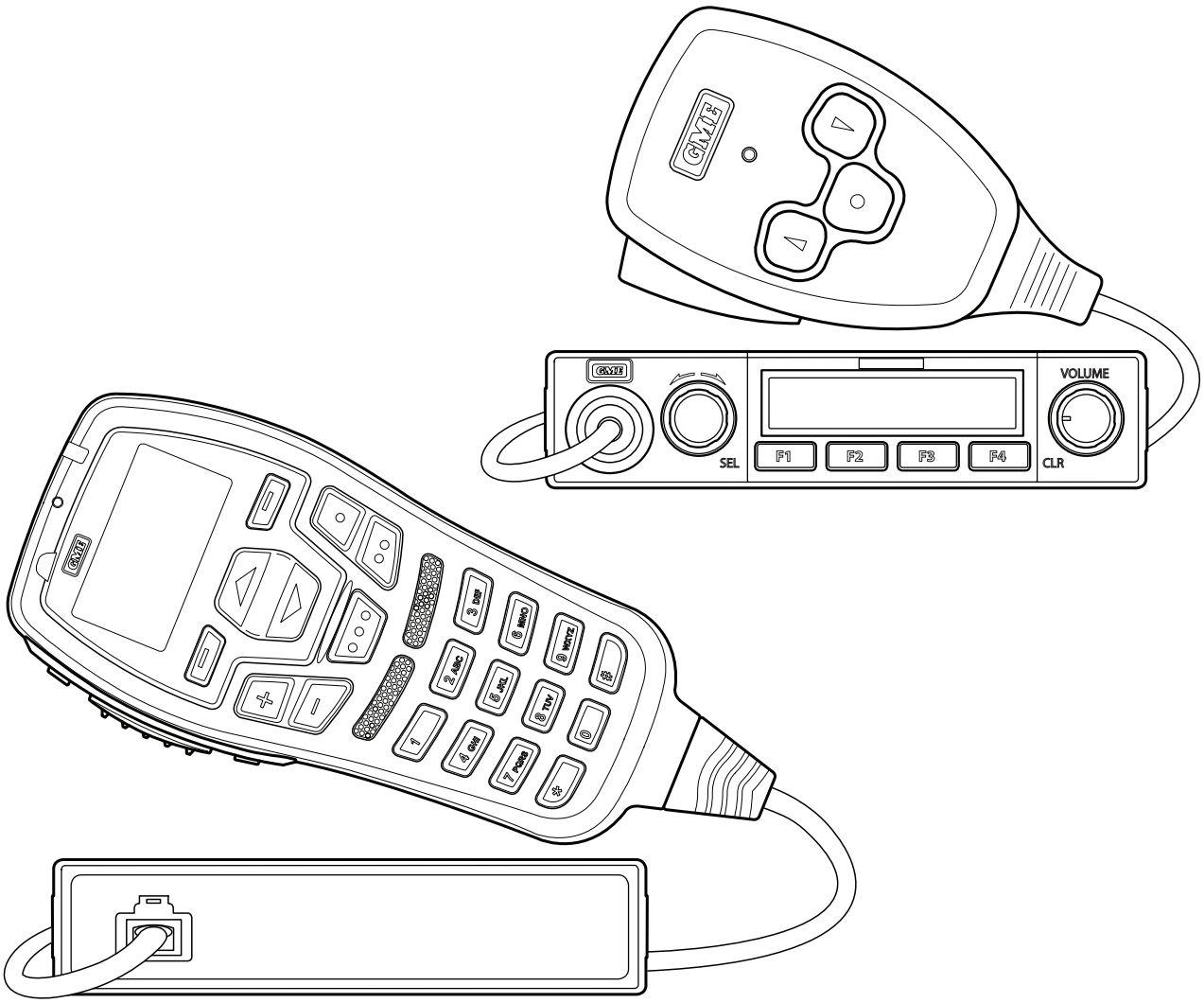
PROFESSIONAL

CM60 SERIES

USER MANUAL



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Radio Frequency Exposure Hazard

Attention

This radio should be used only in an occupational (work related) environment where the user is aware of and able to exercise control over their exposure to RF energy. This radio is not authorised for use by the consumer or by the general population.

To comply with the US FCC radio frequency guidelines and to ensure your safety please read the following information before installing and using the radio.

- Use the radio only within the guidelines of the manufacturer.
- Use only with an approved antenna.
- Ensure your antenna is installed as described under the 'Installation' section of the Service manual.
- Do not remove the RF Exposure label from this radio.
- Do not transmit longer than the rated duty cycle of 50% talk-50% listen.

Radio Frequency Exposure Control

This radio emits RF (Radio Frequency) energy or radio waves when transmitting. RF energy is one of many forms of electromagnetic energy including sunlight and electricity. The FCC Radio Frequency exposure guidelines include recommendations on the safe levels of exposure for workers and the general public with a significant margin of protection.

It is important to follow the guidelines below to control your RF exposure, and comply with the maximum exposure limits for occupational/controlled environments.

- Do not talk/transmit on the radio for longer than the rated duty cycle of 50% talk -50% listen. This is because the radio emits more energy when it is transmitting than when it is receiving.
- Ensure that you maintain a safe distance of 35 inches (0.9 m) between people and the antenna when you are talking or sending information on the radio.
- Use only GME-approved antennas and attachments with the radio.
- Ensure that you make only authorized modifications to the antennae to avoid damaging the radio and violating FCC regulations.

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Compliance with RF Energy Standards

This radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to RF electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at duty cycles of up to 50% talk-50% listen and should be used for occupational use only. In terms of measuring RF energy for compliance with the FCC exposure guidelines, your radio radiates measurable RF energy only when it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

This radio complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J
- 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
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998

FCC Compliance

To comply with FCC exposure limits the radio must be installed using an externally mounted antenna with a gain of either 2.15 dBi or 5.15 dBi. The antenna must be mounted centrally on the roof of the vehicle in a location that ensures a minimum safe distance as stated in the FCC Uncontrolled RF Exposure Limits table in this section.

For further information on RF energy exposure and how to control it, please visit the following website: https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause

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undesired operation.

Note: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

FCC Uncontrolled RF Exposure Limits		
Model	**2.15 dBi Antenna**	**5.15 dBi Antenna**
VHF	0.903 m	1.276 m
UHF L, UHF	0.738 m	1.042 m

IC RSS Compliance

- For license-exempt devices:
  This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
  - This device may not cause interference, and
  - This device must accept any interference, including interference that may cause undesired operation of the device.
- (French)
  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:
  - l'appareil ne doit pas produire de brouillage, et
  - l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

- For transmitters w/ detachable antennas:
  This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.
- (French)
  Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

IC Uncontrolled RF Exposure Limits		
Model	**2.15 dBi Antenna 50 Ω**	**5.15 dBi Antenna 50 Ω**
VHF	1.124 m	1.588 m
UHF L, UHF	0.966 m	1.364 m

For detailed information about RF energy, and how to control exposure to it, refer the following IC website: http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html

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Interference with Vehicle Electronics

Some of the electronics in your vehicle may be susceptible to RF energy when your radio is transmitting. Examples of electronic devices in your vehicle that could be affected are anti-lock/anti-skid braking systems, cruise control systems and fuel injection systems. If your vehicle is fitted with any of these systems please consult your vehicle manufacturer to determine whether these systems are likely to be affected by your radio when it is transmitting. Careful selection of mounting locations and good installation techniques should generally minimise any interference to your vehicle electronics.

Using the Radio in Explosive Atmospheres or Blasting Areas

Switch off your radio before entering any area where there may be inflammable gas, liquids or dust. An explosion could result in serious injury or death.

Switch off your radio when approaching a blasting area. Blasting areas are usually sign posted with instructions to users to turn off two way radios. Strong radio transmissions could ignite blasting caps resulting in an unscheduled explosion resulting in serious injury or death.

Installation Guidelines

- Do not install the radio near an airbag or in an area where an airbag may deploy. If an airbag is obstructed by the radio, it may not deploy as expected. It could also propel the radio with enough force to cause serious injury.
- Avoid touching the heat sink at the rear of the radio while the radio is in use. The heat sink can become hot during prolonged use.
- Do not install the radio in front of a vehicle heater. The radio requires a cool airflow over the rear heat sink when transmitting to maintain efficiency.
- Do not make unapproved modifications to the radio. Such modifications could void the warranty and cause the radio to operate outside its approved specifications.

Warranty

This warranty against defects is given by Standard Communications Pty Ltd ACN 000 346 814 (We, us, our or GME). Our contact details are set out in clause 2.h.

1. Consumer guarantees:

    a. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

    b. To the extent we are able, we exclude all other conditions, warranties and obligations which would otherwise be implied.

2. Warranty against defects:

    a. This warranty is in addition to and does not limit, exclude or restrict your rights

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under the Competition and Consumer Act 2010 (Australia) or any other mandatory protection laws that may apply.

b. We warrant our goods to be free from defects in materials and workmanship for the warranty period from the date of original sale (or another period we agree to in writing). Subject to our obligations under clause 1.2, we will at our option, either repair or replace goods which we are satisfied are defective. We warrant any replacement parts for the remainder of the period of warranty for the goods into which they are incorporated.

c. To the extent permitted by law, our sole liability for breach of a condition, warranty or other obligation implied by law is limited

   in the case of goods we supply, to any one of the following as we decide –

   (i) the replacement of the goods or the supply of equivalent goods;
   (ii) the repair of the goods;
   (iii) the cost of repairing the goods or of acquiring equivalent goods;

d. in the case of services we supply, to any one of the following as we decide –
   (i) the supplying of the services again;
   (ii) the cost of having the services supplied again.

e. For repairs outside the warranty period, we warrant our repairs to be free from defects in materials and workmanship for three months from the date of the original repair. We agree to repair or replace (at our option) any materials or workmanship which we are satisfied are defective.

f. We warrant that we will perform services with reasonable care and skill and agree to investigate any complaint regarding our services made in good faith. If we are satisfied that the complaint is justified, and as our sole liability to you under this warranty (to the extent permitted at law), we agree to supply those services again at no extra charge to you.

g. To make a warranty claim you must before the end of the applicable warranty period (see warranty table), at your own cost, return the goods you allege are defective, provide written details of the defect, and give us an original or copy of the sales invoice or some other evidence showing details of the transaction.

h. Send your claim to:
   Standard Communications Pty Ltd.
   PO Box 96 Winston Hills, NSW 2153, Australia.
   Tel: (02) 8867 6000 Fax: (02) 8867 6199
   Email: servadmin@gme.net.au

i. If we determine that your goods are defective, we will pay for the cost of returning the repaired or replaced goods to you, and reimburse you for your reasonable expenses of sending your warranty claim to us.

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3. What this warranty does not cover:

    a. This warranty will not apply in relation to:
    (a) goods modified or altered in any way;
    (b) defects and damage caused by use with non Standard Communications products;
    (c) repairs performed other than by our authorised representative;
    (d) defects or damage resulting from misuse, accident, impact or neglect;
    (e) goods improperly installed or used in a manner contrary to the relevant instruction manual; or
    (f) goods where the serial number has been removed or made illegal.

4. Warranty period:

    a. We provide the following warranty on GME and Kingray products. No repair or replacement during the warranty period will renew or extend the warranty period past the period from original date of purchase.

    Product type warranty: Commercial accessories
    Period: 1 year

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Record of Amendments

Rev.	Date	Description	By
1	December 2017	Original Issue	KP
2	December 2017	Minor Update	KP
3	February 2018	Minor Additions and Corrections	PMV/KP
4	May 2018	Update to Preface, and Specifications sections	PMV

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Overview

The CM60 radio can be set up in the following configurations:

- Local configuration: Local control head is fitted to the radio and used with a fist microphone.
- Remote configuration: A radio with no local controls is used with a remote head and fist microphone.
- Extended setup: A radio with no local controls is used with a controller microphone.

Basic Operation

The sections that follow outline the basic operation of the radio in the local, remote, and extended setup.

Radio Controls

Radio control functions can be assigned only to programmable keys/buttons on the local and remote control head, and the microphone. Each key can be programmed with a different function and activated by a single press or hold. A press is less than one second and a hold is more than one and a half seconds.

Local and Remote Setup

In the local and remote setups, all control functions can be accessed on the control head and/or the fist microphone. Refer the Programmable Keys Control Functions section of this manual for information on the control functions programmed in the radio by the dealer. The figures in this section show parts of the local and remote control head and fist microphone, and the functions assigned to the buttons.

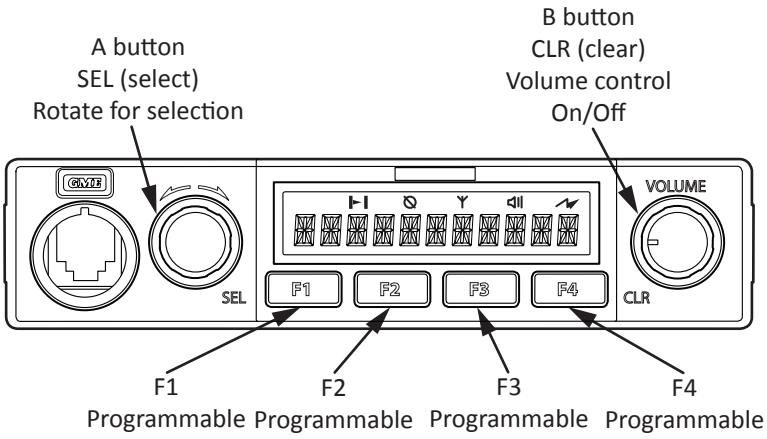

Figure 1 - Local Control Head / Remote Control Head

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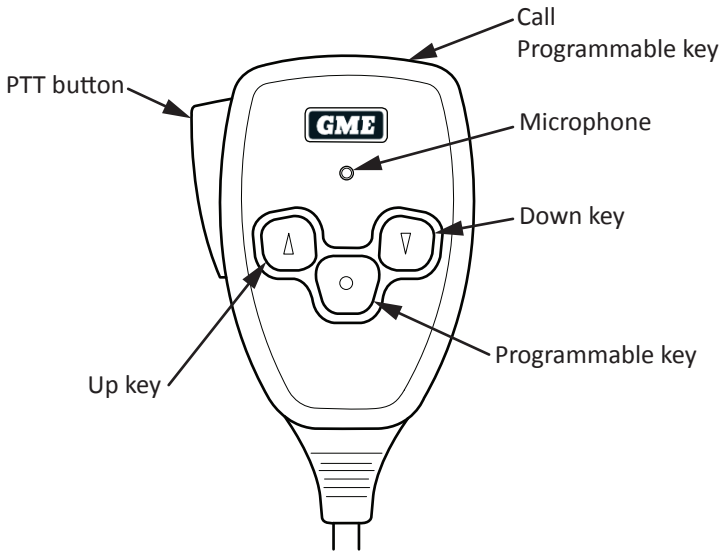

Figure 2 - Fist Microphone

Extended Setup

All control functions of the radio are assigned to keys/buttons on the controller microphone when the radio is fitted with a remote control panel.

	The socket on the remote control panel is only used with the controller microphone or the remote control head.

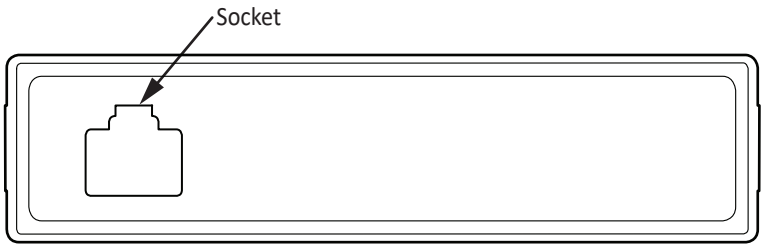

Figure 3 - Remote Control Panel

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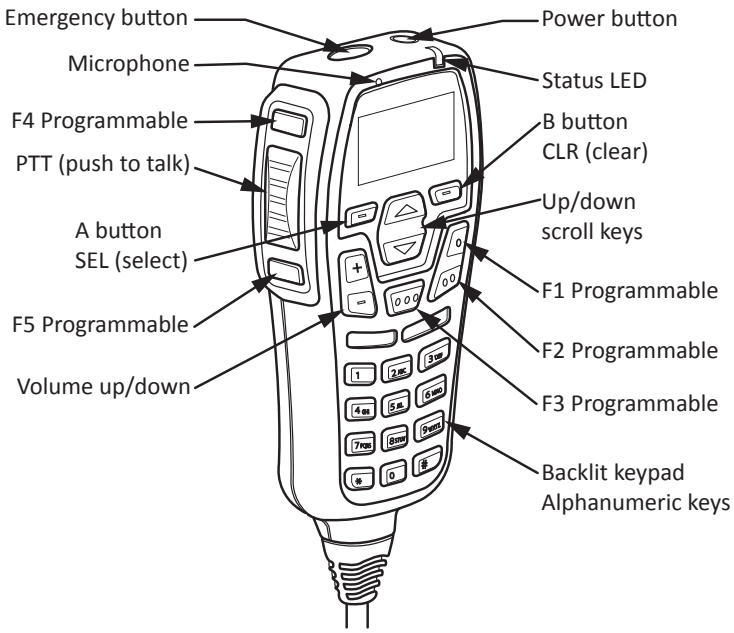

Figure 4 - Controller Microphone

Programmable Keys

The dealer can assign control functions to programmable keys on the radio. Contact the dealer or refer the Programmable Keys Control Functions section of this manual for more information.

Hook On/Off Function

The microphones used with the CM60 series radio are fitted with interactive rear bollards that can be programmed with an on/off hook function by a GME authorised professional dealership.

Turning the radio on and off

To turn the radio on using the control head, turn the volume knob (B button) clockwise until it clicks. To turn radio off, turn volume knob anti-clockwise until it clicks.

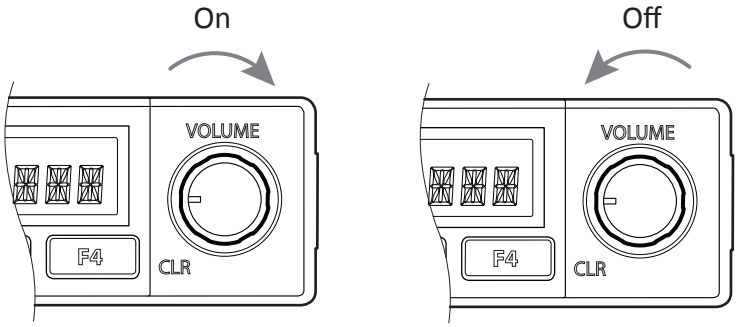

Figure 5 - Turning the radio on and off

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To turn radio on/off using the controller microphone, press and hold the power button located on top of the microphone.

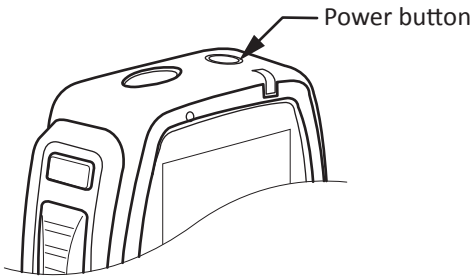

Figure 6 - Turning the radio on and off on controller microphone

Adjusting the Speaker Volume

To adjust the volume on local/remote control head, turn volume knob (B button) clockwise to turn the volume up. Turn volume knob anti-clockwise to turn the volume down.

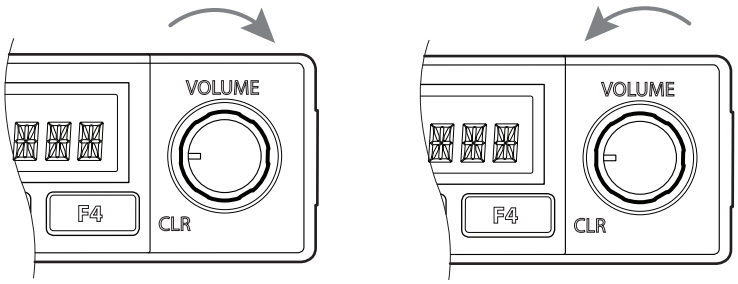

Figure 7 - Turning radio volume up and down

Use the up and down volume buttons on the controller microphone.

Figure 8 - Turning radio volume up and down on controller microphone

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Displays

The radio and the controller microphone displays the current menu and the status of the radio. When a menu is not accessed, the radio displays information such as the network and site the radio is connected to.

Screen displays

The figure below shows the screen display on the local/remote control head control.

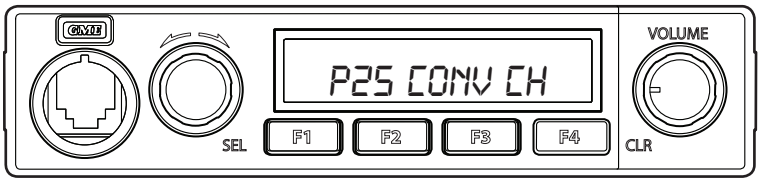

Figure 9 - Local/Remote control head screen display

The figure below shows the screen display on the controller microphone.

Figure 10 - Controller microphone screen display

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Display symbols

Display symbols indicate the state and condition of the radio. The table below describes display symbols of the radio and controller microphone.

Symbol	Meaning
	Signal strength indicator. The more bars, the stronger the signal being received. This symbol appears on the controller microphone only.
	Trunking system available. The radio is operating on a P25 trunking system. Flashes indicates that the radio is trying to register on a network.
	Call is encrypted.
	The radio is transmitting.
	The radio is operating in repeater talkaround mode not using a repeater.
	A call is being received.

LEDs

The controller microphone is fitted with an LED light that displays different colours depending the radio status. The table below explains the meaning of the LED light colours.

Colour	State/Action
Red	The radio is transmitting.
Green	The radio is receiving a call.
Flashing green	An incoming unit or phone call is ringing.
Orange	Emergency mode is active and the radio is not transmitting or receiving calls.
Slow flashing purple	Radio is in programming mode.

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Tones

The radio uses audible tones to alert to its status. If tones are turned off no tones are audible. For information on how to set the volume of tones refer to the Navigating the Radio Menus section in this manual.

The table below describes the tones and corresponding status of the radio.

Status	Tone	Level
P25 trunk/conventional grant tone	2 successive high tones	High
Outgoing/incoming P25 trunk unit call	Phone 'ring'	Obvious
P25 Service Up	3 rising tones	High
P25 Service Down	3 falling tones	Obvious
Generic 'successful' tone	2 successive high tones	
Generic 'failure' tone	Failure tone (mid > low)	Obvious
Programmable key unavailable	Failure tone (mid > low)	Obvious
Key press, selection, or editing complete (can be disabled)	2 successive high tones	High
Enter site mode	2 successive high tones	User selectable, easily learned
Enter monitor mode	2 successive mid tones	User selectable, easily learned
Enter emergency mode	3 successive high tones	High
Incoming emergency call	3 successive high tones - repeating	Obvious
Exit emergency mode	Failure tone (mid > low)	Obvious
Clear incoming emergency call	Failure tone (mid > low)	Obvious
Busy lockout call denied	Failure tone (mid > low)	Obvious
Enter PSTN call, Unit call, or Selective call	3 successive mid tones	User selectable, easily learned
Exit PSTN call, Unit call, or Selective call	Failure tone (mid > low)	User selectable, easily learned
Message, status or call alert received	1 high 1 low tone repeating	User selectable, easily learned
Message, status, or call alert sent	2 successive high tones	User selectable, easily learned
Message, status, or call send failed	Failure tone (mid > low)	User selectable, easily learned
Transmit timeout warning (repeats each second)	2 successive mid-tones 10 seconds prior time-out	Learned first time
Transmit timed out	Failure tone (mid > low)	Learned first time

The CM60 series radio operates in the following three modes:

- Analog
- P25 conventional
- P25 trunked

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Navigating the Radio Menus

Startup display

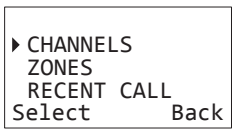
The local/remote head or the controller microphone screen display the last channel used or a selected channel within the zone. Press the A button to access the main menu.

Channels

A channel contains frequencies the radio uses to transmit and receive signals. The Channels menu displays a list of channels that are available in the currently selected zone.

To access the Channels menu:

1. Select Channels from the main menu.
2. Press the A button to select Channels or the B button to go back to the previous menu.

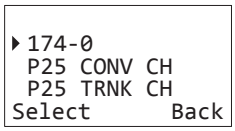


Press the A button to select or the B button to go back to the previous menu.

To scroll through the Channels list:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob on the local head.

Press the A button to select a particular channel and return to the main menu. Press the B button to go back to the previous menu.

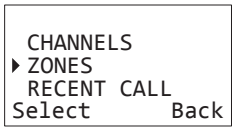


Zones

The radio can be programmed with up to 50 zones. A zone can contain a group of channels.

To access the Zones menu:

1. Scroll to Zones from the main menu.
2. Press the A button to select Zones. Press the B button to go back to the previous menu.



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To scroll through the zone list:

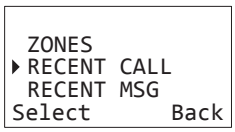
- Use the up/down arrows on the controller microphone.
- Turn the selector knob (A button) on the local head.

Press the A button to select a particular zone and return to the main menu. Press the B button to go back to the previous menu.

Recent Calls

This feature lists the 20 most recent calls made, received or missed by displaying the corresponding Call ID or Unit ID. The most recent call is displayed first on the list. Select a Call/Unit ID on this list to call back. To access the Recent Calls menu:

1. Scroll to Recent Calls on the main menu.
2. Press the A button to select Recent Calls. Press the B button to go back to the previous menu.



To scroll through the recent call list:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob (A button) on the local head.

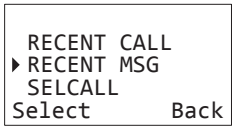
Press and hold the A button to call back. Press the B button to go to the previous menu.

Recent Messages

This feature shows the ten most recent messages that were sent or received. The most recent message is displayed first on the list.

To access the Recent Messages menu:

1. Select Recent Messages from the main menu.
2. Press the A button to select Recent Messages. Press the B button to go back to the previous menu.



To scroll through the Recent Messages list:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob (A button) on the local head.

Press the B button to go back to the previous menu.

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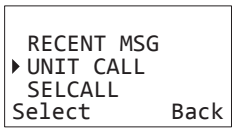
Unit Call

The Unit Calls menu displays a list of all P25 trunked/conventional units in the contact book.

To access the Unit Call menu:

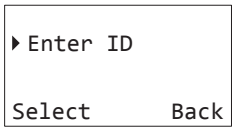
1. Select Unit Call from the main menu.
2. Press the A button to select Unit Call. Press the B button to go back to the previous menu.



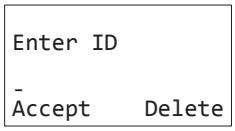
To scroll through the list of contacts:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob on the local head.

The first item in the list is Enter ID. The radio enters numeric edit mode and a custom unit ID can be entered and used to activate a call if selected.



Press the A button to accept and the B button to delete.



Press the B button to exit this menu without making a call.

P25 Trunked Channels

To make a Unit Call to a predefined ID on the controller microphone:

1. Select Unit Call from the main menu. The first item on the list is Enter ID followed by any predefined IDs.
2. Press and hold the A button to select and call a predefined ID. Press the B button to exit the call.
3. To make a Unit Call to a predefined ID on the local/remote control head:
4. Select Unit Call from the main menu.
5. The first item in the menu is Enter ID. Turn the selector knob to display any predefined IDs in the menu.
6. Press and hold the selector knob to select and initiate a call to a predefined ID.

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P25 Conventional Channels

To make a Unit Call to a predefined ID on the controller microphone:

1. Select Unit Call from the main menu. The first item on the list is Enter ID followed by any predefined IDs.
2. Press and hold the A button to select and initiate a call to a predefined ID. The display will show In Call and Unit ID When a unit call is initiated.
3. Press the PTT to send the unit call.
4. To make a Unit Call to a predefined ID on the local/remote control head:
5. Select Unit Call from the main menu. The first item in the menu is Enter ID. Turn the selector knob to display any predefined IDs in the menu.
6. Press and hold the selector knob to select and call a predefined ID. The display will toggle between Unit ID and In Call when a unit call is initiated.
7. Press the PTT within ten seconds to send the unit call. The radio will return to channel if the unit call is not sent.

P25 Trunked Channels

To enter a custom ID and initiate a unit call on the controller microphone:

1. Select Unit Call from the main menu.
2. Press the A button to select Enter ID.
3. Enter the ID using the alphanumeric keypad.
4. Press the A button to initiate the unit call.

To enter a custom ID and initiate a unit call on the local/remote control head:

1. Select Unit Call from the main menu.
2. Press the selector knob to select Enter ID.
3. Turn the knob to select a digit. Press the knob to enter the next digit.
4. Press and hold the knob to initiate the unit call when the entire number is entered.

P25 Conventional Channels

To enter a custom ID and initiate a unit call on the controller microphone:

1. From the main menu, select Unit Call.
2. Press the A button to select Enter Num.
3. Enter the ID using the alphanumeric keypad.
4. Press and hold the A button to initiate the unit call. The display will show In Call and Unit ID when a unit call is initiated.
5. Press the PTT to send the unit call.

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To enter a custom ID and initiate a unit call on the local/remote control head:

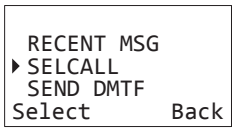
1. Select Unit Call from the main menu.
2. Press the selector knob to select Enter ID.
3. Turn the knob to select a digit. Press the knob to enter the next digit.
4. Press and hold the knob to initiate the unit call When the entire number is entered. The display will toggle between Unit ID and In Call when a unit call is initiated.
5. Press the PTT within 10 seconds to send the unit call. The radio will return to channel if the unit call is not sent.

Selcall (Selective Calling)

Selective Calling is an analog signaling technology which operates like a telephone where a call to a specific radio uses the custom unique ID of the radio.

To access the Selcall menu:

1. Scroll to Selcall on the main menu.
2. Press the A button (selector knob) to select Selcall, or the B button to go back to the previous menu.



To scroll through the Selcall list:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob on the local head.

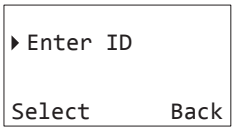
The SelCall menu displays a list of all SelCall contacts in the contact book. The first item in the list is Enter ID.

To enter a custom ID and to initiate a Selcall on the controller microphone:

1. Press the A button to select Enter ID.
2. Enter the ID using the alphanumeric keypad.
3. Press and hold the A button to initiate the Selcall.

To enter a custom ID and to initiate a Selcall on the local/remote control head:

1. Press the selector knob to select Enter ID.
2. Press the selector knob to select the next ID digit.
3. Press and hold the selector knob to initiate a unit call.



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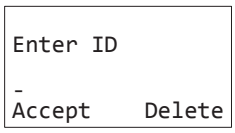
To select a predefined Selcall:

1. Press the up/down buttons on the UIC or rotate the selector knob on the local head.
2. Press the A button to accept and send the call. Press the B button to go back.



The radio can be put in quiet mode. Incoming transmissions are muted until the radio receives a matching selective call (SelCall) when the radio is in quiet mode.

Phone Call

This feature allows a radio on a trunking system to make a phone call. The phone call menu displays a list of all P25 PSTN contacts on P25 trunked channels in the contact book.

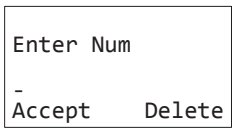
To access the Phone Call menu:

1. From the main menu, select Phone Call.
2. Press the A button to select or the B button to go back to the previous menu.

To scroll through Phone Call list:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob (A button) on the local head.

The first item in the list is Enter Num. If selected, the radio enters numeric edit mode and a custom phone number can be entered.



Press the A button to select and the B button to exit this menu.

To initiate a phone call on the controller microphone:

1. Press the A button to select Enter Num.
2. Use the numeric keypad to enter a phone number.
3. Press and hold the A button to initiate the phone call and return to the main screen.

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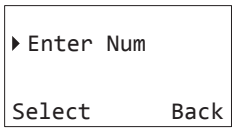
To initiate a phone call on the local/remote control head:

1. If Enter Num is selected, turn the selector knob to select a digit.
2. Press the knob to enter the next digit.
3. Press and hold the knob to initiate the phone call when the entire number is entered.



Press the B button to exit the list without making a call.

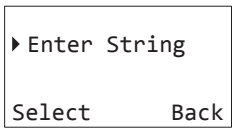
Send DTMF

DTMF (Dual Tone Multiple Frequency) is an analog signaling system used to connect to a telephone network by a telephone interconnect device. The Send DTMF option sends a predefined string of DTMF tones for keying up a repeater.

To access the Send DTMF menu:

1. Select Send DTMF from the main menu.
2. Press the A button to select or the B button to go back to the previous menu.

The first item in the list is Enter STRIN.



To initiate a call using a custom DTMF string on the controller microphone:

1. Press the A button to select Enter Num.
2. Use the numeric keypad to enter a phone number.
3. Press and hold the A button (Accept) to initiate a DTMF call and return to the main screen.

To initiate a call using a custom DTMF string on the local/remote control head:

1. Turn the selector knob to select a digit if Enter Num is selected.
2. Press the knob to enter the next digit.
3. When the entire number is entered, press and hold the knob to initiate the call.

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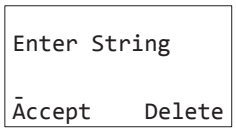
To initiate a call using a predefined DTMF string on the controller microphone:

1. Select the DTMF menu. The first item in the list is Enter String.
2. Press the down key to select string. Press the A button to initiate call.

To initiate a call using a predefined DTMF string on the local/remote control head:

1. Select the DTMF menu. The first item in the list is Enter String.
2. Turn the selector knob to select a string.
3. Press the knob to initiate call.



Services

The Services menu is available for the P25 trunked and P25 conventional channels. For analog channels the Services menu becomes available only if Digital Selcall is enabled. Digital Selcall (MDC1200) is a digital signalling technology that is used for analog channels. The CM60 series programming manual contains information on configuring the radio to use digital selcall. Services provide features that are listed and described in the table below.

Feature	Detail	Description
SEND MSG	Send message	Provides list of predefined short messages that can be sent to another radio.
SEND ALERT	Send alert	Sends page alert call to another radio user alerting them that you want to talk to them.
SEND STATUS	Send status	Custom or predefined status messages used to inform another radio of your current status.
SET STATUS	Set status	Allows you to select and set a status message indicating your current status.
STATUS REQ	Status request	Allows you to send a signal to another radio requesting a status update.
CHECK REQ	Check request	Sends a radio check message to confirm whether a radio is available on the system or is within communication range.
INHIBIT REQ	Inhibit request	Sends a request to prevent a radio from transmitting. The Inhibit Request feature is similar to Stun in the existing MDC system.
UNINHIBIT REQ	Uninhibit request	Sends a request to stop preventing a radio from transmitting. The Uninhibit Request feature is similar to Revive in the existing MDC system.

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To access the Services menu:

1. Select Services from the main menu.
2. Press the A button to select or the B button to go back to the previous menu.

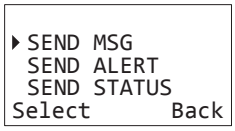
The following sections explain each of the Services features in detail.

Send MSG

The Send MSG (Send Message) feature provides a list of predefined short messages that can be sent to another radio. The radio displays Send MSG after the receiving radio has received the message.

To access the Send MSG menu:

1. Select Services from the main menu.
2. Select send MSG.
3. Press the A button to select or the B button to go back.



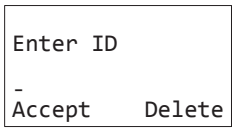
The first screen displays the first message of the message list on local/remote control head. To send a message:

1. Press the knob to enter ID.
2. Press the selector knob to enter the radio ID.
3. Press the selector knob to select the next digit.
4. Press and hold the selector knob to send the message.

The first screen displays a list of messages on the controller microphone. To send a message:

1. Press the up/down keys to select a message, and press the A button to select the message.
2. Press the A button to enter ID.
3. Press and hold the A button to send the message.
4. Press the A button to select and the B button to go back to the previous menu.

Press the A button to accept and the B button to delete.



The screen displays the message No Entries if no predefined messages exist in the radio.

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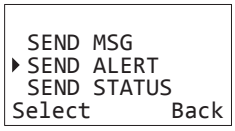
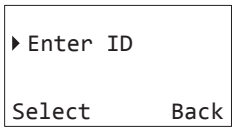
Send Alert (Page)

The Send Alert feature allows for an alert to be send to another radio requesting communication.

To access the Send Alert menu:

1. Select Services from the main menu.
2. Select Send Alert.
3. Press the A button to select or the B button to go back.





To send an alert to a custom radio ID on the controller microphone*:*

1. Press the A button to select.
2. Enter the radio ID using the numeric keypad.
3. Press the A button to initiate the page alert.

To send an alert to a custom radio ID on the local/remote control head:

1. Press the selector knob to select Enter ID.
2. Turn the knob to select a digit. Press the knob to enter the next digit.
3. Enter the entire number. Press and hold the knob to send the page alert.

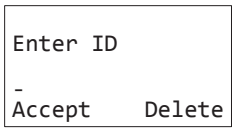
To send an alert to a predefined radio ID on the controller microphone:

1. Press the up/down key to select a predefined radio ID.
2. Press and hold the A button to send the page alert.

To send an alert to a predefined radio ID on the local/remote control head:

1. Turn the selector knob to select a predefined radio ID.
2. Press and hold the knob to send the page alert.

The radio displays Page Sent after the receiving radio has received the page alert.



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Send Status

The Send Status option allows the radio to inform another radio of the user's current status by choosing a predefined status message.

To access the Send Status menu:

1. Select Services from the main menu.
2. Select Send Status.
3. Press the A button to select, or the B button to go back.

The first item displayed is Enter ID if Send Status is selected.

To send status message to a custom radio ID on the controller microphone:

1. Press the A button.
2. Enter the radio ID using the numeric keypad.
3. Press the A button to send the status message.

To send status message to a custom radio ID on the local/remote control head:

1. Press the selector knob to select Enter ID.
2. Turn the knob to select the first digit for the ID. Next press the knob to enter the next digit.
3. Press and hold the knob to send the status message when the entire ID is entered.

To send status message to a predefined radio ID on the controller microphone:

1. Press the up/down key to select a predefined radio ID.
2. Press the A button to send the status message.

To send status message to a predefined radio ID on the local/remote control head:

1. Turn the selector knob (A button) to select a predefined radio ID.
2. Press and hold the knob to send the status message.

The radio displays STS Sent after the receiving radio has received your status message.

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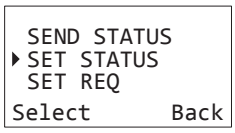
Set Status

The Set Status option allows selection and setting a status message that indicates the radio's current status. The selected message remains set in the radio until updated with another message. Any radios sent a status request will know the current status. The Set Status option also allows access to a list of predefined status messages in the radio.

To access the Set Status menu:

1. Select the Services from the main menu.
2. Select Set Status.
3. Press the A button to select or the B button to go back.

The Set Status option is displayed only when the Status Message feature is enabled in the radio.



To set status on the controller microphone:

1. Press the up/down keys and select Set Status.
2. Select the status message and then press the A button (Select).

To set status on the local/remote control head:

1. Turn the selector knob (A button) to select Set Status.
2. Turn the knob to select the message.
3. Press and hold the knob to set the status message.

The radio will display Status Set when the message is set.

Status Request

The Status Request option allows a signal to be sent to another radio asking for a status update. The Status Request option allows access to a list of predefined requests in the radio.

To access the Set Request menu:

1. Select Services from the main menu.
2. Select status Request.
3. Press the A button to select or the B button to go back.

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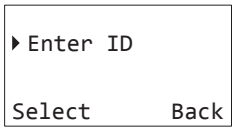
4. The first item displayed is Enter ID if Status Req is selected.



5. Press the A button to select and the B button to go back to the previous menu.

To send status request to a custom radio ID on the controller microphone:

1. Press the A button.
2. Enter the radio ID using the numeric keypad.
3. Press the A button to send the status request.

To send status request to a custom radio ID on the local/remote control head:

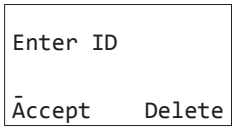
1. Press the selector knob to select Enter ID.
2. Turn the knob to select the first digit for the ID. Next, press the knob to enter the next digit.
3. Press and hold the knob to send the status request when the entire ID is entered.

To send status request to a predefined radio ID on the controller microphone:

1. Press the up/down key to select a predefined radio ID.
2. Press and hold the A button to send the status request.
3. Press the A button to accept and the B button to delete.

To send status request to a predefined radio ID on the local/remote control head:

1. Press the selector knob (A button) to select Enter ID.
2. Turn the selector knob (A button) to select a predefined radio ID.
3. Press and hold the knob to send the status request.



Status Rcvd is displayed after the recipient radio has received the status request. Press the A button to view status of the recipient radio and the B button to exit.

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Check Request

The Check Request feature sends a radio check message to confirm whether a radio is available on the system or in communication range.

To access the Check Request menu:

1. Select Services from the main menu.
2. Select Check Request.
3. Press the A button to select or the B button to go back. The first item displayed is Enter ID if Check Request is selected.
4. Press the A button to select and the B button to go back to the previous menu.

To send Check Request to a custom radio ID on the controller microphone:

1. Press and hold the A button.
2. Enter the radio ID using the numeric keypad.
3. Press the A button to send the check request.

To send Check Request to a custom radio ID on the local/remote control head:

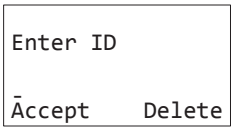
1. Press the selector knob to select Enter ID.
2. Turn the knob to select the first digit for the ID. Next, press the knob to enter the next digit.
3. When the entire ID is entered, press and hold the knob to send the check request.

To send Check Request to a predefined radio ID on the controller microphone:

1. Press the up/down key to select a predefined radio ID.
2. Press the A button to send the check request.

To send Check Request to a predefined radio ID on the local/remote control head:

1. Turn the selector knob to select a predefined radio ID.
2. Press and hold the knob to send the check request.



The message Success is displayed if the radio is available on the system. Press the A button to accept and the B button to delete.

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Inhibit Request

A radio that is configured with this feature can send an Inhibit Request that prevents a selected radio from operating. The Inhibit Request feature is similar to Stun in the existing MDC system.

To access the Inhibit Request menu:

1. Select Services from the main menu.
2. Select Inhibit Request.
3. Press the A button to select or the B button to go back. The first item displayed is Enter ID if Inhibit Request is selected.

To send inhibit request to a custom radio ID on the controller microphone:

1. Press the A button.
2. Enter the radio ID using the numeric keypad.
3. Press and hold the A button to send the inhibit request.

To send inhibit request to a custom radio ID on the local/remote control head:

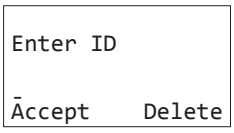
1. Press the selector knob (A button) to select Enter ID.
2. Turn the knob to select the first digit for the ID. Next, press the knob to enter the next digit.
3. When the entire ID is entered, press and hold the knob to send the inhibit request.

To send inhibit request to a predefined radio ID on the controller microphone:

1. Press the up/down key to select a predefined radio ID.
2. Press the A button to send the inhibit request.

To send inhibit request to a predefined radio ID on the local/remote control head:

1. Turn the selector knob to select a predefined radio ID.
2. Press and hold the knob to send the inhibit request.



Inhibit Sent displays after an Inhibit Req message is sent. A radio that is inhibited displays the message Inhibited on the screen.

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Uninhibit Request

A radio that is configured for this feature can send an Uninhibit Request to an inhibited radio allowing it to resume operation. The Uninhibit Request feature is similar to Revive in the MDC system.

To access the Uninhibit Request menu:

1. Select Services from the main menu.
2. Select Uninhibit Request.
3. Press the A button to select or the B button to go back. The first item displayed is Enter ID if Uninhibit Request is selected.
4. Press the A button to select and the B button to go back to the previous menu.

To send uninhibit request to a custom radio ID on the controller microphone:

1. Press the A button.
2. Enter the radio ID using the numeric keypad.
3. Press and hold the A button to send the uninhibit request.

To send uninhibit request to a custom radio ID on the local/remote control head:

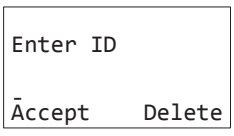
1. Press the selector knob to select Enter ID.
2. Turn the knob to select the first digit for the ID. Press the knob to enter the next digit.
3. When the entire ID is entered, press and hold the knob to send the uninhibit request.

To send an Uninhibit Request to a predefined radio ID on the controller microphone:

1. Press the up/down key to select a predefined radio ID.
2. Press the A button to send the uninhibit request.

To send an Uninhibit Request to a predefined radio ID on the On local/remote control head:

1. Turn the selector knob to select a predefined radio ID.
2. Press the knob to send the uninhibit request.



Uninhibit sent is displayed after an Uninhibit request message is sent.

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Trunking

The Trunking menu allows access to a range of options that are available only when the radio is set to a trunking channel.

To access the Trunking menu:

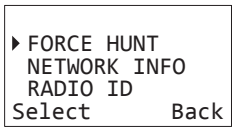
1. Ensure that a trunking channel is chosen.
2. Select Trunking from the main menu.
3. Press the A button to select or the B button to go back to the previous menu.

The trunking menu displays the following options:

- Force Hunt
- Network Info
- Radio ID
- Site Name
- Site Lock
- Site Select

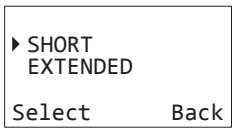
Force Hunt

The Force Hunt feature is used to search and find a control channel by forcing the radio to re-scan a short or extended list of control channels.



Press the A button to select and the B button to go back to the previous menu. The following two options are available under Force Hunt:

- Short Hunt:
  Forces the radio to search through its list of received adjacent site channels, ranking from the highest to lowest channels.
- Extended Hunt:
  Forces the radio to search through its list of all known control channels programmed into the radio if no valid control channel is located by the short hunt method.



Press the A button to select and the B button to go back to the previous menu.

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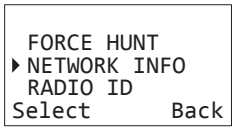
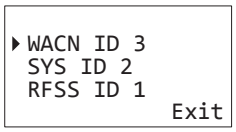
Network Info

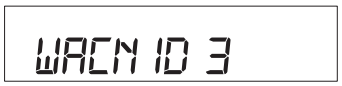
The Network Info feature displays a list of information relating to the current trunking network.



Press the A button to select and the B button to go back to the previous menu. To scroll through the Network Info list:

- Use the up/down arrows on the controller microphone.
- Turn the selector knob (A button) on the local head.

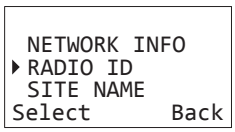




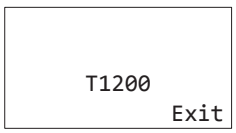
Press the B button to exit.

Radio ID

The Radio ID option displays the radio's ID number.



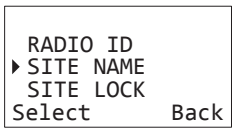
Press the A button to select and the B button to go back to the previous menu.



Press the B button to exit.

Site Name

The Site Name option displays the name of the site the radio is on and connected to.



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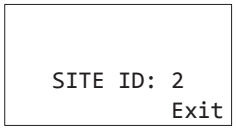
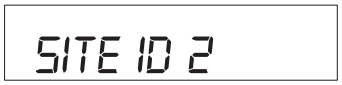
Press the A button to select and the B button to go back to the previous menu.

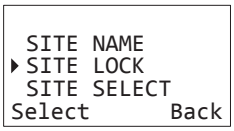




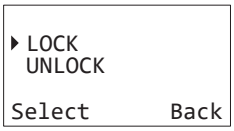
Press the B button to go back to the previous menu.

Site Lock

The Site Lock option allows for the radio to be locked to a specific site.



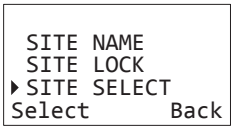
Press the A button to select and the B button to go back to the previous menu.



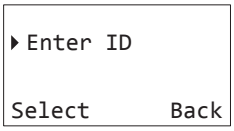
Press the A button to select and the B button to go back to the previous menu.

Site Select

The Site Select option allows you to select a specific site on the radio.



Press the A button to select and the B button to go back to the previous menu. The first item displayed is Enter ID if Site Select is selected.



Press the A button to select and the B button to go back to the previous menu. To select a specific site using site ID on the controller microphone:

1. Press the A button.
2. Enter the site ID using the numeric keypad.
3. Press the A button to select the site.

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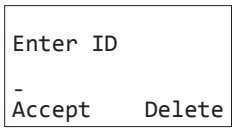
To select a specific site using site ID on the local/remote control head:

1. Press the selector knob to select 'Enter ID'.
2. Turn the knob to select the first digit for the ID. Press the knob to enter the next digit.
3. Press and hold the knob to select the site when the entire ID is entered.



Settings

The Settings option contains a list of options that can be set for the radio.

To access the Settings menu:

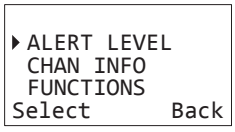
1. Select Settings from the main menu.
2. Press the A button to select or the B button to go back to the previous menu.

The Settings menu displays the following options:

- Alert Level
- Channel Info
- Display
- Functions
- Radio Info
- Speakers
- Bluetooth

Alert Level

The Alert Level setting allows you to set the audio output level of a beep.



Press the A button to select and the B button to go back to the previous menu. The setting has two options, beep level and key tones.

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Beep Level

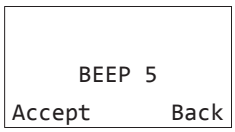
The Beep Level option allows you to set the level of the beep tone.

To access the Beep Level:

1. Select Settings from the main menu
2. Select Alert Level.
3. Select Beep Level.

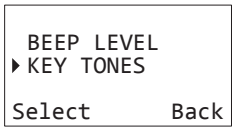
To set the beep tone level:

1. Turn the selector knob on the local head to scroll through different levels. Use the up/down arrows on the controller microphone.
2. Set the beep tone level by choosing a tone level between BEEP 0 and BEEP 9.
3. Press the A button to select and to return to the Alert Level menu. Press the B button to return the beep level to its initial level and return to the Alert Level menu.



Key Tones

The Key Tones feature allows you to set the alert key tones.



To access Key Tones:

1. Select Setting from the main menu.
2. Select Alert Level.
3. Select Key Tones.

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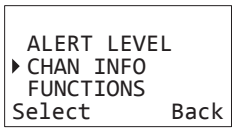
To set/change the alert key tone:

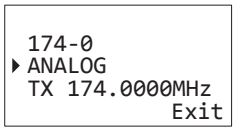
1. Turn the selector knob on the local head. Use the up/down arrows on the controller microphone to scroll through the on/off options.
2. Press the A button to turn the key tones off or on by choosing either option and return to the Alert Level menu.
3. Press the B button to leave the key tone unchanged and return to the Alert Level menu.

Channel Info

The Channel Info displays the configuration information for the set channel. Press the A button to access the menu.



Use the selector knob on the local head, or the up/down buttons on the controller microphone to scroll the information on the display.



Press the B button to go exit.

Display

The Display option allows the backlight brightness for the radio display to be set. The option is available for the local and remote setup only. The controller microphone automatically adjusts the backlight.

Press the A button to access the Backlight menu.

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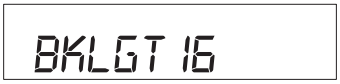
To set the backlight brightness:

1. Turn the selector knob on the local head to scroll through different levels.
2. Set the brightness level by choosing a level between BKLGT 1 and BKLGT 16.
3. Press the A button to select and to return to the Display menu. Press the B button to leave initial brightness level unchanged, and return to the Backlight menu.

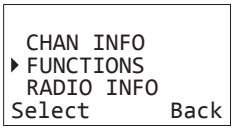


Functions

The Functions menu allows access to functions such as locking the radio, squelch level (for analog channels only) and transmission power.

To access the Functions menu*:*

1. Select Settings from the main menu.
2. Select Functions.

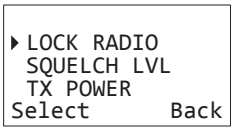


This setting has the following options:

- Lock Radio
- Squelch Level
- TX Power

Lock Radio

The Lock Radio feature allows the radio to be locked.



To lock the radio on the controller microphone:

1. Select Settings from the main menu.
2. Select Functions.
3. Select Lock Radio. The screen displays the message LOCK?.
4. Press the A button to lock the radio. The lock details are displayed on the screen.

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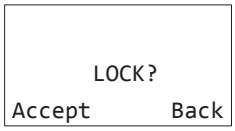
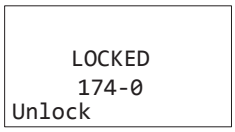
To lock the radio on the local/remote control head:

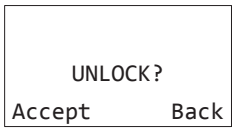
1. Select Settings from the main menu.
2. Select Functions.
3. Select Lock Radio. The screen displays the message LOCK.
4. Press the A button to lock the radio. The lock details are displayed on the screen.





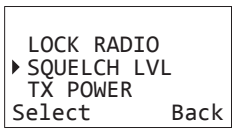
To unlock the radio:

1. Press the A button to access the Unlock option.
2. Press the A button again to unlock the radio. The radio may require a PIN to unlock if configured for PIN entry. For information on how to change the PIN, refer the Change PIN section of this manual.



Squelch Level (for Analog Channels Only)

Squelch is used to eliminate any annoying background noise when there are no signals present. The Squelch Level option allows the squelch level to be set. Squelch level 1 allows the squelch to open on very weak signals, whereas squelch level 9 requires much stronger signals to overcome the squelch.



To access Squelch Level:

1. Select Settings from the main menu.
2. Select Functions.
3. Select Squelch Level.

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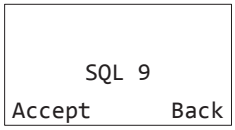
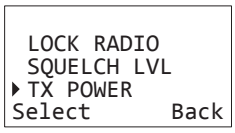
To set the squelch level:

1. Turn the selector knob on the local head, Use the up/down buttons on the controller microphone to scroll through different squelch levels.
2. Set the squelch level by choosing a level between SQL 1 and SQL 9.
3. Press the A button to select and the B button to go back to the Squelch Level menu.



TX Power

The TX Power option allows you to set the radio's maximum transmission power level.

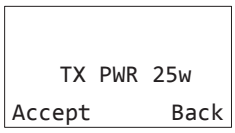


To access TX Power:

1. Select Settings from the main menu.
2. Select Functions.
3. Select TX Power.

To set the TX Power level:

1. Turn the selector knob on the local head to scroll through different TX POWER levels. Press the up/down buttons on the controller microphone.
2. Set the transmission power level by choosing between TX 1W, TX 5W, TX 10W and TX 25W.
3. Press the A button to select and the B button to go back to the previous menu.



Radio Info (Radio Information)

The Radio Info option information allows the radio configuration information to be set.

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Press the A button to select and the B button to go back to the previous menu. The setting has the following options:

- Change PIN
- FW Version
- MAC Address
- MSM Version
- PS25 Unit ID
- MDC/Selcall ID
- Serial Number

Change PIN

The Change PIN option allows the PIN used to lock and unlock the radio to be changed.

To access Change PIN:

1. Select Settings from the main menu.
2. Select Radio Info.
3. Select Change PIN.

The screen displays the message Enter PIN.

To change the PIN on the controller microphone enter the new PIN and press the A button.

To change the PIN on the local/remote control head:

1. Press the selector knob to select Enter PIN.
2. Turn the knob to select the first digit for the new PIN. Press the knob to enter the next digit. Enter the entire PIN.
3. Press and hold the knob to change the PIN.

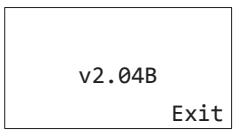
FW Version (Firmware Version)

The FW Version option displays the current firmware version installed on the radio.

To access FW Version:

1. Select Settings from the main menu.
2. Select Radio Info.
3. Select FW Version.

Press the A button to select and the B button to go back to the previous menu.



Press the B button to exit this menu.

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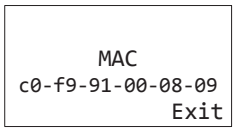
MAC ADDR (MAC Address)

The MAC Address option displays the radio's MAC (media access control) address.

To access MAC Address:

1. Select Settings from the main menu.
2. Select Radio Info.
3. Select MAC Addr.

Press the A button to select and the B button to go back to the previous menu.



Press the B button to exit this menu.

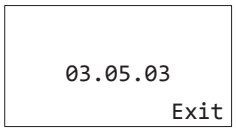
MSM Version (Mini Signalling Module version)

The MSM option displays the MSM's firmware version.

To access MSM Version:

1. Select Settings from the main menu.
2. Select Radio Info.
3. Select MSM Version.

Press the A button to select and the B button to go back to the previous menu.



Press the B button to exit this menu.

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P25 Unit ID

The P25 Unit ID displays the current P25 unit ID is displayed when a P25 trunk/conventional channel is set for your radio.

To access P25 Unit ID:

1. Select Settings from the main menu.
2. Select Radio Info.
3. Select P25 Unit ID.

MDC/Selcall ID

The MDC/Selcall ID is displayed when an analog channel is selected for the radio. To access MDC/Selcall ID:

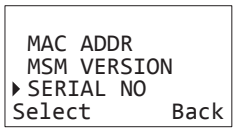
1. Select Settings from the main menu.
2. Select Radio Info.
3. Select MDC/Selcall ID.

Serial Number

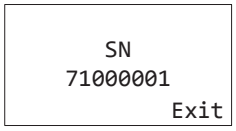
The Serial Number displays the radio's serial number.

To access Serial No:

1. Select Settings from the main menu.
2. Select Radio Info.
3. Select Serial No.



Press the A button to select and the B button to go back to the previous menu.



Press the B button to exit this menu.

Speakers

The Speakers feature allows you to mute or unmute speakers on the radio.

To access Speakers:

1. Select Settings from the main menu.
2. Select Speakers.

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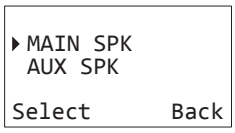
The options available are:

- MAIN SPK (Main speaker)
- AUX SPK (Auxiliary speaker)

Main Speaker

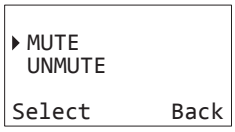
To access Main Speaker:

1. Select Settings from the main menu.
2. Select Speakers.
3. Select Main Spk.



To set the mute/unmute main speaker:

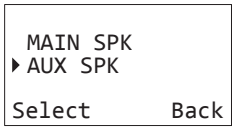
1. Press the A button to select Mute to mute main speaker. Select Unmute to unmute the speaker.
2. Press the B button to go back to the previous menu.



Auxiliary Speaker

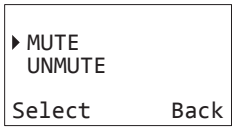
To access Auxiliary Speaker:

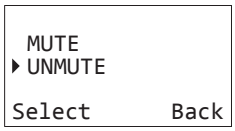
1. Select Settings from the main menu.
2. Select Speakers.
3. Select Aux Spk.



To set the mute/unmute auxiliary speaker:

1. Press the A button to select Mute to mute the auxiliary speaker. Select Unmute to unmute the speaker.
2. Press the B button to go back to the previous menu.





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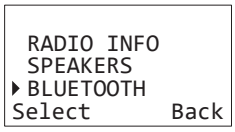
Bluetooth

The Bluetooth feature allows the radio to wirelessly connect to a compatible device. The feature can be used only by the dealer to download firmware, and update configuration on the radio.



Diagnostics

The Diagnostics option allows access to view the radio's frequency and RSSI.
To access this option, select Diagnostics from the main menu.

There are two options available for this feature:

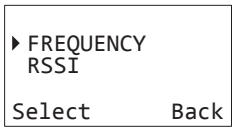
- Frequency
- RSSI

Frequency

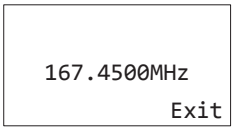
The Frequency option displays the radio's current frequency.

To view radio frequency details:

1. Select Diagnostics from the main menu.
2. Select Frequency.



The following figure is an example of the radio frequency display on the controller microphone and local head.



Press the B button to exit.

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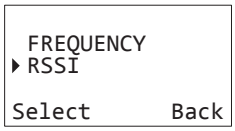
RSSI

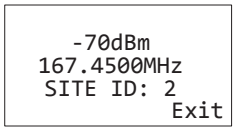
The RSSI (Received Signal Strength Indication) option displays the received signal strength of the current channel. The signal strength is expressed in decibels (dBm). The lower the dBm number, the stronger the signal.

To view the radio RSSI:

1. Select Diagnostics from the main menu
2. Select RSSI.



The figure belows is an example of the RSSI display on the controller microphone and the local head.



Press the B button to exit.

Emergency Modes

Any programmable key can be configured to activate the emergency mode. Depending on how the local/remote control head, or microphones are configured, a press or a hold of the programmed key activates emergency mode. Figure 8 in this manual displays the emergency button on the controller microphone. The dealer can configure the function of the button as required. Contact the dealer for more information on the exact behaviour of emergency modes, and how to configure it on the radio.

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Programmable Keys Control Functions

This section illustrates the various control functions that the dealer has assigned to programmable keys on the radio. The sections below can be filled in by the dealer.

Local/Remote Control Head Programmable Functions

Label the diagram below with the control functions assigned to the programmable keys.

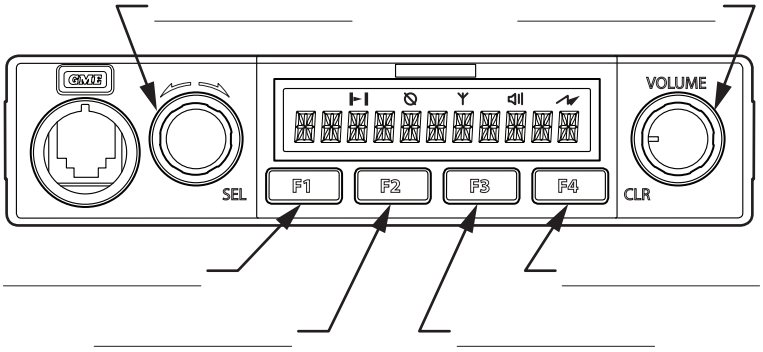

Figure 11 - Control functions on local/remote control head

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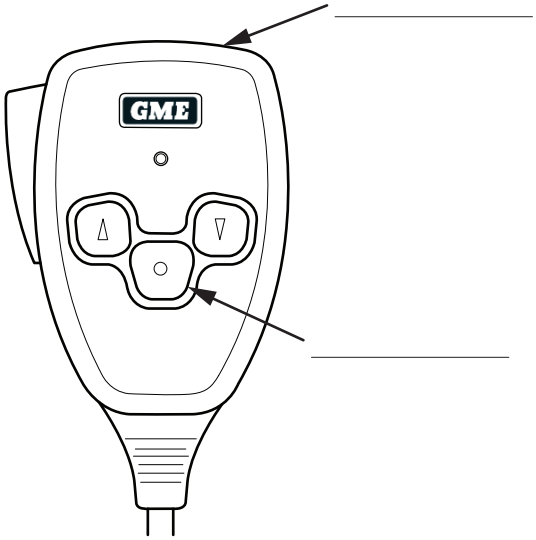
Fist Microphone Programmable Functions

Label the diagram below with the control functions assigned to the programmable keys.



Note: The A button (located between the up and down buttons) on the fist microphone will be assigned the same control function as the A button on the local/remote control head.

Figure 12 - Control functions on fist microphone

Controller Microphone Programmable Functions

Label the diagram below with the control functions assigned to the programmable keys.

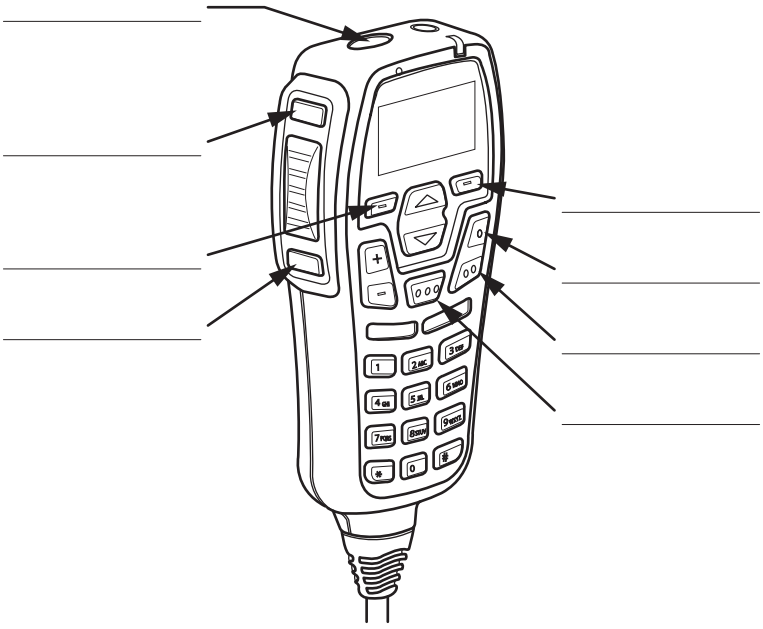


Figure 13 - Control functions on controller microphone

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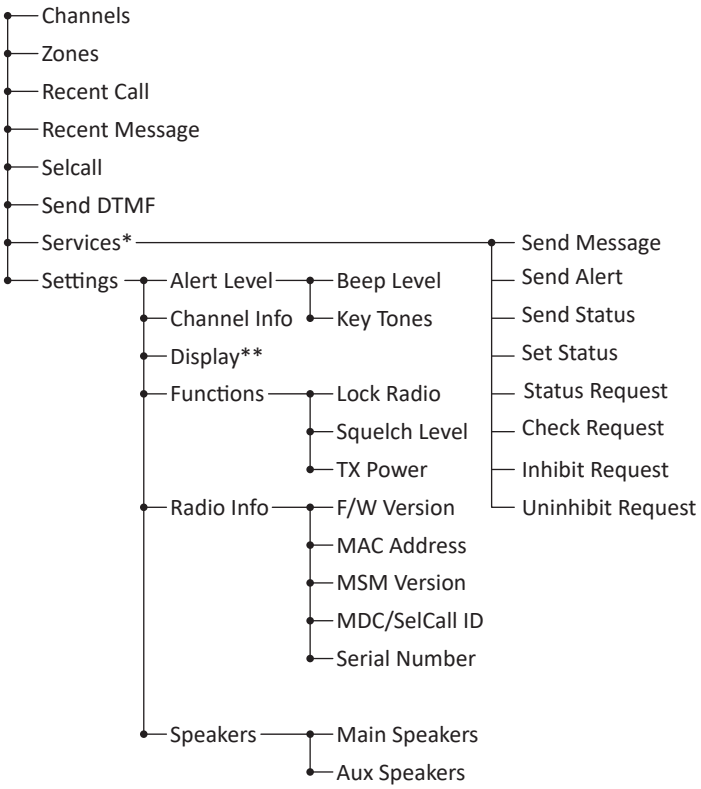
Menu Tree - Analog



* The 'Services' menu is displayed only when Digital Selcall (MDC1200) is enabled.
** The 'Display' menu is displayed only on the local/remote control head.

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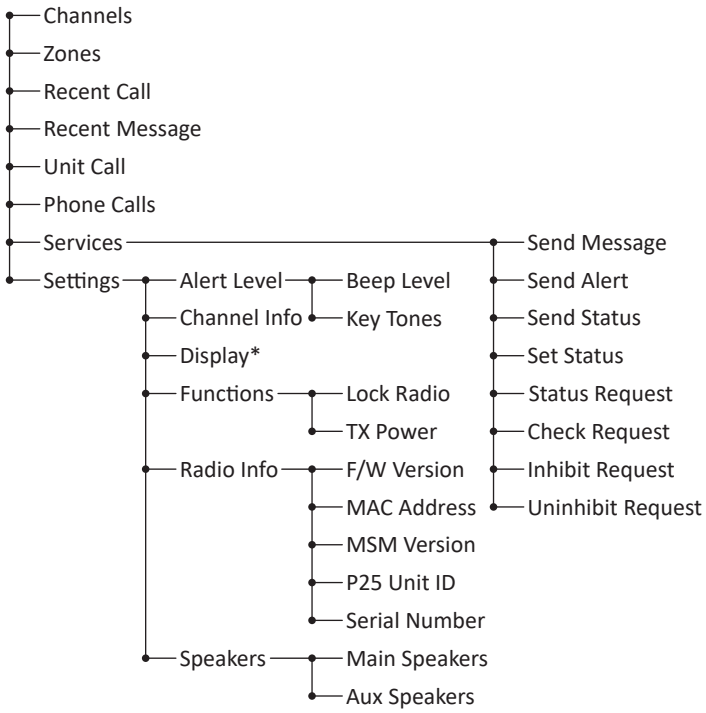
Menu Tree - P25 Conventional



* The 'Display' menu is displayed only on the local/remote control head.

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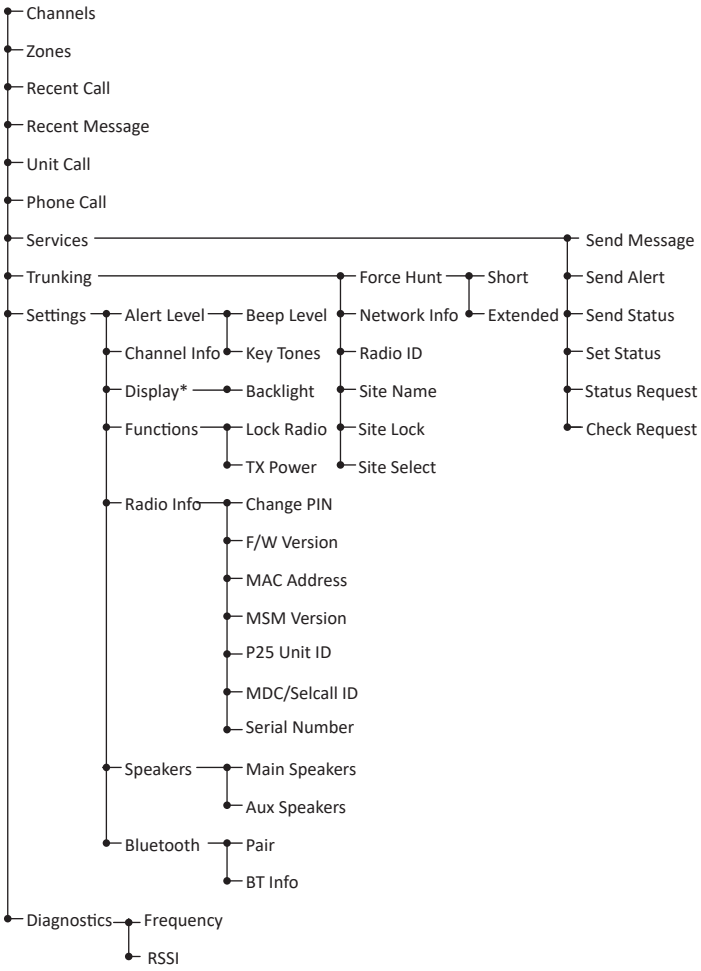
Menu Tree - P25 Trunked



* The 'Display' menu is displayed only on the local/remote control head.

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Specifications

General

Type	Description
RF Performance	Compliant with AS/NZS 4295 | ETS 300-086 | TIA-603-C
Frequency Band	VHF 136 to 174MHz (Australia) VHF: 138 to 174MHz (Canada) VHF: 150 to 174MHz (US)
	UHF LO: 400 to 480MHz (Australia) UHF LO: 406.1 to 470MHz (Canada) UHF LO: 406.1 to 480MHz (US)
	UHF HI: 450 to 520MHz (Australia) UHF HI: 450 to 470MHz (Canada) UHF HI: 450 to 512MHz (US)
Number of Channels	Total 2000 | P25 1072
Number of Zones	50
Channel Spacing	25kHz, 12.5kHz
Channel Steps	12.5kHz, 6.25kHz, 5kHz, 2.5kHz
Frequency Stability	±1kHz for -20°C to 60°C or -4°F to 140°F
Modulation	FM, C4FM
Antenna Impedance	50Ω
Antenna Connector	BNC
Supply Voltage	13.8V negative earth
Operating Voltage Range	10.8V to 15.6V
Reverse Polarity Protection	Diode
Over Voltage Protection	18V crowbar
Fuse	2 x 10A blade type in-line fuse
Current Consumption	RX muted 170mA | RX full audio 1A | TX 6A

Transmitter

Type	Description
Power Output	25W, 10W, 5W, 1W selectable per channel
Transmit Duty Cycle	4:1 for 25W output
Modulation Type	C4FM, FM, DC coupled, DSP audio processing
Deviation Limiting	5kHz, 2.5kHz at +20dB AF limiting
TX Audio Frequency Response	+6dB/octave, +1dB/-3dB, 300Hz to 3kHz
AF Distortion	3% below limiting
TX Audio Residual Noise and Hum	-40dB
Spurious Emissions	-36dBm
Adjacent Channel Power	-60dBc

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Receiver

Type	Description
Circuit Type	Double Conversion Superheterodyne, DC coupled, DSP audio processing
IF Frequencies	21.4MHz (VHF) | 38.85MHz (UHF), 450 kHz
Analog Sensitivity	-122dBm for 12dB SINAD unweighted
Digital Sensitivity	-122dBm C4FM for 5% BER
Adjacent Channel Selectivity	60dB
Spurious Rejection	75dB
Intermodulation Rejection	75dB
Blocking	100dB
RF Switching Bandwidth	VHF 38MHz | UHF 70MHz
Conducted Spurious Emissions	-80dBm

Audio

Type	Description
RX Audio Frequency Response	+6dB/octave, +1dB/-3dB, 300Hz to 3kHz
RX Audio Residual Noise and Hum	-40dB
Audio Rated Power - Radio	3W into 4Ω
Audio Rated Power - UIC600	2W into 8Ω

Mechanical

Type	Description
Dimensions	29mm (H) x 127mm (W) x 163mm (D) 1.14”(H) x 5” (W) x 6.41”(D)
Weight	620g

Environmental

Type	Description
Operating Temperature Range	-30°C to 60°C -22°F to 140°F
Storage Temperature Range	-30°C to 70°C -22°F to 158°F
Shock and Vibration	MILSPEC 810
Ingress Protection Rating	IP54

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