

ACKNOWLEDGEMENT

Thank you for purchasing HONGKAIDE products for amateur mobile radio. We always provide radio products that truly delight enthusiasts. This is a rugged, high-quality, long-range, high-performance multi-band vehicle-mounted transceiver. It supports UHF/VHF wide-band analog + digital dual-mode systems. It can be compatible with existing conventional analog systems, direct mode dual-slot communication, and supports various calling methods, voice encryption, manual frequency input, one-touch calling, one-touch emergency alert, and short messaging features.



WARNING

Before using the device, ensure the antenna is installed properly before turning it on (operating radio equipment without an antenna can cause damage).

PRECAUTIONS

Please observe the following precautions to prevent fire, personal injury, and/or damage to the transceiver:

- ⚠ Do not use this device while driving, as it is dangerous.
- ⚠ This transceiver is designed to operate on a 12-13.8V DC power supply.
- ⚠ Do not place the device in dusty, humid, or splashed water environments, or on unstable surfaces.
- ⚠ If the device experiences external interference, move it away from interference sources (such as televisions, generators, etc.).
- ⚠ Do not expose the device to direct sunlight for extended periods or place it near heating devices.
- ⚠ If the device emits smoke or strange odors, immediately cut off the power, ensure the device is safe, and send it to the nearest service station for inspection. Avoid prolonged high-power transmission, which may cause the transceiver to overheat.

Welcome to use our Amateur Mobile radio

FUNCTION AND FEATURES

Your new transceiver is beautiful, sturdy, durable, and offers excellent performance and outstanding value. It is a versatile vehicle-mounted transceiver meticulously designed for car enthusiasts. This product embodies innovation and practicality, with the following features:

- Compatible with 12-13.8V Power Supply. (The main unit has a power voltage stabilization system, allowing users to connect freely and featuring a user-friendly circuit protection system.)
- Compact Size for Easy Installation.
- Dual Band, Dual Standby Reception.
- Single-Band Large-Screen Display.
- Power: 25W
- Wide/Narrow Band Selection: (Wide band 25K and Narrow band 12.5K).
- Reverse Frequency and Off-Network Function.
- 240x64 Extra-Large Screen with full dot matrix LCD dual-row display or dual-row character display.
- CTCSS/DCS Encoding and Decoding with Customizable Settings.
- Screen Backlight Color Customization.
- Caller ID Display (ANI Identification).
- Personalized Hand Microphone with Indicator Light for Easy Use.
- Automatic Temperature and Power Protection.
- Multiple Fan Cooling Activation Methods.
- Analog KDC1200 and DTMF.
- GPS/BeiDou Positioning: Supports viewing GPS positioning information and sending GPS text messages.
- Recording Function.
- Roaming Function.
- Analog + Digital Dual-Mode: Compatible with existing conventional analog systems.
- DMO True2-Slot, Dual Slot Communication in Direct Mode: Enhances communication efficiency and saves frequency resources.
- Comprehensive Voice Call Features: Supports various call methods, including individual call, group call, all call, and emergency call.
- Wide-band Communication: Supports TX:144-148MHz, 420-450MHz wide-band reception.
- Short Messaging: Supports sending and receiving short messages up to 250 characters, text editing, and draft box functionality.
- One-Key Alarm: Programmable key linked to emergency alarm function for immediate assistance.
- One-Key Call: Includes text messaging, voice call, and application functions. Rich application features includes call reminder, radio detection, remote monitoring, remote kill, and activation.
- Manual Frequency Input: Supports manual frequency input without connecting to a computer.
- Scanning Capabilities: Supports scanning of analog voice and signaling, digital voice and data, priority channel scanning, and mixed analog-digital scanning. Scan list can be manually added or removed.
- Voice Encryption: Supports ARC4 and AES256 encryption.
- Distance Measurement.
- In addition to the inherent encryption provided by digital technology, higher-level encryption capabilities are available.
- Support voice intercom and data services of Digital Repeater Motorola and Hytera.
- Regional Channel Group Support: 250 regions with up to 64 channels per region, totaling 1,024 channels, 800 common contacts, and 300,000 CSV contacts.
- Bluetooth Wireless Hand Microphone Function: Supports Bluetooth headsets and Bluetooth PTT.
- Alias Transmission and Display.
- Digital APRS Functionality.

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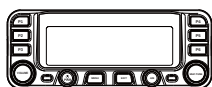
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SUPPLIED AND OPTIONAL ACCESSORIES

■ SUPPLIED ACCESSORIES

Please carefully open the packaging of the transceiver and check the accessories according to the table below. It is recommended to keep the box and packing materials.

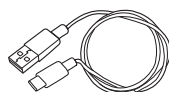
- Controller
- Microphone [HM-66]
(with DTMF keypad)
- Power Supply [XT30-1F]
- DC Power Cable and Fuse Holder [XT30-2F]
- Metal Hardware Kit for Bracket
 - Black screws (M4x8mm)
4 pieces [HSS-01A]
 - Tapered screws (M5x8mm)
5 pieces [HSS-01B]
 - S-type washers
4 pieces [HSS-01D]



- Microphone Hook [TG-1]



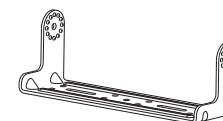
- USB Programming Cable [HPC-01]



- Spare Fuses (one pair) [HF-01]



- Mobile Mounting Bracket [HMB-02]

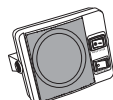


■ OPTIONAL ACCESSORIES

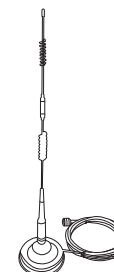
- Wireless Microphone BE-1



- External Speaker (SP-02)



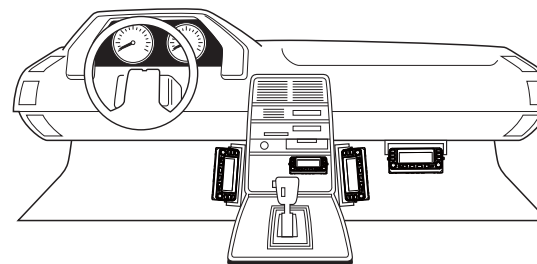
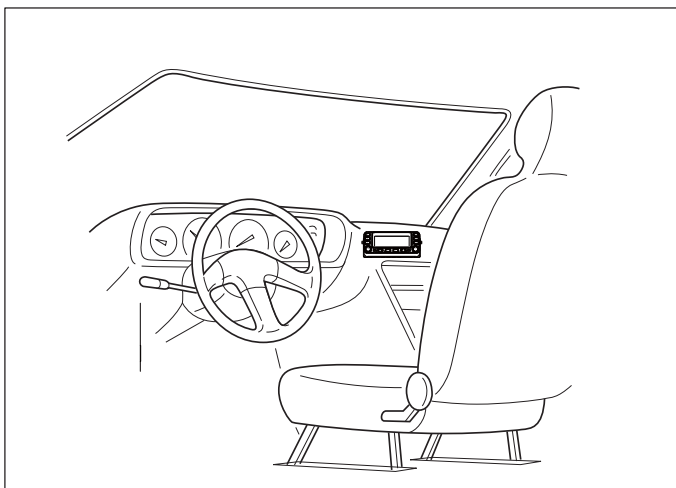
- Mobile Antenna [HCA-01]



PREPARATION

■ MOBILE INSTALLATION

When installing this transceiver, choose a safe and convenient location in the vehicle to minimize the risk to passengers and yourself while driving. When selecting the installation location, ensure that the transceiver will not be impacted by your knees or feet in the event of a sudden stop. Choose a location with good ventilation and avoid direct sunlight.



Note:

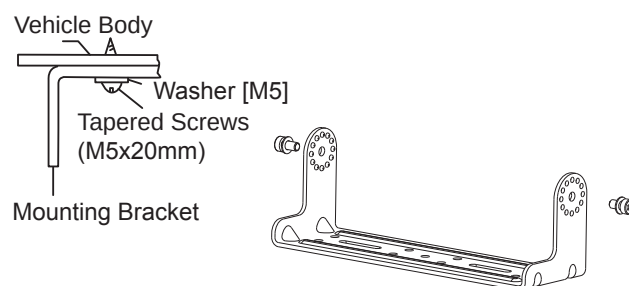
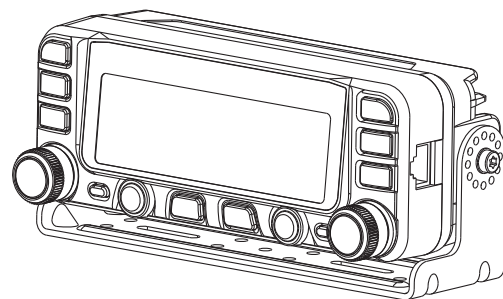
- Do not install the transceiver in a location that obstructs normal vehicle operation, as it may cause personal injury.
- Do not install the transceiver near the airbags, as they may be obstructed.
- Do not place the transceiver near the air conditioning vent, as it will be exposed to hot or cold air currents.
- Avoid installing the transceiver in direct sunlight.

◇ LOCATION

Choose a location that can support the weight of the transceiver and does not interfere with driving. We recommend the position shown in the illustration below.

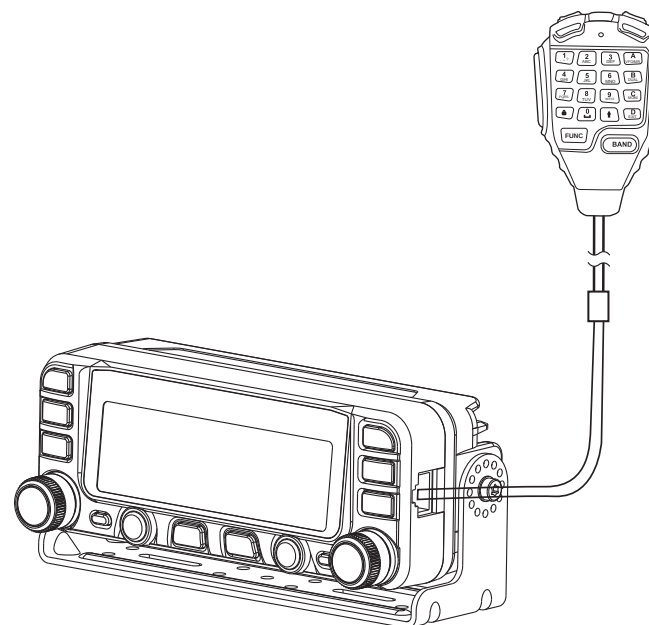
◆ INSTALLATION

- ① Install the device using the two holes in the mounting bracket.
 - Use nuts approximately M5x8mm.
- ② Strengthen the device by using screws, nuts, and HSS-01D washers supplied with the mounting bracket.
- ③ Adjust to a position and angle that suits you.



◆ MICROPHONE CONNECTION

The connection between the microphone and the transceiver main unit or panel is shown as follows:

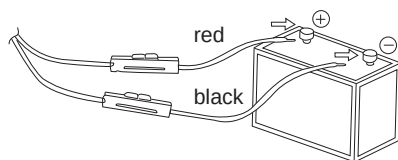


■ DC POWER CABLE CONNECTION

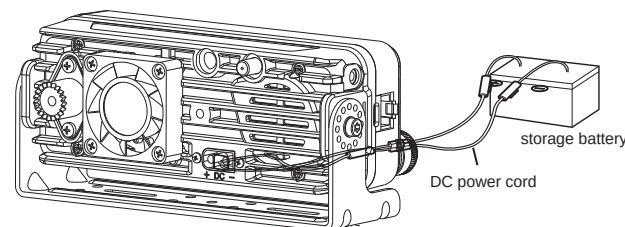
◇ MOBILE OPERATION

This transceiver can be connected to a 12-13.8V battery. Ensure the use of a 12-13.8V vehicle cigarette lighter or battery with sufficient current capacity. If the current supplied to the transceiver is insufficient, the display may dim during transmission, or the transmission output power may drop significantly.

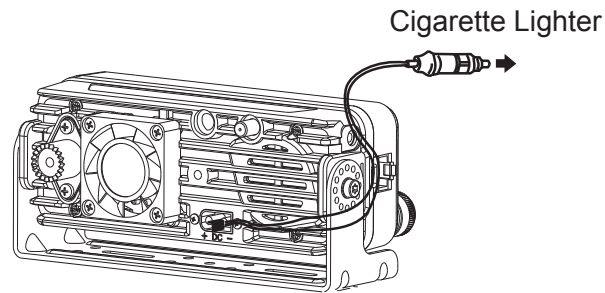
- ① Determine the routing of the DC power cable (provided with the transceiver) and run it directly from the transceiver to the battery terminals, ensuring the cable route is as short as possible.
 - Tip: It is recommended to use the cigarette lighter socket.
 - Arrange the entire cable to avoid high temperatures, moisture, and the vehicle's ignition system/cables.
- ② After routing the cable, wrap heat-resistant tape around the fuse box to prevent moisture and secure the cable along its entire length.
- ③ To avoid the risk of a short circuit, disconnect other cables from the negative (-) terminal of the battery before connecting the transceiver.
- ④ Ensure the polarity is correct and connect the power cable to the cigarette lighter or battery terminals; connect the red wire to the positive (+) terminal and the black wire to the negative (-) terminal.
 - Note: Use the entire cable without cutting off any excess, even if it's longer than needed. Be sure not to remove the fuse box from the cable.



- ⑤ Removed the cable from the negative terminal before reconnecting .
- ⑥ Connect the DC power cable to the transceiver's power connector.
 - Tip: Secure the connectors until the latch clicks into place.



- ① When the vehicle ignition switch is turned to the ACC or ON position, and if the transceiver's power switch was also turned on, the transceiver will automatically turn on. To turn off the transceiver, turn the ignition switch to the OFF position or manually turn off the transceiver's power switch.

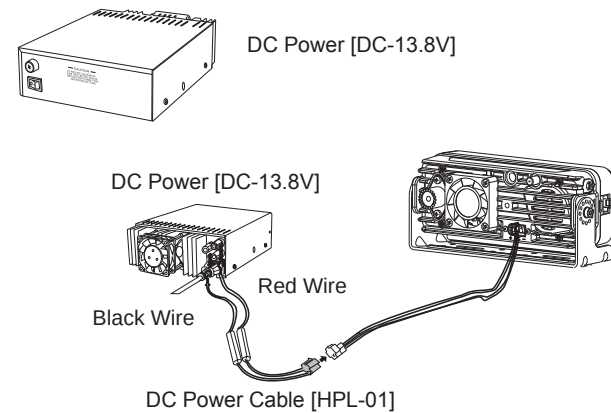


◆ FIXED STATION OPERATION

To use this transceiver for fixed station operation, a separate 13.8V DC power supply (user-purchased) is required. The company offers high-quality communication-grade DC power supplies as optional accessories. Contact an authorized dealer in your area for details.

- Recommended power supply current capacity is 12A.
- Connect the DC power cable to the regulated DC power supply and check that the polarity is correct (red: positive, black: negative).

- Do not connect the transceiver directly to an AC outlet.
- Use the provided DC power cable to connect the transceiver to the regulated power supply.
- Do not substitute the cable with smaller gauge wires.



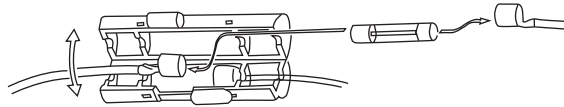
- Connect the transceiver's DC power connector to the DC power cable connector.

Note:

- ◆ Before connecting the DC power supply to the transceiver, ensure that both the transceiver and the DC power supply are turned off.
- ◆ Connect all wiring securely before plugging the DC power supply into an AC outlet.

■ FUSE REPLACEMENT

If the fuse blows, first determine the cause, then correct the problem. After resolving the issue, replace the fuse. If the newly installed fuse continues to blow, disconnect the power cable and contact an authorized dealer or service center for assistance.



Fuse Location	Fuse Rating
Transceiver	15A
Included Accessory DC Power Cable	20A

- Only use the specified type and rating of fuse; otherwise, it may damage the transceiver

Note:

Using the transceiver when the vehicle battery is not fully charged or when the engine is off may drain the battery to the point where there is not enough power left to start the vehicle. Avoid using the transceiver in these situations.

■ ANTENNA CONNECTION

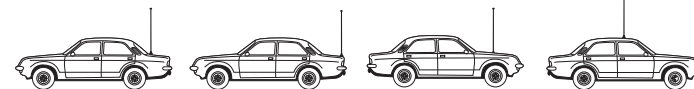
Before operating, install a high-efficiency and precisely tuned antenna. The success of the installation largely depends on the type of antenna and the correct installation process. Carefully selecting the antenna system and properly installing, it will ensure excellent performance from the transceiver.

Use an antenna with a characteristic impedance of 50Ω and a low-loss coaxial feeder line with the same 50Ω impedance to match the transceiver's input impedance. Connecting the antenna to the transceiver using a feeder line with an impedance other than 50Ω can reduce the effectiveness of the antenna system and may cause interference to nearby TVs, radios, and other electronic devices.

Note:

Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna before transmitting. All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage.

The diagram below illustrates the recommended positions and mounting methods for installing the antenna on your vehicle.



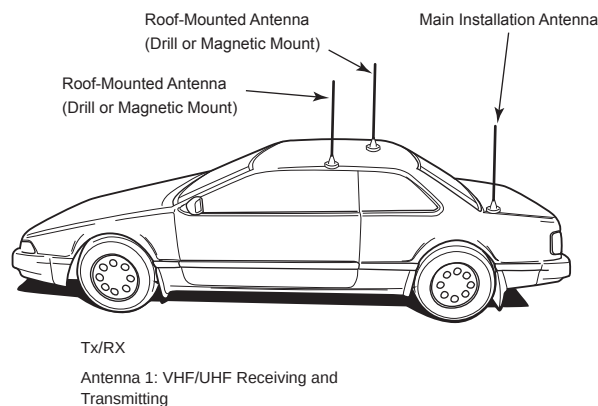
|||||  Important Tips for Antenna Selection |||||

We ship without antennas. The antenna type that matches our model is Helical, and the maximum antenna gain is 5.5dBi

A longer antenna generally improves both receiving and transmitting performance. Longer antennas typically have higher gain, which enhances signal strength. Recommended Specifications: Length: Approximately 1 meter. Gain: Around 5.5 dB. SWR (Standing Wave Ratio): Ideally, the SWR should be below 1.5. An SWR above 1.5 might damage the transceiver's power amplifier, reducing the overall performance and potentially causing long-term damage.

◇ ANTENNA LOCATION

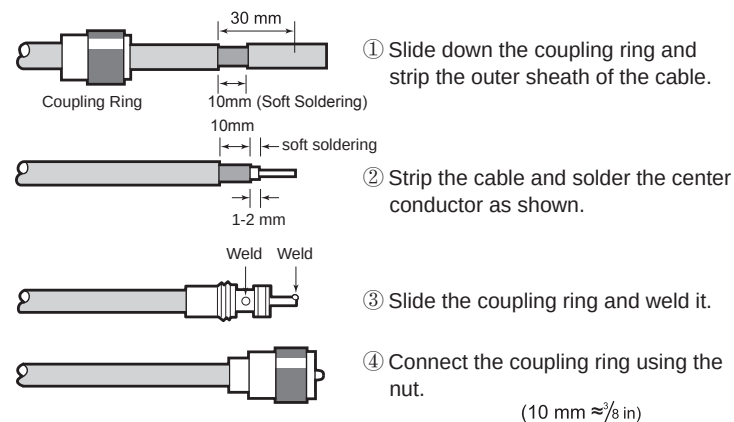
To maximize performance, select a high-quality antenna and install it in a good location.



◇ ANTENNA CONNECTOR

The antenna uses an L16 connector and a Q9 connector.

• L16 Connector



Note: There are detailed instructions on antenna installation. For more information and recommendations, please contact your local dealer.

Important Tips for Feeder Line

1. When purchasing a magnetic or edge-mount antenna for a vehicle, choose a feeder line whose length closely matches the distance required (e.g., if the main unit is 3 meters from the antenna, a 3.5-meter feeder line will give the best results). A feeder line that is too long will result in output power loss.
2. If the feeder line is too long, arrange the excess cable in a serpentine (Z-shaped) pattern.

The correct way to arrange the excess cable:



3. **Note:** Do not coil the excess cable into a loop as this can cause significant power loss and output issues (As shown in picture 2 and picture 3). Cutting and reconnecting the cable is also not recommended due to the high transmission current, which can lead to other problems.

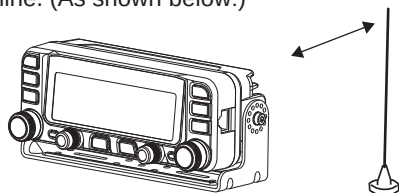


Picture 2

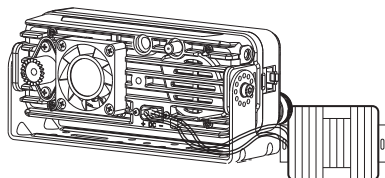


Picture 3

4. If you encounter communication faults within a range of 1-3 kilometers, check the antenna directly to see if the issue lies with the feeder line. (As shown below:)

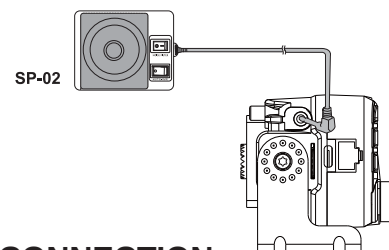


5. If using a 24V battery output, use a voltage converter to reduce 24V to 12V with a current rating of at least 15A. Follow the connection method as shown in the diagram.



EXTERNAL MONO SPEAKER

If you plan to use an external speaker, choose an 8Ω dual-channel external speaker. The external speaker jack accommodates a 3.5mm mono plug.



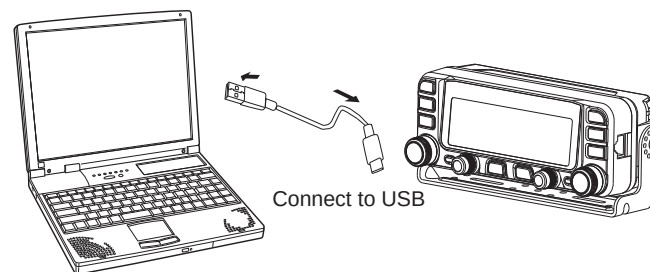
PC CONNECTION

To use programming software, first, connect the transceiver to the PC using the optional programming cable (HPC-01) via the TYPE-C port.

Note: Contact your dealer for information on purchasing the programming cable.

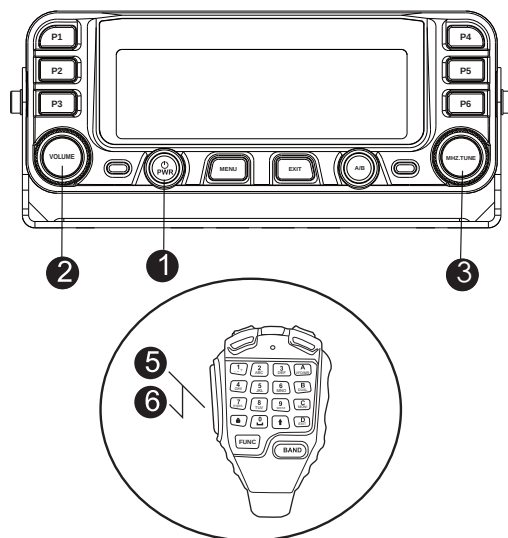
CONNECTION

Use the optional HPC-01 cable to connect the mobile transceiver to your computer as shown.



YOUR FIRST QSO

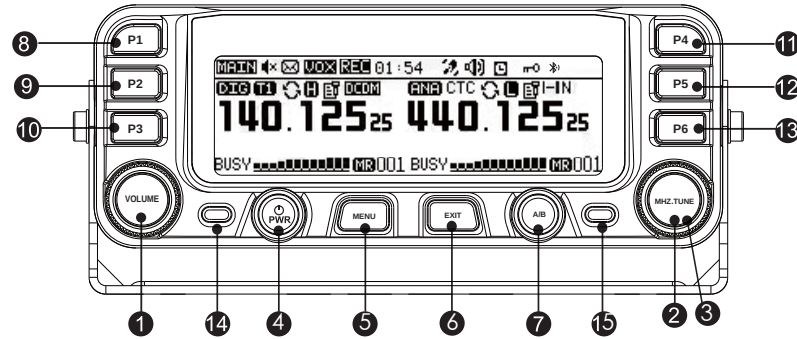
Are you ready to get started with your new transceiver? After reading this section, you'll know how to broadcast your voice over the air. The following instructions will help you get familiar with the basics. If you encounter any issues or want to learn more, please refer to the detailed explanations provided later in this manual.



- ① Briefly press the [PTT] Power button to turn on the transceiver.
 - The transceiver emits a loud double beep, and the LCD screen displays the startup message for a moment before showing various indicators and the current operating frequency.
 - When turning off, the transceiver saves the current settings and automatically restores them the next time it is powered on.
- ② Turn the [VOL] (Volume) control knob clockwise, stopping at the 9 o'clock position.
- ③ Rotate the [DIAL] control knob to choose the desired receive frequency.
- ④ If you want to transmit a signal, please hold the microphone approximately 5 cm (about 2 inches) from your mouth.
- ⑤ Press and hold the [PTT] (Push-to-Talk) button on the microphone, then speak normally into the microphone.
- ⑥ Release the [PTT] button to listen for incoming signals.
- ⑦ Repeat steps ④ , ⑤ and ⑥ to continue your conversation.

GETTING ACQUAINTED

■ FRONT PANEL



NUMBER	KEY	FUNCTION
1	Volume Control [VOL]	Rotate clockwise to increase volume; counterclockwise to decrease volume.
2	Right Band Switch [DIAL]	Rotate this switch to select the right-side frequency or channel.
3	Right [MHZ TUNE] Key	Press to enter MHz tuning mode when in frequency mode.
4		Long press power key for 1 second to power on the transceiver, then the device will be switched on.
5		Enter the menu interface.
6		Press to return to the main screen from the menu.
7		Press to toggle the A/B settings as the main channel.

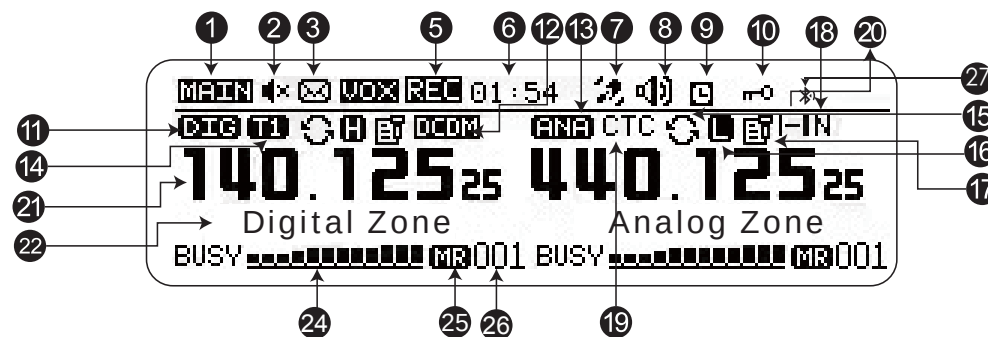
NUMBER	KEY	FUNCTION
8		User-defined Key. Assign the desired short and long press functions through programming software.
9		User-defined Key. Assign the desired short and long press functions through programming software.
10		User-defined Key. Assign the desired short and long press functions through programming software.
11		User-defined Key. Assign the desired short and long press functions through programming software.
12		User-defined Key. Assign the desired short and long press functions through programming software.
13		User-defined Key. Assign the desired short and long press functions through programming software.
14		Receive Indicator Light Lights up when in receive mode.
15		Transmit Indicator Light Lights up when in transmit mode.

■ PROGRAMMABLE KEY SHORTCUT FUNCTIONS

OPTION	DESCRIPTION
No Function	The key has no assigned function. Pressing it does nothing.
Power Adjustment	Quickly toggle between high and low power modes.
Emergency Mode On	Quickly initiate an emergency call (recommended for the orange button).
Emergency Mode Off	Quickly end an outgoing emergency call.
Direct/Repeater Mode	Switch between direct and repeater mode
Encryption	Toggle the encryption function on or off
SMS	Enter the text message menu
Contacts	Access the digital contacts list to make a call or related service.
Zone Up	Switch to the previous zone
Zone Down	Switch to the next zone
V/M Switch	Toggle between channel mode and frequency mode.
Keypad Lock	Lock or unlock the keypad.
Monitor Mode	Toggle between monitor squelch and receive squelch modes.
Single/Dual Display	Quickly switch between single and dual display modes.

OPTION	DESCRIPTION
Scan	Quickly enable or disable the scan function.
Recording On/Off	Quickly start or stop recording (depending on firmware).
Play Previous Recording	Quickly play the previous recording (depending on firmware).
Play Next Recording	Quickly play the next recording (depending on firmware).
Dispatch	Quickly send a 1750 Hz tone burst.
Noise Channel Delete Temporarily	When the scan pauses on a channel, pressing this key temporarily removes the unwanted noisy channel from the scan list. This channel will not be scanned during the current session. However, once the transceiver is restarted and the scan is initiated again, the channel will reappear in the scan list.
APRS Upload	Upload APRS data each time the key is pressed.
Screen Switch	Quickly toggle with A and B keys.
Lone Worker	Toggle the Lone Worker function on or off.
VFO Programming Scan	Enter UV segment frequency programming mode in VFO mode.
GPS Information	Quickly view GPS location information.
Radio	Quickly access the radio band.
Roaming	Quickly enable roaming.
Digital/Analog Switch	Quickly switch between digital and analog modes.
One-Touch Cal	Quickly initiate a one-touch call.

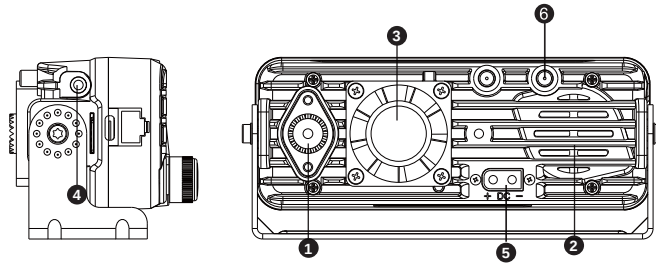
■ FUNCTION DISPLAY



NUMBER	INDICATOR	FUNCTION
1	MAIN	Main Channel Indicator
2	🔇	Mute
3	✉	Message Received
4	VOX	Voice-Activated Transmission
5	REC	Recording Function
6	01:54	Time
7	📍 📍	GPS On (Located)/GPS On (Not Located)
8	🔊	Monitor
9	🔌	Auto Power-Off
10	🔒	Keypad Lock
11	DIG	Digital Channel
12	DCDM	Direct Mode Dual Time slot
13	ANA	Analog Channel

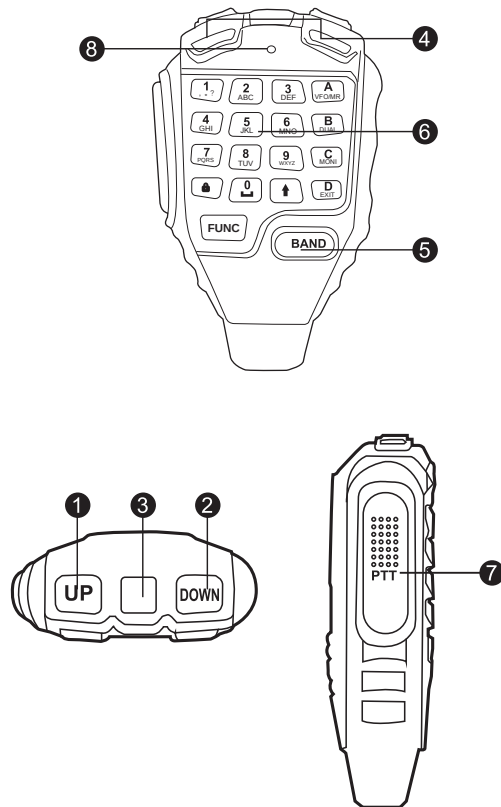
14	T1	Time slot 1
15	🔄 🔄 🔄 🔄	Scan Active/Scan Paused (Signal Found) /Priority Channel 1 Found/Priority Channel 2 Found
16	H M L	High/Medium/Low Power
17	🔑	Encryption On
18	N	Narrow Band (Digital Mode Time slot)
19	CTC DCS	Analog CTCSS/Digital CTCSS
20	I-I I+I I-I	Repeater Channel (Negative Offset)/Repeater Channel (Positive Offset)/Off-Network
21	140.12525	Current Channel Frequency
22	Digital Zone	VFO/Zone/Channel Name
23	VFO	Editable Frequency in VFO Mode
24	BUSY [Signal Strength Bars]	Signal Strength Indicator
25	MR	Channel Mode
26	001	Channel 1
27	📶 📶	Bluetooth On (Connected)/Bluetooth Off (Not Active)

■ REAR PANEL



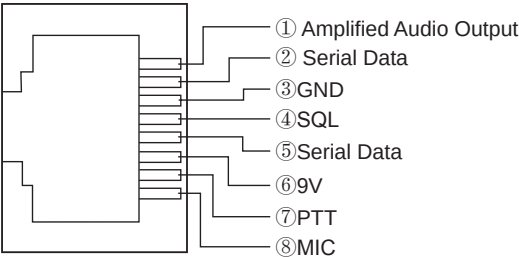
NUMBER	PORT	FUNCTION
1	Antenna Connector	Connects to the antenna, with a 50-ohm impedance.
2	Speaker	Emits audio signals when the transceiver receives them.
3	Cooling Fan	Automatically activates to cool the device when it heats up during operation.
4	External Speaker Port	Connects to an optional external speaker.
5	Power Input	Connects to a 12-13.8V power source.
6	GPS Interface	Connects to a GPS signal input for use with digital APRS functionality

■ MICROPHONE



NUMBER	KEY	FUNCTION
1	Increase	Increases frequency values, memory channel numbers, or settings.
2	Decrease	Decreases frequency values, memory channel numbers, or settings.
3	Emergency Alarm Button	Long press to activate the emergency alarm function; short press to cancel it.
4	Receive/Transmit Indicator Light	Green LED lights up when receiving a signal, and red LED lights up when transmitting.
5	Main/Sub Channel Switch	Switches between the left or right transceiver as the main channel.
6	Numeric Keypad	Used for function settings, VFO frequency input, or DTMF dialing.
7	PTT Button	Press to enter the transmit state.
8	Microphone	Speak here during transmission.

◇ MIC CONNECTOR DIAGRAM
(IN THE FRONT VIEW OF CONNECTOR)



■ MICROPHONE KEYPAD FUNCTION DESCRIPTION

You can use the 4x4 alphanumeric keypad to access the transceiver's functions. When using the keypad to enter a user alias or text message, the transceiver includes three input modes: 1. English letter mode 2. Chinese input mode 3. Numeric input mode. When entering an ID using the keypad, only the numeric mode can be used.

English Letter Mode: Many characters require pressing a key several times. The table below shows how many times a key needs to be pressed to get the desired character.

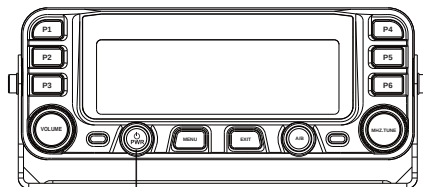
MICROPHONE FUNCTION DESCRIPTION

	1 ., ? ! @ & ' % - :
	a b c 2 A B C
	d e f 3 D E F
	g h i 4 g H I
	j k l 5 j K L
	m n o 6 M N O
	p q r s 7 P Q R S
	t u v 8 T U V

	w x y z 9 W X Y Z
	0 Space
	Press and hold the to lock the keypad. Combine with the to unlock the keypad.
	Input Mode Switching
	In standby mode, press the to select VFO mode. In VFO mode, press the to enter channel mode.
	Single/Double Display Mode Switching
	Monitor Button
	Used with Menu to exit functions
	Enter the menu. Combine with to unlock.
	Main/Sub Channel Switching

BASIC OPERATION

■ POWERING ON AND OFF



Power Key

◇ POWERING ON

When the device is off, press the power key  to turn on the transceiver. The transceiver emits a loud beep, and then the LCD screen displays a startup message, followed by various indicators and the current operating frequency.

◇ POWERING OFF

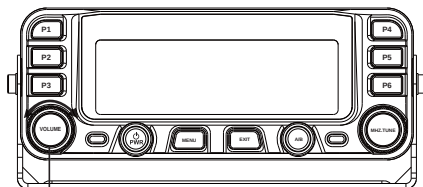
When the device is on, press the power key  briefly to turn off the transceiver. The current settings will be saved during shutdown, and these parameters will automatically be restored the next time the transceiver is turned on.

The volume on this device is adjusted using the [VOL] knob on the display. In standby mode, turn the corresponding [VOL] knob to adjust the volume. Turning the knob clockwise increases the volume, while turning it counterclockwise decreases the volume.

Tip:

You can press and hold the monitor button to listen to background noise while adjusting the volume with the [VOL] knob. This allows for more accurate volume adjustment when the transceiver is in communication mode.

■ VOLUME



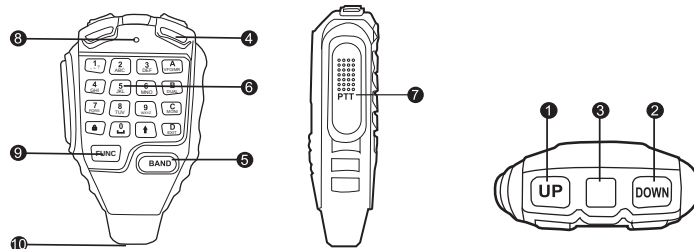
Volume Control

OPTIONAL ACCESSORY: WIRELESS MICROPHONE KIT

■ WIRELESS MICROPHONE

(1) To pair the wireless handheld microphone, press the EXIT key on the main unit. The main unit will display a search status while waiting for the pairing to complete. Once paired successfully, the handheld microphone will emit a successful connection sound. Before pairing, it's essential to turn off all other nearby Bluetooth devices (including car and phone Bluetooth) to avoid connecting to unrelated devices. Note: The wireless microphone has a communication range of 3-10 meters. If there are any obstacles, please avoid them to maintain the communication distance.

(2) After successfully pairing the first time, your device will automatically reconnect the next time you power it on.



NO.	BUTTON	FUNCTION
1	Increase UP	Increase frequency value, memory channel number, or set value.
2	Decrease DOWN	Decrease frequency value, memory channel number, or set value.
3	Orange Button	Long press to power the wireless microphone on/off.
4	Receive/Transmit Indicator	Green LED when receiving a signal, red when transmitting.
5	BAND	Single click to switch between main and sub-channels; double-click to mute the Bluetooth microphone speaker.
6	Numeric Keypad	Used for frequency input and quick operations with the FUNC button.
7	Talk PTT	Press PTT to transmit, release to standby receive.
8	Microphone	Speak into the microphone when transmitting.
9	FUNC	Quick menu selection; double-click to lock/unlock the microphone keypad.
10	TYPC Charging	Please use a DC output of 5V, 1A or higher.

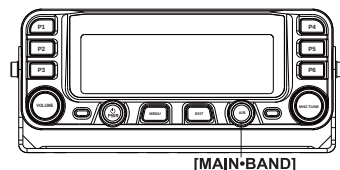
■ BAND INDICATOR STATUS

LED			
Status	Red Light	Blue Light	Speaker Prompt
Charging	Steady on		
Fully Charged		Steady on	
Bluetooth Not Connected	Fast Flash		Beep Prompt
Bluetooth Connected	Slow Flash		Buzz Prompt
Low Battery			Low Battery Warning Sound

Notes:

- 1. Communication Range:** The effective communication distance of the wireless microphone is between 3-10 meters. Using it beyond this range may cause it to malfunction.
- 2. Automatic Connection Search:** After powering on, the wireless microphone will automatically search for the previously paired transceiver. If the paired transceiver is not connected within 30 seconds, the wireless microphone will automatically turn off to save power. If connected successfully, a "connected" prompt will be given, indicating the microphone is ready for use. If the paired transceiver disconnects during use, the microphone will emit a "beep" to indicate the connection has been lost.
- 3. Low Battery Warning:** When the microphone indicates low battery, please charge it promptly. Continuing to use it with low battery may cause the microphone to shut down when the voltage drops below the protection threshold.
- 4. Charging:** Use the TYPC port for charging. Ensure the power adapter provides a DC output of 5V, 1A or higher.
- 5. Mounting Method:** Use the round hook with a no-drill adhesive mount to attach the microphone in the desired location. You can choose to use the hook for securing the microphone as needed.

■ SELECTING MAIN AND SUB BANDS



This product is set to dual-band receive mode by default, where the main unit frequency is indicated with **MAIN** icon in the upper right corner. Only the side set as the main unit can use the transmit function. When the left side is set as the main band, pressing the [MAIN-BAND] button will switch the main unit to the right side. Pressing the [MAIN-BAND] button again will switch the main unit back to the left side.

■ SELECTING WORKING BANDS

- ① You can directly input the frequency using the numeric keypad on the microphone.
- ② You can set the working frequency band between 136~174 MHz (input below 136 MHz is prohibited).
- ③ The transmission frequency ranges are 144-148 MHz and 430-440 MHz.

Note: This product can be set to work in dual UHF or dual VHF modes.

■ RECEIVING

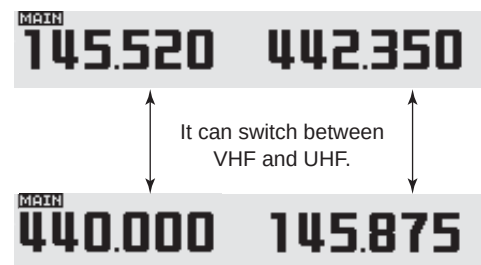
In standby mode, both the left and right units of this product will monitor and receive signals. When a signal is received “**BUSY**” icon and signal strength indicator will appear on the corresponding screen, and you will be able to hear the caller.

Note:

If your transceiver is set to a high squelch level, it may not receive weak signals. If the left or right unit shows the “**BUSY**” icon and signal strength but you cannot hear the caller, this indicates that a matching carrier wave has been received, but the signaling does not match..

■ V/V, U/U STANDBY RECEPTION

The transceiver can monitor and receive signals, such as on the 144 MHz band, using the dual-receive standby function.



[Example]



■ SETTING FREQUENCY THROUGH CONTROLLER

- ① Press [MHz·TUNE] to enter the MHz adjustment mode.
- ② Rotate the [DIAL] control knob to select the desired frequency.

■ INPUTTING FREQUENCY USING MICROPHONE KEYPAD

You can directly input the desired frequency for the left or right band using the microphone keypad.

- ① Press **BAND** to select the desired band (left or right) as the main band.
- ② Press the numeric keys six times to input a frequency.
- ③ If you input an incorrect digit, press the PTT button to clear the input, then start over from the first digit.

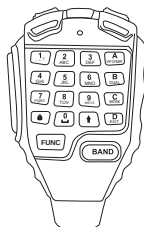
Note:

This function should be operated in VFO mode.

- The memory groups are shared between the left and right bands.

■ CANCELING SQUELCH

In analog mode, press the PTT-M button on the microphone to monitor weak signals.



To Cancel Squelch: Press and hold the PTT-M button until the transceiver emits a "beep" sound, then release the button. The squelch circuit will be disabled. Repeat the operation to reactivate the squelch circuit.

■ TRANSMITTING

Press and hold the [PTT] button to switch the transceiver from receive to transmit mode. Keep your mouth about 2.5 to 5 cm away from the microphone and speak in a normal tone to ensure optimal sound quality for the receiving station.

Note:

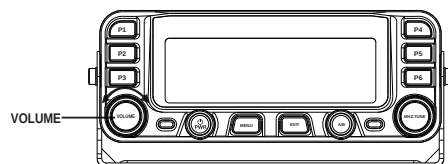
Transmission can only occur on the main channel. When transmitting, the "  " icon will appear in the lower-left corner of the main channel frequency.

SETTING FREQUENCY

■ FREQUENCY/CHANNEL (VFO/MR) SWITCHING

The transceiver operates in two modes: Frequency Mode (VFO) and Channel Mode (MR). Press and hold the preset P1-P6 (V/M switch) key to toggle between frequency mode and channel mode.

Note:
The following operations can switch between digital and analog modes.



Adjusting Frequency in VFO Mode use the [DIAL] control knob to select the desired frequency. Turn clockwise to increase the frequency. Turn counterclockwise to decrease the frequency. Each step increases or decreases the frequency by the set step size.

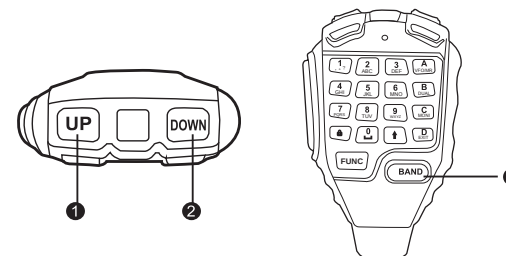


If you select a 1 MHz adjustment step, digits below 100 kHz will disappear.

When setting the main frequency, press the corresponding [DIAL] control knob to enter MHz adjustment mode. In this mode, use the band switch to quickly adjust the frequency in 1 MHz increments.

■ USING [▲]/[▼] BUTTONS

- Press **[BAND]** to choose the left or right band as the main band.
- Press the **[A VFO/MR]** to switch the desired band to VFO mode.
- Use the **[▲]/[▼]** buttons to select the desired frequency.



Tips:

Press **[▲]** to increase the frequency by one step. Press **[▼]** to decrease the frequency by one step. Press and hold **[▲]/[▼]** for continuous frequency adjustment.

■ INPUTTING FREQUENCY VIA MICROPHONE KEYPAD

In frequency mode on the main band, you can input the frequency using the microphone keypad. If the input frequency exceeds the band limits, the input will be invalid.

Button	Screen
	FM MAIN 145.680
Press [1.] [4.] [5.]	FM MAIN 145.36
Press [2.]	FM MAIN 145.36250

Note: If the frequency band restriction feature is enabled, frequency input or adjustment operations will be limited to the valid band range for the current VFO frequency.

SHORTCUT OPERATIONS

■ SELECTING OUTPUT POWER

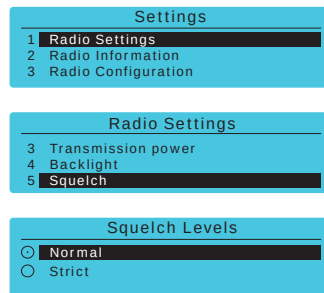
This radio provides three levels of output power to suit your operational needs. For short-distance communication, using low power can reduce interference with other radios and minimize current consumption.

- Press the preset P1-P6 programmed (Power Adjustment) button multiple times to select the desired output power level.

S/RF Display	POWER OUTPUT	
	VHF/UHF	Taiwan
High Power 	25W	25W
Medium Power 	15W*	15W*
Low Power 	5 W*/5 W*	5 W*

You can change the output power during transmission.

■ ADJUSTING SQUELCH



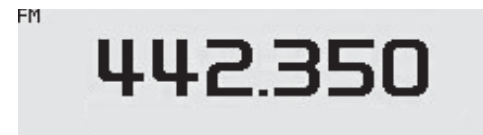
This function is used to set the reception signal strength. When the received signal strength reaches a certain level, you can hear the other party's call; otherwise, the radio will remain silent.

Note: The squelch levels for both the left and right channels of the radio are adjusted simultaneously.

■ SINGLE BAND/DUAL BAND OPERATION

In dual-frequency operation, both frequencies are monitored simultaneously. There are two receiving circuits: the left band and the right band (which can operate on different frequencies, modes, and functions). In single-frequency operation, only one frequency is monitored.

- ① Set one of the sides to the main channel mode.
- ② Press the preset P1-P6 programmed (Single/Dual Display) button to switch to single display mode.



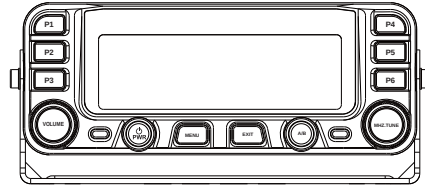
- ③ Press the preset P1-P6 programmed (Single/Dual Display) button again to switch back to dual display mode.



■ SELECTING A CHANNEL

◇ SELECTING A CHANNEL VIA BAND

In channel mode, you can select the desired channel by adjusting the corresponding [DIAL] control knob. Turning counterclockwise selects the next channel, while turning clockwise selects the previous channel. You can also adjust the main channel by pressing the [▲]/[▼] button on the microphone keypad.



Note: If there are unedited channels between two channels, the radio will skip the empty channel and go directly to the next available channel.

◇ INPUTTING THE MAIN BAND CHANNEL THROUGH THE MICROPHONE KEYPAD

In the main band channel mode, you can use the microphone keypad to enter three digits (00-11) to switch to the desired channel. If the input corresponds to an unedited channel, the radio will emit an error tone and return to the current channel.

- For example, entering "01" selects Channel 1, "30" selects Channel 30, and "56" selects Channel 56.

■ KEYPAD LOCK AND UNLOCK

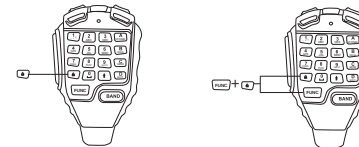
The radio has a keypad lock function that can be activated through the microphone. You can also set the radio to automatically lock the keypad after a specified period if there is no operation or no carrier received.

- Method 1: Using the Pre-programmed [Keypad Lock] Button.



- ① Press [MENU] to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Select the "Radio Settings" menu group, then press [MHz · TUNE].
- ④ Rotate the [DIAL] to select the "Keypad Lock" menu option, then press [MHz · TUNE] to enter the "Keypad Lock Switch" and "Keypad Lock Delay Time" menu options.
- ⑤ Rotate the [DIAL] to choose the desired "Keypad Lock Switch" function and "Keypad Lock Delay Time" settings.
- ⑥ Press the [EXIT] on the panel or the [D · EXIT] on the microphone to return to the previous menu.
- ⑦ Press microphone buttons [FUNC] + [▲] to unlock.

Method 2: Manually Locking and Unlocking the Keypad via the Microphone Keypad.



- ① Press and hold the microphone button [▲] to activate the "Keypad Lock" function.
- ② Press microphone buttons [FUNC] + [▲] to unlock.

QUICK CHANNEL STORAGE OPERATION

■ QUICKLY STORING FREQUENCY AND PARAMETERS, ASSIGNING REGIONS

This feature allows you to quickly store frequency and parameters and assign them to specific zones. To complete the process, it involves two steps: adding the channel and then assigning it to a zone.

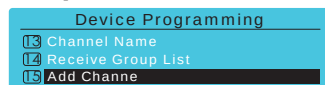
- ① Press **[MENU]** to display the function operation menu.
- ② Rotate the [DIAL] to select “**⚙**” menu group, then press [MHz·TUNE].



- ③ Rotate the [DIAL] to select "Device Programming" and press [MHz·TUNE].



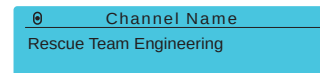
- ④ Rotate the [DIAL] to select the "Add Channel" menu option, then press [MHz·TUNE].



- ⑤ Rotate the [DIAL] to choose between "Analog," "Digital," or "Aviation," then press [MHz·TUNE].



- ⑥ Use the microphone numeric keypad to edit the channel name (refer to the microphone instructions). Press **[FUNC]** to confirm the name. To go back to the previous menu, press **[D/EXIT]**.



- ⑦ After confirming the channel name, proceed to set the receive frequency.



- ⑧ After confirming the receive frequency, proceed to set the transmit frequency.



- ⑨ After setting the transmit frequency, press **[FUNC]** to confirm. The display will show that the channel has been added successfully.

QUICK CHANNEL STORAGE OPERATION

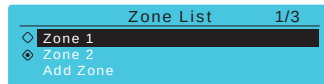
◇ ADDING CHANNELS TO ZONE

- After completing the first step of storing a channel, you can assign that stored channel to a specific zone. Follow these steps to add the stored channel to a zone

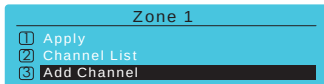
① Press  key to display the function operation menu.



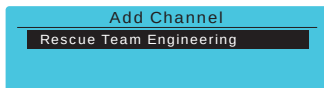
- ② Rotate the [DIAL] to select  menu group, then press [MHz · TUNE].
- ③ Rotate the [DIAL] to choose the "Zone to Store" menu group, then press [MHz·TUNE].



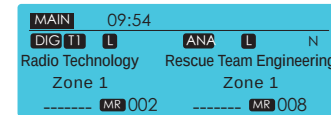
- ④ Rotate the [DIAL] to select the "Add Channel" menu option, then press [MHz·TUNE].



- ⑤ Rotate the [DIAL] to select the channel you added in the first step, then press [MHz · TUNE]. The display will show that the channel has been successfully added.



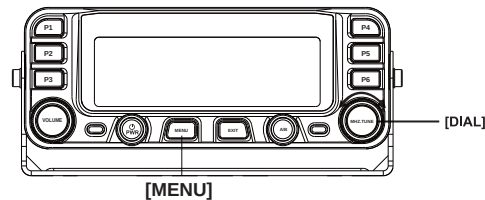
- ⑥ Press the appropriate button to return to the previous menu level.



ZONES AND CHANNELS

SELECTING A ZONE

Zone are used to manage channels efficiently by grouping multiple channels together. Each zone can support up to 64 channels, with a total of 250 zones available, allowing you to manage up to 1024 channels.

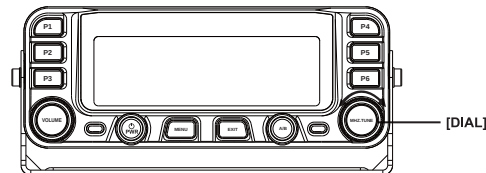


Method 1: Use the pre-programmed [Zone Up] or [Zone Down] keys, which are P1-P6, to select a zone.

Method 2: Using [Menu] to select a zone. Please follow the steps:

- ① Press to display the function operation menu.
- ② Rotate the [DIAL] to select the "Zone" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select your desired "Zone List", then press [MHz·TUNE].
- ④ Press on the front panel or press on the microphone to return to the previous menu.

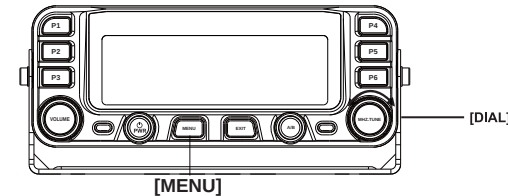
SELECTING A CHANNEL



- ① Press one of the pre-programmed keys (P1-P6) that are set to [V/M] to switch to channel mode. Channels can be either analog or digital.
- ② Rotate the [DIAL] to choose a channel.
- ③ Use the microphone's numeric keypad to enter the channel number. For example, if you want to switch to channel 88, input 88 to enter channel 88.

CREATING A NEW CHANNEL (MANUAL PROGRAMMING)

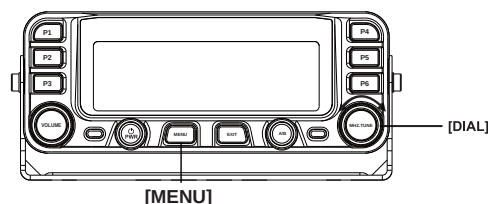
- You can manually create new channels as needed.



- ① Press one of the pre-programmed keys (P1-P6) that are set to [V/M] to switch to channel mode.
 - ② Press to display the function operation menu.
 - ③ Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
 - ④ Rotate the [DIAL] to select the "Device Programming" list, then press [MHz·TUNE].
 - ⑤ Choose whether the channel will be analog or digital.
 - ⑥ Input the channel alias (name) and confirm.
 - ⑦ Input the receive frequency and confirm.
 - ⑧ Input the transmit frequency and confirm.
- The screen will display "Added Successfully." Press on the front panel or on the microphone to return to the previous menu.

ZONES AND CHANNELS

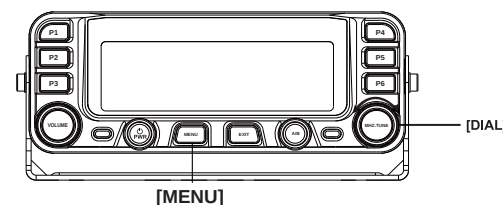
■ STEPS TO ADD A NEW CHANNEL TO A ZONE



- ① Press one of the pre-programmed keys (P1-P6) that are set to [V/M] to switch to channel mode.
- ② Press to display the function operation menu.
- ③ Rotate the [DIAL] to select the "Zone" menu group, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select your desired "Zone" list, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to choose the specific "Select Zone" list you want to add the channel to, then press [MHz · TUNE].
- ⑥ Rotate the [DIAL] to select the "Add Channel" option, then choose the newly created channel from the channel list. Press [MHz·TUNE] to confirm.

The screen will display "Added Successfully." Press on the front panel or on the microphone to return to the previous menu.

■ METHODS FOR CONFIGURING NEW CHANNEL PARAMETERS



- ① Press one of the pre-programmed keys (P1-P6) that are set to [V/M] to switch to channel mode.
- ② Press to display the function operation menu.
- ③ Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select your desired "Device Programming" list, then press [MHz·TUNE].
- ⑤ For analog channels, configure parameters such as CTCSS/DCS (sub-audio tones), radio ID, alias, and channel bandwidth.
- ⑥ For digital channels, configure parameters such as transmit contacts, receive group lists, color codes, time slots, radio ID, alias, and direct dual time slots.
- ⑦ After configuring the necessary parameters, press on the front panel or on the microphone to return to the previous menu.

CALL

■ DIGITAL CALL

In digital mode, you can initiate the following types of calls:

Private Call: A call from one user to another specific user.

Group Call: A call from one user to all members of a group.

All Call: A call from one user to all users on the current channel

- This feature must be enabled by your dealer.

■ INITIATE A CALL

Methods:

- Method 1: In standby mode, press and hold the PTT button to initiate a call to the pre-programmed transmit contact on the current digital channel.
- Method 2: Follow the steps through the menu.
 - ① Press  to access the function menu.
 - ② Rotate the [DIAL] to select the "Contacts" menu, then press [MHz · TUNE].
 - ③ Rotate the [DIAL] to select the desired contact from the "Contact List," then press [MHz · TUNE].
 - ④ Press and hold the PTT button to initiate a call to the selected contact.
 - ⑤ After configuring the necessary parameters, press  on the front panel or  on the microphone to return to the previous menu.
- Method 3: Follow the steps through the menu.
 - ① Press  to access the function menu.
 - ② Rotate the [DIAL] to select the "Call Logs" menu, then press [MHz · TUNE].

- ③ Rotate the [DIAL] to choose from "Outgoing Calls," "Incoming Calls," or "Missed Calls," then press [MHz · TUNE].
 - ④ Select a call record and press the PTT button to initiate a call.
- Method 4: Follow the steps through the menu.
 - ① Press  to access the function menu.
 - ② Rotate the [DIAL] to select the "Contacts" menu, then press [MHz · TUNE].
 - ③ Rotate the [DIAL] to choose "Manual Dial," then press [MHz · TUNE].
 - ④ Press  to toggle between private call and group call numbers. Enter the number and press the PTT button to initiate the private call or group call.
 - Method 5: If your dealer has configured a One-Touch Call for a private or group contact, press the pre-programmed One-Touch Call key, then hold the PTT button to initiate the private or group call.
 - Hold the microphone 2.5-5 cm away from your mouth while speaking. When you press the PTT button, the red LED will light up, and the recipient's information (ID, alias, location, call type, and icon) will be displayed on your screen.
 - Release the PTT button to receive replies.
 - If the transmission power is set to "Low" and the call fails, you can temporarily switch to high power by pressing the pre-programmed Power Adjustment key before transmitting.

CALL

■ RECEIVING AND REPLAYING TO CALLS

When your radio is in digital mode, it can receive and respond to calls on the same frequency, color code, and time slot. Here's what happens when you receive a call:

- ① If the caller's DMR ID is programmed in the receiver's digital contact list, the radio will briefly ring when receiving the call.
- ② The caller's DMR ID, alias, city, state, country, call type, and an incoming call icon will be displayed in the top left corner of the LCD screen.
- ③ Once the other party finishes speaking, press and hold the PTT button to respond.

■ ENDING A CALL

- Private and Group Calls: If neither party presses the PTT button within the call hang time, the call will automatically end.
- All Call: The call will end once the initiating party releases the PTT button.

■ ANALOG CALL

Analog calls are made on analog channels.

- To transmit: Press and hold the PTT button and speak into the microphone. To receive: Release the PTT button to listen.

■ NON-SIGNALING CALL

- Signaling-free calls are made on channels without signaling, meaning the call is open to all users on the same channel.

Select the desired analog channel by rotating the [DIAL] or using the ▲/▼ buttons on the microphone.

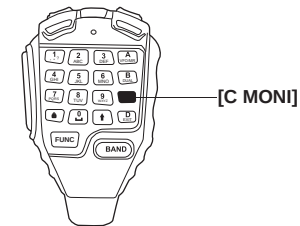
Press and hold the [PTT] button to initiate the signaling-free call.

■ CALLS IN FREQUENCY MODE (VFO)

In frequency mode, you can initiate either a digital or analog call.

- Press the pre-programmed V/M Toggle key to switch to VFO Mode.
- Input the transmission frequency using the number keys to initiate the call.

■ MONITORING



- To enable monitoring: Press on the microphone to turn on monitoring. The LCD will display the icon. Press the button again to exit monitoring mode.
- Attachment 1: When enabled, the radio ignores the sender's ID, call type, and color code, allowing direct access to the call. The display will show the caller's ID, color code, contact, and call type.

Note: In analog mode, if there is no signal and the monitor is activated, pressing will produce noise.

CALL

■ DMR EMERGENCY ALARM

The emergency alarm function allows users to request assistance during critical situations. The alarm can only be triggered if the channel is configured with an emergency system. The types of alarms that can be programmed via PC include:

- Siren Only: The radio emits a loud siren sound during the alarm to signal danger.
- Secret: The radio sends an emergency call to a pre-programmed number without any audible or visual indication on the initiating radio.
- Secret with Voice: The radio sends an emergency call silently, but the user can still receive voice transmissions.
- Normal: The radio makes an emergency call to a pre-programmed number, with both visual and audible feedback. This call has the highest priority and can interrupt ongoing calls.

■ INITIATING AN ALARM

- Press the pre-programmed [Emergency Mode On] key to initiate the alarm to the pre-programmed contact.
- During an emergency call, if the terminal has Automatic Emergency Call enabled, there is no need to press the PTT key to speak. Once the pre-programmed number of automatic emergency call attempts is exhausted, you can manually press PTT to make another emergency call.

■ RECEIVING AN ALARM

When an emergency call is received, the radio automatically answers the call, with no user intervention required.

■ ENDING AN ALARM

The initiator can end the emergency alarm in one of the following ways:

- Method 1: Press the pre-programmed Emergency Mode Off key.
- Method 2: Power off the radio.

The receiver can exit the alarm by switching channels or powering off the device.

■ WORKING ALONE

- If the user is unable to operate the radio within a pre-programmed time while in Lone Worker mode, the radio will automatically trigger an alarm, notifying colleagues or a control center for assistance. Press the pre-programmed Lone Worker key to enable this feature.

■ ENCRYPTION

- Encryption ensures that voice or data is secured by using a key, which prevents unauthorized eavesdropping. Only the receiver with the correct matching key can decrypt the communication.

Encryption types include:

Custom Encryption (ARC4) and AES256 Encryption, which is compatible with MOTO encrypted systems.

Encryption can be pre-programmed via PC software and applied to specific channels. You can enable or disable encryption using shortcut keys or through the menu. The encryption group can be selected from the menu when needed.

MAIN MENU

The device's main menu has an auto-reset function. If no menu operation is performed within a pre-programmed time (configured by the dealer), the device will automatically return to the standby interface. The reset time can be adjusted by the dealer.

■ MAIN MENU ICONS



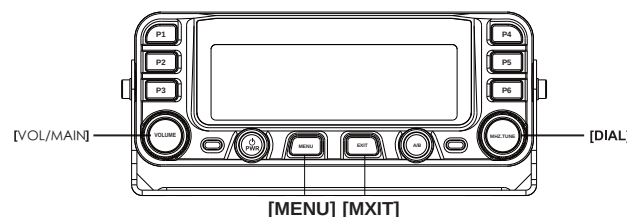
The main menu should pay special attention to the following:
No Region Menu: In DMR and VFO modes, the region main menu is not available.

◇ Analog and VFO Mode: Only the Scan and Settings menus are available.

◇ DMR and MR Mode: No submenus for CTCSS (Continuous Tone-Coded Squelch System) and frequency stepping, and no menus or submenus for analog attributes.

◇ Analog and MR Mode: Only the Scan, Region, and Settings menus are available, with no DMR feature attributes or menus.

■ BASIC MENU OPERATIONS



① Access the Menu: Press **[MENU]** to display the function operation menu interface.

② Navigate Menus: Rotate the DIAL to select the desired menu group, navigate to the submenu or option you need, then press **[MHz·TUNE]** to confirm.

③ Select Options: Rotate the DIAL to select submenu options or parameters, then press **[MHz·TUNE]** to confirm your selection.

④ Return to the Previous Menu: Press **[EXIT]** on the panel or **[D·EXIT]** on the microphone to return to the previous menu.

● Example of Menu Navigation:

When menu operation is described, it follows the path structure, e.g., to access the contact list: "Contacts > Contact List."

● Configuring Menus via PC Software:

You can use PC software to configure the menu options available on the device. Navigate to Basic Configuration > Menu, where you can enable or disable the complete menu or individual sections for the radio. Check the options that need to be accessible on the radio and write them into the device.

CONTACTS

■ CONTACTS

● The address book stores contact information on your radio, allowing you to select a target contact ID and call type for communication. Here's a breakdown of its key features:

◇ CONTACT LIST

● Storage Capacity: You can store up to 800 contact entries in the address book.

◇ Call Types:

- Private Call: A call between two individual radios.
- Group Call: A call from one radio to a group of radios.
- All Call: A call from one radio to all radios in the system.

◇ It allows setting a unique call ID for each digital call member. This ID is used to identify the target radio or a group of radios for communication.

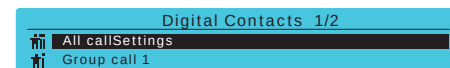
The call ID includes the following:

- Private Call ID: Identifies the target radio's device ID. The ID range is 1-16776415.
- Group Call ID: Identifies a specific group. The ID range is 1-16776415.
- All Call ID: A fixed ID set at 16777215.

◇ Each contact can have an alias. You can enter up to 16 English characters or 8 Chinese characters for each alias.

◇ To navigate and manage the contacts:

- ① Press the  key to open the main menu.
- ② Rotate the DIAL to select the "Contacts" menu group, then press [MHz-TUNE].
- ③ Rotate the DIAL to select "Contact List", then press [MHz-TUNE].
- ④ Select the contact you want to edit or call.
- ⑤ Press  back to return to the previous menu.

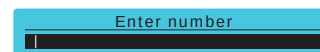


All Call Contacts: Check the contact number (fixed ID 16777215) or press PTT to initiate an all-call.

- Group Call Contacts: View contact properties, send short messages, or press PTT to initiate a group call.
- Private Call Contacts: View and edit contact properties, such as contact ID and name, delete contacts, send short messages, or press PTT to initiate a private call.

■ ADDING NEW CONTACTS

Use the New Contact menu to add new contacts to the list.



- Input a contact alias. Press the  key to switch between input methods.

■ MANUAL DIALING



- You can directly input the desired call ID to initiate a call. In digital mode, press the  key to switch between private call ID and group call ID. The LCD will display the current call type (Private or Group Call ID).

CONTACTS

■ ACCESSING CSV CONTACTS

Your radio can import and manage up to 300,000 CSV contacts. The CSV contact feature allows for detailed contact management and advanced functions. Here's a guide to accessing and using CSV contacts:

- View detailed information about a contact from the CSV list, including: ID Number, Call Sign, Name, Alias, City, State/Province, Country, Notes.
- Perform specific radio operations on the contact, such as: Call Alerts, Radio Check, Remote Monitor, Radio Activation, Radio Kill, Location Retrieval.

Press and hold the PTT key to call the contact directly.

◇ Through computer software by navigating to Digital > Contacts > Contact List, you can manage up to 300,000 contacts. This allows you to save contact details such as alias, call type, TG/DMR ID, and call alerts. Then program these details and write them into the radio.

CSV Contact Quick Access

◇ In digital mode, press the  key briefly to enter manual dialing and quickly search for CSV contacts by entering an ID. The radio will match and associate it with a corresponding DMR contact for fast lookup.

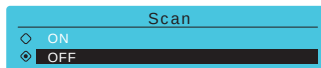
SCAN SETTINGS

■ SCANNING

- The scan function on your radio allows it to monitor multiple channels. When the radio detects activity on a channel, it temporarily stays on that channel for listening. Below is a guide to configuring and using the scan function.
- You can create up to 32 scan lists. At least one scan list must always be available.
- Each scan list contains a maximum of 16 channels (including analog and digital), and the current channel in a scan list cannot be deleted.
- In VFO frequency mode, you can perform frequency scans, but there is no sub-menu for scan lists. In channel mode, you can manage scan lists via computer software> Scanning > Scan List, where you can save 32 scan lists, name them, add members (channels), and write them to the radio.

■ SCAN SWITCH

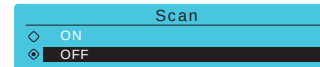
- Method 1: Press the pre-programmed [Scan] key to start scanning.
- Method 2: If a channel has the Auto Scan feature enabled with a configured scan list, the radio will automatically start scanning when you switch to that channel.
- Method 3: Via the main menu:
 - ① Press  to open the menu.
 - ② Rotate the [DIAL] to select the Scan menu group, then press [MHz · TUNE].
 - ③ Rotate the [DIAL] to choose the Scan Switch option, then press [MHz · TUNE].
 - ④ Rotate the [DIAL] to toggle the Scan On/Off.
 - ⑤ Press  to return to the previous menu.



- ◇ When scanning is enabled, the radio checks channels based on the scan list. The screen will show  during scanning. When the terminal detects activity on a certain channel during scanning, it will remain on that channel to listen. If the radio detects activity on a non-priority channel,  will display. For activity on Priority Channel 1 or 2,  or  will appear.
- ◇ To temporarily delete a noisy or unnecessary channel from the scan, press the pre-programmed [Noise Channel Temporary Delete] key.

■ EXITING SCAN

- Method 1: Press the [Scan] key during scanning to stop.
- Method 2: Through the main menu:
 - ① Press  to open the menu.
 - ② Rotate the [DIAL] to select the Scan menu group, then press [MHz · TUNE].
 - ③ Rotate the [DIAL] to choose the Scan Switch option, then press [MHz · TUNE].
 - ④ Rotate the [DIAL] to toggle the Scan Off.



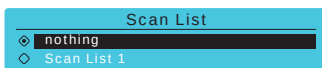
- Method 3: If the channel has Auto Scan enabled, switch to a different channel to exit scanning.

■ EDITING LISTS

- ① Press  to open the menu.
- ② Rotate the [DIAL] to select the Scan menu group, then press [MHz · TUNE].

SCAN SETTINGS

- ③ Rotate the [DIAL] to select the "Scan List" menu option, then press [MHz · TUNE].
- ④ Rotate the [DIAL] to choose the function you want to set.
- ⑤ Press  to return to the previous menu.



- Apply: Activate the current scan list.
- Edit/View: Edit the current list. You can add or delete scan channels, and set priority scan channels.
- Set Priority Channel

You can set the current selected channel as a priority or non-priority channel. If you need to focus on activity on a particular channel, set it as a priority channel. Priority channels are scanned more frequently than non-priority channels. You can set up to two priority channels in each scan list. P1 indicates Priority Channel 1, and P2 indicates Priority Channel 2.

- Delete Channel from Scan List:

Select "Delete" to remove it from the scan list, but you cannot delete the first channel in the scan list.

■ VFO SCAN RANGE

In frequency mode, you can set the VFO scan range, scan resume method, and frequency step. The VFO scan range defines the start and end frequencies for scanning.

- ① Press  to display the function menu interface.
- ② Rotate the [DIAL] to select the "Scan" menu group, then press [MHz · TUNE].

- ③ Rotate the [DIAL] to select the "VFO Scan Range" menu option, then press [MHz · TUNE].

- ④ Rotate the [DIAL] to select the function you need, then press [MHz · TUNE].

- ⑤ Press  to return to the previous menu, or press the microphone to exit the settings interface.

◇ Use the microphone keypad to enter the scan range, for example, for a scan range of 144-146MHz, enter [1][4][4][1][4][6].

- Use the same method to set the UHF band scan range.

■ SCAN RESUME METHODS

In frequency mode, the following scan resume methods are supported:

- Time (TO): Scanning will stop when a signal is detected, and after staying on the channel for 5 seconds, it will resume scanning.
- Carrier (CO): Scanning will stop when a signal is detected, and resume scanning 2 seconds after the signal disappears.
- Search (SE): Scanning will stop when a signal is detected, and scanning will terminate.

■ EDIT LIST

- ① Press  to display the function menu interface.
 - ② Rotate the [DIAL] to select the "Scan" menu group, then press [MHz · TUNE].
 - ③ Rotate the [DIAL] to select the "Scan Switch" menu option, then press [MHz · TUNE].
 - ④ Rotate the [DIAL] to select the scan function you want to enable.
- ◇ During scanning, you can perform the following actions:

SCAN SETTINGS

- Press the [▲] key to incrementally scan up using the preset frequency steps.
 - Press the [▼] key to decrementally scan down using the preset frequency steps.
 - When the terminal scans and detects an active frequency, it will stay on that active frequency until the activity ends.
- During the scan hold, press and hold the [PTT] key. The LED indicator will light up red, and you can speak clearly into the microphone. Release the [PTT] key to listen.
- ◇ To exit scan mode, press the pre-programmed [Scan] key.
- Alternatively, you can disable scanning through the "Scan" menu.

ZONE

■ ZONE

- A zone allows users to conveniently manage channels. Each zone can have up to 64 channels. The radio must keep at least one zone, and each zone must have at least one channel.

 **Note:** The VFO frequency mode does not have a zone menu.

■ SELECTING A ZONE

Method 1: Press the pre-programmed [Zone Select] key, rotate the [DIAL] to select a zone from the zone list. The LCD screen will display the selected zone number or name.

Method 2: Menu operation as follows:



- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Zone" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Zone List" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the desired function and the radio will change to the selected zone.

■ ADDING A ZONE

15 Editing Zones PY

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Zone" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Add Zone" menu option.
- ④ Press  to input the zone name using the keypad. Use the [DEL] key to delete.
- ⑤ After editing the zone name, press  to save.

■ ADDING CHANNELS TO A ZONE

A newly added zone will only have "Channel 1" by default, but you can add more channels.



- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Zone" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Zone List" menu option. Choose the desired zone from the list, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Add Channel" option, press  to enter.
- ⑤ Rotate [DIAL] to select a channel from the channel list, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.

 **Note:**
You can repeat the above steps to continue adding channels.
Each zone can have up to 64 channels.

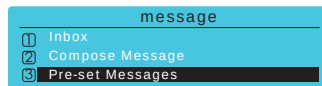
MESSAGE

■ MESSAGE

Users can compose text messages on the walkie-talkie and communicate with other users. The Text Message menu includes the following sub-menus:

- **Inbox:** Received messages are saved in the Inbox.
- **Compose Message:** After entering this menu, you can compose a new message with up to 256 characters.
- **Sent Messages:** Sent messages are saved in the Sent Messages folder.
- **Quick Text:** This menu contains pre-set messages provided by the dealer. The device supports up to 20 quick messages.
- **Drafts:** Edited messages can be saved in the Drafts folder. The device can store up to 100 draft messages.

■ VIEWING MESSAGES



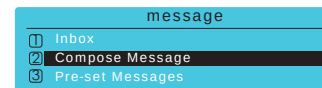
◇ Instant View

When a text message is received, press  to view details.

◇ Through the Menu

- In the "Text Message" menu, select the Inbox or Sent Messages folder, then choose the message you want to view and press  to see the details.

◇ Sending Text Messages



- ① In the "Text Message" menu, select "Compose Message" and press the  button on the microphone to compose a message.
- ② Press the  button on the microphone, select "Send," and choose a recipient or manually enter the recipient's number.
- ③ Press the  button on the microphone to send the message.
- ④ Press  on the microphone to return to the previous menu.

◇ Sending Quick Text

- ① In the "Text Message" menu, select "Pre-set Messages."
- ② Press the  on the microphone, select "Send," and choose a recipient or manually enter the recipient's number.
- ③ Press the  on the microphone to send the message.
- ④ Press  on the microphone to return to the previous menu.

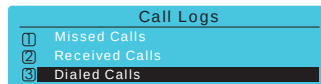
◇ Deleting Text Messages

- ① In the "Text Message" menu, select "Inbox," "Sent Messages," or "Drafts," then choose the message you want to delete.
- ② Press the  button and select "Delete." A prompt will appear on the screen.
- ③ Press the  button to delete the message.
- ④ Press  on the microphone to return to the previous menu.

CALL RECORDS

■ CALL RECORDS

Users can view recent incoming, outgoing, and missed calls through the Call Logs menu, which includes the following sub-menus:



- ① Press  to display the function operation menu screen.
 - ② Rotate [DIAL] to select the "Call Logs" menu group, then press [MHz·TUNE].
 - ③ Rotate [DIAL] to select the menu option you need, then press [MHz·TUNE].
 - ④ Press  to select the required menu option, then press [MHz·TUNE].
 - ⑤ Press  to return to the previous menu.
- Missed Calls: Displays all missed call records (up to 20 recent records). Allows viewing, deleting call details, or sending a message to the contact.
 - Received Calls: Displays all received call records (up to 20 recent records). Allows viewing, deleting call details, or sending a message to the contact.
 - Dialed Calls: Displays all dialed call records (up to 20 recent records). Allows viewing, deleting call details, or sending a message to the contact.
 - Delete Records: Allows deleting all missed, received, or dialed call records.

You can perform the following actions on any call record in the Call Log list:

- Press and hold [PTT] to initiate a call.
- Send a text message.
- Delete records individually.
- To delete all dialed, received, or missed call records, select "Call Logs > Delete Records > Delete All."

 **Note:** You can access the "Call Logs" menu using the  as a shortcut.

DEVICE FUNCTION SETTINGS

You can customize various timing, settings, and programming functions on this walkie-talkie as needed, reducing the need for frequent use of buttons, control knobs, and switches. The device function parameters are effective in all modes.

■ OFF-NETWORK FUNCTION

This option allows you to set whether the walkie-talkies can communicate without network relay services.



- ① Press to display the function operation menu.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Mode Settings" menu group, then press [MHz·TUNE].
- ④ Rotate [DIAL] to select the "Off-Network" option, then press [MHz·TUNE].
- ⑤ Rotate [DIAL] to choose the off-network function you need.
- ⑥ Press to return to the previous menu.

On: Users can use the off-network function on the current channel. When enabled, icon appears on the screen.

Off: The off-network function is disabled on the current channel.

Note: After enabling the off-network function, activate it by pressing the pre-programmed [Off-Network] button. The main unit will transmit using the receive frequency.

■ TONES/PROMPTS

This menu allows you to define alert sounds for the walkie-talkie, including enabling or disabling alerts, setting tone pitch, and volume.

- ① Press to display the function operation menu.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Mode Settings" menu group, then press [MHz·TUNE].
- ④ Rotate [DIAL] to select the "Tone/Alert" option, then press [MHz·TUNE].
- ⑤ Rotate [DIAL] to select the desired function.
- ⑥ Press to return to the previous menu.



- **Walkie-Talkie Mute:** Set whether the walkie-talkie operates in silent mode.
 - When mute is enabled, no alerts will sound for any actions. When mute is disabled, all alerts are active.
- **Key Beep:** Set whether a beep sounds when the user presses buttons.
- **Message Alert:** Allows you to choose if an alert sounds when a message is received.
- **Group Call Alert:** Set whether an alert sounds when a group call is received.
- **Private Call Alert:** Set whether an alert sounds when a private call is received.

- End-of-Call Tone: Sets whether an alert tone sounds after the call hold time (group call, private call) ends.
- Outgoing Call Tone: Sets whether an alert tone sounds when the user presses the PTT to transmit on the current channel.
- Power-On Tone: Sets whether a tone sounds when the walkie-talkie powers on.
- Volume Level: Choose between Outdoor and Indoor settings.

Note: In DMR mode, menus ① to ⑧ are available, while only menus ①, ②, and ⑧ are available in Analog and VFO modes.

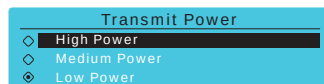
■ TRANSMISSION POWER

This walkie-talkie has three output power levels to meet your operation needs. Low power output is recommended for short-distance communication to reduce interference with other stations and lower current consumption.

Method 1: From the standby screen, press the pre-programmed P1-P6 button (Power Adjustment) to select output power.

Method 2: Adjust power through the function menu:

- ① Press **[MENU]** to display the function operation menu.
- ② Rotate **[DIAL]** to select the "Settings" menu group, then press **[MHz·TUNE]**.
- ③ Rotate **[DIAL]** to select the "Vehicle Mode Settings" menu group, then press **[MHz·TUNE]**.
- ④ Rotate **[DIAL]** to select the "Power Adjustment" option, then press **[MHz·TUNE]**.
- ⑤ Rotate **[DIAL]** to switch between high, medium, and low power as needed.
- ⑥ Press **[EXIT]** to return to the previous menu.



- High Power: Screen displays the "H" icon.
- Medium Power: Screen displays the "M" icon.
- Low Power: Screen displays the "L" icon.

Note: You can toggle between high and low power by pressing the pre-programmed [Power Adjustment] key.

■ BACKLIGHT

The walkie-talkie's backlight colors are formed by mixing red, green, and blue lights, allowing you to create various colors by adjusting the brightness of each individual backlight.

◇ Backlight Settings

Press **[MENU]** to display the function operation menu.

Rotate **[DIAL]** to select the "Settings" menu group, then press **[MHz·TUNE]**.

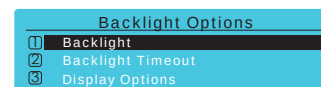
Rotate **[DIAL]** to select the "Vehicle Mode Settings" menu group, then press **[MHz·TUNE]**.

Rotate **[DIAL]** to select the "Backlight" option, then press **[MHz·TUNE]**.

Rotate **[DIAL]** to select the "Backlight" option, then press **[MHz·TUNE]**.

Rotate **[DIAL]** to choose the function you need.

Press **[EXIT]** to return to the previous menu.



- Off: Use this setting to turn off the backlight for extended periods.
- Always On: Use this setting to keep the backlight on continuously.

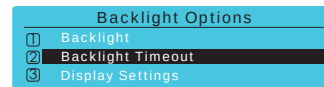
- Backlight Timeout Options

When using automatic backlight, each time a button is pressed on the front panel, the display and keyboard backlight will stay on for 5-15 seconds before turning off.

- ◇ Backlight Timeout

When using automatic backlight, pressing a front panel button will illuminate the display backlight for a specified duration. The backlight can stay on for 5-15 seconds and then turn off automatically.

- ① Press  to display the function operation menu.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Mode Settings" menu group, then press [MHz·TUNE].
- ④ Rotate [DIAL] to select the "Backlight" option, then press [MHz·TUNE].
- ⑤ Rotate [DIAL] to select the "Backlight Timeout" option, then press [MHz·TUNE].
- ⑥ Rotate [DIAL] to choose your desired timeout duration from 5s to 15s.
- ⑦ Press  to return to the previous menu.



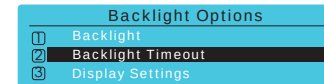
- 5s-15s adjustable.

- ◇ Backlight Display

- ① Press  to display the function operation menu.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Mode Settings" menu group, then press [MHz·TUNE].
- ④ Rotate [DIAL] to select the "Backlight" option, then press [MHz·TUNE].
- ⑤ Rotate [DIAL] to select the "Display" option, then press [MHz·TUNE].

- ⑥ Rotate [DIAL] to choose between red, green, and blue light functions as needed.

- ⑦ Press  to return to the previous menu.



- Red: Configurable to on/off.
- Green: Configurable to on/off.
- Blue: Configurable to on/off.

■ POWER-ON DISPLAY



- ① Press  to display the function operation menu.
 - ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
 - ③ Rotate [DIAL] to select the "Vehicle Mode Settings" menu group, then press [MHz·TUNE].
 - ④ Rotate [DIAL] to select the "Startup Screen" option, then press [MHz·TUNE].
 - ⑤ Rotate [DIAL] to choose the desired function.
 - ⑥ Press  to return to the previous menu.
- Custom Characters: After turning on the power, the radio will display the characters set in the computer software.
 - Default Picture: After turning on the power, the radio will display the pre-programmed picture.

■ KEYBOARD LOCK

The keyboard lock function disables panel keys and microphone buttons, except for [PTT] and knobs, to prevent unintended changes to the radio's operation due to accidental key presses.

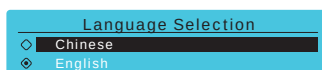
- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu group, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Keyboard Lock" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to choose your desired function.
- ⑥ Press  to return to the previous menu.



- Manual Lock: Long press Mic Key  to lock the keyboard. Press Mic  and  to unlock.
- Auto Lock: The radio automatically locks the keyboard after being idle for a while. Press Mic  and  to unlock.

■ LANGUAGE SELECTION

You can set the language of the radio to either Chinese or English.



- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].

- ③ Rotate [DIAL] to select the "Vehicle Settings" menu group, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Language Selection" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to choose between Chinese or English.
- ⑥ Press  to return to the previous menu.

■ INDICATOR LIGHT

You can configure whether to turn off all indicator lights when the radio is in stealth mode.



- ① Press  to display the function operation menu interface.
 - ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
 - ③ Rotate [DIAL] to select the "Vehicle Settings" menu group, then press [MHz · TUNE].
 - ④ Rotate [DIAL] to select the "LED Indicators" menu option, then press [MHz · TUNE].
 - ⑤ Rotate [DIAL] to choose between On or Off.
 - ⑥ Press  to return to the previous menu.
- On: When the radio enters stealth mode, the indicator lights remain active.
 - Off: When the radio enters stealth mode, all indicator lights are turned off, including transmission and reception indicators.

 **Note:** If LED indicators are turned off, both the transmission and reception lights will also be disabled.

■ CLOCK

The real-time clock is used to display local time and enable related features, such as message timestamps, call history timestamps, auto power-on/off, alarm settings, etc.

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Clock" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to choose between Time or Date, then press [MHz · TUNE].
- ⑥ Rotate [DIAL] to adjust the settings as needed.
- ⑦ Press  to return to the previous menu.



◇ Time:

- Allows manual adjustment of hours, minutes, and seconds. Use / keys to move the cursor and input values with the number keys.

◇ Date:

- Allows manual adjustment of the year, month, and day. Use / keys to move the cursor and input values with the number keys.

■ FAN CONTROL

To prevent overheating caused by prolonged transmission, the fan can be activated to quickly reduce the temperature, extending the lifespan of the device.

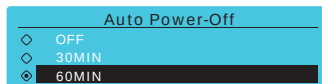
- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Fan Control" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make adjustments as needed, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.



- Off: Disable the fan.
- On: Enable the fan.
- Auto: The fan automatically turns on during transmission and shuts off after a delay.

■ AUTO POWER-OFF

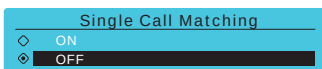
- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Auto Power-Off" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make adjustments as needed, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.



- OFF: Disables the auto power-off function.
- 30-720 MIN: Automatically powers off after 30 to 720 minutes of inactivity.
- Default: OFF.

■ INDIVIDUAL CALL MATCHING

- ① Press to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Single Call Matching" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make adjustments as needed, then press [MHz · TUNE].
- ⑥ Press to return to the previous menu.

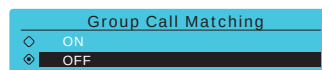


- ON: Matching the received Single ID is required for single calls.
- OFF: Ignores Single Call ID matching and directly receives and responds to transmissions on the same frequency, color code, or time slot.

■ GROUP CALL MATCHING

- ① Press to display the function operation menu interface.

- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Group Call Matching" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make adjustments as needed, then press [MHz · TUNE].
- ⑥ Press to return to the previous menu.



- ON: Matching the received Group ID is required for group calls.
- OFF: Ignores Group Call ID matching and directly receives and responds to transmissions on the same frequency, color code, or time slot.

■ RECORDING

Recording is supported only on digital channels or in digital mode. It serves security purposes by recording voice communications during transmit, receive, or both. This functionality is available in DMR mode.

Method 1: Use a pre-programmed [Recording Toggle] key to turn on the recording function.

Method 2: Configure via the menu settings

- ① Press to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].

- ④ Rotate [DIAL] to select the "Recording" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make adjustments as needed, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.



◇ Recording Toggle

- ON: Enables the recording function.
- OFF: Disables the recording function.

◇ Channel Selection

The recording feature allows selective recording of Received, Transmitted Only, or Both Received and Transmitted communications.

Operation:

- Receive Recording: Records only incoming communications.
- Transmit Recording: Records only outgoing communications.
- Receive/Transmit Recording: Records both incoming and outgoing communications.

◇ Recording List

- Manage recordings through options for playback, deletion, or viewing details:
- Playback: Displays and plays the selected recording on-screen.
- Delete: Deletes the selected recording.
- Details: Shows detailed information, including source ID, incoming/outgoing status, date, time, and recording duration.

◇ Delete All Recordings:

- Press  to delete all recording files.
- Press  to cancel the deletion and return to the previous menu.

■ CHANNEL MODE

Radio displays operational frequency or channel alias as desired.

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Channel Mode" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make the necessary adjustments, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.



- Frequency Mode: The radio displays the operating frequency.
- Channel Mode: The radio displays the channel alias.

■ MESSAGE FORMAT

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Message Format" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make the necessary adjustments, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.

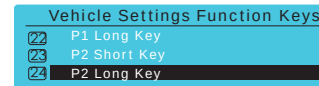


- H-SMS: Supports SMS communication with Hytera DMR radios.
- M-SMS: Supports SMS communication with Motorola DMR radios.

■ FUNCTION KEY DEFINITION

The function keys can be programmed using a computer or manually configured via the menu.

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select the "Settings" menu group, then press [MHz · TUNE].
- ③ Rotate [DIAL] to select the "Vehicle Settings" menu option, then press [MHz · TUNE].
- ④ Rotate [DIAL] to select the "Function Key Definition" menu option, then press [MHz · TUNE].
- ⑤ Rotate [DIAL] to make the necessary adjustments, then press [MHz · TUNE].



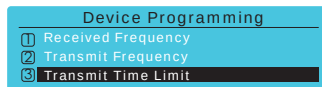
- Each function key definition has separate options for short press and long press to accommodate various operational needs.

DMR-DEVICE PROGRAMMING

■ DEVICE PROGRAMMING

Device Programming Menu

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select "Settings," then press [MHz · TUNE].
- ③ Rotate [DIAL] to select "Device Programming," then press [MHz · TUNE].
- ④ Rotate [DIAL] to select and make necessary adjustment, then press [MHz · TUNE].
- ⑤ Press  to return to the previous menu.

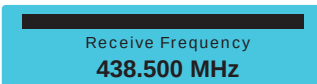


- When the channel type is set to digital, menus related to analog settings will automatically be hidden, streamlining the interface.

■ CONFIGURATION STEPS

■ RECEIVE FREQUENCY

Configure the receive frequency for the current channel.

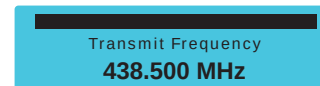


- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select "Settings," then press [MHz · TUNE].
- ③ Rotate [DIAL] to select "Device Programming," then press [MHz · TUNE].

- ④ Rotate [DIAL] to select "Receive Frequency," then press [MHz · TUNE].
- ⑤ Use the microphone's number pad to enter the desired frequency. Press the  to save.
- ⑥ Press Mic  to return to the previous menu.

■ TRANSMIT FREQUENCY

Configure the transmit frequency for the current channel.



- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to select "Settings," then press [MHz · TUNE].
- ③ Rotate [DIAL] to select "Device Programming," then press [MHz · TUNE].
- ④ Rotate [DIAL] to select "Transmit Frequency," then press [MHz · TUNE].
- ⑤ Use the microphone's number pad to change frequency. Press the  button.
- ⑥ Press Mic  to return to the previous menu.



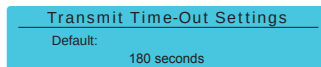
Note:

Frequency Limitations: The configured frequencies must comply with the supported frequency range of the device and local regulatory restrictions.

■ TRANSMIT TIME-OUT TIMER (TOT)

The Transmit Time-Out Timer (TOT) feature prevents extended occupation of the current channel by any single user by limiting the maximum transmission time per call.

- ① Press  to access the function operation menu.
- ② Rotate [DIAL] to highlight "Settings" and press [MHz · TUNE].
- ③ Rotate [DIAL] to choose "Vehicle Settings" and press [MHz · TUNE].
- ④ Rotate [DIAL] to select "Transmit Time-Out Timer" and press [MHz · TUNE].
- ⑤ Rotate [DIAL] to select the desired range (15-495 seconds) or choose OFF to disable. Press [MHz · TUNE] to confirm.



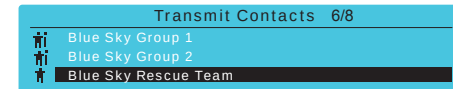
- OFF: No transmission time limit; allows unlimited transmission.
- Range: 15–495 seconds. Sending will be limited to a set time. After this time, the intercom will automatically stop transmitting.

■ TRANSMIT CONTACTS

Assign a frequently used contact to the current channel for initiating calls directly using [PTT].

- ① Press  to access the function operation menu.
- ② Rotate [DIAL] to highlight "Settings" and press [MHz · TUNE].

- ③ Rotate [DIAL] to choose "Device Programming" and press [MHz · TUNE].
- ④ Rotate [DIAL] to choose "Transmit Contacts" and press [MHz · TUNE].
- ⑤ Rotate [DIAL] to select and make necessary adjustment, then press [MHz · TUNE].
- ⑥ Press  to return the previous menu.



- If "None" is chosen, PTT calls are disabled for the channel in standby mode.
- Group Call, Individual Call, or Broadcast Call. Default Contact: Contact 1.

■ COLOR CODE

The color code ensures that only users within the same system can communicate. The main device ignores any channel activity with a mismatched pre-programmed color code.

- ① Press  to display the function operation menu interface.
- ② Rotate [DIAL] to highlight "Settings" and press [MHz · TUNE].
- ③ Rotate [DIAL] to choose "Device Programming" and press [MHz · TUNE].
- ④ Rotate [DIAL] to select "Color Code" and press [MHz · TUNE].
- ⑤ Rotate [DIAL] to select and make necessary adjustment, then press [MHz · TUNE].
- ⑥ Press  to return.



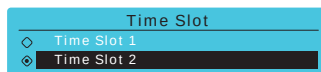
Range: integer from 0 to 15.

 **Note:** The digital channel should have the same color code as the repeater.

■ TIME SLOT

The Time Slot determines the operational slot for the channel in repeater mode. Options are Time Slot 1 and Time Slot 2.

- ① Press  to access the function operation menu.
- ② Rotate [DIAL] to highlight "Settings" and press [MHz · TUNE].
- ③ Rotate [DIAL] to highlight "Device Programming" and press [MHz · TUNE].
- ④ Rotate [DIAL] to choose "Time Slot" and press [MHz · TUNE].
- ⑤ Rotate [DIAL] to select and make necessary adjustment, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.



- Time Slot 1: Used for both transmission and reception in Repeater Mode. Slots are not applicable for Direct Mode.
- Time Slot 2: Used for both transmission and reception in Repeater Mode. Slots are not applicable for Direct Mode. Time slot 2 is used when receiving relay signals in direct mode.

■ RADIO ID

The Radio ID uniquely identifies the device on a digital channel. Other users employ this ID for individual calls and text communications. In analog channels, it will display the pre-programmed radio ID code (i.e., ANI code).

- ① Press  to access the function operation menu.
- ② Rotate [DIAL] to choose "Settings" and press [MHz · TUNE].
- ③ Rotate [DIAL] to highlight "Device Programming" and press [MHz · TUNE].
- ④ Rotate [DIAL] to select "Radio ID" and press [MHz · TUNE].
- ⑤ Rotate [DIAL] to select and make necessary adjustment, then press [MHz · TUNE].
- ⑥ Press  to return to the previous menu.



 **Note:** IDs should be unique and no longer than 8 digits. The ID appears in the radio's information and is used to identify the device during communications.

■ RADIO ALIAS

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Walkie-Talkie Alias" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the item you need to adjust, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



- Use the [#] key to switch input methods and edit the walkie-talkie alias.

 **Note:** The alias can be a maximum of 7 Chinese characters or 15 letters. The walkie-talkie alias can be viewed in the device information.

■ CHANNEL TYPE

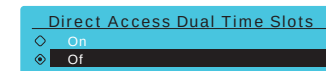


- Analog
- Digital

■ DUAL SLOT IN DIRECT MODE

Direct Access Dual Time Slot refers to the DMR digital walkie-talkie's Time Division Multiple Access (TDMA) direct mode. In this mode, the same frequency point supports two simultaneous calls in different time slots. Walkie-talkies within the same group must use the same time slot for communication to prevent interference with walkie-talkies using other time slots.

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Direct Access Dual Time Slot" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired setting, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.

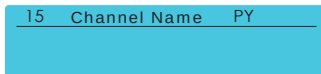


- On: The screen will display "  ". Walkie-talkies within the same group must use the same time slot (Time Slot 1 or Time Slot 2) for communication.
- Off: Disables the dual time slot function.

 **Note:** After enabling direct access dual time slot communication, walkie-talkies must operate within the same time slot to communicate.

■ CHANNEL NAME

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Channel Name" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the item you need to adjust, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.

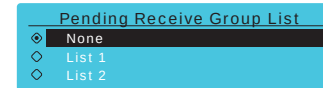


Allows resetting of the channel name.

■ CHANNEL TYPE

This function allows you to edit the "Receive Group List" or assign a new "Receive Group List" to the current channel.

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Receive Group List" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the item you need to adjust, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.

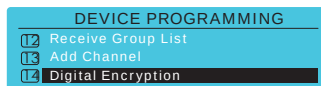


- ◇ **Add List:** Use the numeric keypad to name the added list, which can include letters, numbers, or text. Once naming is complete, press [MHz·TUNE] to confirm and save, then return to the previous menu.
- ◇ **Edit/View:** Rotate the [DIAL] to select a receive group list, then enter the "Edit/View" option. Select "Add Member" to add a group call contact to the current receive group list.
- ◇ **Delete Contact:** Delete a group call contact from the current receive group list.
- ◇ **Apply List:** Rotate the [DIAL] to select a receive group list, press [MHz·TUNE] to confirm and apply the list, then return to the previous menu.

■ ADD CHANNEL

This function allows the creation of a new channel. You can set the channel type (analog or digital), name the channel, and configure the receive and transmit frequencies.

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Add Channel" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the item you need to adjust, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



■ DIGITAL ENCRYPTION

During digital calls, encryption keys effectively protect voice information. This product supports setting up to 32 groups of digital keys. You can manually configure a desired key for each channel.

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Digital Encryption" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the item you need to adjust, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



Encryption Type

The encryption keys for this product include standard encryption and enhanced encryption. Users can select the desired encryption method based on their needs.

 **Note:** The channel menu function options will adapt based on the channel type. For instance, if the channel type is set to digital, related analog functions will be automatically hidden.

ANALOG - DEVICE PROGRAMMING

■ STEPS

Note: When the channel type is set to analog, digital menus will be automatically hidden. The menus listed below apply only to analog channels. For menus not listed here, please refer to the "Digital Channel Settings."

■ RECEIVE SQUELCH MODES

Configure the receive frequency for the current channel. This setting is effective only for the current channel.



- ① In analog channel mode, press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Receive Squelch Mode" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired option, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.

■ TRANSMISSION TIME-OUT TIMER (TOT)

The transmission time-out timer defines the maximum allowable time for a single call transmission. This feature helps prevent a single user from occupying the current channel for an extended period.

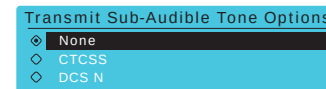
- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Vehicle Settings" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Transmission Time-Out Timer" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to set the desired range (15s–495s).



- OFF: Disables the transmission time limit, allowing unlimited transmission time.
- Time Range: 15s–495s. Transmission will be restricted to the set duration. Once this time is reached, the walkie-talkie will automatically stop transmitting.

■ SUBAUDIO

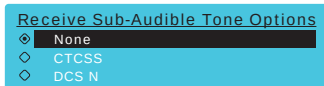
(1) Transmit Sub-Audible Tone (Tx CTC/DCS): Configure the CTCSS/DCS code for transmission.



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings", then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Vehicle Settings" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Sub-Audible Tone" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the "Transmit Sub-Audible Tone" menu option, then press [MHz·TUNE].
- ⑥ Rotate the [DIAL] to select the desired sub-audible tone function.

(2) Receive Sub-Audible Tone (Rx CTC/DCS)

Set the CTCSS/DCS code for receiving. Refer to the attached table for CTCSS/DCS codes.



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Vehicle Settings" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Sub-Audible Tone" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the "Receive Sub-Audible Tone" menu option, then press [MHz·TUNE].
- ⑥ Rotate the [DIAL] to select the desired sub-audible tone function.

■ RADIO ID

In digital channels, you can assign a unique ID to identify your device. Other users will use this ID to send individual calls or text messages to you.

In analog channels, the pre-programmed ID of the walkie-talkie (ANI Code) will be displayed.

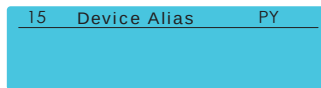
- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Walkie-Talkie ID" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to make the desired adjustments, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



 **Note:** The ID can have a maximum of 8 digits. It is recommended to avoid duplicate numbers. The walkie-talkie ID can be viewed in the device information menu.

■ RADIO ALIAS

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Walkie-Talkie Alias" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



- Use the [#] key to switch the input method and edit the walkie-talkie alias.

 **Note:** The alias can be up to 7 Chinese characters or 15 letters. The walkie-talkie alias will be displayed in the device information menu.

■ RECEIVE GROUP LIST

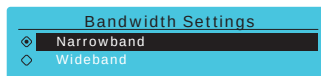
This allows you to edit the "Receive Group List" or assign a new "Receive Group List" to the current channel.

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].

- ④ Rotate the [DIAL] to select the "Receive Group List" menu option, then press [MHz·TUNE].
 - ⑤ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
 - ⑥ Press  to return to the previous menu.
- ◇ **Add List:** Use the numeric keypad to name the new list. The name can include letters, numbers, or text. Once the name is edited, press  to confirm, save, and return to the previous menu.
 - ◇ **Edit/View:** Rotate the [DIAL] to select a receive group list, then access the "Edit/View" option. You can add members by selecting group call contacts to include in the current receive group list.
 - ◇ **Delete Contact:** Remove a group call contact from the current receive group list.
 - ◇ **Apply List:** Rotate the [DIAL] to select a receive group list, then press  to confirm and apply the list. This will return you to the previous menu.

BANDWIDTH SETTINGS

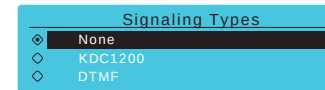
- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Bandwidth Settings" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



- Configures the bandwidth for analog channels. Options include Wideband (25.0 kHz) or Narrowband (12.5 kHz).

SIGNALING TYPE

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Device Programming" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Signaling Type" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



OTHER FUNCTIONS IN ANALOG MODE

◆ Squelch

This function allows you to adjust the squelch level of the walkie-talkie to filter out low-strength signal calls or background noise higher than normal levels.

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Mobile Station Settings" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Squelch" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



- Normal: Default value (basic filtering).
- Strict: Applies stricter filtering to block unnecessary calls or background noise. Note that calls from distant locations may also be filtered out.

 **Note:** This function is only applicable to analog channels. It is not available for digital channels.

■ STEP FREQUENCY SETTINGS

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Settings" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Mobile Station Settings" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Step Frequency" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.



 **Note:** The Step Frequency menu is only visible in VFO Mode.
It is automatically hidden in Channel Mode.

POSITIONING

■ POSITIONING (OPTIONAL)

The device supports multiple positioning systems, including GPS (USA), BeiDou (China), and GLONASS (Russia). Enabling positioning will increase overall power consumption by approximately 30mA.

Note: Please use positioning features in outdoor or unobstructed environments for better accuracy.

- Positioning enabled, but information not yet acquired, the screen will display .
- Positioning enabled, the screen will display . Then you will acquired information successfully (displays details such as latitude, longitude, date, and satellite count).

◇ Positioning Switch

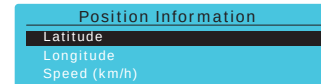
- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Positioning System" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Positioning Switch" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑤ Press  to return to the previous menu.



◇ Position Information

Method 1: Press the pre-programmed [GPS Information] key to view positioning details.

Method 2: Navigate through the main menu.



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Positioning System" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Position Information" menu option, then press [MHz·TUNE].
- ④ Press  to return to the previous menu.

◇ Time Zone

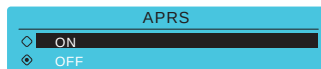


- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Positioning System" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Time Zone" menu option, then press [MHz·TUNE].
- ④ Press  to return to the previous menu.

DIGITAL APRS

■ APRS SWITCH

Enabling this feature allows the current digital channel to display the GPS information of the transmitting party when a call is received. If GPS is unavailable, APRS functionality will not work.



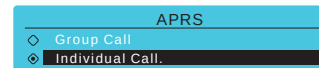
- ① Press **[MENU]** to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "APRS Switch" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the desired adjustment, then press [MHz·TUNE].
- ⑤ Press **[EXIT]** to return to the previous menu.

◇ Reporting ID

15 Manually dial the ID for reporting 123

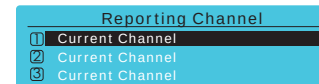
- ① Press **[MENU]** to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Reporting ID" menu option, then press [MHz·TUNE].
- ④ Use the microphone keypad to input the ID information, then press the microphone **[FUNC]** key to confirm.
- ⑤ Press **[EXIT]** to return to the previous menu.

◇ Reporting Type



- ① Press **[MENU]** to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Reporting Type" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select Group Call or Individual Call, then press [MHz·TUNE].
- ⑤ Press **[EXIT]** to return to the previous menu.

◇ Reporting Channel



- ① Press **[MENU]** to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Reporting Channel" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Current Channel" menu option, then press [MHz·TUNE].
- ⑤ Press **[EXIT]** to return to the previous menu.

◇ Reporting Interval



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Reporting Interval" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "30s-7200s" menu option, then press [MHz·TUNE].
- ⑤ Press  to return to the previous menu.

◇ APRS Information

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "APRS Information" menu option, then press [MHz·TUNE].
- ④ Press  to return to the previous menu.

◇ Reporting Beacon



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Reporting Beacon" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "GPS Beacon" menu option, then press [MHz·TUNE].
- ⑤ Press  to return to the previous menu.

◇ Delete All APRS Data



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Delete All" menu option, then press [MHz·TUNE].
- ④ Press  to return to the previous menu.

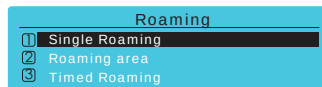
ROAMING

■ ROAMING

In standby mode, pressing the programmed "Roaming" button will search and lock onto the nearest repeater.

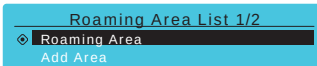
Note: Once a repeater is locked, it will only return to its original frequency if the channel or frequency is changed. The list of repeater frequencies must be pre-programmed through the frequency-writing software.

◇ Single Roaming



- ① Press **[MENU]** to display the function operation menu.
- ② Rotate the [DIAL] to select the "Roaming" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Roaming Area" menu option, then press [MHz·TUNE].
- ④ Press **[EXIT]** to return to the previous menu.

◇ Roaming Area



- ① Press **[MENU]** to display the function operation menu.
 - ② Rotate the [DIAL] to select the "APRS" menu group, then press [MHz·TUNE].
 - ③ Rotate the [DIAL] to select the "Delete All" menu option, then press [MHz·TUNE].
 - ④ Press **[EXIT]** to return to the previous menu.
- Add Area: Press the select key to add a new roaming area.

- Modify Roaming Channel: Modify roaming channel settings, including adding/removing channels, renaming the area, or deleting the current area.

◇ Timed Roaming

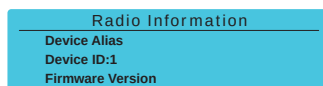


- ① Press **[MENU]** to display the function operation menu.
 - ② Rotate the [DIAL] to select the "Roaming" menu group, then press [MHz·TUNE].
 - ③ Rotate the [DIAL] to select the "Roaming Area" menu option, then press [MHz·TUNE].
 - ④ Rotate the [DIAL] to select the menu option, then press [MHz·TUNE].
 - ⑤ Press **[EXIT]** to return to the previous menu.
- Switch
 - Timing

RADIO INFORMATION

■ RADIO INFORMATION

- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Radio Information" menu group, then press [MHz·TUNE].
- ③ Press  to return to the previous menu.



- Radio Information: Radio Alias, Radio ID
- Software Version: Firmware Version, CPS Version, etc.

 **Note:** Radio Alias and radio ID can be edited in the channel parameter setting.

FACTORY RESET

■ SETTING

Reset all radio settings to factory defaults.

This action is irreversible.
Confirmation

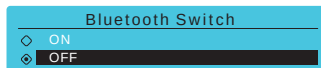
- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Factory Reset" menu group, then press [MHz·TUNE].
- ③ Press  to return to the previous menu.

BLUETOOTH SETTINGS

BLUETOOTH SETTINGS

When using Bluetooth function, every time you press the **EXIT**, the screen will display "Searching Bluetooth".

- ① Press **MENU** to display the function operation menu.
- ② Rotate the [DIAL] to select the "Bluetooth" **⌘** menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Mobile Station Settings" menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Bluetooth Switch" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select "ON" or "OFF", then press [MHz·TUNE].
- ⑥ Press **EXIT** to return to the previous menu.



◇ Bluetooth Pairing

- ① Press **MENU** to display the function operation menu.
- ② Rotate the [DIAL] to select the menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Bluetooth Pairing" **⌘** menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Disconnect" or "Auto Connect", then press [MHz·TUNE].
- ⑤ Press **EXIT** to return to the previous menu.



◇ Bluetooth PTT

- ① Press **MENU** to display the function operation menu.
- ② Rotate the [DIAL] to select the menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Bluetooth Pairing" **⌘** menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Disconnect" or "Auto Connect", then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the "Display" menu option, then press [MHz·TUNE].
- ⑥ Press **EXIT** to return to the previous menu.



◇ Bluetooth Volume Gain

Adjust the volume gain for Bluetooth audio output.



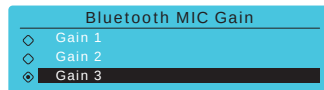
- ① Press **MENU** to display the function operation menu.
- ② Rotate the [DIAL] to select the "Bluetooth Volume Gain" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Gain Level" (1,2,3) menu option, then press [MHz·TUNE].

BLUETOOTH SETTINGS

- ④ Rotate the [DIAL] to select the "Disconnect" or "Auto Connect" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the "Display" menu option, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.

◇ Bluetooth MIC Gain

Adjust the microphone gain for Bluetooth audio input.



- ① Press  to display the function operation menu.
- ② Rotate the [DIAL] to select the "Bluetooth MIC Gain" menu group, then press [MHz·TUNE].
- ③ Rotate the [DIAL] to select the "Gain Level" (1,2,3) menu option, then press [MHz·TUNE].
- ④ Rotate the [DIAL] to select the "Disconnect" or "Auto Connect" menu option, then press [MHz·TUNE].
- ⑤ Rotate the [DIAL] to select the "Display" menu option, then press [MHz·TUNE].
- ⑥ Press  to return to the previous menu.

TROUBLESHOOTING

■ MAINTENANCE

◇ GENERAL INFORMATION

This product has been factory aligned and tested to specification before shipment. Under normal circumstances, the transceiver will operate in accordance with these instructions. All adjustable trimmers, coils, and resistors in the transceiver were preset at the factory. They should only be readjusted by a qualified technician who is familiar with this transceiver and has the necessary test equipment. Attempting service or alignment without factory authorization can void the transceiver warranty.

When operated properly, the transceiver will provide years of service and enjoyment without requiring further realignment. The information in this section gives some general service procedures requiring little or no test equipment.

◇ SERVICE

If it is ever necessary to return this equipment to your dealer or service center for repair, pack it in its original box and packing material. Include a full description of the problems experienced. Include your telephone number, fax number, and e-mail address (if available) along with your name and address in case the service technician needs to call you for further information while investigating your problem. Do not return accessory items unless you feel they are directly related to the service problem.

You may return this product for service to the authorized dealer

from whom you purchased it, or any authorized service center. A copy of the service report will be returned with the transceiver. Please do not send subassemblies or printed circuit boards; send the complete transceiver.

Tag all returned items with your name and call sign for identification. Please mention the model and serial number of the transceiver in any communication regarding the problem.

◇ SERVICE NOTE

If you desire to correspond on a technical or operational problem, please make your note short, complete, and to the point. Help us help you by providing the following:

- Model and serial number of equipment
- Question or problem you are having
- Other equipment in your station pertaining to the problem
- Meter readings
- Other related information (menu setup, mode, frequency, key sequence to induce malfunction, etc.)



CAUTION

Do not pack the equipment in crushed newspapers for shipment! Extensive damage may result during rough handling or shipping.

Note:

- ◆ Record the date of purchase, serial number and dealer from whom this product was purchased.
 - ◆ For your own information, retain a written record of any maintenance performed on this product.
 - ◆ When claiming warranty service, please include a photocopy of the bill of sale, or other proof-of-purchase showing the date of sale.
-

◇ **CLEANING**

The keys, controls, and case of the transceiver are likely to become soiled after extended use. Remove the controls from the transceiver and clean them with a neutral detergent and warm water. Use a neutral detergent (no strong chemicals) and a damp cloth to clean the case.

■ TROUBLESHOOTING

The problems described in the following tables are commonly encountered operational malfunctions. These types of difficulties are usually caused by improper hook-up, accidental incorrect control settings, or operator error due to incomplete programming. These problems are usually not caused by circuit failure. Please review these tables and the appropriate section(s) of this instruction manual before assuming your transceiver is defective.

Problem	Problem Cause and Potential Solutions	
(a) Power is on, nothing appears on Display.	+ and - polarities of power connection are reversed. Connect red lead to plus terminal and black lead to minus terminal of DC power supply. Check whether the	
(b) Fuse is blown.	Check and solve problem resulting in blown fuse and replace fuse with new fuse.	
(c) Display is too dim.	Set the level of the display brightness regulator to high level.	
(d) No sound comes from speaker.	Squelch is muted. Decrease squelch level. Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off.	
(e) Key and Dial do not function.	Key-lock function is activated. Cancel Key-lock function.	
(f) Rotating Dial will not change memory channel.	Transceiver is in CALL mode.	
(g) PTT key is pressed but transmission does not occur.	Microphone connection is poor. Connect microphone properly.	
Issue Description	Cause Analysis	Solution
Cannot communicate with other members in the group.	The frequency or signaling settings are different from those of other group members.	Configure the same frequency and signaling as other group members.
	Incorrect digital or analog channel settings.	Set the same digital or analog channel.
	The distance between the device and other group members is too far.	Stay closer to other group members.
GPS Unable to Locate	Poor location, unable to receive GPS signals.	Move to an open, flat area and retry.
Digital Channel Cannot Perform Individual or Group Calls	Incorrect frequency, channel, color code, or time slot settings.	Configure the same frequency, channel, color code, and time slot as the group members.
Other (Non-group) Voices Heard on the Channel	Interference from users on the same frequency.	Switch to a new frequency or adjust the squelch level.
	No signaling configured.	Configure signaling for all radios in the group to prevent co-channel interference.
Excessive Noise During Communication	The communication distance is too far.	Move closer to other group members.
	Poor location, such as blockage by tall buildings or being in a basement.	Move to an open, flat area and restart the device.
	Interference from the external environment or electromagnetic sources.	Avoid equipment that may cause interference.

SPECIFICATIONS

■ GENERAL

Frequency Ranges Radio

A/B Band RX: 136-174 MHz
400-470 MHz
65-108MHz (FM Radio)

TX: 144-148 MHz (Amateur Band)
420-450MHz(Amateur Band)

Channel Steps: 2.5,5,6,25,10,12.5,15,20,25,50,100KHz
Frequency Stability $\pm 1\text{ppm}(140\text{F to }+1400\text{F}[-10\text{C to }+60\text{C}])$

Antenna Impedance 50 Ω
Supply Voltage Nominal 13.8V DC, Negative Ground
Operating 12-13.8V, Negative Ground

Current Consumption 0.5A(Receive)
6A (TX, 144 MHz 25W)
6A (TX, 430 MHz 25W)

Operating Temperature -40F to+1400F(-20 C to+60 C)
Case Size(W × H × D): (150X58X60mm)

(Panel W/O Knob&Connectors)

Weight 420g (Panel+Main Unit+Connectors)

■ TRANSMITTER

RF Power Output: 25W

FM Modulation: 11K0F3E@12.5KHz

16K0F3E @25KHz

Digital Modulation: 12.5KHz Only Digital: 7K60FXD12.5KHz

Digital & Voice: 7K60FXW

Modulation Distortion: <5%

FM Noise: $\geq 45\text{dB}@25\text{KHz}$ / $\geq 40\text{dB}@12.5\text{KHz}$

Adjacent Channel Power: $\leq -60\text{dB}$ @ 12.5KHz

Digital Protocol: ETSI-TS102361-1-2, -3

Spurious Emission: At least 60 dB below

Microphone Impedance: 2k Ω

■ RECEIVER

Sensitivity Radio Band 2uV TYP for 12dB SINAD(65-108MHz,WFM)

L&R Band 0.2uV for 12dB SINAD(136-174MHz,FM)

0.2uV for 12dB SINAD(400-470MHz,FM)

Squelch Sensitivity 0.16uV(144/430MHz Band)

Selectivity NFMAM 12KHz/30KHz(-6dB/-60dB)

AF Output 6W@4 Ω for 10%THD(@13.8V)EXP SP
3W@8 Ω for 10%THD(@13.8V)Normal EXP

SP/CH AF Output Impedance 4-16 Ω

Digital Receive Sensitivity 0.25 μV (BER: 5%)

Note:

ATTACHED LIST

TABLE 1

CTCSS TONE FREQUENCY(HZ)

1	67.0	21	131.8	41	203.5
2	69.3	22	136.5	42	206.5
3	71.9	23	141.3	43	210.7
4	74.4	24	146.2	44	218.1
5	77.0	25	151.4	45	225.7
6	79.7	26	156.7	46	229.1
7	82.5	27	159.8	47	233.6
8	85.4	28	162.2	48	241.8
9	88.5	29	165.5	49	250.3
10	91.5	30	167.9	50	254.1
11	94.8	31	171.3		
12	97.4	32	173.8		
13	100.0	33	177.3		
14	103.5	34	179.9		
15	117.2	35	183.5		
16	110.9	36	186.2		
17	114.8	37	189.9		
18	118.8	38	192.8		
19	123.0	39	196.6		
20	127.3	40	199.5		

TABLE 2

DCS TONE CODE(HZ)

1	017	23	122	45	244	67	346	89	503	111	731
2	023	24	125	46	245	68	351	90	506	112	732
3	025	25	131	47	246	69	356	91	516	113	734
4	026	26	132	48	251	70	364	92	523	114	743
5	031	27	134	49	252	71	365	93	526	115	754
6	032	28	135	50	254	72	371	94	532	116	765
7	036	29	143	51	255	73	411	95	534		
8	043	30	145	52	261	74	412	96	546		
9	047	31	152	53	263	75	413	97	565		
10	050	32	155	54	265	76	423	98	606		
11	051	33	156	55	266	77	425	99	612		
12	053	34	162	56	271	78	431	100	624		
13	054	35	165	57	274	79	432	101	627		
14	055	36	172	58	305	80	445	102	631		
15	065	37	174	59	306	81	446	103	632		
16	071	38	205	60	311	82	452	104	645		
17	072	39	212	61	315	83	454	105	654		
18	073	40	217	62	325	84	455	106	662		
19	074	41	223	63	331	85	462	107	664		
20	114	42	225	64	332	86	464	108	703		
21	115	43	226	65	343	87	465	109	712		
22	116	44	243	66	345	88	466	110	723		

NOTICE / Compliance Information Statement

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 instruction manual, 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.

Information in this document is subject to change without notice or obligation. All brand names and trademarks are the property of their respective owners. We cannot be liable for pictorial or typographical inaccuracies. Some parts, options and/or accessories are unavailable in certain areas. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION:

To ensure that your exposure to RF electromagnetic energy is within the FCC allowable limits for use, always adhere to the following guidelines:

- DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed FCC 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.
- DO NOT transmit for more than 50% during the time of employment (50% duty cycle or less). Transmitting excessive amount of time can cause RF exposure compliance requirements to be exceeded. Please carefully read this instruction manual to learn how to transmit and stop transmitting before starting to use it.

MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIO TELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

Electromagnetic Interference/Compatibility

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.

Controlled Use

This product is used in situations that users are exposed to RF as consequence of their employment provided those users are fully aware of the potential RF hazards and can exercise control over their exposure.

- This transceiver is NOT ATEX approved and NOT intended for the use in hazardous explosive atmospheres.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an controlled environment .

This equipment should be installed and operated with a minimum distance 20cm between the radiat or your body. The (VHF & UHF) antenna is required to be located outside of a vehicle and kept at a distance of 55 centimeters or more between the transmitting antenna of this device and any persons during operation. For small vehicle as worst case, the antenna shall be located on the roof top at any place on the centre line along the vehicle in order to achieve 55 centimeters separation distance. In order to ensure this distance is met, the installation of the antenna must be mounted at least 55 centimeters away from the nearest edge of the vehicle in order to protect against exposure to bystanders. This transmitter must not be located or operating in conjunction with any other antenna or transmitter

RF EXPOSURE SAFETY INFORMATION

The information listed below provides you with the information needed to make you aware of RF exposure, and what to do to assure that you operate this radio properly and safely.

Your radio generates RF electromagnetic energy while transmitting. This means it must be used only by individuals who is properly licensed, aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment. This radio has been tested and complies with the essential requirements of FCC part 15 and the Radio Equipment Directive, 2014/53/EU, and the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive, 2011/65/EU as an amateur radio equipment.



144/440 MHz 25W FM Transceiver



DMR Instruction Manual

Welcome to use our Amateur Mobile radio

