

WHAT IS A WIRED MICROPHONE?

Coomber offer two kinds of microphone, wired mics and radio mics (discussed right). Our wired mics include a lead, on/off switch and jack plug; allowing connection into Coomber equipment and suitable third party systems utilising a 1/4" (6.35mm) jack socket.

Two of our mics (models 1918 and 1808) include "balanced wiring" - a method of wiring which reduces unwanted noise - and are ideal for digital recording purposes.

NEED MORE THAN ONE MICROPHONE!

Coomber products are designed for simplicity. Plug a wired mic into your PA, switch it on, adjust the volume and start talking. However, we are occasionally asked if more complex recording tasks can be undertaken - perhaps amplifying or recording the school orchestra or a play - even an interview.

Some Coomber equipment includes two or three mic inputs. A definitive chart is included on the back page.

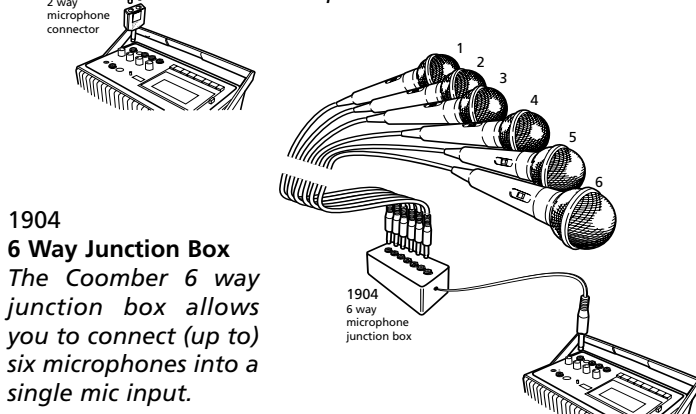
This document should give you a few ideas of working with more than one microphone.

USING TWO OR MORE MICROPHONES

Most Coomber PA equipment includes two microphone inputs, allowing you the opportunity to amplify two sources at once. However, if only one microphone input is available, or if you need to use more than two microphones, here are some useful options. *Please read the note "SOUNDS STRANGE?" overleaf in conjunction with this section.*

1997 2 Way Connector
The Coomber 2 way connector allows you to plug two mics into a single mic input.

If your equipment has two mic inputs, you could use three or even four microphones!

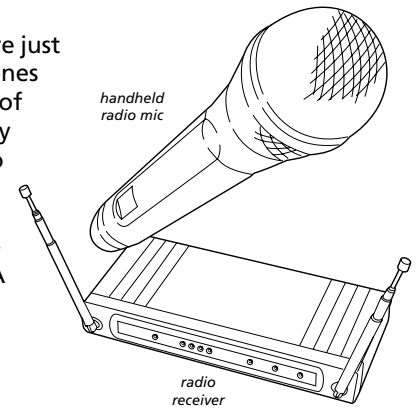


1904 6 Way Junction Box
The Coomber 6 way junction box allows you to connect (up to) six microphones into a single mic input.

WHAT IS A RADIO MICROPHONE?

Radio microphones are just like wired microphones except that instead of having a lead, they incorporate a radio transmitter which sends signals to a nearby receiver - sometimes in the PA equipment itself.

Some Coomber PA models already have a receiver built in.

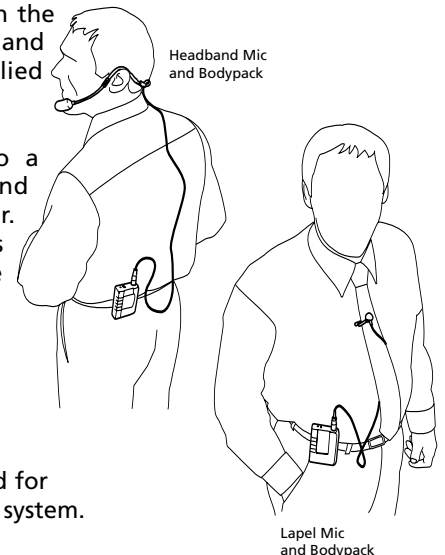


3 DIFFERENT TYPES OF RADIO MICROPHONE

As well as the handheld radio microphone shown above, we also offer headband and lapel microphones.

Unlike the handheld mic, where the transmitter is hidden in the hand grip, headband and lapel mics are supplied with a bodypack.

The bodypack clips to a belt or waistband and includes the transmitter. A thin cable connects the microphone to the bodypack.



THE TROUBLE WITH A LAPEL MIC IS...

...that it is not designed for use on stage with a PA system.

People like them because they are discreet (and the newscasters use them). Be warned however, they are designed to be used in a studio or other quiet area for recording purposes only. The mic is placed a long way from the mouth and not even in a line with where the sound is coming from. Consequently, to pick up any sound at all from the user, they are VERY SENSITIVE.

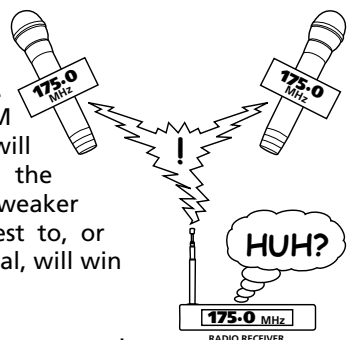
Lapel mics are so sensitive that they pick up the sound of rustling clothes, coughing members of the audience and worst of all, the sound of the PA. This sound (known as feedback) rapidly intensifies into a shrill scream and is often uncontrollable.

For public address (PA) work only use handheld or headband microphones.

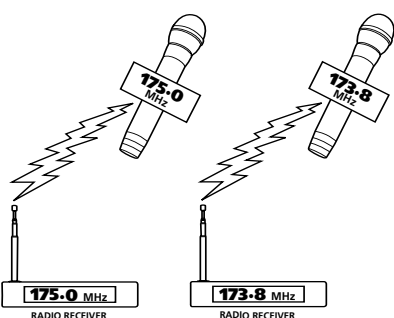
FREQUENCY ISSUES

Radio mics have the great advantage of not needing cables. Nothing to trip over, no knotty situations, no plugs being accidentally pulled out. The problem though is that they emit a radio signal - which can lead to some problems, though this shouldn't detract from the inherent benefits of using radio mics.

Two radio mics won't work on the same frequency - one will lose out to the other. The "capture effect" of FM receivers means that they will only capture and listen to the strongest signal and ignore weaker ones. The microphone closest to, or giving out the strongest signal, will win control of the receiver.



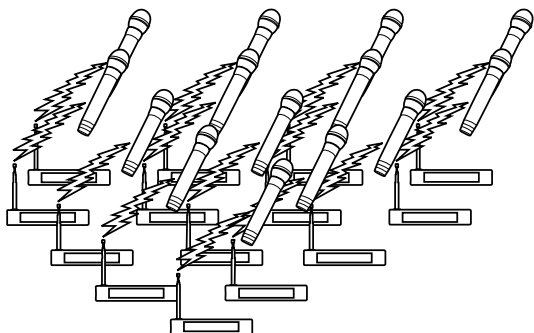
So, every radio mic in use has to transmit on its own fixed frequency.



It also means that every radio microphone needs a dedicated receiver to send a signal into the PA.

Furthermore there are only a small handful of VHF and UHF frequencies available for public use - some of which *can* conflict with each other.

You can get access to some other frequencies, but you'll need a licence and that must be renewed each year.



Finally, the more radio mics you have, the more you are trying to control. Lots of radio mics might sound like a great idea, but think carefully. A theatre might use sixteen (or more) radio mics during a performance. Controlling them all during a production is a full time job for a trained sound engineer.

DISTANCE ISSUES

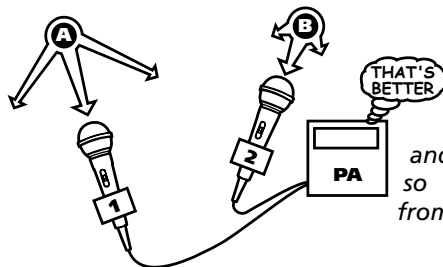
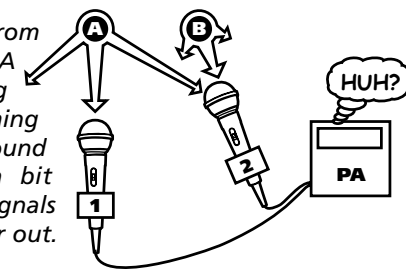
Radio mics work over a fairly limited range. Outside, our mics operate easily up to 50m (and even as much as up to 100 metres can be achieved) from their receivers. Inside, they will be limited by the buildings structure - particularly by those materials you can't see, such as steel joists, aluminium cladding, electrical cables and so on.

This limited distance should be perceived as a good thing, because otherwise you could be vying for air time with every other user of similar equipment nearby.

SOUNDS STRANGE?

Does something sound a bit "flat" or strange? There's probably nothing wrong with the PA - but maybe the mics need to be positioned away from each other!

If two mics collect sound from the same source, the PA can have trouble making sense of the signals coming in. The result is that the sound may seem "flat" or "a bit dead" because the two signals partially cancel each other out.

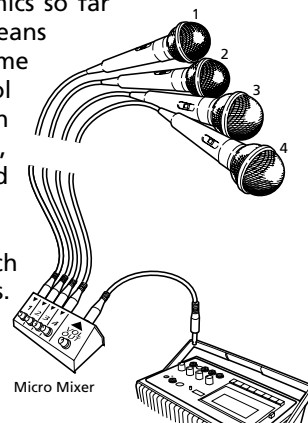


To cure the problem, separate the sources and/or reposition the mics so that they point away from each other.

CREATIVE PA USING A MIXER

The methods of using multiple mics so far mentioned are very simple, but means that all of the mics have the same input volume. You have no control over individual sound levels. Each mic will be as loud as the next and, without mixing, a balanced sound will be difficult to obtain.

A mixer allows you to control each mic via dedicated volume controls. Mics can be individually adjusted for volume before being mixed together and forwarded to the PA system.

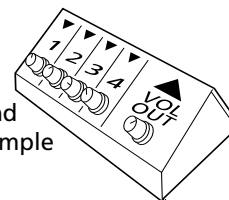


Imagine a school music evening. A singer performs with the support of two backing vocalists. There are two microphones, one for the singer and one for the backing vocalists to share. Together, the backing vocalists are louder than the singer!

By feeding the mics through a mixer, the backing vocals can be turned down while the singer's volume is increased!

WHERE CAN I GET A MIXER AND ARE THEY DIFFICULT TO USE?

Mixers come in various levels of price and complexity, but most music stores sell simple "micro mixers" for a reasonable price.



Often battery powered, they typically include four mic inputs with dedicated volume controls, a master output volume control and output socket (allowing connection to a PA system).

Make sure that a connecting (patch) lead is included, so that you can connect it to the relevant input socket on your PA.

To operate, simply plug the mics into the inputs, connect the mixer to the PA input, turn down the master volume and switch on the mixer followed by the PA. Turn up the master volume before adjusting each microphone level as required.

SOME BASIC TIPS ON USING MICROPHONES WITH A PUBLIC ADDRESS (PA) SYSTEM

On this page you'll find some useful schematics showing how microphones *might* be used for school productions.

This is intended for guidance only. Getting used to working with microphones will help to achieve better results. Also, the acoustics of the room, the furniture (even the props and materials) will affect the set-up of microphones - as will the number of people in the room. Practice and patience will lead to better results.

LISTEN FIRST

Before starting to set up a PA listen to what you can already hear. Decide what you want the PA to amplify. Is the singer drowned by the choir, or the string section engulfed by the brass? Amplify only what is necessary to enhance the performance.

When setting up mics for a performance, you might want to consider some of the following points:-

- Stages, normally constructed of a wooden floor, bounce up and down when any action takes place on them. Microphone floor stands can pick up the reverberations and transmit them to the mic.

In many cases the sound of thumping feet will then be transmitted to the PA!

This problem can't always be avoided though...

- Microphone stands placed on the floor often get bumped into by people and need to be protected by a barrier. Microphone leads should be positioned with care.

It's not uncommon for people to trip over leads and disconnect the mics from the amplifiers, cause damage to the equipment and even hurt themselves.

- Microphones dangling from the rafters are facing the wrong way. They will pick up the sound of performers poorly while collecting general background noise. Furthermore, they can't be switched off.

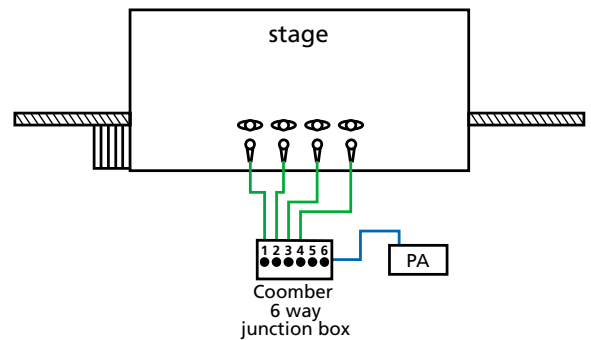
Microphones should be aimed only at the performers. If the mics are dangling from the ceiling, they should be pointed towards the stage

- Microphones should be behind the PA speakers. Placing them in front will lead to feedback problems.

This problem is particularly true where lapel mics are being used.

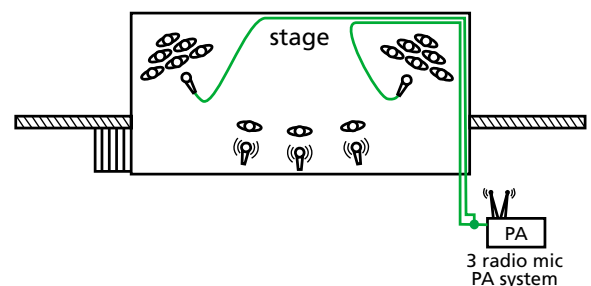
- The great advantage of a wired microphone is that it can't be taken off stage. Radio mics are becoming increasingly the cause of unexpectedly laughter, embarrassment and annoyance, because people walking off stage forget that they are still "live".

Impromptu comments and actions can only be avoided by carefully controlling the radio microphone receiver on-off buttons!



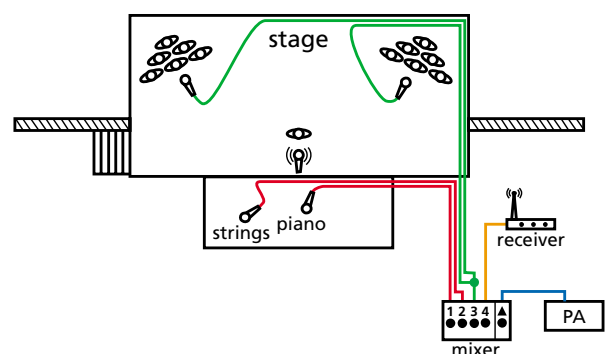
Four microphones are connected together and fed directly into the PA.

The mics cannot be adjusted individually. They can only be adjusted together using the PA master volume.



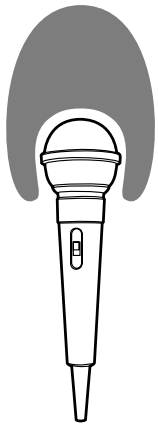
In this example a mix of wired and radio mics are in use. A Coomber 2070/W3 PA has three radio mic receivers and one wired mic input. All three radio mics are used by the singers, while the chorus share two wired mics, joined together with a two way connector.

Again, the microphones cannot be adjusted individually and are controlled by the PA master volume.



Another example of wired and radio mics being used together. Here, the radio mic uses a separate receiver and, along with the wired mics, is connected to a simple mixer.

Using the mixer, the volumes for quieter sections of the orchestra have been turned up, while the singer's radio microphone volume is lifted slightly. The output from the mixer is then fed into the PA input.



uni-directional type mic



omni-directional type mic

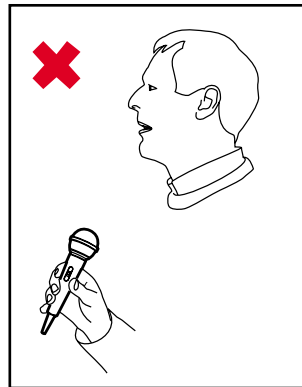
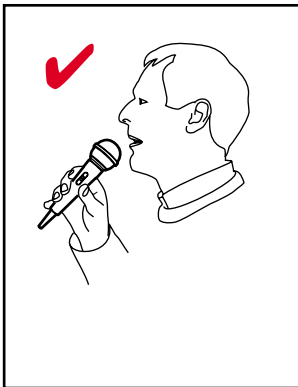
MICROPHONE TYPES

Two types of microphone are found in common usage - Uni-directional and omni-directional. Uni-directional mics are the most useful for PA use.

Uni-directional mics collect sound from immediately in front of them (note the grey shaded area in the figures above). They are more suited to PA and recording work where sound is being collected from one source - perhaps a singer.

Omi-directional mics gather sound from all areas on a plane. They can be used for recording work, but are more suited to collecting sound from a large area or gathering subtle room ambience (perhaps when recording a solo artist).

All Coomber microphones are uni-directional.



MICROPHONE POSITIONING

Microphones should be held close to the mouth (or other sound source) and at a slight angle to it. Only in this way will the words sound clear and distinct.

Holding the microphone directly in line with the mouth may cause an undesirable "popping" sound!

Feedback is much less likely to occur when mic input volume is low!

Background noise will also be reduced.

GUIDE TO COOMBER EQUIPMENT WITH MICROPHONE INPUTS

Model	Features	No. of Mic Inputs	Other Information
PA Equipment			
2020	Cassette	2	
2025	Cassette	2	
2060	Cassette	2	
2060/W	Cassette	2	fitted with 1 radio mic receiver
2070	CD	3	
2070/W	CD	2	fitted with 1 radio mic receiver
2070/W3	CD	1	fitted with 3 radio mic receivers
2085	Cassette	2	
2085/W	Cassette	2	fitted with 1 radio mic receiver
2100	Amplifier only	2	
2100/W	Amplifier only	2	fitted with 1 radio mic receiver
2240	Cassette	2	
Hallsound Equipment with PA			
2242	CD Cassette	2	
705	CD Cassette	2	
Classroom Equipment (no PA)			
393	Cassette	2	
395	Cassette	2	Manual level record
396	Cassette	2	inc. 6 headset sockets
2017	CD Cassette	2	
2018	CD Cassette	2	inc. 4 headset sockets
2241	CD Cassette	1	
Cassette Copier and Editor (no PA)			
844	Cassette Copier	2	
Language Learning Equipment (no PA)			
901	Language Lab Controller	1	inc. 2 headset sockets
3902	Cassette	1	inc. 6 headset sockets
3904	Cassette	0	inc. 6 headset sockets
3907	Cassette	1	inc. 6 headset sockets

MICROPHONES AND ACCESSORIES

Model	Description	Features
Microphones		
1918	Dynamic Microphone (balanced wired for noise reduction)	Ideal for assessment and PA. Supplied with 5 metre lead, on/off switch, case and mic clip.
1808	Live Performance Mic (balanced wired for noise reduction)	High quality dynamic mic for live recording. Supplied with detachable 5 metre lead, on/off switch, case and mic clip.
1914	Economy Microphone	For individual work, not suitable for assessment or PA.
Accessories		
1912	Desk Stand	Cast base with rubber feet for convenient desk top recording.
1905	Floor Stand	Adjustable, fully extending floor stand with boom arm.
1904	6 Way Junction Box	Connects up to 6 microphones into one mic input socket
1997	2 Way Mic Connector	Connects 2 microphones into one mic input socket