



GMRS Radio
GM-30 PLUS

User Manual

PREFACE

Thank you for purchasing GM-30 PLUS Two Way Radio, It is a multitask GMRS transceiver. Combining the latest technology in radio communication along with a sturdy mechanical frame, GM-30 PLUS is the ideal and effective solution for the professionals who need to stay in touch with the working team (in construction sites, buildings, shows, trade fairs or hotels) or for leisure users that just want to keep up with friends and family.



IMPORTANT NOTICE

To help you ward off bodily injury or property loss that may arise from improper operation, please read all the information carefully before using our products. This contains instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulation.

Safety Information for GMRS Radios

Your wireless handheld portable transceiver contains a low power transmitter. When the talk button is pushed, it sends out radio frequency (RF) signals. The device is authorized to operate at a duty factor not to exceed 50%. In August 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for handheld wireless devices.

FCC Part 15.21 Warning Statement

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

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1. GETTING STARTED

1.1 Regulations and Safety Warnings

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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

Important: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device. Your radio is set up to transmit a regulated signal on an assigned frequency. It is against the law to alter or adjust the settings inside the radio to exceed those limitations. Any adjustments to your radio must be made by qualified technicians.

To be safe and sure:

- Never open your radio's case.
- Never change or replace anything in your radio except the battery.

Your radio might cause TV or radio interference even when it is operating properly. To determine whether your radio is causing the interference, turn it off. If the interference goes away, your radio is causing it. Try to eliminate the interference by moving your radio away from the receiver. If you cannot eliminate the interference, the FCC requires that you stop using the radio.

Hazardous Environments: Do not operate the radio in hazardous environments. Explosion or fire may result.

Do not operate the radio near unshielded electrical blasting caps.

Under certain conditions, radios can interfere with blasting operations and may cause an explosion. Turn your radio OFF to prevent accidental transmission when in a blasting area or in areas posted: "Turn off two-way radio." Construction crews often use remote control RF devices to set off explosives.

Care and Safety: To clean the radio, use a soft cloth dampened with water. Do not use cleaners or solvents because they can harm the body of the unit and leak inside, causing permanent damage. Use a dry, lint-free cloth to clean the battery contacts.

RF Exposure Information

WARNING! Read this information before using the radio. In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC regulated transmitters.

Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of the radio complies with the FCC guidelines and these international standards.

Never allow children to operate the radio without adult supervision and the knowledge of the following guidelines.

WARNING! It is up to the user to properly operate this radio transmitter to insure safe operation. Please adhere to the following:

Use only the supplied or an approved antenna. Unauthorized antennas, modifications, or attachments could impair call quality, damage the radio, or result in violation of FCC regulations.

Do not use the radio with a damaged antenna.

If a damaged antenna comes into contact with the skin, a minor burn may result. Please contact your local dealer for a replacement antenna.

Hand-held Operation (Held-to-Face)

This device was evaluated for typical hand-held (held-to-face) operations with a 1 inch spacing from the front of the radio. For hand-held operation, the radio should be held 1 inch from the user's face in order to comply with FCC RF exposure requirements.

For more information about RF exposure, please visit the FCC web site at www.fcc.gov.

Body-worn Operation

This device was evaluated for body-worn operations with the supplied belt-clip accessory. (All necessary accessories are included in the package; any additional or optional accessories are not required for compliance with the guidelines.) Third party accessories (unless approved by the manufacturer) should be avoided as these might not comply with FCC RF exposure guidelines.

For more information about RF exposure, please visit the FCC web site at www.fcc.gov.

GMRS Communication

This GMRS (General Mobile Radio Service) feature is a land-mobile service available for short-distance, two-way communications in the USA. You must have a valid FCC license to communicate on these channels. The GMRS/FRS frequencies that this radio uses are set aside for communicating with others while hiking, biking, and working; keeping track of family and friends at a crowded public event; checking with travel companions in another car; talking with neighbors; arranging meeting spots with others while shopping at the mall. Licensed users will be issued a call sign by the FCC, which should be used for station identification when operating this radio. GMRS users should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other GMRS users, and being prudent with the length of their transmission time.

FCC License Required

This two-way radio operates on GMRS (General Mobile Radio Service) frequencies which require an FCC (Federal Communications Commission) license. A user must be licensed prior to transmitting on the GMRS band with this radio. Serious penalties could result for unlicensed use of GMRS channels, in violation of FCC rules. Operation of this radio is subject to additional rules specified in 47 C.F.R. Part 95. For licensing information and application forms, please call the FCC Hotline at 800418-FORM. Request form #159 and form #605. Questions regarding the license application should be directed to the FCC at 888-CALL-FCC. Additional information is available on the FCC's website at www.fcc.gov.

NOTE: Even if you operate this radio on FRS (Family Radio Service) channels at low power (0.5 watt), you are required to have an FCC license. Because this radio operates in the 0.5 to 5 watt GMRS power range all GMRS rules apply and will require you have a GMRS license even for FRS (Family Radio Service) communication. Normal FRS only radios operate at a maximum power of 0.5 watt (500 mill watt) power and have an integral (non-detachable) antenna.

FCC Warnings

Replacement or substitution of transistors, regular diodes or other parts of a unique nature, with parts other than those recommended by may cause a violation of the technical regulations of part 95 of the FCC rules, or violation of type acceptance requirements of part 2 of the rules.

Precautions for Portable Terminals

Operating Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not operate the product in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials. In such location, only an approved Ex-protection model is allowed for use, but any attempt to assemble or disassemble it is strictly prohibited.
2. Do not operate the product near or in any blasting area.
3. Do not operate the product near any medical or electronic equipment that is vulnerable to RF signals.
4. Do not hold the product while driving.
5. Do not operate the product in any area where use of wireless communication equipment is completely prohibited.

Important Tips

To help you make better use of the product, be sure to observe the following instructions:

1. Do not use any unauthorized or damaged accessory.
2. Keep the product at least 2.5 centimeters away from your body during transmission.
3. Do not keep the product receiving at high volume for a long time.
4. For vehicles with an air bag, do not place the product in the area over the air bag or in the air bag deployment area.
5. Keep the product and its accessories out of reach of children and pets.
6. Please operate the product within the specified temperature range.
7. Continuous transmission for a long time may lead to heat accumulation within the product. In this case, please keep it at a proper location for cooling.
8. Handle the product with care.
9. Do not disassemble, modify or repair the product and its accessories without authorization.

Precautions for Batteries

Charging Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not charge or replace your battery in a location containing fuels, chemicals, explosive atmospheres and other

flammable or explosive materials.

2. Do not charge your battery that is wet. Please dry it with a soft and clean cloth prior to charge.
3. Do not charge your battery suffering deformation, leakage and overheat.
4. Do not charge your battery with an unauthorized charger.
5. Do not charge your battery in a location where strong radiation is present.
6. Overcharge shall always be prohibited for it may shorten the life of your battery.

Maintenance Instructions

To help your battery work normally or prolong its life, be sure to observe the following instructions:

1. Accumulated dust on charging connector may affect normal charging. Please use a clean and dry cloth to wipe it on a regular basis.
2. It is recommended to charge the battery under 5°C~40°C. Violation of the said limit may cause battery life reduction or even battery leakage.
3. To charge a battery attached to the product, turn it off to ensure a full charge.
4. Do not remove the battery or unplug the power cord during charging to ensure a smooth charging process.
5. Do not dispose of the battery in fire.
6. Do not expose the battery to direct sunlight for a long time nor place it close to other heating sources.
7. Do not squeeze and penetrate the battery, nor remove its housing.

Transportation Instructions

1. Damaged batteries must not be transported.
2. To avoid short circuit, separate the battery from metal parts or from each other if two or more batteries are transported in one packaging.
3. The radio must be switched off and secured against switch-on, if the battery is attached.

The content of the shipment must be declared in the shipping documents and by a Battery Shipping Label on the packaging. Contact your hauler for the local regulations and further information.

1.2 Content of the packaging

This transceiver comes shipped with the following items in the box:

- 1 Radio body
- 1 Belt Clip
- 1 Antenna
- 1 Lithium-Ion battery pack
- Instruction Manual
- 1 Wrist Belt

**If any item is missing, please notify your Radioddity*

1.3 Features and Functions

- 1.77" TFT large screen, full keyboard, fully open menu operation
- Scanner function: VFO scan range setting, three scan recovery methods, channel scan, CTC/DCS scan, scan channel addition and removal
- 22 Modifiable GMRS Channels (RX &TX)
- 8 Modifiable GMRS Repeater Channels (RX & TX)
- Built-in input method, allows this device to edit channel name
- NOAA Weather Radio Channel Reception in the United States and Canada
- Frequency step, selectable between 2.5K | 5.0K | 6.25K | 10.0K | 12.5K | 20.0K | 25.0K | 50.0K
- Type-C direct charging and charging stand, more convenient battery life
- Dual-band handheld transceiver.
- DTMF encoder and DTMF manual dial
- High Capacity Lithium-Ion battery.
- Broadcast FM radio receiver 78-108 MHz
- 50 CTCSS tones and 105 DCS codes.
- VOX (voice activated transmit).
- 10 zones storage, Up to 1000 named memory channels.
- Alarm function.
- High or low power selectable.
- Display illumination programmable via keypad.
- Function beep on the keyboard.
- Dual watch / Dual reception.
- Programmable repeater offset.
- Battery saving function.
- Transmission time-out timer.
- Scan mode.
- Busy channel lock out.
- Built in CTCSS/DCS tones.
- Ten (10) levels of Squelch adjustment.
- Cross band reception.
- End of transmission tone, aka "Roger Beep".
- One touch search frequency
- Two (2) pins for Kenwood accessory port
- GPS positioning function, location sharing and requesting location information from others

2. BATTERY INFORMATION

2.1 Charging the Battery Pack

The Li-ion battery pack is not charged at the factory; please charge it before use.

Charging the battery pack for the first time after purchase or extended storage (more than 2 months) may not bring the battery pack to its normal maximum operating capacity. Best operation will require fully charging/discharging the battery two or three times before the operating capacity will reach its best performance. The battery pack life may be depleted when its operating time decreases even though it has been fully and correctly charged. If this is the case, replace the battery pack.

2.2 Charger Supplied

Please use the specified charger provided by Radioddity. Other models may cause explosion and personal injury. After installing the battery pack, and if the radio displays low battery with a red flashing lamp or voice prompt, please charge the battery.

2.3 Use Caution with the Li-ion Battery

- (1) Do not short the battery terminals or throw the battery into a fire. Never attempt to remove the casing from the battery pack, as Radioddity cannot be held responsible for any accident caused by modifying the battery.
- (2) The ambient temperature should be between 5°C-40°C (40°F - 105°F) while charging the battery. Charging outside this range may not fully charge the battery.
- (3) Please turn off the radio before inserting it into the charger. It may otherwise interfere with correct charging.
- (4) To avoid interfering with the charging cycle, please do not cut off the power or remove the battery during charging until the green light is on.
- (5) Do not recharge the battery pack if it is fully charged. This may shorten the life of the battery pack or damage the battery pack.
- (6) Do not charge the battery or the radio if it is damp. Dry it before charging to avoid damage.

NOTICE

When keys, ornamental chain or other electric metals contact the battery terminal, the battery may become damage or injure a human. If the battery terminals are short circuited it will generate a lot of heat. Take care when carrying and using the battery. Remember to put the battery or radio into an insulated container. Do not put it into a metal container.

2.4 How to Charge

- (1) Plug the AC adaptor into the AC outlet, and then plug the cable of the AC adaptor into the DC jack located on the back of the charger. The indicator light blinks orange and is then ready to charge battery.

- (2) Plug the battery or the radio into the charger. Make sure the battery terminals are good in contact with charging terminals. The indicator light turns to red--- charging begins.
- (3) It takes approximately 2-5 hours to fully charge the battery. When the lamp lights green, the charging is completed. Remove the battery or the radio unit with its battery from socket

NOTICE

when charging a radio (with battery) the indicating lamp will not turn into green to show the fully charged status if the radio is powered on. Only when the radio is switched off will the lamp indicate normal operation. The radio consumes energy when it is power-on, and the charger cannot detect the correct battery voltage when the battery has been fully charged. So the charger will charge the battery in constant voltage mode and fail to indicate correctly when the battery has been fully charged.

(4) LED Indicator

Red LED	Green LED	Status
Flashing	Steady	Standby (charger empty) Error (charger with radio)
Steady	Off	Charging
Off	Steady	Charge complete.

The charger and battery are fitted with matching notches so that you can charge your battery on its own! Practical if you have two batteries. That way you can charge one battery while still using your radio. Radio should be turned OFF during charge cycle.

2.5 Using the Type-C Charger

The Type-C charger is a handy port that allows you to conveniently charge your Li-on battery pack.

- (1) Make sure your radio is turned OFF.
- (2) Plug the Type-C cable into the Type-C charging port on your battery. Connect the other end of the Type-C charger to wall power outlet.
- (3) An empty battery will be fully charged in 6 hours.
- (4) The battery meter on LCD will move to indicate the battery is charging.

2.6 Battery Maintenance

The battery for your radio comes uncharged from the factory; please let it charge for at least four to five hours before you start using your radio.

- *Use only batteries approved by the original manufacturer.*

- *Never attempt to disassemble your battery pack.*
- *Do not expose your batteries to fire or intense heat*
- *Dispose of batteries in accordance with local recycling regulations. Batteries do not belong in your trashcan!*

2.7 Prolonging the life of your battery

- Only charge batteries in normal room temperatures.
- When charging a battery attached to the radio, turn the radio off for a faster charge.
- Do not unplug the power to the charger or remove the battery and/or radio before it's finished charging.
- Never charge a wet battery.
- Batteries wear out over time. If you notice a considerably shorter operating time with your radio, please consider purchasing a new battery.
- Battery performance will be reduced in temperatures below freezing. When working in cold environments, keep a spare battery on you. Preferably inside your jacket or in a similar location in order to keep the battery warm.
- Dust can interfere with the contacts on the battery. If necessary wipe the contacts with a clean cloth to ensure proper contact with radio and charger.

If your battery has become wet, remove it from the radio, wipe it dry with a towel and put it in a plastic bag with a handful of dry rice. Tie the bag up and let it sit over night.

The rice will absorb any remaining moisture in the battery.

This method is only effective against minor splashes (light rain for instance). A soaked radio may very well be beyond repair.

2.8 How to Store the Battery

- (1) If the battery needs to be stored, keep it in status of 80% discharged.
- (2) It should be kept in low temperature and dry environment.
- (3) Keep it away from hot places and direct sunlight.
- (4) To avoid severe capacity degradation of your battery while in long-term storage, please cycle the battery at least every six (6) months.

NOTICE

- *Do not short circuit the battery terminals.*
- *Never attempt to remove the casing from the battery pack.*
- *Never store the battery in unsafe surroundings, as a short may cause an explosion.*
- *Do not put the battery in a hot environment or throw it into a fire, as it may cause an explosion.*

3. PREPARATION

3.1 Installing / Removing the Battery

Installing the Battery Pack

- (1) Position the battery pack over the back of the radio.
- (2) Engage the battery pack into the radio until battery pack is fully seated into the radio housing.
- (3) Tighten the screws using a coin or at object to secure the battery pack to the radio. Do not overtighten.

To Remove Battery Pack from Radio

- (1) Loosen the screws on the back of the battery pack.
- (2) Lift the bottom of the battery pack slightly to remove it from the radio housing.
- (3) Pull the battery pack out of the radio housing.

NOTE:

The Li-ON battery pack can also be charged in the battery charger.

3.2 Installing / Removing the Antenna

- (1) Installing the Antenna: Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.
- (2) Removing the Antenna: Turn the antenna counter-clockwise to remove it.

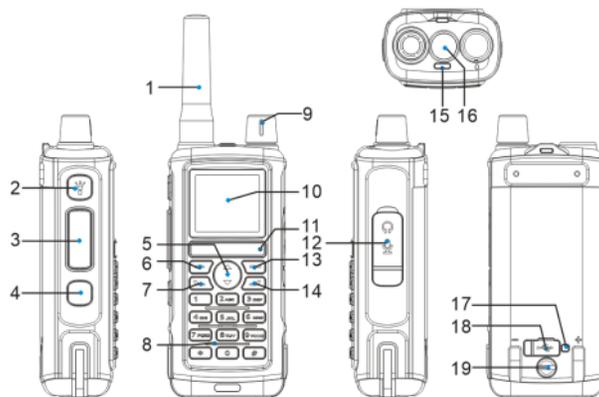
3.3 Installing / Removing the Belt Clip

- (1) Installing the Belt Clip: Place the belt clip above the corresponding holes on the back of the radio, and screw it into place clockwise with the two supplied screws.
- (2) Removing the Belt Clip: Unscrew counter-clockwise to remove the belt clip.

3.4 Installing Additional Speaker/Microphone (Optional)

Pry open the rubber MIC-Headset jack cover and then insert the Speaker / Microphone plug into the double jack.

4. RADIO OVERVIEW



- | | | |
|--|--|--------------------------|
| 1. Antenna | 2. SK1 - FM radio / Emergency Alert key | 3. PTT key |
| 4. SK2 - Monitor key(Custom Keys) | 5. ▲ or ▼ navigation keys | 6. MENU key |
| 7. P1 key | 8. Numeric keypad | 9. Power / Volume knob |
| 10. Color LCD | 11. MIC Input | 12. Speaker/Mic Jacks |
| 13. EXIT Key | 14. P2 key | 15. LED Status Indicator |
| 16. GPS Antenna | 17. Type-C charging indicator | 18. Type-C charging port |
| 19. Battery tightening screw | | |

"SK2" customization function

Press and hold the SK2 key as the Monitor function. SK2 allows you to set shortcut functions through the CPS programming software or the radios menu.

- FM RADIO: Quickly turn on or off the FM radio function.
- Scan: Quickly turn on or off the scan function. You can also turn on or off the scan function by hold down the # key.
- SEARCH: Quickly turn on or off the one-touch frequency search function.
- VOX: Quickly turn on or off the VOX function.

4.1 Status Indications

The top LED will help you to identify the current radio status.

LED Indication	What it Indicates
Constant Green	Receiving Signal
Constant Red	Transmitting signal
Flashes Green	Monitor mode/Scanning Receiving

4.2 LCD icon summary

Icon	Description
	Battery level indicator
RSSI	Operating band signal
	Make sure you can hear the DTMF side tone from the radio speaker, set to DT-ST, ANI-ST, DT+ANI.
D	Dual watch enabled
	VOX enabled
	GNSS function enabled
	Keypad lock enabled
Zone1~ Zone1	Indication of the current channel's region. Working in storage mode
VFO	In the current working VFO mode. Allow manual frequency input
H	Transmit power level indicator, According to Power High
L	Transmit power level indicator, According to Power Low

D	DCS enabled
C	CTCSS enabled
+	Enables access of repeaters in VFO/Frequency Mode. TX will be shifted higher in frequency than RX.
-	Enables access of repeaters in VFO/Frequency Mode. TX will be shifted lower in frequency than RX
R	Reverse function enabled
T	Talkaround has been activated, off grid at the central turntable. The transmission frequency is equal to the receive frequency
	The confidential calling feature is activated
N	Narrowband enabled

4.3 Main keypad controls

- **MENU** key: It is used for activating the MENU, choose each MENU selection and confirm the parameter.
When listening to broadcast FM, the key switches between 65-75 MHz and 76-108 MHz bands.
- **P1** key: press the key to switch between frequency (VFO) mode and channel (MR) mode.
- **↑** key: Press it for more than 2 seconds, the channel and frequency will move upwards rapidly; in SCAN mode, press this control to move the scanning upwards.
- **↓** key: Keep it pressed it for more than 2 seconds, the channel and frequency will move downwards rapidly; in SCAN mode, press this control to move the scanning downwards.
- **EXIT** key: Press to exit the Menu and functions.
- **P2** key: The key switches between A (upper) and B (lower) displays. The frequency or channel on the selected display becomes the active listening and transmit frequency or channel.

• **Numeric keypad**

With these keys you can input the information or your selections on the radio. In TX mode, push the number keys to send a corresponding DTMF code.

-  **Key**

A short momentary press of the key enables the reverse function.

The radios features a keypad lock that locks out all keys except for the three side keys.

To enable or disable the keypad lock, press and hold the  key for about two seconds.

-  key

When listening to broadcast FM a momentary press will start the scanning. Scanning in broadcast FM will stop as soon as an active station is found, regardless of scanner resume method.

To enable the scanner, press and hold the  key for about two seconds.

Short press the  key to quickly enter the DTMF dialing.

5. BASIC OPERATIONS

5.1 Power on the radio

- Turning the unit on

To turn the unit on, simply rotate the Volume/Power knob clockwise until you hear a "click". If your radio powers on correctly there should be an audible double beep after about one second and the display will show a message or flash the LCD depending on settings for about one second. Then it will display a frequency or channel. If the Voice prompt is enabled, the voice will announce "frequency mode" or "channel mode".

- Turning the unit off

Turn the Volume/Power knob counter-clock wise all the way until you hear a "click". The unit is now off.

5.2 Adjusting the volume

To turn up the volume, turn the volume/power knob clock-wise. To turn the volume down, turn the Volume/Power knob counter-clock-wise. Be careful not to turn it too far, as you may inadvertently turn your radio off.

By using the monitor function, enabled from the [Monitor] key below the PTT, you can more easily adjust your volume by adjusting it to the un-squelched static.

5.3 Main Band/Sub Band Switch

In standby mode, press the [P2] key to switch between the main frequency band or sub frequency bands.

Those in large font are the main bands and those in small font are the sub-bands.

5.4 VFO/Channel Switch

Press **[P1]** key to switch between VFO and channel display.

- In channel mode (MR), the channel number will be displayed on the right.
- In frequency mode (VFO), the 'VFO' will be displayed on the right.

5.5 Frequency (VFO) mode

In Frequency (VFO) mode you can navigate up and down the band by using the ▲ or ▼ keys. Each press will increment or decrement your frequency according to the frequency step you've set your transceiver to.

You can also input frequencies directly on your numeric keypad with kilohertz accuracy.

The following example assumes the use of a 12.5 kHz frequency step.

Example. Entering the frequency 462.5625 MHz on display A

(1) In standby mode, press **[P1]** key to switch to the frequency (VFO) mode.

(2) Enter **[4][6][2][5][6][2][5] [0]** on the numeric keypad.

WARNING!

Just because you can program in a channel does not mean you're automatically authorized to use that frequency. Transmitting on frequencies you're not authorized to operate on is illegal, and in most jurisdictions a serious offense. However, it is legal in most jurisdictions to listen.

Contact your local regulatory body for further information on what laws, rules and regulations apply to your area.

5.6 Channel (MR) mode and Channel selection

There are two modes of operation: Frequency (VFO) mode, and Channel or Memory (MR) mode.

For everyday use, Channel (MR) mode is going to be a whole lot more practical than Frequency (VFO) mode. However, Frequency (VFO) mode is very handy for experimentation out in the field. Frequency (VFO) mode is also used for programming channels into memory.

In Channel (MR) mode you can navigate up and down the channel by using the ▲ or ▼ keys or the encoder.

Ultimately which mode you end up using will depend entirely on your use case.

Press **[P1]** key to switch the radio between VFO and Channel mode, select Channel mode.

- **Operation 1:** Press the ▲ or ▼ navigation key to select the channel.
- **Operation 2:** Input the channel numbers by the keyboard. For example, if you want switch to channel 12, input **[0][1][2]** a total of 3 digits, and it will switch to channel 12.

When the voice prompt function is enabled, the corresponding channel will be broadcast by voice.

5.7 Selecting a Bank

A bank is a group of channels with the same property. The radio supports up to 10 banks, with a maximum of 100 channels per bank. To select a bank, do one of the following:

Press **[MENU]** key go to Menu > Bank, press ▲ or ▼ navigation key to select a bank, and then press **[MENU]** key to switch to the selected bank.

The corresponding regional alias will be displayed at the bottom of the screen.

5.8 Making a call

press [P1] key to switch between frequency (VFO) mode and channel (MR) mode.

- **Channel mode call:** After selecting a channel, hold down the **[PTT]** key to initiate a call to the current channel. Speak into the microphone with normal tone. Making a call, the red LED is on.
- **Receive a call:** When you release the **[PTT]** key, you can answer it without any action.
When receiving a call, the green LED is on.

NOTE: To ensure the best reception volume, keep the distance between the microphone and the mouth at the time of transmission from 2.5 cm to 5 cm.

5.9 Emergency Alert

The Emergency Alert feature can be used to signal members in your group for help.

To activate the emergency alert function, press and hold the **[SK1]** key for 3 seconds. The radio will send out a loud siren sound and the flashlight will flash.

Press the **[SK1]** key to exit the emergency alert function.

WARNING: The Emergency Alert feature should only be used in the even of an actual emergency.

5.10 FM Radio (FM)

The frequency ranges to listen to the radio is 65-108MHz. When listening to broadcast FM, press **[MENU]** key switches between 65-75 MHz and 76-108 MHz band.

(1) In frequency or channel mode, Press **[SK1]** key to turn on the radio.

(2) Select the desired radio frequency with the ▲ or ▼ keys or input the frequency. Or

- Press **#Z** to automatically search a radio station.

(3) Press **[SK1]** key to exit FM radio.

Note: while you are listening to the radio, the frequency or channel of A / B receiving signal will automatically switch to the frequency or channel mode for normal transmitting and receiving.

When the signal disappears the radio will automatically switch again to FM radio mode.

5.11 Monitor

In standby, press and hold the **[SK2]** key to enter Monitor. When receiving matched carrier but the signaling or the signal is too weak, this function allows monitor the weak signal.

Stop pressing the **[SK2]** key to turn off the speakers and return to standby mode.

» *If no signal, it will emit noise when press the [SK2] Key.*

5.12 Keypad lock

The radio features a keypad lock that locks out all keys except for the three side keys.

To enable or disable the keypad lock, press and hold ***6** the key for about two seconds.

You can also enable so that the radio automatically locks the keypad after ten seconds from the menu.

5.13 TX Repeaters tone

Press **[PTT] + [SK2]** key to send 1750Hz repeaters tone. This function is useful for communications through repeaters.

If you have the keypad lock enabled on your radio, you can still send a 1750Hz tone the regular way without having to unlock your radio.

5.14 Weather Radio/Scan Weather Channel

Your radio has a NOAA Weather Radio function, to enable the user to receive weather reports from designated NOAA stations. Your radio also has a NOAA Weather Scan function, to enable the user to scan all 10 channels of the NOAA Weather Radio.

(1) To turn the NOAA Weather Scan on, press and hold the **0** key for 3 seconds,  icon appears. The radio will go to Weather band mode.

(2) Press and hold the **#Z** key for 3 seconds to start automatic scanning of all 10 channels and stop on active channels. Pressing and holding the **#Z** key for 3 seconds during a NOAA weather scan will stop the scan.

(3) After stopping NOAA weather scan, it is allowed to manually select the weather channel by press the ▲ or ▼ key.

(4) To exit the Weather Radio broadcast mode, press the [EXIT] key or [PTT] key.

Weather channel frequencies and names

Channel Number	RX Frequency MHz	Channel Number	RX Frequency MHz
CH-01	162.550	CH-06	162.500
CH-02	162.400	CH-07	162.525
CH-03	162.475	CH-08	161.650
CH-04	162.425	CH-09	161.775
CH-05	162.450	CH-10	163.275

NOTE: Weather Channels Wx 1 Thru 10, Receive-only channels for NOAA and Canadian weather broadcasts. You cannot transmit on these channels.

5.15 One touch frequency Search

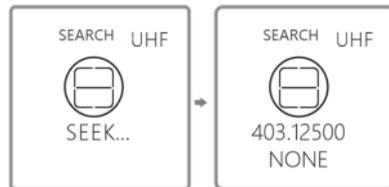
(1) Through the CPS program software or the radio menu >> Radio Setting >> Press the SK2 key to define the SK2 side key as a Search function.

(2) The radio will act as a receiver. Briefly press the preset "Search " key, and the screen will display "SEARCH SEEK..."

(3) If the transmitter continues to transmit and the unit receives an effective frequency (the strongest and stable signal), the received frequency will be displayed. If there is a CTCSS or DCS, the CTCSS or DCS value is displayed, and if there is no CTCSS or DCS, NONE is displayed

(4) You can press the [MENU] key to save the Search frequency and CTCSS or DCS to the channel.

Note: During frequency Search, press the # key on the radio to switch between UHF or VHF bands.



6. ADVANCED FEATURES

6.1 Scanner

The radios features a built in scanner for the VHF and UHF bands. When in Frequency (VFO) mode it will scan in steps according to your set frequency step. In Channel (MR) mode it will scan your channels.

To enable the scanner, press and hold the **[#Z]** key for about two seconds. You can change the scanning direction with the **▲** or **▼** keys. Press and hold the **[#Z]** key to exit scanning mode.

6.1.1 Frequency Ranger

In frequency mode, the frequency sweep range can be precisely set. Input the start value and end value of the sweep frequency through the keyboard.

EX: Enter 144146, in frequency mode, scan in the range of 144.000-146.000MHZ. Enter 430440, in frequency mode, scan in the range of 430.000-440.000MHZ.

Note: for VFO frequency Ranger, see Menu > SCAN > Freq Ranger.

6.1.2 Scan modes

The scanner is configurable to one of three ways of operation: Time, carrier or search, each of which is explained in further details in their respective section below.

Time operation

In Time Operation (TO) mode, the scanner stops when it detects a signal, and after a factory preset time out, it resumes scanning.

Carrier operation

In Carrier Operation (CO) mode, the scanner stops when it detects a signal, and after a factory preset time with no signal it resumes scanning.

Search operation

In Search Operation (SE) mode, the scanner stops when it detects a signal.

*To resume scanning you must press and hold the **[#Z]** key again.*

Note: for Scan mode, see Menu>SCAN>Scan Mode.

6.1.3 Scan Sub-Code

To search for a CTCSS code, do the following:

(1) In VFO mode, enter a known frequency, such as 144.525.

- (2) Press **[MENU]** key to enter menu>>Scan>>3 Scan Sub-Code.
- (3) Press **▲** or **▼** to select CTCSS;
- (4) Press the **[MENU]** key to enter the CTCSS code, and scan the CTCSS code in sequence. When a valid CTCSS code is scanned, it stays on the CTCSS code and the speaker is turned on.
- (5) Press the **[MENU]** key to store the scanned CTCSS code and exit the scan to return to the previous menu. In standby mode, the **C** icon will be displayed on the top line of the screen. Press and hold the **PTT** key to make a callback.

To search for a DCS code, do the following:

- (1) In VFO mode, enter a known frequency, such as 144.525.
- (1) Press **[MENU]** key to enter menu>>Scan>>3 Scan Sub-Code.
- (2) Press **▲** or **▼** to select DCS;
- (3) Press the **[MENU]** key to enter the DCS code scanning, and scan the DCS code in turn. When a valid DCS code is scanned, it stays on the DCS code and the speaker is turned on.
- (4) Press the **[MENU]** key to store the scanned DCS code and exit the scan to return to the previous menu. In standby mode, the **D** icon will be displayed on the top line of the screen. Press and hold the **PTT** key to make a callback.

6.1.4 Sub-Code scan storage

In MR mode or VFO mode, the scanned CTCSS/DCS code can be stored as only TX CTCSS/DCS code, RX CTCSS/DCS code only, TX and RX CTCSS/DCS code to replace the CTCSS/DCS code setting of the current channel or frequency mode of the radio.

To save the settings of CTCSS/DCS code scan, the operation is as follows:

- (1) Press **[MENU]** key to enter menu >> SCAN >> 4 Scan Memory.
- (2) Press the **[MENU]** key to enter the Scan Memory setting, and press the **▲** or **▼** key to select:
 - **ALL:** The scanned CTCSS/DCS code will be stored as the received and transmitted CTCSS/DCS code of the current channel or frequency mode (at the same time as the received and transmitted Sub-Code).
 - **DECODER:** The scanned CTCSS/DCS code will be stored as the receiver CTCSS/DCS code of the current channel or frequency mode (only replace its receiver RX CTC/DCS).
 - **ENCODER:** The scanned CTCSS/DCS code will be stored as the transmitted CTCSS/DCS code of the current channel or frequency mode (only replace its transmitted TX CTC/DCS).
- (3) Press the **[MENU]** key to save the settings and return to the previous menu;

Note: Only when a valid CTCSS/DCS code is scanned and stopped, press the [MENU] key to store the CTCSS/DCS code and replace the corresponding CTCSS/DCS code of the current channel or frequency.

6.2 DTMF

DTMF is an in-band signaling method using dual sinusoidal signals for any given code. Originally developed for telephony systems, it has proved a very versatile tool in many other areas.

In two-way radio systems, DTMF is most commonly used for automation systems and remote control. A common example would be in amateur radio repeaters where some repeaters are activated by sending out a DTMF sequence (usually a simple single-digit sequence).

DTMF frequencies and corresponding codes

	1209Hz	1336Hz	1477Hz	1633Hz
697Hz	1	2	3	A
770Hz	4	5	6	B
852Hz	7	8	9	C
941Hz	*	0	#	D

The radios has a full implementation of DTMF, including the A, B, C and D codes. The numerical keys, as well as the  and  keys correspond to the matching DTMF codes. The A, B, C and D codes are located in the [MENU], ▲, ▼ and [EXIT] keys respectively.

To send DTMF codes, press the key(s) corresponding to the message you want to send while holding down the PTT key.

In general, there are two forms of selective calling in two-way radio systems: Group call, and Private call.

Group call, as the name suggest, is a one-to-many form of communication. Every radio in your working group is configured the same way and any radio will make contact with every other radio in the group.

Private call, some times also known as paging, is a one-to-one form of communication.

Every radio is programmed with a unique ID code. And only by sending out a matching code can you get that radio to open up to your transmissions.

6.3 Dual Watch

In certain situations, the ability to monitor two channels at once can be a valuable asset. This can be achieved in one of two ways. You can either have one receiver in your radio and flip-flop between two frequencies at a fixed interval (known as Dual Watch), or you can equip a radio with

two receivers (known as Dual Receive or Dual VFO). The former method is cheaper to implement and far more common than the latter. The radio features Dual Watch functionality (single receiver) with the ability to lock the transmit frequency to one of the two channels it monitors.

Enabling or disabling Dual Watch mode

- (1) Press the **[MENU]** key to enter the main menu.
- (2) Enter 3 on the numeric keypad to get to Radio Settings.
- (3) Press the **[MENU]** key to confirm, enter 15 on the numeric keypad to get to 15 Dual Watch.
- (4) Press the **[MENU]** key to select.
- (5) Use the **▲** or **▼** keys to enable or disable.
- (6) Press the **[MENU]** key to confirm.
- (7) Press **[EXIT]** to return to the previous menu.

The dual watch function is turned on, and the icon 'D' is displayed on the top line of the screen.

• Repeat the above operation, select "OFF", the dual watch function is disabled, and the icon 'D' on the top line of the screen disappears.

Note: When the dual watch function is turned on, the icon 'D' is displayed on the screen, and the "Singal Mode" submenu is automatically shielded in the radio setting menu.

After the dual watch is turned off, the radio setting menu will automatically add "Singal Mode". After turning on the single display mode, the radio will display the channel name, frequency and channel sequence on the same screen.

7. MAIN MENU FUNCTIONS

The menu function allows you to perform operations such as selecting Banks, Setting SCAN, Radio Settings, Program Channels, and viewing Radio Information.

7.1 Basic use

Use menus with arrow keys

- (1) Press the **[MENU]** key to enter the main menu.
- (2) Use the **▲** or **▼** keys to navigate between menu items.
- (3) After finding the desired next menu item, press the **[MENU]** key again to select the menu item.
- (4) Use the **▲** or **▼** keys to navigate between the next menu items.

- (5) After finding the desired next menu item, press the **[MENU]** key again to select the menu item.
- (6) Use the **▲** or **▼** keys to select the desired parameter.
- (7) When you have selected the parameter to be set for a given menu item;
- (8) To confirm your selection, press **[MENU]** and it will save your setting and bring you back to the main menu.
- (9) To cancel your changes, press **[EXIT]** and it will reset that menu item and bring you out of the menu entirely.
- (10) To exit out of the menu at any time, press the **PTT** key.

7.2 Using short-cuts

As you may have noticed if you looked at Appendix C, Menu definitions, every menu item has a numerical value associated with it. These numbers can be used for direct access of any given menu item.

Using the menu with short-cuts

- (1) Press the **[MENU]** key to enter the menu.
- (2) Use the numerical keypad to enter the number of the menu item.
- (3) To enter the menu item, press **[MENU]** the key.
- (4) For entering the desired parameter you have two options:
 - a) Use the arrow keys as we did in the previous section; or
 - b) Use the numerical keypad to enter the numerical short-cut code.
- (5) And just as in the previous section;
 - a) To confirm your selection, press and it will save your setting and bring you back to the main menu.
 - b) To cancel your changes, press and it will reset that menu item and bring you out of the menu entirely.
- (6) To exit out of the menu at any time, press the key.
- (7) All further examples and procedures in this manual will use the numerical menu short-cuts.
[MENU] + 1: Quick access to Banks selection, up to 10 banks are stored, each bank stores 100 channels;
[MENU] + 2: Quickly enter the Scan Settings. You will be able to set the VFO frequency range, Scan mode, Scan Sub-Code, Scan Memory;
[MENU] + 3: Quickly enter the Radio settings (general settings of the radio);
[MENU] + 4: Quickly enter GNSS position system settings (GNSS switch, time zone setting, position mode setting)
[MENU] + 5: Quick access to Program Channel (Alias, TX and RX Frequency, TX Power, Bandwidth, Display mode, Channel Memory and Channel delete);

[MENU] + 6: Quickly query the radio information (ANI ID, Firmware version, Hardware version);

7.3 Radio Settings

(1) Step frequency (Step) – MENU + 1

This function lets you select the desired frequency step.

The selectable steps are the following: 2.5K/5.0K/6.25K/10K/12.5K/20K/25K/50K/100K.

Note: in channel mode, this function cannot be modified.

(2) Squelch level (Squelch) – MENU + 2

Thanks to this function you can adjust the squelch in 5 different levels:

- **OFF:** opened squelch. With this setting, the radios will detect all signals, also the weakest ones, but will also receive the background noise or undesired signals.
- **Levels 1- 5:** level 1 (lowest squelch level), level 5 (highest squelch level).

If the squelch is set to the highest level, the radio will receive the strongest signals only.

(3) Power save (Power Save) – MENU + 3

When the radio is in standby, the power saving function reduces battery consumption. Turning on will be more power efficient, but you may miss the first few syllables before RX turns on.

(4) VOX Function (Vox Switch) – MENU + 4

The VOX feature allows hands-free calls without using the PTT button. As soon as you speak into the microphone, communication will start automatically.

ON: Activate the VOX function;

Off: Turns off the VOX function.

(5) VOX Level (Vox Level) – MENU + 5

From this menu, you can select the VOX sensitivity level.

The selection range is from 1 to 9.

Note: Level 1 is the least sensitive, while level 9 is the most sensitive.

The VOX feature is not enabled when the radio is in scan or FM radio mode.

(6) VOX Delay – MENU + 6

When the VOX is enabled, set up the VOX delay to help to extend the transmission time to avoid stopping a transmission too early.

Range 0.5 – 2.0 seconds. Step 0.1 second. Default 1 seconds

(7) Time-Out-Timer (TOT) – MENU + 7

The Time-Out-Timer (TOT) sets the duration that the radio can continuously transmit before transmission is automatically terminated. This feature is used to prevent any single user from occupying a channel for too long.

Range: Off, 15 –180 seconds, Step 15 seconds. Default 60 seconds.

Note: If this option is set to OFF, press and hold the PTT key to keep transmission.

(8) Transmission Overtime Alarm (TOA) – MENU + 8

Allows users to define a duration an alert will be given before terminating the transmission. With the TOA function enabled, if the TOT function (Time Out Timer) has been turned on and your transmission reaches the pre-set end-transmission time, the transceiver will warn you and the TX red indicator starts blinking.

Range 0 – 10 seconds, Step 1 second. Default Off.

(9) Voice prompts function (Voice) – MENU + 9

With this function, you activate a voice that informs you about any operation/ selection you are doing.

(10) Language selection (Language) – MENU + 10

With this function, you can select the language of the LCD display and operation prompt.

(11) Roger beep (ROGER) – MENU + 11

When the PTT is released, the radio will beep to confirm to other users that you have finished your transmission and that they can start talking.

(12) Keypad beep (Beep) – MENU + 12

When this function is enabled, every time a key is pressed, you will hear a beep tone.

(13) Backlight (Backlight) – MENU +13

With this function you can adjust the auto off time of the display backlight.

Always: The backlight is always on.

5S-20S adjustable.

Note: This function is valid when turn off the power save.

(14) Power on image (Power on Display) – MENU + 14

With this function you can set the display mode when the radio is turned on. Available options:

- **PICTURE:** Display the preset startup picture.
- **MESSAGE:** Welcome message.
- **VOLTAGE:** The power voltage is momentarily displayed.

(15) Dual Watch Operation (Dual Watch) – MENU + 15

When this function is activated, you can receive the frequency of channel A and channel B at the same time.

If a signal is detected, the ▲ OR ▼ pointer will blink on the corresponding channel or frequency.

Note: In Dual Watch operation mode, the 'D' icon will be displayed on the top line of the screen, you can freely change the parameters of AB channel or frequency.

(16) Auto Keypad Lock (AutoLock) – MENU + 16

When this feature is activated, the keypad will be automatically locked after 10s; this prevents accidental pressure of any keys.

The keypad lock can be manually activated/deactivated through the keypad: keep pressed  .

(17) Alarm Mode (Alarm Mode) – MENU + 17

This function can set the tone alarm/code alarm/site alarm of the radio.

Keep pressed the [SK1] key for 3 seconds to start the alarm tone.

The following three options can be selected:

- **Site:** the speaker emits an alarm tone but the radio doesn't transmit;
- **Tone:** the speaker emits an alarm tone and the radio transmits it;
- **Code:** the speaker emits an alarm tone and the radio transmits it followed by ANI-ID code.

(18) Local Alarm Tone (Alarm Tone) – MENU + 18

Whether to emit an alarm whistle locally when the emergency alarm function is triggered.

(19) ANI-ID (ANI-ID) – MENU + 19

Displays the ANI code set by the software. Manual changes are allowed if necessary, and you can edit up to 3 digits.

ANI-ID is sent when alarm is active and menu 16 = SEND CODE.

The ANI-ID will be sent during DTMF signaling calls.

(20) ANI-ID (ANI-ID) – MENU + 20

Displays the ANI code set by the software. Manual changes are allowed if necessary, and you can edit up to 3 digits.

ANI-ID is sent when alarm is active and menu 16 = SEND CODE.

The ANI-ID will be sent during DTMF signaling calls.

(21) PTT-ID (PTT-ID) – MENU + 21

When to Send PTT-ID Codes are sent during either the beginning or ending of a transmission.

With this function you can decide when sending the ANI-ID code in tx mode.

You can choose amongst 4 possibilities.

- **Off:** Press PTT to turn it off. That is, the current channel or VFO mode disables DTMF signaling.
- **BOT:** The code is sent when you press the PTT.
- **EOT:** The code is sent when the PTT is released.
- **BOTH:** The code is sent when you press and release the PTT.

(22) Signal code sending delay (PTT-DLY) – MENU + 22

PTT-ID signal code sending delay time setting, range 100-3000ms.

(23) 1750Hz Repeater Tone (ALERT) – MENU + 23

With this function you can select **1000Hz, 1450Hz, 1750Hz, 2100Hz** repeater tone. To send out a repeater tone; You hold down the **[PTT] +SK2** key.

If you have the keypad lock enabled on your radio, you can still send a 1750Hz tone the regular way without having to unlock your radio.

(24) Squelch tail elimination (TAIL) – MENU + 24

This function is used eliminate squelch tail noise between handhelds that are communicating directly (no repeater). Reception of a 55 Hz or 134.4 Hz tone burst mutes the audio long enough to prevent hearing any squelch tail noise.

(25) SK2 function definition(Press SK2) – MENU + 25

The SK2 key allows users to customize functions:

- **FM RADIO:** FM radio on/off.
- **SCAN:** Scan on/off.
- **SEARCH:** one touch Search on/off.
- **VOX:** Vox on/off.

(26) Reset (Reset) – MENU + 26

With this function you can reset the transceiver to the factory-programmed settings and parameters. After that, you can set the desired functions. There are two types of reset:

- **VFO:** Menu Reset
- **ALL:** Menu and channel Reset

7.4 GPS function

The position system is a typical DTMF calling application. For the method of setting call codes, call names, and local IDs, please refer to "Signaling Calls".

It is necessary to ensure that the radios that receive and send GPS location information operate on the same frequency or channel, and are set to the main frequency band.

In GPS mode, you can only view location information and cannot make normal calls. Voice intercom must exit GPS mode in order to proceed. You can set the system time, GPS on/off, time zone, and GPS mode through the position system menu. Press **[GPS]** key to view, share, and request location information.

(1) GPS on/off settings

Set path: **[MENU] + 4 + [MENU]**: Press the ▲/▼ key to select whether to turn GPS ON/OFF.

*After turning on the position system, the screen displays the  icon

(2) Time zone settings:

Set path: **[MENU] + 4 + [MENU] + 2**: Press the ▲/▼ key to select the correct time zone.

(3) GPS mode settings

This machine is equipped with a multi-mode GPS module, mainly including GPS from the United States and Beidou from China.

Set path: [MENU] + 4 + [MENU] + 3: Press the ▲/▼ key to select GPS mode (Beidou, GPS, or GPS+Beidou).

Use of GPS

In standby mode, press and hold [P2] key to enter GPS mode and display "My Place" as an information list. Press [MENU] key to switch My Place in the information list mode or electronic compass mode. Press the ▲/▼ key to switch the information of the selected member. The current Contact sequence will be displayed at the top of the interface.

Press the [EXIT] key to exit GNSS mode



Find My Place

1. Press and hold [P2] key to enter GPS mode.

2. Use the ▲/▼ key to switch to "My Place".

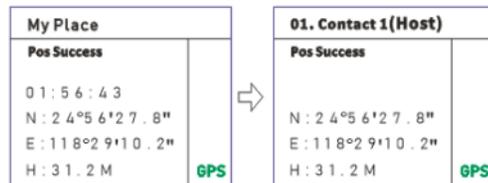
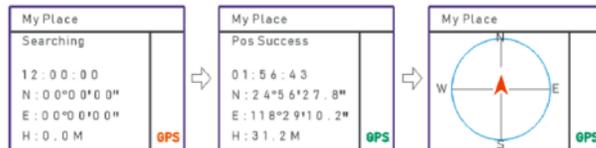
3. At this point, the GPS is in receive mode and displays "Searching" The

GPS character on the right is red, indicating that the positioning has not been successful.

Note: If "Searching" is displayed for a long time, it is recommended that you search for satellites in an open location.

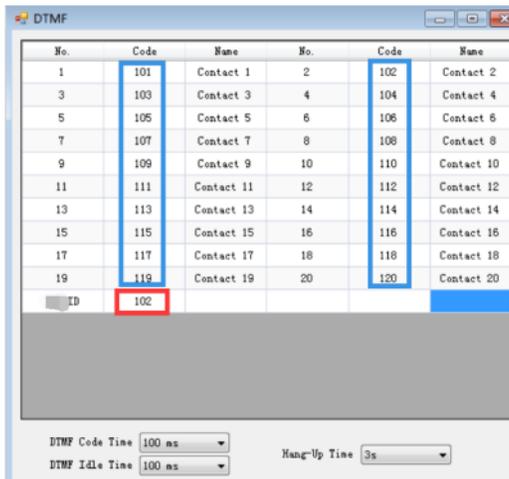
4. Display "Pos Successful" to indicate that the radios position has been successfully obtained, and display the current time, longitude, latitude, and altitude, Where N is north latitude, E is east longitude, and H is height. The GPS character on the right is green.

5. Press the [MENU] key to switch between the GPS position information interface and the GPS distance direction interface.



Share My Place information (send to others)

1. Set the ID of each member in CPS-DTMF in advance (up to 20)



2. After the GPS position of the radio is successful, press the **[MENU]** key to switch to the location information interface.
3. Press the / key to select the pre programmed Contact sequence (01-20), and display the member sequence and name on the first line. Select the member sequence labeled as "Host".
4. Press the [PTT] key to share the current location information of the device with group members.

Requesting someone else's place

1. After the GPS position of the radios is successful, press the **[MENU]** key to switch to the My Place information interface.
2. Press the ▲/▼ key to select the pre programmed Contact sequence (01-20), and display the sequence and call name on the first line. Select

member sequences that are not marked as "Host".

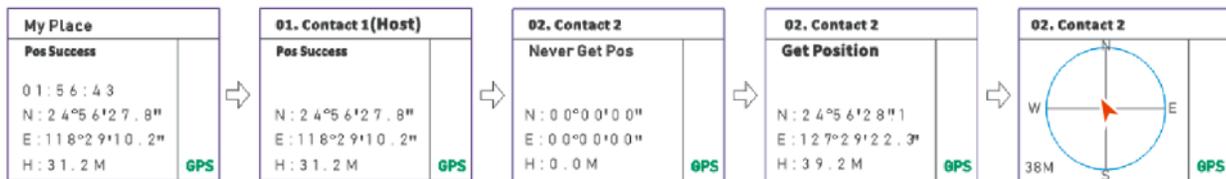
3. Press the [PTT] key to initiate a position request command to the target member.

4. Press the [MENU] key to switch to the electronic compass interface and display the reference distance between two radios.

-Disable transmission during waiting for reception.

-If the other party receives your request, they will reply with your location information.

-The red arrow represents your position, the arrow direction is the direction of your teammate, and the lower left corner is the reference distance between the two radios.



7.5 Program Channel

Channel configuration is only applicable to the current channel and will not change the configuration parameters of other channels. It allows to modify the channel name, Receive or Transmit frequency, Tx_Rx CTCSS/DCS, add the current channel to the scan list, Working Mode, and channel memory and channel delete.

(1) Channel name (CHNAME) – MENU +1

To set the channel name you have at your disposal 26 letters (A-Z) and 10 numbers (0-9). You can use up to 8 characters for the channel name. Edit the desired channel name with the keypad and then confirm by pushing [MENU] key. To exit the function press [EXIT] key.

(2) RX Frequency – MENU +2

Input the RX frequency by keypad, click the [MENU] key to save, press EIXT key to return.

(3) TX Frequency – MENU +3

Input the TX frequency by keypad, click the [MENU] key to save, press [EXIT] key to return.

(4) Transmit power (Tx Power) – MENU +4

Set up the TX power for current channel.

WARNING: Channels 8-14 are low power transmissions and power switching is prohibited.

(5) Wide/Narrow Bandwidth – MENU +5

Select wideband or narrowband for the current channel.

Wide: 25 KHz; Narrow: 12.5 KHz

Warning: Channels 8-14 are fixed at narrowband 12.5 KHz, channel bandwidth change is prohibited.

(6) Receiving CTCSS (Rx CTCSS) – MENU +6

As DCS codes, the CTCSS codes can be added to the channels for creating new private channels.

Note: there are 50 groups of CTCSS tones.

(7) Receiving DCS (Rx DCS) – MENU + 7

DCS codes are similar to access codes and can be added to channels, so as to create a sort of personal channel. They enable the radio to communicate with the users that are tuned on the same channel and have set the same DCS code. You can choose amongst:

- *Off: Off*
- *D023N-D754N (Normal DCS), D023I-D754I (Inverse DCS)*

Note: In radio there are 208 groups of normal and inverse DCS codes.

(8) Transmitting CTCSS (Tx CTCSS) – MENU +8

In this Menu you can set a CTCSS tone in tx mode.

You can choose: Off or CTCSS (67.0 to 254.1 Hz)

Note: there are 50 groups of CTCSS tones.

(9) Transmitting DCS (Tx DCS) – MENU+9

In this Menu you activate DCS codes in tx mode. You can choose between normal R-DCS (D023N-D754N) and inverted R-DCS (D023I-D754I)

Note: the groups of DCS codes are 208.

(10) Call Encryption (Encryption) – MENU +10

If the channel is configured with CTCSS/DCS and encryption is turned on, the communication will remain private.

Allows setting CTCSS/DCS code in RX/TX CTCSS/DCS menu.

The encryption icon  will be displayed on the screen when the encryption function is turned on.

(11) Signal code (Signaling) – MENU +11

Selects 1 of 20 DTMF codes. The DTMF codes are programmed with software and are up to 3 digits each.

(12) Working Mode (CH-MDF) – MENU +12

This function is used to set the display mode of the current channel. The radio offers three working modes:

- NAME: Channel name
- FREQ: Frequency Mode
- CH: Channel Mode

NOTE: The channel name allows editing via the CPS programming software and the channel Name in the Program Channel.

(13) Monitor (SP-MUTE) – MENU +13

With this function, the monitor opens if one of these options is detected:

- QT: When radios is set in this mode, the monitor feature is activated only when the radio receives the correct CTCSS tones.
- QT*DTMF: The monitor is activated when the radio receives the correct CTCSS tone or the correct DTMF code.

(14) Scan Add (Scan Add) – MENU+14

In channel mode, to scan the current channel, the channel must be added to the scan group.

- **On:** Turn on the scan function of the current channel.
- **Off:** Do not scan the current channel.

(15) Busy Channel Lock (Busy Lock) – MENU+15

When this function is on, it may prevent other radios' interference. If the selected channel is being used by other radios, when you press key **PTT**, your radio cannot transmit.

Release the PTT and transmit as soon as the frequency is no longer busy.

(16) Channel Memory - (CH-Memory) – MENU +16

This menu is used to either create new or modify existing channels (1 through 100) so that they can be accessed from MR/Channel Mode.

The channels already stored are displayed as CH-XXX ("CH" and -channel number), and other channels only display channel numbers.

(17) Channel Delete (CH-Delete) – MENU +17

This menu is used to delete the programmed information from the specified channel (1 through 100) so that it can either be programmed again or be left empty.

*** Differences in menus in frequency mode**

(14) Frequency offset (Offset) – MENU + 14

In this menu you can set the deviation between tx and rx. The frequency offset of this radio is 00.000-99.998MHz.

(15) Frequency offset direction (Direction) – MENU + 15

Using this function, you can set the direction of the frequency offset in rx and tx.

You have the following options:

- OFF: No offset.
- Plus: Positive offset(+);
- Minus: Negative offset(-);

7.6 Radio Info

Show the Radio ID, firmware version, Hardware version.

Appendix A. – Trouble shooting guide

Phenomena	Analysis	Solution
You cannot turn on the radio.	The battery may be installed improperly.	Remove and reattach the battery.
	The battery power may run out.	Recharge or replace the battery.
	The battery may suffer from poor contact caused by dirty or damaged battery contacts.	Clean the battery contacts or replace the battery.
During receiving, the voice is weak or intermittent.	The battery voltage maybe low.	Recharge or replace the battery.
	The volume level may be low.	Increase the volume.
	The antenna maybe loose or maybe installed incorrectly.	Turnoff the radio, and then remove and reattach the antenna.
	The speaker maybe blocked.	Clean the surface of the speaker.
You cannot communicate with other group members.	The frequency or signaling type maybe inconsistent with that of other members.	Verify that your TX/RX frequency and signaling type are correct.
	You may be too far away from other members.	Move towards other members.
You hear unknown voices or noise.	You may be interrupted by radios using the same frequency.	Change the frequency, or adjust the squelch level.
	The radio in analog mode maybe set with no signaling.	Request your dealer to set signaling for the current channel to avoid interference
You are unable to hear anyone because of too much noise and hiss.	You may be too far away from other members.	Move towards other members.
	You may be in an unfavorable position. For example, your communication may be blocked by high buildings or blocked in an underground area.	Move to an open and flat area, restart the radio, and try again.
	It may be the result of external disturbance (such as electromagnetic interference).	Stay away from equipment that may cause interference.
The radio keeps transmitting.	VOX may be turned on or the headset is not installed in place	Turn off the VOX function. Check that the headphones are in place.

NOTE: If the above solutions cannot fix your problems, or you may have some other queries, please contact your dealer for more technical support.

Appendix B. - Technical Specifications

GENERAL	
Channel Capacity	1000
Channel Spacing	25.0 KHz/12.5 KHz
Input Voltage	7.4 VDC
Battery Life: 5% TX, 5% RX, 90% Standby	Li-on: 15 hours
Operating temperature	-10°C to 60°C
Antenna Impedance	50Ω
Radio Dimensions	143mm X 64mm X 41mm (not including antenna)
Radio Weight	298 g (with Li-ON battery)
TRANSMITTER	
Frequency Range (TX)	GMRS
RF Output Power	GMRS
Modulation	16K0F3E/11K0F3E
Spurious Emission	-16 dBm<1GHz, -16 dBm>1GHz
Frequency Stability	±2.5 ppm
Audio Distortion	≤5%
FM Hum & Noise	40 dB
RECEIVER	
Frequency Range	108-136, 136-174, 220-260, 350-390, 400 to 520 MHz (Scan Receiver)
Sensitivity: 12 dB SINAD	-120 dBm
Adjacent Channel Selectivity	-60 dBm
Intermodulation and Rejection	-70 dBm
Rated Audio Power Output	0.75 Watts @ 16 Ω
Rated Audio Distortion	≤5%

NOTE: All specifications may be modified without prior notice or liability. Thank you.

Appendix C. - Shortcut Menu operations

Menu		Name		Setting	Description
1	BANK	1	BANK 1	Channel1-Channel100	A Bank is a group of channels grouped together. The radio has 10 Banks. A Bank can have the maximum of 100 channels.
2	SCAN	1	Freq Ranger	NNNNnnn	Input VFO range lower and upper frequency
		2	Scan Mode	Time	Time Operation - scanning will resume after a fixed time has passed
				Carrier	Carrier Operation -scanning will resume after the signal disappears
				Search	Search Operation -scanning will not resume
		3	Scan SubCode	CTCSS	Search within CTCSS Tone (Rang 67-254.1, A total of 50 groups)
				DCS	Search within DCS Code (Rang 023N-754I, A total of 210 groups)
		4	Scan Memory	ALL	RX_TX are saved (default is all, encoding and decoding are the same)
				DECODER	Save only in Transmitter CTCSS/DCS
				ENCODER	Save only in Receiver CTCSS/DCS
3	Radio Setting	1	Step	2.5-100K	Selects the amount of frequency change in VFO/Frequency mode when scanning or pressing the ▲ Or ▼ keys.
		2	Squelch	OFF,LEVEL1-LEVEL5	Squelch silences the receiver when there is no signal. Setting the squelch to 0 will open up the squelch entirely.
		3	Power Save	OFF	Turn off radio sleep. The battery consumption is large, and the standby time may be shortened
				ON	Turn on radio sleep. Turning on is more power efficient, but you might miss the first few syllables before the RX turns on.
		4	VOX Switch	OFF	Turn off the radio VOX.
				ON	Turn on the radio VOX.
5	VOX Level	LEVEL1-LEVEL9	When enabled it is not necessary to push the [PTT] button on the		

			transceiver. Adjust the gain level to an appropriate sensitivity to allow smooth transmission.
6	VOX Delay	0.5.....2.0s	When the VOX is enabled, set up the VOX delay to help to extend the transmission time to avoid stopping a transmission too early. 0.5s-2s, Step 0.1 second. a total of 16 times offered.
7	TOT	OFF	Allow continuous launch, launch time is not limited
		15;30;45...180	Maximum allowed time for transmission while holding down the PTT key.
8	TOA	OFF	Disable TOA function
		1.....10	Activate TOA function. Range 0 – 10 seconds, Step 1 second.
9	Voice	OFF	Disable voice prompts
		ON	Activate voice prompts
10	Language	Chinese	Display menus and voice prompts in Chinese language
		English	Display menus and voice prompts in English language
11	ROGER	OFF	Disable ROGER function. Release PTT key without ROGER audio.
		ON	Activate the ROGER function. Sends an end-of-transmission tone to indicate to other stations that the transmission has ended.
12	Beep	OFF	Disable key confirmation tone.
		ON	Activation key to confirm tone. Allows audible confirmation of a key press
13	BackLight	ALWAYS ON	The backlight is always on.
		5.....20	Set the backlight off time in no-operation delay time. 5-20, step value is 5.
14	Power on Display	PICTURE	Show preset picture when radio is on
		MESSAGE	Display preset information when radio is on
		VOLTAGE	Display battery voltage when radio is on
15	Dual Watch	OFF	Disable dual table, dual receive.
		ON	Monitor [A] and [B] at the same time. The display with the most recent activity ([A] or [B]) becomes the selected display.
16	AutoLock	OFF	Disable automatic keypad lock. Allow manual keypad lock (press and hold the  key to lock/unlock the keyboard)

		ON	When ON, the keypad will be locked if not used in 8 seconds. Pressing the  key for 2 seconds will unlock the keypad.
17	Alarm Mode	On Site	Sounds alarm through your radio speaker only
		Send Sound	Transmits a cycling tone over-the-air
		Send Code	Transmits '119' (911 in reverse) followed by the ANI code over-the-air
18	Alarm Tone	OFF	The radio speaker blocks the alarm sound.
		ON	The radio speaker sounds an alarm
19	ANI-Edit	100	View the ANI ID, and if necessary, will allow to change the ANI ID
20	DTMF-ST	OFF	No DTMF Side Tones are heard
		DT-ST	Side Tones are heard only from manually keyed DTMF codes
		ANI-ST	Side Tones are heard only from automatically keyed DTMF codes
		DT+ANI	All DTMF Side Tones are heard
21	PTT-ID	OFF	No ID is sent.
		BOT	The selected S-CODE is sent at the beginning
		EOT	The selected S-CODE is sent at the ending
		BOTH	The selected S-CODE is sent at the beginning and ending
22	PTT-DLY	100-3000ms	Signal code sending delay. PTT-ID Delay (milliseconds)
23	ALERT	1000Hz	The following configurations will transmit accordingly: PTT + SK3 = Transmits 1000Hz Tone Burst
		1450Hz	PTT + SK3 = Transmits 1450Hz Tone Burst
		1750Hz	PTT + SK3 = Transmits 1750Hz Tone Burst
		2100Hz	PTT + SK3 = Transmits 2100Hz Tone Burst
24	TAIL	OFF	Disable Squelch Tail Elimination.
		ON	Enable Squelch tail elimination. to prevent any squelch tails from being heard.
25	Press SK2	FM Radio	FM radio on/off
		Search	Search on/off
		Scan	Scan on/off

			VOX	VOX on/off	
		26	Reset	VFO Reset the radio's VFO menu to factory defaults (no reset for bank, scan settings) ALL Resets the radio to factory defaults, with some exceptions.	
4	GNSS	1	GPS On/Off	OFF Turn off the position system, long press the MENU key is ineffective	
				ON Turn on the position system, press and hold the MENU key to enter GPS mode	
		2	Time Zone	-12 to 0 to + 12 Set the time zone of the region	
		3	GPS Mode	GPS	
BDS					
GPS+BDS					
5	Program Channel	1	CH.NAME	Channel 1 View channel name, allows to rename the current channel. Press the [#] key to switch the input method, allowing the input of letters, numbers and symbols.	
		2	RX Frequency	View the current channel Receiver frequency, allow to change the current frequency. Input the RX frequency by keypad, click the Menu key to save. * Channels 1-30 are GMRS fixed frequencies, frequency change is prohibited.	
		3	TX Frequency	View the current channel Transmitter frequency, allow to change the current frequency. Input the TX frequency by keypad, click the Menu key to save *Channels 1-30 are GMRS fixed frequencies, frequency change is prohibited.	
		4	Trans Power	High	Selects between HIGH transmitter power when in VFO/Frequency mode.
				Low	Selects between LOW transmitter power when in VFO/Frequency mode. WARNING: Channels 8-14 are low power transmissions and power switching is prohibited
		5	Bandwidth	Wide	Wideband (25 kHz bandwidth)
Narrow	narrowband (12.5 kHz bandwidth)				

			Warning: Channels 8-14 are fixed at narrowband 12.5 KHz, channel bandwidth change is prohibited.
6	RX CTCSS	OFF;67-254.1	Mutes the speaker of the transceiver in the absence of a specific and continuous sub-audible signal. If the station you are listening to does not transmit this specific and continuous signal, you will not hear anything.
7	RX DCS	OFF;023N-754I	Mutes the speaker of the transceiver in the absence of a specific low-level digital signal. If the station you are listening to does not transmit this specific signal, you will not hear anything.
8	TX CTCSS	OFF;67-254	Transmits a specific and continuous sub audible signal to unlock the squelch of a distant receiver (usually a repeater).
9	TX DCS	OFF;023N-754I	Transmits a specific low-level digital signal to unlock the squelch of a distant receiver (usually a repeater).
10	Encryption	OFF	Disable encrypted mode, your conversations are not private.
		ON	Activating encryption mode ensures the privacy of your conversations. To use the Encryption function, the other part of the radio must also have Encryption activated and must be tuned on the same DCS code.
11	Signaling	1-20	Selects 1 of 15 DTMF codes. The DTMF codes are programmed with software and are up to 5 digits each.
12	CH-MDF	NAME	MR/Channel mode is displayed in NAME format. Note: NAME allows CPS program or edit in the channel name (Munu 1) .
		FREQ	MR/Channel mode is displayed in frequency format.
		CH	MR/Channel mode is displayed in CH format.
13	SP-Mute	QT	when radios is set in this mode, the monitor feature is activated only when the radio receives the correct CTCSS/DCS.
		QT*DTMF	• QT*DTMF: the monitor is activated when the radio receives the correct CTCSS/DCS or the correct DTMF code.
14	SCAN ADD	OFF	Forbid the current channel to join the scan group.
		ON	Add the current channel to the scan group.
15	Busy Lockout	OFF	The [PTT] button on the channel is always allowed.

			ON	Disables the [PTT] button on a channel that is already in use. The transceiver will sound a beep tone and will not transmit if the [PTT] button is pressed when a channel is already in use.	
		16	OffSet	Specifies the difference between the TX and RX frequencies	
		17	Direction	None	TX = RX (simplex). Disable access to repeaters in VFO/Frequency mode
				Plus	Plus frequency shift direction. TX will be shifted higher in frequency than RX
				Minus	Minus frequency shift direction. TX will be shifted lower in frequency than RX
		16	CH_Memory	CH001-CH100	This menu is used to either create new or modify existing channels (1 through 100) so that they can be accessed from MR/Channel Mode.
		17	CH_Delete	CH001-CH100	This menu is used to delete the programmed information from the specified channel (1 through 100) so that it can either be programmed again or be left empty.
6	Radio Info	Radio ID\Firmware\Hardware			Displays radio ID, firmware version, hardware version. to check the radio information.

Appendix D. - DCS Table

DCS CODE LIST

Number	Code								
1	D023N	2	D025N	3	D026N	4	D031N	5	D032N
6	D036N	7	D043N	8	D047N	9	D051N	10	D053N
11	D054N	12	D065N	13	D071N	14	D072N	15	D073N
16	D074N	17	D114N	18	D115N	19	D116N	20	D122N
21	D125N	22	D131N	23	D132N	24	D134N	25	D143N
26	D145N	27	D152N	28	D155N	29	D156N	30	D162N
31	D165N	32	D172N	33	D174N	34	D205N	35	D212N
36	D223N	37	D225N	38	D226N	39	D243N	40	D244N
41	D245N	42	D246N	43	D251N	44	D252N	45	D255N

46	D261N	47	D263N	48	D265N	49	D266N	50	D271N
51	D274N	52	D306N	53	D311N	54	D315N	55	D325N
56	D331N	57	D332N	58	D343N	59	D346N	60	D351N
61	D356N	62	D364N	63	D365N	64	D371N	65	D411N
66	D412N	67	D413N	68	D423N	69	D431N	70	D432N
71	D445N	72	D446N	73	D452N	74	D454N	75	D455N
76	D462N	77	D464N	78	D465N	79	D466N	80	D503N
81	D506N	82	D516N	83	D523N	84	D526N	85	D532N
86	D546N	87	D565N	88	D606N	89	D612N	90	D624N
91	D627N	92	D631N	93	D632N	94	D645N	95	D654N
96	D662N	97	D664N	98	D703N	99	D712N	100	D723N
101	D731N	102	D732N	103	D734N	104	D743N	105	D754N
106	D023I	107	D025I	108	D026I	109	D031I	110	D032I
111	D036I	112	D043I	113	D047I	114	D051I	115	D053I
116	D054I	117	D065I	118	D071I	119	D072I	120	D073I
121	D074I	122	D114I	123	D115I	124	D116I	125	D122I
126	D125I	127	D131I	128	D132I	129	D134I	130	D143I
131	D145I	132	D152I	133	D155I	134	D156I	135	D162I
136	D165I	137	D172I	138	D174I	139	D205I	140	D212I
141	D223I	142	D225I	143	D226I	144	D243I	145	D244I
146	D245I	147	D246I	148	D251I	149	D252I	150	D255I
151	D261I	152	D263I	153	D265I	154	D266I	155	D271I
156	D274I	157	D306I	158	D311I	159	D315I	160	D325I
161	D331I	162	D332I	163	D343I	164	D346I	165	D351I
166	D356I	167	D364I	168	D365I	169	D371I	170	D411I
171	D412I	172	D413I	173	D423I	174	D431I	175	D432I
176	D445I	177	D446I	178	D452I	179	D454I	180	D455I
181	D462I	182	D464I	183	D465I	184	D466I	185	D503I
186	D506I	187	D516I	188	D523I	189	D526I	190	D532I

191	D546I	192	D565I	193	D606I	194	D612I	195	D624I
196	D627I	197	D631I	198	D632I	199	D645I	200	D654I
201	D662I	202	D664I	203	D703I	204	D712I	205	D723I
206	D731I	207	D732I	208	D734I	209	D743I	210	D754I

Appendix E. - CTCSS Table

CTCSS CHART (Hz)

Number	Frequency								
1	67.0	2	69.3	3	71.9	4	74.4	5	77.0
6	79.7	7	82.5	8	85.4	9	88.5	10	91.5
11	94.8	12	97.4	13	100	14	103.5	15	107.2
16	110.9	17	114.8	18	118.8	19	123.0	20	127.3
21	131.8	22	136.5	23	141.3	24	146.2	25	151.4
26	156.7	27	159.8	28	162.2	29	165.5	30	167.9
31	171.3	32	173.8	33	177.3	34	179.9	35	183.5
36	186.2	37	189.9	38	192.8	39	196.6	40	199.5
41	203.5	42	206.5	43	210.7	44	218.1	45	225.7
46	229.1	47	233.6	48	241.8	49	250.3	50	254.1

Disclaimer

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