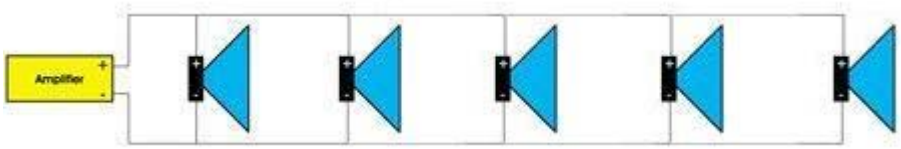
BASIC PA SYSTEM TIPS & ADVICE

100V SYSTEMS

1. 100v is a theoretical value based upon the system being driven flat out into a full load, it is not constant, in reality this is a high impedance system as opposed to a low impedance system (4/8 ohms). So don't be fooled into looking for something that doesn't exist!

2. Speakers must be wired in parallel to each other and the amplifier outputs (which are usually marked Common & 100v). Speakers do not need to be wired back to the amplifier individually unless they are wired into separate speaker zones.



3. It is normal practice to wire out from the amplifier to the 1st or nearest speaker, and then on to any subsequent speakers. Looping in and out is best practice, although if you need to wire off to an existing circuit, teeing off is perfectly acceptable.

4. Speaker loadings ! It is normal practice to load a commercial 100v amplifier below its maximum rating to ensure long life and reliability. As an example a 60 watt amplifier could be loaded as follows:

   2 x 15 watt speakers = 30 watts
   1 x 10 watt speaker = 10 watts
   2 x 5 watt speakers = 10 watts
   Total load = 50 watts

   The 10 watt margin also allows for the odd extra speaker being required in the future. IT IS IMPORTANT THAT AMPLIFIERS ARE NOT DRIVEN WITH A GREATER LOAD THAN THEY ARE RATED!

   Add up your speaker wattage settings and adjust them if necessary to just below the amplifier rating. As a rule speakers COME SET TO THEIR MAXIMUM SETTINGS and often these want reducing prior to installation.

5. As most commercial speakers come with adjustable wattage settings (multi-tapped transformer) it is possible to adjust a speaker to suit its location. More often than not, a speaker only needs a small amount of power in a quiet location such as an office and a moderate amount in a warehouse. Always try to keep back as much power as you can by keeping tappings as low as you can in order to do the job, then if you need to adjust one speaker "UP" there is headroom in the system to do it without problem.

6. Speaker wiring can be done best with a double insulated twin flexible cable such as 2182Y available from most electrical wholesalers and RS Components etc. It is

important to wire all the speakers in the same polarity to ensure correct phasing. Failure to do this will result in some speaker cones moving out, whilst others move in, this results in a thin sound, lacking quality, level and tonal response. Please refer to the table below for recommended sizes of cable and their maximum distances.

	$0.75mm^2$	$1.0mm^2$	$1.5mm^2$
30 watt load	800m	1066m	1600m
60 watt load	400m	533m	800m
120 watt load	200m	266m	400m

7. It is industry practice to wire the 100v common output as the negative or blue conductor within the cabling. Keeping this arrangement throughout ensures all connections to speakers are made in phase.

8. Ensure all speaker connections are well made (particularly those where there may be disturbance in a ceiling) and secure, this will reduce the risk of a cable being pulled, connection broken and ultimately creating a short circuit on a speaker line which can result in a damaged amplifier. A short can be detected audibly if there is low volume and a distorted output.

9. Amplifier inputs – Usually channel one is the paging microphone input, and connection via the Din plug will provide the access switching to automatically switch off any background music that is being broadcast through the system. The microphone can be extended away from the amplifier if required, we suggest using a 2 pair screened cable such as Belden 9502 or equivalent to extend with. It is important to remember that this is two pairs of conductors plus a screen/drain wire and each pair has a function, one pair is audio, one pair is switching, the screen keeps the whole lot quiet!

10. Set the amplifier levels to a moderate level to start with when powering up for the first time, this will avoid feedback and frightening anyone who happens to be close to a speaker at the time!

Suggested starter wattage settings for speakers, these are not correct for every application but will get you going in the right direction.

	Quiet room/area	Average area	Noisy area
Ceiling speaker	0.75 – 1.5 w	3w	6w
Wall cabinet speaker	0.75 – 1.5w	3w	6w
Small projection spkr	2.5w	5w	10w
Large projection spkr	5w	10w	15w
Horn speaker	2.5w	5	10w
Pendant	5w	10w	20w