

Thank you for your interest in our products. This manual will help you to master the operation and use of the DMR 8000s. This manual should be read and studied to ensure that the user understands the operation of the DMR 8000s. Please read the Safety Information Manual before use.

This manual applies to the model,
DMR 8000s

DISCLAIMER

We strive for the accuracy and completeness of this manual, but no warranty is given on its content. All the specifications and designs are subject to change without prior notice due to continuous technology development. No part of this manual may be copied, modified, translated or distributed in any form without our prior written authorization.

The third-party products referred to in this manual are property of those third parties. We do not guarantee their accuracy, validity, timelines, legality or completeness.

USER NOTICES

SAFETY:

The user should be aware of and understand the general hazards in operating a two-way radio transceiver. We cannot guarantee the safety and operation of our transceiver with aftermarket accessories unless they have been tested and sold by us.

Our transceiver should be maintained and serviced by a qualified two-way radio dealer and their technical staff. Failure to do so may violate our warranty.

WARNING:

No two-way radio transceiver including ours shall be operated including powered on in hazardous areas such as explosive atmospheres including Inflammable gas, dust particles, metallic powders, grain dust, etc. This shall include confined spaces where these hazards exist, in areas where blasting or blasting products are in use or stored, and while fueling at refueling centers. In any of these conditions or where hazards exist, the transceiver shall be powered off.

PRECAUTIONS

Observe the following precautions to prevent fire, personal injury and transceiver damage.

- Do not modify or attempt to adjust this transceiver for any reason.
- Do not expose the transceiver to direct sunlight for long periods, nor place it close to a heat source.
- Do not place the transceiver in a dusty, humid or wet area, nor place on unstable surface.
- If an abnormal odor or smoke is detected coming from the transceiver, switch OFF immediately and remove the battery pack from the transceiver. Contact your dealer.

How to use this user manual

This manual introduces the basic operation of DMR / Analog mobile radio

Your dealer or system administrator may have already preset the features of this radio based on your operational requirements. Please consult with your dealer or system administrator about the details.

The icons below are used for distinguishing between analog and digital features.

 This icon indicates the function is only available in Analog mode.

 This icon indicates the function is only available in Digital mode.

Notes:

When programming the radio, be sure to read out the original factory data first before changing desired relevant frequency, settings and other parameter values, otherwise it may result in incorrect set parameter values due to unmatched model or frequency band and other reasons.

CONTENTS

Packing list.....	4
Preparation for operating the radio	5
Radio installation.....	5
Connecting power cable.....	5
Radio operation.....	5
Base station operation.....	6
Antenna connection.....	7
Accessories connection.....	7
Radio Controls.....	8
Rear panel.....	10
Mic jack on side panel.....	10
Speaker Microphone.....	10
TFT Status Icons.....	12
Programmable Function keys.....	14
Keypads & ENC (Channel Selector) Operation...	15
Main functions description.....	16

CONTENTS

Operations for Speaker microphone keypad	18
Transmit / Receive Icons.....	18
Basic operations.....	18
Power On/Off the radio.....	18
Operating Frequency Band Selection.....	19
Volume Adjustment.....	19
Squelch.....	19
Busy Channel Lockout.....	19
Wide/ Narrow Band.....	19
CTCSS / DCS.....	19
Channel Selection.....	19
Switch between VFO and Channel Mode.....	19
VFO Frequency Set.....	20
Zone / Channel Selection.....	20
Monitor.....	20
Permanent monitoring.....	20
Repeater / Talk Around.....	20

CONTENTS

Emergency Alarm.....	20
Scan ON / OFF.....	21
Roaming ON / OFF.....	21
Main menu contains item index.....	21
Menu accessing and operations.....	22
PTT Call.....	23
High / low power.....	23
Select the transmitting band.....	23
Receive and Answer to a radio call.....	23
Initiate a call.....	24
Initiate and receive calls in analog mode.....	24
Advanced functions for DMR.....	25
Menu functions operations.....	26
Contacts.....	26
Message.....	29
Call Log.....	31
Scan.....	33

CONTENTS

Zones & Channel.....	37
Local Set.....	38
Parameters.....	41
Tone Set.....	44
Appendix.....	46
Record.....	49
Device Info	50
User_defined Mode.....	50
Function Applications.....	53
Maintenance and Clean.....	53
General guide for fault handling.....	54
Optional accessories.....	56

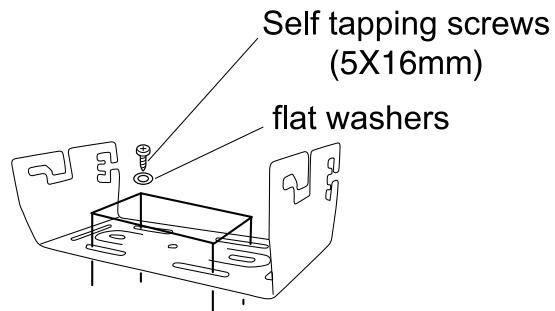
Preparation for operating the raito

Radio installation

When you are driving, please find a safe and convenient position in order to prevent the damage for your own and passengers safeties. You can consider installing the radio in front of the front passenger seat below the panel section or the car trunk. This will prevent your knees and legs crashing the radio in emergency brake. You should install it with good ventilation and avoiding the direct sunlight.

1. Install the mounting bracket to the car with using the self-tapping screws and flat washers (4 screws).

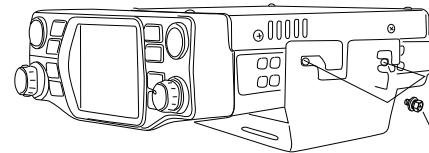
- Screws can be put upside down (under the dashboard mounting) or upwards the mounting bracket.
- When installing the mounting bracket, please make sure the 3 screw slots on the bracket side edge are backwards.



2. Fixed the radio and then insert the equipped with six angle combination screw and flat washers (each equipped with 2 sides and each side of 2 screw sets) and tighten them.

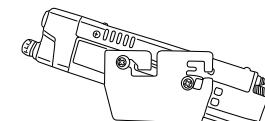
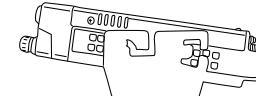
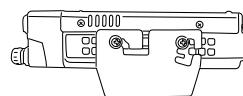
- Please make sure all the screws are tightened to avoid radio

looseness caused by car vibration.



screws sets
(M4x10mm)

- Please use 3 screw slots of each bracket to tilt the main device to the appropriate angle.



Connecting Cable Power

■ Radio Operation

Make sure to use 12V car battery. If the radio's power is not enough during transmitting the screen will grow dark and the output power may be significantly decreased. Please do not connect the radio to the 24V power battery.

Note: If the battery is not fully charged or when the engine is switched off but the battery is still not fully charged, the battery may discharge and there will not be enough power to start the car.

In this case, please avoid using the radio in following situation:

1. Use the radio with the DC power cord to directly connect to the car battery and radio within shortest area.
 - If you use a noise filter, the metal parts of the car shall be fitted with an insulator to prevent it from touching the car.

- We do not recommend you to use the cigarette lighter socket because some of the cigarette lighter socket will cause big substantial voltage.

- If you have to connect the power cord through a car chassis or a hole on the car (such as a firewall in front of the passenger compartment), please use the rubber ring to prevent the power cord and remove the fuse holder to pass the power cord through the firewall.

- The entire power cord must be wrapped in order to keep the heat insulated and insulation from the engine (high pressure) system.

2. After the power cord is already installed, wrap around the fuse holder to make it moisture-proof, including the whole power cord.

3. Please cut off all wire connections on the negative battery terminal before connecting the radio to prevent the short circuit.

4. To confirm the connection is correct then connect the power cord to the power supply; red connection to the positive (+), black connection to the negative(-)

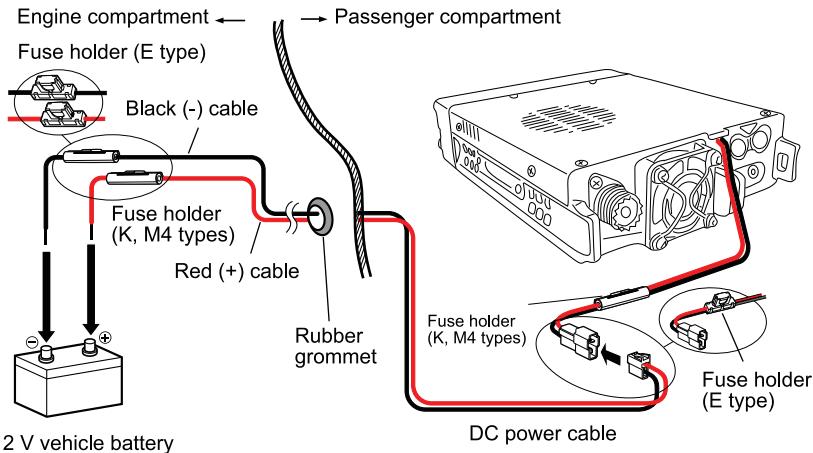
- To use the whole power line, please do not cut off excessive parts of power line even if it is longer than desired length.

Remember, do not remove the fuse holder from the power cord.

5. Reconnect all wiring connections that were previously disconnected on the negative terminal.

6. Connect the DC power supply to radio.

- Connect the plug into the socket until you hear a click sound.

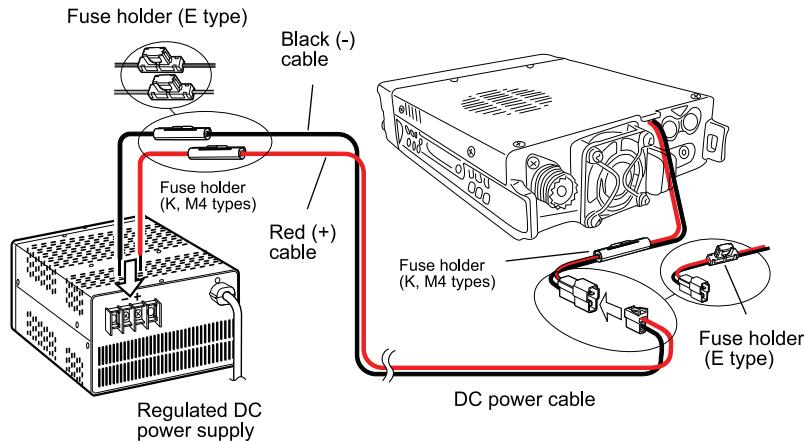


■ Base Station Operation

To use it as a base station, you need a separate 13.8V DC power supply. This power supply is recommended for current capacity above 12A.

Note: Do not connect the DC power to the AC power socket before completing all connections.

1. Make sure that both radios and DC power are off.
2. Connect the DC power supply to the regulated DC power supply and make sure that the polarity is correct.
(Red: positive, black: negative).
 - Use the DC power cord to connect the radio to the regulated power supply. Don't connect the radio directly to the AC power socket.
 - Do not use the smaller size of the power cord to make a replacement.
3. Connect the DC power cord to the radio.
 - Connect and press the socket together until you hear a click sound.



■ Replace fuse

If the fuse is blown, please find out the cause and then solve the problem. After the problem is fixed then replace the fuse. But if after re-installation the fuse is still blown, please disconnect the power cord and contact the local authorized dealer or authorized service center for assistance.

Fuse position	Fuse rated current
Radio (in DC connector)	15A
Equipped with DC power cord	20A

Note: Please use only the specified type and the rated value of the fuse; otherwise it might damage the radio.

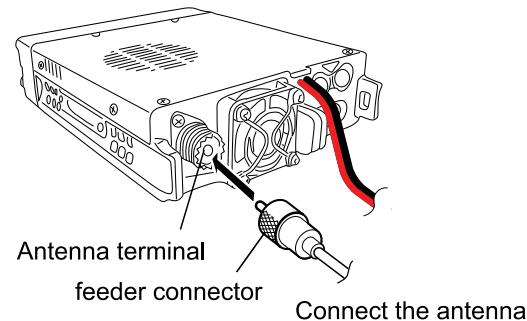
Antenna connection

Before operation, you must first install and adjust well the antenna. Success installation depends mainly on the antenna type and a correct installation. The radio will have best performance if the appropriate antenna is properly installed. A low loss coaxial feeder line with $50\ \Omega$ impedance is used to match the input impedance of the radio. If the transmission

impedance of the feeder line is less than $50\ \Omega$ the antenna connection will reduce the effectiveness of the antenna system, and will cause interference to the nearby radio and television receivers, radio receivers and other electronic devices, and even damage the radio.

Note:

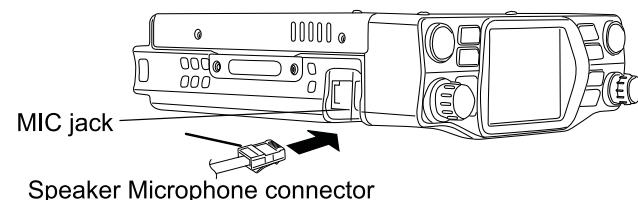
- If transmitting without an antenna or other matched load line, it could damage the radio. The antenna must connect to the radio before transmitting
- All base stations should be equipped with lightning arrestor to reduce fire to prevent the risk of electric shock or radio damage.



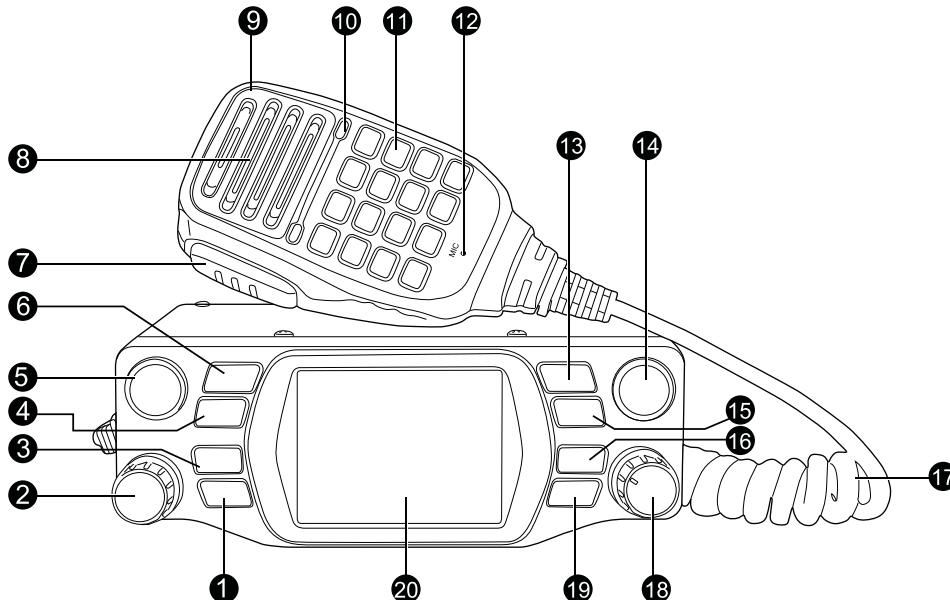
Accessories connection

■ Speaker Microphone

1. Please insert the provided speaker microphone to the Mic jack on left side of the radio to make voice communication. Press the connector until you hear a click sound from the locating plate in place.



Radio Controls



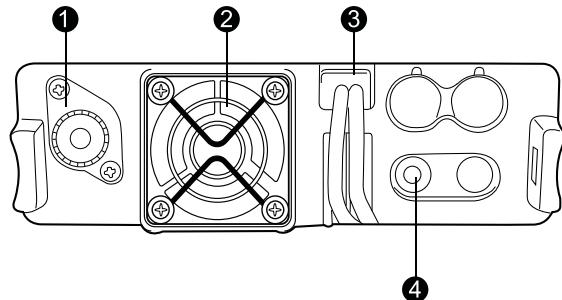
Parts description & function applications

NO.	Part Name	Function description and applications
①	Menu key / Select Key / OK Key	1). In standby, short press to access the menu of the current band; 2). In the current menu mode, short press to select the current menu item.
②	ENC selection knob / P4	1) Apply to channel, frequency and menu etc operations 2) When pressed, the preset function can be activated (see preset function options for details)
③	P3	Programmable function key
④	P2	Programmable function key
⑤	[PWR] Power Switch	Press and hold it for more than 3s to turn on/off the radio.
⑥	P1	Programmable function key
⑦	PTT key	Press and then speak in to the microphone to transmit; Release it to receive.
⑧	Speaker	Used to receive audio from others

NO.	Part Name	Function description and applications
⑨	Speaker microphone housing	It is made of ABS plastic, very study and durable.
⑩	LED indicator	Used for radio transmission status applications only
⑪	Numeric Keypad	Used to input frequency / channel number, alias, ID and SMS
⑫	MIC	Speak to the microphone when pressing the PTT key to transmit; (3-5CM from the mouth)
⑬	P5	Programmable function key
⑭	SOS	Used to issue emergent alarm.
⑮	P6	Programmable function key
⑯	P7	Programmable function key
⑰	Power cord for speaker microphone	It is scalable with flexibility.
⑱	Volume adjustment knob, custom buttons P8	1) Turn this knob clockwise to increase the audio output volume, and turn this knob counterclockwise to decrease the audio output volume. 2) When pressed, the function of the preset editor can be activated, as described in the Custom function options
⑲	Back key Zone key Edit key	1). In menu operation, use as the return key; 2). In standby, short press to enter into Zone list 3). In standby, long press to enter the set of the current band
⑳	TFT display	Display various working states, and combine with visual icons for easy use and operation;

 **Note:** To improve the convenience of operation and use, the terminal provides a programmable button [P] or a programmable keypad on MIC [P]

Rear panel



1. ANT

External antenna connected to this terminal. During the transmitting test please connect the load to replace the antenna. Antenna system or the load should be with 50Ω Impedance

2. Cooling fan

When radio reaches the preset temperature, please start the cooling fan to quickly reduce the temperature to avoid damage to the radio parts.

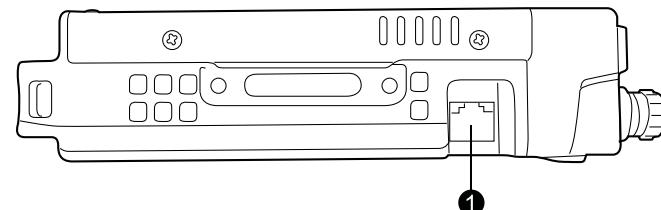
3. External power plug

When you connect to the external power, you should carefully check the polarity of the power supply. (Red line: +, black line: -) and the power ratings (DC13.8V/ 15%).

4. SP

Connect 1 or 2 external speakers for better sound effects (if needed). These jacks can be connected in diameter 3.5mm (1/8") for a two-way plug. Please see instructions to learn how to use the speaker.

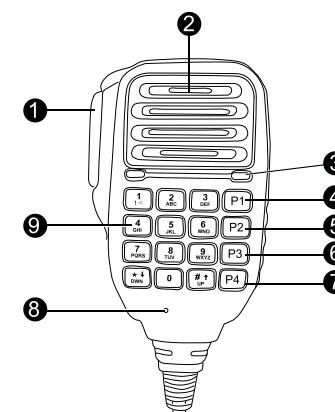
Mic jack on side panel



MIC

Connect the configured microphone to this jack and press the [PTT] key to make a call.

Speaker Microphone



1. PTT button (Push-to-Talk)

Press and hold to transmit. Release it to receive.

2. Speaker

For listening to the voice from others

3. LED indicator

Used to indicate the RX/TX status, etc.

4. P1

Using the MIC-P5 to modify the set

5. P2

Using the MIC-P6 to modify the set

6. P3

Using the MIC-P7 to modify the set

7. P4

Using the MIC-P8 to modify the set

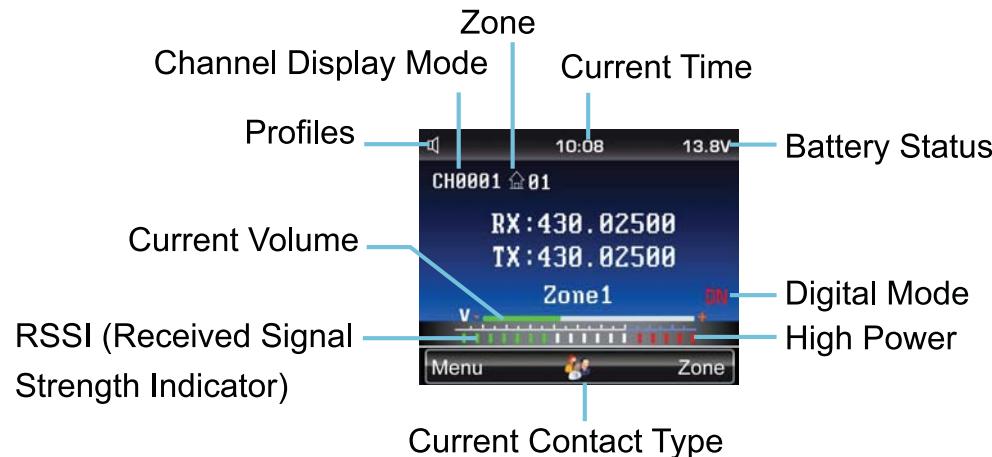
8. Microphone(MIC)

When you press the (PTT) button to launch, you should speak into the microphone; (3-5cm away)

9. DTMF keypad

Press this 16-key keypad to make a DTMF call, or you can input frequency or character strings with them.

TFT Status Icons



Icon	Icon description	Applications and function description
	High Power	6 red bars indicate high power
	Low Power	3 red bars indicate low power
	Standby	White bars indicates the radio being in standby mode
	RSSI	In RX mode, the more green bars, the stronger signal
	Keylock	Appears when the keypad is locked
	Monitor	Appears when monitor is on
	VOX	Appears when VOX is on
	GPS (Optional)	Appears when GPS is on
	Scan	Appears when SCAN is on
	Emergency Mode	Appears when the radio is in emergency mode.
	Encryption	Appears when Encryption is on
	CTCSS	In analog mode, appears when CTCSS is on
	CDCSS	In analog mode, appears when DCS is on

Icon	Icon description	Applications and function description
	Prompt Tone on	Appears when profile is in standard mode
	Prompt Tone Off	Appears when profile is in silent mode
	Talk Around	Appears when the radio is in Talk Around Mode
	Roaming	Appears when Roaming is on
	Roaming Lock	For locking current channel in Roaming
	Offset Frequency Negative direction	Appears when RX frequency is higher than TX frequency
	Offset Frequency Positive direction	Appears when TX frequency is higher than RX frequency
DN	Digital Mode	Indicates the current band working in digital mode
FM	Analog Mode	Indicates the current band working in analog mode
DN	Digital/Analog Mode	The current band is in digital/analog auto RX mode. Digital Mode is for main TX
DN	Analog/Digital Mode	The current band is in analog/digital auto RX mode. Analog Mode is for main TX
¹	Time Slot 1	Indicates the working slot of current frequency or channel
²	Time Slot 2	Indicates the working slot of current frequency or channel
	Zone	Indicates the working zone of current frequency or channel
VFO	Frequency Mode	Indicates working in frequency mode, can input frequency directly via numeric keypad
	SMS	Appears when received a new message.

Programmable Function keys

If desired, the following terminal features can be preset for programmable keys:

Type	Features	Description
	Radio Revive	Revive a target radio that has been remotely disabled
	Radio Detection	Determine if targeted radio is active
	Radio Kill	Disable targeted radio remotely
	Remote Monitor	Covert activation of targeted radios transmitter without local indicators.
	Encryption On/Off	Turn on/off encryption
	Emergency On/Off	Initiate an emergency alarm mode or call based on programmed preset.
	Contacts	Direct access to the contact list
	Permanent Monitor	Always monitor the selected channel until disabled.
	Scan On/Off	Turn scanning on/off
	Zone Switch	Changes from selected Zone to new Zone
	VOX On/Off	Switch between VOX On and Off.
	Backlight On/Off	Turn backlight On/Off
	Keypad Lock	Switch between keypad lock and unlock.
	High /Low Power	Switch transmit power between high and low power
	Scan Mode	Select the desired scan mode (switch between SE, TO, CO mode)
	Repeat / Talk Around Selection	Switch between the Repeat and Talk Around Mode
	SMS	Direct access to SMS list

Type	Features	Description
	Monitor	Turn On/Off the radio RX squelch circuit. Receive weak analog signals
	DTMF On/Off	Turn On/Off DTMF
	1750Hz	The 1750Hz single-tone signaling is sent to activate the trunk
	MENU	Enter the menu list
	Upper key	Used as a move up key
	Down key	Used as a down key
	Back	Back to the previous menu
	Subaudio switching	Go to Subaudio Settings
	VFO	Directly to VFO mode
	Digital forced to monitor	When group and contact or wrong color code, press this key to enforce monitoring signal
	700Hz	For senting signaling at 700Hz
	1200Hz	For senting signaling at 1200Hz
	1400Hz	For senting signaling at 1400Hz
	1450Hz	For senting signaling at 1450Hz
	2100Hz	For senting signaling at 2100Hz

Note:

- ◎ Short Press: press and release quickly (programmable range is from 50ms-750ms).
- ◎ Long Press: press and hold for programmed time length (programmable range is from 500ms-5000ms).

Keys & ENC (Channel Selector) operation

The following keys can be used to quickly achieve the desired function.

Keypad	Status	Operation	Description
	Standby	Long Press (3S)	Power on or turn off the radio.
OK	Standby	Short Press	Access to the Menu
		Long Press (3S)	Input the channel number and call up the desired channel.
	Access to the Menu Mode	Short Press	[Confirm] or [Select]
SOS	Standby	Short Press	To transmit emergent alarm.
	Standby	Short Press	Access to Zone list
		Long Press (3S)	Operations for Channel / VFO User-defined mode mode and storage and other parameters
	Menu Mode	Short Press	Back to the previous level
P1	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization
P2	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization
P3	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization

Keypad	Status	Operation	Description
ENC / P4	Standby	Rotate	Select channel, frequency and other parameters
	Access to the Menu Mode		Select Menu and other setting parameters
	Enter User-defined mode		Select programming items or other parameters;
	Edit (SMS)		Move the editing position of the blink cursor to the left or right
	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization
P5	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization
P6	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization
P7	Standby	Short Press	Preset function based on customization
	Standby	Long Press (3S)	Preset function based on customization
VOL / P8	Standby	Rotate	To rotate the knob clockwise to increase volume level, vice versa.
		Short Press	Preset function based on customization
		Long Press (3S)	Preset function based on customization

Main functions description

Classification	Function	Description
Public Functions	Zone	A zone is a group of channels. Support end users to build and expand zones by themselves.
	VFO Mode	In VFO mode, the user can directly input the required frequency through the numeric keyboard
	Channel	Support end users to build and expand channels by themselves, up to 4000 channels, 16 zones.
	Keyboard lock	Keyboard lock is used to lock keys to prevent inadvertent key operation. The radio may be set to automatic or manual lock mode.
	Power saving	Power saving is a preprogrammed function based on time that places radio into a sleep-wake mode to conserve the battery.
	Power	The power level is for the transmission power level of the current channel, which can be set to high or low power.
	Emergent alarm	Emergency alarm has the highest priority.

Classification	Function	Description
Public Functions	Scan	When the terminal scans a signal on a channel, it will stay on the channel to listen, so as to understand the current activity status of the relevant team members.
	VOX	If VOX is on, when the voice is detected to reach the transmission condition by the microphone, it will be transmitted automatically. The user can Initiate a call without pressing the [PTT] key.
	Busy channel lockout	Busy channel lockout prohibits transmission and prevents interference to other users when the radio is receiving traffic.
	TOT	When a transmission times out, the terminal will automatically terminate the transmission and issue a warning sound. The user can Initiate a call without pressing the [PTT] key.
Digital functions	Recording	Can record any receive or transmit audio, or receive + transmit audio of the radio
	TDMA direct mode	TDMA direct mode is used to divide a direct channel (simplex) into two time slots to allow efficient channel usage. Multiple parties may share the channel without interference depending on slot setting.

Classification	Function	Description
Digital functions	Private call	Private call is a one-to-one call.
	Group call	Group call is a one-to-many call.
	All call	All call is a call to all contacts on the current digital channel.
	Talk around	When the repeater fails to work or the radio exceeds the coverage of the repeater, it can communicate off-line (RX & TX at the same frequency) to communicate
	Roaming Setting	Roam Mode, RSSI Set, Connect Check Timer, Connect Re Check Timer, Connect Timer
	Roaming	When the radio moves from one site to another, it will automatically find the next available site through roaming.
Analog functions	DTMF RX / TX reminder	Used as the TX PTT prompt tone and RX prompt tone before receiving the voice.
	Analog channel call	An analog call is a call on an analog channel.
	Busy Channel Lockout	If it is ON, when received the carrier signal, it is prohibited to transmitting when pressing the PTT button.
	Monitor	Monitor allows the user to open the receiver squelch manually to listen to on-channel signals.

Classification	Function	Description
Analog functions	Narrow / Wide Band	Working band for the radio (Narrow band: 12.5KHz, Wide band: 25KHz)
	Squelch Level	It is the signal strength required to adjust the received signal. Normally the higher squelch level, the higher received signal strength is required. Settable squelch level is from 0 ~ 9. Level 0 is normally open, and there is background sound from the speaker once the radio is on. Level 9 is the highest and the required received signal strength is the strongest.
	CTCSS	CTCSS code for RX radio must be same as TX radio, so that the audio can be received successfully
	DCS	DCS code for RX radio must be same as TX radio, so that the audio can be received successfully

Operations for Speaker microphone keypad

The numeric keypad of the speaker microphone can be used to access the radio functions. It can be used to input frequency/channel number, user alias or ID or SMS. Many characters require pressing a key for several times

Keystrokes

Keypad	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Note
	,	。	！	：	；	、	“	”	‘	’	()	《	》															"PY" input mode		
	.	,	?	!	-		()	@	/	:	_	;	+	&	%	*	=	<	>	\$	[]	{	}	~	^	·	#		"AB" / "ab" input mode
1	A	B	C																												
2	D	E	F																												
3	G	H	I																												
4	J	K	L																												
5	M	N	O																												
6	P	Q	R	S																											
7	T	U	V																												
8	W	X	Y	Z																											

 Note: in the digital editing mode, a short press of this key enters the value of "0", while long press enters the symbol "+" in the digital, English editing mode.

 Note: in the digital, English editing mode, a short press of this key enters the "*" symbol, and a long press enters a "space".

 Note: in the editing mode of Numbers, English, a short press of this key inputs the symbol "#", while a long press switches between the editing input mode of English, Numbers.(" AB "in upper case, " ab" in lower case, " 12 "in figure. ")

Transmit / Receiving Icons

The following icon appears on the radio screen to indicate the radio status.

Mode	Type	ICON	Terminal product status
	Private call		Sending a private call
			Receiving an private call
	Group Call		Sending a group call
			Receiving an group call
	All Call		Sending an All Call
			Receiving an All Call
	—		Sending an analog transmission
			Receiving an analog transmission

Note:

In the contact list, user aliases, names, ID numbers, codes, etc can be used.

Basic operation

Power On/Off the radio

ON: Make sure the power supply is connected correctly, long press the [] key power on the radio till "Beep sound" is heard (if turned on). After power on, the brand logo and "is powering" character show on the display screen. And the LCD enters the standby interface.

OFF: long press the [] key power off the radio, then the brand logo and "is powering" character show on the display screen.

Volume Adjustment

To rotate the volume knob clockwise to increase volume level;
To rotate the knob anticlockwise to decrease the volume level.
And the green bar below frequency will be changed accordingly.

Squelch

Set the squelch level accessing the menu. In general, the higher squelch level, the received signal strength is stronger. Settable squelch level range is from "0, 1 ~ 9". Level 0 is normally open, and there is background sound from the speaker once the radio is on. Level 9 is the highest and the required received signal

Busy Channel Lockout

You can set the busy switch by accessing the menu. When you select the open mode, when the intercom receives the carrier signal, press the PTT key to prohibit transmission

Wide/ Narrow Band

set the operating bandwidth accessing the menu.

CTCSS / DCS

Set the CTCSS and DCS signaling by accessing the menu or user-defined.

Channel Selection

Can choose the working channel by following ways.

1. Rotate the [ENC] knob to select the channel
2. When the intercom is in the standby state. Press the digital keyboard in channel mode, and a dialog box and the total number of current channels will appear on the screen. You can enter the required channel number through the keyboard.

Switch between VFO and Channel Mode

In standby mode, press and hold the [P] key for 3 seconds, switches between VFO and channel mode.

VFO Frequency Set

In standby mode, and the current band is in VFO mode, the desired frequency can be entered through the numeric keyboard. For example: 446.050000MHZ; directly input [4][4][6][0][5][0][0][0][0] through the numeric keyboard.

Note:

- ◇ The current frequency can be increased / decreased by rotating the [ENC] knob.
- ◇ For detail user-defined operation steps, parameters set and storage, please refer to "VFO / Channel" on page 19.

Zone / Channel Selection

The following two methods can be used to select the desired zone, channels switching and zone name modification or editing.

1. By presetting the programming key to [Channel Switching] feature.
2. Select [Zone] item by accessing the menu

Note:

◇ For detail operation and steps, please refer to "Zone/Channel" on page 37.

Monitor

In standby mode or before pressing the [PTT] key to transmit, press and hold the preset [Monitor] key to monitor channel activity, or receive weak signals, or confirm whether the current channel is free.

Permanent monitoring

In standby mode, press the preset [Permanent Monitor] key to continuous monitor the current channel activity.

Repeater / Talk Around

When the repeater fails to work, or the radio exceeds the coverage of the repeater but within the call range of other radio users, press the preset [Repeater / Talk Around] key or set sub-menu "Timeslot /Repeater" thru Parameter in Menu to talk

around actively and press [PTT] key to continue the communication. This is the so-called Talk Around.

Note:

- ◇ This function is supported in digital mode only;
 - ◇ For detail operation and steps, please refer to "Timeslot / repeater" on page 42.
-

Emergency Alarm

The emergency alarm function is mainly used in an emergency situation. In any mode, press the preset [Emergency Alarm] key to initiate an Emergency Call.

- ◎ There are 3 Emergency Alarm modes supported:
 - Emergency Alarm
 - Emergency Alarm & Call
 - Emergency Alarm & Voice
- An alarm is a type of non-voice signaling that can trigger a prompt to another radio. This function refers to the alarm behavior of the radio after it is activated.
- ◎ The alarm has the following types:
 - Disable - The radio can't send the alarm signal.
 - Standard - The radio can send the alarm signal with voice & visual prompts.
 - Mute - The radio sends alarm signaling without audio or visual prompts, and will not alert to any received audio.
 - Mute with voice - The radio sends alarm signaling without audio or visual prompts, but can send signal to the eligible channels.

 **Note:** This feature is available in digital mode only.

Scan On/Off

If need can choose Scan On/Off by following ways.

1. Turn on / off scan by programming [Scan On / Off] key.
2. Select the [Scan] item by accessing the menu to turn on/off it.

Roaming On/Off

If necessary, turn on / off roaming by the following two ways.

1. Turn on / off roaming by programming [Roaming on / off] key.
2. Select the submenu [Scan] item by accessing the menu to enable / disable roaming.

 **Note:**

- ◇ Make sure the "Scan List" is pre-selected before turning on "Scan" or "Roaming" feature , otherwise, none of the scan types will be enabled.
- ◇ The radio will work in Band A as default when "Roaming" is enabled.
- ◇ When "Roaming" is enabled, the radio will start to scan all repeater channels in the "scan list" (TX/RX with inter-frequency), and the non-repeater channels in the "scan list" (RX/TX with same frequency) will not be scanned. If there is no repeater channel in the scan list, the radio will exit the roaming after scanning the current "scan list";
- ◇ When "Scan" is enabled, the radio will open all the receivable channels in the "scan list".

◇ For detailed setting and operation of the "Scan", please refer to page 33.

Main menu contains item index

Set various functions and parameters by accessing the main menu and submenu of the radio. The menu function options supported by this unit are shown in the table below.

The user-defined [PF] programming keys are function shortcut keys, for specific function application, please pre-program by CPS, or consult the system administrator or local dealer.

No.	Icon	Main Menu Item	Available setting items
1		Contacts	Contact List, New contact, Manual Dial, Contacts on ham contacts list, contacts on ham contacts list
2		Message	Create Msg, Comm Msg, Inbox, Outbox, Draft box.
3		Call log	Dialed Numbs, Received Calls, Missed Calls.
4		Scan	Scan (On/Off), Scan List, Scan Mode, Roam Scan
5		Zone&Channel	Zone List, Modify Name
6		Local Set	Language, Keypad lock, Back Light, Display Mode, VOX, Channel Sw, Factory Reset, SFR
7		Parameters	TOT, Power, Repeat, Sleep Mode, SQ Level, Band, BCLO, Signaling, Enc Level, Roger tone
8		Tone Set	Profiles, Key Tone, Power Tone, Msg Tone, P Call Tone, G Call Tone, Alert Tone, Power On Tone.
9		Appendix	GPS(Optional), FM Radio, Time, DTMF (Optional), Speaker / Earpiece (Optional), APRS
10		Record	Record Set, Record List, Clear Record, Space Info.
11		Device Info	Radio ID, RX Group List, CH contact, Version, Talker Alice

No.	Icon	Main Menu Item	Available setting items
12		User_defined Mode	Self-program the channel of current band(CTRL stays) or various parameters of VFO mode. Including: Mode selection, frequency, power, etc

Menu accessing and operations

Access the main menu and submenu options to set or browse various parameters (like message checking, editing and sending, etc) through the following operations and step. If there is access right preset by administrator or dealer, please contact them firstly.

Below icons may appear during menu accessing:

-  /  indicate On / Off selection;
-  /  indicate selected and executed items;
-  indicates to enter the next submenu option;

Processes:

1. In Standby Mode, press [MENU] key to access the menu.
2. Rotate the [ENC] knob to select the desired "Main Menu" item, and press the [MENU] key to enter.
3. Rotate the [ENC] knob to select the desired "Level 2 Menu" item, then press the [MENU] key to enter.
- If necessary, rotate the [ENC] knob to select the desired item and press the [MENU] key to enter.

OR

Rotate the [ENC] knob to select and set the current parameter value and press the [MENU] key to confirm and return to the previous level.

OR

Press the [MENU] key to select "On or Off".

4. Press the [BACK] key to return to the previous level.
5. If needed, continue to browse other menus by repeat steps 2 ~ 4 or return to the "Main Menu" interface for other operation.

Note:

- ◊ Part of the menu and parameter configuration, when you select the function or set the parameter value belong to the interphone application value
 - ◊ For details please refer to "Main Functions Description" on page 16.
-

PTT Call

To ensure an optimal transmission, hold the radio in a vertical position at one to two inches (2.5 to 5.0 centimeters) away from the mouth.

High / low power

You can change radio output wattage by following

ways.

1. Press the preset [High / Low Power] key to switch between high and low power. The "RED" indicator at the bottom of the screen of the current band will change according to the set power level.
 2. Access "Power" through the menu to set the output power level of the radio. After setting, the "RED" indicator at the bottom of the screen of the current band will change according to the set power level.
-

Note:

- ◊ High power gets further communication distance.
 - ◊ Low power gets closer communication distance.
 - ◊ Please refer to the operation of menu "Power" on page 41.
-

Receive and Answer to a radio call

Private calls, Group calls, and All calls can be made to the preset contacts on the current digital channel (All call rights need to be allowed by the dealer), and the methods for initiating and receiving all types of calls are the same. Each digital channel can be preset by the dealer with a "transmission

contact" for Private call, group call or call contact.

Call type	Operation method	
	Making call	Receiving call
Private call	In standby mode, press [PTT] key to initiate the call. When a call is initiated, the screen displays: 	When a private call received, the screen displays: 
Group call	When initiated a group call, the screen displays: 	When a group call received, the screen displays: 
All call	When Initiated an all call, the screen displays: 	When an all call received, the screen displays: 

Notes:

- ◊ If the "Tx Begin Tone" and "TX End Tone" for private and group calls are activated, when press [PTT] key to make a call, a short prompt tone will be heard indicating that the call is in progress. You can speak clearly into the MIC. And when release the [PTT] key, a short beep sound will be heard indicating that it is ready for receiving.
- ◊ If "Rx Begin Tone" and "Rx End Tone" for private and group calls are activated, when the other part press the [PTT] key to transmit, you will hear a short prompt tone indicating that the current channel is in receiving. And when the transmitter releases the [PTT] key, you will hear a short beep, indicating that the channel is idle and waiting for your answer.
- ◊ Please refer to the operation and steps of "Tone Set" on page 44.

Initiate a call

If necessary, a call can be initiated by any of the following ways.

1. Rotate the channel knob to select any preset channel, and then press the [PTT] key to call.
2. Access the "Contact" list through the menu, or press the pre-set "Contact" key to access the list. Select the desired contact by Rotate the [ENC] knob, and then press the [PTT] key to make the call.
3. Access "Contacts" through the menu to select "Manual Dial" to input the user ID with the numeric keypad to the popping up dialog box on the screen. It is used for private calls only.

Note:

- ◊ Encryption must be enabled on the current channel of your radio before sending encrypted transmission. Only when the target radio has the same key value and key ID with your radio, can the transmitted voice be decrypted.
- ◊ Please refer to the operation of "Encryption" on page 43.
- ◊ Please refer to the initiating call steps of "Contact" on page 26.

Initiate and receive calls in analog mode

When on the currently preset analog channel, press and hold the [PTT] key to initiate a call to all users, the TFT display screen shows . When receive a call indicated by other users on the current analog channel or monitor is activated, the TFT display screen shows .



Note:

- ◇ If the transmitter or receiver is with "CTCSS / DCS" code, the other party radio can decode the audio successfully with same "CTCSS / DCS" code only.
- ◇ Please refer to details of "Signaling" on page 43.

Advanced functions for DMR



Use the dedicated CPS software to enable/disable and preset DMR advanced functions (application) on / off and parameters set.

Remote monitor

Pre-set to prohibit the radio from being remotely monitored by others; or allow other users to remote monitor and set time for continuing to keep the MIC and transmitter on (Time range is from 10s ~ 120s).

Remote Kill

Pre-set to prohibit the radio from receiving "Remote Kill" command sent by other users; or allow the other users to receive and process the "Remote Kill" command to disable the radio. This function can be used to disable the radio when it is stolen or lost.

Radio Revive

Pre-set to restrict the radio from receiving "Radio Revive"

command sent by other users; or allow the radio to receive and process the "Radio Revive" command to activate it remotely. This function can be used to enable the radio when it is lost and found.

Radio Detection

Pre-set to prohibit or allow the radio from being remotely detected whether the radio is in communication range or active state without any prompt.

Call Alert

Pre-set to prohibit or allow the radio from receiving alert tone to ask for calling back when you are free.

Record

Pre-set to prohibit or allow the recording for any of receive, transmit, receive + transmit voice.

DTMF

Pre-set to prohibit sending DTMF tones; or allow to send a DTMF prompt tone when press the [PTT] key to transmit. It can remind the receiver that there is a call need to listen in time.

Encryption

Preset to encrypt the voice transmission of the digital channels. But the encryption is a software-based scrambling solution for preventing eavesdropping. The receiver radio must have same encryption method, level, alias and value as the transmitter radio to decrypt the encrypted voices from each other.

Notes:

- ◊ DMR Advanced functions (application) apply to digital mode only.
- ◊ For DMR advanced functions (application), please refer to "Menu" operation on page 25.
- ◊ Transmission of remote monitor, Remote kill, Radio Revive, Radio Detection, Call Alert, etc. Please refer to "Application" operation of the "Contacts" on page 26.

Menu function operation

The various functions, applications and parameter configuration of the radio can be check and set by menus, if they are allowed by the dealer or system administrator.

Contacts

The contacts provide the "address book" for the radio. Each entry corresponds to an alias or ID used to initiate a call, as well as operations and applications for DMR advanced functions (Application).

Contact list

Processes:

1. Press the preset [Contact] key to access the menu.

OR

1. Access the menu and rotate the [ENC] knob to select **Contacts**, and press [Select] key to enter.
2. Rotate the [ENC] knob to select the **Contact list**, press [Select] key to enter and select the desired contact.
 - Press [PTT] key to initiate a call;
 - Press [Select] key to make following options:

Group Call ID:

SendMsg → press [Select] key → Edit SMS → press [OK] key to choose operation of **SendMsg** (Send Message), **InsertComMsg** (Insert Common Message), **Save**, **Exit Editor** rotate the [ENC] knob → press [Select] key to confirm → return back to the previous level;

Private Call ID:

- ① **Application(Advanced)** → press [Select] key → choose operation of **Radio Detection**, **Call Alert**, **Remote Mon (Monitor)**, **Radio Kill**, **Radio Revive** rotate the [ENC] knob → press [Select] key to send → "success" or "Fail" character pops up on the screen → Return to the previous level;
- ② **Edit (contact)** → Press [Select] key to choose operation of **Number**, **Name** and **Save** rotate the [ENC] knob → press [Select] key to input number and name or Save → press [OK] key to confirm the operation → return to previous level;
- ③ **Delete** → press [Select] key → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion, or press [Back] key to cancel deletion → return back to previous level;
- ④ **SendMsg** → press [Select] key to Edit SMS → press [Ok] key to choose operation of **SendMsg** (Send Message), **InsertComMsg** (Insert Common Message), **Save**, **Exit Editor** rotate the [ENC] knob → press [Select] key to confirm the operation → return to the previous level.

New Contact

Processes:

1. Press the preset [Contact] key to access the contact.

OR

1. Access the menu and rotate the [ENC] knob to select Contacts, and press [Select] key to enter.

2. Rotate the [ENC] knob to choose the New Contact, press [Select] key to enter.

3. Rotate the [ENC] knob to choose the desired option.

① **Number** → press [Select] key → edit interface → input the numbers with the numeric keyboard → press [OK] key to confirm return back to the previous level;

② **Name** → press [Select] key → edit interface → input the numbers with the numeric keyboard → press [OK] key to confirm → return back to the previous level;

③ **Save** → press [Select] key to confirm → Return back to the previous level

Manual Dial

Processes:

1. Press the preset [Contact] key to access the contact.

OR

1. Access the menu and rotate the [ENC] knob to select **Contacts**, and press [Select] key to enter.

2. Rotate the [ENC] knob to select the **Manual Dial**, press [Select] key to enter the interface for inputting the ID.

3. Input the ID with numeric keyboard.

○ Press [PTT] key to initiate a call;

○ Press [OK] key to make following options:

① **Application** → press [Select] key to choose operation of

Radio Detection, Call Alert, Remote Mon(Monitor), Radio Kill, Radio Revive rotate the [ENC] knob → press [Select] key to confirm the operation → "success" or "fail" character pops up on the screen Return to the previous level;
② **SendMsg** → press [Select] key to Edit SMS → press [Ok] key to choose operation of **SendMsg** (Send Message), **InsertComMsg** (Insert Common Message), **Save, Exit Editor** rotate the [ENC] knob → press [Select] key to confirm the operation → return to the previous level.

Ham Private Contacts

Processes:

1. Access the menu and rotate the [ENC] knob to select Contacts, and press [Select] key to enter.

2. Rotate the [ENC] knob to select the Ham Private Contacts, press [Select] key to enter the Ham Private Call Contacts List. Up to 200,000 private contacts can be added.

3. Choose the desired private contact rotate the [ENC] knob, then the selected contact ID number will display at the top left of the screen and the serial No of the contact displays at the upper right.

OR

◇ Long press and hold the [MENU] key for 3 seconds, a dialogue window pops up on the interface.

◇ Input the first few digits of the private contact ID to search with the numeric keypad, after that press the [MENU] key to confirm, and then the screen jumps to the search results. rotate the [ENC] knob to choose the desired ID.

4. Press the [PTT] key to initiate a private call;

OR

◇ Press the [MENU] key → rotate the [ENC] knob to make

the following options:

- ① **Application** → press [Select] key to choose operation of **Radio Detection, Call Alert, Remote Mon(Monitor), Radio Kill, Radio Revive** rotate the [ENC] knob → press [Select] key to confirm the operation → "success" or "fail" character pops up on the screen → Return to the previous level;
- ② **SendMsg** → press [Select] key to Edit SMS → press [Ok] key to choose operation of **SendMsg** (Send Message), **InsertComMsg** (Insert Common Message), Save, Exit Editor rotate the [ENC] knob → press [Select] key to confirm the operation → return to the previous level.
- ③ **Details** → press [Select] key → the display shows ID, nick name, name, city, province, country etc information → press [Select] key to confirm → Return to the previous level.

Notes:

- ◇ "128Bytes" mode must be selected firstly before writing Ham Private Contacts list, so that details like name, city, province, country, etc information can be checked. But this mode requires a long writing time. Make sure the radio keeps normal power supply during the writing process.
- ◇ If "16Bytes" mode is selected before writing More Private Contacts list, only contact ID and Nick name can be checked. This mode has a shorter writing time which takes about 10 minutes. Make sure the radio keeps normal power supply during the writing process.

Ham Group Contacts

Processes:

- 1. Access the menu and rotate the [ENC] knob to select **Contacts**, and press [Select] key to enter.

2. Rotate the [ENC] knob to select the **Ham Group Contacts**, press [Select] key to enter the Ham Group Call Contacts List. Up to 20,000 group contacts can be added.

3. Choose the desired group contact rotate the [ENC] knob, then the selected contact ID number will display at the top left of the screen and the serial No of the contact displays at the upper right.

OR

- ◇ Long press and hold the [MENU] key for 3 seconds, a dialogue window pops up on the interface.
 - ◇ Input the first few digits of the group contact ID to search with the numeric keypad, after that press the [MENU] key to confirm, and then the screen jumps to the search results. rotate the [ENC] knob to choose the desired ID.
4. Press the [PTT] key to initiate a group call;
 5. Press [Back] key to return to the previous level.

Ham RX Group List

If allowed in software, Ham RX Group List can be set On or Off in menu to allow/disable the radio to receive any group call from the receiving group call list when it has same working channel/frequency.

Processes:

1. Access the menu and rotate the [ENC] knob to select **Contacts**, and press [Select] key to enter.
2. Rotate the [ENC] knob to select the **Ham RX Group List**, press [Select] key to enter the Ham RX Group Call Contacts List. Up to 20,000 group contacts can be added.
3. rotate the [ENC] knob to Ham RX Group List ON/OFF selection.
4. Press [MENU] key to turn it On or OFF.
5. Press [Back] key to return to the previous level.

Message

The radio can receive and send text messages from / to the other radios. The below ways can be used to send messages.

CreateMsg

Processes:

1. Press the preset [Message] key to access the menu.

OR

1. Access the menu and rotate the [ENC] knob to select **Message**, and press [Select] key to enter.
2. Rotate the [ENC] knob to **CreateMsg** and press [Select] key to enter message editing interface.
3. After editing, press [OK] key to make following options:
 - ① **SearchLinkman** → press [Select] key to enter and choose the contact rotate the [ENC] knob → press the [PTT] key to initiate a call or press [Select] key to send the message → the message sending status pops up on the screen;
 - ② **WriteNumber** → input the contact number with the numeric keyboard → press the [Ok] key to send the message → the message sending status pops up on the screen;
 - ③ **InsertComMsg** (Insert Common Message) → press [Select] key to choose the desired message rotate the [ENC] knob → press [Select] key → edit or press [OK] key to choose contact to send.
 - ④ **Save** → press [Select] key to save the message → return to the previous level;
 - ⑤ **ExitEditer** → press [Select] key to return to the previous level;

CommMsg

Processes:

1. Press the preset [Message] key to access the menu.

OR

1. Access the menu and rotate the [ENC] knob to select **Message**, and press [Select] key to enter.
2. Rotate the [ENC] knob to select **CommMsg** and press [Select] to enter the common message list or "Empty" Do you want Add?" character pops up on the screen.
 - ① In common message list → rotate the [ENC] knob to select the desired message → press [OK] key to make following options:
 - ◇ **Display** → Press [Select] key to display the full message → Press [Back] key to return to the previous level;
 - ◇ **AddCommMsg** → press [Select] key → input the message with the numeric keyboard → press [OK] key → Save or ExitEditer press [Select] key → return to the previous level;
 - ◇ **Edit** → press [Select] key → edit the message with the numeric keyboard → press [Ok] key → Save or ExitEditer → press [Select] key to save the message or exit the edition → return to the previous level;
 - ◇ **Delete** → press [Select] key → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion or press [Back] key to cancel deletion → return back to previous level;
 - ◇ **Send** → Press [Select] key → edit SMS and press [Select] key to search a contact or write a receiver ID → press [Ok] key to send a message → return to the previous level
 - ② **Add message** → press [Select] key to add new common message / press [Back] key to cancel → press [Ok] key → Save or ExitEditer → press [select] key to save the message or exit the edition → return to the previous level.

Inbox

Processes:

1. Access the menu and rotate the [ENC] knob to select **Message**, and press [Select] key to enter.
2. Rotate the [ENC] knob to **Inbox**, and press [Select] key to make the following options:
 - ① **Inbox List** → press [Select] key to enter and choose the received message rotate the [ENC] knob → press [Select] key to display full message → press [Select] key to perform the following options and processes:
 - ◇ **Reply** → press [Select] key → edit SMS → press [OK] key to choose operation of **SendMsg**, **InsertComMsg**, **ExitEditer** rotate the [ENC] knob → press [Select] key to confirm the operation;
 - ◇ **Forward** → Press [Select] key → search or Write the contacts by Search or WriteNumber → Press [Select] key to choose contact rotate the [ENC] knob or input ID number → Press [OK] key to send SMS;
 - ◇ **Edit** → press [Select] key to write the message → press [OK] key to choose operations of **SearchLinkman**, **WriteNumber**, **InsertComMsg**, **Save** or **ExitEditer** rotate the [ENC] knob → press [Select] key to send message or save or exit edition and return to the previous level;
 - ◇ **Delete** → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion or press [Back] key to cancel deletion → return back to previous level;
 - ② **Delete All** → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion or press [Back] key to cancel deletion → return back to previous level;

Outbox

Processes:

1. Access the menu and rotate the [ENC] knob to select **Message**, and press [Select] key to enter.
2. Rotate the [ENC] knob to **Outbox**, and press [Select] key to make the following options:
 - ① **Outbox List** → press [Select] key to enter and choose the message rotate the [ENC] knob → press [Select] key to display full message → press [OK] key to perform the following options and processes:
 - ◇ **Search** → press [Select] key to search the contact → press the [PTT] key to initiate a call or press [Select] key to send the message → the message sending status pops up on the screen;
 - ◇ **WriteNumber** → Press [Select] key to input the contact ID → Press [OK] key to send the message → the message sending status pops up on the screen;
 - ◇ **InsertComMsg** (Insert Common Message) → press [Select] key to choose the desired message rotate the [ENC] knob → press [Select] key → edit or press [OK] key to choose the contact to send.
 - ◇ **Save** → press [Select] key to save the message → return to the previous level;
 - ◇ **Delete** → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion or press [Back] key to cancel deletion → return back to previous level;
 - ◇ **Exit Editor** → press [Select] key to return to the previous level;
 - ② **Delete All** → "Are you sure?" pops up on the screen →

press [OK] key to confirm deletion or press [Back] key to cancel deletion → return back to previous level;

Draft Box

1. Access the menu and rotate the [ENC] knob to select **Message**, and press [Select] key to enter.
2. Rotate the [ENC] knob to **Draftbox**, and press [Select] key to make the following options:

① **Draft List** → press [Select] key to enter and choose the message rotate the [ENC] knob → press [Select] key to display full message → press [OK] key to perform the following options and processes:

◇ **Search** → press [Select] key to search the contact → press the [PTT] key to initiate a call or press [Select] key to send the message → the message sending status pops up on the screen;

◇ **WriteNumber** → Press [Select] key to input the contact ID → Press [OK] key to send the message → the message sending status pops up on the screen;

◇ **InsertComMsg** (Insert Common Message) → press [Select] key to choose the desired message → press [Select] key → edit or press [OK] key to choose the contact to send.

◇ **Save** → press [Select] key to save the message → return to the previous level;

◇ **Delete** → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion or press [Back] key to cancel

deletion → return back to previous level;

◇ **ExitEditor** → press [Select] key to return to the previous level;

② **Delete All** → "Are you sure?" pops up on the screen → press [OK] key to confirm deletion or press [Back] key to cancel deletion → return back to previous level;

Notes:

◇ If Common Message list is empty, you should pre-program the common messages by CPS software or enter into "CommMsg" menu to add messages firstly;

◇ Hold and long press the [#] key for 3 seconds to change the Input modes in writing and editing messages and other processes. The input modes are AB / uppercase, ab / lowercase, 12 / digits.

◇ In the process of searching contacts or inputting ID numbers to send SMS, when press the [PTT] key, the radio initiates a call.

Call Log

Information for recent dialed calls, received calls and missed calls can be checked by users thru Call Log menu. Call logs help to manage the recent call activities.

Dialed Calls

Processes:

1. Access the menu and rotate the [ENC] knob to select **CallLog**,