

# TP9300 DMR Portable Radios User's Guide

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# Contents

	<b>For your safety</b> .....	<b>9</b>
	<b>Menu maps</b> .....	<b>28</b>
<b>1</b>	<b>About this guide</b> .....	<b>30</b>
	Safety warnings used in this guide .....	30
	Related documentation.....	31
<b>2</b>	<b>Before using your radio</b> .....	<b>32</b>
	For your safety—battery warning .....	33
	Attaching labels to the radio or battery .....	33
	Charging the battery before first use .....	34
	Attaching the battery.....	35
	Removing the battery .....	35
	Attaching the antenna.....	36
	Removing the antenna .....	36
	Attaching a belt clip .....	36
	Removing a belt clip .....	36
	Installing an audio accessory .....	37
<b>3</b>	<b>Getting started</b> .....	<b>38</b>
	About your DMR digital radio.....	39
	About the radio controls.....	41
	Understanding the radio display .....	43
	Understanding the radio indicators.....	45
	Using function keys to access frequently used features.....	48
	Navigating the radio’s menus .....	49
	Using the alphanumeric keys to search a list .....	50
<b>4</b>	<b>Basic operation</b> .....	<b>51</b>
	Turning the radio on and off .....	52
	Adjusting the speaker volume .....	53
	Locking and unlocking the keypad .....	53
	Using a wireless headset.....	54
	Changing the radio’s operating mode.....	59
	Setting and viewing the radio’s time and date .....	60
<b>5</b>	<b>Using the address book</b> .....	<b>61</b>
	Opening the address book .....	62
	Changing the default address book.....	62
	Navigating the address book.....	63
	Filtering address book lists .....	64
	Maintaining personal address book entries .....	65
<b>6</b>	<b>Operating in conventional mode</b> .....	<b>69</b>

Selecting a zone .....	70
Selecting a channel .....	71
Selecting a scan or voting group .....	72
Understanding talkgroups.....	74
Making a call.....	75
Making an individual call.....	77
Making a preset call.....	77
Making a call using the address book .....	77
Making a local call .....	78
Dialing a radio call .....	79
Making a phone call.....	80
Making a DTMF patch call.....	80
Making an emergency call.....	82
Setting your status (on analog channels) .....	83
Sending and receiving status messages .....	83
Sending and receiving text messages.....	85
Checking the queue.....	89
Call alert .....	90
Radio check.....	91
Radio monitor .....	92
Radio inhibit and uninhibit .....	94
Resending calls automatically .....	96
Transmitting at low power.....	97
Ending active calls.....	98
Using monitor and squelch override (on analog channels) .....	99
Bypassing the repeater (on analog channels).....	100
Receiving a call .....	101
Using the radio in different repeater areas .....	101
Scanning a group of channels .....	102
<b>7 Operating in trunked mode .....</b>	<b>108</b>
Checking that your network is available .....	109
Changing your network.....	109
Making a call using the address book .....	110
Making a preset call.....	111
About trunked zones and workgroups .....	112
About emergency operation .....	116
Dialing a PABX number.....	118
Dialing a PSTN number.....	118
Receiving a call .....	119
Re-establishing a call .....	121
Checking the queue.....	122
About status messages .....	124
About trunked text messages .....	126
Placing the radio in do-not-disturb mode.....	129
Switching to conventional channels or conventional groups ..	130

<b>8</b>	<b>Dialing calls in trunked mode .....</b>	<b>131</b>
	MPT 1343 dialing.....	132
	DMR dialing .....	134
	Nokia ANN fleet calls.....	136
	Accessing common trunking functions .....	138
<b>9</b>	<b>Location services .....</b>	<b>140</b>
	About location information .....	141
	About location statuses .....	141
	Viewing location information.....	142
<b>10</b>	<b>Loneworker monitoring .....</b>	<b>144</b>
	Activating loneworker monitoring.....	145
	Responding to a loneworker alarm.....	145
<b>11</b>	<b>Encryption .....</b>	<b>147</b>
	About encryption.....	148
	Encrypting calls .....	148
	Making an encrypted call.....	149
	Receiving an encrypted call.....	149
	Removing encryption keys from the radio .....	150
<b>12</b>	<b>Customizing radio settings .....</b>	<b>151</b>
	Changing the volume of all audible indicators.....	152
	Changing the volume of keypress tones .....	152
	Changing to quiet operation .....	153
	Changing to silent operation.....	153
	Turning on backlighting .....	154
	Adjusting the display contrast.....	155
<b>13</b>	<b>Charging and caring for batteries .....</b>	<b>156</b>
	About the chargers .....	157
	6-way charger safety information .....	158
	Special conditions when using IS/NI radios.....	158
	Before using the charger .....	159
	Charging temperatures.....	160
	Leaving the battery on charge .....	160
	Receiving calls while charging (not for battery-only vehicle charger) .....	161
	Low battery warning .....	162
	Inserting the radio into the vehicle charger.....	163
	Charging a battery for the first time .....	164
	Charging a battery .....	164
	LED behavior.....	165
	Removing the battery from the charger .....	166
	Maintaining battery life and performance .....	166
	Storing batteries .....	167

Disposing of batteries .....	167
<b>14 Troubleshooting .....</b>	<b>168</b>
About troubleshooting.....	169
When your radio won't turn on.....	169
Identifying the radio's audible tones .....	169
Viewing radio information .....	170
General care.....	170
<b>Directive 1999/5/CE Declaration of Conformity .....</b>	<b>172</b>
<b>Tait Software Licence Agreement.....</b>	<b>173</b>

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# For your safety

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

## Intrinsically Safe and Non-Incendive radios and accessories

Intrinsically Safe (IS) and Non-Incendive (NI) radios and accessories are certified by a third party to be safe to use in particular hazardous locations, or in potentially explosive atmospheres.



**Warning Explosion hazard!** IS/NI certification applies only while the product is used in accordance with these instructions.



**Warning Explosion hazard!** Ensure that the ratings printed on a label on the equipment will permit your IS/NI radio and accessories to be used in your hazardous location. Refer also to "[Rating matching](#)" on page 14.



**Warning Explosion hazard!** Use only a Tait-supplied, IS/NI-approved battery, charger, antenna, audio accessory, carry accessory or programming adapter with an IS/NI radio. Fitting a battery or accessory that is not IS/NI-approved, using a charger that is not IS/NI-approved, or failing to use the IS/NI programming adapter, creates a risk of explosion which could cause serious injury or death. For an up-to-date list of approved accessories, contact your regional Tait office.



**Warning Explosion hazard!** Do not charge the battery, or change the antenna, in a hazardous location. An explosion could cause serious injury or death.



**Warning Explosion hazard!** You must use a battery carry case when carrying a spare battery into a hazardous area.

IS/NI radios, batteries, antennas and accessories must not be engraved or modified in any way. Do not use the radio, battery or accessory if it is cracked or damaged. Do not use the antenna if the sheathing is split or the end cap is missing. Do not expose the radio to solvents. IS/NI radios and accessories must be serviced only by an agency certified by both the approval authority and by Tait Limited. Any unauthorized repair or substitution of parts invalidates the IS/NI rating and the third party IS/NI approval. To have an IS/NI radio serviced, return it to your regional Tait office.

## Radios

One or more of the following marks identifies a TP9300/TP9400 radio as an IS/NI radio:

- an IS circle logo (S) on the radio's front panel
- a label on the radio, showing IS/NI information
- a label on the radio battery, showing IS/NI information

Radios with the product code "T03-22xxx-xxxx" have IS/NI approval and are approved to one or several of the following ratings. Refer also to "[Rating matching](#)" on [page 14](#).

- Class I, Zone 1, AEx ib IIC T4...T3 (USA)
- Class I, Zone 1, AEx ib IIA T4...T3 (USA)
- Class I, Division 2, Group A, B, C, D, T4...T3 (USA and Canada)
- Class II, Division 2, Group E, F, G T4...T3 (USA and Canada)
- Class III, Division 1 (USA and Canada)
- Ex ib IIC T4...T3 Gb (Canada)
- Ex ib IIA T4...T3 Gb (Canada)

-  II 2 G Ex ib IIC T4...T3 Gb (ATEX)
-  II 2 G Ex ib IIA T4...T3 Gb (ATEX)
- Ex ib IIC T4...T3 Gb (IECEX)
- Ex ib IIA T4...T3 Gb (IECEX)

T4:  $-20^{\circ}\text{C} \leq T_a \leq +50^{\circ}\text{C}$

T3:  $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

## Batteries

The following batteries have been approved for use with TP9300/ TP9400 IS/NI portable radios. Refer also to ["Rating matching" on page 14](#).

Description	Product code
Li-Ion, 2300mAh, AEx-USA, IIA	T03-22001-AAAA
Li-Ion, 2300mAh, AEx-USA, IIC	T03-22001-AACA
Li-Ion, 2300mAh, ATEX, IIA	T03-22001-ABAA
Li-Ion, 2300mAh, ATEX, IIC	T03-22001-ABCA
Li-Ion, 2300mAh, IECEX, IIA	T03-22001-ADAA
Li-Ion, 2300mAh, IECEX, IIC	T03-22001-ADCA
Li-Ion, 2300mAh, Ex-Canada, IIA	T03-22001-AEAA
Li-Ion, 2300mAh, Ex-Canada, IIC	T03-22001-AECA

## Chargers

Chargers are common to IS and NI batteries. The chargers for IS/NI batteries are marked with an IS circle logo  and have the following product code:

- T03-22011-xAxx (AEx and Canada)
- T03-22011-xDxx (IECEX and EU)

You must use these chargers with an IS/NI battery, as their internal circuitry provides additional protection for the IS circuitry in the battery and radio.



**Warning Explosion hazard!** Do not use the charger in a hazardous location. An explosion could cause serious injury or death.

**Notice** The IS/Ni battery can only be charged in the chargers listed above. It will not charge in other TP8100/TP9300/TP9400 chargers. However, the chargers listed above can charge non-IS TP8100/TP9300/TP9400 batteries.

The operating temperature range for the charger is +32°F to +104°F (0°C to +40°C).

### Audio accessories

One or more of the following marks identifies a TP9300/TP9400 audio accessory as an IS/Ni audio accessory:

- an IS circle logo (S) on the audio accessory
- a label on the audio accessory, showing IS/Ni information

The following audio accessories have been approved for use with TP9300/TP9400 IS/Ni portable radios. Refer also to "[Rating matching](#)" on page 14.

Description	Product code
Headset, Heavy Duty, over-the-head	T03-22008-BAAA
Headset, Heavy Duty, behind-the-head	T03-22008-BABA
Earphone, in-ear, 2.5mm jack	T03-22008-CAAA
Speaker microphone, Storm, IP68-rated, emergency button, High/Low volume button, 2.5mm jack	T03-22008-AAAA

### Carry cases

IS/Ni leather carry cases are marked with an IS circle logo (S). The following carry cases have been approved for use with TP9300/TP9400 IS/Ni portable radios.

Description	Product code
Carry case, heavy-duty, leather, belt loop with D-stud	T03-22007-0001
Carry case, heavy-duty, leather, spring clip	T03-22007-0002
Carry case, heavy-duty, leather, belt loop	T03-22007-0003 <sup>1</sup>
Battery carry case, heavy-duty, leather	T03-22007-0004
Battery carry case, heavy-duty, leather, belt loop with D-stud	T03-22007-0005

Description	Product code
Battery carry case, heavy-duty, leather, spring clip	T03-22007-0006
Battery carry case, heavy-duty, leather, belt loop	T03-22007-0007
Belt loop for D-stud, 55mm	T03-00038-0022
Spring clip for D-stud, 40mm	T03-00038-0023
Belt clip, 55mm	TPA-CA-201
Belt clip adaptor for 55mm belt clip	TPA-CA-208

1. Must not be used with H7 band radios with whip antenna (TPA-AN-012).

Carry accessories are not specifically rated, and may be used in any area, subject to the rating restrictions of the overall radio system.



**Warning Explosion hazard!** You must use a battery carry case when carrying a spare battery into a hazardous area.

### Antenna

Use only genuine Tait-supplied antennas. Antennas are not specifically rated and may be used in any area, subject to the rating restrictions of the overall radio system.

### Programming adapter

The IS programming adapter is marked with an IS circle logo (IS) and has the product code:

- T03-22009-AAAA (AEx and Canada)
- T03-22009-ADAA (IECEX and EU)



**Warning Explosion hazard!** Do not use the IS programming adapter in a hazardous location.

You must use the IS programming adapter with an IS/NI radio, as its internal circuitry provides additional protection for the IS/NI circuitry in the radio. All programming activities are permitted. Calibration activities are only permitted if the activity can be done with the programming adapter alone. Other connections (e.g. antenna port) are not permitted.

## Equipment repair



**Warning Explosion hazard!** IS/NI radios and accessories are not user-serviceable. IS and NI radios and accessories must be serviced only by an agency certified by both the approval authority and by Tait Limited. Any unauthorized repair or substitution of parts invalidates the intrinsic safety or non-incendive rating and the third party IS or NI approval. To have an IS and NI radio serviced, return it to your regional Tait office.

## Rating matching

The rating of the radio, battery and accessories must be reviewed to ensure a safe IS/NI radio system. IS/NI ratings must be “matched”, and the lowest approval level determines the overall IS/NI radio system approval. Equipment labels clearly identify the item’s ratings.

## Zone ratings

- Use only Gas Group IIC batteries with Gas Group IIC radios.  
Use only Gas Group IIA batteries with Gas Group IIA radios.
- Gas Group IIC rated accessories may be used with IIA radios, but the combination may only be used in a IIA Gas atmosphere.
- Gas Group IIC and Dust Group IIIC rated accessories may be used with Gas Group IIC or IIA radios, but the combination may only be used in a gas atmosphere.
- Gas Group IIC rated radios and accessories may be used in Gas Group IIB or IIA areas.
- Zone 1 rated radios and accessories may be used in Zone 2 areas.
- Any item approved to Gas Group IIA will limit the radio system to a Gas Group IIA area. For use in a Gas Group IIC area, all items must be approved to Gas Group IIC.

## Division ratings

- Use only Group D battery with Group D radios.  
Use only Group A, B, C, D battery with Group A, B, C, D radios.
- Gas Class I and Dust Class II and Class III rated accessories may be used with Gas Class I radios, but the combination may only be used in a Gas Class I hazardous (classified) location.
- Division 2 rated radios and accessories may only be used in Division 2 or Zone 2 hazardous (classified) locations.
- Division 2, Group A radios and accessories may be used in Division 2, Group B, C, or D areas.
- Any item approved to Group D will limit the radio system to Group D areas. For use in a Group A area, all items must be approved to Group A.

## Temperature class

Different ambient temperature ranges apply for the T3 and T4 temperature classes. The item with the most restrictive temperature range will determine the allowed temperature range of the radio system. T4-rated radios and accessories can be used in T3 areas, within the rules stated above.

## Entity parameters

The Entity Concept allows interconnection of IS/NI equipment with associated equipment when the following is true:

$U_i \geq U_o$ ,  $I_i \geq I_o$ ,  $P_i \geq P_o$ ,  $C_i \leq C_o$ ,  $L_i \leq L_o$ , and  $L_i/R_i \leq L_o/R_o$ .

The installation must be in accordance with the following standards:

- National Electrical Code (NEC), ANSI/NFPA 70, Articles 504 and 505
- Canadian Electrical Code (CEC) Part I, CAS C22.1
- ANSI/ISA-RP12.06.01
- EN/IEC 60079-25
- relevant local regulations.

TP9300/TP9400 IS/NI radios have the following entity parameters.

Radio accessory port:

- |         |       |             |                      |
|---------|-------|-------------|----------------------|
| ■ $U_o$ | 7.2V  | ■ $C_o$     | 1.97 $\mu$ F         |
| ■ $I_o$ | 0.42A | ■ $L_o$     | 100 $\mu$ H          |
| ■ $P_o$ | 1.3W  | ■ $L_o/R_o$ | 20 $\mu$ H/ $\Omega$ |

Radio battery port:

- |         |                        |         |             |
|---------|------------------------|---------|-------------|
| ■ $U_i$ | 8.4V                   | ■ $C_i$ | 1.2 $\mu$ F |
| ■ $I_i$ | IIA: 2.9A<br>IIC: 1.9A | ■ $L_i$ | 5.7 $\mu$ H |
| ■ $U_m$ | 9.0V (charging)        |         |             |

## Battery:

### Charging Terminals

- $U_m$  9.0V

### Battery Output (radio port)

- $U_o$  8.4V
- $I_o$  IIA: 2.9A  
IIC: 1.9A
- $C_o$  1.2 $\mu$ F
- $L_o$  5.7 $\mu$ H

Ambient pollution degree: 4

Overvoltage category: I

## Certificates

### Radio:

- MET E113958
- TÜV 15 ATEX 7792X
- IECEx ITA 15.0015X

### Battery:

- TÜV 15 ATEX 7791X
- IECEx ITA 15.0009X

## Standards

- ANSI/ISA-12.12.01-2015
- CAN/CSA-C22.2 No. 213-15
- ANSI/UL 60079-0
- ANSI/UL 60079-11
- CAN/CSA-C22.2 No. 60079-11:14
- CAN/CSA-C22.2 No. 60079-0:15
- EN 60079-0:2012/A11:2013
- EN 60079-11:2012
- IEC 60079-0:2011 6th edition
- IEC 60079-11:2011 6th edition

# Radio frequency exposure information



For your own safety and to ensure you comply with the radio frequency (RF) exposure guidelines of the United States Federal Communication Commission's (FCC), Industry Canada, and those from other administrations, 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.
- When listening and talking on the radio, hold it upright in front of your face so that it is at least one inch (2.5cm) away from any part of your face. Keeping the radio at the recommended distance is important

because exposure to RF decreases rapidly the further away the antenna is from your body.

- Keep the antenna at least one inch (2.5cm) from your face at all times.
- If you wear your radio, you must always put it in a carrying accessory that has been specifically approved by Tait for this radio. Using non-approved body-worn accessories may mean you expose yourself to higher levels of RF than recommended by the FCC's occupational/controlled environment RF exposure limits.
- Ensure you only use Tait-approved antennas, batteries, and accessories.

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](http://www.fcc.gov/oet/rfsafety/rf-faqs.html).

### **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 2.1093.
- 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**

### **CFR Title 47 Part 15.19 (a) (1) - Receivers**

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.

### **CFR Title 47 Part 15.19 (a) (3) - All other devices**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions.

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

# 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 (764–776MHz and 794–806MHz)

The Code of Federal Regulations (CFR) Title 47 Subpart R deals with the use of frequencies in the 764 to 776MHz and 794 to 806MHz 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](http://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 172](#) of this booklet. To download the formal declaration of conformity, go to [www.taitradio.com/eudoc](http://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
- keep the radio at least 6 inches (15cm) from the pacemaker while the radio is on
- use the radio on the side opposite to the pacemaker to minimize interference
- never carry the radio in a breast pocket.

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.

## Vehicle charger installation and operation

For detailed instructions necessary to the safe installation and operation of the vehicle charger, please refer to the documentation supplied with the vehicle charger.

## Multicharger safety information



**Warning** This device must be connected to an earthed mains socket-outlet.

Norsk (no): Apparatet må tilkoples jordet stikkontakt.

Suomi (fi): Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

Svenska (sv): Apparaten skall anslutas till jordat uttag.

## 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.

# 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.

## Engraving and modification of intrinsically safe radios



**Warning** Intrinsically Safe (IS) and non-incendive (NI) radios and batteries must not be engraved or modified in any way. For more information on IS and NI radios refer to ["Intrinsically Safe and Non-Incendive radios and accessories" on page 9.](#)

## Attaching of labels



**Warning** Do not obstruct the vent hole on the battery or the vent hole on the radio chassis label. If the vent on the battery is obstructed, the battery may explode, causing personal injury and/or damage to property. If the vent on the radio is obstructed, audio quality and/or key function may deteriorate and radio seals may be damaged.



**Caution** Tait recommends that you do not affix additional labels to the surfaces between the radio chassis and the battery. The fit between these surfaces is intentionally firm and any added thickness will damage the points of attachment between radio and battery. If you must attach a customized label, use only a thin gummed paper label applied to the bottom 25% of the radio chassis label and/or to the top 25% of the battery label. Do not obstruct the vent holes (see Warning above). Do not allow the paper label to extend beyond the recessed label area or to conceal relevant product information.

## Use of lithium-ion batteries



**Warning** A damaged battery can cause an explosion or fire, and can result in personal injury and/or property damage. To prevent personal injury and/or damage to property, read the important safety information supplied with the battery.

# Short-circuiting battery contacts



**Warning** Do not short-circuit the battery contacts, neither intentionally nor accidentally, e.g. by placing the battery with conductive materials such as keys or jewelry inside a pocket or container. Short-circuiting the battery contacts can heat up the conductive material and cause personal injury and/or damage to property.

# 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

- Personal

- Standard

### Individual call

### Phone call

### Local calls

### Set status

### Dial radio call

### Dial patch call

### Services

- Text message

- Status update

- Call alert

- Radio check

- Radio monitor

- Radio inhibit

- Radio uninhibit

### Talkgroups

### Wireless headset

- Connect

- Reconnect last

- Disconnect

- Connection info

- Manage headsets

- Find new devices

- Options

  - Power-on option

  - Confirm connect

### Radio settings

- Functions

  - Scrambler

  - Lock radio

  - Low power tx

  - Monitor

  - Squelch o'ride

  - VOX

  - VOX sensitivity

  - Repeater

  - Talkaround

  - Voice annunciation

- Call settings

  - Ignore 2-tone

- Extra features

  - Lone worker

- Alert settings

  - Indicator level

  - Keypress tones

  - Quiet operation

  - Silent operation

- Display settings

  - Backlighting

  - Contrast adjust

  - Talk party ID

  - RSSI

- Radio info

  - Radio ID

  - Key settings

  - Version info

  - Customer info

  - Serial number

### Advanced

- Program groups

### Location Svs

- Own location

### Security

- Encryption

- Zeroize key

- Zeroize all keys

### Change mode

### Diagnostics

### Time and Date

### Unify Apps

## Main menu (trunked mode)

### Preset calls

### Address book

- Personal
- Standard

### Set zone

### Set workgroup

### Go to homegroup

### Scanning

### Send

- Status
- Text message
- Dispatcher call
- Broadcast call
- Conference call
- Priority call
- Emergency call

### Wireless headset

- Connect
- Reconnect last
- Disconnect
- Connection info
- Manage headsets
- Find new devices
- Options
  - Power-on option
  - Auto-connect

### Workgroup setup\*

- My Workgroups\*\*
- Set homegroup
- Subscribe all
- Unsubscribe all

### Radio settings

- Functions
  - Scrambler
  - Lock radio
  - VOX
  - VOX sensitivity
  - Voice annunciation
- Call settings
  - Call queuing
  - Do not disturb
- Extra features
  - Lone worker
- Alert settings
  - Indicator level
  - Keypress tones
  - Quiet operation
  - Silent operation

- Display settings
  - Backlighting
  - Contrast adjust
  - Channel display
  - RSSI
- Radio info
  - Trunked ID
  - Key settings
  - Version info
  - Customer info
  - Serial number
  - Alias

### Call groups

### Own location

### Security

- Encryption
- Zeroize key
- Zeroize all

### Change network

### Change mode

### Diagnostics

### Time and Date

### Unify Apps

\* 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 all TP9300 portable radios, except the TP9310 (without display and keypad).

The radio behavior described in this guide applies to radios with firmware version 2.15. To check the radio's firmware version, see "[Viewing radio information](#)" on page 170. 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.)
- *Li-ion Battery Safety Information*—supplied with each Li-ion battery.
- *Battery Care and Charging Guide*—supplied with each charger. (The same information is in the section "[Charging and caring for batteries](#)" on [page 156](#).)

## 2 Before using your radio

Once you have unpacked your radio, there are a few tasks you must do before you can use it. The most important of these is to charge your battery for the first time.



**Warning** Use only a Tait-supplied, IS and NI-approved battery, charger, antenna, audio accessory, carry accessory or programming adapter with an IS and NI radio. Fitting a battery or accessory that is not IS and NI-approved, using a charger that is not IS and NI-approved, or failing to use the IS and NI programming adapter, creates a risk of explosion which could cause serious injury or death. For an up-to-date list of approved accessories, contact your regional Tait office. For detailed information about IS and NI radios and how to identify them, see ["Intrinsically Safe and Non-Incendive radios and accessories" on page 9.](#)



**Warning** Do not charge the battery or change the antenna in a hazardous location. An explosion could cause serious injury or death.

### This section covers:

- [For your safety—battery warning](#)
- [Attaching labels to the radio or battery](#)
- [Charging the battery before first use](#)
- [Attaching the battery](#)
- [Removing the battery](#)
- [Attaching the antenna](#)
- [Removing the antenna](#)
- [Attaching a belt clip](#)
- [Removing a belt clip](#)
- [Installing an audio accessory](#)

# For your safety—battery warning



**Warning** This radio uses a Lithium-ion battery. If the battery is damaged or handled in an unsafe manner, it can cause personal injury and/or damage to property. Read the important safety information included with your battery.

## Attaching labels to the radio or battery

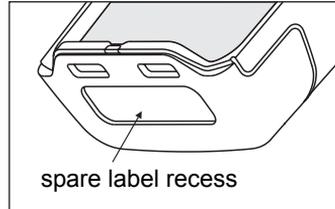


**Warning** Do not cover the battery vent hole or the vent hole on the radio chassis. If the vent on the battery is obstructed, the battery may explode, causing personal injury and/or damage to property. If the vent on the radio is obstructed, audio quality and/or key function may deteriorate and radio seals may be damaged.

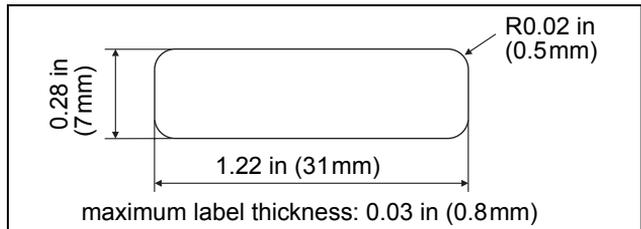
**Notice** Tait recommends that you do not affix additional labels to the surfaces between the radio chassis and the battery. The fit between these surfaces is intentionally firm and any added thickness will damage the points of attachment between radio and battery.

## Attaching a label to the front panel

If a customer requires an additional label, attach the label in the spare label recess in the bottom edge of the radio front panel. In this position, the label is still visible while the battery is attached to the radio.



The diagram below shows the specified dimensions of the label.



## Charging the battery before first use

Before using your battery for the first time, you must charge it. Follow the instructions included with your Tait charger. This information is repeated in the section ["Charging and caring for batteries" on page 156](#).



For best charging performance, switch off the radio before placing it in the charger.

# Attaching the battery



**Warning** Use only a Tait-supplied, IS and NI-approved battery with an IS and NI radio.

**Notice** Fit the bottom edge of the battery to the radio, then the top edge. Attempting to fit the top edge first may damage the contacts.

- 1 Rotate the power/volume control switch counterclockwise to turn off the radio.



If the battery has been attached while the radio is turned on, turn the radio off and then on again before use.

- 2 Holding the radio firmly, align the back of the battery with the back of the chassis.
- 3 Place the two lugs at the bottom edge of the battery into the two slots in the bottom of the front panel.
- 4 Lightly press the top of the battery towards the radio until the battery catch clicks.
- 5 Make sure that the battery is firmly in position.

# Removing the battery

The battery is secured to the radio by a battery catch in the radio's rear panel.

To remove the battery from the radio, so that the battery can be charged or replaced:

- 1 Rotate the power/volume control switch counterclockwise to turn off the radio.



If the battery has been removed while the radio is turned on, turn the radio off and then on again before use.

- 2 Slide the battery catch up.
- 3 From the sides, pull the battery away from the radio.

# Attaching the antenna

Before using the radio, screw the antenna clockwise into the antenna connector. The antenna should be screwed sufficiently tight so that it doesn't unscrew easily. This is important as it creates a seal.

# Removing the antenna



**Warning** Do not change the antenna in a hazardous location. An explosion could cause serious injury or death.

Use a firm grip and turn the antenna counterclockwise half a turn. Use a lighter grip to fully unscrew the antenna, and carefully remove it.

# Attaching a belt clip

To attach a belt clip to the radio:

- 1 Slide the belt clip into the two grooves at the top of the battery.
- 2 Press down on the belt clip until it snaps into place.

# Removing a belt clip

The belt clip has been designed to prevent accidental removal, but you can take it off, if required.

To remove a belt clip from a battery:

- 1 Insert a flat screwdriver blade or similar flat object under the lip of the release lock (that is, between it and the metal slider).
- 2 Lift the release lock up (away from the metal slider) and hold it in position.
- 3 Slide the belt clip out.

# Installing an audio accessory



**Warning** Use only Tait-supplied, IS and NI-approved audio accessories with IS and NI radios. Fitting an audio accessory that is not IS-approved exposes the customer to a risk of explosion which could cause serious injury or death. For an up-to-date list of approved audio accessories, contact your regional Tait office. For detailed information about IS and NI radios and how to identify them, see ["Intrinsically Safe and Non-Incendive radios and accessories" on page 9.](#)

Audio accessories plug into the radio's accessory connector. The accessory connector is protected by a cover, which needs to be removed before an accessory can be installed.

**Notice** The accessory cover protects the accessory connector from electrostatic discharge. Keep the cover in place unless the connector is in use.

To remove the accessory cover and install an audio accessory:

- 1 Use a coin or other blunt object to loosen the screw that secures the accessory cover to the radio.
- 2 Remove the accessory cover and store it in a safe place.
- 3 Plug the accessory into the accessory connector.
- 4 Tighten the screw.

# 3 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.

## What you hear on an analog channel

On analog channels, your radio may be programmed so that you hear all conversations on a channel, or your user group may be segregated from other user groups by using special signaling. The special signaling is used to control the muting and unmuting of your radio, so that your radio is muted when other user groups are talking and unmuted for members of your user group.

There are two muting controls that operate in your radio:

- signaling mute
- squelch

### Signaling mute

The radio's signaling mute only allows the radio to unmute if the incoming call carries the tones specific to your user group. Your user group may use tones that are either audible, subaudible or both.

### Squelch

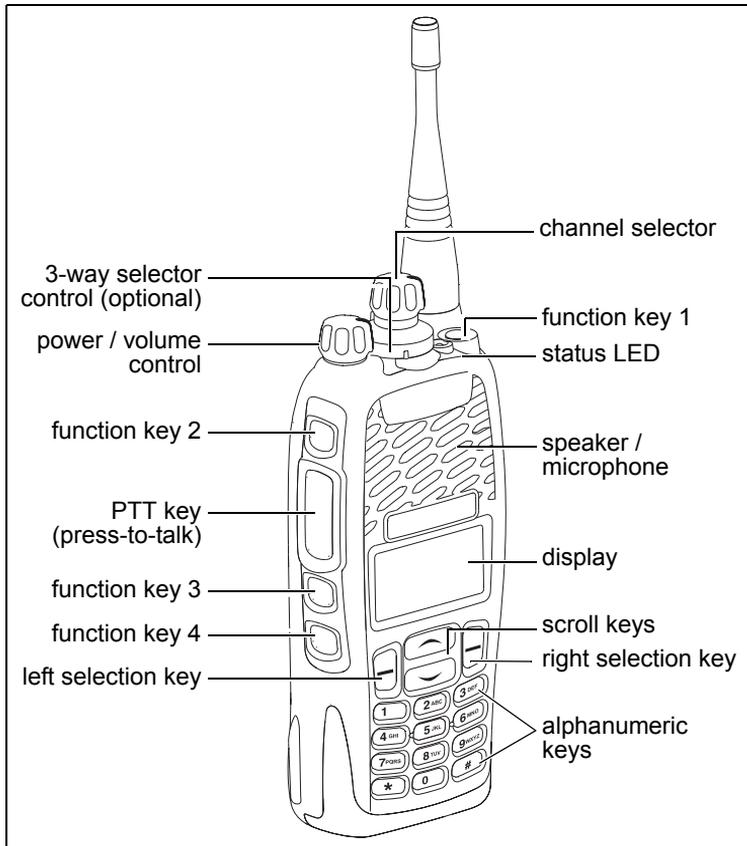
The radio's squelch allows the radio to unmute only when the strength of the incoming signal is above a predetermined threshold. This means that only signals of reasonable intelligibility are made audible.

# About the radio controls

The radio controls are the PTT key, power/volume control, channel selector, 3-way selector control (optional), 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.



<b>Name</b>	<b>Function</b>
PTT key	Press and hold to transmit and release to listen
Power/volume control	Rotate to turn the radio on and change the speaker volume
Channel selector	Select and change channels
3-way selector (optional)	Select frequently used features
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 access a pre-programmed menu
Function keys	Programmed for frequently used options
Alphanumeric keys	Used to enter letters and numbers

# 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
	Battery indicator: shows how much charge is available in the battery
	Scanning: your radio is monitoring a group of channels or workgroups for activity
	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
	Headset connected: there is a wireless headset connected to your radio Flashing: your radio is attempting to connect to a headset, or the headset connection has been lost
	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 pre-programmed menu
<b>Trunked mode icons</b>	
	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

<b>Icon</b>	<b>Meaning</b>
	Network (flashing): your radio is registered on a DMR or MPT trunked network
	Trunking: your radio has established a call and you are now able to speak to the other party
<b>Conventional mode icons</b>	
	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
	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)

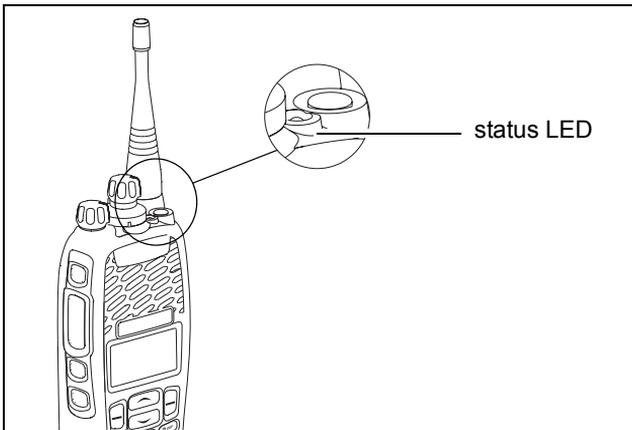
# Understanding the radio indicators

The status LED indicator 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.

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

## Status indicators



Color	Meaning
Red (transmit)	 Glowing: your radio is transmitting
	 Flashing: your transmit timer is about to expire
Green (receive)	 Glowing: the current channel is busy
	 Flashing: you have received a call (analog channel only)
Orange (network)	 Flashing: you are registered on a trunked network

Color	Meaning
All LEDs off	Trunked: network not available, or your radio is attempting to register on a trunked network Conventional: receive standby

## 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, or the battery is low, for example.



**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	<ul style="list-style-type: none"> <li>■ Valid keypress: The action you have attempted is permitted.</li> <li>■ Function activated: A function has been turned on (using a function key).</li> </ul>
One short, low-pitched beep	Function deactivated: A function has been turned off (using a function key).
One long, low-pitched beep	<ul style="list-style-type: none"> <li>■ Invalid keypress: The action you have attempted is not permitted.</li> <li>■ Transmission inhibited: You have attempted to transmit, but for some reason you cannot make a call at this time.</li> </ul>

Tone	Meaning
Two short beeps	<ul style="list-style-type: none"> <li>■ Radio turned on: The radio is powered on and ready to use.</li> <li>■ Radio is revived: The radio has been made operable by your service provider.</li> </ul>
Three long beeps	Transmit timeout imminent: Your transmit timer will expire and your current transmission will be terminated.
one short, high-pitched beep	Radio is stunned: The radio has been made inoperable by your service provider.
two low-pitched beeps	Radio's temperature is high: The radio's temperature is in the high-temperature range, but the radio will continue to operate.
two high-pitched beeps	Radio's temperature is very high: The radio's temperature is in the very high temperature range and all transmissions will now be at low power; if the radio's temperature rises outside this range, transmissions 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.
two long high-low pitched tone pairs	Synthesizer is out-of-lock: The radio's synthesizer is out-of-lock on the current channel and you cannot operate on that channel ( <b>Out of lock</b> appears on the display).

## Voice annunciation

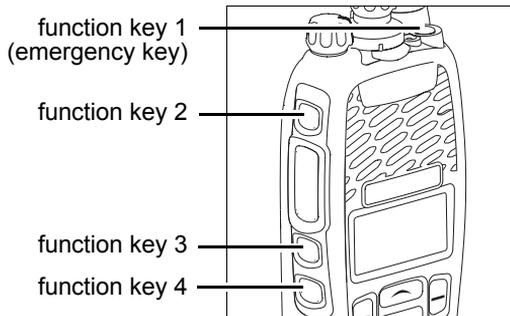
In conventional mode, your radio may be programmed to play a pre-recorded message for the start-up zone and channel, and when changing the zone or channel.

In trunked mode, your radio may be programmed to play a pre-recorded message for the start-up zone, workgroup or preset, and when changing the zone, workgroup or preset.

In both modes, your radio may be programmed to play a pre-recorded message for the battery condition.

## Using function keys to access frequently used features

The function keys provide access to some of the features you will 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.

Use the following table to record the function keys programmed for your radio:

	Short key press	Long key press
F1		
F2		
F3		
F4		
F5 <sup>1</sup>		
F6 <sup>1</sup>		

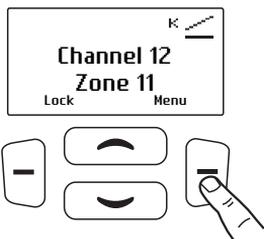
1. On speaker microphone (if fitted)

For more information about the function keys that can be programmed on your radio, contact your radio provider.

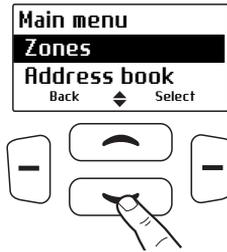
## Navigating the radio's menus

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

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.

Your radio may be programmed to use the scroll keys or the left selection key to directly access a menu.

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

## 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.

# 4 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](#)
- [Using a wireless headset](#)
- [Changing the radio's operating mode](#)
- [Setting and viewing the radio's time and date](#)

# Turning the radio on and off

Rotate the power/volume control switch clockwise to turn the radio on. Rotate the switch counterclockwise to turn the radio off.

When the radio is first turned on, the status LED briefly glows red, and the radio gives two short beeps.

 Your radio may not turn on if your battery is very low. (See "[Low battery warning](#)" on page 162.)

## 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

Rotate the power/volume control clockwise to increase the speaker volume and counterclockwise to decrease the volume.

- ❶ 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.

(Depending on your radio model and the way it is programmed, your radio may have a 3-way selector that can be used to lock the keypad.)

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.

# Using a wireless headset

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

You may be able to connect a Bluetooth® wireless headset to your radio, using the **Wireless headset** menu or a function key.

-  When you have selected a menu option in the **Wireless headset** menu, you can still receive and reply to calls without interrupting the selected operation.

## Headset compatibility with Tait radios

Bluetooth wireless headsets may operate with Tait radios, provided the headset:

- Is compatible with the Bluetooth Specification Version 2.0 or higher. Tait recommends Bluetooth Specification Version 2.1 or higher.
- Includes Bluetooth Headset Profile (HSP) adopted version 1.1 or 1.2, or Bluetooth Handsfree Profile (HFP) version 1.5 or 1.6.

## Wearing the headset

Place the headset on your ear. Depending on which ear you are going to wear the headset, simply adjust the ear hook accordingly.

To get the best performance from your headset:

- 1 Do not block the device's internal antenna (see the device's user documentation). The human body can interfere with a Bluetooth signal.
- 2 If you usually use your radio with your right hand, wear the headset on your right ear.
- 3 Avoid coming in contact with the internal antenna of a headset or radio.

# Pairing a wireless headset with the radio

-  Before attempting to connect a wireless headset, Tait recommends that the headset is fully charged. Refer to the headset installation instructions for charging instructions.

Pairing creates a unique and encrypted wireless link between the Bluetooth-capable radio, and the Bluetooth headset. To use a headset with your radio, the devices must first be paired.

When you connect to a wireless headset for the first time, you need to instruct the radio to search for compatible headsets using Bluetooth wireless technology. The search should take less than one minute.

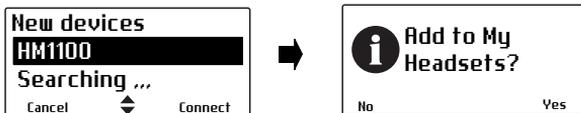
To pair a wireless headset with the radio:

- 1 Turn on the radio.
- 2 Put the wireless headset into pairing mode. Refer to the headset installation instructions for instructions on how to do this.
- 3 Press **Menu** and select **Wireless headset > Find new devices**.



The **New devices** menu opens, and while the radio searches for the new device, the message **Searching ...** appears.

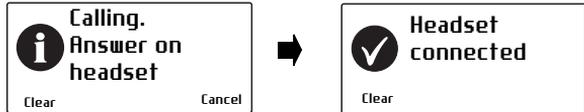
- 4 Select **Connect** when the required headset appears in the list of new devices, then **Yes** to add the headset to My Headsets.



The message **Connecting** appears, while the radio attempts to pair with the headset.



- 5 When the message **Calling. Answer on headset** appears, press the **Answer** button on the headset to confirm the connection.



- 6 Repeat the previous steps to add other headsets.

While the wireless headset is connected, the wireless headset icon  appears on the display.



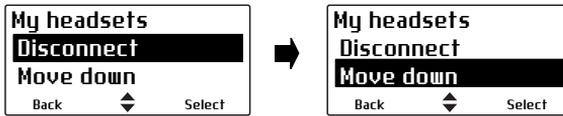
## Managing your headsets

Once a headset has been added to My Headsets, the **Manage headsets** menu item appears under the **Wireless headsets** menu. The **Manage headsets** menu shows the headsets currently in My Headsets, along with the following information:

- **+** This headset is currently connected.
- **a** This headset will be automatically connected.
- **c** The radio will ask you for confirmation before connecting this headset.



Press **Options** to disconnect or connect a headset (**Disconnect**, **Connect**), change the priority order of the headsets (**Move down**), or remove a headset from My Headsets (**Remove**, **Remove all**).



## Disconnecting the headset

To disconnect the headset from your radio:

- Press **Menu** and select **Wireless headset** > **Disconnect**.

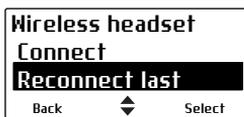
Alternatively, in the **My headsets** menu select **Options** > **Disconnect**.

## Reconnecting the headset

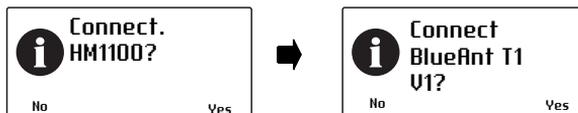
Your radio may be programmed so that each time the headset is turned on, it will automatically reconnect to the radio.

If the radio does not automatically reconnect to the headset:

- 1 On the radio, press **Menu** and select **Wireless headset** > **Reconnect last**.



The radio then prompts you to connect to the headsets in My Headsets, in priority order.



- 2 Select **Yes** to connect, or **No** to choose another headset.

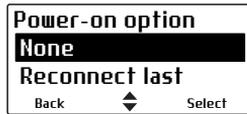
## Changing the way your headset reconnects

You can use the **Power-on option** menu to change the way your radio reconnects with a headset when the radio is first turned on. The choices are:

- **None:** The radio does not connect to any headsets, and you will need to manually connect or reconnect to your headset.
- **Reconnect last:** The radio connects to the previously connected headset.
- **Connect:** The radio will attempt to connect to the headsets in My Headsets, in priority order.

To change the power-on option:

- 1 Press **Menu** and select **Wireless headset > Options > Power-on option**, and change to the required option.



# 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 69](#)), and
- trunked mode (see ["Operating in trunked mode" on page 108](#)).

To change your operating mode:

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



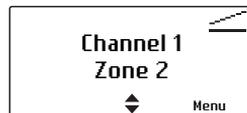
(Depending on how your radio is programmed, you may be able to press a function key to change mode.)

- 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

# Setting and viewing the radio's time and date

Your radio may be programmed to use its internal real-time clock. You may be able to view the time and date via a function key or via the radio menu. Other features may also make use of the radio's time and date by showing entries based on the current clock setting.

To set the time, date, and time format:

 Your radio may be programmed to allow you to set time and date manually, or time and date can be updated using a GPS source.

- 1 Press **Menu** and select **Time and Date** and the corresponding option.
- 2 Follow the prompts on the display.

To view the time and date:

- Press **Menu** and select **Time and Date > View clock** (Depending on how your radio is programmed, you may be able to press a function key to view the time and date).

# 5 Using the address book

Your radio may have a standard address book (with pre-programmed entries) and a personal address book which allows you to maintain your own entries.

The address book only shows entries that are relevant to your radio's current mode of operation (conventional or trunked) and network.

The standard address book may be grouped by roles, but you can also select to display all entries.

The standard address book can also contain entries that are hidden from the radio user. These hidden entries are used to identify incoming calls from known sources.

## **This section covers:**

- [Opening the address book](#)
- [Changing the default address book](#)
- [Navigating the address book](#)
- [Filtering address book lists](#)
- [Maintaining personal address book entries](#)

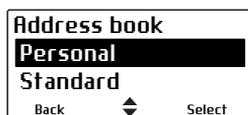
# Opening the address book

To open the address book:

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

 Your radio may be programmed to use the left selection key (**Ad. book**) or a function key to open the address book.

When opening the address book for the first time after turning on the radio or changing the mode, you are asked to select the default address book:



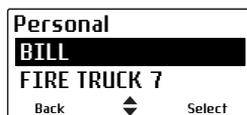
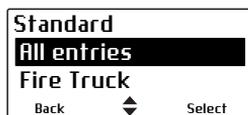
The radio will now default to the selected address book.

# Changing the default address book

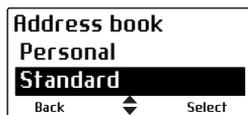
To change the default address book:

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

The standard or personal address book appears.



- 2 Press **Back**.



You can now select the default address book.

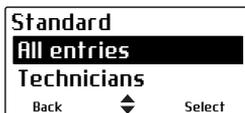
# Navigating the address book

In the standard address book, each entry may have been assigned to a role. Roles are used to categorise entries into logical groups. When opening the standard address book, you can view all entries or filter the entries by a particular role.

The personal address book always lists all entries.

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

In the standard address book, you can now select to view all entries or select to view the entries of a role.



## 2 Scroll to the role you want, and press **Select**.



All entries associated with the selected role are now displayed.

## 3 Scroll to the entry you want.



## 4 Press the PTT key to make a call.

## 5 You can also press **Options** to:

- call the address or select the channel (same as pressing PTT)
- send a status, text message, emergency or priority call (depending on the type of entry)
- view the entry details

- add an entry of the standard address book to your personal address book
- ① If the number of an incoming or dialed call occurs in both the standard and the personal address books, the radio will display the name defined in the personal address book.
- ① When adding an entry from the standard address book to the personal address, the role is added as well.
- add, edit or delete entries in the personal address book, including adding the last call

## Filtering address book lists

You can use this method to select a role or entry if you know its name.

- In the roles or entries list, start typing the name (e.g. for 'Jonathan' press **5** (J) and **6** (o)) until the desired role or entry appears.



# Maintaining personal address book entries

The personal address books allows you to:

- create, edit and delete entries
- add the last caller
- copy entries from the standard address book

The personal address book can contain up to 100 entries.

New address book entries are only relevant to your radio's current mode of operation (conventional or trunked) and network.

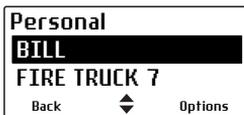
## Creating, editing and deleting personal address book entries

To manually create a personal address book entry:



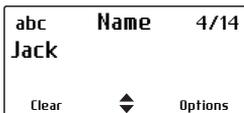
To edit or delete entries, select the corresponding option.

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



If the standard address book appears, press **Back** and switch to the personal address book.

- 2 Press **Options** and select **New entry**.
- 3 Enter the name.

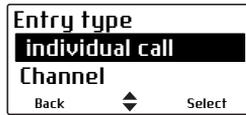


Press **Clear** to correct any mistakes.

Press **Options** and select **Next**.

- 4 In conventional mode, select the **Entry type**.

DMR conventional



Entry type  
individual call  
Channel  
Back Select

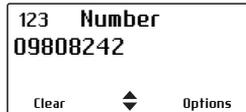
Analog conventional



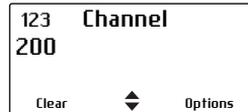
Entry type  
Channel  
Text message ID  
Back Select

Press **Select**.

- 5 Enter the number or channel.



123 Number  
09808242  
Clear Options



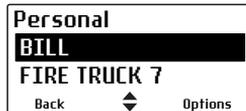
123 Channel  
200  
Clear Options

Press **Options** and select **Save**.

## Adding the last caller to the personal address book

If you received an individual call or a text message, you can add the caller to the personal address book:

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



Personal  
BILL  
FIRE TRUCK 7  
Back Options

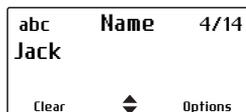
If the standard address book appears, press **Back** and switch to the personal address book.

- 2 Press **Options** and select **Add last call**.



**Add last caller** only appears, if you received an individual call (all modes except analog conventional) or a text message.

- 3 Enter or edit the name.

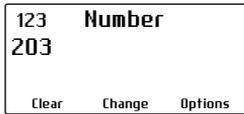


abc Name 4/14  
Jack  
Clear Options

Press **Clear** to correct any mistakes.

Press **Options** and select **Next**.

- 4 In trunked mode, the number of the last call appears on the display.



If you want to edit the number, press **Change**. Otherwise, press **Options** and select **Save**.

- 5 In conventional mode, select the **Entry details** screen appears showing the radio ID of the last caller:

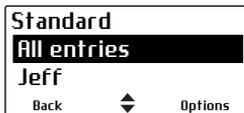


If you want to edit the details, press **Change**. Otherwise, press **Options** and select **Save**.

## Copying a standard address book entry to the personal address book

To copy a standard address book entry to the personal address book:

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



If the personal address book appears, press **Back** and switch to the standard address book.

- 2 Select a standard address book entry (from a role or all entries) and press **Select**.

- ⓘ The entry types Talkgroup and Status Update cannot be copied to the personal address book.



### 3 Press **Options** and select **Add to personal**.

You can now go to the personal address book and change the new entry to make corrections to the name or number.

- ⓘ If the number of an incoming or dialed call occurs in both the standard and the personal address books, the radio will display the name defined in the personal address book.
- ⓘ If the entry from the standard address book has a role assigned, the role will also be copied to the personal address book. In this case the personal address book will display the role in a second line.

# 6 Operating in conventional mode

This section explains how to operate your radio on a conventional network (digital and analog).

## This section covers:

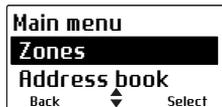
- Selecting a zone
- Selecting a channel
- Selecting a scan or voting group
- Understanding talk-groups
- Making a call
- Making an individual call
- Making a preset call
- Making a call using the address book
- Making a local call
- Making a DTMF patch call
- Making an emergency call
- Setting your status (on analog channels)
- Sending and receiving status messages
- Sending and receiving text messages
- Checking the queue
- Call alert
- Radio check
- Radio monitor
- Radio inhibit and uninhibit
- Resending calls automatically
- Transmitting at low power
- Ending active calls
- Using monitor and squelch override (on analog channels)
- Bypassing the repeater (on analog channels)
- Receiving a call
- Using the radio in different repeater areas
- Scanning a group of channels

# Selecting a zone

Your radio may be programmed to use zones, which are collections of channels and groups. When you select a zone, only the channels and groups assigned to that zone are available.

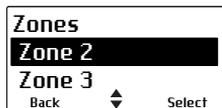
## Using the Main menu:

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

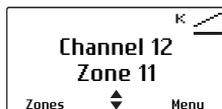


(Depending on how your radio is programmed, you may be able to use the scroll keys or left selection key to select the **Zones** menu.)

- 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.



When changing a zone, the first channel in the new zone is selected.

## Using the 3-way selector (optional):

Rotate the 3-way selector to the zone you want. For all other zones, use the Main menu to select a zone.

-  If you turn the 3-way selector while pressing the PTT key, the zone will change after you release the PTT key.

## Selecting a channel

-  For DMR digital channels, a talkgroup may be assigned to a channel. For more information, see ["Understanding talkgroups" on page 74](#).

### Using the scroll keys:

Your radio may be programmed use the scroll keys to scroll through the channels.

### Using the Main menu:

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



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

### Using the channel selector

Depending on the radio model, the channel selector can be used to either select channels 1 to 16, or continuously scroll through all available channels.

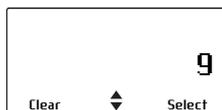
-  If you turn the channel selector while pressing the PTT key, the channel will change after you release the PTT key.

## Dialing a channel

-  This feature is only available for radios with alphanumeric keys.

Dialing a channel may be available from the radio's idle display but is always available while in the **Channels** menu.

- 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 scan or voting group

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

The sections ["Using the radio in different repeater areas" on page 101](#) and ["Scanning a group of channels" on page 102](#) explain how your radio operates once a scan or voting group has been selected.

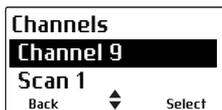
## Using the Main menu

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

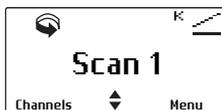


(Depending on how your radio is programmed, you may be able to use a function key, the scroll keys or left selection key to select a group.)

- 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 scan or voting group is now shown on the display. The scanning icon  appears on the display.



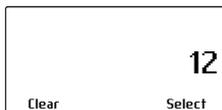
## Dialing a scan or voting group

 This feature is only available for radios with alphanumeric keys.

Dialing a scan or voting group may be available from the radio's idle display but is always available while in the **Channels** menu.

To dial the group number from the default display:

- 1 Dial the number associated with the scan or voting group using the alphanumeric keys.



- 2 Press **Select**, and the programmed scan or voting group is now shown on the display. The scanning icon  appears on the display.

# Understanding talkgroups

This feature is available for DMR 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 public safety members in other regions. 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.

Talkgroups can be assigned to each channel, to allow a users to:

- initiate a call to a talkgroup by pressing PTT
- listen and respond to conversations on none, one or multiple talkgroups

The channel may be named to reflect its talkgroup association. When making a call, the talkgroup name will appear.

Your radio may also be programmed to show the **Talkgroups** menu which allows you to change the talkgroup you want to call and listen to on the current channel.

# Making a call

The radio's behavior when making a call changes depending on the type of channel selected.

Channels can be programmed for:

- DMR calls over a DMR network
- DMR calls between radios
- analog calls between radios

If you are on a channel programmed for calls over the DMR network, the green LED indicates whether the network is active. By default, the network is inactive (green LED is off).

Initiating a call will activate the network which will remain active for a programmed time. While the network is active (green LED glows), you can complete the call and start a new call.

If you are on a channel programmed for DMR or analog calls between radios (without a radio network), the green LED indicates activity on the channel, i.e. whether someone is talking.

For all DMR calls (over the network or radio to radio), you may hear a go-ahead double-beep after pressing the PTT key (if programmed).

The radio may be programmed to ring or beep when a new DMR call is received.

DMR calls have an inactivity timeout. If a pause in the conversation exceeds the timeout, the next press of the PTT key will establish a new call.

To make 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 On channels programmed for DMR or analog calls between radios (without a radio network): Check that the channel is clear. If the LED is glowing green, the channel is busy and you may not be able to transmit.
- 3 Hold the radio so that the microphone is about one inch (2.5 cm) from your mouth and press the PTT key to transmit.
- 4 On a DMR channel: Wait for the go-ahead double-beep (if programmed).
- 5 Speak clearly into the microphone and release the PTT key when you have finished talking.

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

-  If you turn the channel selector while pressing the PTT key, the channel will change after you release the PTT key.

## 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 message **Transmit Timeout Imminent** appears on 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

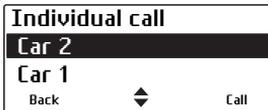
This feature is available for DMR digital channels only.

To make a call to one person:

**1 Press **Menu** and select **Individual call**.**

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

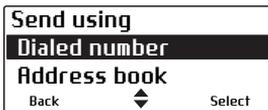
**2 If no address book is configured, a preconfigured list appears. The person to whom you last made an individual call is highlighted.**



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

(Alternatively, you can press **Call** and then PTT.)

**3 If an address book is configured, you can select to either dial a number or show the address book.**



# Making a preset call

Your radio may be programmed to use a function key to initiate a call to an individual or group that may or may not be part of your current talkgroup (e.g. the dispatcher).

# Making a call using the address book

The **Address book** menu has a programmed list of calls.

When on a DMR conventional channel, the address book will show the DMR entries available on the current channel as well as all analog entries. When on an analog channel, the address book will show all analog entries. When selecting an analog entry, the radio will change channel if necessary.

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. For more information, see ["Using the address book" on page 61](#).

- 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 **Options** and **Call**, or press PTT.

The call details appear on the display, the LED glows red, and  $\text{Ⓜ}$  appears on the display.

## Making a local call

Each channel on your radio may have one or more local calls programmed.

- 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 LED glows red, and  appears on the display.

## Dialing a radio call

 This feature is only available for radios with alphanumeric keys.

To dial a call to another radio, or group of radios (analog only):

1 Select the required channel.

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

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

On an analog channel, a series of **X** and **S** characters may appear, prompting you to dial over them.

3 Dial the number using the alphanumeric keys.

 On an analog channel, 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 For DMR conventional calls, press the PTT key to make the call immediately. You can also press **Call** and then PTT.

For analog calls, press **Send**.

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

On an analog channel, when the called party receives your call, the message **Ack received** may appear on the display.

# Making a phone call

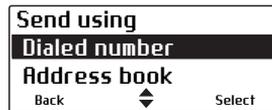
This feature is available for DMR digital channels only.

You may be able to connect directly to a telephone network by dialing the number yourself or using preset dialing sequences.

- 1 Select the required channel.
- 2 Press **Menu** and select **Phone call**.



- 3 If an address book is configured, you can select to either dial a number or show the address book.



Otherwise you can only dial a number.



- 4 Press **Call**.

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

# Making a DTMF patch call

You may be able use DTMF patch dialing to connect to a telephone network or signal another device by dialing the number yourself or using preset dialing sequences.

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 78](#))
- use your address book (see ["Making a call using the address book" on page 77](#))
- dial DTMF tones (overdialing)

## 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.

### Dialing DTMF tones (overdialing)

Your radio may be programmed to allow dialing of DTMF tones using the numeric keypad while on a channel or in a call. The dialing may be either sent out immediately (as you type) or sent after pressing **Send**.

## 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 automatically 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.

# Setting your status (on analog channels)

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 call has been programmed with the same status messages, it will decode and display your status. The status indicates your current activity or location, such as “en route” or “at lunch”.

To change your 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.

# Sending and receiving 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.

Status messages can also be used to control external devices.

## Sending a status message

- 1 Press **Menu** and select **Services > Status update**.
- 2 In the **Status update** menu, scroll through the list of status messages until the message you want appears.



- 3 When you have chosen a message, press **Select**.



Depending on how radio is programmed, the message may be sent directly to a preconfigured radio or group, or you are presented with options to select a destination.

The call details appear on the display.

## 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 89.

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

Your radio may be programmed to automatically view status messages on receipt.

If the radio is not programmed for call queuing, incoming status messages are displayed briefly.

# Sending and receiving 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

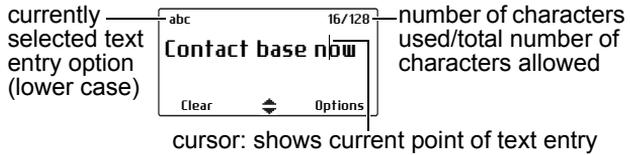
When the alphanumeric keys are used to enter a text message, they have special functions.

- 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		P Q R S 7
	A B C 2		T U V 8
	D E F 3		W X Y Z 9
	G H I 4		space 0
	J K L 5		
	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 **Services** > **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.



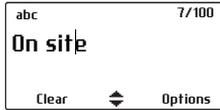
- 4 Press **Send** to send the message, or **Edit** to change the message.

Pressing  will place the cursor at the start of the message. Pressing  will place the cursor at the end of the message.

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

## Creating a new text message

- 1 Press **Menu** and select **Services > Text message > New message**.
- 2 Use the alphanumeric keys to add characters and the **Clear** key to delete them. Use the scroll keys to move through the characters.



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

If you decide to cancel out of editing a text message or receive a call while editing, the current draft will be saved and is available for editing later.

## Editing a draft text message

- 1 Press **Menu** and select **Services > Text message > Edit message**.
- The last sent or edited text message will appear.
- 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**.

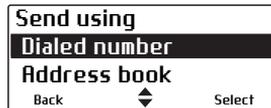
If you decide to cancel out of editing a text message or receive a call while editing, the current draft will be saved and is available for editing later.

## 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.
- 3 Select **Send** and press **Select**.
- 4 If an address book is configured, you can select to either dial a number or show the address book.



Otherwise a preset list of radios will appear.



The call details appear on the display.

## 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 89.

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

Your radio may be programmed to automatically view text messages on receipt.

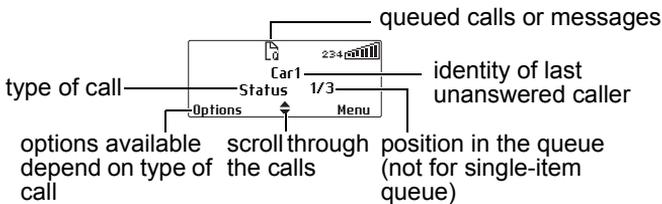
If the radio is not programmed for call queuing, incoming text messages will not be stored or displayed.

# Checking the queue

If you have missed an incoming call, status message, call alert 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.

Your radio may be also programmed to automatically view the latest status update or text message on receipt. Press **Back** to exit this view or **Delete**.

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 for a period of time.

The notification starts again when the radio is restarted or another call is received.

## 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, **Reply** to reply, or **Call** to return the call.

Your radio may be programmed to automatically view status updates and text messages on receipt.

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

## Call alert

This feature is available for DMR digital channels only.

You can let another radio user know that you want to talk to them by sending them a call alert page. When the other radio user receives the call alert page, they can call you back when it is convenient.

If you are on a DMR conventional channel, you can send a call alert to any other radio on the same DMR conventional channel.

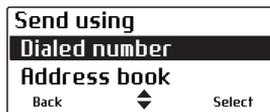
To send a call alert page:

- 1 Press **Menu** and select **Services > Call alert**.



You can also send a call alert from the **Options > Services** menu of an address book entry.

- 2 If an address book is configured, you can select to either dial a number or show the address book.



Otherwise a preset list of radios will appear.



- 3 Select the radio you want to page.
- 4 Press **Send to**.

A message appears in the display.



The LED glows red and a message will be displayed to advise you whether the call alert has been sent successfully or not.

If an acknowledgement is not received from the recipient's radio, you will have the option of either canceling or resending the request.

## Answering a call alert page

If you receive a call alert page from another radio user, the message **Call alert** and the name of the caller appears on the display.

Select **Call** to return the page or **Clear** to delete it. If you miss the call alert page, a call alert entry is added to the queue. See ["Checking the queue" on page 89](#).

# Radio check

This feature is available for DMR digital channels only.

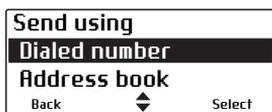
If you want to find out whether a particular radio is available on the same DMR conventional channel, you can use the radio check feature. This sends a radio check message to the radio unit you have specified.

- 1 Press **Menu** and select **Services > Radio check**.

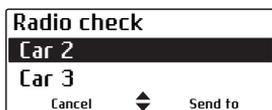


You can also check a radio from the **Options** menu of its address book entry.

- 2 If an address book is configured, you can select to either dial a number or show the address book.



Otherwise a preset list of radios will appear.



- 3 Scroll to the radio you want to check.
- 4 Press **Send to**.

The LED glows red and a message showing the destination appears in the display.



If the radio is available on the system, an acknowledgement message is displayed.



If an acknowledgement is not received from the recipient's radio, you will have the option of either canceling or resending the request.

## Radio monitor

The radio unit monitor feature can be used when you are concerned about the safety of a radio user on the same DMR conventional channel. When you send a radio-unit monitor request to a radio, it calls you back without giving any indication that it is making a call. You can hear any activity near the radio for up to 120 seconds.

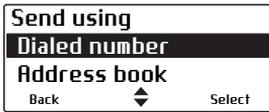
To send a radio unit monitor request:

- 1 Press **Menu** and select **Services > Radio monitor**.

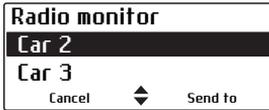


You can also send a radio unit monitor request from the **Options** menu of an address book entry.

- 2 If an address book is configured, you can select to either dial a number or show the address book.



Otherwise a preset list of radios will appear.



- 3 Scroll to the radio you want to monitor.
- 4 Press **Send to**.

The LED glows red and a message appears in the display.



If the other radio has received your request, it will now call you, so that you can monitor activity near the radio.



If an acknowledgement is not received from the recipient's radio, you will have the option of either canceling or resending the request.

# Radio inhibit and uninhibit



**Warning** When a radio is immobilized ('inhibited'), the encryption keys may be automatically deleted from the radio.

If you want to inhibit another radio on the same DMR conventional channel, you can use the radio inhibit feature. This feature is also known as 'stun'.

On the inhibited radio, **Radio stunned** will appear briefly on the display, and the radio will return to the idle display. The radio remains inoperable even if it is turned off and then on again.

The radio cannot return to normal operation until it receives an uninhibit request. This is also known as 'revive'.

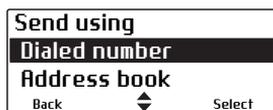
To send a radio inhibit request

- 1 Press **Menu** and select **Services > Radio inhibit**.



You can also inhibit another radio from the **Options** menu of its address book entry.

- 2 If an address book is configured, you can select to either dial a number or show the address book.



Otherwise a preset list of radios will appear.



- 3 Scroll to the radio you wish to make inoperable.
- 4 Press **Send to**.

The LED glows red and a message appears in the display.



If the radio has been successfully immobilized, an acknowledgement message is displayed.

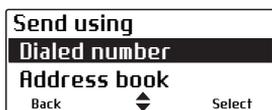


To send a radio uninhibit request:

- 1 Press **Menu** and select **Services > Radio uninhibit**.

 You can also uninhibit another radio from the **Options** menu of its address book entry.

- 2 If an address book is configured, you can select to either dial a number or show the address book.

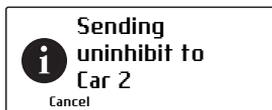


Otherwise a preset list of radios will appear.



- 3 Scroll to the radio you wish to make operable.
- 4 Press **Send to**.

The LED glows red and a message appears in the display.



If the radio has been successfully returned to operation, an acknowledgement message is displayed.



The uninhibited radio will briefly display **Radio revived**.

If an acknowledgement is not received from the recipient's radio, you will have the option of either canceling or resending the request.

## Resending calls automatically

On an analog channel, your radio may have been programmed to resend individual and group calls when transmission is refused because the channel is busy.

There are two automatic callback features:

- deferred calling
- no acknowledgement retries

### Deferred calling

When you attempt to make a call on a channel that is busy, the radio can store and send the call once the channel is free. The radio gives a low-pitched beep if the channel is busy, and then waits until the channel is free to retry the call.

-  A deferred calling time limit may have been configured. Once the time limit has expired the radio will no longer attempt to retry the call.

Any user interaction (such as pressing PTT) will cancel a deferred call.

## No acknowledgement retries

When you send a call and there is no reply, the call is resent.

Any user interaction (such as pressing PTT) will cancel a call that is being resent.

## Transmitting at low power

If you are using your radio in conditions where signal strength is high, you can extend the shift life of your battery by transmitting at low power.

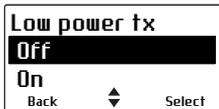
When low power transmit is turned on,  appears on the display and calls are made at low power rather than at the programmed power setting.

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



The message **Low power tx activated** (or **deactivated**) appears on 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 clear-down.

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

### Using the function key programmed for reset monitor/call clear-down 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.

# Using monitor and squelch override (on analog channels)

The monitor function 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.

The squelch override function lets the radio user override the squelch (carrier) mute and hear all noise on a channel, including weak signals that are below the programmed squelch threshold.

To turn 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 LED slowly flashes green and the monitor icon  appears in the display.

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

To turn squelch on and off:

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

-  Squelch is often programmed as a long keypress of the same function key that turns monitor on and off.

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

This allows you to hear even faint and noisy signals. While squelch override is on, the LED flashes green, and the squelch override icon  appears on the display.

-  Press the monitor function key again to return the radio to a quiet state.



Squelch cannot be overridden when the radio is scanning.

## Bypassing the repeater (on analog channels)

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

## 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.

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

The section ["Selecting a scan or voting group" on page 72](#) 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 scanning icon  appears on the display. When activity is detected on a channel in the scan group, the radio stops on that channel. The radio unmutes and you can hear the call. Scanning resumes once the channel is no longer busy.

The section ["Selecting a scan or voting group" on page 72](#) 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 Press the PTT key to transmit. If background scan is active, your radio will now call the currently selected channel.
- 2 If standard scan is active and there has been no recent activity on the channel, 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.
- 3 When the called party responds, proceed with your conversation.

### **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 scan or voting group" on page 72](#).

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  $T_x$  icon.

1 Select the group. See ["Selecting a scan or voting group" on page 72](#).

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  $T_x$  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 scan or voting group](#)" on page 72.

**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<sub>1</sub> or P<sub>2</sub> 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 <sub>x</sub>	This channel is used to transmit on when there has been no recent activity. You cannot delete this channel (it will not appear under <b>Delete channel</b> ).
P <sub>1</sub>	This channel is the group's first priority channel. You cannot delete this channel (it will not appear under <b>Delete channel</b> ).
P <sub>2</sub>	This channel is the group's second priority channel. You cannot delete this channel (it will not appear under <b>Delete channel</b> ).
+	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.

<b>Message</b>	<b>Meaning</b>
<b>Scanning not on</b>	You cannot use nuisance delete to temporarily delete a channel from a group, as there is no group currently selected.
<b>No channel captured</b>	You cannot use nuisance delete to temporarily delete a channel from the group, as there is no channel currently captured.
<b>Not enough channels in group</b>	You cannot use nuisance delete to temporarily delete the channel from the group, as the captured channel is the last remaining group member.
<b>Cannot delete channel</b>	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.
<b>Cannot delete priority chan</b>	You cannot use nuisance delete to temporarily delete the channel from the group, as the captured channel is a priority channel.
<b>Only two channels in group</b>	You cannot delete a channel from the group, as there would be only one group member left.
<b>No items in list</b>	The action you are attempting is not allowed. Either: <ul style="list-style-type: none"> <li>■ the group does not have a preset transmit channel or priority channels programmed, or</li> <li>■ you have added all the channels in the zone to the current group.</li> </ul>
<b>Group full</b>	You cannot add any more channels to the group, as the maximum number of members (50) has been reached.

# 7 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 call using the address book](#)
- [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](#)
- [Switching to conventional channels or conventional groups](#)

# Checking that your network is available

Check that the orange LED is flashing and the network icon "F" appears on 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 on other sites.

## Changing your network

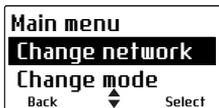
Your radio may be programmed to operate in up to four completely separate trunking networks, either DMR (digital), MPT (analog) or both (dual mode). You may wish to change networks because you are out of the network coverage area, or you need to have access to another trunking network.

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 113](#).

### 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 call using the address book

The **Address book** menu programmed for your radio may contain calls to other radios, to PABX extensions or to PSTN numbers.

Address book calls may also be used to send status information, such as “at lunch” or “on site”. For more information, see ["Using the address book" on page 61](#).

- 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 **Options** and **Call**, or press PTT.  
The call details appear on the display, the LED glows red, and  appears on the display.

## 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.

It may be possible to dial preset calls, if preset calls are programmed for your radio and 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 **Cancel**.

## About trunked zones and workgroups

Trunked zones and workgroups are used to manage the calls on the trunked system. Zones, if used, 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, left selection key, 3-way selector, or channel selector 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 the network icon  $\Psi$  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, left selection key, 3-way selector, or channel selector 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 the network icon  $\Psi$  appears on the display.

## Making a call to a workgroup

Different types of calls may be associated with your workgroups. These calls can be any types of calls.

To make a call to a workgroup:

- 1 Select the required zone. See ["Selecting a zone" on page 113](#).
- 2 Select the required workgroup. See ["Selecting a workgroup" on page 113](#).
- 3 Press the PTT key, and a call to that workgroup is made.

## Dialing a workgroup call



This feature is only available for radios with alphanumeric keys.

It may be possible to dial workgroup calls, if you know the number associated with the workgroup.

- 1 Dial **w**, where **w** is the number of the workgroup.

If your workgroup 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 workgroup call number 23.



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

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

## 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 function keys

You may be able to use function keys to go to your homegroup or to toggle between your homegroup, and the currently selected zone and workgroup.

- Press the function key programmed to go to your homegroup.

The radio now shows your homegroup on the default display.

- Press the function key programmed to toggle between your homegroup and the currently selected zone and workgroup.

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



The homegroup icon only appears if you use a function key to toggle between your homegroup and the currently selected zone and workgroup.

## 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 turn scanning on or off.)

- 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:

- use a function key programmed for emergency mode
- make an emergency call using
  - the address book (see ["Making a call using the address book" on page 110](#))
  - a workgroup (see ["Making a call to a workgroup" on page 113](#))
  - a preset (see ["Making a preset call" on page 111](#))
- dial the emergency call using the alphanumeric keys

## Dialing an emergency call

 Dialing 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

 Dialing 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 **Cancel**.

## Dialing a PSTN number

 Dialing 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 **Cancel**.

# Receiving a call

When you receive a call, your radio may:

- automatically accept the call. The  icon appears on the display. The radio may also be programmed to beep or ring. In this case, the caller will usually talk first.
- ring like a telephone. Press **Answer** to accept the call. The radio gives a beep and the  icon appears in the display. You may also be able to accept the call if you press the PTT key. In this case, you will usually talk first.

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

- 1 Hold the microphone about 2 inches (5cm) 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 LED glows red and  appears in the display.

- 4 End the call by pressing **End**. 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.

## Transmit timer

Your radio may have a transmit timer that limits the amount of time you can transmit continuously.

When the transmit timer is about to expire, the message **Transmit timeout imminent** appears in the display, the LED flashes red, and the radio gives three beeps.

If the transmit timer times out, the call clears down.

## 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 may 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

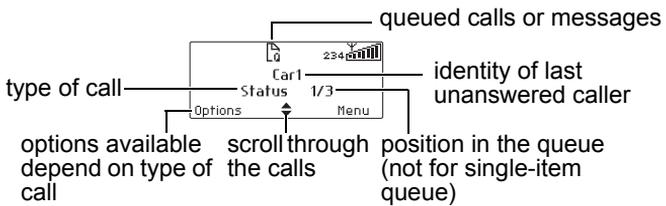
If you have missed an incoming call or have received a status message or text message, it may be stored in the queue. Information about the missed call or message is shown on the display and the queue icon  appears.

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

Your radio may also be programmed to automatically view the latest status or text message on receipt.

Press **Back** to exit this view or **Delete**.

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 for a period of time.

The notification starts again when the radio is restarted or another call is received.

## 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, **Reply** to reply, or **Call** to return the call.

Your radio may be programmed to automatically view status updates and text messages on receipt.

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 between “unanswered” and “full”.

In “unanswered” queuing, incoming individual voice calls are only queued if unanswered.

In “full” queuing, incoming individual voice calls are queued immediately and you don't get an option to answer the call.

In both cases, all status and text messages are queued immediately.

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

To activate “full” 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” 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.

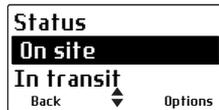
The message **Call queuing deactivated** appears.

# 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 **Send** 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.
  -  If you select **Address book** or **Preset**, scroll to the entry you want and press **Select**.
- 3 Press **Select**.

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

## 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 or workgroup. See ["Dialing a preset call" on page 111](#) or ["Dialing a workgroup call" on page 114](#) 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 **Cancel**.

## 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 122](#).

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

Your radio may be programmed to automatically view status messages on receipt.

If the radio is not programmed for call queuing, incoming status messages will not be stored or displayed.

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

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



cursor: shows current point of text entry

# 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.

Pressing  will place the cursor at the start of the message. Pressing  will place the cursor at the end of the message. 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**.
- 2 Use the alphanumeric keys to add characters and the **Clear** key to delete them. Use the scroll keys to move through the characters.



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

If you decide to cancel out of editing a text message or receive a call while editing, the current draft will be saved and is available for editing later.

## Editing a draft text message

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

The last sent or edited text message will appear.

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

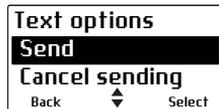


- 3 When the message is complete, press **Options** and select **Send**.

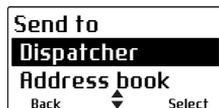
If you decide to cancel out of editing a text message or receive a call while editing, the current draft will be saved and is available for editing later.

## Sending a text message

- 1 When you have finished editing the message, press **Options** and the **Text options** menu opens.



- 2 In the **Text options** menu, select **Send**.
- 3 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.

 If you select **Address book** or **Preset**, scroll to the entry you want and press **Select**.

#### 4 Press **Select**.

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

## 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 122.

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

Your radio may be programmed to automatically view text messages on receipt.

If the radio is not programmed for call queuing, incoming text messages will not be stored or displayed.

## 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.

## Switching 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.

# 8 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](#)
- [DMR 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 300	Fleet 3078	Radio unit number 234
---------------	---------------	--------------------------

# MPT 1343 dialed calls

The following table summarizes the way you dial calls to other radios and groups of radios using the MPT 1343 dialing scheme, 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 <b>23</b> in the same fleet as you	Radio unit number 23      #
Radio <b>234</b> in the same fleet as you	Radio unit number 234      #
Radio <b>23</b> in fleet <b>3078</b> with the same prefix as you	Fleet 3078      Radio unit number 23      #
Radio <b>234</b> in fleet <b>3078</b> with the same prefix as you	Fleet 3078      Radio unit number 234      #
Radio <b>234</b> in fleet <b>3078</b> with a different prefix to you ( <b>300</b> )	Prefix 300      Fleet 3078      Radio unit number 234      #
Group <b>92</b> in the same fleet as you	Group 92      #
Group <b>923</b> in the same fleet as you	Group 923      #

# DMR dialing

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

- a three-digit prefix
- a two-digit fleet number, and
- a three-digit unit number

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

## Finding your radio's DMR number

To find your radio's full DMR number:

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

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

The number is in the form:

Prefix 330	Fleet 78	Radio unit number 542
---------------	-------------	--------------------------

## DMR dialed calls

The following table summarizes the way you dial calls to other radios and groups of radios using the DMR dialing scheme, 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 <b>332</b> in the same fleet as you	Radio unit number 332      #
Radio <b>521</b> in the same fleet as you	Radio unit number 521      #
Radio <b>332</b> in fleet <b>78</b> with the same prefix as you	Fleet 78      Radio unit number 332      #
Radio <b>521</b> in fleet <b>78</b> with the same prefix as you	Fleet 78      Radio unit number 521      #
Radio <b>332</b> in fleet <b>78</b> with a different prefix to you ( <b>350</b> )	Prefix 350      Fleet 78      Radio unit number 332      #
Group <b>990</b> in the same fleet as you	Group 990      #
Group <b>923</b> 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 7	Prefix 34	Fleet 2	Radio unit number 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 <b>23</b> in the same fleet as you	Radio unit number 23    #
Group <b>923</b> in the same fleet as you	Group 923    #
<b>Large fleet:</b>	
Call to radio <b>234</b> in fleet <b>1</b> with the same prefix as you	Lead 7    Fleet 1    Radio unit number 234    #
Call to radio <b>235</b> in fleet <b>2</b> with a different prefix to you ( <b>32</b> )	Lead 7    Prefix 32    Fleet 2    Radio unit number 235    #
Call to radio <b>236</b> in fleet <b>2</b> with the same lead and prefix <sup>1</sup>	Fleet 2    Radio unit number 236    #
<b>Small fleet:</b>	
Call to radio <b>23</b> in fleet <b>51</b> with the same prefix as you	Lead 7    Fleet 51    Radio unit number 23    #
Call to radio <b>24</b> in fleet <b>52</b> with a different prefix to you ( <b>126</b> )	Lead 7    Prefix 126    Fleet 52    Radio unit number 24    #
Call to radio <b>25</b> in fleet <b>53</b> with the same lead and prefix <sup>1</sup>	Fleet 53    Radio unit number 25    #
<b>Mini fleet:</b>	
Call to radio <b>23</b> in fleet <b>80</b> with the same prefix as you	Lead 7, 8 or 9    Fleet 80    Radio unit number 23    #
Call to radio <b>24</b> in fleet <b>81</b> with a different prefix to you ( <b>3</b> )	Lead 7, 8 or 9    Prefix 3    Fleet 81    Radio unit number 24    #
Call to radio <b>25</b> in fleet <b>81</b> with the same lead and prefix <sup>1</sup>	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#	Request base dispatcher to call you back	
#0#	Cancel request	
*0*n#	Request another dispatcher to call you back	*0*234#
#0*n#	Cancel request	#0*234#
*0s*n#	Status call to radio <b>n</b> ( <b>s</b> = status 0 to 31, MPT, or 0 to 127, DMR)	*015*23#
*0s#	Status call to dispatcher	*015#
g#	Conference call to group <b>g</b>	92#
*11*g#	Broadcast call to group <b>g</b>	*11*92#
*41*n#	Divert own calls to radio <b>n</b>	*41*23#
#41#	Cancel divert	
*41*0n#	Divert own calls to PSTN <b>n</b>	*41*03456798#
#41#	Cancel divert	
*44*n*m# <sup>1</sup>	Divert 3rd party calls <b>n</b> to <b>m</b>	*44*23*21#
44*n# <sup>1</sup>	Cancel divert of 3rd party calls	#44*23#
*441*m#	Divert of speech calls to <b>m</b>	*441*21#
#441#	Cancel divert of speech calls	#441#
*442*m#	Divert of packet data calls to <b>m</b>	*442*21#
#442#	Cancel divert of packet data calls	#442#
*451#	Cancel incoming call diversions (speech only)	
*452#	Cancel incoming call diversions (packet data only)	
*453# <sup>2</sup>	Cancel incoming call diversions (SDM only)	
*454# <sup>2</sup>	Cancel incoming call diversions (status only)	
*46# <sup>3</sup>	Toggle encryption	
*461# <sup>3</sup>	Turn encryption off	

**\*... # functions**

Dialing code	Functions	Example
<b>*462#</b> <sup>3</sup>	Turn encryption on	
<b>*47#</b> <sup>3</sup>	Display the current network and your full radio number	
<b>*48#</b>	Queue incoming calls	
<b>#48#</b>	Cancel queue	
<b>*49#</b>	Do not disturb	
<b>#49#</b>	Cancel do not disturb	
<b>*491#</b>	DMR: Do not disturb (SDM calls) MPT: Do not disturb (voice calls only)	
<b>#491#</b>	DMR: Cancel do not disturb (SDM calls) MPT: Cancel do not disturb (voice calls only)	
<b>*492#</b>	Do not disturb—data calls only	
<b>#492#</b>	Cancel do not disturb—data calls only	
<b>*50*n#</b> <sup>1</sup>	Select channel <b>n</b> (site-select diagnostic function, enabled during programming)	
<b>*50*xnnnnn#</b> <sup>2</sup>	Select channel <b>xnnnnn</b> , where <b>x</b> is the logical channel and <b>nnnnn</b> is the physical channel (site-select diagnostic function, enabled during programming)	
<b>#50#</b>	Resume normal channel hunting (site-select diagnostic function, enabled during programming)	
<b>*700#</b>	Display the current network and your full radio number	
<b>*70n#</b>	Change to network <b>n</b> (1 to 4)	<b>*702#</b>
<b>*8*n#</b> <sup>4</sup>	Priority call (highest) to radio <b>n</b>	<b>*8*23#</b>
<b>*8*g#</b> <sup>4</sup>	Priority conference call (highest) to group <b>g</b>	<b>*8*923#</b>
<b>*81*n#</b> <sup>4</sup>	Priority call (highest) to radio <b>n</b>	<b>*81*23#</b>
<b>*81*g#</b> <sup>4</sup>	Priority conference call (highest) to group <b>g</b>	<b>*81*923#</b>
<b>*82*n#</b> <sup>4</sup>	Priority call (high) to radio <b>n</b>	<b>*82*23#</b>
<b>*82*g#</b> <sup>4</sup>	Priority conference call (high) to group <b>g</b>	<b>*82*923#</b>
<b>*83*n#</b> <sup>4</sup>	Priority call (medium) to radio <b>n</b>	<b>*83*23#</b>
<b>*83*g#</b> <sup>4</sup>	Priority conference call (medium) to group <b>g</b>	<b>*83*923#</b>
<b>*9*n#</b>	Emergency call to radio <b>n</b>	<b>*9*23#</b>
<b>*9*g#</b>	Emergency conference call to group <b>g</b>	<b>*9*923#</b>
<b>**n#</b> <sup>1</sup>	Abbreviated dialed codes (1-49)	<b>**3#</b>

1. MPT only.
2. DMR only.
3. DMR dialing scheme only
4. 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.

# 9 Location services

This section explains how to use the 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 location information](#)
- [About location statuses](#)
- [Viewing location information](#)

# About location information

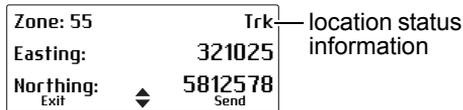
While you may be able to view your location information on analog channels, sending location information is only available for digital channels.

If your radio is connected to the receiver of a satellite navigation system, you can view 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 or receive and log location information.

# About location statuses

In the **Own location** screen, location status information appears at the top right of the display.



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

Your radio configuration may include the **Send** option. This option is a digital feature, and is only available on digital channels.

# Viewing location information

- 1 Press **Menu** and select **Location Svs > Own location**.

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

Location information is now shown in the display, if it is available.

-  Your radio may be programmed to show any of these displays, in any order.
-  Immediately after the radio is turned on, location reporting is set to all zeros, until the first satellite fix is achieved.

- 2 Use the scroll keys to scroll through the **Own location** displays.

<b>Zone: 59</b>	Trk
Easting: 321025	
Northing: 5812578	
Exit	◆

- Zone: UTM zone number
- Easting and Northing: Raw Universal Transverse Mercator (UTM) Cartesian coordinates

<b>Location</b>	Trk
S 43°29'00.0"	
E 172°33'05.0"	
Exit	◆

- Latitude and longitude in degrees, minutes and decimal seconds

<b>Location</b>	Trk
S 43°29.000"	
E 172°33.083"	
Exit	◆

- Latitude and longitude in degrees, minutes and decimal minutes (to three decimal places)

<b>Location</b>	Trk
S 43.488326°	
E 172.563255°	
Exit	◆

- Latitude and longitude in decimal degrees

<b>Location</b>	Trk
Course: 010°	
Speed: 045 km/h	
Exit	◆

- The radio's current course and speed

<b>Location</b>	Trk
UTC time:	23:36:20
Exit	◆

- UTC: Coordinated Universal Time 24 hour clock

<b>Location</b>	Trk
Altitude:	34m
Exit	◆

- The radio's altitude in metres above or below mean sea level

<b>MGA:</b>	Trk
Zone:	29M
Exit	◆
	PJ264837

- MGA: Map Grid of Australia coordinate system
- Zone: UTM zone number
- PJ: The grid square
- 264837: Easting and Northing to the nearest 100m

<b>MGRS:</b>	Trk
59G PM	
26406 83789	
Exit	◆

- MGRS: Military Grid Reference System
- 59G: UTM zone and band
- PM: The grid square
- 26406 83789: Easting and Northing to the nearest 1 m

### 3 Press **Exit** to exit the location display.

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

# 10 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 for a predetermined period of time:

- the radio has been tilted by more than 60 degrees (man down)
- the radio has not moved
- there has been no user activity



Your radio may be programmed to respond to a combination of these events.

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.

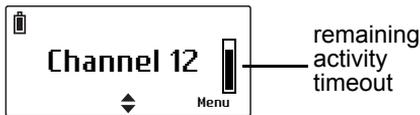
# Activating loneworker monitoring

- 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.

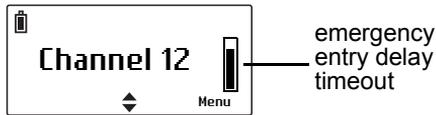


- Press any key.
- Move the radio
- If using the man down feature, restore the radio to an upright position.

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 on to cancel the loneworker alarm.



The emergency action can be delayed only once.

# 11 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.

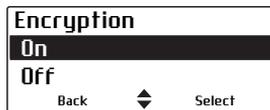
## Encrypting calls

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 LED glows red 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.

# 12 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:**

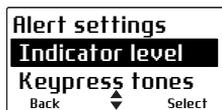
- [Changing the volume of all audible indicators](#)
- [Changing the volume of keypress tones](#)
- [Changing to quiet operation](#)
- [Changing to silent operation](#)
- [Turning on backlighting](#)
- [Adjusting the display contrast](#)

# 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.)

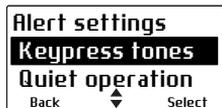
- 2 Scroll to **High** (or **Low**) and press **Select**.

# 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**.



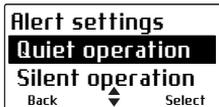
- 2 Scroll to either **Off**, **Low** or **High** and press **Select**.

# 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.)

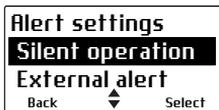
- 2 Scroll to **On** (or **Off**) and press **Select**.

# 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.)

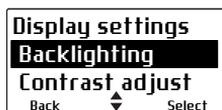
While silent operation is on, the  icon appears in the display.

# 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 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.

# 13 Charging and caring for batteries

This section describes how to charge your Tait radio battery as well as care for it, to ensure safe operation, maximum performance and prolonged battery life.

## **This section covers:**

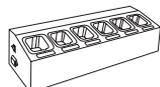
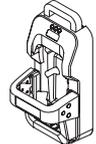
- [About the chargers](#)
- [6-way charger safety information](#)
- [Special conditions when using IS/NI radios](#)
- [Before using the charger](#)
- [Charging temperatures](#)
- [Leaving the battery on charge](#)
- [Receiving calls while charging \(not for battery-only vehicle charger\)](#)
- [Low battery warning](#)
- [Inserting the radio into the vehicle charger](#)
- [Charging a battery for the first time](#)
- [Charging a battery](#)
- [LED behavior](#)
- [Removing the battery from the charger](#)
- [Maintaining battery life and performance](#)
- [Storing batteries](#)
- [Disposing of batteries](#)

# About the chargers

Unless otherwise indicated, the charging advice and instructions in this document apply to all chargers.

The following chargers are available for your Tait radios and batteries:

- i Chargers for intrinsically safe (IS) and non-incendive (NI) batteries contain circuitry for the protection of IS/NI batteries. These chargers are marked with an IS circle logo . IS/NI radios are also marked with an IS circle logo . IS/NI batteries are identified on their labels.

Part number range	Designation	
T03-00012-xxxx	Desktop charger for non-IS/NI batteries	
T03-22011-Bxxx	Desktop charger for IS/NI batteries	
T03-00013-xxxx	6-way charger for non-IS/NI batteries	
T03-22011-Cxxx	6-way charger for IS/NI batteries	
T03-00014-AAAA	Battery-only vehicle charger for non-IS/NI batteries	
T03-00014-Bxxx	Vehicle charger for non-IS/NI batteries	
T03-22011-Dxxx	Vehicle charger for IS/NI batteries	

IS/NI batteries can only be charged in the chargers for IS/NI batteries. However, all chargers can charge non-IS/NI batteries.

## 6-way charger safety information



**Warning** This device must be connected to an earthed mains socket-outlet.

**Norsk (no):** Apparatet må tilkoples jordet stikkontakt.

**Suomi (fi):** Laite on liitettävä suojamaadoitus-koskettimilla varustettuun pistorasiaan.

**Svenska (sv):** Apparatens skall anslutas till jordat uttag.

## Special conditions when using IS/NI radios

Intrinsically safe (IS) and non-incendive (NI) radios and accessories are certified by a third party to be safe to use in particular hazardous locations, or in potentially explosive atmospheres.



**Warning Explosion hazard!** Use only a Tait-supplied, IS/NI approved battery and charger with an IS/NI radio. Fitting a battery or using a charger that is not IS/NI-approved creates a risk of explosion which could cause serious injury or death. For an up-to-date list of approved accessories, contact your regional Tait office.



**Warning Explosion hazard!** Do not charge the battery in a hazardous location. An explosion could cause serious injury or death.

For detailed information about IS/NI radios and accessories, refer to the Safety and Compliance Information provided with the radio:

- MPD-00013-xx for TP9300 and TP9400 with ATEX and IECEx certification
- MPD-00027-xx for TP9300 and TP9400 with AEx, Ex, and non-incendive certification.

# Before using the charger

Check the battery label and charger label to see if the charger is compatible with the battery. See also ["About the chargers" on page 157](#).



**Warning** Handle the battery safely. Failure to observe the following handling recommendations could result in personal injury and/or equipment damage.

- Before using a Li-ion battery, read the Li-ion Battery Safety Information (MPD-00024-xx for IS-batteries and MPC-00006-xx for non-IS batteries) included with your battery, and follow the instructions it provides. Incorrect use of a Li-ion battery can cause explosion or fire.
- Do not short-circuit the battery contacts, neither intentionally nor accidentally, e.g. by placing the battery with conductive materials such as keys or jewelry inside a pocket or container. Short-circuiting the battery contacts can heat up the conductive material.
- Do not obstruct the vent hole(s) on the battery. If the vent on the battery is obstructed the battery may explode, causing personal injury and/or equipment damage. If the vent on the radio is obstructed, audio quality and/or key function may deteriorate and radio seals may be damaged.

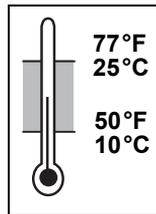
**Notice** Turn the radio off before removing the battery, and turn it on again after attaching the battery. This ensures that the radio powers down and up correctly. Failing to follow this procedure may require the radio to be turned off then on again to operate correctly.

# Charging temperatures

**Notice** Do not expose a battery to very high or very low temperatures for extended periods of time. Doing so will shorten the usable life ('service life') of the battery.

To achieve the best results when charging your battery:

- Before you begin to charge your battery, make sure that the battery temperature is close to the room temperature in which the battery is to be charged.
- If possible, charge the battery in temperatures between 50°F and 77°F (between 10°C and 25°C). This temperature range is the optimal charging range.



Charging only starts when the battery is between 32°F to 104°F (0°C to 40°C).



When the battery temperature is outside the normal charging range, the orange LED on the charger is lit. Charging will start or resume once the temperature is within normal limits, and no action is required by you.

## Leaving the battery on charge

You can leave a battery/radio in the charger once charging is complete. Leaving a battery in the charger will not overcharge or damage it.

You can remove a battery/radio from the charger at any time without harming the battery, the radio, or the charger. When you return the battery/radio to the charger, charging is automatically resumed.

## Vehicle chargers only

It is safe to switch off the ignition while there is still a battery in the charger. But if the vehicle will not be used again for some time, check whether charging will continue while the ignition is off, and consider what effect this might have on the vehicle battery.

To check, place the battery in the charger and switch off the vehicle ignition:

- If no charger LED stays lit, the charger will resume charging only when the ignition is switched on again. Minimal charger standby power will be drawn from the vehicle battery until then.
- If a charger LED stays lit, the charger will continue to charge the radio battery even while the ignition is off, and will continue to draw power from the vehicle battery. Once the battery is charged, the charger draws minimal current and has little effect on a healthy vehicle battery.

## Receiving calls while charging (not for battery-only vehicle charger)

**Notice** For best charging performance, switch off the radio before placing it in the charger.

You can receive a call while the radio is in the charger, but your radio performance may be degraded. If you do remove the radio from the charger to answer a call, the call will not be disrupted.

Removing the radio from the charger to make or receive a call ends the charging process. Charging safely recommences when the radio is reinserted into the charger.

If a radio was turned on while being charged, the battery indicator may not be accurate when the radio is initially removed from the charger. After a few seconds, the battery indicator is updated to display the amount of charge available in the battery.

## Low battery warning

**Notice** Do not allow a radio battery to fully discharge every time you use it, or you will shorten the service life of the battery.

When the battery is low, your radio warns you in the following ways:

- The battery symbol on the radio display looks empty.
- The status LED on the radio slowly flashes red.
- A high-pitched beep sounds.

You should recharge or replace the battery as soon as possible.

When the battery is completely empty, the message **Battery is flat** appears on the display. The radio emits a long, low-pitched beep and then stops working. Turn off the radio.

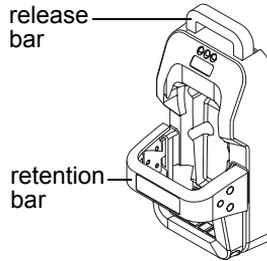
# Inserting the radio into the vehicle charger

- 1 Place the radio in the charger with the battery attached.



**Warning** When the portable radio is used inside a vehicle, radio performance is degraded. Use a mobile radio for all critical communications. If the portable radio must be left switched on while it is in the charger, removing the radio from the charger will improve radio performance. Check your local regulations about using a portable radio in a vehicle.

- 2 Firmly press the retention bar towards the radio.  
If the larger battery (such as the IS/NI battery) is attached to the radio, there will be an audible click as the catches engage. If the smaller battery is attached to the radio, there will be two audible clicks as the catches engage. If the catches do not engage, remove the radio. Press once firmly on the release bar, then try again.



# Charging a battery for the first time



Fully charge a battery before using it for the first time.

The red LED stays lit while the battery charges.

## Charging a battery

**Notice** For best charging performance, switch off the radio before placing it in the charger (not for battery-only vehicle charger).

- 1 Desktop charger: Connect the charger to the correct Tait power adaptor.

6-way charger and vehicle charger:

Power on the charger.



Initially, all three LEDs are lit for 2 seconds.

- 2 Place just a battery in the charger, or a radio with a battery attached (desktop charger or 6-way charger only). There is no need to remove a belt clip, antenna, or any accessory that is attached to the accessory connector.



The red LED lights up, and stays lit while the battery charges.



When charging is complete, the green LED stays lit.

# LED behavior

If there is a battery in the charger when power is supplied to the charger, the LEDs behave as follows:

  	Meaning
	The charger has been connected to a power supply briefly
	The battery is charging. steady
	Charging complete. Remove the battery, or leave it in the charger. steady
	■ The battery temperature is outside the normal charging range. Charging will start or resume once the temperature is within normal limits. No action is required by you.  ■ There is a fault. Contact your dealer.
 or 	If the LEDs for all charger slots continuously flash orange, or red then orange, the charger itself may be faulty (e.g. the 6-way charger fan may be jammed). Contact your dealer. flashing
	There is a fault. Contact your dealer. all off

If the charger does not behave as expected:

- Make sure the radio or battery is seated properly in the charger. For the vehicle charger, see also ["Inserting the radio into the vehicle charger" on page 163](#).
- Check that the charger is properly plugged into the originally supplied power supply.
- Check that the battery and charger contacts are clean. To clean, wipe the contacts with a dry lint-free cloth to remove any dirt, oil or grease.

# Removing the battery from the charger

- Desktop charger and 6-way charger: Lift the battery/radio out of the charger.
- Battery-only vehicle charger: Pull up the top clip of the vehicle charger, and then lift out the battery.
- Vehicle charger: Press down once firmly on the release bar at the top of the vehicle charger, and then lift out the radio.

You can remove a battery/radio from the charger at any time without harming the battery, the radio, or the charger. When you return the battery/radio to the charger, charging is automatically resumed. You can also leave a battery/radio in the charger once charging is complete.

# Maintaining battery life and performance

With proper care and maintenance you will maintain the performance and life of the battery. It is recommended that you:

- Use only Tait chargers and batteries.
- Do not expose a battery to very high or very low temperatures for extended periods of time. Doing so will shorten the service life of the battery.  
Very high: above 140°F (60°C)  
Very low: less than -4°F (-20°C)
- Charge the battery at a room temperature of between 50°F and 77°F (between 10°C and 25°C). This temperature range is the optimal charging range.
- Wipe excess moisture and dirt from the radio, radio contacts and battery contacts before charging the battery.

- Store batteries properly when not in use. See ["Storing batteries"](#).

## Storing batteries

When not in use for a month or more, batteries should be stored correctly to prolong their life.

- Remove the battery from the radio before storage.
- Fully charge the battery if storing for less than one month.
- Charge non-IS batteries to about 30% if storing for longer than one month.
- When storing IS batteries for any length of time, fully charge the battery and check periodically as it will discharge faster.
- Store in a cool dry place.

Batteries that have been stored for any length of time must be charged before being used. See ["Charging a battery for the first time"](#) on page 164.

## Disposing of batteries



Run the battery flat before disposing of it. When disposing of the battery, be sure to do so in an environmentally sensitive manner. Please contact your radio provider for information on recycling programs in your area. See ["Environmental responsibilities"](#) on page 8 for more information.

# 14 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](#)
- [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 LED on your radio does not glow red when the radio is turned on, it is probable that power is not reaching the radio. Check the following:

- Is the battery firmly attached to the radio?
- Is the battery sufficiently charged?
- Is the battery charger working properly?

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. See "[Audible tones](#)" on page 46.

# 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

- 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.

# General care

Your radio requires no regular maintenance other than ensuring that the battery has sufficient charge and that no damage has occurred to the antenna or the battery.

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

For general battery care, see "[Maintaining battery life and performance](#)".

## **Cleaning the contacts of the battery**

**Notice** Do not scratch or scrape the contacts of the battery. If necessary, wipe the contacts of the battery with a dry, lint-free cloth to remove any dirt, oil or grease.

## **Cleaning the radio**

If you need to clean the radio case, use a cloth dampened with clean water.

# Directive 1999/5/CE Declaration of Conformity

## **da Dansk**

Undertegnede Tait Limited erklærer herved, at følgende udstyr TPDB1A, TPDC0A, TPDH5A & TPDH7A overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Se endvidere: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **de Deutsch**

Hiermit erklärt Tait Limited die Übereinstimmung der Geräte TPDB1A, TPDC0A, TPDH5A & TPDH7A mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG.

Siehe auch: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **el Ελληνικά**

H Tait Limited δηλώνει ότι το TPDB1A, TPDC0A, TPDH5A & TPDH7A συμμορφώνεται προς τις ουσιώδεις απαιτήσεις και τις λοιπές σχετικές διατάξεις της Οδηγίας 1999/5/EK.

Βλέπε επίσης: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **en English**

Tait Limited declares that this TPDB1A, TPDC0A, TPDH5A & TPDH7A complies with the essential requirements and other relevant provisions of Directive 1999/5/EC.

See also: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **es Español**

Por medio de la presente Tait Limited declara que las radios TPDB1A, TPDC0A, TPDH5A & TPDH7A cumplen con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE. Véase también:

[www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **fi Suomi**

Tait Limited vakuuttaa täten että TPDB1A, TPDC0A, TPDH5A & TPDH7A tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Katso: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **fr Français**

Par la présente, Tait Limited déclare que les appareils TPDB1A, TPDC0A, TPDH5A & TPDH7A sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Voir aussi: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **it Italiano**

Con la presente Tait Limited dichiara che questo TPDB1A, TPDC0A, TPDH5A & TPDH7A è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Vedi anche: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **nl Nederlands**

Hierbij verklaart Tait Limited dat het toestel TPDB1A, TPDC0A, TPDH5A & TPDH7A in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

Zie ook: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **pt Português**

Tait Limited declara que este TPDB1A, TPDC0A, TPDH5A & TPDH7A está conforme com os requisitos essenciais e outras provisões da Directiva 1999/5/CE.

Veja também: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

## **sv Svensk**

Härmed intygar Tait Limited att denna TPDB1A, TPDC0A, TPDH5A & TPDH7A står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Se även: [www.taitradio.com/eudoc/](http://www.taitradio.com/eudoc/)

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7.5. If Licensee, as a contractor or subcontractor (integrator), is purchasing Tait Designated Products and licensing Software not for its own internal use but for end use only by a Customer, the Licensee may transfer such Software, but only if a) Licensee transfers all copies of such Software and the related Documentation to the transferee and b) Licensee has first obtained from its Customer (and, if Licensee is acting as a subcontractor, from the interim transferee(s) and from the ultimate end user sub license) an enforceable sublicense agreement that prohibits any other transfer and that contains restrictions substantially identical to the terms set forth in this Software License Agreement. Except as stated in the foregoing, Licensee and any transferee(s) authorised by this Section may not otherwise transfer or make available any Tait Software to any third party nor permit any party to do so. Licensee will, on request, make available evidence reasonably satisfactory to Tait demonstrating compliance with all the foregoing.

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8.1. Licensee's right to use the Software and Documentation will commence when the Designated Products are supplied by Tait to Licensee and will continue for the life of the Designated Products with which or for which the Software and Documentation are supplied, unless Licensee breaches this Agreement, in which case this Agreement and Licensee's right to use the Software and Documentation may be terminated immediately upon notice by Tait.

8.2. Within thirty (30) days after termination of this Agreement, Licensee must certify in writing to Tait that all copies of the Software have been removed or deleted from the Designated Products and that all copies of the Software and Documentation have been returned to Tait or destroyed by Licensee and are no longer in use by Licensee.

8.3. Licensee acknowledges that Tait made a considerable investment of resources in the development, marketing, and distribution of the Software and Documentation and that Licensee's breach of this Agreement will result in irreparable harm to Tait for which monetary damages would be inadequate. If Licensee breaches this Agreement, Tait may terminate this Agreement and be entitled to all available remedies at law or in equity including immediate injunctive relief and repossession of all non-embedded Software and associated Documentation. Licensee shall pay all Tait costs (on an indemnity basis) for the enforcement of the terms of this Agreement.

## **SECTION 9 CONFIDENTIALITY**

Licensee acknowledges that the Software and Documentation contain proprietary and Confidential Information valuable to Tait and are

Tait trade secrets, and Licensee agrees to respect the confidentiality of the information contained in the Software and Documentation.

## **SECTION 10 LIMITATION OF LIABILITY**

10.1. In no circumstances shall Tait be under any liability to Licensee, or any other person whatsoever, whether in Tort (including negligence), Contract (except as expressly provided in this Agreement), Equity, under any Statute, or otherwise at law for any losses or damages whether general, special, exemplary, punitive, direct, indirect, or consequential arising out of or in connection with any use or inability of using the Software.

10.2. Licensee's sole remedy against Tait will be limited to breach of contract and Tait sole and total liability for any such claim shall be limited at the option of Tait to the repair or replacement of the Software or the refund of the purchase price of the Software.

## **SECTION 11 GENERAL**

11.1. COPYRIGHT NOTICES. The existence of a copyright notice on the Software will not be construed as an admission or presumption of publication of the Software or public disclosure of any trade secrets associated with the Software.

11.2. COMPLIANCE WITH LAWS. Licensee acknowledges that the Software may be subject to the laws and regulations of the jurisdiction covering the supply of the Designated Products and will comply with all applicable laws and regulations, including export laws and regulations, of that country.

11.3. ASSIGNMENTS AND SUBCONTRACTING. Tait may assign its rights or subcontract its obligations under this Agreement, or encumber or sell its rights in any Software, without prior notice to, or consent of, Licensee.

11.4. GOVERNING LAW. This Agreement shall be subject to and construed in accordance with New Zealand law and disputes between the parties concerning the provisions hereof shall be determined by the New Zealand Courts of Law. Provided however Tait may at its election bring proceedings for breach of the terms hereof or for the enforcement of any judgment in relation to a breach of the terms hereof in any jurisdiction Tait considers fit for the purpose of ensuring compliance with the terms hereof or obtaining relief for breach of the terms hereof.

11.5. THIRD-PARTY BENEFICIARIES. This Agreement is entered into solely for the benefit of Tait and Licensee. No third party has the right to make any claim or assert any right under this Agreement, and no third party is deemed a beneficiary of this Agreement. Notwithstanding the foregoing, any licensor or supplier of third-party software included in the Software will be a direct and intended third-party beneficiary of this Agreement.

11.6. SURVIVAL. Sections 4, 5, 6.3, 7, 8, 9, 10, and 11 survive the termination of this Agreement.

11.7. ORDER OF PRECEDENCE. In the event of inconsistencies between this Agreement and any other Agreement between the parties, the parties agree that, with respect to the specific subject matter of this Agreement, this Agreement prevails.

11.8. SECURITY. Tait uses reasonable means in the design and writing of its own Software and the acquisition of third-party Software in order to limit Security Vulnerabilities. While no software can be guaranteed to be free from Security Vulnerabilities, if a Security Vulnerability is discovered, Tait will take the steps specified in Section 6 of this Agreement.

11.9. EXPORT. Licensee will not transfer, directly or indirectly, any Designated Product, Documentation or Software furnished hereunder or the direct product of such Documentation or Software to any country for which New Zealand or any other applicable country requires an export license or other governmental approval without first obtaining such license or approval.

11.10. SEVERABILITY. In the event that any part or parts of this Agreement shall be held illegal or null and void by any court or administrative body of competent jurisdiction, such determination shall not affect the remaining terms which shall remain in full force and effect as if such part or parts held to be illegal or void had not been included in this Agreement. Tait may replace the invalid or unenforceable provision with a valid and enforceable provision that achieves the original intent and economic effect of this Agreement.

11.11. CONSUMER GUARANTEES. Licensee acknowledges that the licenses supplied in terms of this agreement are supplied to Licensee in business, and that the guarantees and other provisions of prevailing consumer protection legislation shall not apply.

11.12. WHOLE AGREEMENT. Licensee acknowledges that it has read this Agreement, understands it and agrees to be bound by its terms and conditions. Licensee also agrees that, subject only to the express terms of any other agreement between Tait and Licensee to the contrary, this is the complete and exclusive statement of the Agreement between it and Tait in relation to the Software. This Agreement supersedes any proposal or prior agreement, oral or written, and any other communications between Licensee and Tait relating to the Software and the Designated Products.





