

fmGenie Diversity Soundfield Installation Instructions

Check contents of kit, you should have the following:



a) fmGenie Transmitter
& twiddling stick

b) fmGenie Diversity
Receiver/amplifier with two aerials
and wall fixings

c) Collarworn
microphone



d) Hip pouch

e) Charging lead for
fmGenie
transmitter



f) 2 pairs of speakers (3 pairs for a
6 speaker system!)



g) 100m reel of speaker cable (we know this is too much cable, but
100m reels are the cheapest form of supply)



h) 1 bag of speaker cable clips (using a cabling
staple gun is preferable if you have one)



j) Pair of batteries for
fmGenie transmitter



k) Instruction sheets:

Soundfield fmGenie Diversity Courtesy Card

*fmGenie Diversity Receiver/ Amp control &
feature card*

Wall & door stickers

Mounting instructions

fmGenie system booklet

This installation instruction booklet



An overview of the installation steps are:

- 1) Decide where the speakers are to be fitted
- 2) Decide the easiest cabling run for the speakers – which may not be the shortest.
- 3) Decide where to mount the fmGenie Diversity Receiver/amplifier
- 4) Install the system
- 5) Setting up and testing the system
- 6) Demonstrate and set the volume level for the user.

Charge batteries now if possible

Rechargeable batteries require charging before use, so if you have a standard plug-in AA or fmGenie twin tail charger, we suggest that you start charging the transmitter batteries now whilst the system is being fitted.

Even just an hour or so will give enough charge to test the system.

A proper charge can be given when the setting up or demonstration has finished.

If you don't have a suitable charger you will need to use the inbuilt fmGenie Diversity charger, but naturally you cannot start charging until the system has been fully installed. A pair of AA alkaline batteries can be used (or borrowed) for testing if necessary – but do not try charging them!

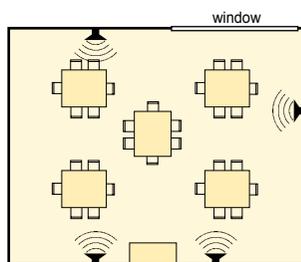
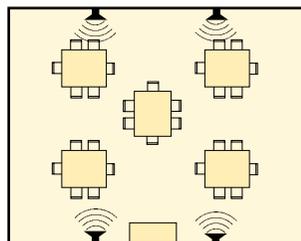


1. Deciding where to fit the speakers

Firstly please do not think home hi-fi and put the speakers in the corners, at waist level and point them to the centre of the room – this is the worst possible thing to do!

Placing loudspeakers for a classroom soundfield is more like deciding how best to light a room using 4 small lamps. If you think light you will not go far wrong, i.e. fitted above head height (2 to 2.5 metre high) each over a 1/4 of the room pointing down on the area to be covered.

The positioning of speakers is often predecided by physical objects such as windows. You have to fit 4 (or 6) speakers so adapt your 'lighting' plan to give the best pattern for the students – perhaps avoiding the window, an unused end of a classroom or a teachers desk.



Speaker position allowing for a window

2. Deciding the easiest cabling run for the speakers.

Take advantage of existing features such as any wooden picture rails or perhaps notice boards (it is much easier to fit cable clips to wood than plaster). If you have a false ceiling the cable can be run above it. Sometimes using a piece of plastic mini trunking for any difficult runs is a good solution.

Speaker wiring

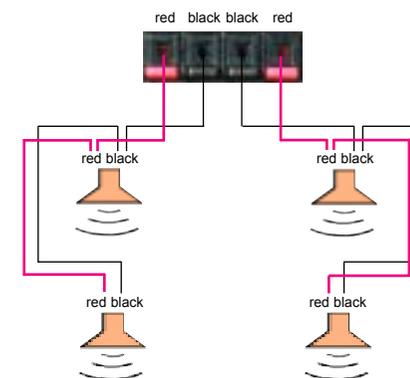
Speaker wiring – one cable run down each side of the classroom wiring 2 (or 3) speakers in parallel. It is important to maintain the correct polarity when connecting the cable so we suggest connecting the black trace wire to the black terminal(!) (Each speaker is 4 Ohms thus for 4 speakers we now have 2 Ohms on each cable).

The fmGenie Diversity has 4 terminals – red, black, black, red. Connect the two cable runs, one to the left pair and one to the right pair, again maintaining correct polarity i.e. black trace wire to the black terminals.

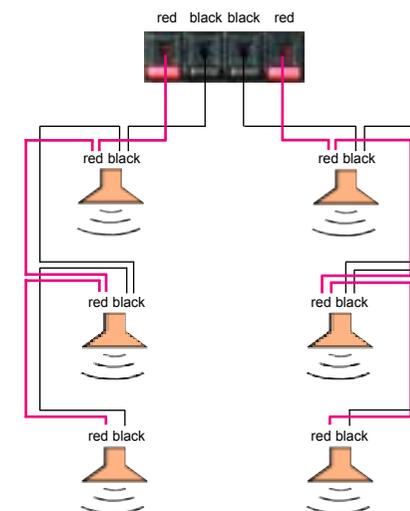
(The terminals are wired internally to connect the two cable runs in series making the load on the amplifier 4 Ohms. The actual amplifier connections are the 2nd and 4th terminal as viewed from below, which you would need to know if you wanted to test the amplifier with just one speaker)

The cable is white with a black stripe along one wire. The white only wire should always be connected to the red terminals and the black stripe wire always to the black terminal.

Four speaker wiring



Six speaker wiring



3. Deciding where to mount the fmGenie Diversity Receiver/amplifier

This is usually best done by discussing the options with the school staff. Make sure that there is adequate access to open the door and operate the controls!

The two aerials must be used fully extended in a 60° 'V' shape preferably 'flat' to where the teacher will normally stand – away from metal racking, pipes, metal building frames etc. otherwise the quality of radio reception will be reduced.

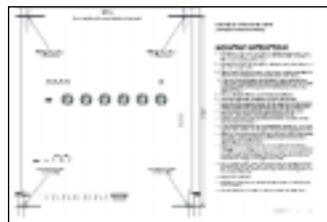
It should not be necessary to adjust the controls during a lesson so the fmGenie Diversity unit does not actually need to be beside the teacher although it is a good idea to mount it near to where a TV or smart board projector might be used. Mounting the unit away from little fingers is also a good idea(!) and of course do not forget that you also need a 13A mains socket to power the system.



4. Install the system

fmGenie Diversity Wall Mounting

There is an separate A3 sheet which has a template and guidance for mounting the fmGenie Diversity wall unit.



Connecting the speaker wiring

- 1 Pass the two speaker cables from behind the unit through the rubber grommet with the mains cable, around the right hand corner of the unit and through the speaker cable clamp. See the photograph below.
- 2 Prepare the speaker cable ends.
- 3 Place each speaker cable pair into the appropriate connector, observing the correct polarity.
- 4 Lay the speaker cables on top of each other and tighten the cable clamp.



5. Setting up and testing the system

fmGenie transmitter information

General instructions for using the fmGenie transmitter are included in the Tutor courtesy card.

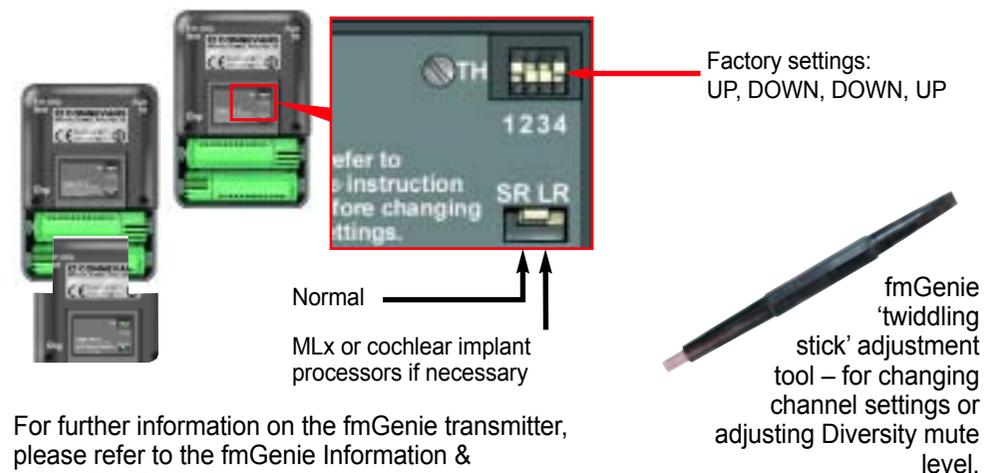
Tx underflash switch settings

The display on the transmitter shows which channel is selected.



Tx rear battery compartment switch settings

Set to LR if MLx or cochlear implant processors are being used with a personal fm system in the classroom.



For further information on the fmGenie transmitter, please refer to the fmGenie Information & Instruction Booklet.

Choosing the channel

You may use any radio channel between 38 and 69. Any number lower than 38 defaults to channel 38 and any number higher than 69 defaults to channel 69 on the Diversity receiver. All radio receiving apparatus can suffer from interference. Channels 38 to 44 inclusive are reserved for the use of radio hearing aids (personal fm systems) so these are least likely to suffer from interference. When choosing channels for each room, try to ensure that there is always a separation of at least two channels between adjacent rooms. Don't forget that adjacent rooms includes rooms above and below too! The channel number on the fmGenie transmitter and the Diversity receiver are dialled up as 'tens' and 'units' in the same way on both products. Refer to the relevant product instructions for further information.



Avoiding interference

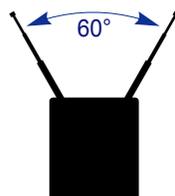
Set the 'Mute level' control on the Diversity receiver fully anti-clockwise using the fmGenie tool or a small screwdriver.

With the receiver powered up, but leaving the transmitter turned OFF, increase the 'Radio Mic' volume to check whether there is any local interference on the channel you have selected. If not, reduce the volume to about half-way and proceed to checking the transmitter. If there is interference, change the channel until you find one that is clear. Keep in mind the minimum two channel separation between adjacent rooms. If you are unable to find a clear channel, then find the channel with the least interference and adjust the 'Mute Level' clockwise until the interference is muted.



Setting the Diversity receiver amplifier aerials

Make sure that the two aerials on the top of the wall mounted Diversity receiver are fully extended and angled upwards at about 60 degrees to each other, but in line with the wall. They should be left permanently in these positions, pinned to the wall with cable clips if necessary. The aerials are not designed for daily movement.



Checking the operation of the Diversity amplifier and speaker system

The easiest way to check the system is to connect a portable radio, cassette or CD player into one of the auxiliary inputs (numbered 1 to 4). Adjust the appropriate volume to a suitable level and walk around the room, checking for a reasonably constant sound level and lack of distortion or buzzing from any particular speaker. Buzzing or distortion from a particular speaker may indicate a faulty speaker or loose mount.



Check the transmitter

Plug the microphone into the fmGenie transmitter and switch on by holding the power button down until the display appears. Check that the four green signal bars on the fmGenie Diversity receiver light up. Hold the microphone at about 25mm from the mouth and talk whilst increasing the 'Radio Mic' volume on the Diversity until you can hear it clearly without causing feedback whistling.

Make sure that the transmitter aerial (the microphone cable) is substantially vertical and fully extended by wearing the transmitter in the hip pouch supplied or simply clipping it to your belt. Walk around the room whilst talking. There should be no important places where the sound cuts out. Walk around again whilst staying silent. There should be no important places where the sound goes very noisy. If either of these instances occurs, check for the presence of large metallic objects in the vicinity. Consider moving them, adjusting the position of one or both aerials on the Diversity, re-siting the Diversity or alternatively, increase the fmGenie transmitter power setting to 'LR'.



Signal bars

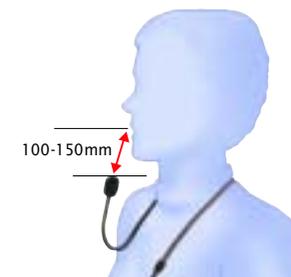
6 Demonstrate and set the volume level for the user

It is important that the soundfield is set up properly. We have found that most users tend to set the system too loud. This is unnecessary and undesirable. The golden rule is "if the user of the transmitter can hear themselves clearly from the speakers, then the volume is too loud". It is difficult for the person talking to judge the level of their own amplified voice.

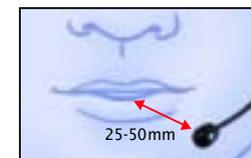
There are two ways to set up a soundfield properly; one uses a sound level meter and the other relies on the subjective judgement of another person. Both methods require two people with the class teacher preferably being the one doing the talking.

Setting the correct volume level

- Wear the collarworn or headset microphone as shown.
- Walk to the point in the room furthest away from the Diversity and invite a colleague to join you.
- Mute the transmitter by pressing the STAR button momentarily.
- Talk in a normal voice to your colleague while they stand about 1 metre away from you.
- Ask your colleague to remember the average sound level reading by either...
 - a) Using a sound level meter or
 - b) Remembering the sound level by ear
and then get them to walk over to the Diversity receiver.

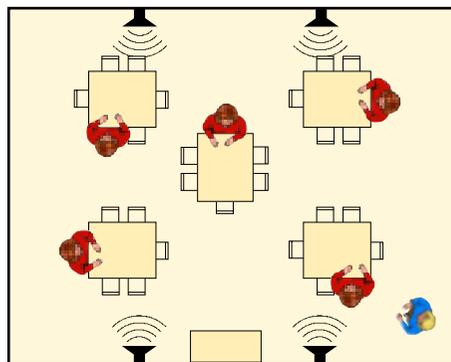


Collarworn microphones



Head/earworn microphones

- Un-mute the transmitter by pressing the STAR button again.
- Ask your colleague to increase the 'Radio Mic' volume control on the Diversity receiver, whilst you continue to talk in the same normal voice as before, until either....
 - a) the sound level shown by the meter at where they are standing is the same average value as when he/she was one metre in front of you.
 - b) until he/she judges the sound level at where they are standing to be about the same as when he/she was one metre in front of you
- He/she may now adjust the tone controls if necessary to optimise vocal clarity.
- Now ask your colleague to walk around the room listening to make sure that your voice is clear all around the room.



Job done! Don't be tempted to increase the volume much further as teachers tend to raise their voices in an active classroom situation!

Once the installation has been carried out, please do not underestimate the importance of ensuring that the teacher has the opportunity to experience listening to another person using the system. There are two reasons for this: firstly so that they become impressed at the natural sound and secondly it is hard for anyone to listen objectively to their own voice. It is also an excellent opportunity to 'play' at using the system with a colleague, allowing the teacher to gain confidence with their own 'performance'.

Leaving the fmGenie Diversity in a ready state for the user

If the transmitter batteries were not fully charged before testing and setting up the system, remove one of them from the transmitter for 15 seconds and replace. Do NOT turn the transmitter on. Plug the charger lead from the Diversity into the transmitter charger socket. The Diversity should enter charge mode within a couple of seconds, shown by the flashing red indicators and the transmitter should show the top two battery bars scrolling. Place the transmitter, complete with microphone into the door of the Diversity and lock the door. The system will automatically switch off when charging is done – as long as you don't forget to leave the mains switch on! If you have any difficulty, refer to the individual operating guides.

fmGenie Transmitter Battery Charging:

Normal charging routine.

Check the status of the battery bars on the fmGenie transmitter before switching it off.

If the unit shows two bars or less, put it on charge overnight. (Whilst an fmGenie will run for about 40 hours on a single charge, there is no need to risk the inconvenience of running out of power).



The basic procedure

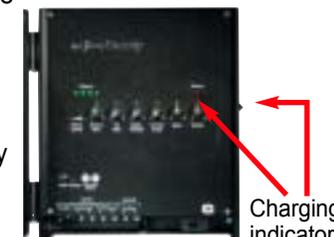
- 1 Turn off fmGenie Transmitter
- 2 Connect charging lead from fmGenie transmitter to Diversity receiver amplifier.
- 3 Put transmitter and microphone into door pocket and lock door to set automatic timer.
4. Go home!



Charging socket

Additional information on charging an fmGenie Transmitter.

When the fmGenie transmitter starts to take a charge, the Diversity amplifier will switch off and enter charge mode. Charge mode is indicated by flashing red indicators. Charging will continue when the door of the fmGenie Diversity is locked.



Charging indicators

When the fmGenie Diversity is locked it will automatically switch itself off about ten seconds after charging has finished or after a fault has developed that reduces the current taken from the charger.

A charge cycle takes either four or ten hours, depending on the residual charge in the fmGenie transmitter batteries.

Under normal circumstances, the charge cycle terminates automatically and the fmGenie Diversity will switch itself off (assuming the door is locked). When the door is opened the next time, the fmGenie Diversity will switch on and the fmGenie transmitter will show the word "no". This means that it needs no further charge and is ready for use. When the charging plug is removed from the transmitter the display will go blank. Store the charger plug in the door, safely away from any metal object and use the transmitter as normal.

Charging is normally required once or twice a week, depending on use.

If the mains power is interrupted during charging when the door is locked, then charging cannot continue on restoration of the power supply since the unit will have

switched itself off. In this eventuality, the fmGenie transmitter will indicate the total number of charge hours that have completed. For further information, refer to the fmGenie instruction manual.

Cutting short the charge cycle

If you wish to cut short the charge cycle, the charging plug may simply be removed from the fmGenie transmitter.

This will cause two things to happen:

- 1) The fmGenie Diversity receiver amplifier will return to normal amplifier 'on' mode after about 10 seconds (indicated by the red power lights going solid)
- 2) The transmitter display will show the approximate hours spent on charge e.g. "1H". Press and hold the star button to clear the display.

Notes:

- a) When topping up battery charge the rough ratio is 1 hour charge should give 5 hours use.
- b) Because the transmitter and its batteries have been 'fooled' into thinking they are charged it will be necessary to remove one battery for 15 seconds (to force the 'new battery' charge mode) before attempting to charge again.

FINAL NOTE: Probably the most useful bit of advice that we can give to a user is to get involved with setting up and understanding their equipment from the beginning. Adjusting tone & volume controls should not be regarded as a 'black magic' art only for a technician. It is not unknown for our customer services team to receive a phone call asking for permission to turn the volume up or down!

Understanding how the equipment works is important as it will prove very expensive to request a technician service visit every time somebody turns a volume to zero or the cleaner unplugs the mains lead!

Cautions:



Do not allow the door to swing open – either use it shut or fully open, to reduce the probability of someone hitting their head on it.

The unit will become warm during normal use.

The inside front panel will become hot when the system is producing continuous loud sound.

Open the door if the unit is to be used for extended periods (i.e. more than ten minutes) with loud or continuous sound such as music or if the ambient temperature is above 30°C.

Do not block the ventilation holes at the bottom and top of the unit.

Do not allow the tip of the charger lead to touch any metallic object, including the casework of the fmGenie Diversity. Store the charger plug safely in the insulated door pouch when not in use or remove from the front panel socket.

The charger in the fmGenie Diversity is designed only to charge fmGenie units containing Ni-MH batteries of 1300mAh capacity. Do not attempt to charge other devices, battery types or use for other purposes.

Do not attempt to charge units containing non-rechargeable batteries.

Do not expose the fmGenie Diversity to rain or moisture.

The fmGenie Diversity unit **MUST** be earthed.

For continued protection, replace the fuse only with the same type and rating i.e. Antisurge T315mA.

Hazardous voltages exist inside the fmGenie Diversity unit.

No user serviceable parts inside.

Refer servicing to authorised representatives of Connevens Limited.

Remove the mains plug from the wall socket before undertaking any servicing operations.

The fmGenie Diversity is manufactured by:

Connevens Limited
54 Albert Road North, Reigate, Surrey RH2 9YR
Helpline 01737 247571 soundfield@connevens.com

Trouble shooting:

If the fmGenie Diversity does not operate as expected check the following:

Symptom	Probable Cause
No red indicator light	Unit unplugged, switched off or fuse blown
Red indicators solid but no sound	Volume control too low, transmitter not on or muted, speaker cable disconnected
Red indicators flashing and no sound	Unit in charge mode
No green 'Signal' indicators	Transmitter unit not functioning or on different channel setting to receiver. Transmitter microphone (aerial) not plugged in
Distorted sound only when transmitter is very close to the Diversity receiver	Transmitter on different channel setting to receiver
Feedback whistling all the time or when the user of the transmitter speaks	'Radio mic' volume too high. Headworn microphone too far away from user's mouth.
Sound too bright or boomy	Adjust the tone controls to suit the acoustics of the room and speakers
Sound distorted	Reduce the volume of the appropriate channel. The system is only intended for speech and music in an average size classroom up giving up to about 90dB SPL.
Interference present when the transmitter is switched off	Another distant transmitter on the same channel, another close by transmitter on a nearby channel or a nearby electrical system such as a computer, fire alarm system or mobile telephone. Locate and change the frequency of the offending transmitter or increase the 'Mute Level' control until the interference disappears or change the fmGenie Diversity system to another channel.
Wooshing sound or signal drop out as the user of the transmitter moves around the room	Diversity receiver has been positioned near some metal such as a cupboard, filing cabinet, steel building structure (RSJ) or a metal lined plasterboard partition. Receiver aerial broken, not connected or not extended properly at 60°. Microphone wire on transmitter not extended in recommended fashion. Transmitter faulty. If the system has suffered from this since installation, switch the transmitter to the 'LR' setting.