



# Understanding a PA System

Edwards stock a range of Portable PA Systems to meet the very different needs of our clients. We have helped many a PTA member, school executive officer, church group volunteer, Aerobics and Zumba instructor choose the right solution for their needs, so feel free to call us! Or if you want to do some needs analysis with your colleagues in advance, here's what you should find out.

## A bit of background: what is a PA System?

A PA system or public address system ensures the audience hears the presenter or performer clearly. It picks up signals from a microphone or audio device such as an iPod, converts acoustic sound to electronic and processes and blends it. The signals are then amplified with a power amplifier and sent to the audience via speakers. Portable systems simplify life because rather than buying and setting up all the components required (mixer, amplifier, speakers, stands, cables etc.), it all comes in one convenient package just like Ed Sheeran and his guitar. OK to look at, great to listen to, not overly complicated and travels easily!

## What do we need to consider?

### 1) What size audience will you be catering for?

This will determine how much power your PA System requires. As a general rule, you should aim for 1/2 a watt per person in the audience for spoken sound and double this for music. For large numbers of people you might need to add extension speakers known as "slaves". Our advice would be to overestimate rather than underestimate your power needs to avoid ending up with a system operating at its capacity, struggling and sounding terrible.



## 2) What are the spaces like?

The physicality of the space can have an impact on your power requirements. Large stages, high ceilings, noisy environments, or using the PA System outdoors will all increase the power requirements or call for additional speakers.

## 3) What will you be plugging into it?

When you've got your colleagues together to discuss the new PA System, get them to brainstorm what inputs they will be using and how many at one time. This includes CD/USB players, digital video players/USB/SD players, Bluetooth recorders, digital music players (iPods), sound recorders or receivers for microphones. Also consider how you want to be able to connect these devices: hard wired, Bluetooth or wireless.

## 4) What will you be playing / presenting?

Once you know what gadgetry you are putting through it, you will have a pretty good idea of the audio content. Speaker sizes are measured in inches. 8" and 10" speakers will give you good vocal and acoustic guitar sound. However for your School Rock competition or the end of year disco the bass will be too limited and you should consider a 12" or even 15" speaker system.

## 5) How are you going to transport it?

Portability is assumed with a portable PA system but if it is going to move around a lot or need to fit in a car, you will need to think about the physical size and weight of your PA system plus protection. They can come with wheels, handles, trolleys and carry cases included or as optional extras. For schools, conference venues, maraes and churches where the PA System will need to travel over rough ground between locations you should consider a trolley base with wheels and tyres designed for outdoors to avoid damaging the equipment.

## 6) How long will it need to run without access to AC power?

Portable PA systems come with either lead-acid or lithium batteries. Typically, the lead-acid batteries they come supplied with will run the system for 6-10 hours (this is the same kind of battery as a car battery but a smaller version). Lithium batteries are more environmentally friendly, last longer, need replacing less often and crucially for a mobile solution they are lighter. There is a cost attached to the better performing battery so weigh up how important weight and battery-life are to inform your decision.

## 7) Are your needs likely to grow or change?

Some PA Systems can be expanded, eliminating the need for another PA system in a year or two. This is especially useful for churches or schools where there is always a variety of uses from jump jam to cross country and assembly to civil defence procedures. You may need to add microphones in which case look for the number of module slots. These may be built-in or external. You may also need to add companion speakers, known or slaves that will require outputs for either active or passive speakers. To cover all bases try to ensure that you will have enough outputs for your future needs as well as today's. For more infor-

mation on expanding your PA System see our additional information sheet available in the FAQ section of the Edwards website.

## 8) What else do I need to understand?

The product descriptions can be baffling. We have listed some of the terminology with layman's definitions to help you identify what is or isn't important to you.

# PA System Terminology

**Emergency broadcasting / alarm sounds:** every workplace has a civil defence emergency plan and being able to communicate with your staff, students, worshippers or audience is a key component. Portable PA systems are ideal because they are battery powered and some portable PA systems offer one or two emergency sirens and a handheld cable microphone for easy use in a crisis situation. See the "Coach 400" for a popular solution.

**Voice priority** may sound complicated but it simply means that the PA system will reduce the volume of any music playing if someone speaks into a microphone, for example at a prize giving when you may want to play some upbeat tunes as the winner approaches the stage but talk about how wonderful they are over the top. Very Oscar-esque! In some PA systems this feature may not be automated but two volume controls will allow you to adjust the volumes remotely.

**Crossovers** divide the signal into low and high frequencies (or even mid-range if it is a three way crossover). These are then directed to the most appropriate speaker. The high frequencies are sent to the tweeters and the lows are sent to the woofers. These speakers are all combined in the one speaker cabinet to form what is known as a full-range speaker. Crossovers improve the sound quality and are important for music.

**Recording features** – this means that audio can be captured to a USB device as a standard .mp3 file you can play on any computer, email out or edit as needed. This can be a big plus in schools to capture student speeches or visitor's presentations. Similarly in churches for weddings, funerals etc. This feature is also being utilised in conference venues for AGM's and meetings as more companies use alternatives to note taking. Alternatively recorder modules can be added to some portable PA systems.

**Remote control operation from front and rear** can be very useful for PA Systems that will be used in a range of locations and for different applications. For a student's speech competition you may want to be able to operate it from the front where you can see what is happening on stage, or for Aerobics or dance teachers switching tracks.

**Anti-interference Pilotone circuitry** is referring to what in olden days was called "squelch" control. Without squelch, receivers would send screeching static into the PA system when devices were turned off or having technical issues. This noise was then amplified and sent out via speakers to give everyone in the audience a screaming headache. These days squelching is often automated and Pilotone circuits are the most well respected automatic squelch circuits in the business! So all you need to know is that it is very nice to have...

**Class D amplifier** does not mean that there are three other classes better than it! Classes A-C came first is all. Class D amps work differently to the previous amps, use less power and run much cooler so do not require the heavy heat sinks that A-C class amps need. This means that a Class D amp can be significantly lighter so is the amp of choice for a portable PA. Not something you need to worry about, but now you can impress your friends!

**9) Do you have an old one that we can upgrade?** If you have an old PA System and are thinking about replacing it, talk to us first with your list of needs.

You may not require a completely new PA System but just an add-on or some parts replaced. However, the modern portable sound systems do have modular add-ons, extended battery life, better sound quality, are more durable and have options galore that the older sets don't offer so sometimes it could be false economy to patch up an old system.

We are more than happy to test and evaluate your existing systems and will give you an honest opinion.

If your old system incorporates wireless mics we can also check that they are on legal frequencies for you too. As of 11th March 2015 using the 698-806 MHz frequency range is no longer permitted and compliance action will be taken against you if you use them.

Just call us to organise an assessment.

## 10) The biggie: what PA System?

Now you are an expert on PA Systems and have identified your needs, it is time to find the right solution for you. Call us, visit our website or see our PA Systems recommendations. These are updated regularly and can be downloaded from the FAQ section of the Edwards website or [www.edwardsnz.co.nz/pages/pasystems-recommendations](http://www.edwardsnz.co.nz/pages/pasystems-recommendations)



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09 571 0551

[info@edwardsnz.co.nz](mailto:info@edwardsnz.co.nz)  
<http://www.edwardsnz.co.nz>

