



## 900 Series Mixer, Slave & CD-mixer Amplifiers



### PA900 - 5 CHANNEL 120W RMS MIXER AMPLIFIER

Mixer amplifier producing 120W rms output power featuring 4 mic inputs and 1 line input. Switchable VOX priority on Mic 1 and balanced input and phantom power on all MIC input channels.

Maximum output power 160W  
 VOX priority channel 1  
 2U 19" rack mount

5 input channels  
 Bass & treble controls  
 Peak and signal LED's

4 balanced mic inputs  
 8 ohm and 100V line outputs  
 Mains and 24v battery operation

### PA900S - 120W RMS SLAVE AMPLIFIER

A 120W rms high power slave amplifier for use with the above range of mixer amplifiers or with any other suitable source.

Featuring phono sockets for line inputs and outputs and a front located master volume control.

Maximum output power 160W  
 Peak and signal LED's

8 ohm and 100V line outputs  
 Bass & treble controls

2U 19" rack mount  
 Mains and 24v battery operation



### PA910CD - 5 CHANNEL 120W RMS MIXER AMPLIFIER WITH CD PLAYER

Mixer amplifier producing 120W rms output power featuring 4 mic inputs and 1 line input. Switchable VOX priority on Mic 1 and balanced input and phantom power on all MIC input channels. Incorporates single CD player.

Maximum output power 160W  
 VOX priority channel 1  
 2U 19" rack mount

5 input channels  
 Bass & treble controls  
 Peak and signal LED's

4 balanced mic inputs  
 8 ohm and 100V line outputs  
 Mains and 24v battery operation

### PA940 - 5 CHANNEL 240W RMS MIXER AMPLIFIER

Mixer amplifier producing 240W rms output power featuring 4 mic inputs and 1 line input. Switchable VOX priority on Mic 1 and balanced input and phantom power on all MIC input channels.

Maximum output power 340W  
 VOX priority channel 1  
 2U 19" rack mount

5 input channels  
 Bass & treble controls  
 Peak and signal LED's

4 balanced mic inputs  
 8 ohm and 100V line outputs  
 Mains and 24v battery operation





## Monacor PA900 120w mixer amplifier

- 120w RMS @ 100v line or low impedance output
- 4 balanced mic/line inputs
- Mic 1 with priority circuit and automatic talkover
- Additional connection for desk microphone via screw terminal
- Dedicated aux input
- Speaker outputs via screw terminals
- Line output
- Insert facility for preamplifier
- Input and output level controls
- 2-way tone control for the output
- 21V phantom power, selectable
- Mains operation or 24V emergency / battery power operation

<b>Output power</b>	120w RMS 160w PPMO
<b>Mic input</b>	1.5mv – XLR connectors
<b>Aux input</b>	300mv – RCA phono connectors
<b>Speaker output</b>	4Ω, 70 or 100V
<b>Frequency range</b>	50 to 15,000Hz ±3dB
<b>Equalizer bass</b>	±10dB @ 100Hz
<b>Equalizer treble</b>	±10dB @ 10kHz
<b>S/N ratio</b>	> 92dB
<b>THD</b>	< 2%
<b>Power supply</b>	230v AC @ 50Hz - 300VA 24v DC - 9A
<b>Admiss. temp.</b>	0-40 °C
<b>Dimensions</b>	482 x 88 x 275mm (2RS / 2u 19")
<b>Weight</b>	10kg



# PDA PRO-RANGE

PDA200/2 • PDA500/2 • PDA1000/2  
PROFESSIONAL INDUCTION LOOP AMPLIFIERS

- ▶ Ideal for theatres, cinemas, churches, conference halls and other applications where top quality sound is a must
- ▶ Attractive free-standing design (optional wall and 19" rack-mounting kits available)
- ▶ Improved drive current capability provides up to 50% extra coverage over previous PDA Pro-Range models

Pro-Range Amplifier	Max. square room coverage	Max. 2:1 aspect ratio coverage
PDA200/2	200m <sup>2</sup>	240m <sup>2</sup>
PDA500/2	500m <sup>2</sup>	600m <sup>2</sup>
PDA1000/2	900m <sup>2</sup>	1100m <sup>2</sup>

- ▶ Two XLR 3 pin input sockets - one balanced mic. and one switchable balanced mic./line
- ▶ Optional 11V phantom power available for electret or condenser microphones
- ▶ 'Outreach' input allows the connection of up to 10 additional mic. or line level inputs via a series of separately available single gang connector plates
- ▶ Adjustable level controls provided for all inputs - can be used individually or together as a three-input mixer
- ▶ Adjustable drive control allows the loop current to be adjusted to suit a room's individual characteristics
- ▶ Metal compensation control helps offset the frequency response problems associated with excessive metal in a building
- ▶ True output current meter
- ▶ Visible indication of the amplifier's compressor action via two LEDs
- ▶ 3.5mm headphone socket allows true monitoring of the output signal
- ▶ Advanced audio signal processing with automatic gain control
- ▶ On-board cooling fan on PDA500/2 and PDA1000/2 promotes stable operating temperature and increased reliability
- ▶ All models designed to meet or exceed the requirements of BS7594 and EN60118-4 when correctly installed



SigNET's new range of professional current mode audio-frequency induction loop amplifiers offer outstanding sound quality at a competitive price. They are ideal for use in large prestigious applications such as theatres, churches, cathedrals, cinemas, large conference halls, etc., where first class sound and unrivalled reliability are a must.

Each amplifier includes one balanced microphone input and one switchable balanced mic. or line level input, both of which will accept standard 3 pin XLR connectors. Optional 11V phantom power is also available on both inputs to allow the use of electret or condenser microphones.

By popular demand, each amplifier also features a four-way 'Outreach' input offering full compatibility with SigNET's unique Outreach Plate audio input extension system. This system allows the connection of up to 10 additional microphone or line level inputs via a range of specially designed single gang connector plates.

The pre-amplification stage of each amplifier utilises an advanced signal processing system that allows tight control over the audio signal without any degradation of output quality. A metal compensation control is also provided to help offset the frequency response problems associated with the excessive metal content of some rooms.

Other features include three level controls (one for each input), a loop drive control, an output current meter and a 'compression' activity display giving visible indication of the amplifier's compressor.

**PDA**  
Range

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**SigNET**



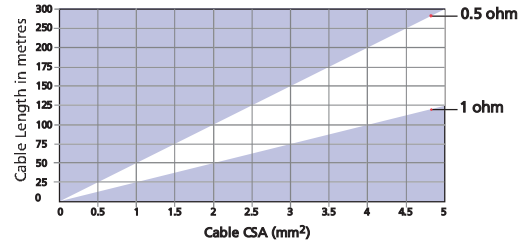
Audio-frequency induction loop systems work by transmitting amplified sound to hearing aids. Most hearing aids have a 'T' or 'MT' switch which allows them to pick up the electromagnetic field generated by an induction loop system. The hearing aid converts this signal to a sound suited to its user's specific hearing requirements, allowing them to participate more fully in general conversation, ordering goods or services, etc.



PDA Pro-Range amplifiers are fully compatible with SigNET's unique 'Outreach Plate' audio input extension system. This system allows the connection of multiple microphone or line level inputs via a range of specially designed single gang connector plates covering the most common variants of audio connector including XLR line, XLR mic., 3.5mm jack, dual phono and 1/4" jack. A maximum of 10 plates (any mix) can be daisy-chained to the amplifier's Outreach socket using standard two pair audio cable such as Belden 8723. Contact our sales desk for further information.

#### Loop cable selection graph

Almost any single core tri-rated cable can be used for the induction loop provided it is of the appropriate DC resistance (ideally 0.5 to 1 Ohm). The graph below shows the recommended CSA for different lengths of loop cable. Simply work out the length of the loop required and choose a cable size that falls into the non-shaded area of the graph. For example, to cover a room 30m x 20m (600m<sup>2</sup>) the loop cable would need to be 100m long (2 sides @ 30m and 2 sides @ 20m). The recommended cable CSA for a loop this length is between 2mm<sup>2</sup> and 4mm<sup>2</sup>. Therefore, a PDA1000/2 (which can cover areas up to 900m<sup>2</sup>) using 2.5mm<sup>2</sup> cable would be sufficient.



### PDA PRO RANGE SPECIFICATIONS

Power	230-240 V a.c. mains (PDA200/2 <150 VA; PDA500/2 <225 VA; PDA1000/2 <300 VA). IEC 320 fused mains lead supplied)
Inputs	Line (3 pin XLR) - impedance: 6k $\Omega$ + or - input to ground; Sensitivity: 200mV - 2.5V RMS balanced or unbalanced. Microphones (3 pin XLR) - impedance: 6k $\Omega$ + or - input to ground; Sensitivity: 1 - 8 mV balanced Phantom power: 12V switchable (on/off) Outreach (Four-way Weidmuller connector BL5. 08/4) - impedance: >10k; Sensitivity: 500mV - 6V RMS balanced Outreach Power: 16 - 21 V d.c. is available via the amplifier's Outreach Socket.
Output type	Current mode
Loop connector	Four way binding posts
Recommended loop impedance:	0.5 - 1 Ohm @ 1KHz. Will drive higher impedance loops with reduced area of coverage.
Loop drive current @ 1 Ohm:	PDA200/2 - 6A; PDA500/2 - 9A; PDA1000/2 - 12A.
Peak loop drive current (Measured over 5mS integration time)	PDA200/2 - 8 Amps @ 1 Ohm, 13Amps @ 0.5 Ohm; PDA500/2 - 12 Amps @ 1 Ohm, 19 Amps @ 0.5 Ohm; PDA1000/2 - 14 Amps @ 1 Ohm, 24 Amps @ 0.5 Ohm
Recommended cable gauge:	See Loop Cable Selection Graph at bottom of page.
Headphones:	3.5mm jack socket allows monitoring of the loop signal via >32 Ohm headphones.
Maximum area coverage:	For a 400mA/M field strength +/- 1dB. PDA200/2 @ 6A max short term current: Square room = 200m <sup>2</sup> ; Rectangular room (2:1 aspect ratio) = 240m <sup>2</sup> PDA500/2 @ 9A max short term current: Square room = 500m <sup>2</sup> ; Rectangular room (2:1 aspect ratio) = 600m <sup>2</sup> PDA1000/2 @ 12A max short term current: Square room = 900m <sup>2</sup> ; Rectangular room (2:1 aspect ratio) = 1100m <sup>2</sup>
Performance	Frequency response: 20Hz - 14 KHz + - 3dB; Distortion: Less than 0.5 %; S to N ratio: Better than -65dB any input
Compressor:	Gives dynamically variable compression ratio from 1:1 (no compression) to 17:1 Attack time: Approx. 10mS. Release time: Approx. 2.2S
Metal Compensation:	True 3dB /octave design counteracts frequency dependent absorption by metal in the proximity of the installation over a bandwidth of approximately 100Hz - 10KHz.
Indicators	Power on LED: Red Loop current: A five LED bar graph type meter is provided to allow monitoring of loop current output and assist in setting up the amplifier. This is provided by monitoring true output current rather than from a line level derived signal. This meter has PPM type characteristics i.e. fast attack and slow release. This allows easy reading of fast peaks. Accuracy - +/-10% Compression: A two LED display is provided for indication of signal compression. The first LED shows the beginning of compression whilst the second indicates very high compression levels have been reached.
Controls	On/Off switch incorporated into IEC mains inlet. Four way piano key style DIP switch selects Phantom power for mic 1 & 2 XLR inputs and switches XLR input 1 between Line and Microphone settings. The fourth of the 4-in-line switch is not connected. Level controls for XLR 1 (Line/Mic switchable), XLR 2 (Mic) and Outreach. These can be used individually or any of them together, in which case they act as a three input mixer. Drive control: Sets the level of amplifier output current supplied by the amplifier. Metal compensation control. When fully anti-clockwise has no effect on the signal. When turned clockwise imparts a rising 3dB/octave characteristic to the frequency response of the amp to counteract the effect of metal in proximity to the loop.
Cooling Requirements	The PDA1000/2 and PDA500/2 have thermostatically controlled cooling fans, which are activated when the amplifier's internal heatsink temperature reaches approx. 56°C. The PDA200/2 model does not require a cooling fan, as it does not generate as much heat as the larger models.
Dimensions	All models: Length - 380mm; Depth - 220mm; Height - 80mm
Weight	PDA200/2 - 3.74Kg, PDA500/2 - 3.46Kg; PDA1000/2 - 4.54Kg



## Monacor LR200 induction loop receiver

Inductive receiver for receiving audio signals in inductive loop hearing systems. The electromagnetic field which is created by an inductive loop is received by the inductive receiver and converted into an audio signal. Any number of receivers can be operated within one inductive loop.

The unit is suitable for people with and without hearing problems and can be used for various applications:

- Hearing aid for the hearing impaired
- Operational test of inductive hearing systems
- Detection of stray radiation within a loop
- Interpreting installations
- Lectures in museums, exhibitions, etc.
  
- 3.5mm **mono** connection for headphone
- Volume control
- Low frequency cut switch
- Belt clip
- Power supply via 9V PP3 battery
- Dimensions: 63x100x29mm
- Weight: 100g

## adastra 952.961 & 952.963 100v line loudspeakers



### HIGH PERFORMANCE LOUDSPEAKERS with wall brackets

High quality 2 way speakers for indoor or outdoor use. Weatherproof speaker and cabinet makes these enclosures ideal for outdoor events, swimming pools, garden areas and marine or boat use. Available in white (952.961) or black (952.963) finish.

- 13.1cm (5.25") Woofer and 1.25cm (0.5") Dome Tweeter
- 2 way speaker system with crossover network
- 5, 10, 20, 40W (@ 100V) & 8 Ohms selected by rotary switch
- Weatherproofed IP35
- UV protected ASTM D4329
- Indoor / outdoor equalisation switch (Indoor response tailored for speech applications)
- Gold plated binding posts
- Mounting bracket
- Individually boxed

Power max.	100W @ 8 ohms
Power rms	65W @ 8 ohms
Power taps @ 100v line	5, 10, 20 & 40w RMS
SPL @ 1W/1m	86dB
Frequency response	110Hz - 20kHz
Dimensions	280 x 180 x 140mm



## TXS810 ~ TXS830 UHF 16ch. radiomic system

The TXS810 ~ TXS830 16 channel UHF radiomic system is easy to use and well constructed.

- 16 channels to choose from – if you get interference just change to another channel
- High quality dynamic microphone suitable for speech or music
- Transmitter runs of two cost effective AA batteries
- XLR & jack sockets on receiver to match all sound systems
- Comprises TXA810 ~ TXS830 diversity receiver and microphone transmitter – see below
- Professional quality

The 16 UHF radiomic frequencies preset into the IMG Stageline TXS890 series of equipment (and allowing the user to program the TXS870 series to be used in conjunction with TXS890 series).

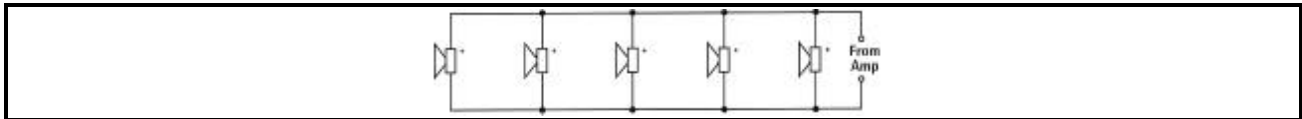
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Ch 2 - 792.265  
Ch 3 - 794.250  
Ch 4 - 795.625  
Ch 5 - 797.125  
Ch 6 - 798.875  
Ch 7 - 801.125  
Ch 8 - 802.250  
Ch 9 - 803.625  
Ch 10 - 805.250  
Ch 11 - 805.750  
Ch 12 - 808.625  
Ch 13 - 809.125  
Ch 14 - 810.000  
Ch 15 - 813.250  
Ch 16 - 813.750

**TXS810 – 16ch UHF Handheld radiomic system comprising handheld transmitter, diversity receiver and mains power supply**

**TXS830 – 16ch UHF Handheld radiomic system comprising bodyworn / pocket transmitter, tie-clip microphone, headworn microphone, diversity receiver and mains power supply**

## Installing 100v line PA sound systems

- Please read this first
- Plan your loudspeaker layout and locations together with your cable routes
- Use cable with a minimum specification of 6a twin sheathed two core flex (02162) for the loudspeakers – this means that there is a blue and a brown wire inside a white outer (for instance) and it is at least the size of cable on your table lamp or TV etc.
- Install the loudspeaker cable – remember with 100v line PA sound systems all loudspeakers are connected in parallel – this means that the cable starts at the amplifier and goes to the first loudspeaker, from there to the second loudspeaker and from there to the third loudspeaker etc.



- Remember that the total wattage of all of your loudspeakers added together must NOT be higher than the rated wattage of your amplifier
- Prepare your loudspeakers for installation – each 100v line loudspeaker will have a number of wattage tapings – it is best to start off by using the middle wattage (ie: if you have 1, 2, 4, & 8 watts you could use the 4w tapping) – this allows you to increase or lower the volume of each loudspeaker later. Please be aware that some loudspeakers (especially ceiling types) are often supplied with this setting disconnected from the built in transformer on each loudspeaker – it is often left to the purchaser to fit or connect the tag to the transformer etc.
- On some loudspeakers you connect your cable to 'com' (or 'common') and to the chosen wattage connection and on others you connect a tag to the chosen wattage connection (or select via a switch) and connect your cable to the short fly leads
- All loudspeakers MUST be connected in the same phase – it is likely that your cable and your loudspeakers do not have the same coloured wires – choose an obvious convention such as brown cable to red on loudspeaker and blue cable to black (for instance) and stick to it throughout your installation
- Once you have installed and connected all of your loudspeakers and you are happy that there are no short circuits or other problems with the installation you can connect the other end of your cable to your amplifier
- Your amplifier will probably have both low impedance (8 ohm) and 100v line connections – you must NEVER use both at the same time
- Connect your wires to the 100v and 'com' (or on some amplifiers to the pair of terminals marked 100v line)
- Your amplifier should ideally sit on top of your CD player, cassette deck etc. so that there is adequate ventilation and airflow to keep the amplifier cool.
- Turn all volume controls to minimum and set all bass and treble controls to midway
- Connect your microphone to the amplifier and switch your amplifier on
- Turn your master volume to around midway and gradually turn the microphone volume (or input volume) up while speaking into the microphone
- Adjust to the volume level that is required

## PA sound systems - basic set-up rules

- Always turn on the power last - after you have connected up the whole sound system
- Always turn the power off first - before you strip down the sound system
- Microphones should always be connected to inputs marked 'mic' on amplifiers
- Radiomic systems usually have two outputs – the XLR output should preferably be connected to inputs marked 'mic' on amplifiers and the jack output should preferably be connected to inputs marked 'aux' or 'line' on amplifiers
- Remember - you must still project your voice when using any sort of microphone amplification system
- ALWAYS use the microphone from a position behind the loudspeakers
- CD players and cassette decks should always be connected to inputs marked 'aux', 'CD', 'cassette' or 'line' on amplifiers
- Commercial and industrial projection, horn & column type (100v line) loudspeakers should always be connected to the 100v line terminals on amplifiers
- Hifi, disco and similar cabinet type (8 ohm - low impedance) loudspeakers should always be connected to the 8-16 ohm terminals or connectors on amplifiers - NEVER connect these speakers to the 100v terminals on amplifiers
- NEVER use 100v line & 8 ohm speakers on the same sound system

## Inputs

Microphones should only be connected to inputs marked mic or microphone while line sources such as CD players, cassette deck and line outputs on radiomic receivers should only be connected to inputs marked aux, line, CD etc. As a rule of thumb a jack output on a radiomic receiver is line level and an XLR output is mic level

## Speaker Leads

Internal fuses will blow and the amplifier will be damaged if you use faulty speaker leads (or speakers). Always look after your interconnect cables - they are easily damaged - especially in a portable or mobile sound systems. The leads and any damage directly caused by using faulty leads is not covered by the Sound Services or manufacturers warranty unless the leads exhibit a manufacturing fault. Immediately STOP USING THE SYSTEM if you suspect that you have damaged the speaker leads or speakers in any way.

Maximum volume that a PA sound system is capable of producing before incurring equipment damage will be apparent by noticeable audio distortion - this may well occur when the volume control(s) are set well down from their maximum position! If you can hear distortion the sound system is being damaged! Turn the volume and the bass down! Never use more than two 8 ohm speakers with aerobics and other portable sound systems.

## Acoustic Feedback (Howl)

- To avoid acoustic feedback (howl) microphones must never be used in front of or otherwise near to any loudspeakers. Always ensure that the person wearing/using the microphone/radiomic does not go within 3m to 4m of the loudspeaker(s).
- Body worn (lapel) mics should be central on the body and around 20cm below the mouth (on a tie, for instance). Feedback is very likely with this sort of microphone – body worn microphones can only be used to reinforce the voice.
- Headworn microphones should always be protected by a foam windshield and be worn as near to the mouth as possible and well below the nose so that breath noises do not become a problem.
- Hand held microphones sound 'warmer' and exhibit less feedback if they are close to the mouth.
- Remember - you must still project your voice when using any sort of microphone system.
- Feedback is primarily caused by proximity of microphone(s) to loudspeaker(s), incorrect placement of loudspeakers, too much volume and/or incorrect tonal settings on the amplifier such as far too much bass.
- The microphone(s) must always be used from behind the loudspeakers.

## Other Considerations

- Please note that radiomic receivers can be effected by CD players & other RF sources - keep your radiomic receiver at least 300mm away from any CD player, ghetto blaster or music system.
- Please read all manufacturers instructions prior to using any equipment.
- For sports, aerobics, dance and other exercise based activities it is preferable to wear you radiomic transmitter belt pack in a custom pouch and belt such as the IMG or Strike belts.
- Induction loops for the hard of hearing must reach BS6083 Part 4 1981 and the requirements of the RNID.

## Induction Loop Systems for the Hard of Hearing

Induction loop systems are used to assist the hearing impaired by transmitting amplified sound, ie: music & speech etc., to NHS and other hearing aids. Demand for induction loops is increasing due to new legislation aimed at preventing discrimination against disabled people. This document provides a brief summary of all new and existing legislation/standards relating to induction loop systems and their installation.

### Induction Loops

In order that the hard of hearing may benefit from sound distribution, it is necessary that they have a hearing aid fitted with a 'T' (Telecoil) switch. This would normally allow ease of use of a telephone. Most modern aids will have this facility inbuilt, no switch being required. Basically, the loop system operates as the primary of a large transformer, creating an electromagnetic field around the site to be covered. Each individual aid would then effectively become a secondary within this field, receiving the signal and transforming it into sound for the user.

Some calculations are needed so as to meet the requirements of BS7594, which governs these installations. The calculations are a little involved and include length and width of the area, together with the required field strength, in order to determine the loop current. The calculation also varies somewhat with the differing shapes of sites. Then, the cable diameter will be determined, taking into account the total loop size, loop resistance and current rating. It is felt that these calculations are beyond the scope of this text. However, most manufacturers and suppliers offer a design service for loop installations.

Uses for induction loops include churches, banks, service counters, schools, theatres, meeting rooms, waiting rooms, etc. They may be installed as a stand-alone unit, e.g. in a bank, or as a 'slave' to an existing PA system, e.g. in a theatre.

The loop itself will usually consist of a single turn conductor around the listening area. Care must be taken not to run the loop parallel to existing wiring, conduit or piping, since these will all be regarded by the system as suitable 'secondaries', each absorbing considerable amounts of the radiated signal.

The calculations will also take into account the fact that it is generally undesirable to site the loop too near to 'ear' height as this may well produce overloading to a listener physically close to the loop. Usually, the loop will be sited around 1 metre above or below the listening plane. This could be in a false ceiling or perhaps around a skirting board.

Follow the manufacturer's setting up procedure closely, paying attention to detail, since any digression may result in a system which fails to meet the users expectations. In the absence of a field strength meter or loop test receiver, simply organise the aid of a hard-of-hearing member of the public. They will soon advise if levels are incorrect!

## Induction Loop Legislation

BS8300 (2002) British Standard BS8300 is the new code of practice for the design of new buildings and their approaches to meet the needs of disabled people. The standard states that 'a hearing enhancement system, using induction loop, infrared or radio transmission, should be installed in rooms and spaces used for meetings, lectures, classes, performances, spectator sports or films, and used at service and reception counters where the background noise level is high or where glazed screens are used' (9.3.2).

BS8300 pinpoints the following areas for consideration seated waiting areas, ticket sales and information points, fitness suites and exercise studios, churches, crematoria and cemetery chapels, educational, cultural and scientific buildings.

Induction loops shall reach EN60118-4 (formally BS6083 Part 4 1981), BS7594 and the requirements of the RNID.

## Building Regulations (1992)

Current building regulations state that newly erected or substantially reconstructed non-domestic buildings must provide aids for the hearing impaired. The aim is to enable both members of the public and employees to play a full part in conferences, committee meetings, etc. Areas requiring cover include booking and ticket offices where the customer is separated by the vendor by a glazed screen, reception areas, auditoria and meeting rooms in excess of 100m<sup>2</sup>. The regulations state that a person with a hearing disability must receive a signal some 20dB above that received by a person with normal hearing. The system should be able to suppress reverberation, audience or other environmental noise.

## The Care Standards Act (2002)

On 1 April 2002, the Government's new Care Standards Act came into force. The new regulations demand that care homes provide certain adaptations and equipment for residents, specifically 'facilities, including communication aids (eg: an induction loop system), and signs to assist the needs of all service users, taking account of the needs, for example, of those with hearing impairment, visual impairment, dual sensory impairments. learning disabilities or dementia or other cognitive impairment. where necessary'. (standard 22.6).

These are 'core requirements which will apply to all care homes providing accommodation and nursing or personal care for older people' in England. Regular inspections of homes and enforcement of the new legislation will be carried out by the new National Care Standards Commission.

## The Disability Discrimination Act


The aim of the Disability Discrimination Act (1995) is to stop discrimination against disabled people including the hearing impaired. The Act was recently extended to cover education in schools and colleges and will be strengthened further in October 2004 as the Disability Rights Commission's (DRC) new Code of Practice comes into effect. Service providers, ie: companies or organisations offering goods, facilities and services to the general public, must make 'reasonable' adjustments to ensure that they do not unlawfully discriminate against disabled people. Employers must also take measures to ensure that existing and potential employees are not disadvantaged in the workplace.

Under the Act, 'reasonable adjustments' include the provision of various auxiliary aids, including temporary induction loop systems, to enable a deaf or hard of hearing person to access goods, facilities or services available to the general public. At present, service providers do not have to make any permanent adjustment to their buildings. This, however, is about to change. From October 2004, service providers will be required to install permanent induction loops and infrared systems where it is impossible or unreasonably difficult for a deaf or hard of hearing person to make use of a service. Service providers who fail to make adequate provision for people with hearing disabilities face prosecution. Furthermore, it is not enough to simply install an induction loop system - it must be properly maintained and staff must know how to use it. (DDA. Auxiliary aids and services 5.13)

Some examples of service providers covered under the Act are:

- Telecommunications and broadcasting organisations
- Public utility companies, such as gas, electricity and water suppliers
- Leisure centres, football stadia, national parks and health clubs
- Bus and railway stations, airports and travel agents
- Shops, hairdressers, post offices, banks and building societies
- Hotels, restaurants, cinemas, theatres and pubs
- Hospitals, waiting rooms, clinics
- Solicitors' offices, courts, churches and mosques

The DRC advises service providers to take steps now to prepare for their extended obligations.

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## Radiomicrophones

You may be a little bewildered by the range of prices and types of radio microphones, so here's a short introduction:

The quality and price ranges from home disco and 'karaoke' types costing £50 or less, right up to thousands of pounds for broadcast quality products. The main differences will be in transmission range, reliability of the radio (RF) link (see below), robustness of the hardware, and the audio / sound quality. With the cheapest, don't expect more than about 10 metres of range - any more, and you'll get gaps, or drop-outs, in the coverage, which may at worst give you a brief 'shhht' noise rather than silence.

Go more expensive, and you'll get a 'diversity' receiver with your radio microphone. Diversity means two separate receivers in one box, with two separate receiving antennas or aerials. The receiver that's getting the better signal is selected automatically -- so there's a good chance that if one receiver sees a gap in coverage, the other one is still working well. (But watch out -- some cheaper receiver boxes have two antennas but aren't true-diversity).

There are three different types of transmitter. Hand-held transmitters have the microphone and transmitter in the same microphone tube, which opens to allow you to fit batteries. Add-on transmitters fit on to a standard microphone, making it into a radio mike, although the lump at the base of your mic may not appear very elegant. Lapel microphones, headworn microphones (headmics) connect to a separate bodyworn pack / box that you can wear on your belt or in your pocket. If you're using a lapel microphone, it's often worth getting a better microphone than the standard one that came with the radiomic kit, because it will pick up less clothing noise, and probably be tougher made and of higher audio / sound quality.

There are two legal radio bands in the UK that don't need a licence to use – these are called deregulated frequencies: the 'VHF' one is between 173.7 and 175.1MHz (megahertz), and the 'UHF' one is between 863 and 865MHz. The UHF one is a pan-European allocation, but note that other European countries also allocate other bands, so don't assume that a radio mic bought in Europe is legal in the UK -- check! Manufacturers and vendors should put the frequency of their radio mic on the equipment and sales literature etc. Naturally, if you are going to use more than one, each needs to have its own frequency. Some more sophisticated designs allow the user to select from a range of frequencies. Do not assume that you will be able to use all frequencies, as intermodulation distortion and interference are common occurrences – often it is best to have at least 250khz between the frequencies you are using – 500khz upwards between frequencies even better.

Radio mics all need a battery. Some designs use a PP3 style 9V battery, and operate for a time between 3 and 10 hours from an alkaline. Newer types often use a pair of AA or even AAA cells and last for 5 to 10 hours. Be aware that when the battery in a radiomic transmitter gets low on voltage (around 8.2v for a PP3, for instance) the radiomic audio signal (your voice) will often be muted by the radiomic receiver.