

# Communication Solutions

## An **Expert Guide**

Current Regulations  
Two-Way Radios  
Radio Frequencies  
Licence-Free Radios

Integrated Communication  
Considerations  
Two-Way Communication  
Radio Headsets  
Level Dependent  
High-Attenuating

Full Duplex  
ATEX  
Aviation  
High Noise  
Communication Solutions



contents

OUR SERVICE	2
CURRENT REGULATIONS	3-4
TWO-WAY RADIOS	5
RADIO FREQUENCIES	6
LICENCE-FREE RADIOS	7
WHY USE COMMUNICATION SOLUTIONS	8
INTEGRATED COMMUNICATION CONSIDERATIONS	9-10
TWO-WAY COMMUNICATION RADIO HEADSETS	11
LEVEL DEPENDENT	12-13
HIGH ATTENUATING & FULL DUPLEX	14
ATEX	15
AVIATION	16
HIGH NOISE COMMUNICATION SOLUTIONS	17-20
CUSTOM MOULDED	21-22



Arco is the UK’s leading supplier of personal protective equipment, workwear and workplace safety products offering a world-class range of over 170,000 products.

As Experts in Safety we are widely recognised as a provider of specialist advice through our sales office network and this is further supported by our training and consultancy division. We reach our customers through an extensive product catalogue, interactive website, local Sales Offices and 41 strong Trade Counter network. We pride ourselves on providing customers with great availability, performance and price.

Founded in 1884 Arco has a heritage spanning four generations. With traditional family values at the heart of the business we pride ourselves on our core values: respect, hard work, enterprise and excellence in reputation. We fully subscribe to the ETI’s Nine Principles Base code and have fully incorporated the internationally recognised code of labour practice into our own ethical policy. In 2007 Arco was the first distributor in our industry to become a member of the Ethical Trading Initiative (ETI) and in 2010 we became a member of Sedex, the Supplier Ethical Data Exchange. We continually support local communities and charities donating in excess of 1% of pre tax profits annually.

As we are members of the BSIF Registered Safety Suppliers Scheme you can be confident that we will supply safety equipment which is genuine and compliant with the relevant standards and regulations. The BSIF monitor and regulate members of the scheme by conducting regular standards audits.



Our Service

Hearing damage caused by exposure to noise at work is permanent and irreversible. Research estimates that over 2 million people are exposed to noise levels at work that may be harmful\*.

Hearing loss usually develops from long-lasting exposure to noise and progresses over time. Hearing damage can also be caused by sudden, extremely loud noises. Tinnitus and muffled hearing is also a sign of hearing damage from exposure to noise.

The Control of Noise at Work Regulations 2005 is designed to protect against the risks to both health and safety from exposure to noise. Employers are duty bound by this regulation to remove or reduce the risk from noise at work.

As part of our commitment to keeping people safe in the workplace, this Expert Guide has been designed to help provide guidance on the selection on the different types of hearing protection which feature integrated communication capabilities.

Arco’s range of hearing protection with integrated communication enables the users to stay protected and communicate effectively in noisy environments without the need for removing the hearing protection. Arco’s range consists of two-way radios, communication radio headsets and smartplugs. We can also advise you on employee protection and legislation conformance.

All of our hearing protection conforms to all relevant European Standards and carries the CE mark, complying with the requirements of the Personal Protection Equipment Regulations 2002. The CE marking signifies that the protection satisfies certain requirements and in some cases will have been tested and certified by an independent body.

As part of it’s commitment to keeping people safe in the workplace, we have created this Expert Guide to provide guidance on the selection of hearing protection with integrated communication capabilities and to advise on the different types of communication solutions available in the marketplace.

Arco Technical Sales Specialist

To help aid in the selection of the right product for the right application, our Technical Sales Specialist can provide customers with a bespoke on-site service.

Our Technical Sales Specialist offers comprehensive advice which is independent of any brand and focussed on providing solutions that meet the needs of the customer.

Arco Training and Consultancy

The Control of Noise at Work Regulations 2005 require each employer to carry out a noise risk assessment where any employee is likely to be exposed to noise at or above the lower exposure action of 80dBA. Arco Training and Consultancy is the specialist arm of Arco that is dedicated to helping customers achieve and maintain, full health, safety and environmental compliance.

Arco Training and Consultancy can provide a range of occupational hygiene services to help identify health hazards and appropriate control measures in the working environment with noise risk assessments and personal dosimetry.

We can visit your site and conduct the risk assessment, identify who is at risk, whether exposure is between the lower and upper action values and how the risks need to be controlled.

We can also deliver specific health and safety training to your employees to support your needs; the Noise Assessment and Principles of application course is aimed at those who are responsible for undertaking a noise assessment, providing training and understanding on:

- The issues related to noise in the workplace
- The law applicable to the control of noise at work
- The affects of noise on human hearing
- Transmission paths and factors to consider
- Planning and undertake a noise risk assessment

\*Source: Health and Safety Executive: Noise Induced Hearing Loss in Great Britain



# Current Regulations

For the UK the Control of Noise Regulations 2005 and for Ireland the Safety, Health and Welfare at Work (Control of Noise at Work Regulations 2006) state that it is the employers duty to remove or reduce risks to health and safety from noise at work.



A noise risk assessment is required if any employee is likely to be exposed at or above the lower action value. Typical situations would be:

- The noise is intrusive for most of the working day. Examples would be a busy road or a vacuum cleaner.
- For at least part of the day you need to use a raised voice to have a conversation with someone two metres away.
- Noisy power tools or machinery are used for more than half an hour a day.
- Working in noisy industries such as construction, road repair, engineering or manufacturing.
- There are noises from impacts such as hammering, drop forging, and pneumatic impact tools.
- There are noises from explosive sources, such as cartridge-operated tools, detonators or guns.

The employer shall ensure that risk from the exposure of noise is either eliminated at source or, where this is not reasonably practicable, reduced to as low a level as is reasonably practicable. A formal programme of measures to reduce noise exposure is required to be established and implemented whenever an employee’s exposure to noise is likely to exceed the upper exposure action values (hearing protection does not count as a control measure).

When or while a risk remains an employer must make hearing protection available upon request to any employee likely to be exposed above a lower action value, and provide hearing protection to any employee likely to be exposed above the upper action value.

\*Source: Health and Safety Executive: The Control of Noise at Work Regulations 2005.  
Health and Safety Authority: Guide to the Safety, Health and Welfare at Work (General Application) Regulations 2007.

## The Regulation Action Values

Loud noise is an occasional part of everyday life. Permanent hearing damage results when the noise is too high, for too long, too often. The risk from noise at work is indicated by the daily personal noise exposure level or  $L_{EP,d}$ . This is the total noise dose in the working day. This may be made up of periods at different sound levels but it is expressed as the equivalent steady level that would give the same dose in eight hours.

Very high level sound such as explosions, gun fire and some machinery may pose a risk of instantaneous damage even when the sound is infrequent or very short duration. This risk is assessed against the C-weighted peak level of the sound.

The Control of Noise at Work Regulations give action and limit values for the above risks which are trigger points for action to protect employees.

	Daily personal noise exposure level $L_{EP,d}$ dBA	C-weighted peak level $L_{Cpeak}$ dBC
Lower action value	80	135
Upper action value	85	137
Limit value	87	140

The action values take no account of hearing protection use, but the limit values do take account of the attenuation of any hearing protection used.



**Actions required when the action values are exceeded**

**Actions when at and above the lower action value**

- Make a noise risk assessment.
- Provide staff training on the risks and how to keep safe.
- Implement controls to reduce the level and duration of exposures.
- Consult with staff on workplace changes.
- Make hearing protection available.

**Additional actions when above the upper action value**

- Produce an action plan of control measures that details the how, when and who is responsible.
- Mark out areas where exposures are likely to exceed the upper action values as hearing protection zones. Hearing protection must be worn in these zones.
- Provide regular health surveillance to employees at risk (this would usually include everyone regularly exposed above the upper action value).

**The limit value**

If it is exceeded then you must prevent any reoccurrence immediately.

\*Source: Liz Brueck MIOA, Senior Noise Specialist, Engineering & Personal Safety Unit, Health & Safety Laboratory



# Two-Way Radios



**UK**  
It is required by the Wireless Telegraphy Act 2006 that no radio equipment is installed or used in the UK except under the authority of a licence granted by or otherwise exempted by regulations made by Ofcom. It is a condition of such a licence or exemption regulations as appropriate that the equipment meets the minimum requirements in the relevant UK Interface Requirement.

**Ireland**  
The possession and use of radio equipment in Ireland is governed by the Wireless Telegraphy Act 1926, (Act No 45 of 1926), (as amended), which stipulates that an appropriate Wireless Telegraphy licence must be held, unless licence exempted.

ComReg is the authority charged with the authorisation of Wireless Telegraphy equipment in Ireland, with the exception of Ships Radio Licensing. An authorisation may take the form of either a licence or a licence exemption. A licence may be issued under the Wireless Telegraphy Act 1926, or under the Broadcasting Authority Act 1960, as amended (in the case of the RTÉ Authority), or under a Radio and Television Act, 1988 (in the case of the Broadcasting Commission of Ireland).

In managing the radio spectrum, ComReg has set down specific rules and regulations for the possession and use of many forms of radio equipment. These regulations specify the licensing regime or exempt the radio equipment from licensing.

**Unlicensed**  
The frequency on 446MHz on UHF/Analogue is available licence-free to anybody across the UK. With the 446 frequency there are multiple channels to choose from, allowing anyone to access this unlicensed frequency. Unlicensed communication equipment has no security settings, anyone who is within the range will be able to pick up your conversation on the same channel.

**Licence**  
Licensed frequencies prevents transmissions being picked up by other radio frequencies and provides a secure form of communication. To request a licensed frequency, Ofcom need to consider the following:

- Type of business
- Location
- Other sites in the vicinity with existing radio licenses
- Number of users
- Number of frequencies required
- Number of channels required

Ofcom will review the above details and will advise if they will allocate the company their own frequency/channel for them to use. All radios/headsets will need to be programmed in to this specific frequency. For a licensed frequency an annual licensed fee will need to be paid to Ofcom.

A typical cost of a licence radio system in the UK starts from £75 for five years.

The licence cost in Ireland varies depending on the number of radios, coverage, etc, more information can be found on the ComReg website.

- Typical users of licensed radios/headsets are:**
- Emergency services
  - Airports
  - Hospitals
  - Military installations
  - Large industrial companies
  - Oil rigs
  - Refineries

Source: UK: <http://licensing.ofcom.org.uk/binaries/spectrum/business-radio/guidance-for-licensees/LicensingPolicyManual.pdf>  
Ireland: [http://www.comreg.ie/radio\\_spectrum/licensing.541.html](http://www.comreg.ie/radio_spectrum/licensing.541.html)

# Radio Frequencies

**Analogue and Digital**  
Both analogue and digital frequencies transmit radio signals, however analogue and digital radios cannot be used together as the way they transmit signals is different.

Analogue is slowly being replaced by digital due to it having certain audio and coverage limitations. Digital offers a better and clearer form of communication. Providing a better range, higher channel capacity and data transfer. Security is also improved as each signal is encrypted. Digital radios can accommodate GPS tracking, free of charge text messaging, the integration into an IP network and lone working alarm functionality.

Email: UK: [commstrial@arco.co.uk](mailto:commstrial@arco.co.uk) Ireland: [services@arcosafety.ie](mailto:services@arcosafety.ie)  
to arrange a site survey to discuss your radio requirements

# Licence-Free Radios

Two-way radios are easy to use and provide a simple and convenient way of communicating with others at different locations on a site.



### Motorola XTNiD Radio c/w Charger

Designed for everyday use and built to military specifications the XTNiD is the most rugged and robust radio in its class.

- Easy to use
- 16 preset channels
- 122 eliminator codes (reduces interference)
- Cast-metal chassis
- Voice scrambling to limit eavesdropping

Ref: 2R1100



### Motorola XTB446 Radio Twin-Pack

The convenient, flexible and expandable XTB446 two-way radio, provides you with the convenience and benefits of two-way communications without the cost or hassle of obtaining an operating license.

- Convenient, flexible and expandable
- Designed for everyday use
- Easy and simple to use
- Cost-free operation
- Hands-free (VOX) operation
- Auto channel scan

Ref: 2R2600 – Twin-Pack

Ref: 2R2700 – XTB D Shape Inline PTT 2.5mm

Ref: 2R2800 – Two-Pin (CP040/GP300/XTNi)

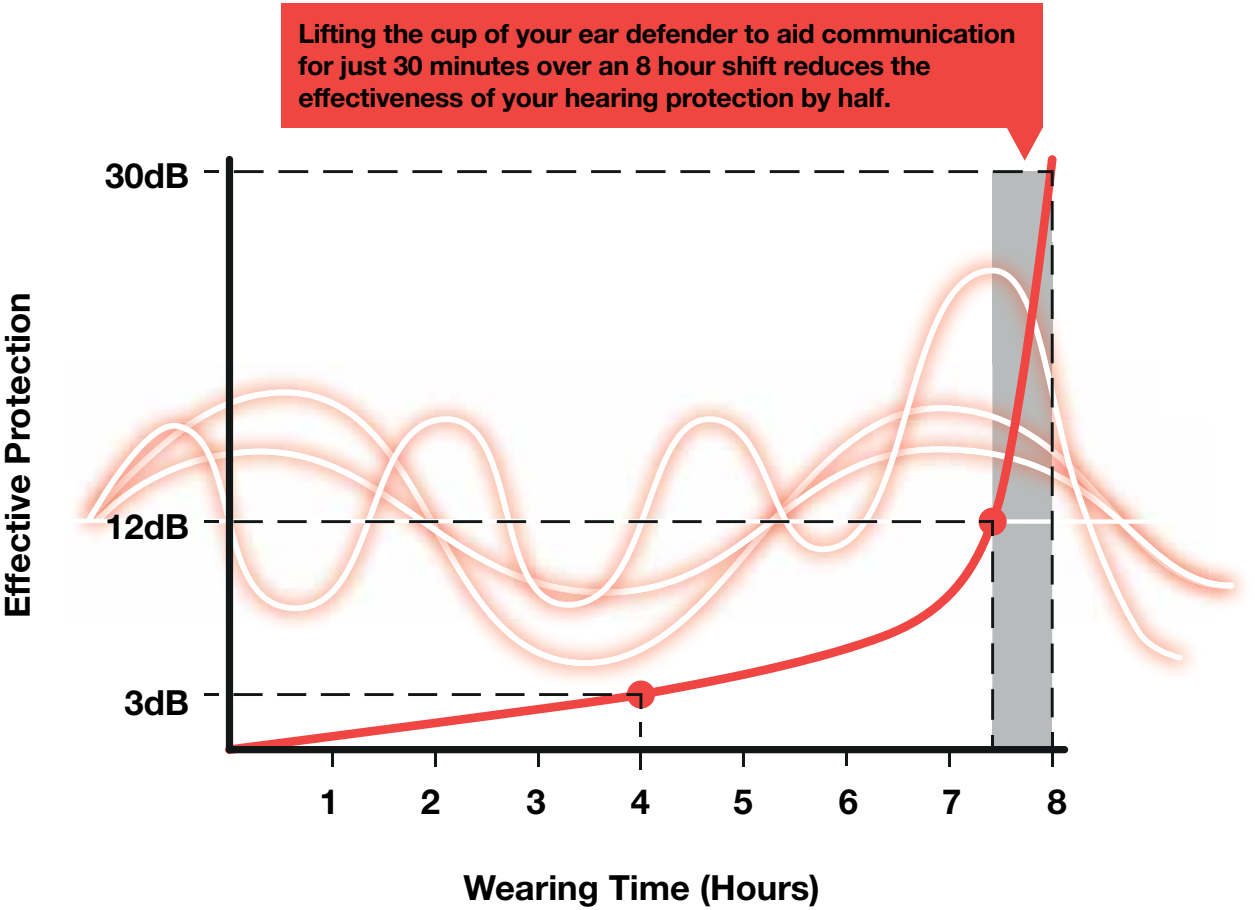
Ref: 2R2900 – XTB Two Wire Acoustic Tube 2.5mm

Ref: 2R3000 – Two-Pin Two Wire Acoustic Tube

Ref: 2R3100 – Two-Pin Medium Duty Speaker Mic

# Why use communication solutions?

Working in high noise environments can make communicating with others more difficult, prompting the need for the person to either completely remove their ear defender or lifting a cup of the defender to hold a conversation with someone. For some, this may not seem to be an issue, however the overall impact of this action could in fact reduce the effectiveness of the hearing protection during the working day. The graph below highlights how the attenuation is affected, by lifting the cup of the ear defender.



Hearing protection with integrated communication capabilities enables the person who works in a high noise environment to:

- Communicate efficiently and safely,
- Hear warning signals,
- Remove the feeling of isolation and eliminate the tendency to remove their hearing protection in situations where it is required.

Source: 3M Peltor research

A wide range of radio accessories to accompany your two-way radios is available please contact your local branch.



# Integrated Communication Considerations

The type of hearing protection featuring integrated communication capabilities must be suitable for the job and environment, ensuring The Control of Noise at Work Regulations 2005 are adhered to where applicable. Compatibility with other Personal Protective Equipment should also be a consideration.

## Communication options

### Two-Way Radios:

A two-way radio transmits and receives voice messages, between a group of users on site with a Push-To-Talk function. This solution is an affordable, flexible and reliable way of communication. The range of communication depends upon the type of frequency used. Licensed radios have a vast coverage area compared to un-licensed. When radios are being used in hazardous noise environments, suitable accessories are available to provide hearing protection and enable better audio transmission.

### Two-Way Headsets:

Two-way headsets can be a simple interface to existing radios on site or can feature built-in communication radios in the cup. Both providing an effective way to communicate with colleagues while at the same time ensuring protection from hazardous noise.

### Full Duplex:

With a radio system, only one user in a group can speak at a time. A full duplex system allows efficient communication between operatives without the need of using a Push-To-Talk button on a headset. This system can be used in a variety of environments typically where hands free communication is required or where it is safety critical for users to be able to interrupt each other.

### Level Dependent:

Each cup has a microphone that captures all the surrounding noise. The electronics then analyse the information and processes the sound before reproducing it to the ear at a safe decibel level. The level dependent feature therefore provides effective protection against loud impulse noises, whilst at the same time ensuring speech and signals can be heard to ensure the worker maintains a safe level of situational awareness.



### Bluetooth®:

Hearing protection which is Bluetooth® enabled will allow the pairing of mobile, DECT phones and tablets to enhance this communication method whilst being protected from harmful noise. The noise cancelling microphones of these headsets will also deliver better quality audio during calls especially in high noise environments.

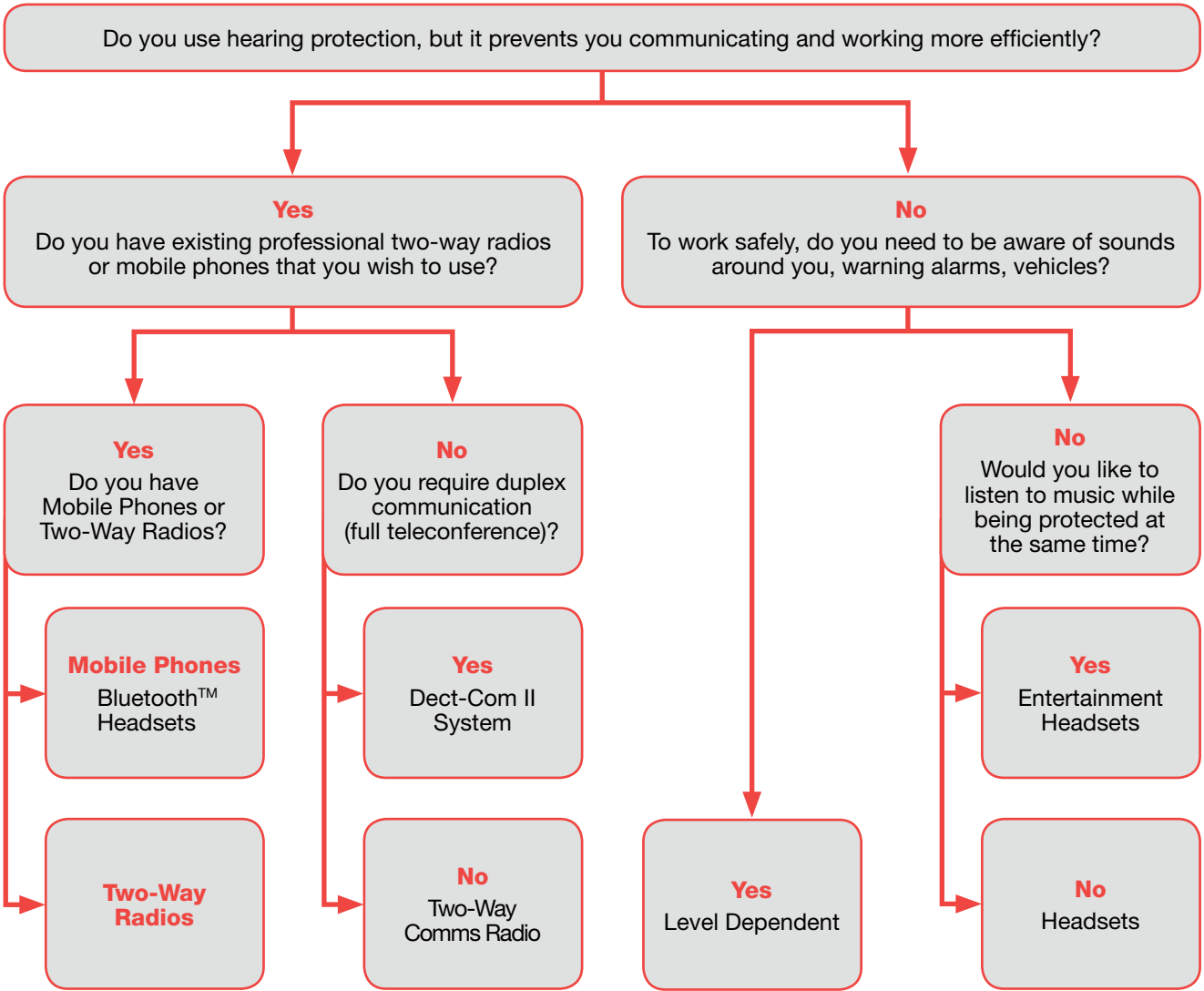


### ATEX Approved:

There are also ATEX Approved integrated communication capabilities available. ATEX Approved hearing protectors with built in communication capabilities must be worn in areas where there is a possible risk from a potentially explosive atmosphere. Integrated communication hearing protection for use in zoned areas should be selected to meet the requirements of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 1996.

# Which Integrated Communication Solution is right for your team?

The below flowchart has been designed to help you discover which type of integrated communication solution is right for your working environment.



# Two-Way Communication Radio Headsets



3M Peltor's range of communication headsets are synonymous with protecting hearing in noisy and hazardous environments. 3M's portfolio of hearing protectors paired with communication systems draws on the latest technologies and manufacturing techniques to offer products which allow workers to operate in comfort and safety.

### 3M™ Peltor™ LiteCom Headset SNR31

Using the new and improved 3M™ Peltor™ LiteCom™, wearers can communicate hands free on the licence free 8 channel PMR built in to the cup. Communication across the site has never been so simple using the LiteCom's 1 kilometre range.

- Simplified menu system
- Communication on 8 channels in the PMR 446MHz band
- 38 sub-channels allow several users to communicate individually using the same channel
- Electronic voice to confirm if settings are being adjusted
- Automatically switches off after two hours of non-use, saving battery life

Approved to EN 352-1

Ref: 262000 – Over head

Ref: 3M0308 – Helmet mounted

Ref: 3M0291 – Behind neck



### 3M™ Peltor™ LiteCom Plus Headset SNR31

The built in level dependent function allows the user to hear ambient sounds – like conversation, machine noises and warning signals.

- Hear normal ambient noises without being exposed to loud and harmful noise levels
- New patented speaker system designed to produce a full-bodied, dynamic sound
- Easy-to-adjust volume and settings
- Amplifies quiet noises, making them easier to hear than without a headset
- Voice confirmation of chosen settings
- Bluetooth Wireless Technology with A2DP enabling the streaming of music directly from compatible products
- Speech microphone built into earshell

Approved to EN 352-1

Ref: 2M0018



### 3M™ Peltor™ WS LiteCom Headset SNR30

The WS LiteCom has a built-in communication radio and a Bluetooth® link for wireless connection to a mobile phone, means wearers don't have to miss calls or remove their hearing protection in a noisy environment. Sudden impulse noises at harmful volumes are instantly attenuated.

- Built-in level dependent function lets wearers hear ambient sound, such as conversation, machine sounds and warning signals
- Communication on 8 channels, 38 sub-channels allow several users to communicate individually using the same channel
- Wireless Bluetooth® connection to mobile phones allows wearers to manage phone calls directly in the headset, calls can be managed simultaneously with a call on the communication radio
- Noise-cancelling speech microphone
- Electronic voice to confirmation if settings are being adjusted
- Automatically switches off after two hours of non-use, saving battery life
- Helmet attachment and behind the neck models available

Ref: 2M0019



# Level Dependent



### 3M™ Peltor™ WS Workstyle Headset SNR26

Gives wearers better control of what they want and don't want to hear. Wearers can have wireless telephone conversations and listen to their favourite music, and still be protected even in noisy environments.

- Hear normal ambient noises without being exposed to loud and harmful noise levels
- New patented speaker system designed to produce a full-bodied, dynamic sound
- Easy-to-adjust volume and settings
- Amplifies quiet noises, making them easier to hear than without a headset
- Voice confirmation of chosen settings
- Bluetooth Wireless Technology with A2DP enabling the streaming of music directly from compatible products
- Speech microphone built into earshell

Ref: 2B0200



### 3M™ Peltor™ WS Protac XP Headset SNR31

The Peltor WS ProTac XP is an active-hearing protector that features Bluetooth® technology, allowing wearers to carry on working while taking calls.

- Digital noise reduction in high noise environments.
- Supports Bluetooth A2DP profile for streaming high quality stereo sound.
- Advanced VOX (Voice Operated Transmit).

Ref: 2M0017



### 3M™ Peltor™ WS Alert XP Headset SNR32

Level dependant hearing protector that lets you hear ambient sound: conversation, machine sounds and warning signals, electronic voice guided menu system.

- Use mobile phones without stopping work or removing hearing protectors
- Automatically switches to mono for optimal listening in case of weak signals
- Level dependent function (surround)
- Bluetooth® Wireless Technology with A2DP enabling the streaming of music directly from compatible products
- Supplied with 3.5mm Stereo Input Cable for MP3 Player
- Features Bass Boost, Music Limiter, Sound Equalizer and the Patented Speaker System

Ref: 2M0016



### 3M™ Peltor™ Alert Headset SNR30

The 3M Peltor Alert headset offers the user an in-built FM radio receiver and audio input to provide entertainment and motivation. The headset also features the level dependent function to attenuate loud noises and amplify weak ones, ensuring the wearer is always protected, but maintains situational awareness.

- Easy to use volume control to adjust radio and level-dependent function
- Automatically switches to mono for optimal listening in case of weak signals
- Excellent bass sound
- Radio never exceeds 82dB(A)
- Supplied with 3.5mm Stereo Input Cable for external media player

Ref: 2M0015



“ Being able to contact Plant Operators quickly and easily, particularly within the constraints of a noisy environment, has proved vital for safe and efficient production. ”

Gary Hyde, Operations Support Manager, Nippon Gohsei UK Ltd

# Level Dependent

## 3M™ Peltor™ Protac Headset II SNR32

An active hearing protector for long hours of use, soft sounds are amplified whilst harmful ambient and impulse noise is reduced to harmless levels.

- Extremely comfortable
- Last setting stored when switched off
- The two x 1.5 volt AA batteries, purchased separately, give 250 hours of service
- Voice-driven menu
- Automatic switch off after two hours of non-use
- Weight 370g

Approved to EN 352-1

Ref: 264200



## 3M™ Peltor™ Tactical XP Flex Headset SNR31

Level Dependent Hearing Protector that lets you hear ambient sound: conversation, machine sounds and warning signals. Electronic voice guided menu system.

- Electronic voice guided menu system
- Plenty of space for the ear
- Last setting is stored when switched off
- Automatic shut-off after two hours if no function is used
- Warning signal when power is low, before shut-off
- Audio input jack for external radio

Approved to: EN 352-1.

Ref: 3M0282



## 3M™ Peltor™ Flex Cables

3M Peltor radio flex cables are durable, adaptable and versatile for a number of applications. A flex cable provides a hard-wired connection to a radio, ensuring the user is protected from noise risk, whilst providing clear communications.

Ref: 3M0329 FL6U-32 - Motorola™ GP320/340/360/380/640/680/1280

Ref: 3M0340 FL6U-21 - Motorola™ GP300 / CP040 / XTNi / XTNiD / DTR2430 / DTR 2450

Ref: B217577 FL6U-35 - ICOM™ 2-pin with right angled plug

Ref: 3M0341 FL6U-36- Kenwood™ 2-pin plug



### 3M™ Peltor™ Communication Solutions Trial

If your organisation would like to trial 3M™ Peltor™ Communication Solutions, contact your Account Manager or email UK: [commstrial@arco.co.uk](mailto:commstrial@arco.co.uk) or Ireland: [services@arcosafety.ie](mailto:services@arcosafety.ie)

- 3M will then assess your requirement and provide you with the ideal communication solution to trial\*
- See and hear, the productivity and safety benefits in your work environment with 3M™ Peltor™ Communication Solutions

**\*Trial equipment has limited availability and remains the property of 3M UK and Ireland. 3M UK and Ireland reserve the right to refuse or withdraw trial equipment loans at any time.**

# High-Attenuating

## 3M™ Peltor™ High-Attenuating Flex Headset SNR33

High-attenuating cups with optimised acoustic design and excellent all-round comfort.

- Microphone with efficient noise compensation for clear and reliable communication
- Quick-positioning integrated microphone boom for easy handling
- Press-to-talk mounted on cup
- Beam-mounted earphones provide the least possible resonance and distortion for excellent sound reproduction even in very high-noise environments
- Headset and cable sold separately

Ref: 260300 – Headset

260400 – Motorola Xtnid Radio Cable



Please note, different options on cables and headsets are available.

# Full Duplex

## 3M™ Peltor™ Dect-Com II Wireless Intercom System Base/Portable Unit

Duplex intercom system for simple and efficient wireless communication with up to 9 active users in full conference and additionally up to 40 listeners with the possibility to “break in” to the conference. Due to low power output and high frequency it is a short range communication system. The nominal working range is approximately 250 metres outdoors in line of sight.

- Full duplex communication system
- Ghost voice guided menu system
- Up to three simultaneous talk groups
- Volume boost
- Noise gate (voice operated)
- All-call, between the channels (and synchronised systems)
- Wireless PTT button for external radio etc. available
- Extended battery pack for longer usage time
- Wide range of accessories available

Price on application, contact your local branch for more information





# ATEX



### 3M™ Peltor™ ATEX Helmet-Mounted Headset SNR32

3M™ Peltor™ ATEX helmet mounted ear defenders with beam-mounted earphones that provide the least possible resonance and distortion for excellent sound reproduction even in very high-noise environments.

- High-attenuating shells
- Optimised acoustic design
- Excellent space for the ears
- Best possible sound quality and comfort
- Microphone with effective noise compensation
- Clear and reliable communication
- Integrated microphone boom
- Quick positioning for easy handling

EEX-approved according to ATEX class EEX ib IIC T4.

Approved to: EN 352-3.

Ref: 3M0328



### 3M™ Peltor™ ATEX Adaptor

3M™ Peltor™ ATEX Adaptor connected to a Peltor ATEX approved headset, is the communication solution for most environments where there is danger of explosion.

- PTT button
- Moisture sealed
- Sturdy shell
- Can be operated even while wearing heavy gloves
- Clamp on the back can be twisted 360 degrees

Ref: 3M0317



### 3M™ Peltor™ ATEX Headband Headset SNR32

Beam-mounted earphones that provide the least possible resonance and distortion for excellent sound reproduction even in very high-noise environments.

- High-attenuating shells
- Optimised acoustic design
- Excellent space for the ears
- Best possible sound quality and comfort
- Microphone with effective noise compensation
- Clear and reliable communication
- Integrated microphone boom
- Quick Positioning for easy handling

EEX-approved according to ATEX class EEX ib IIC T4.

Approved to: EN 352-3.

Ref: 3M0351



# Aviation

### 3M™ Peltor™ Ground Mech Headset Hi-Vis SNR33

Provides clear, concise ground crew communications and reliable hearing protection during ground support operations. The soft earcup cushions are filled with liquid foam for extended wear and comfort.

- Bright neon ear cups
- Noise-cancelling boom microphone
- Integral amplifier
- Padded headband
- Durable plug assemblies

Ref: 3M0367



Push back adapters and cables are also available, contact your local branch for more details

# High Noise Communication Solutions



High noise working environments exhibit difficult challenges for communication and pose potential safety risks. Arco's range of high-noise communication systems enable the end user to hear speech and warning signals clearly with the added benefit of hearing protection at the same time.

## Essential Guide to selecting 2-Way Trackers



\*Single and Double denotes single and double protection. Both over the ear headsets limit in ear noise exposure to 82dB(A). Single protection should be used up to 105dB(A) and double protection above 105dB(A) and up to 120dB(A).  
\*\*Work Group Communications denotes the inclusion of a built in FM radio in the headset. When multiple workers program headsets to the same FM frequency they can communicate via PTT headset to headset at short distances without the need for a two way radio.  
\*\*\*IS denotes Intrinsically Safe certified. Sensear's SM1xSR(S) is certified to UL, IECEx, ATEX and CSA standards. Contact a Sensear Specialist for more details.  
Each over the ear headset is available in headband, behind the neck and helmet mount variants.

Source: Sensear

## Stay protected in high-noise environments

### Speech Enhancement

Sensear's revolutionary speech enhancement technology isolates and enhances speech in real-time, enabling users to hear speech clearly and safely in environments that until now has been impossible. Sensear's speech enhancement technology is effective for mobile phone calls and two-way radio communication as it enhances the wearer's speech and lowers background noise for the call receiver.

### Noise Suppression

Sensear's SENS™ technology recognises the different properties of speech and background noise thereby allowing noise to be suppressed without distorting or

blocking speech. The technology reduces background noise to comfortable levels while retaining the original sound characteristics of noise. This allows users to retain awareness of their surroundings for optimum safety.

### SENS® Technology

Sensear's SENS® Technology simultaneously combines Speech Enhancement with Noise Suppression to deliver a total communication solution in high noise environments. Users can communicate face-to-face, at short distances and long distance via two-way radio and Bluetooth® mobile phone in high noise environments. Now you can hear speech and stay protected in high noise environments no matter how you communicate.

- Rugged design for harsh environments
- Wireless Bluetooth® connection to mobile phones
- LED indicators for Bluetooth®, battery level and battery charge status
- Easy to use buttons even when wearing gloves
- Input for wired connection to two-way radio interface
- Approved to EN 352-1 for overhead and EN 352-3 for helmet mounted
- Intrinsically safe version available
- Short Range FM – up to approximately 50m communication between headsets
- Binaural functionality enables user to tell the direction of all sounds, including speech and alarms
- Extra-soft ear cushions for long wearing comfort
- Separation of electronics from ear muff mouldings ensures maximum attenuation
- Impact, tonal and continuous noise suppression
- Lithium polymer rechargeable battery provides 12 hrs+ continuous talk
- Noise-cancelling boom microphone



### Face to face communication

#### Sensear SM Ear Muffs SNR29

- Ref: 2S0100 – Overhead
- Ref: 2S0200 – Helmet mounted
- Ref: 2S0300 – Behind neck



### Face to face and two-way radio communication

#### Sensear SM1 Ear Muffs SNR29

- Ref: 2S0400 – Overhead
- Ref: 2S0500 – Helmet mounted
- Ref: 2S0600 – Behind neck



### Face to face, two-way radio and Bluetooth® communications

#### Sensear SM1x Ear Muffs SNR29

- Ref: 2S0700 – Overhead
- Ref: 2S0800 – Helmet mounted
- Ref: 2S0900 – Behind neck



### Face to face, two-way radio, Bluetooth® and between headset communications

#### Sensear SM1xSR Ear Muffs SNR29

- Ref: 2S1000 – Overhead
- Ref: 2S1100 – Helmet mounted
- Ref: 2S1200 – Behind neck



### Intrinsically Safe SM1xSR Ear Muff SNR29

- Ref: 2S5000 – Overhead
- Ref: 2S5500 – Helmet mounted

### Sensear SP2 Smartplug SNR34

- Face-to-face communication up to 95dB
- Two-way radio and Bluetooth® mobile phone communication up to 110dB without the need for a boom mic
- Suitable for use with respirators, face-masks and helmets
- Durable and lightweight design. Simple adjustments
- Protects against impact, intermittent and continuous noise
- 360° awareness – speech and noise direction recognition
- Connects to existing two-way radio system
- Maximum noise exposure of 82dB
- Built-in rechargeable battery delivers 12+ hours talk time

- Ref: 2S2201 – Sensear SP2 Smartplug, face-to-face, two-way radio communication
- Ref: 2S2301 – Sensear SP2x Smartplug, face-to-face, two-way radio and Bluetooth® communication



Email: UK: [commstrial@arco.co.uk](mailto:commstrial@arco.co.uk) Ireland: [services@arcosafety.ie](mailto:services@arcosafety.ie)  
to arrange a site survey to discuss your high noise requirements



# Sensear Smart Group



Sensear now delivers a unique solution for Group Tours, VIP visits and Training in high noise environments. The Sensear Smart Group Series is designed to enable clear communication in high noise environments for groups of people where both communication and hearing protection is critical.

Using Sensear's unique SENS (Speech Enhancement, Noise Suppression) technology the Smart Group Series allows the tour leader or trainer to safely and clearly communicate with all members, within a radius of up to 50 metres, in most noise levels up to 105dB. Because Sensear is the only device to have SENS technology, tour members and trainees can also communicate face-to-face, within a radius of 1-3 yards, up to noise levels of 97dB.

Because SENS enables users to remain aware of their surroundings the Smart Group is the safest communication solution for tour or training participants who may not be familiar with their surroundings.

The Smart Group is available with a 'Teacher' Smart Muff and 5 or 10 'Student' Smart Muffs.

**Ref:** 2S2900 - Pack of 6 Smart Group Headsets

**Ref:** 2S2901 - Pack of 11 Smart Group Headsets



# QuietPro QP100Ex

Honeywell

Developed in conjunction with an international energy company, QUIETPRO® QP100Ex is the only intelligent hearing protection and communication system that provides smart personal hearing protection, verifiable personal noise exposure measurement, and the clearest communication throughout a full range of work environments.

QUIETPRO QP100Ex transforms a worker's hearing and ability to communicate clearly from a point of vulnerability to a productivity advantage.

The ability for workers in high noise environments to identify, process, and comprehend critical information while communicating clearly is essential to the safety of the entire work team.

## Personal real-time noise monitoring to prevent hearing loss

QUIETPRO® QP100Ex uses patented in-ear dosimetry to measure every sound that reaches the user's eardrum. Dramatically more precise than technology found in existing area or personal sampling devices, its in-ear dosimetry provides continuous monitoring of personal noise exposure, enabling safety managers and workers to address the potential of noise-induced hearing loss in real time. Audible and visual signals alert workers when they are approaching or have met their daily noise dose. Not only can this information prevent further occupational hearing loss, it can improve productivity by streamlining worker deployment, matching shift hours with permissible exposures more efficiently.

## Clear communication even in rapidly changing, high-noise environments

Connected to two-way com radios, QUIETPRO QP100Ex allows users to hear communications without compromising listening quality, even under high-noise situations. It also enables a user to speak at a normal level and be heard by the person on the other radio without picking up environmental noises — compressors or pumps in engine rooms, steel forging equipment, or draglines in surface mines — or compromising speech intelligibility.

## Always listening, always on

QUIETPRO QP100Ex's bionic hearing expands your workers' personal situational awareness, understanding, and communication by adapting to changing noise levels. This allows your workers to remain aware of their surroundings, assess rapidly changing environments and potential threats, and reduce further exposures to hazardous noise.

## Intrinsically safe for potentially explosive environments

QUIETPRO QP100Ex is intended for use in potentially explosive atmospheres, and is ideal for oil & gas, mining, primary metals, and energy production applications.

**Price on application, contact your local branch for more information**



# Custom Moulded Ear Plugs



Ear plugs fit into the ear or cover the ear canal to form a seal. Ear plugs are suited for use with safety glasses and other forms of personal protective equipment. It is paramount that ear plugs are fitted precisely; the manufacturer’s guidelines will identify the correct way for insertion. If the ear plugs are supplied by an employer, then the employer must provide training on fitting and ensure employees are adhering to the compliance stipulated.

**Arco Custom Moulded Ear Plugs**

Designed to provide a perfect fit to the individual and a level of protection matched to the working environment.

**The service**

The Arco Custom Moulded Ear Plug Service involves an on-site visit by one of our trained technicians to assess the protection required, check wearer suitability and take impressions of the wearer’s ear to allow the creation of their personal hearing protectors. The finished product will usually be dispatched within 7 working days.

- Supplied complete with a storage pouch
- Alpine Filter Technology ensures effective noise protection matched to the noise level while allowing you to hear conversational speech
- Ideal for virtually any industrial application
- Approved to EN 352

**Benefits of the product**

- No moving parts to wear out or injure the ear
- Can be worn under headphones or helmets
- Can be comfortably worn with spectacles and safety glasses
- Virtually indestructible (with reasonable care)
- Washable
- Life expectancy up to 5 years – cost effective and environmentally friendly reducing landfill waste
- Cannot be pushed further in to the ear by impact
- The wearer can still hear normal conversation levels, alarms, horns and warning sirens
- Interchangeable filters for differing environments
- Variety of colours available, including hi-vis

A cost effective communication solution for two-way radio users and custom moulded plug wearers. This solution allows users to communicate on their radios whilst being protected from harmful noise.

**Ref:** 2S3200 - 10-100 pairs  
2S3300 - 100+ pairs  
B174981 - Radio connection cable for most radios, please specify at time of ordering



**Alpine Noise Filters**

Arco Custom Moulded Ear Plugs have a sound bore through each mould where an inline filter is then fitted. This filter permits reception of conversational speech, aeration and changes in air pressure in the user’s ear canal. A choice of filter, depending upon need, acts to attenuate the noise by varying degrees of frequency. The filters are interchangeable and colour coded for each attenuation level.



**F10 filter SNR 26 (white)**

Attenuates noise levels from pile driving, shooting, high pressure cleaners and is suitable for studying.



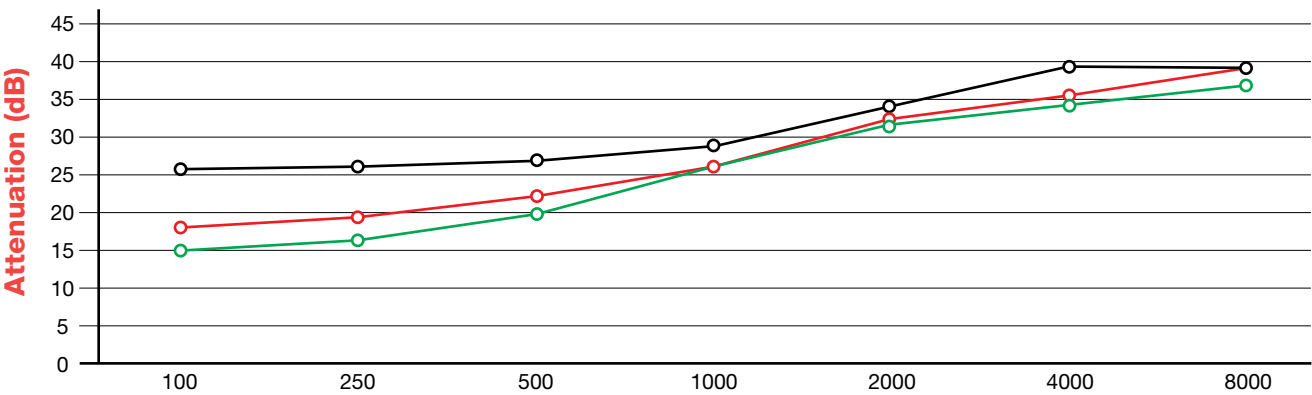
**F8 filter SNR 25 (red)**

Attenuates noise levels from heavy industry, metal processing, snoring and is suitable for sleeping peacefully.



**F7 filter SNR 23 (green)**

Attenuates noise levels from timber industry, construction work, DIY, motorcycling (wind noise).



Attenuation values: Alpine acoustic filters for customised hearing protection

○ F10    ○ F8    ○ F7

Frequency Hz	Attenuation per filter in dB		
	F7	F8	F10
125	15.1	17.8	25.8
250	16.9	19.7	26.2
500	20.2	22.2	26.9
1000	26.2	26.0	28.8
2000	31.6	32.8	34.0
4000	32.8	35.4	39.3
8000	36.8	39.1	39.0



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[www.arcosafety.ie](http://www.arcosafety.ie)



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