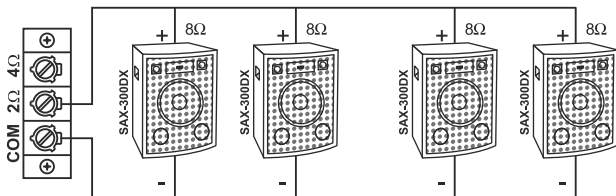
The Eight SAX-150DX Speakers (each speaker can handle 150W of power) should be wired in a parallel-series combination as shown in figure. Two groups of four speakers each are connected in parallel and then the groups are connected in series. The resulting impedance will be 4Ω. The speaker system should be connected to the 4Ω tap of the amplifier.



Resultant Impedance = $(8 \text{ ohm}/5) \times 2 = 3.2 \text{ ohm}$

Connecting Ten SRX-120DX Speakers

The Ten SRX-120DX speakers (each speaker can handle 100W of power) should be connected in parallel-series combination as shown in figure. Two groups of five speakers each are connected in parallel and then the groups are connected in series. The resulting impedance would be 3.2Ω. Thus they should be connected to the 2Ω tap of the amplifier.



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

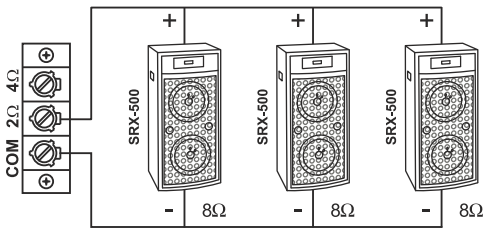
Connecting Four SAX-300DX Speakers

The Four SAX-300DX Speakers (each speaker can handle 300W of power) should be wired in parallel shown in figure. The resulting impedance will be 2Ω. The speaker system should be connected to the 2Ω tap of the amplifier.

IMPORTANT

- When Box speakers are connected to COM-2Ω / 4Ω 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-2Ω or COM-4Ω terminals as illustrated above but never to more than one set of terminals.

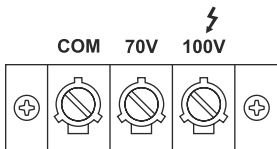
Speaker Connection Guidelines....



Resultant Impedance = $(8 \text{ Ohm} / 3) = 2.66 \text{ Ohm}$

Connecting Three SRX-500 Speakers

The Three SRX-500 speakers (each speaker can handle 400W of power) should be wired in parallel as shown in figure. The resulting impedance of the speaker system is 2.66Ω. Thus they should be connected to the 2Ω tap of the amplifier.



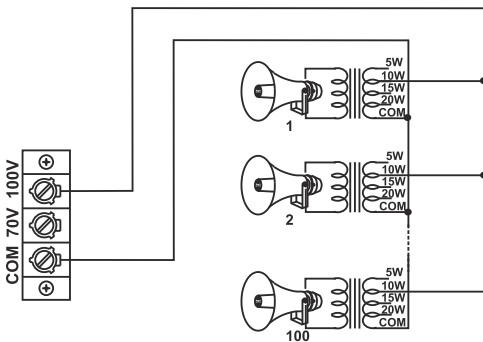
High Impedance Speakers or Speakers Using A 100V Line Matching Transformer

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.

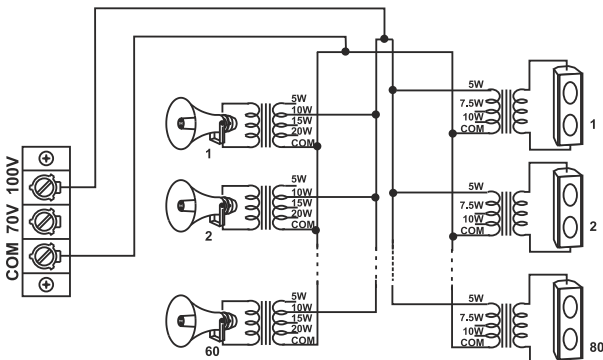
When any of the above speakers are connected to the COM-70V / 100V Terminal Strip then NO Box speakers should be connected to the COM-2Ω / 4Ω Terminal Strip.

The power drawn from the amplifier should not exceed 1000 Watts.



Connecting Hundred Driver Units with 100V LMT

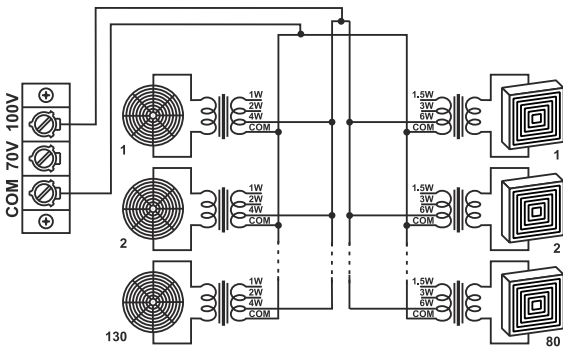
100 Driver Units with 100V Line Matching Transformer connected at 10 Watts tap can be operated.



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

60 Driver Units with 100V LMT at 10 Watts and 80 Column Speakers with 100V LMT at 5 Watts can be connected together. The power drawn from the amplifier should not exceed 1000 Watts.

Speaker Connection Guidelines....



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

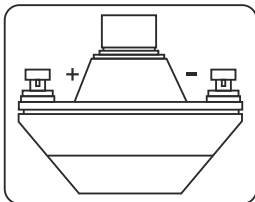
130 Ceiling Speakers with 100V LMT at 4 Watts and 80 Wall Speakers with 100V LMT at 6 Watts can be connected together. The power drawn from the amplifier should not exceed 1000 Watts.

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 & 2Ω / 4Ω 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.



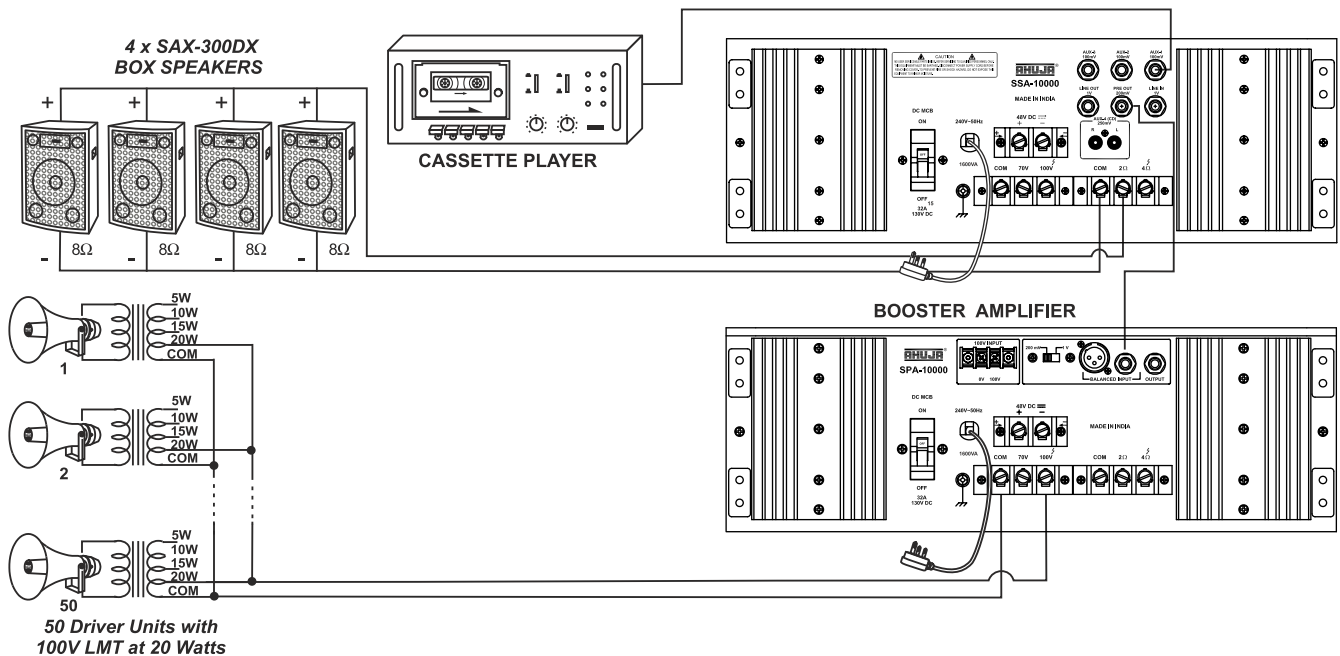
IMPORTANT

- When 70 / 100 Volt line is being used, no speakers / driver units should be connected to 2Ω / 4Ω (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 One SSA-10000 and one SPA-10000 To Get A 2000W Mono System

1. Connect the pre-out of Cassette Player to the Aux. input jack of the Amplifier SSA-10000 using a patch-cord with ¼" phone plugs at both ends.
2. The Pre out of SSA-10000 should be connected to the input jack of the SPA-10000 (BOOSTER). The sensitivity switch of the SPA-10000 should be be at 200mV.
3. In this manner the Cassette Player will feed both the amplifiers creating a 2000W 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 1000W from the each amplifier.
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 and the Cassette Player does not have its own Bass and Treble controls.



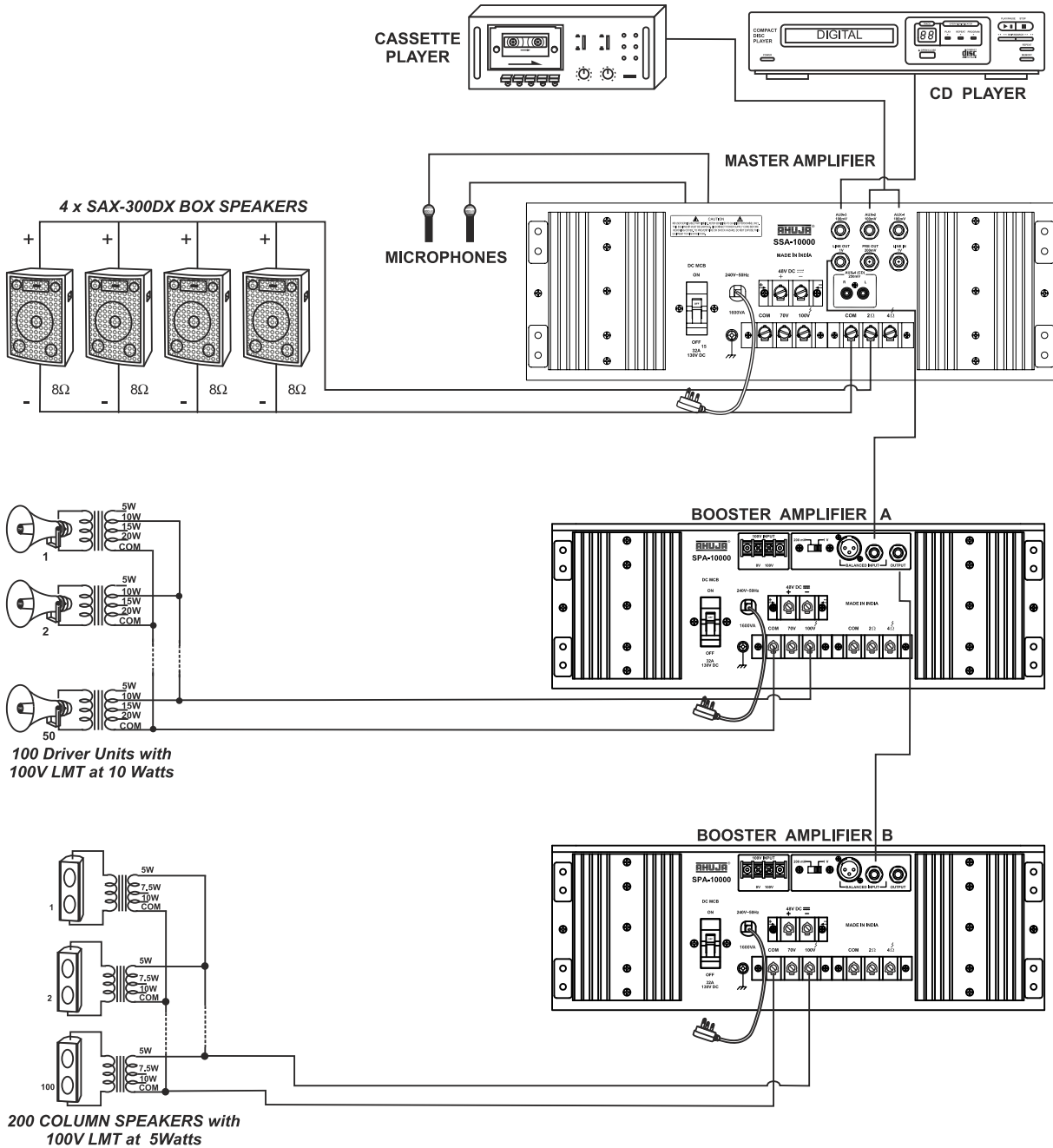
Connecting One SSA-10000 And Two SPA-10000 For Making A 3000W Mono System

1. Connect Microphones and other Program Sources to the input jacks of the MASTERAMPLIFIER, which is the SSA-10000.
2. Connect the Line-Out of the MASTER AMPLIFIER to the input jack of the first SPA-10000 (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-10000 (BOOSTER B). The sensitivity switch of the second booster should also be at 1V.
4. In this manner the inputs connected to the MASTERAMPLIFIER will feed all the three amplifiers creating a 3000W output system.
5. 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.
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 1000W from each of the amplifiers individually.
8. 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 14 for illustration)

Typical Applications....

Connecting One SSA-10000 And Two SPA-10000 For Making A 3000W Mono System



• Specifications

Model	SPA-10000
Power Output	1000W RMS at 10%THD (Rated) 850W RMS at 5% THD 800W RMS at 2% THD
Output Regulation	≤ 2 dB no load to full load at 1kHz
Input Channels	200mV / 100kΩ 1V / 50KΩ 100V / 100kΩ
Frequency Response	50 – 15000Hz ±3dB
S/N Ratio	60dB
Tone Controls: Switch at Box Speaker Position Switch at Driver Unit Position	Bass: ±8dB at 100Hz Treble: ±8dB at 10kHz Bass: -8 at 100Hz Treble: ±8dB at 10kHz
Output Taps for Speaker Matching	2 & 4Ω (for direct connections) 70 & 100V Line (for use with LMT)
Power Supply	AC: 220 - 240V 50 / 60Hz DC: 48V (4 × 12V Car Battery)
Protection	AC: 10Amp. Circuit Protector DC: 32Amp. MCB
Rated AC Power Consumption	1600VA
DC Power Consumption	12A
Dimensions	W540 × H185 × D510 mm
Weight	40 Kg. 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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