TM9300
DMR Mobile Radios
User's Guide

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www.taitradio.com

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Tait Limited is an environmentally responsible company which supports waste minimization, material recovery and restrictions in the use of hazardous materials.

The European Union's Waste Electrical and Electronic Equipment (WEEE) Directive requires that this product be disposed of separately from the general waste stream when its service life is over. For more information about how to dispose of your unwanted Tait product, visit the Tait WEEE website at www.taitradio.com/weee. Please be environmentally responsible and dispose through the original supplier, or contact Tait Limited.

Tait Limited also complies with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive in the European Union.

In China, we comply with the Measures for Administration of the Pollution Control of Electronic Information Products. We will comply with environmental requirements in other markets as they are introduced.

For your safety

Before using your radio, please read the following important safety and compliance information.

Radio frequency exposure information

For your own safety and to ensure you comply with the Federal Communication Commission's (FCC) radio frequency (RF) exposure guidelines, please read the following information before using this radio.

Using this radio

You should use this radio only for work-related purposes (it is not authorized for any other use) and if you are fully aware of, and can exercise control over, your exposure to RF energy. To prevent exceeding FCC RF exposure limits, you must control the amount and duration of RF that you and other people are exposed to.

It is also important that you:

- Do not remove the RF Exposure label from the radio.
- Ensure this RF exposure information accompanies the radio when it is transferred to other users.
- Do not use the radio if you do not adhere to the guidelines on controlling your exposure to RF.

Controlling your exposure to RF energy

This radio emits radio frequency (RF) energy or radio waves primarily when calls are made. RF is a form of electromagnetic energy (as is sunlight), and there are recommended levels of maximum RF exposure.

To control your exposure to RF and comply with the maximum exposure limits for occupational/controlled environments, follow these guidelines:

- Do not talk (transmit) on the radio more than the rated transmit duty cycle. This is important because the radio radiates more energy when it is transmitting than when it is receiving.
- While you are transmitting (talking or sending data) on the radio, you must ensure that there is always a distance of 35 inches (0.9m) between people and the antenna. This is the minimum safe distance.
- Use the radio only with Tait-approved antennas and attachments, and make only authorized modifications to the antenna otherwise you could damage the radio and violate FCC regulations.

For more information on what RF energy is and how to control your exposure to it, visit the FCC website at www.fcc.gov/oet/rfsafety/rf-faqs.html.

Health Canada warning statement

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit an RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from the Health Canada's website http://www.hc-sc.gc.ca.

Compliance with RF energy exposure standards

This two-way radio complies with these RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR §§ 1.1307, 1.1310, and 2.1091.
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95.1-1992.
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition.

- European Directive 2004/40/EC on minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields).

This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environments at operating duty factors of up to 50% talk to 50% listen.

Conformité aux normes d’exposition à l’énergie RF

Cette radio émetteur-récepteur se conforme aux normes et aux règlements d’exposition à l’énergie RF :

- La Commission fédérale de la communication des Etats-Unis, Code de règlements fédéraux (CFR) Titre 47 Sections 1.1307, 1.1310 et 2.1091 (radios mobiles) ou 2.1093 (radios portatives).
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992.
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition.
- La directive européenne 2004/40/EC concernant les prescriptions minimales de sécurité et de santé relatives à l'exposition des travailleurs aux risques dus aux agents physiques (champs électromagnétiques).

Cette radio se conforme aux limites d’exposition de l’IEEE (FCC) et ICNIRP pour les environnements d’exposition au rayonnement RF professionnel et contrôlé aux cycles de marche de 50% en mode transmission et 50% en mode réception.

Radio frequency emissions limits in the USA

Part 15 of the FCC Rules imposes RF emission limits on receivers. This radio complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

Radio frequency emissions limits in Canada

This device complies with Industry Canada licence exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

USA public safety bands (764–776 MHz and 794–806 MHz)

The Code of Federal Regulations (CFR) Title 47 Subpart R deals with the use of frequencies in the 764 to 776 MHz and 794 to 806 MHz bands.

Low-power channels

This radio complies with § 90.531 (b) (3) and § 90.531 (b) (4) of 47 CFR. These sections state that only low-power transmission is permitted on the following channels:

- Regional Planning channels, as defined in § 90.531 (b) (3).

- Itinerant channels, as defined in §90.531 (b) (4).

Use of encryption

This radio complies with §90.553 (a) of 47 CFR. This states that:

- Encryption is not permitted on the nationwide Interoperability calling channels. These channels are defined in §90.531 (b) (1) (ii).
- Radios using encryption must have a readily accessible switch or control to allow the radio user to disable encryption.

EMC regulatory compliance in Australia

N46 This product meets all ACMA regulatory requirements for electromagnetic compatibility (EMC). For more information about EMC compliance, visit the ACMA website at www.acma.gov.au.

Frequency band reserved for distress beacons

Frequency band 406 to 406.1 MHz is reserved for use by distress beacons. Transmissions should not be made within this frequency band.

Health, safety and electromagnetic compatibility in Europe

In the European Community, radio and telecommunications equipment is regulated by Directive 1999/5/EC, also known as the Radio and Telecommunications Terminal Equipment (R&TTE) directive. The requirements of this directive include protection of health and safety of users, as well as electromagnetic compatibility.

Intended purpose of product

This product is an FM radio transceiver. It is intended for radiocommunication in the Private Mobile Radio (PMR) or Public Access Mobile Radio (PAMR) services, to be used in all member states of the European Union (EU) and states within the European Economic Area (EEA).

Restrictions

This product can be programmed to transmit on frequencies that are not harmonized throughout the EU/EEA, and will require a licence to operate in each member state.

This product can be programmed for frequencies or emissions that may make its use illegal. Where applicable, a license must be obtained before this product is used. All license requirements must be observed. Limitations may apply to transmitter power, operating frequency, channel spacing, and emission.

Declaration of conformity

Brief Declarations of Conformity appear on page 113 of this booklet. To download the formal declaration of conformity, go to www.taitradio.com/eudoc.

Interference with electronic devices

Warning Some electronic devices may be prone to malfunction due to the lack of protection from RF energy that is present when your radio is transmitting.

Examples of electronic devices that may be affected by RF energy are:

- aircraft electronic systems
- vehicular electronic systems such as fuel injection, anti-skid brakes, and cruise control
- medical devices such as pacemakers and hearing aids

- medical equipment in hospitals or health care facilities.

Switch off the radio before boarding an aircraft. Using your radio while in the air is not permitted.

Consult the manufacturer (or its representative) of any such electronic devices to determine whether electronic circuits in those devices will perform normally when the radio is transmitting.

Warning If you have a pacemaker, immediately turn off the radio if you suspect it is interfering with the pacemaker.

If there is interference between your hearing aid and the radio, please discuss an alternative solution with the hearing aid manufacturer.

Potentially explosive atmospheres and blasting areas

Warning Unless the radio is specifically certified for use in a potentially explosive atmosphere, turn off the radio before entering such an atmosphere. An explosion could cause serious injury or death. Examples of potentially explosive atmospheres include filling stations, and any environment where there are flammable liquids, gases, or dusts.

Warning Turn off the radio before approaching blasting caps, a blasting area, or any area where you are instructed to turn off a two-way radio. Obey all signs and instructions. Interference with blasting operations could cause serious injury or death.

Radio installation and operation in vehicles

Warning Keep the radio away from airbags and airbag deployment areas. Do not install, charge, or place a radio near such areas. An activated airbag can propel a portable radio with sufficient force to cause serious injury to vehicle occupants. An airbag may not perform to specification if obstructed by a radio.

Warning To avoid damage to existing wiring, airbags, fuel tanks, fuel and brake lines, or battery cables, refer to the installation guide for the radio, and to the vehicle manufacturer's manual, before installing electronic equipment in the vehicle.

Using a handheld microphone or a radio while driving a vehicle may violate the laws and legislation that apply in your country or state. Please check the vehicle regulations in your area.

Radio protection when charging the vehicle battery

Always remove the fuses from the radio power cable before charging the vehicle battery, connecting a second battery, or using power from another vehicle (e.g. when jump-starting the vehicle).

Electromagnetic compatibility in European vehicles

In the European Community, radio equipment fitted to automotive vehicles is regulated by Directive 72/245/EEC and its amendments. The requirements of this directive cover the electromagnetic compatibility of electrical or electronic equipment fitted to automotive vehicles.

To meet the requirements of Directive 72/245/EEC and its amendments, installation of this product in a vehicle must be performed according to the instructions provided by the vehicle manufacturer

Notice Failure to install the product correctly may void the vehicle's type-approval. The owner could be held responsible for any damage resulting from vehicle failure that can be attributed to RF energy interfering with the vehicle systems.

Unapproved modifications or changes to radio

The radio is designed to satisfy the applicable compliance regulations. Do not make modifications or changes to the radio that are not expressly approved by Tait. Failure to do so could invalidate compliance requirements and void the user's authority to operate the radio.

High radio surface temperatures

Caution The bottom surface of the radio and the heatsink fins can become hot during prolonged operation. Do not touch these parts of the radio.

EN 60950 requirements (25 watt mobiles)

This radio complies with the European Union standard EN 60950 when operated up to the rated 33% duty cycle of two minutes transmit and four minutes receive, and with ambient temperatures of 30 °C or lower.

Caution Operation outside these limits may cause the external temperature of the radio to rise higher than this standard permits.

Menu maps

This section shows the menus and submenus that may be programmed for your radio. Some features are controlled by software licenses and may not be available with your model.

Main menu (conventional mode)

- **Channels**
- **Zones**
- **Address book**
- **Individual call**
- **Local calls**
- **Set status**
- **Dial radio call**
- **Dial patch call**
- **Services**
  - Status update
  - Call alert
  - Radio check
  - Radio monitor
  - Radio inhibit
  - Radio uninhibit
- **Radio settings**
  - Functions
    - Scrambler
    - Lock radio
    - Low power tx
    - Monitor
    - Squelch o’ride
    - VOX
    - VOX sensitivity
    - Repeater
    - Talkaround
  - Call settings
    - Ignore 2-tone
  - Extra features
    - Lone worker
  - Alert settings
    - External alert
    - Indicator level
    - Keypress tones
    - Quiet operation
    - Silent operation
  - Display settings
    - Backlight level
    - Backlighting
    - Contrast adjust
    - Talk party ID
    - RSSI
  - Radio info
    - Radio ID
    - Key settings
    - Multi head info
    - Version info
    - Customer info
    - Serial number
- **Advanced**
  - Program groups
  - Set scan key
- **GPS info**
- **Change mode**
- **Diagnostics**

Main menu (trunked mode)

- **Preset calls**
- **Set zone**
- **Set workgroup**
- **Go to homegroup**
- **Scanning**
- **Send**
  - Status
  - Text message
    - Preset message
    - Edit message
    - New message
  - Dispatcher call
  - Broadcast call
    - Send group
    - Send to preset
    - Send to dialed
  - Conference call
    - Send group
    - Send to preset
    - Send to dialed
  - Priority call
    - Send dispatcher
    - Send to preset
    - Send to dialed
  - Emergency call
    - Send dispatcher
    - Send to preset
    - Send to dialed
- **Workgroup setup***
  - My Workgroups**
  - Set homegroup
  - Subscribe all
  - Unsubscribe all
- **Radio settings**
  - Functions
    - Scrambler
    - Lock radio
    - VOX
    - VOX sensitivity
  - Call settings
    - Call queuing
    - Do not disturb
  - Extra features
    - Lone worker
  - Alert settings
    - External alert
    - Indicator level
    - Keypress tones
    - Quiet operation
    - Silent operation
  - Display settings
    - Backlight level
    - Backlighting
    - Contrast adjust
    - Channel display
    - RSSI
  - Radio info
    - Trunked ID
    - Key settings
    - Multi head info
    - Version info
    - Customer info
    - Serial number
- **Call groups**
- **GPS info**
- **Security**
  - Encryption
  - Zeroize key
  - Zeroize all
- **Change network**
- **Change mode**
- **Diagnostics**

*This menu item may appear as ‘Group select’

** This menu item may appear as ‘Edit groups’.

1 About this guide

This user's guide provides information about TM9300 mobile radios.

The radio behavior described in this guide applies to radios with firmware version 2.03. To check the radio's firmware version, see "Viewing radio information" on page 111. If your radio does not operate as you expect, contact your radio provider for assistance.

Safety warnings used in this guide

Please follow exactly any instruction that appears in the text as an 'alert'. An alert provides necessary safety information as well as instruction in the proper use of the product. This user's guide uses the following types of alert:

Warning This alert is used when there is a hazardous situation which, if not avoided, could result in death or serious injury.

Caution This alert is used when there is a hazardous situation which, if not avoided, could result in minor or moderate injury.

Notice This alert is used to highlight information that is required to ensure procedures are performed correctly. Incorrectly performed procedures could result in equipment damage or malfunction.

This icon is used to draw your attention to information that may improve your understanding of the equipment or procedure.

Related documentation

The following documentation is also available for your Tait radio, which you can access from the Tait Technical Support website (http://support.taitradio.com):

- *Safety and Compliance Information*—supplied with each radio. (The same information is included in this user's guide.)
- *Installation Guide*—covers installing TM9300 mobile radios, microphones, antennas, emergency switches, and external alert devices.
- *Accessory installation instructions*—may be supplied with an accessory.

2 Getting started

This section gives an overview of your DMR radio, describes the radio's controls and indicators, and explains how the radio menus are organized.

This section covers:

- About your DMR digital radio
- About the radio controls
- Understanding the radio display
- Understanding the radio indicators
- Using function keys to access frequently used features
- Navigating the radio's menus
- Using the alphanumeric keys to search a list

About your DMR digital radio

Your DMR digital radio can be programmed for DMR conventional or DMR trunked operation. Analog conventional and MPT operation is also available.

DMR and MPT trunking operation is controlled by a software license (SFE) and may not be available with your radio.

In DMR and MPT trunking operation, dual-mode networks are able to receive both digital and analog calls.

You may notice differences between digital and analog calls in terms of:

- static noise in low signal areas, and
- radio coverage in marginal reception areas.

Lack of static noise

On digital networks there is no static noise, even in low signal areas. This lack of static is because your digital radio removes the ‘noise’ from the call, so that you hear only clear voice.

Coverage

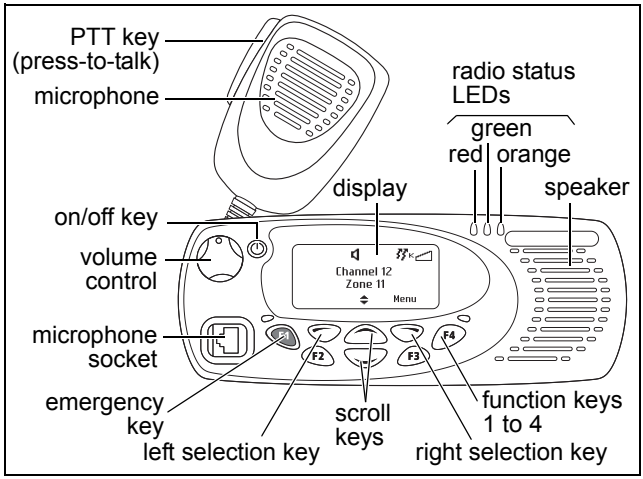
With digital networks, a call remains clear and then drops off quickly at the border of a coverage area. The reason for this is that a digital call is either received or it isn't. With analog networks, the background noise in a call gets progressively worse when you are in fringe areas or even slightly outside normal coverage areas.

About the radio controls

The radio controls are the PTT key, volume control, on/off key, scroll keys, selection keys and function keys. Some keys have functions assigned to both short and long key presses:

- a short key press is less than one second, and
- a long key press is more than one second.

The radio controls and their functions are described in the following sections.

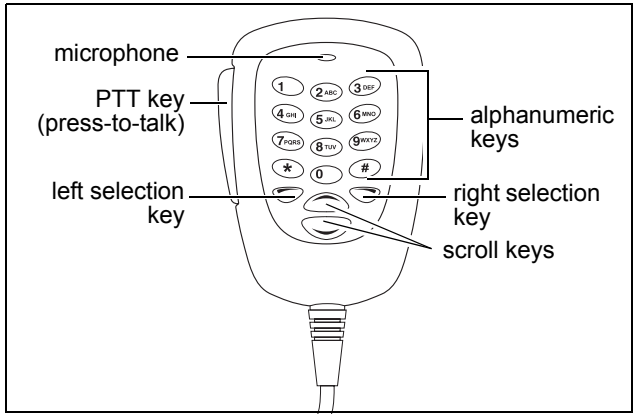


Name	Function
PTT key	Press and hold to transmit and release to listen
Volume control	Rotate to change the speaker volume
On/off key	Turn the radio on or off with a long press
Left and right selection keys	Action determined by the text above the selection key
Scroll keys	Scroll up and down through a list of menu options, scroll left and right in messages, or select the Quick Access menu
Emergency key	Activates emergency mode
Function keys	Programmed for frequently used options

About the keypad microphone

Your radio may have a keypad microphone installed. The keypad microphone has a PTT key as well as alphanumeric keys, two scroll keys, and left and right selection keys.

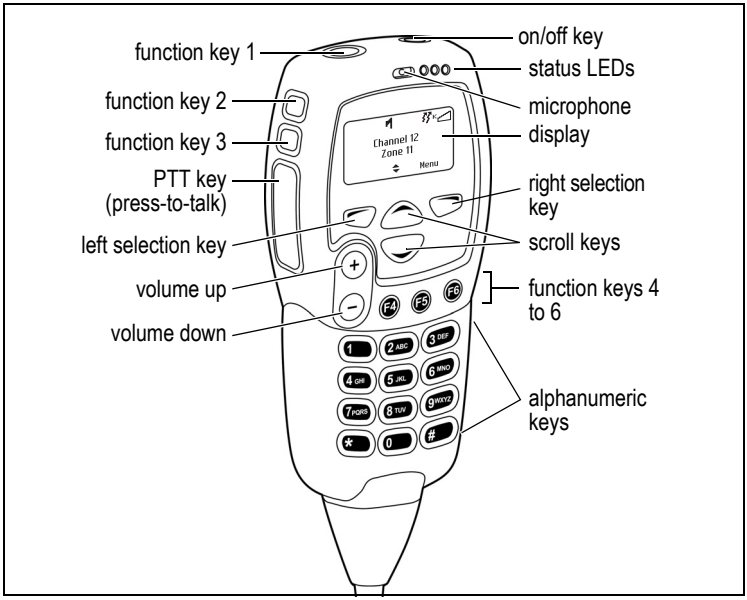
The PTT key, the scroll keys and the selection keys all work in the same way as those on the radio control head (see "About the radio controls").



About the hand-held control head

Your radio may have a hand-held control head installed, to enable you to operate the radio at a distance from the radio body.

The keys and controls work in the same way as those on the standard control head, with the exception of the PTT and volume up and down keys. The hand-held control head also has two additional function keys.



Understanding the radio display

The messages and icons you see on your radio display depend on the mode in which your radio is operating and the way it is programmed.

Radio display icons

These are some of the icons you may see on your radio display:

Icon	Meaning
	Scanning: your radio is monitoring a group of channels or workgroups for activity
	External alert: external alert is turned on
	Silent operation: your radio's audible tones have been turned off
	Low-power transmit: your radio is set to transmit on low power
	Transmit: your radio is transmitting
	Scrambler: the voice-inversion scrambler is turned on (analog channels only)
	Signal strength indicator: the more bars, the stronger the signal being received by the radio
	Scrolling: you can use or to move through a list, or access a Quick Reference menu
Trunked mode icons	
	Scanning: scanning has been turned off
	Homegroup: your radio has been returned to the homegroup using the homegroup toggle function key
	Call queuing: call queuing is turned on
	Call queuing: there are calls in the call queue
	Network: your radio is registered on a trunked network Flashing: your radio is attempting to register on a trunked network
GO	Trunking: your radio has established a call and you are now able to speak to the other party

Icon	Meaning
Conventional mode icons	
	Monitor or squelch override: monitor or squelch override is turned on
	Scanning: your radio is monitoring a group of channels for activity, and the currently selected channel is a member of the scan group.
	Repeater talkaround: your radio is operating in repeater talkaround mode, or you are on a simplex channel
	Text message: there is no text message in the call queue
	Text message: there is a text message in the call queue
K	Zone: this letter represents the zone in which your radio is operating, where A is zone 1, Z is zone 26 (for example, K represents zone 11)

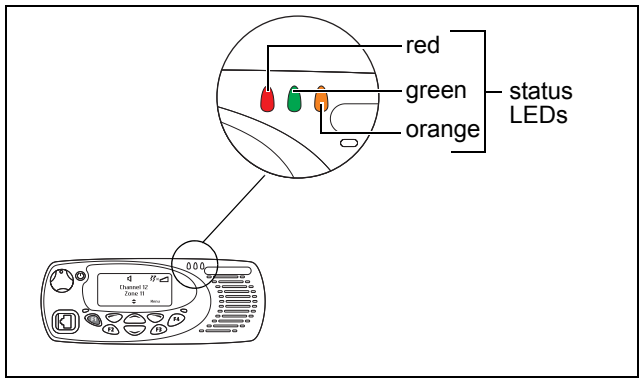
Understanding the radio indicators

The status LED indicators and the radio's audible tones—together with the radio display—all combine to give you information about the state of your radio.

The most common way the indicators work is described in the following sections.

The way these indicators behave may be affected by the way your radio is programmed.

Status indicators



Color		Meaning
Red (transmit)		On: your radio is transmitting
		Flashing: your transmit timer is about to expire
Green (receive)		On: the current channel is busy
		Flashing: you have received a call or monitor is active
Orange (network)		Off: No service
		Flashing: Limited service (no inter-site or fixed network services are available)
		On: Full service For more information see "Checking that your network is available" on page 66.

Audible tones

The radio uses audible tones to alert you to its status:

- Radio controls and keypress tones—the tones and beeps you hear when you press your radio's keys or use the controls.
- Incoming call tone—when the radio is receiving a call.
- Warning tones—when there is an error.

Warning If quiet or silent mode is turned on, you will not hear any alert tones.

Some of the more common audible tones are described below:

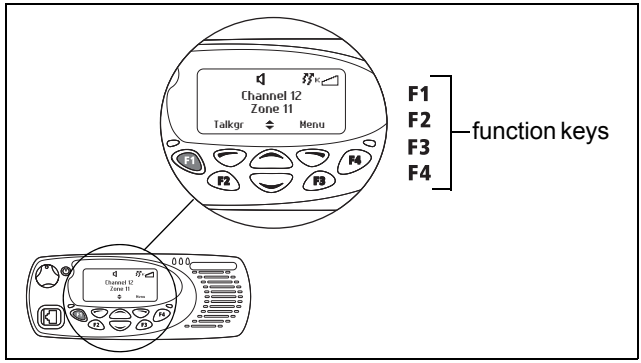
Tone	Meaning
One short beep	■ Valid keypress: the action you have attempted is permitted ■ Function activated: a function has been turned on (using either the Main menu or a function key)
One long, low-pitched beep	■ Invalid keypress: the action you have attempted is not permitted ■ Transmission inhibited: you have attempted to transmit, but for some reason you cannot make a call at this time
One short, low-pitched beep	Function deactivated: a function has been turned off (using either the Main menu or a function key)
Two short beeps	Radio turned on: the radio is powered on and ready to use

Voice annunciation

In conventional mode, your radio may be programmed to play a pre-recorded message for the start-up channel and when changing a channel.

Using function keys to access frequently used features

The function keys provide access to some of the features you use most often. These features are assigned to the function keys when the radio is programmed. Some keys may have a feature associated with both a short key press and a long key press.



Viewing the function key settings

Use the Main menu to check the features assigned to your radio's function keys:

1 Press **Menu** and select **Radio settings** > **Radio info** > **Key settings**.

2 In the **Key Settings** menu, scroll through the list of function keys.

3 Press **Select** to view details of the function associated with a particular function key.

The example shown is for a function key programmed to turn backlighting on and off.

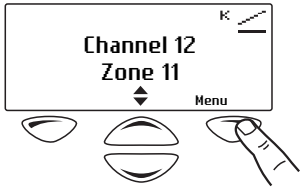
4 Press **Back** to return to the **Key Settings** menu.

Navigating the radio's menus

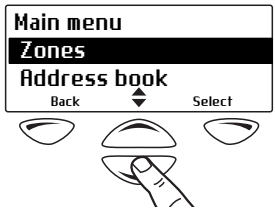
Your radio has a number of menus, each containing lists or submenus. The menus available depend on the way your radio is programmed.

Using the Main menu

To access the Main menu, press the right selection key whenever **Menu** appears above it.



Use the scroll keys to move through the menu list.



When the menu you want is highlighted, press **Select** to open the menu you have chosen.

To quickly exit the menu system, press and hold the left selection key when the word **Cancel** or **Back** appears above it.

Accessing frequently used menus

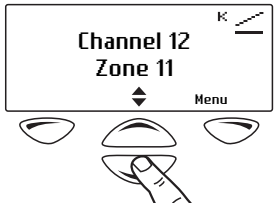
Depending on how your radio is programmed, you may have two different Quick Access menus. One Quick Access menu is displayed when you press a scroll key, and the other when you press the left selection key. These give you easy access to the menus you use most often.

Using the scroll key Quick Access menu

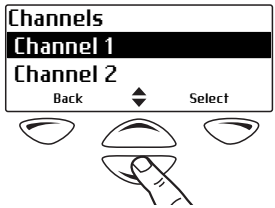
There are two ways to use this Quick Access menu:

- Use the scroll keys to scroll through a list of zones or channels.
- Press the scroll keys and the Quick Access menu appears.

  In this example, the **Channels** menu is the Quick Access menu. Use the scroll keys to go directly to the **Channels** menu.



  The **Channels** menu, with a list of your available channels, is now displayed.

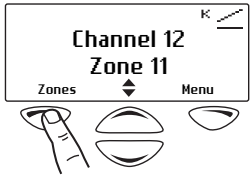


Using the left selection key Quick Access menu

The text above the left selection key corresponds to the Quick Access menu, for example, Zones.

To use this Quick Access menu:

- Press the left selection key and the associated menu appears.



Using the alphanumeric keys to search a list

This feature is only available for radios with alphanumeric keys.

If a blinking cursor appears when you select a list, you are able to search for the menu item you want using the alphanumeric keys. This is of particular benefit if you have a large number of items in a list.

Lists that you may be able to search are channels, zones, workgroups, and preset calls.

- To search a list, enter the required name using the keypad.

3 Basic operation

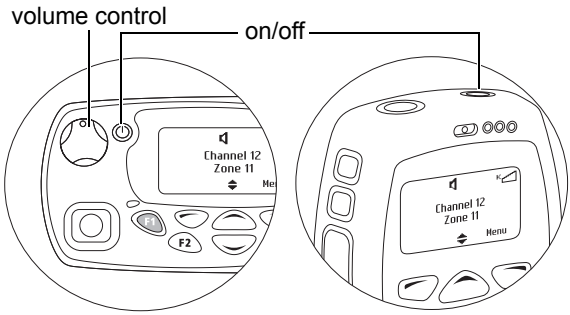
This section describes the basic operation of your radio.

This section covers:

- Turning the radio on and off
- Adjusting the speaker volume
- Locking and unlocking the keypad
- Changing the radio's operating mode

Turning the radio on and off

Long press the on/off key to turn the radio either on or off.



Standard control head Hand-held control head

When the radio is first turned on, the red, green, and orange LEDs flash briefly, and the radio gives two short beeps. A brief message may appear on the display.

Security lock on power-up feature

Your radio may be automatically locked each time it is powered-up. If the message **Enter PIN** appears on the display, enter your assigned PIN (personal identification number). See “Unlocking the radio” below.

Locking the radio

1 Press **Menu** and select **Radio settings** > **Functions** > **Lock radio**. (Depending on how your radio is programmed, you may be able to press a function key to turn radio lock on and off.)

2 Scroll to either **On** or **Off** and press **Select**. (The current setting is highlighted.)

The radio is now locked, and the message **Enter PIN** appears on the display.

The radio remains locked until the correct sequence of keys is pressed. If you forget the unlock sequence or you do not know it, contact your radio provider for assistance.

Unlocking the radio

- To unlock your radio, use the unlock sequence you have been given. (This is a pre-programmed sequence of four keys.)

Adjusting the speaker volume

Standard control head

Rotate the volume control clockwise to increase the speaker volume and counterclockwise to decrease the volume. The raised dot indicates the current volume setting.

Hand-held control head

Press ⊕ to increase the speaker volume, and ⊖ to decrease the volume.

ⓘ The volume control also changes the volume level of the radio's audible indicators.

Locking and unlocking the keypad

The keypad lock feature prevents you from pressing a key accidentally. The number of keys that are locked depends on the way your radio is programmed.

If you receive a call while the keypad is locked, press any key to answer.

To lock the keypad:

- Press and hold the right selection key for about one second.

  The message **Keypad locked** briefly appears on the display, and **Unlock** appears above the right selection key, in place of **Menu**.

  When any of the locked keys are pressed, the message **Keypad lock active** appears.

To unlock the keypad:

- Press and hold the right selection key for about one second.

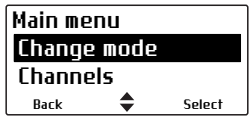
Changing the radio's operating mode

The way your radio performs basic functions, such as sending and receiving calls, depends on the operating mode of your network. The two operating modes that may be available on your radio are:

- conventional mode (see "Operating in conventional mode" on page 39), and
- trunked mode (see "Operating in trunked mode" on page 66).

To change your operating mode:

1 Press **Menu** and select **Change mode**.

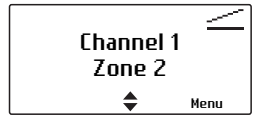


(Depending on how your radio is programmed, you may be able to press a function key to change mode.)

2 Select **Yes** to confirm your selection, and your radio now shows the default display for either trunked or conventional.

The following examples show typical default displays for trunked and conventional modes.

trunked mode



conventional mode

4 Operating in conventional mode

This section explains how to operate your radio on a conventional network (digital and analog). This includes how to make and receive different types of calls, use your radio in different repeater areas, and scan a group of channels for activity.

This section covers:

- Selecting a zone
- Selecting a channel
- Selecting a group
- Understanding talkgroups
- Checking that a channel is clear
- Making a call
- Making an individual call
- Making a call using the address book
- Making a local call
- Connecting to a telephone network
- Making an emergency call
- Sending a status message
- Transmitting at low power
- Ending active calls
- Activating the repeater before a call
- Communicating directly with other radios
- Receiving a call
- Hearing faint and noisy signals
- Using the radio in different repeater areas
- Scanning a group of channels

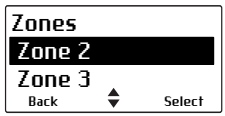
Selecting a zone

A zone is a collection of channels and groups. When you select a zone, only the channels and groups assigned to that zone are available.

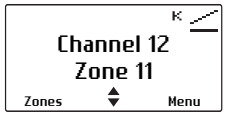
1 Press **Menu** and select **Zones**.

(Depending on how your radio is programmed, you may be able to use the scroll keys or left selection key to select the **Zones** menu.)

2 In the **Zones** menu, scroll through the list of zones until the one you want appears.



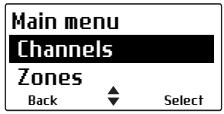
3 Press **Select**, and the zone indication appears either below the channel information, beside the RSSI icon, or in both positions.



Selecting a channel

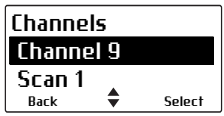
For digital channels, a talkgroup is assigned to each channel. For more information, see "Understanding talkgroups" on page 43.

1 Press **Menu** and select **Channels**.



(Depending on how your radio is programmed, you may be able to use the scroll keys or left selection key to select the **Channels** menu.)

2 In the **Channels** menu, scroll through the list of channels until the channel you want appears.



3 Press **Select**, and the programmed channel is now shown on the display.

Dialing a channel

This feature is only available for radios with alphanumeric keys.

1 Dial the number associated with the channel using the alphanumeric keys.

2 Press **Select**, and the programmed channel is now shown on the display.

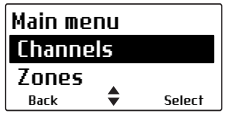
Selecting a group

A group is a collection of channels that are grouped together for either scanning or voting. In the **Channels** menu, the group is shown as being a single channel item, e.g. “Scan1”.

The sections "Using the radio in different repeater areas" on page 58 and "Scanning a group of channels" on page 59 explain how your radio operates once a scan group or voting group has been selected.

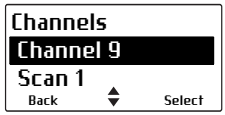
Using the Main menu

1 Press **Menu** and select **Channels**.

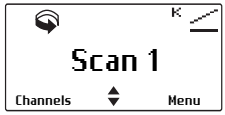


(Depending on how your radio is programmed, you may be able to use a function key, the scroll keys or left selection key to select a group.)

2 In the **Channels** menu, scroll through the list of channels and groups until the group you want appears.



3 Press **Select**, and the programmed group is now shown on the display. The orange LED glows and the scanning icon appears on the display.



Dialing a group

This feature is only available for radios with alphanumeric keys.

To dial the group number from the default display:

1 Dial the number associated with the group using the alphanumeric keys.

2 Press **Select**, and the programmed group is now shown on the display. The orange LED glows and the scanning icon appears on the display.

Understanding talkgroups

This feature is available for digital channels only.

A talkgroup is a collection of radio users with whom you want to have private conversations. For example, a state's public safety agencies could have the following talkgroups:

- Local talkgroups—used by a specific agency to communicate within their own local agency. It may even be made up of a county of public safety officers.
- Regional talkgroups—used by large state agencies that have regional divisions.
- Statewide talkgroups—used by an agency to communicate with a public safety member in another region. Statewide talkgroups, as their name suggests, enable public safety agencies to communicate with each other from one end of the state to the other.
- Special event talkgroups—may be used to manage emergencies encompassing a large area, or even events such as visits by heads of state.

Making a talkgroup call

To make a call to the currently selected talkgroup

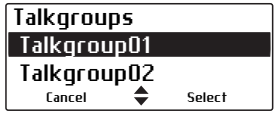
- Press the PTT key.

Changing a talkgroup

1 Press **Menu** and select **Talkgroups**.

(Depending on how your radio is programmed, you may be able to use a Quick Access menu to go to the **Talkgroup** menu.)

2 Scroll through the list of talkgroups to the one you want and press **Select**.



3 Press the PTT key to make a call to the currently selected talkgroup.

Checking that a channel is clear

For analog channels, Monitor allows you to override some or all of the radio's mutes, and hear if there is any traffic on a channel before you make a call.

Your radio may be programmed to activate monitor whenever the microphone is off the microphone clip.

Turning monitor on and off

1 Press **Menu** and select **Radio settings** > **Functions** > **Monitor**.

(Depending on how your radio is programmed, you may be able to press a function key to toggle monitor on and off.)

2 Scroll to **On** (or **Off**) and press **Select**.

While monitor is on, the green LED flashes slowly and the monitor icon ◁ appears in the display.

Your radio may be programmed so that monitor turns off automatically after a short time.

Making a call

1 Select the required channel or scan group.

You may need to select the zone you want first, then select the channel or group from that zone.

2 Check that the channel is clear. If the green LED is glowing, the channel is busy and you may not be able to transmit.

3 Once the channel is clear (the green LED is off), lift the microphone off the microphone clip.

4 Hold the microphone about 5 cm (2 inches) from your mouth.

5 Press and hold the PTT key to transmit.

6 Speak clearly into the microphone and release the PTT key when you have finished talking.

While you are transmitting, the red LED glows and the transmit icon appears on the display.

Limiting call time

Your radio may limit the amount of time you can talk (transmit) continuously. This is known as the ‘transmit timer’ or ‘time-out timer’ and allows other radio users to make calls on that channel.

The radio warns you before the transmit timer expires by beeping three times. The red status LED flashes and the message **Transmit timeout imminent** appears in the display.

If the transmit timer has timed out, you must release the PTT before you can transmit again.

Your radio may be unable to transmit for a short time after the transmit timer has expired.

Making an individual call

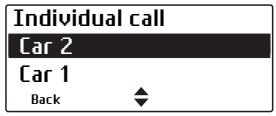
This feature is available for digital channels only.

To make a call to one person rather than a group of people:

1 Press **Menu** and select **Individual call**.
(The person to whom you last made an individual call is highlighted.)

(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select individual calls.)

2 Scroll to the person you want to call and press the PTT key to make the call immediately.

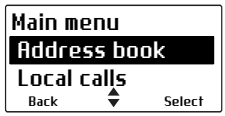


Making a call using the address book

The **Address book** menu has a programmed list of calls, which can be made from any channel or zone. Address-book calls may also be used to send status information, such as “at lunch” or “on site”, or to change to a channel or group.

Using the Main menu

1 Press **Menu** and select **Address book**.



(Depending on how your radio is programmed, you may be able to use the scroll keys, left selection key or a function key to select the **Address book** menu.)

2 In the **Address book** menu, scroll through the list of calls until the call you want appears.

3 Press **Send**.

The call details appear on the display, the red LED glows, and appears on the display.

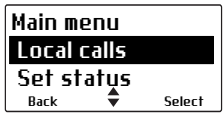
Making a local call

For analog channels, each channel on your radio may have one or more local calls programmed.

Using the Main menu

1 Select the required channel.

2 Press **Menu** and select **Local calls**.



3 In the **Local calls** menu, scroll through the list of local calls until the call you want appears.

4 Press **Send**.

The call details appear on the display, the red LED glows, and appears on the display.

Using the Quick Access menu

1 Select the required channel.

2 Press one of the scroll keys or the left selection key to open the **Local calls** menu.

3 Scroll through the list of local calls until the call you want appears.

4 Press **Send**.

The call details appear on the display, the red LED glows, and appears on the display.

Dialing a local call

This feature is only available for radios with alphanumeric keys.

To make a local call to another radio or group of radios:

1 Select the required channel.

2 Press **Menu** and select **Dial radio call**.

Alternatively, your radio may be programmed so a local call can be dialed directly from the default display. In this case, you can start dialing the call without selecting the menu option.

A series of **X** and **S** characters may appear, prompting you to dial over them.

3 Dial the number using the alphanumeric keys.

Your radio may be programmed so you can dial group tones using the * and # keys. Dial * to fill one **X**. Dial # to fill the current **X** and all subsequent **X** characters in the current burst.

4 Press **Send** (if the Send option appears).

The call details appear on the display, the red LED glows, and appears on the display.

When the called party receives your call, the message **Ack received** may appear on the display.

Connecting to a telephone network

For analog channels, you may be able to use your radio to connect to a telephone network. This type of call is known as a DTMF patch call.

To make a DTMF patch call, you may be able to either:

- use a programmed function key,

- use the Main menu to dial the call,
- make a local call (see "Making a local call" on page 47), or
- use your address book (see "Making a call using the address book" on page 46).

Using a function key

Depending on how DTMF patch calls are programmed, some or the following steps may not be necessary.

1. Select the required channel.
2. Press the function key programmed for DTMF patch call.

   Your radio may send tones to capture the line.
3. Press **Send**, or press the function key a second time, to send the preset number.

   You may hear telephone dialing and ringing tones.
4. Proceed with your call.
5. Press **End**, or give a long press on the function key, to end the call.

   Your radio may send tones to release the line.

Using the Main menu

This feature is only available for radios with alphanumeric keys.

To dial a DTMF patch call by using the Main menu:

Depending on how DTMF patch calls are programmed, some or the following steps may not be necessary.

1. Select the required channel.
2. Press **Menu** and select **Dial patch call**.
3. Dial the required number using the alphanumeric keys.
4. Press **Send**.

Your radio may send tones to capture the line.

5 Press **Send** to send the number dialed in step 3.

You may hear telephone dialing and ringing tones.

6 Proceed with your call.

7 Once the call has finished, press **End**.

Your radio may send tones to release the line.

Making an emergency call

You may be able to activate emergency mode by using a programmed function key.

1 Press the function key programmed for Emergency Mode and an emergency call is sent to your dispatcher, or some other predetermined location.

While emergency mode is active, your radio may cycle between receive and transmit, so that your dispatcher can hear any activity near the radio. Alternatively, your radio may appear to turn off but will actually remain in emergency mode.

2 Reset the radio to normal operation at any time by turning the radio off and then on.

Emergency mode may be programmed to end after a fixed period of time. In this case, there is no need to turn the radio off and then on in order to return the radio to normal operation.

Sending a status message

For analog channels, your radio may be able to maintain a record of your current status. This status may be sent with outgoing calls programmed to contain status information. If the radio receiving your message has been programmed with the same status messages, it will decode and display your message. The message indicates your current activity or location, such as “en route” or “at lunch”.

To change you current status:

1 Press **Menu** and select **Set status**.

2 In the **Set status** menu, scroll through the list of status messages until the message you want appears.

3 Press **Select**. The message **Status updated** appears on the display.

Transmitting at low power

If you are using your radio in conditions where signal strength is high, you can reduce the drain on your vehicle battery by transmitting at low power.

When low power transmit is turned on, appears in the display and calls are made at low power rather than at the programmed power setting.

Some channels may always transmit at low power.

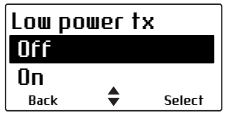
To turn low power transmit on or off for all channels:

Using the Main Menu

1 Press **Menu** and select **Radio settings** > **Functions** > **Low power tx**.

(Depending on how your radio is programmed, you may be able to press a function key to turn low power transmit on or off.)

2 Scroll to **On** (or **Off**) and press **Select**. (The current setting is highlighted.)



The message **Low power tx activated** (or **deactivated**) appears in the display.

Using a function key

1 Press the function key programmed for low-power transmit to transmit at low power on your current channel.

The message **Low power tx activated** appears briefly, and the low-power transmit icon appears on the display.

2 Press the low-power transmit function key again to turn low-power transmit off, and the message **Low power tx deactivated** appears on the display.

Ending active calls

For analog channels, you may have a function key programmed to either end the current call, or end the current call and all other active calls in your group. This can be done either by:

- using the function key programmed for reset monitor to end your current call,
- using the function key programmed for call clear-down to end your current call and all other calls in your group, or
- using the function key programmed for both reset monitor and call cleardown.

Using a function key to end your current call

- Press the function key programmed for reset monitor. The radio's monitor is turned off, ending your current call.

  The green LED stops flashing, and the monitor icon ◁ disappears from the display.

Using a function key to end all active calls

- Press the function key programmed for call clear-down and monitor is turned off for all radios in your radio group.

  The green LED stops flashing, and the monitor icon ◁ disappears from the display.

Using the function key programmed for reset monitor/call cleardown to end active calls

The function key programmed for reset monitor may be programmed so that a short key press ends your current call, and a long key press ends all active calls in your group.

Activating the repeater before a call

For analog channels, it may be required to send a repeater-access tone to activate the repeater before a call is made, so that the start of the call is not lost.

To send a repeater-access tone, you may be able to either use the PTT key, or use a programmed function key.

ⓘ For DMR channels, the repeater is activated as part of the standard call signaling.

Using the PTT key

1. Press the PTT key and the repeater-access tone for the current channel is sent.

The call details appear on the display, the red LED glows, and appears on the display. You may also hear signaling tones.

2 Press and hold the PTT and proceed with your call.

Using a function key

1 Press the function key programmed for sending a repeater-access tone, and the repeater-access tone for the current channel is sent.

The call details appear on the display, the red LED glows, and appears on the display. You may also hear signaling tones.

2 Press and hold the PTT and proceed with your call.

Communicating directly with other radios

For analog channels, you can bypass the radio repeater and communicate directly with another radio. This feature is known as repeater talkaround. You can do this, for example, when you are out of range of the repeater, or if the repeater is busy or stops working. While repeater talkaround is active, all transmissions are made on the receive frequency of the channel you are on.

To activate repeater talkaround, you may be able to either use a programmed function key, or use the Main menu.

Using the Main menu

1 Select the required channel.

2 Press **Menu** and select **Radio settings** > **Functions** > **Talkaround**.

3 In the **Talkaround** menu, choose **On**.

4 Press **Select**. The message **Talkaround activated** appears briefly, and the repeater talkaround icon appears on the display.

5 Proceed with your call.

6 To turn repeater talkaround off, either change the channel, or choose **Off** in the **Talkaround** menu.

Using a function key

1 Select the required channel.

2 Press the programmed function key to turn repeater talkaround on. The message **Talkaround activated** appears briefly, and the repeater talkaround icon appears on the display.

3 Proceed with your call.

4 To turn repeater talkaround off, either change the channel, or press the function key again.

Receiving a call

When there is valid activity on your radio's currently selected channel or group, the radio then unmutes and you can hear the call.

If the incoming call contains special signaling that matches the signaling programmed for your radio, the green LED flashes and your radio may give a ringing tone.

Receiving a text message

Your radio may be able to display received text messages in conventional mode. If programmed, the queuing icon (empty queue) or (message in queue) is always shown in the default display while in conventional mode.

Viewing a text message

When a text message is received, the radio sounds two short high-pitched beeps. If the radio is currently showing the default display, the message appears immediately.

To view a message that does not appear immediately:

1 Navigate to the default display.

2 Press **Queue**.

To delete the message, press **Delete**. The message **Queue empty** appears on the display.

If you want to leave the message in the queue, press **Back**.

The conventional call queue only retains one message. If a new message is received while there is an old message left in the queue, the old message will be replaced.

Hearing faint and noisy signals

For analog channels, your radio's squelch allows the radio to unmute only when the strength of the incoming signal is above a predetermined threshold. This means that only signals of reasonable intelligibility are made audible. To make faint and noisy signals audible, use the squelch override function to unmute the radio.

To activate squelch override, you may be able to either use the Main menu, or a programmed function key.

Using the Main menu

1 Press **Menu** and select **Radio Settings** > **Functions** > **Squelch o'ride**.

2 In the **Squelch o'ride** menu, choose **On**.

3 Press **Select**.

The message **Squelch override activated** appears on the display.

While squelch override is on, the green LED flashes continually, and the squelch override icon ◁ appears on the display.

Using a function key

1 Press the function key programmed for squelch override to unmute the radio.

   The message **Squelch override activated** appears on the display.

   While squelch override is on, the green LED flashes continually, and the squelch override icon ◁ appears on the display.

2 To turn squelch override off, press the squelch override function key again.

Using the function key programmed for monitor

The function key programmed for monitor may be programmed so that a short key press turns monitor on, and a long key press turns squelch override on.

To activate squelch override:

- Press and hold the function key programmed for monitor to override the radio's squelch.

  The message **Squelch override activated** appears on the display.

  While squelch override is on, the green LED flashes continually, and the squelch override icon ◁ appears on the display.

  Squelch override remains on until there is a further long key press.

Using the radio in different repeater areas

Your radio may have a group of channels programmed as a voting group. The channels in the voting group all carry the same traffic, but from different repeaters. As your radio moves in and out of different repeater coverage areas, the best communication channel is automatically selected for you to use, until a better communications channel is selected.

This channel is known as the ‘home’ channel, and will be the channel you make and receive calls on. While voting is active, the orange LED glows and the scanning icon appears on the display.

The section "Selecting a group" on page 42 explains how to select a group. A group can be either a voting or a scanning group.

Suspending a channel from a voting group

You may be able to use the function key programmed for nuisance delete to temporarily delete one of the channels from the voting group.

When that voting group is next selected, or after the radio has been turned off and then on, the deleted channel is again part of the voting group.

Alternatively, the function key programmed for voting may be programmed so that a short key press turns on voting, and a long key press activates nuisance delete.

- Press and hold the function key programmed for voting to remove the current channel from the voting group.

  If the operation has been successful, the message **Channel nuisance deleted** appears on the display.

Scanning a group of channels

The scan function is used to monitor a programmed group of channels, looking for activity. While the radio is scanning for activity, the orange LED glows and the scanning icon appears on the display. When activity is detected on a channel in the scan group, the radio stops on that channel. The orange LED begins flashing, the radio unmutes and you can hear the call. Scanning resumes once the channel is no longer busy.

The section "Selecting a group" on page 42 explains how to activate scanning.

Standard and background scanning

The two types of scanning that may be available on your radio are standard scanning, and background scanning. Background scan can only be activated by using a function key programmed for background scan. It differs from standard scanning in that the channel that was selected when background scan was activated is also included as a scan-group member.

Making a call while scanning

If you wish to make a call while your radio is scanning:

1. Lift the microphone off the microphone clip.
2. Press the PTT key to transmit. If the orange LED is flashing, or background scan is active, your radio will now call the currently selected channel.
3. If standard scan is active and there has been no recent activity on the channel (the orange LED is glowing rather than flashing), then the channel that is called depends on the way your radio has been programmed. The possible options are:

   —your radio calls a predetermined channel e.g. your dispatcher,

—your radio calls the channel where activity was last detected, or

— your radio calls the last free channel.

4 When the called party responds, proceed with your conversation.

Changing the background scan group assigned to a function key

You can change the background scan group assigned to the function key programmed for group scanning or for scanning/nuisance delete.

1 Press **Menu** and select **Advanced** > **Set scan key**.

2 In the **Set scan key** menu, scroll through the list of background scan groups until the group you want appears.

3 Press **Select**.

The message **Scan key scans new group** appears on the display.

The next time you activate background scan, the new group will be your background scan group.

Suspending a channel from a scanning group

If a member channel of a scan group is busy for a long time and you do not wish to hear the conversation, you may be able to use the function key programmed for nuisance delete to temporarily delete it from the scan group.

When the scan group is next selected, or after the radio has been turned off and then on, the deleted channel is again part of the scan group.

Alternatively, the function key programmed for scanning may be programmed so that a short key press turns on scanning, and a long key press activates nuisance delete.

- Press and hold the function key programmed for scanning to remove the current channel from the scanning group.

If the operation has been successful, the message **Channel deleted from group** appears on the display.

Adding or deleting member channels of a group

Your radio may be programmed so you can add or delete channels in a voting or scanning group. Changes made are permanent, and will remain after restarting the radio.

1. Select the group. See "Selecting a group" on page 42.
2. Press **Edit**.

   If there is no edit option for the left selection key, the group cannot be changed.

   Alternatively, you may be able to edit groups by pressing **Menu** and selecting **Advanced** > **Program groups**, then select the group you wish to edit.
3. In the **Edit group** menu, choose **Add channel** or **Delete channel**.
4. Press **Select**.
5. Press the scroll keys to select the channel that you want to add or delete.
6. Press **OK**.

   If successful, the message **Channel added** or **Channel deleted** appears.

To check the new group details, press **Back** and select the **Group members** menu option.

Changing a group's transmit channel

You may be able to change the transmit channel of a standard scanning group. The transmit channel is identified by the Tx icon.

1. Select the group. See "Selecting a group" on page 42.
2. Press **Edit**.

   If there is no edit option for the left selection key, the group cannot be changed.

   Alternatively, you may be able to edit groups by pressing **Menu** and selecting **Advanced** > **Program groups**, then select the group you wish to edit.
3. In the **Edit group** menu, choose **Change tx**.
4. Press **Select**.
5. Press the scroll keys to select the new transmit channel.
6. Press **OK**.

   If successful, the message **Tx channel changed** appears.

   To check the new group details, press **Back** and select the **Group members** menu option. The new transmit channel has the Tx icon next to it.

Changing a group's first or second priority channel

You may be able to change the priority channels of a scanning group. Priority channels are scanned more frequently than other channels in the group. If valid activity is found on another channel, the radio continues to scan the priority channel or channels at regular intervals. The first priority channel is identified by the P_1 icon, and the second priority channel is identified by the P_2 icon.

1. Select the group. See "Selecting a group" on page 42.
2. Press **Edit**.

   If there is no edit option for the left selection key, the group cannot be changed.

   Alternatively, you may be able to edit groups by pressing **Menu** and selecting **Advanced** > **Program groups**, then select the group you wish to edit.
3. In the **Edit group** menu, choose **Change P1** or **Change P2**.
4. Press **Select**.
5. Press the scroll keys to select the new priority channel.
6. Press **OK**.

If successful, the message **P1 channel changed** or **P2 channel changed** appears.

To check the new group details, press **Back** and select the **Group members** menu option. The new priority channel has the P_1 or P_2 icon next to it.

Icon and messages that may appear when changing group details

The following icons may appear when viewing group membership details, adding or deleting channels from a group, or changing a group's transmit or priority channels.

Icon	Meaning
T_X	This channel is used to transmit on when there has been no recent activity. You cannot delete this channel (it will not appear under **Delete channel**).
P_1	This channel is the group's first priority channel. You cannot delete this channel (it will not appear under **Delete channel**).
P_2	This channel is the group's second priority channel. You cannot delete this channel (it will not appear under **Delete channel**).
+	There is more than one instance of this channel in the group (the channel will be scanned more often). If you delete this channel, the radio will attempt to delete all instances of the channel.

The following messages may appear when using nuisance delete to temporarily delete a channel from a group, when adding or deleting channels from a group, or changing a group's transmit or priority channels.

Message	Meaning
Scanning not on	You cannot use nuisance delete to temporarily delete a channel from a group, as there is no group currently selected.
No channel captured	You cannot use nuisance delete to temporarily delete a channel from the group, as there is no channel currently captured (the orange LED is glowing and not flashing).
Not enough channels in group	You cannot use nuisance delete to temporarily delete the channel from the group, as the captured channel is the last remaining group member.
Cannot delete channel	You cannot use nuisance delete to temporarily delete the channel from the group. The captured channel may be the selected channel in a background scan group.
Cannot delete priority chan	You cannot use nuisance delete to temporarily delete the channel from the group, as the captured channel is a priority channel.
Only two channels in group	You cannot delete a channel from the group, as there would be only one group member left.
No items in list	The action you are attempting is not allowed. Either: ■ the group does not have a preset transmit channel or priority channels programmed, or ■ you have added all the channels in the zone to the current group.
Group full	You cannot add any more channels to the group, as the maximum number of members (50) has been reached.

5 Operating in trunked mode

This section explains how your radio operates on a DMR (digital), MPT (analog) or dual-mode trunked network.

These features are controlled by software licenses (SFE) and may not be available with your radio.

Your radio must have trunking functionality programmed before it can operate in DMR or MPT trunked mode.

This section covers:

- Checking that your network is available
- Changing your network
- Making a preset call
- About trunked zones and workgroups
- About emergency operation
- Dialing a PABX number
- Dialing a PSTN number
- Receiving a call
- Re-establishing a call
- Checking the queue
- About status messages
- About trunked text messages
- Placing the radio in do-not-disturb mode
- Calls to conventional channels or conventional groups

Checking that your network is available

Check that the orange LED is glowing and the network icon appears in the display. These are the indications that your radio has access to a trunked network.

If the network icon is flashing and **No service** appears on the display, your radio is attempting to access the trunked network. If this icon remains flashing, your radio may be out of the network coverage area.

If **Limited service** appears on the display, one of the network sites or the connection between the network sites has been interrupted. You can still make calls to radios covered by the same site but not to radios to other sites.

Changing your network

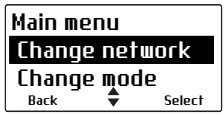
Your radio may be programmed to operate in up to four completely separate trunking networks, either DMR (digital), MPT (analog) or both (dual mode). You may wish to change networks because you are out of the network coverage area, or you need to have access to another trunking network.

To change your radio's operating network, you may be able to either use the Main menu or dial the new network using the alphanumeric keys.

Changing your radio's workgroup may also change the network in which you are operating. See "Selecting a workgroup" on page 71.

Using the Main menu

1 Press **Menu** and select **Change network**.



2 In the **Change network** menu, scroll through the list of networks until the network you want appears.

3 Press **Select**.

The radio will restart and display the name of the new network.

Dialing a new network

This feature is only available for radios with alphanumeric keys.

1 Dial ***700#** to display the name of the current trunked network.

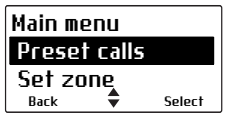
2 Dial ***70n#** to change to a new network, where **n** is the number of the new network (1 to 4).

The radio will restart and display name of the new network.

Making a preset call

The preset calls programmed for your radio may be to other radios, to PABX extensions or to PSTN numbers.

1 Press **Menu** and select **Preset calls**.



(Depending on how your radio is programmed, you may be able to use a function key, or left selection key to select the **Preset calls** menu.)

2 In the **Preset calls** menu, scroll through the list of calls until the call you want appears, then press **Send**.

While the call is being setup, you can cancel the call by pressing **Clear**.

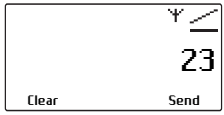
Dialing a preset call

This feature is only available for radios with alphanumeric keys.

The preset calls programmed for your radio can be dialed if you know the number associated with the preset call.

1 Dial **p**, where **p** is the number of the preset call.

   If your preset call number is the same as a call to another radio, then you need to dial a leading **0**. For example, dial **23#** to call radio 23 and dial **023#** for preset call number 23.



2 Press **Send** or the **#** or PTT key.

   While the call is being setup, you can cancel the call by pressing **Clear**.

About trunked zones and workgroups

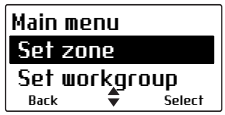
Trunked zones and workgroups are used to manage the calls on the trunked system. Zones typically define geographic areas (towns, suburbs or counties), or branches of an organization. Workgroups span multiple zones, and typically define functions, work areas or job roles.

When your radio belongs to a workgroup, it is said to be ‘subscribed’, and you receive all calls directed to that group of users. A group’s members are dynamic, in that a group only contains radios that are currently registered on the system and subscribed to the same group.

Your radio may be programmed to use different names for a ‘zone’ and ‘workgroup’.
For example, ‘district’ or ‘area’ may be used in place of zone, and ‘role’ or ‘group’ may be used in place of workgroup.

Selecting a zone

1 Press **Menu** and select **Set zone**.



(Depending on how your radio is programmed, you may be able to use the scroll keys or left selection key to select a zone.)

2 In the **Set zone** menu, scroll through the list of zones until the zone you want appears.

3 Press **Select**.

4 Check that orange LED is glowing and the network icon appears on the display.

Selecting a workgroup

1 Press **Menu** and select **Set workgroup**.

(Depending on how your radio is programmed, you may be able to use the scroll keys or left selection key to select a workgroup.)

2 In the **Set workgroup** menu, scroll through the list of workgroups until the workgroup you want appears.

3 Press **Select**.

4 Check that orange LED is glowing and the network icon appears on the display.

Making a call to a workgroup

Different types of calls may be associated with your workgroups. These calls can be individual calls, preset calls, broadcast calls (no response permitted), or conference calls.

To make a call to a workgroup:

1 Select the required zone. See "Selecting a zone" on page 70.

2 Select the required workgroup. See "Selecting a workgroup" on page 71.

3 Press the PTT key, and a call to that workgroup is made.

Selecting the homegroup

Your ‘homegroup’ is the workgroup in which your radio usually operates. To return to your homegroup at any time, you may be able to use the main menu, or use a function key.

Using the Main menu

1 Press **Menu** and select **Go to homegroup**.

2 Press **Select**, and the radio now shows your homegroup in the default display.

Using a function key

You may be able to use a function key to toggle between your homegroup, and the currently selected zone and workgroup.

- Press the function key programmed for your homegroup.

  The radio now shows your homegroup in the default display, along with the homegroup icon .

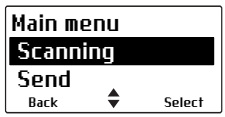
The homegroup icon only appears if you use a function key to select your homegroup.

Scanning workgroups

The ‘My Workgroups’ list comprises the current workgroup, the homegroup, and other programmed groups. When scanning is active, the radio will receive activity from any subscribed groups in the My Workgroups list.

To activate scanning:

1 Press **Menu** and select **Scanning**.



(Depending on how your radio is programmed, you may be able to use a function key to select scanning.)

2 Scroll to **On** (or **Off**) and press **Select**.

About emergency operation

In an emergency you may be able to summon help by sending an emergency call. After making the call, your radio may be programmed to enter emergency mode. While emergency mode is active, your radio may cycle between receive and transmit, so that your dispatcher or the called party can hear any activity near your radio.

On most networks, an emergency call takes precedence over other call types, and existing calls are cleared down so that the emergency call can proceed.

To make an emergency call from your radio, you may be able to either:

- make a preset emergency call,
- dial the emergency call using the alphanumeric keys, or
- use a function key programmed for emergency mode.

Making a preset emergency call

To make a preset emergency call from your radio, you may be able to either use a programmed function key, use the main menu, or use your quick access menu.

1. Select your preset emergency call.

   See "Making a preset call" on page 68.

2. Press **Send**.

   An emergency call is now sent to the emergency location that has been programmed for your radio.

Dialing an emergency call

This feature is only available for radios with alphanumeric keys.

1 Dial ***9**.

2 Press Send or the **#** or PTT key.

An emergency call is now sent to the emergency location that has been programmed for your radio.

If you wish to send an emergency call to another radio, you may be able to dial ***9*n** then press the **#** or PTT key. In this case, **n** is the radio unit number you wish to send the emergency call to and may be a two- or three-digit number.

Activating emergency mode

You can activate emergency mode using a function key programmed for emergency mode. Alternatively, you may be able to activate emergency mode using a hidden switch or panic button. Once emergency mode is activated, your radio makes an emergency call to your dispatcher or some other predetermined location. The radio then enters emergency mode.

While emergency mode is active, your radio may cycle between receive and transmit, so that your dispatcher can hear any activity near the radio.

Cancelling emergency mode

Reset the radio to normal operation at any time by turning the radio off and then on.

Emergency mode may be programmed to end after a fixed period of time. In this case, there is no need to turn the radio off and then on in order to return the radio to normal operation.

Dialing a PABX number

This feature is only available for radios with alphanumeric keys.

To dial a PABX extension:

1 Dial **n**, where **n** is the PABX extension you wish to call.

2 Press **Send** or the **#** or PTT key.

The call details appear on the display. While the call is being setup, you can cancel the call by pressing Clear.

Dialing a PSTN number

This feature is only available for radios with alphanumeric keys.

To dial a PSTN number:

1 Dial **0n**, where **n** is the PSTN number you wish to call.

The numbers you dial before the 0 depend on the way your network operates.

2 Press **Send** or the **#** or PTT key.

The call details appear on the display. While the call is being setup, you can cancel the call by pressing Clear.

Receiving a call

When you receive a call, your radio displays the caller's identity and responds in one of two ways, depending on the way it was programmed and the way your network operates.

- On-air call setup: The radio gives a ring and automatically accepts the call. The GO icon appears in the display.
- Full off-air call setup (FOACSU): When a call is received, the radio rings like a telephone.

  To accept the call, press **Answer**. The radio gives a beep and the GO icon appears in the display. You may also be able to accept the call if you briefly press the PTT key or lift the microphone off the microphone clip.

Once the GO icon appears, you can proceed with the call, as follows:

1. Hold the microphone about 2 inches (5 cm) from your mouth.
2. Press and hold the PTT key to transmit.
3. Speak clearly into the microphone and release the PTT key when you have finished talking.

   While you are transmitting, the red LED glows and appears in the display.
4. End the call by placing your microphone back onto its hook or by pressing Clear. The network may also end the call if neither you nor the other party transmits for a predetermined time or if your call time limit is exceeded.

Call time limit

In trunked mode, the length of your call may be limited by the network or by your radio. Your radio may be programmed to display the time remaining for your call.

Re-establishing a call

The last number recall, unanswered call and callback functions allow you to re-establish calls using the PTT key.

Last number recall

When an outgoing call has ended, the message **Last call to** and the called unit's identity may appear on the display.

To make a call to that person again, briefly press the PTT key.

Unanswered call

When an incoming call is missed, the message **Missed call** and the caller's identity may appear in the display.

To return the call, briefly press the PTT key.

Callback

When an incoming call has been ended, the message **Last call from** and the caller's identity may appear in the display.

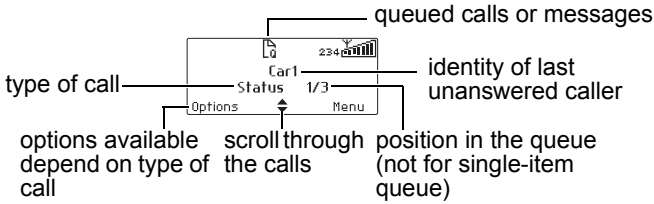
To make a call to that person, briefly press the PTT key.

Checking the queue

If you have missed an incoming call, status message or text message, it may be stored in the queue. Information about the last call or message is shown on the display and the queue icon appears.

The queue can be programmed to store multiple calls or messages or just the last call or message.

In the example below, a status message was received from Car 1. This is the first of three calls or messages stored in the queue.



If there are calls or messages in the queue, the radio may emit a warble tone which will time out after a programmable time. The notification starts again when the radio is restarted.

Accessing the queue

1. Use the scroll keys to move through the calls or messages in the queue until the item you want appears.
2. Press **Options**.

   The options available depend on the type of call it is. For a voice call, select **Call** to return the call.

   For a status message or a text message, select **View** to read the message or **Call** to return the call.

You can also delete the selected call or messages, or delete all queued calls and messages.

Changing your queue settings

Your radio may be programmed so that you are able to change queuing to ‘unanswered’. Unanswered queuing means that all status and text messages are immediately queued. Incoming voice calls are only queued if they are unanswered.

If your radio has alphanumeric keys, you may be able to change your call queuing setting using the keypad.

To activate call queuing:

- press **Menu** and select **Radio settings** > **Call settings** > **Call queuing** and choose **On**,
- press the function key programmed for Call queuing, or
- dial ***48** then press the **#** or PTT key.

The message **Call queuing activated** appears.

To change call queuing to unanswered call queuing:

- press **Menu** and select **Radio settings** > **Call settings** > **Call queuing** and choose **Off**,
- press the function key programmed for Call queuing, or
- dial **#48** then press the **#** or PTT key.

The message **Call queuing deactivated** appears.

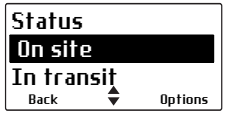
About status messages

A status message is sent to another party to indicate your current activity or location, such as “en route” or “at lunch”. If the radio receiving your message has been programmed with the same status messages, it will decode and display your message. If you receive a status message, the message is automatically queued, since a response is not expected.

Selecting a status message

1 Press **Menu** and select **Send** > **Status**.

2 In the **Status** menu, scroll through the list of status messages until the message you want appears.



Sending a status message

1 When you have chosen a message, press **Options** and the **Send to** menu opens.

2 In the **Send to** menu, scroll through the list of options until the choice you want appears.

If your radio has alphanumeric keys, you can choose the option **Dialed**, then dial the number of the party you wish to call.

3 Press **Send**.

The call details appear on the display. While the call is being setup, you can cancel the call by pressing **Clear**.

Dialing a status message

If your radio has alphanumeric keys, the status messages programmed for your radio can be dialed. To dial the message, you need to know the number associated with the status message.

To dial a status message:

1. Dial ***0s*n**, where **s** is the number of the status message and **n** is the radio unit number you wish to send the message to.
2. Alternatively, dial ***0s*p**, where **p** is the number of a preset call. See "Dialing a preset call" on page 69 for more information.
3. Press **Send** or the **#** or PTT key.

   The call details appear on the display. While the call is being setup, you can cancel the call by pressing **Clear**.

Receiving a status message

If the radio is programmed for call queuing, incoming status messages are added to the queue. For more information, see "Checking the queue" on page 78.

Press **Options** and select whether to reply, call or delete.

About trunked text messages

Your radio may be programmed so that you can send text messages. The three options for creating text messages are selecting a preset text message, editing a draft text message, or creating a new text message.

To either edit or enter a text message, your radio must have alphanumeric keys.

Using the alphanumeric keys to enter text

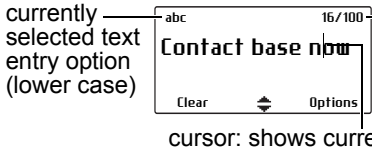
When the alphanumeric keys are used to enter a text message, they have special functions.

- Use the **#** key to select the type of text entry: upper and lower case characters (**ABC**, **abc**), initial capitals (**Abc**), or numbers (**123**).
- Use the left selection key (**Clear**) to delete a character from the display.
- Use the scroll keys to move through a message.

Repeated presses of these keys will give you the characters shown in the following table.

Key	Characters	Key	Characters
1	. , ? ! - / 1	7 PQRS	P Q R S 7
2 ABC	A B C 2	8 TUV	T U V 8
3 DEF	D E F 3	9 WXYZ	W X Y Z 9
4 GHI	G H I 4	0	space 0
5 JKL	J K L 5		
6 MNO	M N O 6		

In the example below, a preset text message has been selected, and is being edited.



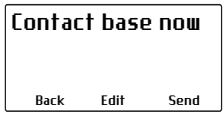
Sending a preset text message

1 Press **Menu** and select **Send** > **Text message** > **Preset message**.

In the **Preset message** menu, a short label representing each message is displayed.

2 Scroll through the list of preset message labels until the one you want appears.

3 Press **Select**, and the text message you have chosen is now displayed.



4 Press **Send** to send the message, or **Edit** to change the message.

Editing a draft text message

1 Press **Menu** and select **Send** > **Text message** > **Edit message**.

In the **Edit message** menu, a short label representing a message is displayed.

2 Use the scroll keys to move through the characters. Use the alphanumeric keys to add characters and the **Clear** key to delete them.

3 When the message is complete, press **Options** and select **Send**.

Creating a new text message

1 Press **Menu** and select **Send** > **Text message** > **New message**.

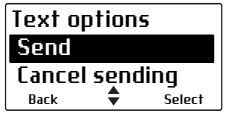
The last text message you sent may be displayed.

2 In the **New message** menu, modify the last text message you sent, or enter the new text message using the alphanumeric keys.

3 When the message is complete, press **Options** and select **Send**.

Sending a text message

1 When you have chosen or entered a message, press **Options** and the **Text options** menu opens.



2 In the **Text options** menu, scroll through the list of options until the choice you want appears.

(If your radio has alphanumeric keys, you may be able to dial the number of the party you wish to call.)

3 Press **Select**.

The call details appear on the display. While the call is being setup, you can cancel the call by pressing **Clear**.

Receiving a text message

If the radio is programmed for call queuing, incoming text messages are added to the queue. For more information, see "Checking the queue" on page 78.

Press **Options** and select whether to reply, call or delete.

Placing the radio in do-not-disturb mode

If you do not want calls for a while, you can place the radio in do-not-disturb mode, so that incoming calls can be ignored. You can make outgoing calls in the usual way.

While do-not-disturb mode is active, incoming calls cannot be stored in the call queue.

Using a function key

1 Press the function key programmed for do not disturb, to activate the do-not-disturb function.

   The message **Do not disturb activated** appears on the display. Your radio will now ignore all incoming calls.

2 To deactivate the do-not-disturb function, press the do-not-disturb function key again.

   The message **Do not disturb deactivated** appears on the display.

Using the Main menu

1 Press **Menu** and select **Radio Settings** > **Call Settings** > **Do not disturb**.

2 In the **Do not disturb** menu, choose **On**.

3 Press **Select**.

   The message **Do not disturb activated** appears on the display. Your radio will now ignore all incoming calls.

Calls to conventional channels or conventional groups

You may be able to dial conventional channels or groups, using **101** to **110**. The channels or groups called using these numbers are programmed for your radio.

To call a conventional channel or group:

1. Dial the number for the channel or group you wish to call.
2. Press **Send** or the **#** or PTT key.

   Your radio switches to the conventional channel programmed for that number.

6 Dialing calls in trunked mode

If your radio has alphanumeric keys, you can make dialed calls from your radio. The numbers you dial and dialing features available depend on the way your radio is programmed and the way your network operates. Contact your radio provider for further assistance.

This section covers:

- MPT 1343 dialing
- Nokia ANN fleet calls
- Accessing common trunking functions

MPT 1343 dialing

If your MPT or DMR trunked network uses the MPT 1343 dialing scheme, your radio's unique number on the network consists of:

- a three-digit prefix,
- a four-digit fleet number, and
- a two- or three-digit radio unit number.

You may also be part of a group, with a two- or three-digit group number.

Finding your radio's MPT number

To find your radio's full MPT number:

1. Dial ***700**.
2. Press the **#** or PTT key.

   The name associated with your network and your radio's full MPT number appears.

   The number is in the form:

Prefix	Fleet	Radio unit number
300	3078	234

MPT 1343 dialed calls

The following table summarizes the way you dial calls to other radios and groups of radios and gives an example of each type of call.

In the following examples, the final **#** may be replaced by a short press of the PTT key.

Call to	Dialing code and example
Radio **23** in the same fleet as you	Radio unit number 23 **#**
Radio **234** in the same fleet as you	Radio unit number 234 **#**
Radio **23** in fleet **3078** with the same prefix as you	Fleet 3078 Radio unit number 23 **#**
Radio **234** in fleet **3078** with the same prefix as you	Fleet 3078 Radio unit number 234 **#**
Radio **234** in fleet **3078** with a different prefix to you (**300**)	Prefix 300 Fleet 3078 Radio unit number 234 **#**
Group **92** in the same fleet as you	Group 92 **#**
Group **923** in the same fleet as you	Group 923 **#**

Nokia ANN fleet calls

If your trunked network uses Nokia ANN dialing, the numbers you dial depend on your fleet size. Fleets are defined as either large, small or mini. Your radio's unique number on the network consists of:

- a lead number **7**, **8** or **9**, depending on the fleet size,
- a zero-, one-, two- or three-digit prefix,
- a one- or two-digit fleet number, and
- a two- or three-digit radio unit number.

See your radio provider or network administrator for Nokia ANN call details.

Finding your radio's Nokia ANN number

To find your radio's full Nokia ANN number:

1 Dial ***700**.

2 Press the **#** or PTT key.

The name associated with your network and your radio's full Nokia ANN number appears.

The number is in the form:

Lead	Prefix	Fleet	Radio unit number
7	34	2	209

Nokia ANN dialed calls

The following table summarizes the way you dial calls to other radios and gives an example of each type of call.

In the following examples, the final **#** may be replaced by a short press of the PTT key.

Call to	Dialing code and example
Radio **23** in the same fleet as you	Radio unit number 23 **#**
Group **923** in the same fleet as you	Group 923 **#**
Large fleet:	
Call to radio **234** in fleet **1** with the same prefix as you	Lead 7 Fleet 1 Radio unit number 234 **#**
Call to radio **235** in fleet **2** with a different prefix to you (**32**)	Lead 7 Prefix 32 Fleet 2 Radio unit number 235 **#**
Call to radio **236** in fleet **2** with the same lead and prefix[1]	Fleet 2 Radio unit number 236 **#**
Small fleet:	
Call to radio **23** in fleet **51** with the same prefix as you	Lead 7 Fleet 51 Radio unit number 23 **#**
Call to radio **24** in fleet **52** with a different prefix to you (**126**)	Lead 7 Prefix 126 Fleet 52 Radio unit number 24 **#**
Call to radio **25** in fleet **53** with the same lead and prefix[1]	Fleet 53 Radio unit number 25 **#**
Mini fleet:	
Call to radio **23** in fleet **80** with the same prefix as you	Lead 7, 8 or 9 Fleet 80 Radio unit number 23 **#**
Call to radio **24** in fleet **81** with a different prefix to you (**3**)	Lead 7, 8 or 9 Prefix 3 Fleet 81 Radio unit number 24 **#**
Call to radio **25** in fleet **81** with the same lead and prefix[1]	Fleet 81 Radio unit number 25 **#**

1. If 4-digit-dialing is configured in the programming application.

Accessing common trunking functions

The following tables explain how you can access special MPT or DMR trunking functions using the * and **#** keys. The availability of these functions is dependant on the way your radio is programmed and the way your network operates.

In the following examples, the final **#** may be replaced by a short press of the PTT key.

***... # functions**

Dialing code	Functions	Example
#	Accept an incoming FOACSU call	
***#**	Clear call or displayed item, or decline an incoming FOACSU call	
***0#** **#0#**	Request base dispatcher to call you back Cancel request	
***0*n#** **#0*n#**	Request another dispatcher to call you back Cancel request	***0*234#** **#0*234#**
***0s*n#** ***0s#**	Status call to radio **n** (**s** = status 0 to 31, MPT, or 0 to 127, DMR) Status call to dispatcher	***015*23#** ***015#**
g#	Conference call to group **g**	**92#**
***11*g#**	Broadcast call to group **g**	***11*92#**
***41*n#** **#41#**	Divert own calls to radio **n** Cancel divert	***41*23#**
***41*0n#** **#41#**	Divert own calls to PSTN **n** Cancel divert	***41*03456798#**
***44*n*m#** [1] **44*n#** [1]	Divert 3rd party calls **n** to **m** Cancel divert of 3rd party calls	***44*23*21#** **#44*23#**
***441*m#** **#441#**	Divert of speech calls to **m** Cancel divert of speech calls	***441*21#** **#441#**
***442*m#** **#442#**	Divert of packet data calls to **m** Cancel divert of packet data calls	***441*21#** **#441#**
***451#**	Cancel incoming call diversions (speech only)	
***452#**	Cancel incoming call diversions (packet data only)	
***453#** [2]	Cancel incoming call diversions (SDM only)	
***454#** [2]	Cancel incoming call diversions (status only)	
***48#** **#48#**	Queue incoming calls Cancel queue	

***... # functions**

Dialing code	Functions	Example
***49#**	Do not disturb	
#49#	Cancel do not disturb	
***491#**	DMR: Do not disturb (SDM calls) MPT: Do not disturb（voice calls only）	
#491#	DMR: Cancel do not disturb (SDM calls) MPT: Cancel do not disturb（voice calls only）	
***492#**	Do not disturb—data calls only	
#492#	Cancel do not disturb—data calls only	
***50*n#**	Select channel **n** (site-select diagnostic function, enabled during programming)	
#50#	Resume normal channel hunting (site-select diagnostic function, enabled during programming)	
***700#**	Display the current network and your full radio number	
***70n#**	Change to network **n** (1 to 4)	***702#**
***8*n#** [3]	Priority call (highest) to radio **n**	***8*23#**
***8*g#** [3]	Priority conference call (highest) to group **g**	***8*923#**
***81*n#** [3]	Priority call (highest) to radio **n**	***81*23#**
***81*g#** [3]	Priority conference call (highest) to group **g**	***81*923#**
***82*n#** [3]	Priority call (high) to radio **n**	***82*23#**
***82*g#** [3]	Priority conference call (high) to group **g**	***82*923#**
***83*n#** [3]	Priority call (medium) to radio **n**	***83*23#**
***83*g#** [3]	Priority conference call (medium) to group **g**	***83*923#**
***9*n#**	Emergency call to radio **n**	***9*23#**
***9*g#**	Emergency conference call to group **g**	***9*923#**
****n#**	Abbreviated dialed codes (1-49) (MPT only)	****3#**

1. MPT only.
2. DMR only.
3. DMR has three priority levels and MPT has one priority level.
   *8 and *81 are interchangeable. Dialing *82 or *83 in MPT mode has the same effect as dialing *8 or *81.

7 GPS location services

This section explains how to use the GPS location services that may be available on your radio.

This feature is controlled by a software license (SFE) and may not be available with your radio.

This section covers:

- About GPS location information
- About GPS status information
- Viewing GPS information

About GPS location information

If your radio is connected to an external GPS receiver, you can view GPS location information such as latitude and longitude, true course, speed, and coordinated universal time. Your radio can also display universal transverse mercator (UTM) information such as the UTM zone, and northing and easting coordinates.

Your radio may also be set up to send GPS information.

About GPS status information

In the **GPS Info** menu, GPS status information appears at the top right of the display.

The following GPS status information appears at the top right of the display. Status information shown on a hand-held control head is shown in brackets [ ].

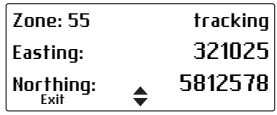
- **tracking** [**trk**]: the GPS receiver is displaying up-to-date satellite information.
- **stored**: the GPS receiver is having trouble connecting to satellites and the radio is displaying stored information that may not be current.
- **lost cnx** [**no cnx**]: the radio has lost serial communications with the GPS receiver.

Viewing GPS information

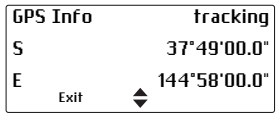
1 Press **Menu** and select **Location Svs** > **GPS Info**.

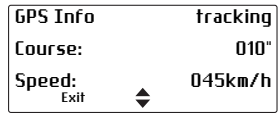
(Depending on how your radio is programmed, you may be able to press a function key to access the **GPS Info** menu.)

GPS information is now shown on the display, if it is available.

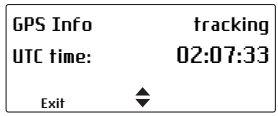


2 Use the scroll keys to view more GPS information.





3 Press **Exit** to exit the GPS display.



In certain situations, your radio may automatically exit the GPS display.

8 Loneworker monitoring

Loneworker monitoring is a safety feature for people who work alone. Loneworker monitoring may be programmed to be on or off at all times, or can be switched on and off by the user using a programmed function key or the menu.

A loneworker alarm is activated, if there has been no user activity for a predetermined time.

When the predetermined time has expired, an audible warning is given and you have a predetermined time to respond to the loneworker situation.

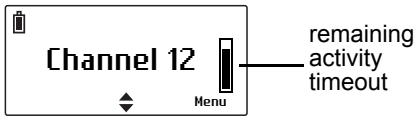
If you are unable to respond, the radio either enters emergency mode or (in trunked mode) sends a status update to a predetermined person or talkgroup.

Activating loneworker monitoring

1 Press **Menu** and select **Radio Settings** > **Extra features** > **Loneworker**. (Depending on how your radio is programmed, you may be able to press a function key to turn loneworker monitoring on and off.)

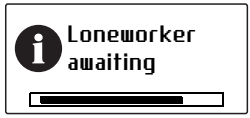
2 In the **Loneworker** menu, choose **On**.

A vertical scroll bar on the right-hand side of the display indicates the remaining activity timeout.



Responding to a loneworker alarm

If you hear a beep to indicate that the radio is expecting a response from you to acknowledge that you are safe. The message “Loneworker awaiting” and a horizontal scroll bar appear indicating the remaining time until an emergency action is triggered.

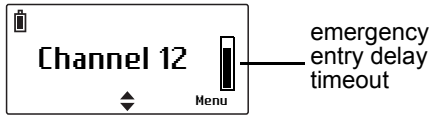


- Press any key.

Otherwise the radio will activate emergency mode or (in trunked mode) send a status update.

Delaying the emergency action (conventional mode only)

In conventional mode, an additional emergency entry delay may be programmed which allows you to press a scroll key within a programmed time (usually 10 seconds) after the response time expires to delay the emergency action.



You now have the opportunity to turn the radio off and one to cancel the loneworker alarm.

The emergency action can be delayed only once.

9 Encryption

This section describes how to use encryption to make your communications completely private.

This feature is controlled by a software license (SFE) and may not be available with your radio.

This section covers:

- About encryption
- Encrypting calls
- Making an encrypted call
- Receiving an encrypted call
- Removing encryption keys from the radio

About encryption

The encryption feature is available for digital and dual-mode networks only.

To make communications with other users on your system completely private, your radio may be able to encrypt outgoing calls, using a confidential encryption key. The radio receiving your call must have the same encryption key installed before it can hear your encrypted call.

Encrypting calls

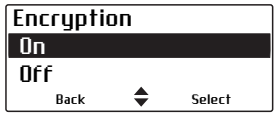
Your radio may be able to turn encryption on and off. While encryption is on, your outgoing calls are encrypted on networks programmed for encryption, and the encryption icon remains in the display.

This setting only affects outgoing calls. Incoming calls will still be decoded by your radio so long as the key required to decode the call is stored in your radio.

To turn encryption on or off:

1 Press **Menu** and select **Security** > **Encryption**. (Depending on how your radio is programmed, you may be able to press a function key to turn encryption on and off.)

2 Scroll to **On** (or **Off**) and press **Select**.



The message **Encryption activated** (or **deactivated**) appears in the display.

If you attempt to transmit with encryption turned on but don't have any keys loaded, the message **Key fail** appears.

Making an encrypted call

1. Select the network you wish to operate on.
2. Check that encryption is on (is showing in the display).
3. Press and hold the PTT key to transmit.

   While you are transmitting, the red LED glows and appears in the display.

If you transmit or receive an unencrypted call on an encrypted network, the disappears and your radio may be programmed to issue an audible alert.

Receiving an encrypted call

When you receive an encrypted call, your radio unmutes and you can hear clear speech, so long as the key required to decode the call is stored in your radio.

If the key required to decode the call is not stored in your radio, then your radio remains muted and the message **Key fail** appears.

If you transmit or receive an unencrypted call on an encrypted network, the disappears and your radio may be programmed to issue an audible alert.

Removing encryption keys from the radio

It may be possible for you to delete encryption keys from your radio.

Warning When emergency mode is activated, or when your radio is immobilized (‘inhibited’), your encryption keys may be automatically deleted from your radio.

If you attempt to transmit with encryption turned on but don’t have any keys loaded, the message **Key fail** appears.

Deleting an encryption key

1. Press **Menu** and select **Security** > **Zeroize key**.
2. Scroll to the key you want and press **Select**.

   The message **Single key zeroized** briefly appears in the display.

Deleting all encryption keys

1. Press **Menu** and select **Security** > **Zeroize all**.

   The message **Zeroize all keys?** appears in the display.
2. Press **OK** and the message **All keys zeroized** briefly appears in the display and no longer appears.

10 Customizing radio settings

This section describes the ways in which you can customize your radio.

These features are common to radios operating in either trunked or conventional mode.

This section covers:

- Changing the volume of all audible indicators
- Changing the volume of keypress tones
- Changing to quiet operation
- Changing to silent operation
- Changing the external alert option
- Turning on backlighting
- Adjusting the display contrast

Changing the volume of all audible indicators

You can set the volume of all the audible indicators to either high or low. Audible tones include incoming call tones, warning tones and confirmation tones.

To change the volume of your radio's audible tones:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **Indicator level**.

(Depending on how your radio is programmed, you may be able to press a function key to change the level of indicators.)

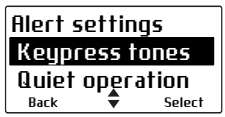
2 Scroll to **High** (or **Low**) and press **Select**.

Changing the volume of keypress tones

Whenever you press the radio keys, the keypress tones give you an audible indication as to whether or not your action is allowed. A short, medium-pitched beep indicates that an action is allowed. A long, low-pitched beep indicates that the action is not allowed.

To change the volume of your radio's keypress tones:

1 Press **Menu** and select **Radio settings**> **Alert settings** > **Keypress tones**.



2 Scroll to either **Off**, **Low** or **High** and press **Select**.

Changing to quiet operation

When quiet operation is on, keypress tones and confirmation tones are turned off. Incoming call tones, signaling tones and warning tones all remain audible.

To turn quiet operation on or off:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **Quiet operation**.

(Depending on how your radio is programmed, you may be able to press a function key to toggle quiet operation on and off.)

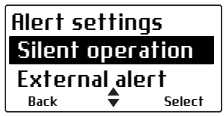
2 Scroll to **On** (or **Off**) and press **Select**.

Changing to silent operation

When silent operation is on, all the radio's audible tones are turned off, and only channel traffic can be heard.

To turn silent operation on or off:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **Silent operation**.



2 In the **Silent operation** menu, scroll to either **On** or **Off** and press **Select**.

(Depending on how your radio is programmed, you may be able to press a function key to toggle silent operation on and off.)

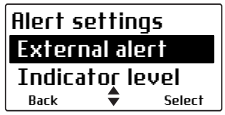
While silent operation in on, the icon appears in the display.

Changing the external alert option

If you are away from your radio and unable to answer calls immediately, an external alert, such as a car horn, may activate when you receive a call. The external alert continues for a period of time and is then turned off.

To turn external alert on or off:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **External alert**.



(Depending on how your radio is programmed, you may be able to press a function key to toggle external alert on and off.)

2 Scroll to either **On** or **Off** and press **Select**.

Turning on backlighting

Whenever a key is pressed or a call is received, the keypad and display light up automatically. Backlighting only remains on for a few seconds, unless there is further radio activity. When backlighting is turned on, it remains on until the setting is changed to **Off**, regardless of radio activity.

To turn backlighting on or off:

1 Press **Menu** and select **Radio settings** > **Display settings** > **Backlighting**.

(Depending on how your radio is programmed, you may be able to press a function key to toggle backlighting on and off.)

2 Scroll to either **On** or **Off** and press **Select.**

Turning backlighting on momentarily

You may be able to use a programmed function key to turn backlighting on momentarily.

- Press the assigned function key to turn backlighting on. Backlighting remains on for a few seconds, and then turns off.

Alternatively, the function key may be programmed so that:

- a short key press turns backlighting on momentarily, and
- a long key press turns backlighting on, and it remains on until there is a further long key press.

Adjusting the backlighting level

The radio's display can also be make either darker or lighter, to suit your working conditions.

To change the level of the backlighting:

1 Press **Menu** and select **Radio settings** > **Display settings** > **Backlight level**.

2 Scroll to either **Low**, **Medium** or **High**, and press **Select.**

Adjusting the display contrast

To change the contrast of your radio display to suit the lighting conditions that you are working in:

1 Press **Menu** and select **Radio settings** > **Display settings** > **Contrast adjust**.

2 Use the scroll keys to adjust the display contrast to the level you want.

3 Press **Save** to save this setting.

11 Troubleshooting

This section describes troubleshooting procedures, and basic maintenance.

This section covers:

- About troubleshooting
- When your radio won’t turn on
- Identifying the radio’s audible tones
- Viewing radio information
- Removing the microphone
- General care

About troubleshooting

If you are experiencing difficulty operating your radio, you may find the following sections helpful. Consult your radio provider for assistance, if necessary.

When your radio won't turn on

If the red, green and orange LEDs on the control head do not light up when the radio is turned on, it is probable that power is not reaching the radio. Check the following:

- Is the power connector firmly plugged into the rear of the radio?
- Are the in-line fuses in good condition?
- Is the power cable securely connected to the vehicle battery or power supply?

If all appears to be in order, but your radio still fails to operate properly, contact your radio provider for further assistance.

Identifying the radio's audible tones

The radio's audible tones can help you identify a potential problem:

Audible tone	Meaning
One short, high-pitched beep	The radio has been made inoperable ('stunned' or 'inhibited') by your service provider.
Two short beeps	The radio has been made operable ('revived' or 'uninhibited') by your service provider.
Two low-pitched beeps	The radio's temperature is high. (The radio will continue to operate.)

Audible tone	Meaning
Two high-pitched beeps	The radio's temperature is in the very high range; all calls will now be at low power. If the radio's temperature rises above this range, calls will be inhibited. Turn off the radio and allow it to cool down.
Continuous low-pitched tone	Radio system error: a system error has occurred and the radio may be inoperable. Contact your radio provider.

Viewing radio information

Your radio provider may ask you for the hardware and firmware version of your radio, for troubleshooting purposes.

Use the **Radio info** menu to view information such as the hardware and firmware version of your radio, function key settings, the radio serial number, and various radio identities.

1. Press **Menu** and select **Radio settings** > **Radio info**.
2. Scroll to the radio information you want to view and press **Select**.

Checking the version of your radio using the PTT key (not with hand-held control head)

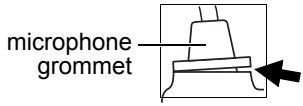
1. Turn off the radio.
2. Hold down the PTT key and turn on the radio.

   The firmware and hardware versions, and your radio's frequency band is briefly displayed.

Removing the microphone

For information on installing or removing your radio from a vehicle, refer to the *Installation Guide*.

1 Using your thumb or forefinger, lift up one of the corners of the microphone grommet and firmly (but gently) pull that corner until the seal comes away from the cavity.



Notice Remove the grommet carefully as it serves two important functions. Firstly, it prevents damage to the microphone socket due to movement of the microphone cord, and secondly, it ensures that the control head is sealed against water, dust, and other environmental hazards.

2 Repeat to expose another corner.

3 Pull the exposed corners back and slide the grommet up the cable to reveal the microphone plug.

4 Remove the plug from the microphone socket.

General care

Your radio requires no regular maintenance other than ensuring that all the cables and connections are secure, and that no damage has occurred to the antenna or wiring.

Notice To prevent permanent damage to the radio cover, do not allow the radio to come into contact with detergents, alcohol, aerosol sprays or petroleum-based products.

If you need to clean the radio cover, use a cloth dampened with clean water. Do not immerse the radio in fluids.

Directive 1999/5/CE Declaration of Conformity

da Dansk
Undertegnede Tait Limited erklærer herved, at følgende udstyr TMBB1A, TMBH5A & TMBH7A overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Se endvidere: www.taitradio.com/eudoc/

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Hiermit erklärt Tait Limited die Übereinstimmung der Geräte TMBB1A, TMBH5A & TMBH7A mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG.
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Η Tait Limited δηλώνει ότι το TMBB1A, TMBH5A & TMBH7A συμμορφώνεται προς τις ουσιώδεις απαιτήσεις και τις λοιπές σχετικές διατάξεις της Οδηγίας 1999/5/ΕΚ.
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Vedi anche: www.taitradio.com/eudoc/

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Veja também: www.taitradio.com/eudoc/

sv Svensk
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