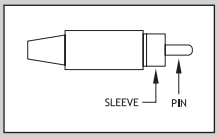
PA Fundamentals

CONNECTORS

There are various connectors used with the Ahuja range of PA Products.

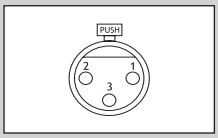
1. RCA Phono Plug

A popular audio connector used on auxiliary inputs & booster in/out connections; also commonly used on mixers, CD & tape players. They are wired using single core screened cable.



2. XLR Plug

This is the industry standard microphone connector; robust and relatively simple to install. There are a number of ways in which they can be wired.



Balanced Operation

Pin 1 connects to screen (Signal earth)
Pin 2 connects to signal + (Live)
Pin 3 connects to signal – (Return)

Quasi Balanced Operation

Pins 1 & 3 connects to the screen of the cable
Pin 2 connects to signal conductor.

The Pin numbers are identified on the XLR plug and an easy way to remember how they should be wired is:

X = Earth (Pin 1)

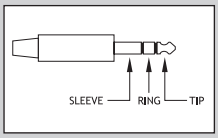
L = Live (Pin 2)

R = Return (Pin 3)

3. 6.3mm (¼") Phone Plug

There are two versions of this connector in common use, MONO & STEREO.

The STEREO plug is used for BALANCED operation and wired as follows:

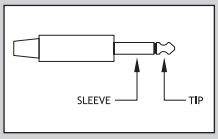


TIP - Signal +

RING - Signal –

SLEEVE - Screen

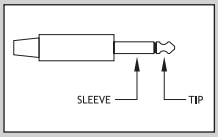
The MONO plug is used for UNBALANCED operation and wired as follows:



TIP - Signal +

SLEEVE - Screen

The MONO plug is also used for QUASI-BALANCED operation and is wired as follows:

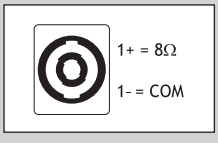


TIP - Signal +

SLEEVE - Signal -, Screen

4. SPEAKON Plug

This is used in some models of Ahuja speaker systems for connecting to an amplifier.
The pin configurations are as shown in the diagram:



LOUDSPEAKER CABLE SIZE & CONNECTIONS

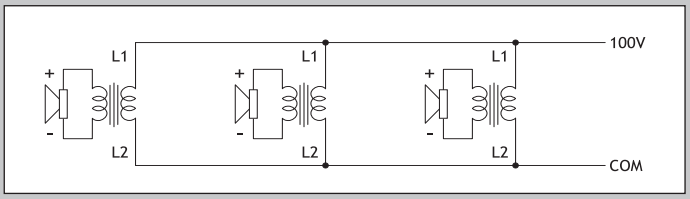
100V LINE

When installing a 100V line system, it is important that the correct size of cable is used to connect the speakers to the amplifier. The following chart gives an indication of the maximum cable length which can be used for each type of cable (cables specified by number & diameter of wire in mm).

100V Amp	24/0.2	32/0.2	48/0.2	80/0.2	128/0.2	122/0.25
30W	800m	1066m	1600m	2666m	4266m	6400m
60W	400m	533m	800m	1333m	2133m	3200m
120W	200m	266m	400m	666m	1066m	1600m
240W	100m	133m	200m	333m	533m	800m

As the voltage on the line can approach 100 volts, installation must follow best practice with double insulated cable being used. Cable runs should be kept away from any potential source of interference such as 3 phase mains, data, telecom cables etc.

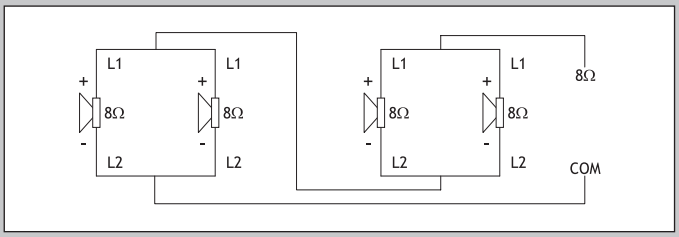
100V Line System must always be wired in PARALLEL:



NOTE: The total load presented to the amplifier must not exceed the rated output of the amplifier or damage can result.

LOW IMPEDANCE

All the amplifiers in the Ahuja range have the facility for connection of low impedance loudspeakers. On low impedance, to minimize power losses, short cable runs are recommended. Where it is intended to use multiple low impedance speakers to cover an area, the speakers must be wired in a series/parallel arrangement in such a way to present the correct load to the amplifier.



NOTE: The total load impedance presented to the amplifier must never be below the rated amplifier impedance, otherwise damage can result. To avoid damage to the speakers the total wattage of the driver units should be at least 30% higher than the rated power output of the amplifier.

You must NEVER mix 100V line and low impedance speakers on the same system.

PA Fundamentals

IP DEGREES OF PROTECTION

IP protection is given as two figures.
For example: IP66

The 1st numeral (6) - Dust tight. No ingress of dust.
The 2nd numeral (6) - Protected against heavy seas, or water projected in powerful jets shall not enter the enclosure.

1st Numeral: Protection of persons and from solid objects

1		Protected against solid objects greater than 50 mm Ø Can not touch the live part in the enclosure with hand.
2		Protected against solid objects greater than 12 mm Ø Can not touch the live part in the enclosure with finger tip.
3		Protected against solid objects greater than 2.5 mm Ø Can not touch the live part in the enclosure with tools,wires.
4		Protected against solid objects greater than 1.0 mm Ø Can not touch the live part in the enclosure with tools, wire.
5		Dust protected. Ingress of dust is not totally prevented but satisfactory operation of the equipment is available.
6		Dust tight. No ingress of dust.

2nd Numeral: Protection from ingress of water

1		Protected against dripping water.
2		Protected against dripping water when tilted upto 15°.
3		Proteced against spraying water at angle up to 60° from the vertical.
4		Protected against splashing water from any direction.
5		Protected against water jets by a nozzle against the enclosure from any direction.
6		Protected against heavy seas or water projected in powerfull jets shall not enter the enclosure.
7		Protected against the effects on immersion.
8		Protected against submersion.

KEY TO SYMBOLS USED

2-Zone Operation
Supercardioid
Two Speakers 12"
19" Rack Mounting
Omnidirectional
One Speaker 12"
Telephone Input
IP Rating
Two Way Speaker System
Headphone Output
100V Line
Subwoofer
CLASS-D AMPLIFIER
Double Insulated
Compliance to EU Standards
Unidirectional Cardioid
Weatherproof
NEW
New Product

GENERAL INSTALLATION PRECAUTIONS

DO NOT run microphone cables near mains, data, telephone or 100V line cables.

DO NOT run 100V line cables near data, telephone or other low voltage cables.

DO NOT exceed 90% of the amplifier's output power when using 100V line (speech only).

DO NOT exceed 70% of the amplifier's output power when using 100V line (high level music or voice).

DO NOT over-drive the mic inputs. (In certain PA applications an extremely high speech signal is fed to the microphone. This results in a highly distorted output, thereby damaging driver unit/speaker voice coil). For such applications connect the microphone through an attenuator to the amplifier.

ALWAYS keep 'Microphone' Volume Control and 'Master' Volume Control of the Amplifier at position '6' or below.

DO NOT use 100V line and low impedance speaker connections to the same amplifier.

AVOID jointing the microphone cable; when this is unavoidable make sure a good screened connector is used, e.g. XLR.

ENSURE that all loudspeakers are in-phase.

ENSURE that there are no short circuits on the loudspeaker line before connection to the amplifier.

RELATIVE NOISE LEVELS IN Decibels

dB	Comment
120	Threshold of pain. Jet taking off at 60m
115	Pneumatic drill, express train passing through station
110	Impossible to converse. Disco (on dance floor)
105	Live orchestra
100	Inside underground railway station
95	Machine shop, print shop
90	Difficult to converse. Ventilation equipment room, club
85	Busy supermarket
80	Loud voice needed to talk, Traffic noise, church choir
75	Noisy office
70	Speech at 30cm, typing pool, theatre, department store
65	Typical office, normal talking, near motorway
55	Background noise, hotel lobby, restaurant
50	Light traffic at 30m, quiet office
45	Tearing paper at 1m
40	Average residential area, quiet house
35	Soft music
30	Countryside
25	Library
20	Leaves rustling
15	Broadcasting studio
10	Quiet whisper at 1m
0	Threshold of hearing. Minimum audible sound

WARNING

In the market SPURIOUS/DUPLICATE sub-standard Amplifiers, Microphones, Driver Units, Horns, Diaphragms are being passed off as genuine AHUJA Products.

BE VERY CAREFUL

- Obtain your requirements from AUTHORISED AHUJA DEALERS only.
  Insist on seeing the 'AUTHORISED DEALER CERTIFICATE' and AHUJA / ANA 'TRADE MARK'
- Manufacture & Sale of Spurious/Duplicate Products is Illegal and Punishable Under Law.