

Bulletin

Procurement and use of this device is a behavior setting and using radio station that should be approved legally for establishing a station and authorized with a radio station license. During use, operate this device in accordance with items permitted in the radio station license. Setting and using radio stations without authorization and interfering with radio services, not to work as licensed and other behaviors in violation of regulations in the radio administration act will be administratively punished by the radio administration authority. Serious violation of radio usage would even offend against article 288 of "Criminal Law" or article 28 of "Public Security Punishment" that would be sentenced to fixed-term imprisonment of not more than three years, criminal detention or public surveillance and also be subject to fine, or subject to fine alone or be punished with "administrative detention" by a public security bureau.

Acknowledgement

Thank you for buying our professional radio communications products!

Since 1989, we have been always engaging in research and exploration of radio communications technologies for dozens of years to lead intelligent technologies in the industry. We still make every effort to research and design products according to modern complicated communications environment, and are well positioned to customize special communications solutions adapting to your industrial properties. Excellent performance and outstanding communications strength allow our products being your ideal options for getting the big picture and also intelligent dispatch and command delivery, no matter what field you are in.

Applicable model

FM digital two-way radio

Need-to-Know

- ◆ The government decree forbids use of a radio transmitter without authorization within the territorial jurisdiction.
- ◆ Apply for frequency point to local radio management committee before using a two-way radio.
Illegal operation may be subject to fine or arrestment.
- ◆ Repair is only allowed to be conducted by a specialist.

Warnings:

Explosive environments (gas, dust or smoke)

The product is prohibited to be used in following environments, including but not limited to:

1. Do not use the product in the therapy area and ward of a hospital;
2. Do not use the product on the airplane;
3. Please wear earphones when driving a car;
4. Do not use the product in an examination;
5. Power the two-way radio off when refueling or parking near a filling station.

If you want to use this product for secondary development, please contact the dealer.

Precautions

Please follow following precautions to prevent fire, personal injury or damage to the machine:

- The recommended usage rate for the two-way radio is less than 1 minute for TX and less than 4 minutes for RX. Long and continuous TX will result in heating of the rear panel. Do not allow the rear panel of the two-way radio to contact surface of a plastic object.
- Do not let the two-way radio placed in direct sunlight for a long time or place it near a heating source.
- Do not place the two-way radio in an extremely dusty, moist or splash place, or on a unstable surface.
- If unusual odor or smoke is found, power the two-way radio off and remove the battery pack. Then contact your local vendor.
- In no circumstances can the product be modified without authorization. The company is not liable for any adverse consequence resulting from unauthorized modification.

Unpack and Inspection

Note: Following unpacking notes are only for distributors or dealers.

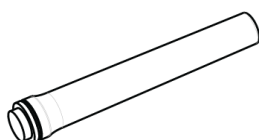
Please take the two-way radio out of the package carefully. It is recommended to check accessories according to the following checklist before discarding its package. If any item is missed or damaged, please immediately submit a claim letter to the carrier.

Supplied accessories

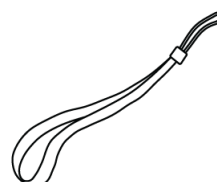
Items	Quantity
Antenna	1
Hand strap	1
Belt clip	1
Desktop charger	1
Adaptor	1
Battery	1
Operating Manual	1
Warranty card	1
Certificate	1

Standard accessories

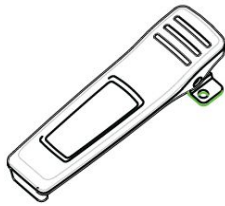
Antenna



Hand strap



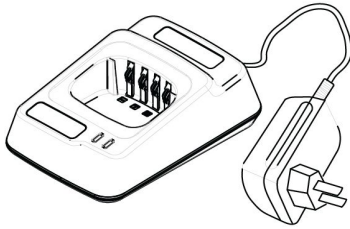
Belt clip



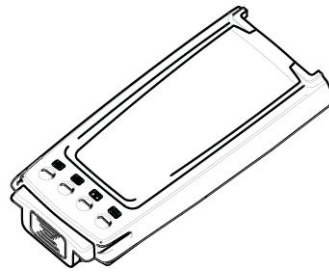
Operating manual



Desktop charger



Battery



Installation of Accessories

- Warning!
- ◆ Do not make battery contacts short circuited; do not put the battery into fire; It is at risk of explosion.
- ◆ Do not try to remove the housing for battery pack.
- ◆ Do not install the battery pack in a dangerous environment. Spark may result in explosion.

■ Installation/Removal of Antenna

Hold the antenna seat and turn it clockwise into the connection on the top of your two-way

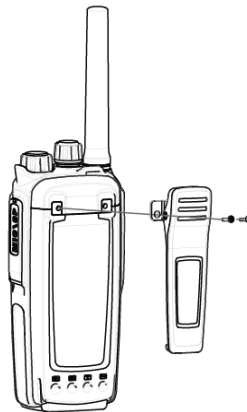
radio till it stops.

Turn the antenna anti-clockwise to remove it.



■ Installation/Removal of Belt Clip

Please use 2 pieces 3*4mm screw to fix the belt clip .



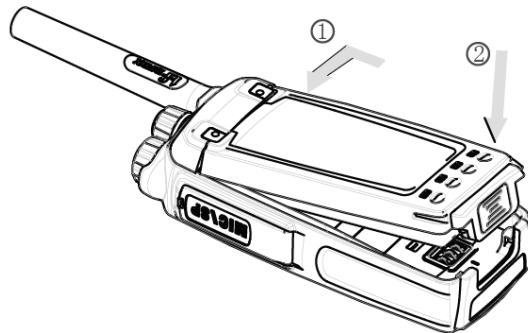
■ Installation of hand strap

Penetrate the lanyard to the loop on the right and back of your two-way radio.

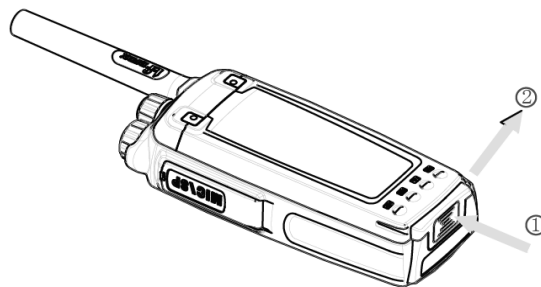


■ Installation/Removal of Battery Pack

Align two catching grooves on the top of the battery pack with two corresponding grooves on the bottom of your two-way radio, and then press the lower battery pack till a "click" sounds and the battery pack is locked by the latch on the bottom and back of your two-way radio.



To remove the battery pack, power your two-way radio off, and push the latch on the bottom then move the battery to the upper side, and back of your two-way radio down to disengage the bottom of the battery pack from your two-way radio, and finally remove the battery pack.



■ Use of Lithium Battery Pack

- The original battery is activated in the factory. Charge the lithium battery pack before use. Alternate charging / discharging twice or three times to make the battery capacity in the best status.

- To try to reduce consumption of the battery pack, take the battery out of your two-way radio if it is left unused and put it in a shaded and dry place.

When the battery pack is left unused:

1. Take the battery pack from the device;
2. If possible, discharge the battery pack;
3. Put the battery pack in a shaded (lower than 25°C) and dry place.

■ Features:

- The battery pack, after repeated charging and discharging, will deteriorate its capacity.
- Even if the battery is left unused, it may also be deteriorated (capacity deteriorated).
- Charging the lithium battery pack in a shaded and dry place (lower than 25°C) may charge the battery to the best capacity.
- Charging the battery pack in a high temperature condition will deteriorate it and shorten its lifecycle. Do not leave it inside a car or place it near a heating source.
- If the service time of the battery pack is shortened, even if it is fully charged, please replace it with a new one. Continuing to charge and discharge the battery pack will result in leakage of electrolyte and thus cause smoke or explosion.

Charging:

When your two-way radio gives a "battery low" alarm, it indicates the battery is died. Recharge the battery to avoid affecting normal use.

Note: charge the battery under ambient temperature between 0°C and 40°C; otherwise, normal charging of the battery may be affected.

Charging Steps:

1. Connect the plug of the charger to 220V AC socket;
2. Align the battery or your two-way radio with battery with the groove and attach it to the charger;
3. Check that the battery is well contacted with charging contacts. If the charger indicator lights red, charging starts.
4. If the charger indicator lights green, charging completes.

Note: After connection, if the charger indicator is not lit, the battery may be damaged or ambient temperature is too high or too low.

Warnings

- Do not over charge the battery pack.
If the battery pack is not fully charged within the specified time (4-6 hours), please stop charging. Otherwise, the battery may be overheated, bursting or fired.
- Do not place the battery pack into microwave bulb or high pressure vessel.
The battery may be overheated, bursting or fired.
- Do not let cracked and leaked battery pack close to fire to prevent explosion.
If the battery pack is leaked (or smells penetrating odor), immediately keep it away from flammable and explosive environment. Electrolyte leaked from the battery is flammable that may result in smoke or fire.
- Do not use unusual battery pack!

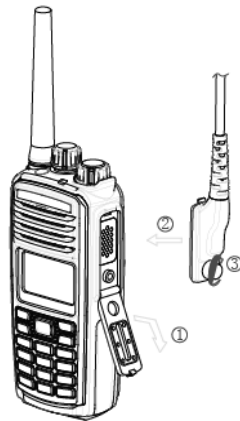
If the battery is exceptional due to deformation or any reason, please remove it from the charger or your two-way radio and discard it.

- Use the specific charger!

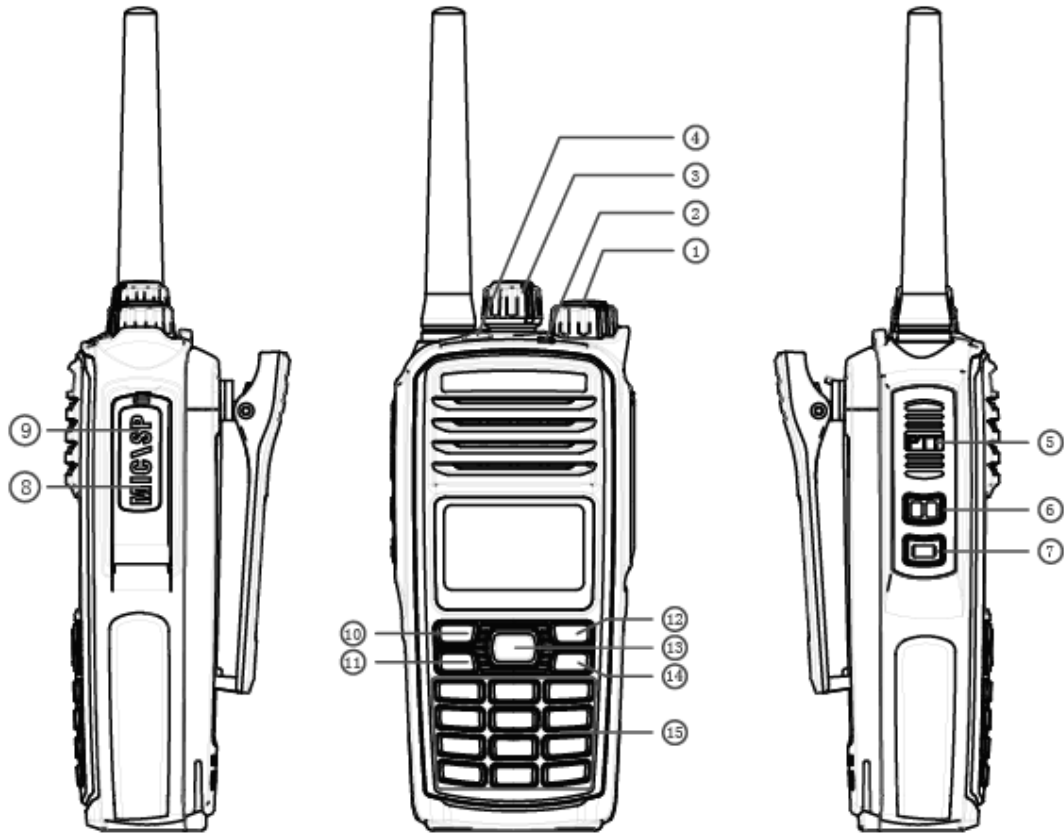
The charger is specifically designed for this model providing more scientific, reasonable, secure and reliable charging.

■ Installation of External Speaker/Mic

Open the earphone cover, and align the speaker/Mic earphone with its jack and tighten the screw.



About the Product



① Power switch/Volume controller

Turn the switch clockwise to power on your two-way radio; rotate the controller to adjust volume.

Turn the switch anti-clockwise to power off.

② LED indicator

1. Light red for TX.
2. Light green for RX.
3. Light red and green during startup.
4. Alternate flashing red and green indicators when a channel idle.
5. Flash orange when phase-locked loop is unlocked.

③ Channel selector

1. Turn the selector to select channel 1-16. If a channel is available, there will be a channel No. alert tone when rotating the channel selector. If not, you will be alerted with a short

alert tone.

2. If your two-way radio is establishing connection, your two-way radio will give disconnection signal when switching channels.

④ Orange key

Allow a user to change setting. (see below)

⑤ PTT

PTT (Press to talk) On

⑥ Key 1

Allow a user to change setting. (see below)

⑦ Key 2

Allow a user to change setting. (see below)

Side key programmable features:

1. All Alert Tones On/Off: switch on/off.
2. Backlight auto ON/OFF: switch on/off the backlight.
3. Battery Indicator: display battery capacity status.
4. Address list: open the address list.
5. Emergency On: enable the emergency alarm (this function can only be set to the orange key).
6. High/Low Power: switch between high power and low power.
7. Keypad lock: lock keys on the keypad.
8. Manual Dial: enable manual dial.
9. Monitor: enable monitor.
10. Nuisance Delete: delete nuisance channels.
11. One Touch Call 1-6: enable call objects set by One Touch Call 1-6 for connection (including private call, group call, call alert and quick message).
12. Device Check: enable device detection function.

- 13. Device Disable: enable device disable function.
- 14. Remote Monitor: enable remote monitor function.
- 15. Repeater/Talkaround: enable connection mode of your two-way radio switching between repeater and talkaround.
- 16. Scan On/Off: switch scan on/off.
- 17. Message: send edited message or quick message.
- 18. Unassigned: this key is not assigned with any function.
- 19. Zone Selection: select an available zone.
- 20. Connect Auth On/Off: allow a user to enable or disable connect authentication
- 21 Disconnect: When the "disconnect" key is pressed, the current connection is disconnected to end the current group call (private call) hang time.
- 22. DPMR MODE3 ON/OFF: DPMR MODE3 on/off.
- 23. GPS ON/OFF: GPS on/off.
- 24. Send GPS Report: report GPS information to the control center

Press and talk to the Mic for Tx.

⑧ MIC-SP-USB interface

Connect to optional speaker/Mic and USB cable.

⑨ MIC-SP-USB plug

Protect the interface to allow better contact with speaker/Mic and USB cable.

⑩ Left key

Confirmation key

Scroll to left

☐ MENU key

Access to functional settings

☐ Right key

Scroll to right

☐ OK key

☐ Back key























Return key

☐ Numeric keypad

Input letters and numbers

Basic Operations

LCD Icons

H/L	High power/low power
M0	PTT Mode
M1	Talkaround mode
M2	Repeater mode
M3	Multichannel mode
	Address List
	Private Call
	Group Call
	All Call
	Scan
	Zone
	Message
	Call Log
	Settings
	Keypad lock
	Connect authentication
	Missed
	Unread
	Sent full
	Horn On
	Horn Off
	Signal strength indicator
	Connected to PC
	Battery status
	Rx & Tx
	Monitor / permanent monitor
	GPS

■ Power On/Off

Turn the Power switch/Volume controller clockwise to power your two-way radio on.



Intro Screen

Turn the Power switch/Volume controller anticlockwise to power your two-way radio off.

■ Adjust Volume

Turn the Power switch - Volume controller to adjust the volume: clockwise to increase volume and anti-clockwise to reduce volume.

- When you communicate with the other party, it is important to adjust the volume correctly.

■ Select a Channel

Use a channel encoder to select the desired channel 1 to 16. Clockwise selection can increase channel number while anti-clockwise selection can reduce channel number.

Number reporting: your two-way radio give an alert tone to prompt you with the current channel number which the encoder turns to.

■ Call

1. Firstly check that the channel you use is not occupied by other two-way radio.
2. Press and hold PTT key and talk to Mic.

- TX status:

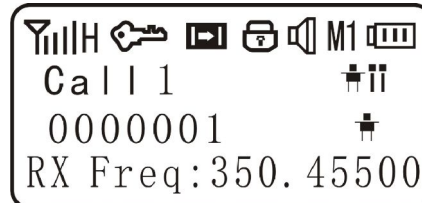


- 1) Keep 3-4 cm away from Mic and talk to Mic with normal tone to obtain the best quality.
 - 2) When pressing the PTT key, if the LED lights red, Tx is in progress.
 - 3) Call number and frequency display when pressing the PTT key.
3. Releasing the PTT key, your two-way radio exits from TX status and enters RX status.

■ RX

When the channel you are using is called, LED lights green. This call can be heard only when a correct code is received. After receiving the signal, your two-way radio will display Rx frequency and the number of calling party.

- RX status:



Notes:

Call 1 is a call initiated in form of group call by the calling party

000001 is the device ID of the calling party.

- If the calling signal is weak and your two-way radio is set to high SQ level, this call will not be received.

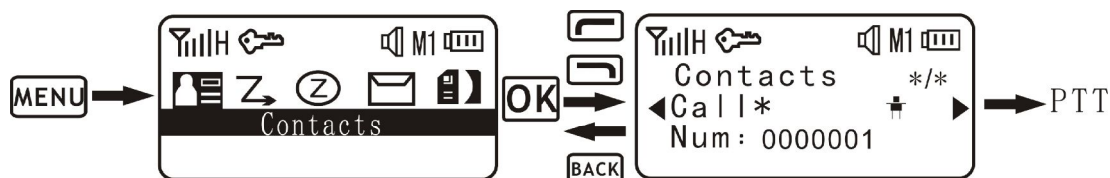
Introduction to Operations

1. Address list: press **MENU** key to view the address list

① Private call type

When the member type of the selected address list is private call, you can perform following operations:

- Initiate group call:



- Call alert: allow the user to alert other users and request them (receiving party) to call back (originating party) when communication is available. The call alert can be received only when a channel is available.



- View number: view ID number of a contact in the address list.



- Edit name: rename a contact in the address list.



- Edit number: modify a number in the address list.



- Ring tone: select tone 1-19 or leave it unselected.



- Device detection: When no any alert is sent to the target two-way radio, the originating party can enable device detection function to check if the target two-way radio is active in the system.



- Remote monitor: allow a user to send a "Remote Monitor" request to the target two-way radio via menu. If the request is successful, the MIC and transmitter for the target two-way radio will be activated for remote monitor. (remote key is required for this operation)



- Device disable: allow a user to send "kill" command to the target two-way radio via menu. If the device is lost or stolen, a user can use this function to disable the device. However, this device will continue monitoring air interface to receive its "kill" command at any time. (remote key is required for this operation)



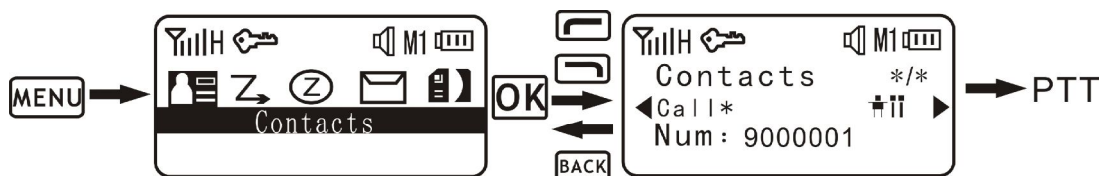
- Delete: delete unwanted contacts from the address list.



② Group Call Type

When the member type of the selected address list is group call, you can perform following operations:

- Initiate group call:



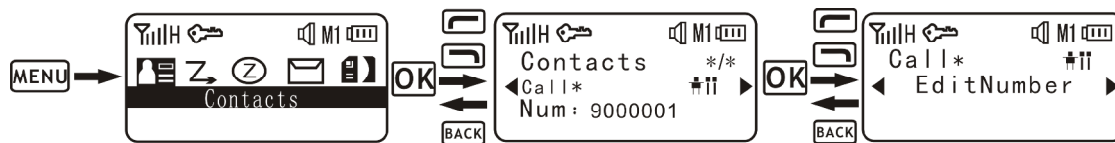
- View number: view group call ID in the address list.



- Edit name: rename a group in the address list..



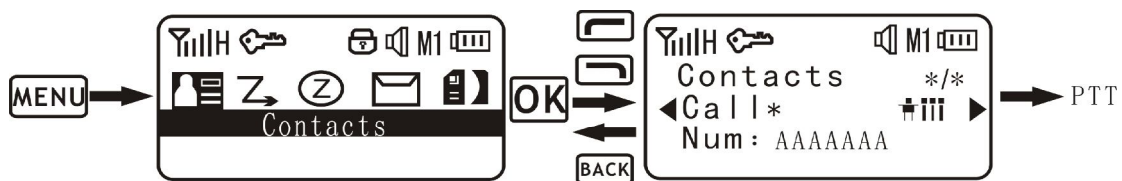
- Edit number: modify a group call number in the address list.



③ All Call Type

When the member type of the selected address list is all call, you can perform following operations:

- Originate all call




- View number: view all call ID in the address list.



- Edit name: rename all call type in the address list.




④ New Contact

After creating a new call type as private call contact and pressing OK key, the screen displays the last edited number. You can press  key to delete it and type a number again. Then press OK key to enter the name edit interface, where you can edit a name for the new contact. Press # key to switch input method. Input a name and press OK key, and then select an alert tone. After this, press OK and the screen prompts you with "contact saved" message.



⑤ Manual dial


You can manually input call type as private call or group call ( is a delete key)



When the call type is set to private call, press OK and you can select call alert, device detection, remote monitor and device enable; when group call is selected, press OK key and then PTT for TX.

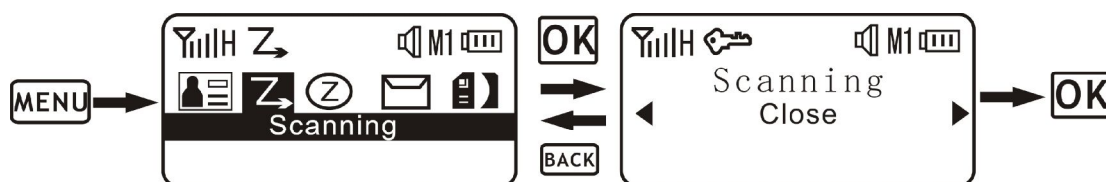
2. Scan

① On/Off

Allow a user to enable or disable scan function for the current channel via menu. Scanning allows the device to search the scan list where the current channel is located. When the scan function is enabled, the screen will automatically switch channel number and frequency of the channel to be scanned as well as related channel information. When the scan function is enabled,  on the screen is lit up.

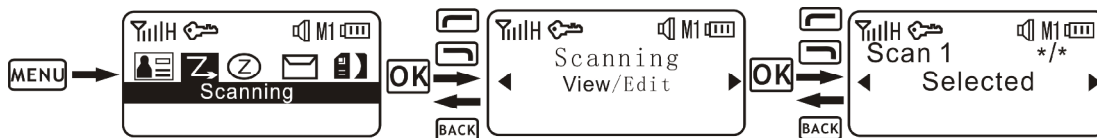


When the scan function is disabled, press MENU key to access the scan list again, disable the scan function and then press OK key or manually switch the channel to directly disable the scan function.



② View/Edit List

Allow a user to edit the scan list via menu, "Edit List" allows a user to execute some operations to the scan list, such as viewing the scan list, changing priority of scan member, adding a new member to the scan list or deleting a member from the scan list. It is not allowed to create a new scan list or delete existing scan lists from the device.



3. Zone


Your two-way radio supports up to 50 zones that can be selected by the left and right keys. When a specific zone is selected, and OK key is pressed, the screen prompts you with "zone saved" message. After about 1 second, the screen returns to the saved zone option.



4. SMS

① Inbox

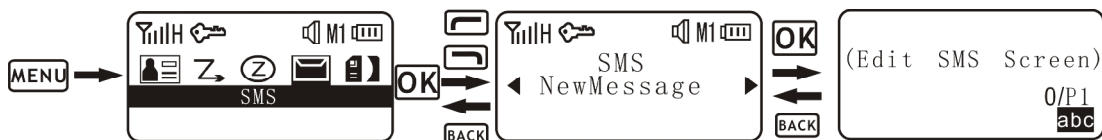


When there is an unread message, the screen displays . In inbox, press OK key to view messages, where you can reply to a message, forward or delete a message or select to delete all messages.



② New

Edit a new message (up to 144 characters) to send it to an individual or group. When editing a message in the edit box, press * key for deletion and modification and press # key for switching input method. For non-numeric input method, key 1 is a symbol key. After the message is edited, you can select a contact from the address list which the message is sent to or manually dial a number to send to.



③ Preset SMS

Messages preset using a programming software can be directly sent or a saved message can be edited before sending. (***** is preset message using a programming software)



④ Sent

"Sent" box can store up to 10 messages. When this box is full, the message icon will flash and the earliest message will be overwritten. In the "Sent" box, press OK key for view and press this key again to forward, delete, re-send or edit the sent message; press the right key to delete all message in the outbox. (***** is sent message)



5. Call Log

① Missed



Allow a user to view last ten missed call logs. When there is a missed



call, the screen displays . A user can access missed call log via menu. This log also can be a shortcut for a user to originate a call.



Press OK key to view missed call log. A missed call number can be stored into the address list or directly deleted or all deleted.



② Answered

Allow a user to view last ten answered call logs. A user can access answered call log via menu. This log also can be a shortcut for a user to originate a call.



Press OK key to view answered call log. An answered call number can be stored into the address list or directly deleted or all deleted.



③ Outgoing

Allow a user to view last 10 call numbers originated by this user and for easy re-dialing. A user can access the call log via menu. This log also can be a shortcut for a user to originate a call.



Press OK key to view outgoing call log. A outgoing call number can be stored into the address list or directly deleted or all deleted by pressing the right key.



6. Channel Settings

A user can enable or disable this function with the programming software. Channel can be edited in the menu only when Channel Edit Enable is checked in the general setting of the programming software. A user can use keys to edit RX and TX frequency for the channel. After modification and confirmation, channel RX and TX frequency will be updated and saved.

① TX frequency setting:



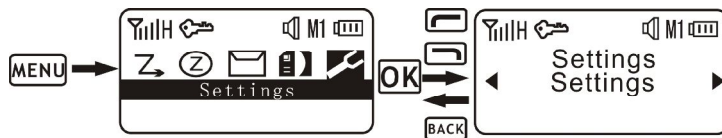
② RX frequency setting:



7. Settings

① Device settings

Allow a user to perform basic settings for the two-way radio.



- Connection Mode:

PTT mode: in this mode, the digital two-way radio will receive and transmit signals in form of connection mode of the analog two-way radio.

Talkaround mode: in this mode, the two-way radio performs TX and RX in the same frequency.

Repeater mode: in this mode, the two-way radio performs TX and RX in different frequencies.



- Tone/Alert: allow a user to enable or disable all tones or alerts via menu. Tone alerts include settings of all tones, call permit, call ring, key tone and escalert. A user can set these options according to his/her preference.



- TX power output: allow a user to select high/low TX power output via menu.



- Backlight: allow a user to change backlight setting via menu.



- Intro screen: allow a user to enable or disable the Intro Screen via menu. If the Intro Screen is enabled, the device name area displays welcome message when starting the device.



- Keypad locked: allow a user to enable or disable keypad lock via menu.



- LED indicator: allow a user to enable or disable all indicators via menu.



- Squelch level: this function is used to increase the SQ level when interference from surroundings is high to avoid interference. The SQ level can be set between 1 and 5 and is level 3 by default. A user can set the SQ level according to the operating environment and requirements.



- Mic level: allow a user to set the mic level via menu (level 1-9)



- VOX level: allow a user to set the VOX level via menu (level 0-9)

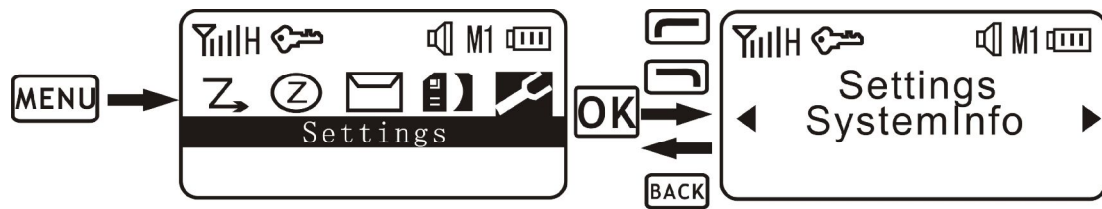


- LCD contrast: allow a user to set LCD contrast via menu. (level 1-5). It is level 2 by default.



② Device Information

Allow a user to view related device information.



- Battery status: allow a user to view battery status and know battery usage and charge the battery when necessary.



- My number: allow a user to view his/her ID number, which is same as device ID.



MyNum is same as Device ID

Repeat is same as Repeater ID

Authent is same as Connect Code

- RX group call ID: receive only calls originated by group ID set into the programming software.



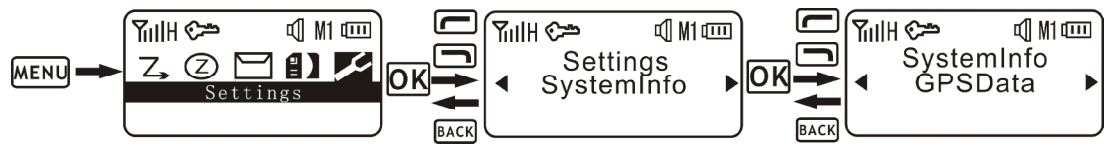
- Firmware version: view firmware version information.



- CP version: view CP version information.



- GPS data: view GPS data.



Technical Indicators

General	
Frequency range	UHF:400-470 MHz VHF:136-174 MHz
Total number of channels	160
Number of zones	50
Channel spacing	6.25KHz
Operating voltage	DC 7.5V (±20%)
Battery capacity	2300mAh
Average battery operating time (5/5/90)	22 hours (with GPS disabled)
Frequency stability	±1.5ppm
Antenna impedance	50 ohm
Dimension	62.4(L)*40.5(W)*145.6(H) mm
Weight	345g
Transmitter	
Output power	UHF high power: 4.0 W UHF low power: 1.0 W
4FSK modulation	4K00F1E
TX spurious	-36 dBm≤1GHz/-30 dBm≥1GHz
Adjacent channel power	≤-60dB
Digital vocoder	RALCWI
Receiver	
Digital sensitivity	5% BER: 0.25 uV
Rated audio output power	1200mW
Rated audio distortion	5%
Conducted emission	-57dBm
GPS positioning precision	Horizontal positioning precision ≤-10m (in condition of good signal)
Time To First Fix (TTFF) cold start	< 1 minute (in condition of good signal)
Time To First Fix (TTFF) warm start	< 10 seconds (in condition of good signal)
Environmental Indicators	
Working temperature	-20℃～+60℃
Storage temperature	-30℃～+85℃
Moisture-proof	Comply with MIL-STD-810C/D/E/F
Impact and vibration	Comply with MIL-STD-810C/D/E/F

Statement

We have done our best to make the content of this manual accurate and complete. If you have any question, please contact us immediately. We will instantly reply to you in details. Due to the rapid development of wireless communication technology, we reserve the rights to change the design and specifications of the product without notice, please understand.