



Trunk-Mount Mobile Radio Operator Manual



APCO Project 25 Compliant

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Guardian™ operator manual for use with the trunk-mount mobile radio.

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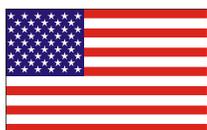
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NOTICE TO USER

WARNING! Maintain a distance of at least 60 cm between the antenna and people.

To satisfy RF exposure compliance, you, as a qualified user of this radio device must control the exposure conditions of bystanders to ensure the minimum distance is maintained between the antenna and nearby persons. The operation of this transmitter must satisfy the requirements of the Occupational/Controlled Exposure Environment for work-related use. Transmit only when people are at least the minimum distance from the properly installed, externally mounted antenna.

This radio is designed for initial setup by authorized technicians using a computer and the Guardian™ programming software. Programming can enable or disable many of the radio's features from user access per user agency security policy and legal restrictions. All, some, or none of the features and functions described in this manual may be available to the user. To successfully operate the radio, it is important to understand how the radio is programmed prior to issuance by the user agency. Consult authorized agency personnel for features and functions made available or restricted to the user. FCC licensees are prohibited by federal law from enabling the radio to directly enter transmit frequencies using the radio's controls.

NOTICE TO INSTALLATION TECHNICIANS

Use only a manufacturer- or dealer-supplied antenna.

Antenna minimum safe distance: 60 cm.

The Federal Communications Commission (FCC) has adopted a safety standard for human exposure to Radio Frequency (RF) energy that is below the Occupational Safety and Health Act (OSHA) limits.

Antenna mounting: The antenna supplied by the manufacturer or radio dealer must be mounted at a location so that during radio transmission people cannot come closer than the minimum safe distance to the antenna, i.e., 60 cm.

To comply with current FCC RF exposure limits, the antenna must be installed at or exceeding the minimum safe distance, and in accordance with the requirements of the antenna manufacturer or supplier.

Base station installation: The antenna should be fixed-mounted on an outdoor permanent structure. Address RF exposure compliance at the time of installation.

Antenna substitution: Do not substitute any antenna for the one supplied or recommended by the manufacturer or radio dealer. You may be exposing people to harmful RF radiation. Contact your radio dealer or manufacturer for further instructions.

Contents

INTRODUCTION.....	1	ADJUSTING SQUELCH.....	9
ACCESSORIES	1	TRANSMIT INHIBIT OVERRIDE	10
PALM MICROPHONE.....	1	EMERGENCY CALL	10
DTMF MICROPHONE.....	1	SELECTING ENCRYPTION.....	10
ANTENNAS.....	1	TRANSMITTING.....	10
EXTERNAL SPEAKER	1	ZEROIZING ENCRYPTION BUTTONS	10
EXTENDED DC POWER CABLE	1	RADIO SETTINGS.....	11
PROGRAMMING KIT	1	MENU STRUCTURE.....	11
KEY VARIABLE LOADER	ERROR!	REQUIRED PASSWORDS.....	11
BOOKMARK NOT DEFINED.		ENTERING DATA.....	12
SERVICE MANUAL	2	SCAN OPERATION MENU	12
QUICK START.....	2	SELECT MENU	12
FEATURES AND SPECIFICATIONS	2	HOME CHANNEL MENU	13
CAPACITIES	3	PROGRAM MENU	13
Channels	3	<i>Global Setting Submenu.....</i>	<i>13</i>
Zones of Channels.....	3	Backlight (BKLITE)	13
Banks of Zones.....	3	Backlight Delay (BL DLY).....	13
Shadow Channels.....	3	Time-out Timer (TOT).....	13
Encryption Keys.....	3	Display (DISPLY).....	14
Encryption Algorithm	4	Home Channel (HOM).....	14
Squelch Options	4	Emergency Channel (EMG).....	14
EMERGENCY CALL.....	4	Emergency Call (ALERT)	14
ALERT TONES	4	Transmit Inhibit (TX INH).....	14
FRONT PANEL DESCRIPTION.....	5	Repeater Delay (RPTR)	14
POWER-VOLUME KNOB	5	Global Erase (ERASE).....	15
CHANNEL SELECT KNOB	5	<i>Channel Setup Submenu.....</i>	<i>15</i>
PROGRAMMABLE SWITCH	5	<i>Scan Setup Submenu.....</i>	<i>15</i>
STATUS INDICATOR.....	6	<i>Password Setup Submenu.....</i>	<i>16</i>
SPEAKER SWITCH.....	6	COVERT MENU	16
SPEAKER INDICATOR.....	6	ENCRYPTION MENU.....	17
PROGRAMMABLE BUTTONS.....	6	RADIO CLONING.....	17
MENU BUTTONS	6	ENCRYPTION KEYFILL	17
PUSH-TO-TALK BUTTON	7	TROUBLESHOOTING.....	18
DISPLAY	7	PRODUCT INFORMATION	19
RADIO OPERATION.....	8	FACTORY SUPPORT	19
SELECTING CHANNELS.....	8	USER SERVICING	19
SELECTING SHADOW CHANNELS	8		
SELECTING HOME CHANNEL	8		
SELECTING A ZONE	9		
SELECTING A BANK	9		
SELECTING TALK-AROUND	9		
SCANNING	9		

Introduction

The Guardian trunk-mount mobile radio is carefully crafted with advanced electronics, software, and materials incorporated into a rugged, professional grade design, offering years of reliable service with reasonable care. Numerous combinations of options, features, and channel settings are possible through software programming. The Guardian is a VHF radio providing 136 to 174 MHz in analog or digital, wideband or narrowband modes, and is APCO Project 25 compliant. Consult authorized personnel for information and user training, and before attempting to modify radio settings.

Accessories

Contact your Datron representative for details on these accessories.

Palm Microphone (G25AMM001)

The palm microphone is a standard microphone with coiled cord and black finish.

DTMF Microphone (G25AMM002)

The dual-tone multifrequency (DTMF) signaling microphone is required to make alphanumeric entries and selections during direct radio programming.

Antennas

There are four antennas available depending on the used frequency range. Do not substitute inappropriate antennas, connect the radio to an external amplifier, or use the radio without any antenna. Improper antennas or connections may pose RF hazard to personnel.

External Speaker (G25AMS001)

The external speaker provides 10W of clear communications audio from the radio. Comes with data and speaker cable.

Extended dc Power Cable (G25AMG002)

The extended dc power cable is an extra-length, 25 ft. power cable intended for longer runs between vehicle battery and radio.

Programming Kit (G25AXR010)

The programming kit is required for full access to radio features. Includes a manual, software, cloning cable, and carry case.

Service Manual (G25AMK005)

The service manual is used to assist trained technicians in locating technical problems.

Quick Start

The Guardian radio requires initial setup by qualified personnel using the Guardian programming software.

1. **Power availability.** Power is supplied by starting the vehicle engine.
2. **Select speaker.** Set the speaker switch to **I** for internal speaker operation, **E** for external, or **B** for both speakers simultaneously.
3. **Power on.** Turn the power-volume knob clockwise about half way around. When a transmission is heard, set the volume to a comfortable level. There is a 5-second delay on power up for the radio self-test.
4. **Select channel.** Turn the channel knob until the desired channel displays.
5. **Receive.** The first volume knob position mutes the speaker for silent operation. Other positions control the speaker volume.
6. **Transmit.** Install the palm microphone using the microphone jack on the front panel. Press the **PTT** button and speak about 4 inches away from the microphone. Release the **PTT** button when finished speaking.

Features and Specifications

The Guardian mobile 256-channel (4 banks, 16 zones) radio provides multi-mode plain and secure communications in the 136-174 MHz spectrum. Premium standard features include data encryption standard (DES) single-bit cipher feedback (SBCF) analog encryption, high-output LCD, tri-color LED status indicator, 16-position rotary volume and channel knobs, programmable switch and function buttons, speaker switch, and indicator. Channels can be individually programmed for 25 kHz wideband or 12.5 kHz narrowband operation, analog or digital, plain or encrypted, with transmitter power settable from 25W to 110W in three steps (25W, 50W, and 110W). Up to seven shadow channels can be programmed for any channel providing all-mode radio performance. Sixteen encryption keys can be stored in the radio.

Capacities

Channels

There are 256 channels (frequency pairs) available for programming. Each can be set for receive and transmit frequencies, wideband or narrowband, analog or digital, various squelch types, encryption key, power output level, and an 8-character alphanumeric channel tag (name).

Zones of Channels

Sixteen zones (groups of channels) are available for programming. Each zone can have up to 16 channels (16 zones x 16 channels/zone=256 channels). Zones are assigned group tags (names) of up to 8 alphanumeric characters, and selected as programmed by the toggle switch, function buttons, or through the menu and keypad.

Banks of Zones

Four banks (groups of zones) are available for programming. Each bank can have up to 16 zones assigned. Banks are assigned group tags of up to 8 alphanumeric characters, and selected using the menu and keypad.

Shadow Channels

Up to 7 shadow channels are available for each primary channel. Shadow channels enable you to monitor and reply (if all settings match) to all transmissions on a given channel. Shadow channels can have different modulation modes (analog or digital), bandwidths, squelch modes, digital network access codes (NAC), and encryption key than their associated primary channel. Each shadow channel must have the same transmit and receive frequencies, scan list, talk-around, locked options, and transmit power level as its associated primary channel. The primary or shadow channel can have analog encryption enabled. Shadow channels count toward the 256-channel total radio capacity. Shadow channels are created and edited through the programming software. Consult authorized personnel for assigning a shadow channel.

Encryption Keys

Up to 16 encryption keys can be stored in the radio for selective assignment to each applicable channel. Selection of a new key from the key list replaces the default key for a selected channel.

Encryption Algorithm

Standard Guardian software includes an SBCF analog DES encryption, usable on 25 kHz wideband channels.

Squelch Options

Analog squelch options are none, continuous tone-coded squelch system (CTCSS), and digital-coded squelch (DCS). Digital squelch options are none, network access code (NAC), and talk-group identifier (TGID) including individual call.

Emergency Call

This feature is used when the radio is connected to an external, user-supplied emergency switch, and when programmed for emergency operation. In alert mode, emergency messages display and a beep is heard every time the radio transmits the emergency message. In silent mode, emergency transmissions are made but the radio does not beep and emergency messages do not display.

Alert Tones

Audible tones provide important information about the radio's operating state or condition:

Tone pitch	Tone length	Description
Low	Beep	Button press error/failed self-test/talk timeout warning/empty channel
Low	Continuous	Talk time-out/talk inhibit/invalid mode/radio locked
Medium	Beep	Button press/passed self-test/receiving in clear voice
Medium	Pulse	Emergency call mode/key error
High	Beep	Low input voltage (vehicle power)
High	Pulse	Individual call

Front Panel Description

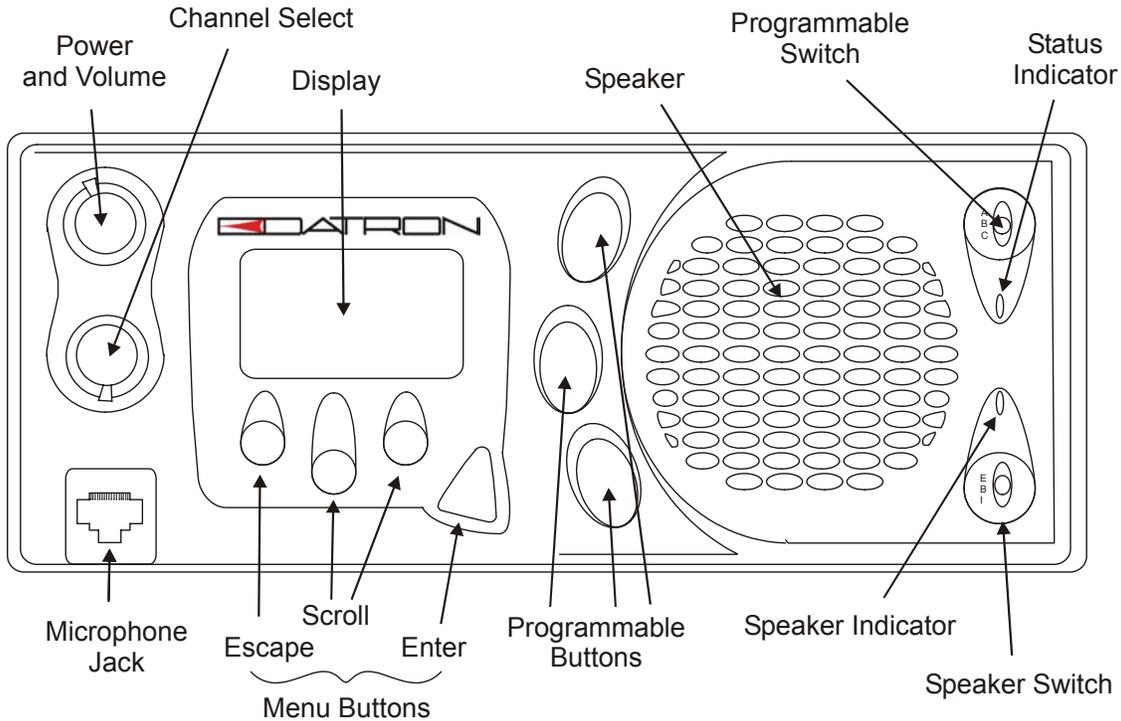


Figure 1: Controls and Indicators

Power and Volume Knob

The last counterclockwise position is power off. The first clockwise position is power on with the speaker muted. Subsequent clockwise positions (clicks) increase the speaker volume. The clicking feature prevents accidental knob rotation. Rotate the power-volume knob clockwise about half way around. When a transmission is heard, set the volume to a comfortable level.

Channel Select Knob

The 16-position rotary knob is programmed for radio operating channels. Consult authorized personnel for channel assignments.

Programmable Switch

The 3-position (A, B, C) toggle switch can be programmed for zone select, transmit encryption enable/disable, scan on/priority/off, power high/low, talk-around on/off, monitor on/off, or not used. Consult authorized personnel for assigning specific functions.

Status Indicator

The color LED status indicator signifies:

Color	Action	Description
Red	Steady	Transmitting
Green	Steady	Receive mode/receiving clear transmission
Green	Flashing	Receiving encrypted transmission
Orange	Steady	Emergency call state/low-battery condition/squelch off

Speaker Switch

The 3-position toggle switch selects the internal radio speaker (I), external vehicle speaker (E), or both (B) speaker operations.

Speaker Indicator

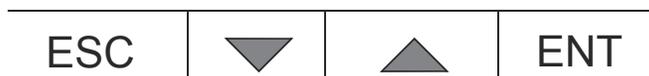
When the external speaker is selected, the speaker indicator is red.

Programmable Buttons

These three buttons can be programmed for monitor on/off, LCD backlight bright/dim/off, transmit encryption enable/disable, scan list add/delete, scan on/priority/off, keypad disable, signal strength indicator on/off, talk-around on/off, home channel select, power high/low, next zone, or not used. Consult authorized personnel for assigning specific functions to these buttons.

Menu Buttons

These four buttons perform actions determined by the display located above them. The right-hand **Enter (ENT)** button lets you enter information into the radio and to toggle between a setting and its value. The left-hand **Escape (ESC)** button allows you to return to a previous display without making changes to values. Scroll buttons move a highlight up and down menu choices as indicated on the display.



When data is entered using the DTMF keypad, the scroll buttons move the highlight left to right. Scroll direction is also indicated on the display.



Push-to-Talk Button

The **PTT** button located on the palm microphone provides standard push-to-transmit and release-to-receive radio operation.

Display

On power up the radio briefly displays the Guardian name and software version numbers. The display then indicates the operating status for the selected channel. Turn the channel knob to select a different channel to view.

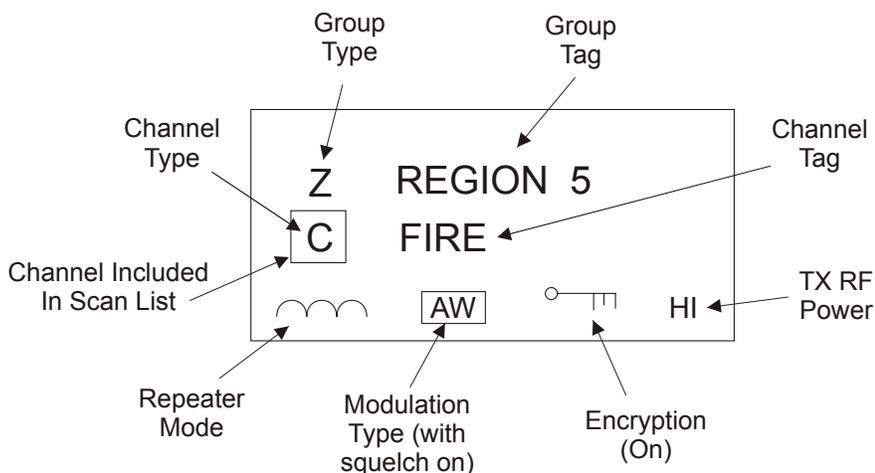


Figure 2: Channel Status

The display consists of various icons.

Group type icons: **B** = bank, **Z** = zone. Channel type icons: **C** = channel, **S** = shadow channel, **H** = home channel, **E** = emergency, a **□** around a channel type means it is included in a scan list. Modulation type icons: **AW** = analog wideband, **AN** = analog narrowband, and **DG** = digital, a **□** around the modulation type means squelch is active. Other icons: **TX** = transmit mode, **RX** = receive mode, **TA** = talk-around, **∩∩** = repeater, and **⚔** = encrypted.

To include a channel in the scan list, press the up scroll button once. To remove it from the list, press the down scroll button once.

Squelch is activated from the channel setup submenu; refer to the Radio Settings section.

Press **Enter** to access the main menu.

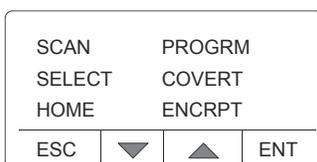


Figure 3: Main Menu

Use the scroll buttons to highlight a menu selection. Press **Enter** to access its submenu. Press **Escape** to revert to the previous display.

Submenus can consist of more than one display and are cyclic (roll over to the first display after the last display). When a submenu continues on more than one display, a ▼ displays in the lower right corner. Press **Enter** to access the continued submenu.

Radio Operation

Selecting Channels

Rotate the channel select knob while observing the display to choose the desired channel. Consult authorized personnel for assigning channels.

Selecting Shadow Channels

A DTMF keypad is required to select a shadow channel. When a transmission is received on a shadow channel, an **s** displays as the channel type. The talk-back timer allows you to transmit within 10 seconds on the shadow channel. The talk-back timer is reset at the end of each message received. Shadow channels are held or selected by pressing the asterisk (*) followed by the shadow channel number (1 to 7) while the associated primary channel is selected. Revert to the primary channel by either pressing asterisk (*) and zero (0), two asterisks (**), the **Escape** button, or by allowing the talk-back timer to reset itself.

Selecting Home Channel

If a button is programmed for a home channel, press the designated home button. The channel status for the home channel displays. Consult authorized personnel for assigning a home button.

To assign a different home channel, access the main menu. For more information, refer to the Radio Settings section.

Selecting a Zone

If a button or switch is programmed for zone select, press the designated zone button or position the toggle switch appropriately. Consult authorized personnel for assigning a zone button.

A zone is selectable by accessing the main menu. For more information, refer to the Radio Settings section.

Selecting a Bank

Banks are selected by accessing the main menu. For more information, refer to the Radio Settings section.

Selecting Talk-Around

Talk-around forces the transmit frequency to an equal receive frequency for a selected channel, useful for direct radio-to-radio communication when a repeater is unavailable. If a button or switch is programmed for talk-around, press the designated button or position the toggle switch appropriately. Consult authorized personnel for assigning a talk-around button.

Talk-around is selectable by accessing the main menu. For more information, refer to the Radio Settings section.

Scanning

If a button is programmed for scan select, press the designated scan button or select the designated toggle switch position to select or deselect scanning. Consult authorized personnel for assigning a scan button.

The scanning process begins and is visible by pressing **Escape** to return to the channel status display. The four letters on top of the display differ depending on the selected scan mode (scan, search, or zone).

Scan is activated and setup from the main menu as well. For more information, refer to the Radio Settings section.

Adjusting Squelch

Press and briefly hold the switch programmed for monitoring until the squelch adjust status displays. Use the scroll buttons to change the squelch setting. Consult authorized personnel for assigning a monitor switch.

Squelch is also adjustable from the main menu. For more information, refer to the Radio Settings section.

Transmit Inhibit Override

If the radio is set for transmit inhibit override, press **PTT** twice quickly to transmit over an existing conversation on the channel. For more information, refer to the Radio Settings section.

Emergency Call

To activate, use the external user-supplied emergency switch (radio must be programmed). The radio initiates and continues in an emergency call state until the emergency call is deactivated.

To deactivate, press and hold the external user-supplied emergency switch (radio must be programmed) until the radio beeps, or power off the radio with the power-volume knob.

For information about setting the emergency switch to normal or silent, refer to the Radio Settings section.

Selecting Encryption

Selection of encrypted or plain mode is automatic since channels are programmed for plain or encrypted mode. If you attempt to reprogram the radio from encrypted to plain, the radio generates an alert tone when **PTT** is pressed for an encrypted channel. For more information, refer to the Radio Settings section.

Transmitting

Press the **PTT** button and speak at a normal level about 4 inches from the microphone. Release the **PTT** button when finished speaking. Do not hold the **PTT** longer than necessary after talking. Channels programmed for receive-only operation sound an alert tone, display **RX ONLY**, and do not transmit.

Zeroizing Encryption Buttons

Use the external user-supplied emergency switch to zeroize (radio must be programmed) the encryption buttons. Selective zeroization is performed using the programming (**PROGRM**) menu, if enabled. For additional zeroizing information, refer to the Radio Settings section.

Radio Settings

Setting the radio's functions and features is selectively permitted or restricted according to agency policy and federal law, by authorized technicians using the programming software. Internal radio software provides limited access to certain features and settings. Menus shown in this manual may not be available on the radio. Consult authorized personnel to determine the features and functions that are enabled for your radio.

Menu Structure

The Guardian operates with most of its features already programmed providing single-button action. The ability to change certain programmed settings is made available by accessing menus. For information on use of these menus, refer to the Radio Settings section.

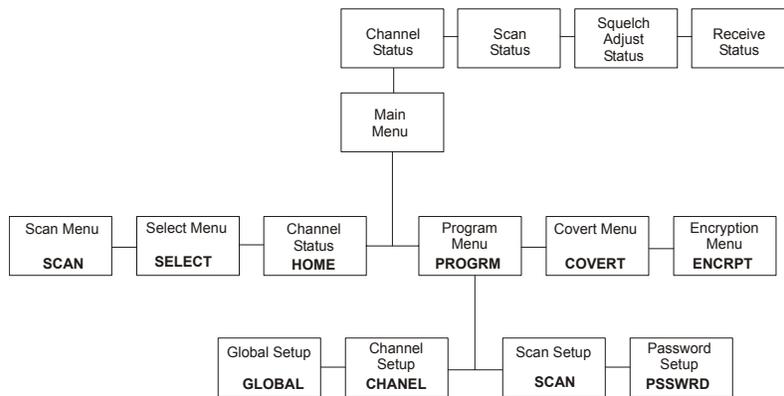


Figure 4: Menu Structure Diagram

Required Passwords

Passwords may be required to enter the program, covert (**COVERT**), and encryption (**ENCRPT**) submenus. Use the DTMF keypad to enter predetermined passwords. An incorrect password causes **INVALID ENTRY** to display. Press **Escape** and try again. If an invalid password is attempted three times consecutively, **ACCESS DENIED** displays. Press **Escape** to resume radio operation. To enter a new valid password, power off and on the radio. When submenus are disabled, the radio displays **MENU DISABLE**. Consult authorized personnel for guidance.

Entering Data

The DTMF keypad is required to enter alphanumeric data into the radio. In addition, the type of character that displays depends on whether **ALPHA** or **NUMBER** is set in the display setting from the global (**GLOBAL**) submenu.

For numeric characters, a keystroke on the DTMF keypad displays the number and moves the cursor to the right. When finished, press **Enter**.

For alpha characters, press the key bearing the desired letter on the DTMF keypad multiple times as required to show it on the display. Use the scroll buttons to navigate across the line. When finished, press **Enter**.

Scan Operation Menu

Access the main menu, scroll to highlight **SCAN**, and press **Enter**. Choose to enable or disable the scan function, select the scan mode, and enable or disable priority channels. For scan mode, select **SCAN** for normal scanning, **SEARCH** for a scan of all frequencies programmed into the radio, and **ZONE** for scanning all zones in the zone scan list. Priority (**PRITY**) scanning includes none (**OFF**), one (**PR1**), or two (**PR2**) predefined priority channels. Activity on priority channels overrides all other modes except emergency.

Select Menu

Access the main menu, scroll to highlight **SELECT**, and press **Enter**. Choose programmed channels, zones, banks, and enable or disable the talk-around mode. **ZONE** permits an alternate zone selection, and **BANK** permits a bank selection different than the one used in the programmed bank scan. Talk-around (**TKRD**), when on, forces the transmit frequency to an equal receive frequency for a selected channel, useful for direct radio-to-radio communication when a repeater is unavailable.

Setting	Value
ZONE	Select alternate
BANK	Select alternate
PHON (Phone)	(Future development)
MSGE (Message received)	(Future development)
IDCL (Individual call))	(Future development)
TONE (Tone)	(Future development)
TKGP (Talk group)	(Future development)
TKRD (Talk-around)	Off or on

Home Channel Menu

Access the main menu. Scroll to highlight **HOME** and press **Enter**. The home channel displays. To assign a different home channel, select **GLOBAL** from the program menu.

Program Menu

Allows the operator to change global radio settings, channel settings, scan options, and the password. Access the main menu and scroll to highlight **PROGRAM**. Press **Enter**. If required, enter the predefined password for this radio and press **Enter**.

Note: **LISTS** and **SCLISTS** are future developments, presently unavailable.

Global Setting Submenu

From the program menu, highlight **GLOBAL**, and press **Enter**. Choose from the following settings:

Setting	Value
BKLITE (Backlight)	BRIGHT/DIM/OFF
BL DLY (Backlight delay)	0 to 9 seconds
TOT (Time-out timer)	30 to 300 seconds in 30 second intervals/OFF
DISPLY (Display)	ALPHA/NUMBER
HOM (Home channel)	Home channel designation
EMG (Emergency)	Emergency channel designation
ALERT	NORMAL/SILENT
P/D EM	(Future development)
TX INH (Transmit inhibit)	CARR/CARR+O/TONE+O/NAC/NAC+O/NONE
RPTR (Repeater)	(Future development)
ERASE	Erase or delete all settings

Backlight (BKLITE)

Enables, disables, and varies the intensity of the LCD and keypad illumination.

Backlight Delay (BL DLY)

Sets the time delay for the LCD and keypad backlighting.

Time-Out Timer (TOT)

Limits the duration of messages (30 to 300 seconds in 30-second increments), reducing the possibility of accidental PTT. The off setting allows unlimited transmitting time.

Display (DISPLY)

Sets the display to either alpha or numeric characters when using the DTMF keypad.

Home Channel (HOM)

Sets the home channel within the active zone and bank. Scroll to **HOM** and press **Enter**. The channel's receive and transmit frequency displays but cannot be changed. Select the desired home channel using the channel knob. Press **Enter** to confirm the new home channel.

Emergency Channel (EMG)

Sets the emergency channel within the active zone and bank. Scroll to **EMG** and press **Enter**. The channel's transmit frequency displays but cannot be changed. Select the desired emergency channel using the channel knob. Press **Enter** to confirm the new emergency channel.

Emergency Call (ALERT)

Sets the emergency call alert mode. Scroll to **ALERT** and press **Enter**. Choose **NORMAL** or **SILENT** to change the emergency call alert state. In normal mode, **EMERG TX** and **EMG** displays and the radio beeps every time the radio transmits the emergency message, until deactivated. In silent mode, there is no beep or display.

Transmit Inhibit (TX INH)

Locks the PTT switch to prevent talking over other radio conversations. Select from one of six behaviors:

Setting	Description
NAC	Inhibit transmission on a busy channel using a different NAC
NAC+O	Override NAC inhibit with two rapid PTT actions
CARR	Inhibit transmission on a busy channel
CARR+O	Override CARR inhibit with two rapid PTT actions
TONE	Inhibit transmission on a busy channel using a different squelch tone
TONE+O	Override TONE inhibit with two rapid PTT actions
NONE	No transmit inhibit

Repeater Delay (RPTR)

This feature is under development and is not currently available.

Global Erase (ERASE)

Erases all settings and resets the radio to factory defaults.

Channel Setup Submenu

Accessed from the program menu, this submenu allows you to change channel settings. Channels can be selectively locked preventing you from making changes. If a locked channel is selected, **CHANNEL LOCKED/ACCESS DENIED** displays.

Select the desired channel using the channel knob. Scroll to **CHANEL** and press **Enter**. The channel number and tag (if defined) for that channel display. Scroll to highlight the desired choices. To quickly cycle to the next channel for programming, press the down scroll button once after setting **HI PWR**.

If digital mode is chosen, analog settings do not display. If analog mode is chosen, digital settings do not display. If the radio is not programmed for encryption, those settings do not display. Some setting require use of a DTMF keypad.

Setting	Value
MODE (Modulation)	Analog/Digital
B/W (Bandwidth)	12.5 kHz/25 kHz
ENCRPT (Encryption)	Enable/Disable
K (Encryption key)	Choose from established list of keys
RX (Receive frequency)	Enter receive frequency using keypad
SQ (Squelch)	Receive squelch sensitivity setting
RXNAC (Receive NAC)	Choose digital receive network access code
RXSQMD (Receive squelch)	None/Noise/DCS/CTCSS
TON (CTCSS tone)	Choose CTCSS squelch tone
CODE (DCS code)	Choose DCS code
TALKGP (Talk group)	Enter 5-digit number of talk group
TX (Transmit frequency)	Enter transmit frequency using keypad
TXNAC (Transmit NAC)	Choose digital transmit network access code
TXSQMD (Transmit squelch)	None/DCS/CTCSS
LO PWR (Low TX power)	Choose low transmit power setting
HI PWR (High TX power)	Choose high transmit power setting

Scan Setup Submenu

Accessed from the program menu, this submenu sets basic functions of scan delay, revert mode, and priority-scan channels. Highlight **SCAN** and press

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Enter. The delay setting is the length of time in seconds the radio stays on the channel after the last transmission ends and before scanning resumes. The radio switches to the revert channel when you switch out of scan mode. Revert choices are the last channel selected (**LSTSEL**), the last channel received (**LASTRX**), or the home channel (**HOME**). The radio switches to the priority channel (**P1** or **P2**) when activity is detected on either of these channels.

Setting	Value
DELAY (Scan delay)	Set time in seconds to resume scanning
RVERT (Revert channel)	LSTSEL/LASTRX/Home
P1 (Priority 1 channel)	Designate first priority channel
P2 (Priority 2 channel)	Designate second priority channel

Password Setup Submenu

Accessed from the program menu, this submenu changes the current 6-character password. Highlight **PASSWORD** and press **Enter**. Enter the old password using the DTMF keypad and press **Enter**. If the entered password is incorrect, **INVALID ENTRY** displays. Press **Escape** and try again. Three consecutive invalid entries and **OLD PASSWORD LOCKED** displays. Turn the radio off and on again if necessary. When the old password is accepted, enter the new password. Confirm the new password by entering it again. If the new password is entered incorrectly, **NEW PASSWORD REJECTED** displays.

Covert Menu

Used to set the radio for covert operation including muting the speaker, alarms, beeps, and backlighting. From the main menu highlight **COVERT** and press **Enter**. Use the DTMF keypad to enter the predefined password for this radio and press **Enter**. Covert settings override all other radio settings.

Setting	Value
DISPLY (Backlight)	Off/on, disable/enable backlighting
SPEAKR (Speaker)	Off/on, disable/enable speaker
WHISPR (Whisper)	Off/on, disable/enable speaker
KBEEPS (Key beeps)	Off/on, disable/enable key beeps
ALARMS (User alert tones)	Off/on, disable/enable user alert tones
LED (Status indicator)	Off/on, disable/enable LED status indicator
DEFAULT (Audible alarms)	Resets radio to non-covert (normal) settings

Encryption Menu

Used to set the radio for encrypted operation and accessed from the main menu. Highlight **ENCRYPT** and press **Enter**. Use the DTMF keypad to enter the password for this radio. Press **Enter**.

Setting	Value
KEYSEL (Key select)	Choose the active key for the channel
ZEROIZE (Zeroize keys)	Zeroize key for channel or all keys
DF KEY (Default key)	Activates the channel's default key

Radio Cloning

Cloning enables the transfer of channel settings between Guardian radios. Consult authorized personnel for guidance. Perform the following steps to clone one Guardian radio with another:

1. Power off both radios.
2. Connect the source and target radios together using the Guardian cloning cable (PN G25AMKG004).
3. Power on the target radio and then the source radio.
4. The source radio automatically detects the connection and **FULL CLONE** displays.
5. Press PTT on the source radio to start the download. If there are problems between the source and target radios, the source radio times-out after 20 seconds, **CLONING ERROR** displays, and the radio reverts to **PTT TO SEND** for another attempt. Check the connectors and repeat the steps.
6. When finished, the target radio resumes normal operation.
7. The source radio displays **PTT TO SEND** and remains in cloning mode in order to clone additional radios, if desired.
8. Press **Escape**, or power off and on the radio, to resume normal radio operation.

Encryption Keyfill

Encryption keyfill is accomplished using a computer and the Guardian programming software (PN G25AXR001). A key variable loader (KVL) is an optional accessory used for keyfill. Perform the following steps to load keys into a Guardian radio using a KVL:

1. Power off the target radio.
2. Connect the KVL to the target radio.
3. Power on the radio.

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4. The radio automatically detects the KVL and **KVL KEYFILL** displays. If not, check the connections, and repeat the steps.
5. Use the scroll buttons to highlight the desired key slot. To set the key slot selection, press **Enter**.
6. To verify the key identification, press **ID** for the key ID display. Press **TAG** to return to the key display.
7. Press **Enter** to access the key transfer display.
8. Press **PTT** on the KVL to initiate the key transfer. When the transfer is successful, **SUCCESS KEY DATA UPDATED** displays. If unsuccessful, **FAILURE KEY DATA NOT UPDATED** displays. Press **Enter** to return to the key tag or the key ID displays.
9. To stop the transfer, press **Escape** on the radio to return to the key tag or the key ID displays.
10. Press **Escape** or power off and on the radio to resume normal operation.

For more information regarding its operation, consult the KVL instruction manual.

Troubleshooting

The following table of symptoms, possible causes, and suggested corrective actions may be helpful. Consult authorized personnel for further guidance.

Symptom	Probable Cause	Corrective Action
Radio does not power on	No power source	Furnish power source
Cannot talk with other users in plain mode	Radios programmed for different frequencies, squelch tones, talk-group IDs	Program radios to same frequency settings
Background noise or other conversations heard	Other users on channel or improper squelch tone setting	Select another channel or program squelch tones to eliminate interference
Error message on display	Operational error in radio	Follow display instructions
Alarm message on display	Encryption alarm in radio	Press PTT to clear alarm. Ensure encryption key is loaded into selected slot
Limited talk-out range	Radio signal obstructed or insufficient height above terrain	Move away from large metal objects or to higher ground

Product Information

Factory Support

This product is covered by the limited warranty on the back cover of this manual. For warranty service, contact Technical Support Services Group, Datron World Communications, 3030 Enterprise Ct., Vista, CA 92083, or phone (760) 597-1500 or e-mail guardian.service@dtwc.com. Before calling have the following information: (1) radio model number, serial number, and date of installation, (2) name of dealer or supplier of equipment, (3) detailed explanation of the suspected problem, (4) return shipping instructions, and (5) telephone or fax number where the buyer can be contacted. Do NOT return a radio to the factory for service without first obtaining an RMA number from the Technical Support Services Group.

User Servicing

There are no user serviceable parts inside. This product is subject to electrostatic discharge (ESD) damage. Specialized maintenance and repair procedures are required. Unsuccessful attempts to repair this product can void the warranty. This product requires customer-specific programming to function as required. Radio programming is performed using a computer and authorized software. The factory does not have knowledge of customer-specific programming. Government agency users should contact their authorized personnel for assistance regarding the correct operation of this product.

Limited Warranty and Remedies

Datron warrants that its manufactured products (radios) are free from defect in design, materials, and workmanship for a period of 24 months from date of shipment from factory. Products such as antennas, batteries, carry cases, and other parts purchased from other vendors for resale are warranted for a period of 12 months from date of shipment from factory. If products do not provide satisfactory service due to defects covered by this warranty, Datron will, at its option, replace or repair the item(s) free of charge. This warranty is limited to the original purchaser and is not transferable. Repair service performed by Datron is warranted for the balance of the original warranty or 90 days, whichever is longer.

Exclusive Warranty: There are no other warranties beyond the warranty as contained herein. No agent, employee, or representative of Datron has any authority to bind Datron to any affirmation, representation, or warranty concerning the equipment or parts that is not in conformity with the warranties contained herein. EXCEPT AS EXPRESSLY SET FORTH ABOVE, NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, ARE MADE WITH RESPECT TO THE EQUIPMENT OR THE PARTS CONTAINED THEREIN, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND DATRON EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED HEREIN.

Limitations of Warranty: This warranty does not cover: (1) physical damage to the equipment or its parts that does not involve defects in design, material, or workmanship, including damage by impact, liquids, temperature, or gases, (2) damage to the equipment or its parts caused by lightning, static discharge, voltage transients, or application of incorrect supply voltages, (3) defects or failures caused by unauthorized attempts to repair or modify the equipment, and (4) defects or failures caused by abuse or misuse.

Remedies: Buyer's sole remedies and the entire liability of Datron are set forth above. In no event will Datron be liable to Buyer or any other person for damages, including any incidental or consequential damages, expenses, lost profits, lost savings, or other damages arising out of use of or inability to use the equipment.

Guardian[™] radios are manufactured by Datron World Communications Inc. Datron is respected worldwide as the best value supplier of voice and data communications products for government and business.

