



User Manual

AWR-DM7700

DMR Digital Two-Way Radio



Thank you!

Thank you for purchasing this AWR-DM7700 DMR Digital two-way radio by Advanced Wireless Communications (AWC). The AWR-DM7700 delivers the latest technology, has the most stable components, and has the most advanced production technology. The AWR-DM7700 mobile radio will provide you with the reliable performance and high quality you demand.

This manual should be read to ensure that the user understands the operation of the AWR-DM7700. Please read the Safety Instructions before use.

User Instructions

Please carefully read this manual before attempting to deploy the repeater. The instructions will explain the various features of this repeater. Please retain these instructions for future reference.

Safety Instructions

Please observe the following safety instructions to prevent fire, accidents, personal injury, or equipment damage.

- **Do not** modify the radio in any way.
- **Do not** expose the radio to direct sunlight for extended periods of time, locate near heaters or other heat sources.
- **Do not** store or use unprotected radio for prolonged periods in areas of high dust or excessive moisture.
- Users may experience signal interference if the unit is used near devices such as televisions or electric generators.
- **Do not** attempt to configure or program the radio while driving.
- If the radio emits smoke or a strange smell, immediately turn off the power, and send it to the closets repair station.
- Use of the radio while driving may be against local traffic laws. Please verify and observe regulations in your area.
- The radio contains high power components that are not user serviceable or should be tampered with.
- It is not uncommon for the body of the radio to be slightly warm during operation. This is normal and the radio may continue to be used.
- **Do not** operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio, and the antenna gain shall not exceed **3.9 dBi** by the manufacturer declared.
- **Do not** transmit for more than 50% of total radio use time, more than 50% of the time can cause RF exposure compliance requirements to be exceeded.

Hazards and Hazardous Environments

- When in areas of explosive atmospheres (gases, dust, fumes, etc.), the radio shall be turned off. This includes when taking on fuel or while parked at a fueling facility.

Hazards and Hazardous Environments (continued)

- The radio shall not be operated in or around locations that are using blasting devices or detonators. The radio shall be turned off in the area where blasting is in progress and in areas with signage stating that blasting is occurring. If transporting such materials, they shall be secured in an approved container to prevent inadvertent detonation from the radio.
- During transmissions, your radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. **Do not** operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.
- Physical exposure to radio frequency transmissions requires that the user or bystander cannot touch the radio while it is transmitting. A distance of at least three feet (90 cm) shall be maintained during transmission. The separation distance between user and the antenna will ensure that there is sufficient distance from a properly installed externally-mounted antenna to satisfy the RF exposure requirements.

If there are any problems with the radio, please contact AWC or your local distributor.

Product Safety and RF Exposure

This equipment is intended for use in occupational / controlled applications where users have been made aware of the potential for exposure and can exercise control over their exposure. This radio device is NOT authorized for the general population, consumer or similar use cases.

BEFORE USING THIS RADIO DEVICE, READ ALL RELATIVE MATERIALS IN THIS MANUAL FOR IMPORTANT OPERATION INSTRUCTIONS FOR SAFE USAGE, RF ENERGY AWARENESS, AND CONTROL INFORMATION FOR COMPLIANCE WITH RF ENERGY EXPOSURE LIMITS IN APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS.

Federal Communication Commission (FCC) Regulations

The FCC has established limits for safe exposure to radio frequency (RF) emissions from radio devices. The FCC requires manufacturers to demonstrate compliance with RF exposure limits before radio devices may be marketed in the U.S. When two-way radios and repeaters are approved for occupational / controlled environment exposure limits, the FCC requires users to be fully aware of, and exercise control over, their exposure. Awareness and control of RF exposure can be accomplished using labels, or by education and training through appropriate means such as information and instructions in user manuals or safety booklets. Your Advanced Wireless Communications' two-way radio or repeater has an RF exposure information label on the device. The training material below includes useful information about RF exposure and helpful instructions.

Your Advanced Wireless Communications two-way radio devices are designed and tested to comply with several national and international standards and guidelines regarding human exposure to RF electromagnetic energy. In terms of measuring RF energy for compliance with FCC exposure guidelines, your radio device radiates measurable RF energy only while transmitting, not when it is receiving, or in stand-by mode.

WARNING

As the qualified end-user of this radio device you must control the exposure conditions in the area to ensure the minimum separation distance is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of **Occupational/Controlled Use Only**, for work-related use, transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna. **“Occupational/Controlled Use Only”** means it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards; **NOT** intended for use in an General population/uncontrolled environment. Transmit only when people outside the vehicle or away from the repeater antenna are at least the recommended minimum lateral distance away from the antenna/vehicle. **Do Not** operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio, and the antenna gain shall not exceed **3.9 dBi** by the manufacturer declared. **Do Not** transmit for more than 50% of total radio use time, more than 50% of the time can cause RF exposure compliance requirements to be exceeded.

Advanced Wireless Communications Radio Quality Warranty and Liability **The warranty range and limitation**

Advanced Wireless Communications (AWC) is committed to quality and stands behind its products. AWC will, during the warranty period specified for each product, repair or replace components that fail as a result of poor workmanship or materials. This warranty does not cover improper use or intentional damage. The warranty policy does not include the following conditions:

1. Defects or damages caused by working in abnormal or unusual situations.
2. Defect or damages caused by misuse, accident, or water submersion.
3. Defect or damages caused by unauthorized installation, repair, tampering or adjustment.
4. Warranty does not extend to cosmetic scratches or damages as a result of normal use or misuse.
5. This warranty is void if:
 - (a) The product information label is removed, or if the serial number is tampered with, changed or cannot be identified.
 - (b) The repeater enclosure is tampered with or unsealed.

General Items

This warranty policy establishes the liability limits for which AWC is responsible. AWC has the right to decide, in their sole discretion, whether to repair, replace, or refund the purchase price of any equipment subject to this warranty. There are no other options available under this warranty. This express warranty is the complete agreement. **OTHER THAN AS EXPRESSLY SET OUT IN THESE TERMS OR ADDITIONAL TERMS, NEITHER AWC NOR ITS SUPPLIERS OR DISTRIBUTORS MAKE ANY SPECIFIC PROMISES ABOUT THE SERVICES OR PRODUCTS.**

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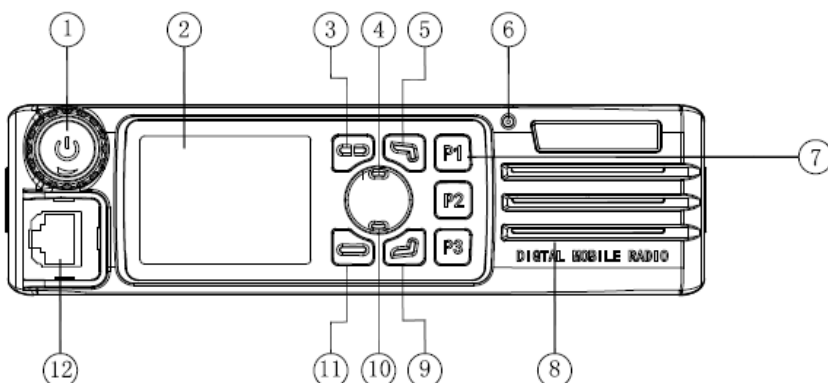
Unpacking and Device Check

Please carefully remove the radio from its packaging and before disposing of the packing materials, ensure that all the items noted below have been included. If any item has been lost or damaged, please submit a claim with the carrier or deliverer.

Items	Quantity
AWR-DM7700 Mobile Radio	1
Microphone	1
Microphone Hanger w/Hardware	1
Power Cable w/Fuse	1
Mounting Bracket w/Hardware	1
User Manual	Available at www.advancedwireless.com
Warranty Card	Available at www.advancedwireless.com

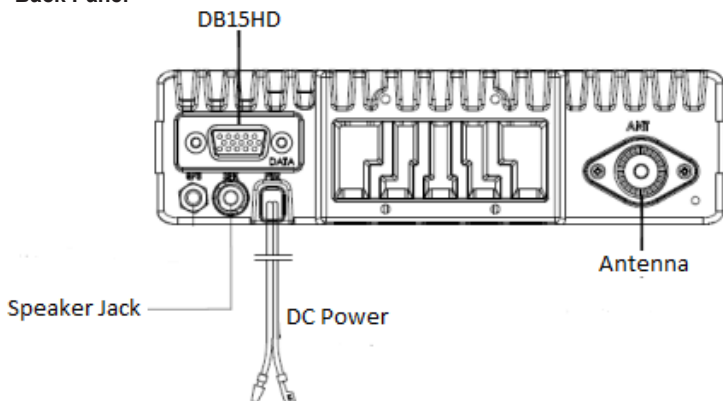
Product External View

Front Panel



No.	Part Name	No.	Part Name
1	Power/Volume Knob	7	PF Key (assignable)
2	LCD Display	8	Speaker
3	Return Key	9	Call Key
4	Up Key	10	Down Key
5	Home Key	11	Menu Key
6	RX / TX LED	12	Microphone Connector

Back Panel



Programmable Key Functions

There are four programmable soft keys, P1, P2, P3, and Call. The following table shows the programmable functions available. Each key can be programmed for a short and long press function as noted in the programming software.

Key Parameter Function	Application
Power Switch	Allows toggling of the RF output power between high (H) and Low (L) settings
Monitor (Analog)	Opens squelch w/ signaling
Monitor Momentary (Analog)	Opens squelch w/ signaling for duration of key press
Squelch Off (Analog)	Squelch off
Squelch Off Momentary (Analog)	Squelch off for duration of key press
Zone Up	Selects next logical zone up from current
Zone Down	Selects next logical zone down from current
Scan	Radio steps between channels, stopping on channel with matched signaling
Talk Around	Direct communications on repeater output
One Touch Access (1-4)	Short-cut operation for selected features, press one-touch key to start pre-programmed function by PTT
Local ID Report	Announces programmed DMR Unit ID
CH ID Announce	Announces currently selected Channel
Power Announce	Announces selected output power
CH Type Announce	Announces whether channel is digital or analog

Installation

Before installing the mobile radio, please read the following precautions carefully. These precautions are applicable to both vehicular or fixed station installations.

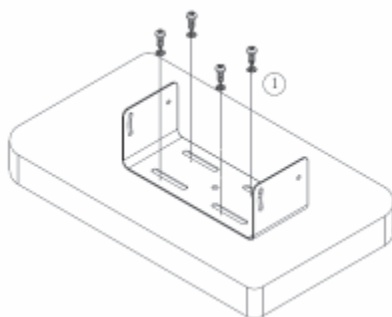
Precautions

- This mobile only operates off a 13.6VDC, $\pm 15\%$ negative ground power system. Please verify the power system and its operational capability before installation.
- Before installation ensure that the mobile mounting bracket screws are sufficient in length and that they do not protrude through the opposite surface in a way that may damage other components. Care should be exercised in drilling these mounting holes.
- The supplied mounting bracket shall be used for all installations. It shall be firmly attached in the mounting location with supplied hardware to ensure radio cannot break loose and cause damage or physical injury.
- Vehicle mounting location should be away from heat sources and airbags to ensure no physical interference with these devices and mobile radios. Adequate space around the radio shall be supplied to ensure cooling during operation.
- Fixed station installation shall be such that the radio is firmly affixed to the power supply or mounting so radio does not fall on floor or other surfaces that may damage it or the user.
- The radio shall be installed in a location that is convenient for accessing the radio's front panel.
- The microphone shall be placed so that it does not interfere with the user when not in use.
- The DC power cord shall be routed such that it does not cause issues for the user or the installation. It is recommended that for vehicle installation that the power cord is directly attached to the battery or per the vehicle manufacturer's recommendation. Please contact the vehicular manufacturer for guidance.
- Do not replace the power cord fuse with a higher value than what is supplied.

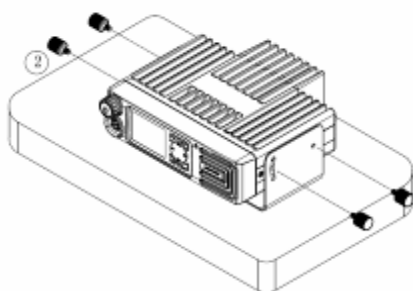
Installation Kit

- Power drill w/ appropriate drill size
- Phillips screwdriver
- Hex socket

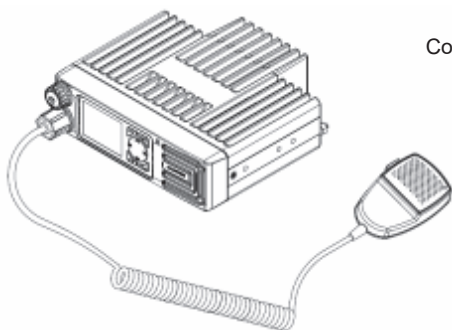
Preparation Steps



Install the u-bracket to the desired position



Put the platform on the u-frame and secure it with screws



Connect the speaker microphone

Status Indication

LCD Icon

Icon Name	Icon	Status Description
Emergency Alarm		Radio is in an emergency alarm state or has received an emergency alarm
Transmitting Indicator		The radio is transmitting
Signal Indicator		Receiving signal
		No signal
Transmit Power	L	Current channel power is low-power
	H	Current channel power is high-power
Speaker		Squelch and speaker turned on
Monitor		Monitor enabled
Scan		Scan-on
Lock Icon		Keyboard locked
Signaling (analog)	CT	CT has been set to transmit or receive QT
	DN	DN has been set to transmit or receive DQTN
	DI	DI has been set to transmit or receive DQTI

LED Indicator

The front panel LED indicator allows the user to determine the radio state.

Indicator Status	Radio Status
Red LED glows	Transmitting
Red LED flashes	USB uploading data
Green LED glows	Receiving signal
Green LED flashes	Scanning
Orange LED glows	Start monitoring

Product Operation

User Mode

Power on / Power off

Press the power button and the prompt tone 'Du' should be heard, the green light will flash, the mobile radio is turned on. A long press of the power button turns off the mobile radio.

Volume Control

Rotate the [Power/Volume] knob to adjust the volume, clockwise to increase the volume, and counterclockwise to decrease the volume.

Switching Channels

The user can press the up and down keys to switch channels. The upper right corner of the LCD displays the alias of the current channel (CH:X), the "X" is the channel number.

Zone Selection

A zone is a grouping of channels that may be assigned to that zone. The radio supports up to 100 zones with 32 channels per zone. There are two ways to select a zone:

1. Menu – a zone may be selected by using the Menu structure of the radio. After entering Menu, press the Up or Down key to navigate to the Zone item on the display. Press the select key to enter the Zone selection and use the Up or Down key to select the desired Zone. Press the select key for the zone.

2. Programmable Key – PF keys may be programmed for Zone Up or Zone Down. Press the appropriate key to increment the zones.

Call Types

Digital Operation

Group Call – A group call allows a user to call multiple units that are on the same talk group. Groups are established during programming and are generally on a per channel basis although there are two ways for a user to make a group call as described below:

1. Preset

User makes a call on the channel where the talk group has been preset. Only users with the like talk group can receive and talk back. The user presses the PTT to make the call on the digital channel.

2. Contact List

If the radio is programmed to allow access to the contacts list, the user may enter the contacts list by pressing the Menu key and navigating to the Contacts selection. Pressing the select key will provide the user a list of groups that they may PTT on. Once selected, the user may PTT on that group without leaving the contacts list and make a call to users of that talk group and receive traffic on that talk group.

Product Operation (continued)

Note: Other users must share the same programming to be able to receive a call from the contact list. Once a user exits the contact list selection, the radio reverts to the channel preset. It does require knowledge of the talk groups and users when using the contact list method.

Private / Individual Call – The private or individual call allows a user to call another user without other users hearing their radio traffic. Private or individual calling may occur on either a per channel basis, via the contacts list, or manual dialing as discussed below:

1. Preset

The contacts list is preprogrammed for individual call users from the RX Group List and TX Contact. User PTT's on the selected channel to make a private call.

2. Contact List

If the radio is programmed to allow access to the contacts list, the user may enter the contacts list by pressing the Menu key and navigating to the Contacts selection. Pressing the select key will provide the user a list of individual unit ID's that they may PTT on. Once selected they user may PTT on that individual UID without leaving the contacts list and make an individual call to that user.

Note: Other users must share the same programming to be able to receive a call from the contact list. Once a user exits the contact list selection, the radio reverts to the channel preset. It does require knowledge of the users when using the contact list method.

3. Manual Dialing

If the radio is programmed to allow access to manual dialing, the user may enter the contacts by pressing the Menu key and navigating to Manual Dial. Once selected, the user may enter the UID for the party to be called via the DTMF microphone (optional accessory). The PTT is pressed to make the call.

Note: Once a user exits manual dialing, the radio reverts to the channel preset. It does require knowledge of the users when using the contact list method.

All Call – All Call allows a user to call all users on a time slot. It is on the selected time slot only but will make a call to all talk groups on that time slot. It is useful for announcement calls from a supervisor or dispatcher. It is a one-way call.

1. Making an All Call

An All Call is made using the same methodology as a group call. It can be Preset or Selected from the Menu depending on programming.

2. Receiving an All Call

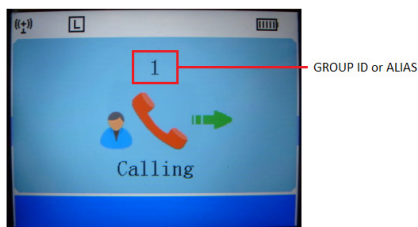
Upon receipt an All Call, the All Call menu will appear in the display. The user cannot reply to the All Call.

Analog Operation

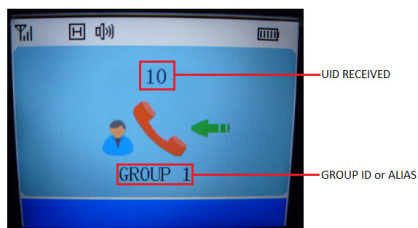
Analog Call – Analog calling has no special calling methods. To make a call on an analog channel, the user selects the channel, presses the PTT button, speaks in the microphone and releases it to listen to the other party's reply.

Call Operation

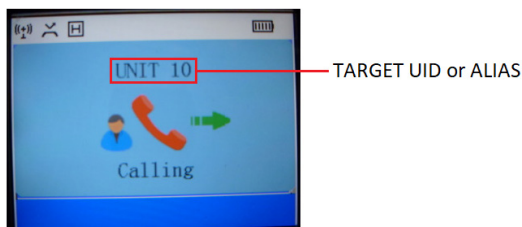
Group Call Digital Transmit: Select a preset digital channel or use the menu to select a group on which to make a call. Press and hold the PTT with the microphone 3 to 5 cm (1 to 2 in.) away from microphone. The screen will show the following.



Group Call Digital Receive: Upon receiving a group call on a digital channel with matched digital signaling, the radio's screen will show the following.

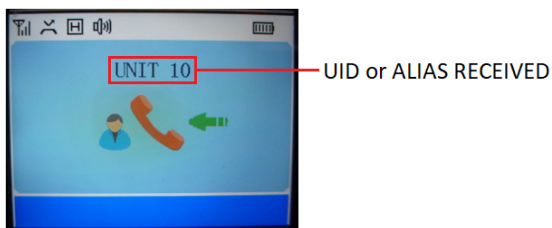


Private Call Digital Transmit: Select the private call preset channel or use the menu to make an individual call to another user via their UID by pressing and holding the PTT. The screen in transmit will show the following.

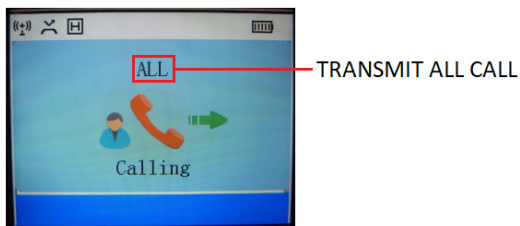


Call Operation (continued)

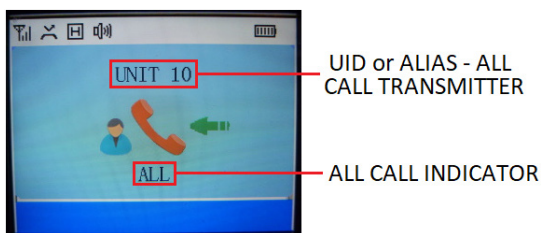
Private Call Digital Receive: Upon receiving a private call on a digital channel the radio's screen will show the following.



All Call Digital Transmit: Select the all call preset channel or use the menu to select all call. Press and hold the PTT to send the all call. The screen in transmit will show the following.



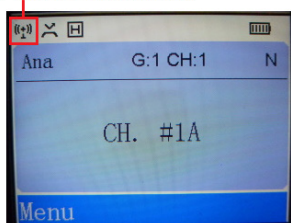
All Call Digital Receive: Upon receiving an all call on a digital channel the radio's screen will show the following.



Call Operation (continued)

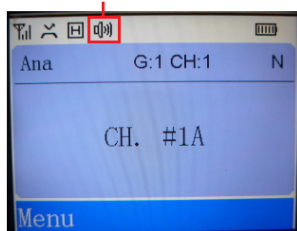
Analog Transmit: Select an analog channel on which to make a call. Press and hold the PTT with the microphone 3 to 5 cm (1 to 2 in.) away from mouth. The screen will show the following.

ANALOG TRANSMIT



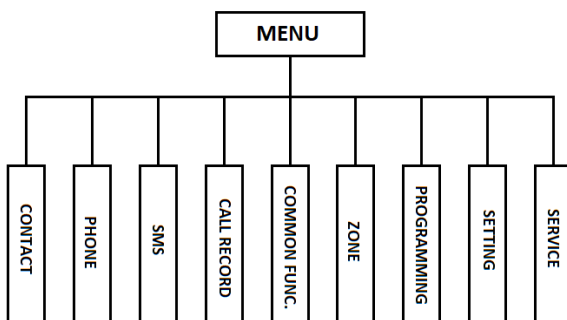
Analog Receive: Upon receiving a call on an analog channel with matched digital signaling, the radio's screen will show the following.

ANALOG RECEIVE



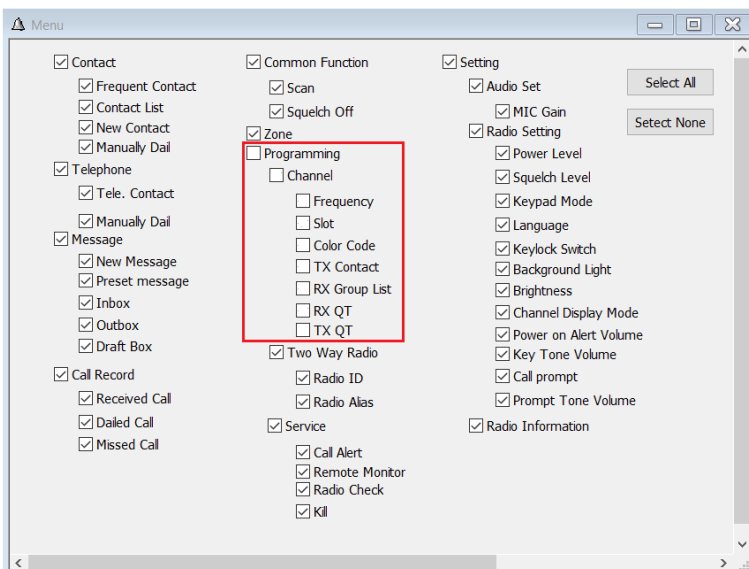
Menu

The Menu that is accessible from the radio front panel is controlled by the programming software. There are numerous settings that may or may not be available to the end-user based on how it has been configured in software. The following Menu items may be available when the Menu key is pressed. Pressing the Back or Cancel returns to the previous setting.



There are sub-menus under each of the categories. Like the menu items, they may or not be available to the end-user based on programming. In most use cases only, a few items will be enabled.

To access the Menu, press the menu button. The Up / Down keys are used to navigate to the selected menu item, and a button press will access the available sub-menus. Pressing the cancel or back button returns the user to the previous screen. The following figure is from the programming software.

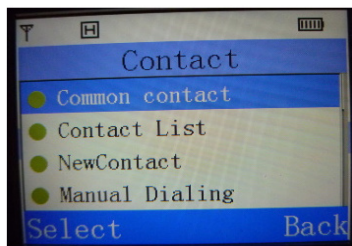


Note: The menu item enclosed in the red box shall never be directly available to the end-user. This is for test and evaluation by a certified technician only.

The following section will cover the more common sub-menu items that may be accessible via the Menu. They will vary between analog and digital zones.

Contact (Digital Only)

To enter this menu item, press the Menu key to enter the main menu and select "Contact."



Common Contact (Frequent Contact)

Choose whether you can access the contact list through the menu or place a call to the contact. You can access the frequently used contact list via Menu - Contacts.

Contact List

Allows access to all programmed contacts in the sub-menu. Press PTT to directly call the selected contact.

Contact (continued)

New Contact

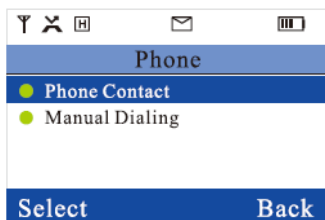
Allows entry of new contact ID and alias that may be accessed via the Contact List. When the selection has been created, enter the contact list and select New Contact.

Manual Dialing

Allows the user to enter the ID of the targeted user from a front panel key to make a call.

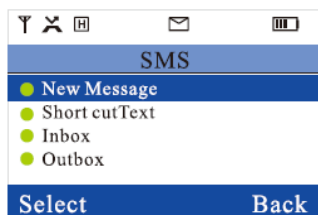
Phone (Digital Only)

The Phone menu allows the selection of the sub-menus for the contact phone number or access manual dialing from the front panel or optional DTMF microphone.



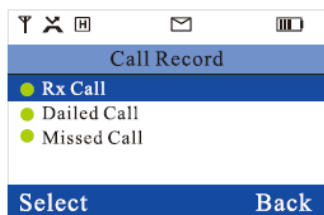
SMS (Digital Only)

Text messaging is available under the SMS sub-menu. This allows the user to send and respond to text messages from this sub-menu. Programming dictates what is available for selection such as generating a New Message, selection of Short Cut Text, accessing the Inbox or Outbox, or accessing a draft message in the Draft Box. There are additional selections under each of these items.



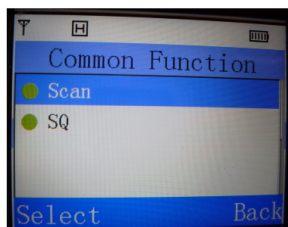
Call Record (Digital Only)

The Call Record allows the user to view received calls, dialed calls and missed calls. There are additional selections under each of these items.



Common Function (Digital / Analog)

The Common Function provides the ability to select Scan On/Off and Squelch On/Off. Squelch control is available only in analog mode.

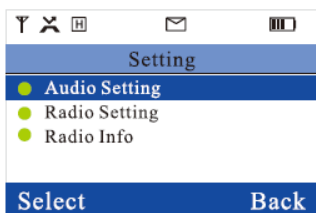


Zone (Analog / Digital)

This screen allows the user to change between Zones.

Setting (Analog / Digital)

The Setting sub-menu allows the user, if permitted in programming, to customize the radio's parameters to their preference. Each selection under Setting has additional items that may be available based on programming. The following capture shows the basic top screen. The additional figure shows the selections under each.



Setting	Audio Setting	Mic Gain	Mic Fixed Gain	Analog Gain	0 - 30	
				Digital Gain	0 -30	
Radio Setting	Power Level	Power Low				
		Power High				
		Squelch Level				Low
						Medium
						High
		Keypad Mode				Turn Off
						Frequency
						Channel Number
						DTMF
						Call ID
		Language				Chinese
						English
						Korean
		Keyboard Lock				Turn Off
						5 - 60 seconds
		Backlight				Constant Light
						1 - 60 seconds
		Brightness				1 to 8
		Display Mode				Channel Number
						Frequency
Alias						
PowerOn Volume	Level 0 to 8					
Key Volume	Level 0 to 8					
Call Volume	Level 0 to 8					
Voice Volume	Level 0 to 8					
Radio Info	Displays - FW, DSP, S/N, and Radio UID					

Service (Digital Only)

Service allows access to special supplementary services defined by the DMR standard. They may or may not be activated in programming. They will mainly be used only in supervisor or management radios for transmission. These selectable items are Call Prompt, Remote Monitor, Radio Check, Radio Kill, and Active.

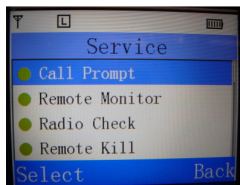
Call Prompt – This allows a user to ping another user over the air.

Remote Monitor – Provides the ability to remotely activate a targeted radio's transmitter. This is generally used for life safety.

Radio Check – Allows the entry of a UID of target radio to verify that it is on the air.

Remote Kill – When command is sent to a targeted radio, the receiving radio will be disabled until activated. This is generally used to deactivate stolen or missing radios.

Active – Active is used to reactivate a radio that has received a remote kill command.





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