BelFone

www.belfone.com

BF-SFR600

DMR digital FM transceiver model

Notice to the user

Government law prohibits the operation of unlicensed radio transmitters within the territories under government control.

Illegal operation is punishable by fine or imprisonment or both.

THANK YOU!

We are grateful you choose BelFone series professional radio communications products!

Since 1989, BelFone has been always engaging in research and exploration of radio communications technologies, In order to lead intelligent technologies in the industry. We still make every effort to research and design products according to modern complicated communications environment, and we offer complete and customized communication solutions to clients. Our products will satisfy you because of its excellent performance and outstanding communications strength. No matter what field you are in. You will be satisfied with the transceiver.

This manual is applicable to

DMR digital FM transceiver model: BF-SFR600

Warning!

- In explosive atmospheres(inflammable gas, dust particles, much powder area，etc.), please turn the power off.
- Do not carry spare fuel containers in the trunk of your vehicle if your transceiver is mounted in the trunk area.
- Various electronic equipment in your vehicle may malfunction if they are not properly protected from the radio frequency energy which is present while transmitting. If your vehicle contains such equipment, consult the dealer for aid in determining if they will perform normally while transmitting.

Precautions

It's important that the operator is aware of and understands hazards common to the operation of any transceiver .Please observe the following safety precautions to prevent transceiver damage or personal injury. The following precautions shall be observed during operation, service and repair of this transceiver.

◆ The recommended usage rate is 1 minute for TX and 4 minutes for RX, when the transceiver is used for transmission for many hours Continuously, the radiator and chassis will become hot, don't allow the rear panel of the transceiver to contact surface of low melting point /low Ignition point object.

◆Don't leave the transceiver in direct sunlight for a long time, don't place the transceiver on extremely heat, damp, dusty area, and don't put it on unstable surfaces.

◆ When restriction or warnings are posted regarding the use of radio devices, please obey the regulation turn the transceiver power off.

◆ Use of the transceiver while you are driving may be against traffic laws, please prohibit using it .

◆If you notice any problems on the transceiver, please turn off at first. Then contact with local dealer. Do not modify this transceiver unless instructed by this manual or refer service to a qualified licensed or certified technician only.

◆ If you want to use the machine for secondary development, Please contact with BelFone's technical engineer or dealer for technical assistance.

◆ Please keep the surface of transceiver is clean and dry, clean the transceiver using a cloth moistened with clean water and a mild dishwashing liquid.

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Supplied Accessories

Notes: The accessories listed below are covered by BelFone dealer、authorized BelFone agents or factories .

After carefully unpacking the transceiver, identify the items listed in the table below. If any items are missing or have been damaged during shipmen, please contact with dealer immediately.

Accessory

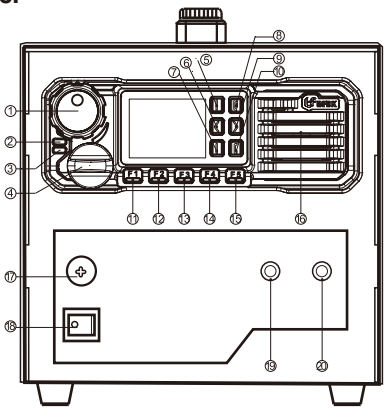
Items	Number	Qty.
Microphone		1
Instruction Manual		1
Warranty Card		1
Certificate		1

Microphone

Notes: Do not use accessories not specified by BelFone.

Getting Acquainted

Front panel



① Power switch/volume adjust key

Turn clockwise to switch the transceiver power on, turn counterclockwise fully to switch the transceiver off.

When the transceiver is turned on, rotate clockwise to increased volume, counter- clockwise to decrease the volume.

② GPS Indicator

1.No GPS chip or GPS chip is malfunction, LED is off;

2.GPS LED indicator

A.Searching the GPS signal, LED flashes green;

B.GPS data is effective, LED glows green.

③ Receiving/Transmitting Indicator

When transmitting glows red, when receiving glows green

④ Microphone Jack

⑤ Return Key

⑥ **Left key**

⑦ **MENU Key**

⑧ **Hang Up Key**

⑨ **Right Key**

⑩ **Call Key**

⑪ **F1 Programmable Key F1**

Press to activate the programmable function. (The detailed consult to basic operation)

⑫ **F2 Programmable Key F2**

Press to activate the programmable function. (The detailed consult to basic operation)

⑬ **F3 Programmable Key F3**

Press to activate the programmable function. (The detailed consult to basic operation)

⑭ **F4 Programmable Key F4**

Press to activate the programmable function. (The detailed consult to basic operation)

⑮ **F5 Programmable Key F5**

Press to activate the programmable function. (The detailed consult to basic operation)

⑯ **Speaker**

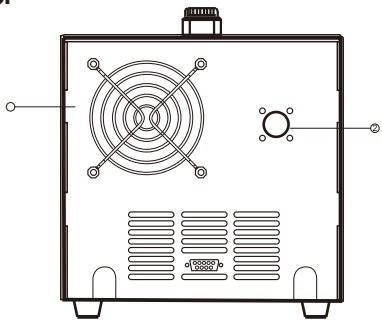
⑰ **Fuse**

⑱ **Power switch: "—" :Power on; "○" :Power off**

⑲ **AC LED Indicator**

⑳ **DC LED Indicator**

Rear Panel

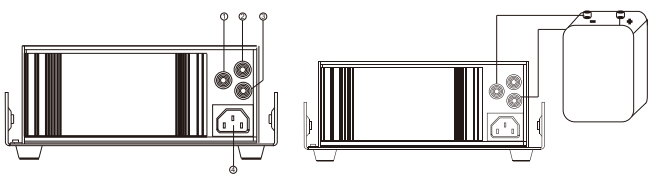


① Cooling Fan

② ANT

Connect an external antenna to this terminal. When making test transmissions,connect a dummy load inplace of the antenna. The antenna system or load should have an impedance of 50 Ω.

Power Supply Interface



① Power Output (-) for radio & battery(-)

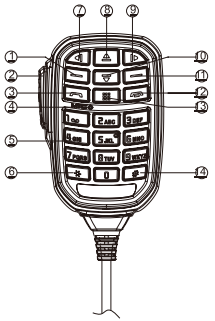
② Power Output (+13.8V) for radio

③ Power Input (+) for battery(+)

When the power supply connects to AC power, it will charge the battery. When it disconnects from AC power, the battery will power the raido.

Microphone

①	**Menu Key** Press to enter menu mode	⑨	**Right Key**
②	**PTT Key** Press and hold down the PTT key then speak into the microphone to transmit.	⑩	**Down Key** To switch channel number down
③	**Call Key** Press to transmit default call	⑪	**Return Key**
④	**Microphone**	⑫	**Hang Up Key**
⑤	**Numeric key**	⑬	**Manual Dial Key**
⑥	*** Key** When text editing to delete	⑭	**#Key** When text editing to switch input method
⑦	**Left Key**		
⑧	**Up Key** To switch channel number up		



Basic Operation

LCD Icons

	Signal Strength		Missed Call
H L	High/Low Power		Message Full
	Emergency		Unread Message
	Digital Mode		Connect to PC
	Analog Mode		Keypad Lockout
	D/A Channel		Disable all tone alert
	A/D Channel		Talk Around/Direct Mode

	Duplex Mode		Zone Menu
	GPS effective		Call Log Menu
	Monitor/Permanent Monitor		Setting Menu
	Roaming		Read Message
	Recording normally		Unread Message
	Recording abnormally		Outbox message send successfully
	Analog Receiving		Outbox message send Failed
	ID Single ID		The First Priority Scanning Channel
	ID Group ID		The Second Priority Scanning Channel
	ID All ID		Confirm
	Root Menu		Return
	Contact Menu		Selected
	Scanning Menu	R	Signal Frequency Repeater Mode
	Text Message Menu		

Turning the power on off

Rotate the power switch/volume adjust keys clockwise to turn the power on, an audio voice prompt the current channel name.

Rotate the power switch/volume adjust keys anti-clockwise to turn the power off.

Note: If you active power on password function via program software, each time you turn on transceiver, must be enter 6 digit passwords correctly, when 3 times wrong in input password continuously, after it transceiver must be kill, only reprogram it then device work normal. Please enable power on password with due care.

Adjusting the volume

After the transceiver is power on, you can rotate the power switch/volume adjust keys to adjust the volume level, rotate the knob clockwise to increase the volume, or rotate the knob anti-clockwise to decrease the volume.

Selecting a Zone

The radio supports up to 50 zones, each with a maximum of 16 channels, 50 zones all support up to 160 channels. You may select a desire zone through enter zone menu then handover zone.
Note: Press programmable key “Zone UP” or “Zone Down” to select zone.

Selecting a Channel

Press Up-Key to increase the channel number or press Down Key to decrease channel number. While voice indication is on, selecting a channel will prompt channel name, if the current channel is invalid will sound a long beep.
Note: Press programmable key “Channel UP” or “Channel Down” to select channel.

Button Setting

For enhanced convenience, you may program the button1~ 5, short and Long press of a key can be assigned with different functions.
Programmable keys are including functions listed below:
1.Unassigned：This key is not assigned with any function.
2.One Touch Call 1~6：Allow user to initiate digital group call, digital private call, call alert or send preset message via the one touch call function. Service on the analog channel, to make a call to the 2-Tone, 5-Tone or DTMF contact.
3.Manual dial：You can manually input the private call number for calling.
4.Emergency Open: To enter emergency mode.
5.Emergency Off: To exit emergency mode.
6.Monitor On/Off: To enable or disable monitor function
7.Permanent Monitor On/Off: To enable or disable permanent monitor function.
8.Backlight On/Off: Quick switch backlight mode.

9.Keypad Lock On/Off: To lock the keypad quickly
10.Scan On/Off: To enable or disable scan function quickly
11.All Alert Tones On/Off: To enable or disable all tones quickly.
12.GPS On/Off: To enable or disable GPS quickly
13.Record On/Off: To enable or disable record quickly
14.Message Menu: Quick access to short message
15.Zone Selection Menu: Quick access to Zone Selection.
16.Address List Menu: Quick access to Contact Menu.
17.Recording Menu: Quick access to Recording Menu
18.Remote Enable: Quick access to Remote Enable Menu.
19.Remote Disable: Quick access to Remote Disable Menu.
20.Remote Check: Quick access to Remote Check Menu.
21.Remote Monitor: Quick access to Remote Monitor Menu.
22.High/Low Power: To switch High/Low Power quickly.
23.Repeater/Talkaround: To enable or disable talk around quickly
24.Zone Up: Quickly select a zone, zone number is increase.
25.Zone Down: Quickly select a zone, zone number is decrease.
26.Channel Up: Quickly select a channel, channel number is increase.
27.Channel Down: Quickly select a channel, channel number is decrease.
28.Cannel Call: On analog channel, press it to cancel analog signaling transmit or exit automatically reset mode.
29.Site Lock/Unlock: Quickly to enable or disable lock site function.
30.Manual Site Roam: Quickly to search the available site manually.

Calls on digital channel

On digital mode, you can transmit a private call, group call or an all call. To transmit press and hold down the PTT key, LED indication glows red, speak into the microphone, hold the palm microphone approximately 3 to 4 centimeters away from your mouth.

Group Call

（1）If you preset a group call contact for current digital channel. Press PTT key to transmit a group call;

（2）Enter Contacts menu to select the group call number you want to call, then press PTT key to transmit a group call;

（3）You can set the One Touch Call key as group call feature, then press programmed key to transmit a group call.

Private Call

If the feature “private call ACK” is enabled, to transmit a private call need to confirm whether it is power on or activate on the current channel.

（1）If you preset a private call contact for current digital channel. Press PTT key to transmit a private call;

（2）Enter Contacts menu to select the private call number you want to call, then press PTT key to transmit a private call;

（3）Enter Contacts menu and go to manual dial menu or press programmed “Manual Dial” key, input a private call number you want to call, then press PTT key to transmit;

（4）Enter Call Log menu to select the private call number you want to call, then press PTT key to transmit a private call;

（5）You can set the One Touch Call key as private call feature, then press programmed key to transmit a private call.

All Call

（1）If you preset an all call contact for current digital channel. Press PTT key to transmit an all call;

（2）Enter Contacts menu to select the all call number you want to call, then press PTT key to transmit an all call;

Receiving and responding to a call

On digital channel, while a private call is received, you may press the PTT key within the preset time period to call back. If you do not respond to a received private call within the preset time period, the radio will display the missed call icon; while a group call is received, you may press the PTT key within the preset time period to call back. while an all call is received, you can’t respond to an all call.

Note: While enable channel free indication feature, if the transmitter release PTT key will with a tone.

Calls on digital channel

On analog channel, if current channel isn't attach to signaling, press PTT key to transmit directly; if the RX SQL mode of receiver is set as carrier or CTCSS, after decode successfully, the icon of RSSI and speaker appears, user can receive audio. If current channel is attach to signaling, press PTT key the radio displays signal sending. When" Outgoing" appears, you can speak into the microphone to transmit. The RX SQL mode of receiver is set as "Optional Signaling", "CTCSS and Optional", "CTCSS or Optional", after decode successfully, the radio displays "Receiving Signal Call" and the icon of RSSI and speaker appears, user can receive audio.

Calls on Compatible Channel

On digital compatible analog channel press PTT key, if is not within hang time to transmit digital call, within the preset time period to call back; On analog compatible digital channel press PTT key, if is not within hang time to transmit analog call, within the preset time period to call back. While receiving, the radio detect digital and analog signal (is must attach to CTCSS/CDCSS) simultaneously, if detected matching signal, within the preset time period to call back.

Functions and Operations

Contacts

On the DMR contacts, you can view address list members, add new contacts, manual dialing.

1. Group Call

While the contacts type as group call, you can select the menu to view its ID or send message.

●Details: View ID of a group call contact.

● Send SMS: It's convenient to send message.

2. Private Call

While select a contact as private call, a private call can view its detail, send message, send call alert, send device check, send remote monitor, disable or enable, edit name or number, or delete.

●Details: View ID of a private call contact.

● Send SMS: It's convenient to send message.

●Call Alert: Call alert is used for prompting the private receiver; ask them respond to transmitter if communication is available. While receiving call alert command the radio will generate alert tone.

●Device Check： This function can check if the target radio is active in the system while don't send any tone alert to the target device.

●Remote Monitor: Allow a user to send a "Remote Monitor" request to the target device via menu. If the request is successful, you can enable the microphone of the target radio, and monitor its activities. Only the target radio is set remote monitor decode, that enable monitor its activities.

●Device enable : Allow a user to send "Device enable" command to the target killed device, to allow it to be used normally.

●Device Disable: Allow a user to send "Device Disable" command to the target device 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 "Device Enable" command.

●Edit Name: Modify the name of a private call contact. Press" *" key to delete, press "#" to switch input method, name input 16 characters at most.

●Edit No: Modify the number of a private call contact, the available number range is 1~16776415.
●Delete: Delete unwanted contacts from the address list, if private call contact is set as channel default address or call number on one touch call, its unable to delete.

3. All Call
While the contacts type as all call, you can select the menu to view its ID or press PTT to call.

4. New Contact
You can add a private call contact to the contact list. First input number, the available number range is 1~16776415. Then input name, when edit name, press" * " key to delete, press "#" to switch input method, name input 16 characters at most;, After add a private call contact successfully, on contacts list will show new contact.

5. Manual Dial
You can manually input the private call number for calling or sending message, send call alert, device check, remote monitor, device enable, device disable.

Scanning

1. Scan On/Off
While current channel add scan list and the list contain 2 channels at least, you may enable the feature. Scanning allows the device to search the scan list connected to the current channel to locate qualified channel for receiving or voicing. During scanning, the icon ""flashes, when activities are detected on a channel, the radio will stay on the channel to receive current activities. To exit the scanning process, enter scan menu, switch channel or press the programmed Scan On/Off key.

Note:
●If the channel enables the feature "Auto Scan" via the programming software, switch to the channel will enter scanning automatically;
●While programmable button programmed as Scan on/off, press it to enable scan feature.

2. View/Edit List

Allow a user to view/edit the scan list via menu, user can view members of the scan list, or edit priority of members; Also allow a user to add a new member to the scan list, the list contain 16 channels at most. Delete menu will remove a member from the scan list.

Note: If the channel is set as scanning priority channel, on the right of the scan list appears icon: ❶ or ❷.

Zone

The transceiver supports up to 50 zones, each of zone supports 16 channels, totally 160 channels supported. Enter “Zone” menu to select a desired zone. On programming software, the members’ channel of zone is the valid channel.

Note: Only contain 2 zones at least, the zone menu is visible.

Text Message

1. Inbox

The Inbox can save up to 50 received messages. Inbox the unread message displays: ✉, read message displays: 📭 . For each message, you can choose to perform any of these operations: Reply, Forward, Delete or view date and time. Delete All will remove all messages on inbox.

2. Write

You can edit desired text message(140 characters at most) and send it to an private call contact or group call contact, when editing a message, press “# ”key for switching input method, press “*” key for deletion and modification, press left or right key to switch input cursor. For non-numeric input method, key “1” is a symbol key. Key “0” is a space 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 Text

Via programming software, user can save 10 entries text messages and each of a message contains 140 characters at most on preset SMS. You can choose to edit and send any entry.

4. Outbox

Enter outbox menu, you can view the message is sent successfully or failed, outbox can save up 20 sent messages. If sent message is successful displays , you can choose to forward, delete it or view date and time; if sent message is failed displays , you can choose to resend, forward, delete or view date and time. Delete all will remove all messages on outbox.

Turning the power on off

1. Missed Call

The missed calls list can save up to 20 entries, when the memory for call logs is full, the oldest entry will be deleted automatically. You can add it to contact list or delete it. Delete All will remove all missed calls.

2. Answered Call

The answered calls list can save up to 20 entries, when the memory for call logs is full, the oldest entry will be deleted automatically. You can add it to contact list or delete it. Delete All will remove all answered calls.

3. Outgoing Call

The outgoing calls list can save up to 20 entries, when the memory for call logs is full, the oldest entry will be deleted automatically. You can add it to contact list or delete it. Delete All will remove all outgoing calls.

Recording

While activated voice recorder, it will continuously record all transmitted and received signals. There are 2 Rec modes available: compress or uncompress the compress mode can reduce memory but uncompress mode can make the quality of audio excellent. While recording on and work normally indicate by: ⦿, if recording mode work abnormally indicate by: ⦿. On Voice Records menu input date can view or play the voice memo. For 30 minutes recording a voice memo, the suffix of memo as 0 represents uncompress, 1 represents compress. While terminal switches to U-Disk mode, the voice memos can download to PC to play.

Note: On digital channel, if the work mode is duplex and transmitting private call, while enable recording feature, the record mode is enforcement of uncompress mode.

Setting

1. Settings

Allow a user to perform basic settings for the transceiver.

●Talk Around: When your repeater malfunctions, or when radio is out of repeater's range, you can continue to communicate in talk around mode. While enable talk around feature, the screen displays: |→| , By this time TX frequency the same as to RX frequency. If switch channel, enable scan feature or restart radio will disable the feature.

●Tone/Alerts: To set tones for your radio, tone alerts include settings of all tones, call alert tone, SMS tone and keypad tone. If disable all tones, all alerts will be off except emergency tone.

●TX Power : Allow a user to change the power level, there are two levels available: high (indicated by H) and low (indicated by L).

●Backlight: To set the backlight parameters, you can select on or automatic,

●Boot Interface: Allow a user to enable or disable the boot screen via menu. If the Intro screen is enabled, while the radio power on, the screen display BF Logo and device name; while the Intro screen is disable, the screen only displays device name.

●Keypad Lock: Allow a user to enable or disable keypad lock via menu. While Keypad locked indicate: 🔒 , that you can't operate the keypad except PTT key and orange button, button 1 or button 2. Press "MENU" and" #" key to unlock.

●LED indicator: To set whether to enable LED indication via menu. While disable all indicator, the screen becomes dark and TX red indicator, Rx green indicator, scan orange indicator are off. Please use this function with due care.

●Squelch Level: On the analog mode, this feature allows you to adjust the squelch level, you can set SQL1~9 or normally Open.

●GPS: Allow a user to enable or disable GPS via menu, while GPS on indicate by: 🛰 .

●Site Roaming: Allow a user to enable lock site or unlock site and enable manual site roaming.

●Date and Time: This option allows you to set the current date, week, time.

●Language: The radio supports two languages: Chinese and English.

●Power-on Password: If enable power-on password feature via programming software, you can modify the password by this menu. First you need input old password correctly, then input a new password twice the same, that will modify the password successfully.

Note: This menu is effective if power on password is set via programming software.

2. Device Info.
With this option, you can view the basic information of your radio, including device ID, firmware version, CP version, voice record version, GPS data, and send GPS data, real time clock.
●GPS Data: To view the radio's position information, it's including longitude, latitude, speed, altitude, time, date, and satellite no.
●Send GPS Data: On digital mode, while the GPS enable, and receive radio's position information successfully, you can transmit location data to an individual user.
●Real Time Clock: To view the date, week and time, the time will synch with GPS time automatically.

Roam

This feature allows the radio communicate between available sites in the IP Site Connect system. If enable, the radio can communicate via any site in the IP Site Connect system, thus ensuring seamless communication in the system. The radio supports start roam automatically and site roam manually.
Note: allows the user to associate one of a scan list or roam list to the current channel, but can't enable both feature at the same time.

GPS

The GPS Positioning function allows you to view your location information, GPS data include time, date, longitude, latitude, speed, altitude, and number of available satellites. While enable GPS, the radio will transfer its positioning information automatically to the center if connect counts or PTT counts is reached. GPS data also can be manually transmitted to an individual user.

● Query Location information of another radio user
①Transceiver A enable GPS function and set GPS query command as: GPS
②Transceiver B enter New SMS menu and edit text message:"GPS" then send to transceiver A.
③Transceiver A received message from transceiver B, then send GPS data to transceiver automatically.

If transceiver A GPS data is invalid, the transceiver B will receive: No GPS Data.

Emergency

Digital Emergency

In case of an emergency you can enter emergency mode to ask for help, for each emergency mode, there are three emergency types and three emergency modes available.

Emergency Type:

Regular: In emergency mode, the radio will give audible and visible indication;

Silent: In emergency mode, the radio won't give any audible or visible indication;

Silent with Voice: In emergency mode, the radio won't give any audible or visible indication, but will receive voice.

Emergency Mode:

Alarm: In this mode, you can send alarm information, while receive ACK or reach the maximum retries will exit emergency mode.

Alarm with Call: You can press programmed" Emergency On/Off" key to send emergency information, then press PTT to transmit an emergency call.

Alarm with voice to follow: You can press programmed" Emergency On/Off" key to send emergency information, then you can speak into the microphone, allowing your voice and background noise be transmitted automatically as you do not to press PTT key.

1.Send Emergency Alarm

If the current channel adds emergency system and the current channel as the emergency revert channel, press the programmed "emergency on/off" key to send alarm information, LED indicator glows red, the radio displays icon as "regular" type.

2.Exit emergency mode

If choose regular type and emergency alarm mode, after send emergency information then receive ACK command or the alarm cycles expire, the radio will exit the emergency mode automatically. And long press the programmed emergency key to exit the emergency mode; If choose silent or silent with voice type, press PTT key or long press programmed emergency key to exit the emergency mode.

3.Receive Emergency Information

When the feature" emergency alarm indication" is enable, if received emergency information, the radio displays icon , the transmitter's ID and name, an alarm tone will sound. To exit the emergency mode, long press the programmed emergency key.

Analog Emergency

You can use the feature to transmit emergency information to others, the receiver will sound alarm tone.

Emergency Type:

Only Whistle: The radio will sound alarm tone locally;

Regular: The radio will gives visible and audible indication, and allow to transmit alarm signal reports, alarm audio and emergency call.

Silent: The radio won't give any audible or visible indication, and disable speaker output while receive any signal.

Silent with voice: The radio won't give any audible or visible indication, but will receive voice.

Emergency Mode:

Alarm: Only allow send emergency alarm, but prohibit pressing PTT to transmit audio;

Alarm with Call: Only allow send emergency alarm, and allow press PTT to transmit audio at any time.

1.Send Emergency Alarm

On analog channel, if the alarm signaling type is set as 5-Tone or DTMF, press the programmed "Emergency On" key to send emergency signaling, the radio display icon and text information "Alarm Signaling Sending"; if send emergency information, the radio display text information "alarm sending". Long press the programmed"Emergency Off" key to exit emergency mode.

2.Send Emergency Alarm and Call

Allow user to send emergency information to others, and then you can transmit emergency call. if the alarm signaling type is set as 5-Tone or DTMF, press the programmed "Emergency On" key to send emergency signaling, the radio display icon and text information "Alarm Signaling Sending"; if send emergency information, the radio display text information "alarm sending". If "Automatic Emergency Call" is enabled via the programming software, the

radio display “Alarm calling”, you can speak into the microphone to transmit emergency call. Long press the programmed “Emergency Off” key to exit emergency mode.

3.Receive Emergency Information
While receiving analog signal, the decode type of receiver is emergency call, after decoding successfully, the radio displays: “Receiving Signal Alarm Call”.

Analog Signaling

2-Tone Signaling

2-Tone Contact
While users set 2-Tone signaling type for the current channel, the 2-tone contact supports a maximum of 32 2-Tone call list, on the menu of 2-Tone contact, you can select one of the contacts to send.
Send 2-Tone Signaling
On analog channel, press the programmed “one touch call” key to send 2-tone signaling, the radio display:”Two tone signaling sending”, if sent success, the displays: signal sent.
Receive 2-Tone Signaling
Allow the user define the call type of the 2-tone system as “Alert Call”, “Alert Call with Voice”, or “Select Call”. While received signaling and match with decode format, the radio displays the call type and an alert tone will sound.

5-Tone Signaling

5-Tone Contact
While users set 5-Tone signaling type for the current channel, the 5-tone contact supports a maximum of 200 5-Tone call list, on the menu of 5-Tone contact, you can select one of the contacts to replace the address code of decoding sequence and encoding sequence.
Send 5-Tone Signaling
On analog channel, press the programmed “one touch call” key to send 5-tone signaling, the radio display:”Five tone signaling sending”, If checked the “Expect Reply” via the programming software, the call is deemed successful if ACK is received from the other party; if uncheck the “Expect Reply” via the

programming software, A transmission is deemed successful after signaling is transmitted, no matter whether the other party receives it or not.
Receive 5-Tone Signaling
Allow the user define the call type of the 5-tone system as “Common Call”, “Emergency Call”, “Swoon”, ”Disable”, “Enable”, ”Check”, ”Call Alert”, ”ACK”. The decoding is successful while received signaling and match with decode type.

DTMF

DTMF Contact
While users set 5-Tone signaling type for the current channel, the contact list includes a total of 200 items. On the menu of DTMF contact, you can select one of the contacts to replace the address code of decoding sequence and encoding sequence.
Send DTMF
On analog channel, press the programmed “one touch call” key to send DTMF signaling, the radio display:”DTMF signaling sending”, If checked the “Expect Reply” via the programming software, the call is deemed successful if ACK is received from the other party; if uncheck the “Expect Reply” via the programming software, A transmission is deemed successful after signaling is transmitted, no matter whether the other party receives it or not.
Receive DTMF
Allow the user define the call type of the 5-tone system as “Common Call”, “Emergency Call”, “Swoon”, ”Disable”, “Enable”, ”Check”, ”Call Alert”, ”ACK”. The decoding is successful while received signaling and match with decode type.

Voice Encryption

The voice encryption can encrypt your audio signals to guarantee the privacy of your communication, via the programming software user can select encryption type as static or dynamic. If the encrypt feature is enabled, the transmitter and receiver will be set as the same encryption type and same encryption key, otherwise the receiver is mute.

Reject Stranger Call

On digital mode, if enable reject strange call feature, while the call ID not exist in the contacts list, it's unable to transmit or receive. When received group call or all call, the device ID of transmitter and group call ID or all call ID must be preset on address list.

Direct Mode

If enable DMO feature via the programming software, the radio work in DMO mode, in DMO mode, the channel of different RX/TX frequency works in talk around mode.

Note: User must check DMO feature via the programming software for both the transmit side and the receive side, and the TX frequency of radio A must be set the same as the RX frequency of radio B, the RX frequency of radio A must be set the same as the TX frequency.

Signal Frequency Repeater Mode

Set Signal Frequency Repeater function to a programmable button via programming software.

In Digital Channel mode, press the button and it will change to Signal Frequency Repeater mode.

It shows a R icon on the left-top side of the screen.

Compander

The compander can be enabled only for analog channel, transmitted signals are compressed before being sent and received signals are expanded when they receive. This background feature allows higher clarity of signals, avoiding excessive noise.

Scrambler

The scrambler can be enabled only for analog channel, scrambler is used for encrypted audio, via programming software checked frequency interference

enable, and set the value of scrambler. User must set the same value of scrambler for both the transmit side and the receive side.

Time Out Timer (TOT)

The purpose of TOT is to prevent any user occupy a channel for an extended period. If a channel is busy, the time will be shorter. If the preset time expires, the radio will generate beep and terminate transmission automatically. Via programming software, you can set TOT as 15-495 second.

TX Permission

Digital Channel

This feature can restrict the channel if it is already in use you will be unable to transmit. There are three options available: always, color code free, channel free, if choose always, whenever press PTT key to transmit directly; If choose color code free, you will be unable to transmit on the channel if the color code is already in use; If choose channel free, you will be unable to transmit on the channel if it is already in use. If the channel is busy, press PTT key a warning tone will sound.

Analog Channel

This feature can restrict the channel if it is already in use you will be unable to transmit. There are three options available: off, carrier, CTCSS/CDCSS, if choose Off, whenever press PTT key to transmit directly; If choose carrier, you will be unable to transmit on the channel if the channel is being used by others; If choose CTCSS/CDCSS, you will be unable to transmit on the channel if it is already in use and the CTCSS/CDCSS code in use. If the channel is busy, press PTT key a warning tone will sound.

CTCSS/CDCSS

On analog channel and compatible channel (digital and analog channel), you can set unique CTCSS/CDCSS to guarantee the privacy of your communication, on digital compatible analog channel or analog compatible digital channel, is must attach to CTCSS/CDCSS. If CTCSS/CDCSS has been set on the current channel, CTCSS/CDCSS match is required for the radio to receive an incoming signal.

●RX CTCSS/CDCSS Type: Only when receiver receives a call containing matching decode, you can hear the call; you can select tone type as: CTCSS, CDCSS or Reverse CDCSS.
●TX CTCSS/CDCSS Type: Signal that you transmit will only be heard by parties whose CTCSS/CDCSS signaling matches your transceiver; you can select tone type as: CTCSS, CDCSS or Reverse CDCSS.
Note：The device approves of non-standard code, you can input non-standard code as you need.

CTCSS Frequency Table

CTCSS No	Freq. [Hz]	CTCSS No	Freq. [Hz]	CTCSS No	Freq. [Hz]	CTCSS No	Freq. [Hz]
1	67.0	11	94.8	21	131.8	31	186.2
2	69.3	12	97.4	22	136.5	32	192.8
3	71.9	13	100.0	23	141.3	33	203.5
4	74.4	14	103.5	24	146.2	34	210.7
5	77.0	15	107.2	25	151.4	35	218.1
6	79.7	16	110.9	26	156.7	36	225.7
7	82.5	17	114.8	27	162.2	37	233.6
8	85.4	18	118.8	28	167.9	38	241.8
9	88.5	19	123.0	29	173.8	39	250.3
10	91.5	20	127.3	30	179.9		

CDCSS Standard Code Table

CDCSS NO	Positive Code	Negative Code	CDCSS NO	Positive Code	Negative Code	CDCSS NO	Positive Code	Negative Code
1	D023N	D023I	29	D174N	D174I	57	D445N	D445I
2	D025N	D025I	30	D205N	D205I	58	D464N	D464N
3	D026N	D026I	31	D223N	D223I	59	D465N	D465N
4	D031N	D031I	32	D226N	D226I	60	D466N	D466I
5	D032N	D032I	33	D243N	D243I	61	D503N	D503I
6	D043N	D043I	34	D244N	D244I	62	D506N	D506I
7	D047N	D047I	35	D245N	D245I	63	D516N	D516I
8	D051N	D051I	36	D251N	D251I	64	D532N	D532I
9	D054N	D054I	37	D261N	D261I	65	D546N	D546I
10	D065N	D065I	38	D263N	D263I	66	D565N	D565I
11	D071N	D071I	39	D265N	D265I	67	D606N	D606I
12	D072N	D072I	40	D271N	D271I	68	D612N	D612I
13	D073N	D073I	41	D306N	D306I	69	D624N	D624I
14	D074N	D074I	42	D311N	D311I	70	D627N	D627I
15	D114N	D114I	43	D315N	D315I	71	D631N	D631I
16	D115N	D115I	44	D331N	D331I	72	D632N	D632I
17	D116N	D116I	45	D343N	D343I	73	D654N	D654I
18	D125N	D125I	46	D346N	D346I	74	D662N	D662I
19	D131N	D131I	47	D351N	D351I	75	D664N	D664I
20	D132N	D132I	48	D364N	D364I	76	D703N	D703I
21	D134N	D134I	49	D365N	D365I	77	D712N	D712I
22	D143N	D143I	50	D371N	D371I	78	D723N	D723I
23	D152N	D152I	51	D411N	D411I	79	D731N	D731N
24	D155N	D155I	52	D412N	D412I	80	D732N	D732N
25	D156N	D156I	53	D413N	D413I	81	D734N	D734I
26	D162N	D162I	54	D423N	D423I	82	D743N	D743I
27	D165N	D165I	55	D431N	D431I	83	D754N	D754I
28	D172N	D172I	56	D432N	D432I			

Specifications

General	
Frequency Range	VHF:136-174MHz UHF:350-390MHz / 400-480MHz / 450-520MHz
Zone Capacity	50
Channel Capacity	160
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC 13.8V(±20%) AC:110(±15%) or 220V(±15%) optional
Frequency Stability	±1.5ppm
Antenna Impedance	50Ω
Dimensions	210（L）*275（W）*180(H) mm
Weight	6.9 Kg
Transmitter	
RF Output Power	VHF/UHF High Power：25W VHF/UHF Low Power：10W
4FSK Modulation	Only Data：7K60FXD， Data and Audio:7K60FXE
FM Modulation	12.5 kHz：8K50F3E； 25 kHz：16KΦF3E；
Modulation Limiting	+/- 2.5kHz @ 12.5kHz; +/- 5kHz @ 25kHz
FM Noise	-40dB
Conducted Emission	-36 dBm≤1GHz/-30 dBm≥1GHz
Adjacent Channel Power	≤-60dB
Audio Response	+1/-3 dB
Audio Distortion	3%
Digital Voice coder Type	AMBE+2™

Receiver	
Digital Sensitivity	5% BER：0.25 uV
Analog Sensitivity	0.25 uV (12 dB SINAD)
Intermodulation	60 dB
Adjacent Channel Selectivity	60 dB
Spurious Response Rejection	70 dB
FM Noise	-40 dB
Audio Response	+1/-3 dB
Audio output power	3W(Speaker)
Audio Distortion	3%(Typical)
Conducted Spurious Emission	-57dBm
GPS Accuracy	Horizontal Accuracy≤-10m（with well signal）
TTFF (Time To First Fix) Cold Start	< 1minuter（with well signal）
TTFF (Time To First Fix) Hot Start	< 10 Second（with well signal）
Environmental Specifications	
Operating Temperature	-20℃—+70℃
Storage Temperature	-40℃—+80℃
Humidity	MIL-STD-810C/D/E/F
Vibration & Shock	MIL-STD-810C/D/E/F

Statement

Our Company endeavors to achieve the accuracy and completeness of this manual, if you have any question, you can contact with us, we will make a detailed answer to you in time. All the above specifications and design are subject to change without prior notice due to continuous development.

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RECYCLABLE PACKAGING