

BelFone

www.belfone.com



BF - TD511

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 dedicated to research and explore in the field of radio communication technology throughout the decades, and has developed leading smart technology in the industry. Underpinned by research, development and design geared towards modern complicated and changeable communication environment, it is capable of tailoring specific communication solutions to your needs based on features of your industry. Superior products with outstanding performance may help you control the overall situation, while providing you with the best choice for smart scheduling and instructions communicating.

This manual is applicable to

BF-TD511 series

WARNING!

◆ **In explosive atmospheres(inflammable gas, dust particles, much powder area, etc.), please turn the power off.**


Instructions before Use

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

- ◆The recommended usage rate is 1 minute for TX and 4 minutes for RX, when the radio is used in the transmission mode for many hours continuously, the radiator and chassis will become hot, allow the rear panel of the radio to contact a surface of low melting point /low Ignition point.
- ◆Don' t leave the transceiver in direct sunlight for a long time. Also, don' t place the transceiver on sources of extremely heat, damp, dusty area, or unstable surfaces;
- ◆In areas where the use of radio devices is restricted or warned, please obey the regulation and turn off the transceiver.
- ◆Use of the radio while driving may be against traffic laws in some countries, please check your local traffic laws before using the radio while driving.
- ◆If there is any problems with the radio, please turn the radio off immediately. Then contact the local dealer/technician. Do not modify this radio unless instructed by this manual. Refer to a certified technician only for service.
- ◆If secondary development is required, please contact BelFone or the local dealer for technical assistance;
- ◆Please keep the surface of radio clean and dry. To clean the radio, use a damp fabric soaked in mild washing liquid.

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Unpacking and Device Inspection

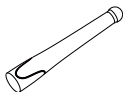
Note: The following instructions regarding unpacking are only for BelFone's distributors, and service agencies or factories authorized by BelFone.

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

Accessories

Items	Quantity
Antenna	1
Strap	1
Belt Clip	1
Charger	1
Li-ion Battery	1
Screws	1
User Manual	1
Warranty Card	1
Certificate	1

Antenna



Strap



Charger



Li-ion Battery



Belt Clip



Screws



Installation of Accessories

Installation/ Removing the Antenna

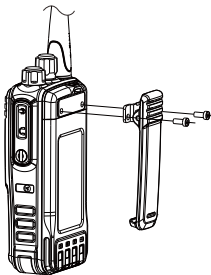
Hold the antenna base, screw it into the connector at the top of the radio until fasten.

Turn the antenna anti-clockwise to remove it.



Installation/ Removing the Belt Clip

Attach the belt clip using the two supplied 3*4mm binding screws.



Attaching/Removing the Strap

Thread the hand strap to the loop back of the two-way radio.

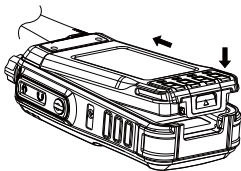


Attaching/Removing the Battery

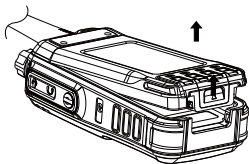
Warning!

- Don't short-circuit the battery, which may cause damaged or catch fire;
- Never attempt to remove the casing from battery, the battery terminals may short circuit;
- Battery is flammable objects, don't throw it into fire or don't use it on dangerous area.

Match the guides of the battery with the corresponding grooves on the upper rear of the radio, then press the battery until a click is heard to lock it in place.



To remove the battery, please turn the power off then press the latch to unlock the battery and pull the battery away from the radio.



Note: Don't attach / remove the battery if the transceiver turned on.

Battery Information

The new battery hasn't been fully charged before shipped, please charge more than 5 hours at the first use. The maximum battery capacity and performance is achieved after three full charge/discharge cycles. If the battery power runs lows, please recharge the battery.

Applicable Battery

To reduce the risk of injury, please only use the battery and charger specified by Belfone, other batteries may burst, causing bodily injury and property damage.

Battery Tips

1. When charging battery, keep it at a temperature among 5 C—40 C. Temperature out of the limit may cause battery leakage or damage.
2. Prior to charging a battery with the radio, it is recommended to turn the radio off.
3. Avoid cut off the power supply or remove the battery during charging.
4. Please ensure that the battery is charged in a dry state before charging.
5. Please change the battery when working time is shorten than normal performance even if the battery is fully charged.

Extend Battery Life

1. The battery performance will be decreased under 0 C. Please prepare a spare battery in cold weather. A battery not work properly in a cold environment does not mean that it is damaged. Please keep the battery and reconfirm at room temperature.
2. The dust on the battery contact point may cause battery faulty, please cleaning it by a dry cloth before using.

Battery Storage

1. Fully charge a battery before storing it for a long time, to avoid battery damage due to over-discharge.
2. Recharge a battery after several months' storage, to avoid battery capacity reduction due to over-discharge. (NI-MH batteries: 3 months, Li-Ion & Li-polymer batteries: 6 months)
3. Store battery in a cool, dry place under room temperature, to reduce self-discharge.

Charging the Battery

Use only the charger specified by the manufacturer, the charge indicator indicates the charging progress.

Charger Status	Charger Indicator
Standby(No-load)	Charge Indicator glows green
Battery is charging	Charge Indicator glows red
Battery is fully charged	Charge Indicator glows green

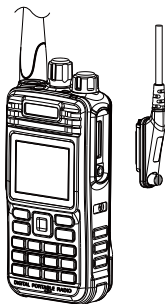
Charge Steps:

- 1.Plug the AC connector of the switching power into the AC outlet socket.
- 2.Place the battery or the radio is attached with a battery in the charger.
- 3.Make sure the battery is connected to the charger, the charging process initiates when the charger indicator glows red.
- 4.The charger indicator glows green when the battery fully charged, please remove the battery.

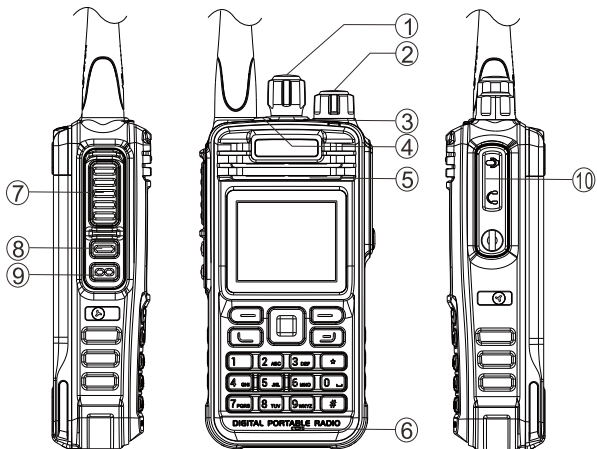
Note: While charging the temperature out of the limit the LED indicator of charger will flash red and green. If battery has damaged or battery is not connected to the charger correctly, the LED indicator of charger also will flash red and green.

Attaching the Speaker/ Microphone

Open the accessory port cover, then align the plug with the accessory port and tighten the screw on the plug.



Getting Acquainted



① Channel Selector Knob

Turn the knob to select channel 1-16.

② Power switch/volume adjust keys

Rotate clockwise to power on, after the radio is powered on, rotate clockwise to increased volume, anti-clockwise to decrease the volume. Rotate anti-clockwise fully to power off.

③ LED Indicator

When the radio transmitting the LED will glow red, when receiving the LED will glow green; when un-programmed the LED will flashe red; when scanning the LED will flashe red.

④ **Orange Button**

Press to activate the programmable function. The default function is emergency alarm. (The function can be customized by cps.)

⑤ **Speaker**

⑥ **MIC**

⑦ **PTT key**

Press and hold down the PTT key then speak into the microphone to transmit.

⑧ **Button 1**

Press to activate the programmable function. (The function can be customized by cps.)

⑨ **Button 2**




































Press to activate the programmable function. (The function can be customized by cps.)

⑩ **MIC-SP-USB Jack**

Connect to optional speaker/MIC and USB programming cable.

Basic Operation

LCD Icons

	Signal Strength		Unread message		VOX on
	High/Low Power		Inbox or Outbox Full		Plug in earphone
	Digital Mode		Message send successfully		Direct /Talk around Mode
	Analog Mode		Message send Failed		Monitoring/ Permanent Monitoring
	Analog Compatible Digital Mode		Read Message Inbox		Connect to Computer
	Digital Compatible Analog Mode		Unread Message Inbox		Satellite Position On
	Private Call		Missed Call		Record On
	Group Call		Keypad Locked		Roaming On
	All Call		Disable All Tone Alert		Battery Capacity
	Scanning On		Emergency On		Unregistered
	Encrypted		Connecting		Successfully Registered
	Channel Locked		Weakening mode		

Turning the power on /off

Rotate the power switch/volume adjusting keys clockwise to power on.

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

Note: If the radio enable and set power on password function via program software ,each time the radio turns on, a 6-digit password must be entered. If a password error occurs, the radio will restart automatically and need inputting password again . After 3 wrong password inputs, the radio will be killed, and need to be reprogrammed again to work normal.

Adjusting the volume

After the radio is powered on, 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 Channel

Turn the channel selector knob to select channel 1 to 16, rotate the knob clockwise to increase the channel number, or rotate the knob anti-clockwise to decrease the channel number, while all tone alert is enabled, the channel number will sound when change channel.

Note: If a channel is not programmed, the display appears: Un-programmed Channel and a prompt tone "no channel" sounds, LED indicator flashes red.

Selecting a Zone

The radio supports up to 32 zones, each zone with a maximum of 16 channels, all 32 zones can support up to 512 channels. Select a desire zone through zone menu or set zone selection function to orange button, button 1 or button 2, then handover zone. While all tone alert is enabled, select zone then a channel number will sound.

A/D Modes Switching

The **【AD Switch】** buttons can be switched AD mode and DA mode each other. If the current channel mode is D/A mode, press **【AD Switch】** button to switch to A/D mode; If the current channel is A/D mode, press **【AD Switch】** button to switch to D/A mode.

Note: AD Switch function only switches the channel mode temporarily, restart the radio or rotate channel selector knob, the current channel will return to its default channel mode.

AD mode is analog compatible digital mode.

DA mode is digital compatible analog mode.

Call

Each digital channel may initiate a private call, a group call or an all call. On analog channel press PTT key to directly initiate call. On digital compatible analog channel press PTT key, if is not within hang time to transmit digital call, within the hang time to call back. On analog compatible digital channel press PTT key, if is not within hang time to transmit analog call, within hang time to call back. 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 mouth.

Note: While talk permit indication feature is enabled, and the channel is available, press PTT key to transmit a tone will sound.

Private Call

If the feature “private call ACK” is enabled, to set up a private call, it needs to confirm whether the called is activated on the current channel.

- (1) If a private call contact is preset for current digital channel, press PTT key to set up the private call;
- (2) Enter Contacts menu to select the private call number then press PTT key to set up the private call;
- (3) Enter Contacts menu and go to manual dial menu or press programmed “Manual Dial” key, input the private call number, then press PTT key to set up the private call;
- (4) Enter Call Log menu and select the private call number, then press PTT key to set up the private call;
- (5) Set the One Touch Call key as private call feature, then press programmed key to set up the private call.


Group Call

- (1) If a group call contact is preset for current digital channel, press PTT key to set up the group call;
- (2) Enter Contacts menu and select the group call number, then press PTT key to set up the group call;
- (3) Enter Call Log menu and select the group call number, then press PTT key to set up the group call;
- (4) Set the One Touch Call key as group call feature, then press programmed key to set up the group call.

All Call

- (1) If an all call contact is preset for current digital channel, press PTT key to set up the all call;
- (2) Enter Contacts menu to select the all call number, then press PTT key to set up the all call;
- (3) Enter Call Log menu and select the all call number, then press PTT key to set up the all call;


Receive and respond to calls

On digital channel, while a private call is received, press the PTT key within the ring time to set up the private call and then to talk each other. If there is not respond to a received private call within the ring time, the radio will display the missed call icon: ; while a group call is received, press the PTT key within the hang time to call back. While an all call is received, it cannot respond to an all call. On digital compatible analog channel or analog compatible digital channel, the radio will detect digital and analog signal (must have a subsonic) simultaneously when receiving, and if matching signal detected, the current call can be called back within the hang time.

Note: While channel free indication feature is available, if the transmitter releases PTT key, a tone will sound.

Button Setting

For enhanced convenience, button1, button2 can be programmed, short and Long press of a key can be assigned with different functions.

Programmable keys are including functions listed below, icon  indicates functions that are also available on analog mode.

NO.	Shortcut Keys	Description
1	Unassigned ~	Not assigned with any function
2	On Touch Call 1-6	Quick transmit group call/ private call/call alert or preset SMS
3	Manual Dial For Private	Quick access to Manual Dial
4	Emergency On	Send emergency information, only set short press on orange button
5	Emergency Off	Exit emergency mode, only set long press on orange button
6	Monitor ~	Enable or disable monitor function
7	Backlight Auto On/Off ~	Quick switch backlight mode
8	Keypad Lock ~	Lock or unlock the keypad quickly
9	Scan On/Off ~	Enable or disable scan function quickly
10	All Alert Tones On/Off ~	Enable or disable all tones quickly
11	Battery Indication ~	Quick view battery capacity
12	Short Message	Quick access to short message
13	Zone Toggle ~	Quick access to Zone Toggle
14	Satellite positioning On/Off	Enable or disable satellite positioning function quickly
15	Priority Interrupt	Interrupt activity of current channel forcibly
16	AD Switch	Temporarily switch channel mode to AD or DA
17	Flashlight On/Off ~	Enable or disable flashlight quickly
18	Address List	Quick access to Address List
19	Radio Enable	Quick access to Radio Enable
20	Radio Disable	Quick access to Radio Disable
21	Radio Check	Quick access to Radio Check
22	Remote Monitor	Quick access to Remote Monitor
23	High/Low Power ~	To switch High/Low Power quickly
24	Repeater/Talkaround ~	Enable or disable talk around quickly
25	Vox On/Off ~	Enable or disable VOX quickly
26	Nuisance Delete ~	Temporarily ignore unwanted channel activity
27	Record On/Off	Enable or disable record quickly
28	Permanent Monitor ~	Enable or disable permanent monitor function
29	Site Lock on/off	Quick to lock current site
30	Manual Site Roam	Quick to roam to next available site
31	System Status Query	Query the network and GPS position status in the online channel.
32	Channel Lock ~	Quick to enable or disable channel lock function.
33	Encrypt Switch	Quick to enable or disable encryption function.

Functions and Operations

Contacts

On the contacts, it can search address list members, add new contacts, manual dialing.

1. Group Call ()

While the contacts type is a group call, select the menu to view the group ID or send message or press PTT to set up the group call.

2. Private Call ()

While the contact type is private call, select the menu item to view its detail, send call alert, send message, edit name or number, delete, send device check, disable or enable, send remote monitor.

- **Call Alert:** Call alert is used for prompting the private receiver to respond the transmitter if communication is available. While receiving call alert command the radio will generate alert tone.
- **Device Check:** This function can check whether the target radio is active or not in the system without sending any tone alert to the target radio. While the radio is available, the screen displays: target radio has replied, while the radio is unavailable, the screen displays: fail!
- **Remote Monitor:** Allow a user to send a "Remote Monitor" request to the target radio via menu. If the request is sent successfully, the microphone of the target radio will be enabled to monitor its activities. Only when the target radio is set remote monitor decode can the monitor allowed.
- **Device enable:** Allow a user to send "Device enable" command to the killed radio and revive it .
- **Device Disable:** Allow a user to send "Device Disable" command to kill a radio via menu, and all other functions of the target radio will be disabled except remote monitor. However, this target radio will continue monitoring mode in order to receive its "Device Enable" command and revive the radio.
- **Edit:** Modify the radio ID or name of a private call contact. Press "*" key to delete, press "#" to switch input method, the available radio ID range is 1~16776415, the radio name supports 16 characters at most.
- **Delete:** Delete contacts from the address list, if private call contact is set as channel default address or call number on one touch call, it's unable to be deleted.

3. All Call ()

While the contacts type is all call, the radio supports to view all call ID via menu or press PTT to call.

4. Manual Dial

It allows to manually input the private call number for calling or sending call alert , send message ,device check, remote monitor ,device enable ,device disable.

5. New Contact


It allows to add a private call contact to the contact list. When editing name, press " * " key to delete, press "#" to switch input method, name input 16 characters at most; then input number, the available number range is 1~16776415. After adding a private call contact successfully, it will show up on the contact list as a new contacter.

Telephone

On the telephone book, It allows to view telephone contacts list, add new contacts, and manual dial. Contacts list can store up to 100 telephone contacts, which can be viewed, edited, or deleted. To make a telephone call, select the contact list or enter the contact number manually and then press the TelCall key to initiate the call. During the telephone conversation, press the number or symbol on the keyboard directly for secondary dialing.

Scan

1.Scan On/Off

For scan to work, the current channel must be added to the scan list and the list must contain 2 channels at least. Scanning allows the radio to search the scan list and join to the active channel. If the scan function is enabled, the icon "" and scan group name appear on the home screen, and LED indicator flashes red. When activities are detected on a channel, the radio will stay on the channel to receive current activities, and LED indicator flashes green. If unwanted call is received on the channel, press the programmed Nuisance Delete key to remove the channel from the scan list temporarily. Exit the scanning process from scan menu, switch channel or press the programmed Scan key.

Note:

If the channel enables the feature “Auto Scan” via the programming software, switching to the channel will enter scanning automatically;
While button 1 or 2 is 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, "View Member" allows a user to view the scan member, delete a member from the scan list; Add Member allow a user to add a new member to the scan list, the list contains 16 channels at most. It is not allowed to create a new scan list or delete existing scan lists from the radio. Digital and analog channel will be appear in the same scan list.

Zone

The radio supports up to 32 zones, a zone supports 16 channels, totally support 512 channels. Enter “Zone” menu to select a desired zone.

Note: Zone switching can be performed when two or more zones are written.

SMS

1.New SMS

It allows to edit desired text message(140 characters at most) and send it to a private call contactor or group call contactor, when editing a message, press “#”key for switching input method, press “*” key for deletion and modification, press up or down 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, select a contact from the address list which the message is sent or manually dial a number to send.

2.Inbox



The Inbox can save up to 30 received messages. Inbox the unread message displays:  , read message displays:  . For each message, it can perform any of these operations: Reply, Forward and Delete.

3.Preset SMS

Via programming software, user can save 10 text messages and a message contains 140 characters at most on preset SMS. The preset SMS can be temporarily edited before sending or directly sent.

Note: Preset text messages also can be assigned to one touch call, and press the programmed key to send messages.

4.Outbox

The outbox menu can view the message sent successfully or failed, outbox can save up to 30 sent messages. If the message is successful sent it displays , and supports forward or delete; If the message is failed, it displays , and supports resend, forward or delete operations.

5.Delete All

This function is convenient to delete all messages on inbox or outbox, Clear All will delete all messages on Inbox and Outbox at the same time, but the preset messages can't be deleted.

Call Logs

1.Missed Call

The missed calls list can save up to 10 logs, when the memory for call logs is full, the oldest log will be deleted automatically. It can be added to contact list or deleted.

2.Answered Calls

The answered calls list can save up to 10 logs, when the memory for call logs is full, the oldest log will be deleted automatically. It can be added to the contact list or deleted.

3.Outgoing Calls

The outgoing calls list can save up to 10 logs, when the memory for call logs is full, the oldest log will be deleted automatically. It can be added to contact list or deleted.


4.Clear Record

This function is convenient to delete Missed call logs Answered or Outgoing call logs, Clear All will delete all logs at the same time.

Settings

1.Settings

Allow a user to perform basic settings for the radio.

- Talk Around:** When repeater malfunctions, or the radio is out of repeater's range, communications can be continued in talk around mode. When talk around feature is enabled, the screen displays: , By this time TX frequency will be set the same as RX frequency automatically. Switching channel, enable scan feature or restart radio will disable the feature.

Note:


- **To enable this function, TX frequency should be different with RX frequency, and the channel should be set as allowing talk around on the programming software.**
- **Press the programmed Talk Around key to switch DM mode and RM mode.**


● **Tone/Alerts:** Set tones for the radio, tone alerts include settings of all tones, call alert tone, message tone and keypad tone. If all tones is disabled, 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 lower (indicated by L).


● **Backlight:** Set the backlight parameters, the radio supports the modes: on or automatic, while "automatic on" is selected, the light will become dark after 5 seconds without operating the radio, and the light will keep on all the time when "on" is selected.

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

● **Keypad Lock:** Allow a user to enable or disable keypad lock via the menu. While Keypad is locked it indicates:  ,and keypad operation is not allowed except PTT key and orange button, button 1 or button 2. Press "MENU" and" #" key to unlock.

● **Channel Lock:** Allow a user to lock the channel via the menu. If channel is locked , it indicates:  , and remain in the current channel, rotating the channel knob cannot switch to other channels.



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

● **VOX:** When this function is enabled, the radio will automatically begin transmitting when speaking, and terminate transmitting when stopping talking with no need of PTT press. Allow user to set the VOX level (level 1-8) and VOX delay(0.5~10second) via menu. When VOX is on it indicates :  .

Note: The VOX feature is only effective when plugging in a supported headphone.

● **Power-on Password:** If the power-on password feature is enabled via programming software, the password can be modified by this menu. First input the old password correctly, then input a new password twice to modify the password successfully.

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

- Site Roaming**: Allow a user set site lock or unlock, and start roam manually.
- Language**: The radio supports two languages: Chinese and English.
- GPS Switch**: The GPS mode can set turn off, power save or high performance type, while GPS is on it indicates:  .
- VR Configure**: When voice recording feature is enabled, 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 is on it indicates:  .
- RTC Configure**: This option allows user to set the current date, time.
- U Disk Mode**: If voice recording is stored in transceiver memory, it allows switch to U disk mode, the voice recordings can download to PC, The radio will restart when exit U disk mode.
- Theme Choose**: It allows user to choose the screen displaying style, there are 4 themes available: Default Theme, Light Yellow, Light Blue and Light Green

2. System Info

With this option, users can view the basic information of the radio, including battery status, ID number, firmware version, CP version, hardware version, voice record version, GPS data, and send GPS data.

- Battery Status**: View the radio's rest battery capacity, it's convenient for user to know battery capacity and charge the battery in time. If the battery shows green it indicates capacity is sufficient, shows yellow indicates the capacity is middle, shows red indicates the capacity is low, please recharge in time.
- GPS Data**: View the radio's position information, including longitude, latitude, time, date, speed, altitude, and satellite No.
- Send GPS Data**: While the GPS mode is set as power save or high performance, and the radio receives GPS information successfully, it can transmit location data to an individual user.

3. Channel Configure

Channel configure function is used to modify the current channel parameters. On digital channel, it allows to modify RX/TX frequency, channel name, TOT, TX contact, CC index, choose slot, RX group list; on analog channel, it allows to modify RX/TX frequency, channel name, TOT, CTCSS/CDCSS.

Note: While finish the parameters modification, please return to home screen to save the setting, then all modified data is effective.

Digital Emergency

In case of an emergency, short press programmed “Emergency on” key to send emergency information, long press “Emergency off” to exit emergency mode. On regular type alarm, after sending emergency information when ACK command is received or the alarm cycles expires, the radio will exit the emergency mode automatically. On silent type alarm, after sending emergency information press PTT key to exit emergency mode. There are three emergency types and three emergency mode 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; And won't play any voice calls if receiving matched signal;

Silent with Voice: In emergency mode, the radio won't give any audible or visible indication, but it plays any voice calls if receiving matched signal.


Emergency Mode:

Alarm: In this mode, users can send alarm information, while ACK is received or reach the maximum retries expires the radio will exit emergency mode.

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

Alarm with voice to follow: Press programmed” Emergency On/Off” key to send emergency information, then speak into the microphone, voice and background noise can be transmitted automatically without the need to press PTT key.


1.Initiating Emergency Alarm

If the current channel adds emergency system and is set 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

Long press the transmitter programmable button which is programmed as "Emergency Off" to exit emergency state. In regular type and emergency alarm mode, when ACK command is received or the alarm cycles expires, the radio will exit the emergency mode automatically. In silent or silent with voice type, pressing PTT key can also exit the emergency mode.

3.Receive Emergency Information

When the feature” emergency alarm indication” is enabled, if receiving emergency information, the radio will display icon , the transmitter's ID and name, an alarm tone will sound.

Alone Worker

This function is useful for persons who work alone situation. When the user encounters an incident and doesn't press any keys or transmit audio within the preset period time, the radio will alarm automatically to ask help.

Note: Alone Worker is an optional feature.

Man Down

When this feature is enabled, the radio will automatically send an alarm for help if it is positioned aslant or keeps motionless long time. If the trigger type is set as Only Lean, and the radio tilts to a specified degree (30°,45°,60°) within a preset period, the radio will give alerts. To terminate such alerts, put radio upright otherwise it will enter Emergency mode; If the trigger type is set as Only Motion Detection, and the radio stays motionless within a preset period, it will enter Emergency mode.

Note: Man Down is an optional feature.

Satellite Positioning

The location function includes GPS position system and Beidou Satellite system. The satellite positioning function allows user to view location information including time, date, longitude, latitude, speed, altitude, and number of available satellites. When location is enabled, the radio will transfer its positioning information automatically to the center if connect counts or PTT counts is reached. Location data also can be manually transmitted to an individual user.

● Query Location information of another radio user

- ① Transceiver A enables location function and set location query command as: ABC
- ② Transceiver B enters New SMS menu and edits text message: "ABC" then sends to transceiver A.
- ③ Transceiver A receives message from transceiver B, then sends location data to transceiver automatically.
- ④ If transceiver A location data is invalid, the transceiver B will receive: No location Data.

Note: Location Positioning is an optional feature, the transceiver supports both GPS position and Beidou satellite position at the same time or only supports one of them.

Roam

This feature allows the radio communicate between available sites in the IP Site Connection system. If the Roaming feature is enabled, the radio can communicate via any site in the IP site connection system, thus ensuring seamless communication in the system. After the feature enabled, the icon will appear, and during roaming, LED indicator flashes red. On roaming channel, enter roaming menu to set site lock or unlock, and start roam manually.

Note: It allows the user to associate one of a scan list or roam list to the current channel, but not allows to enable both features at the same time.

Roaming function is only supported in the SDC/SVT version..

Voice Encryption

The voice encryption can encrypt the audio signals to guarantee the privacy of the communication, via the programming software the user can select encryption type as static, dynamic or advance dynamic. The radio has 3 encryption types which are XOR, Enhanced XOR, ARC4. If the encrypt feature is enabled, the transmitter and receiver must be set as the same encryption type and encryption key, otherwise the receiver can not get the normal audio.

Note: This feature is effective on digital channel.

Reject Stranger Call

On digital mode, if reject strange call function is enabled, and if the call ID is not in the contacts list, the call cannot be set up. On group call or all call, the caller's ID, group call ID or all call ID must be preset on address list.

Direct Mode Operation

If DMO function is enabled users can transmit with different frequency directly. Only the transmitter and receiver are set direct mode simultaneously and the TX frequency of the transmitter is the same as the RX frequency of the receiver, can the radio directly communicate in DMO mode.

TDMA Direct Mode

If TDMA Direct mode is enabled, the members in the same group call must use the same slot, one frequency supports calls in two slots synchronously in order to avoid interfering communications in the other slot.

Note: This feature is available only in digital mode.

Networking

The radio supports registration to the network system, and can adapt to the Belfone Smart Dispatching Connection(SDC) System or the Smart Virtual Trunking(SVT) system to realize the interconnection communication under the networking mode. The network mode can be selected as SDC or SVT mode. In "SDC" mode, the channel will not support scanning, roaming, and normal digital emergency alarm functions. When the channel is in different receiving and transmitting frequency, the network mode can be selected as "SVT", which will not support functions such as scanning, roaming, normal digital emergency alarms, color codes, etc. So the SDC mode, if the SDC system need roaming function that the radio can set "Roam" item in the radio to support the radio roam to others site. The SVT mode can set in "SVT setting" item. The scan function is set in the "Scan" item, if want to support scan function in sdc mode or SVT mode of the radio. Channel slot will be defaulted to pseudo trunk, and transmitting slot defaulted to none.

Note: The network feature is only valid for the SDC/SVT version.

Local Call

The local call can be effective only when the network function is enabled in digital channel. Check the local call, the call initiated by the radio is forwarded only under its repeater, and the callback mode during receive hang-up time is based on the type of incoming call (in the networked or not).

Patrol System

Set whether the radio can activate emergency alarm and track monitor function in online status. When emergency alarm is enabled, the radio will automatically send voice and position information to the system by pressing the alarm key. It

can set alarm type, send times, call contact, auto monitor time and auto trace time. When track monitor is enabled, the radio will continuously send position information to the system according to the set polling time and minimum distance.

Pseudo Trunk



If the slot is set as Dual slot, and one time slot is already occupied, it can transmit and receive on another free time slot. If the Specify Transmit Slot is set as "NONE", both time slot 1 or time slot 2 can transmit. If the Specify Transmit Slot is set as 1, press PTT key to transmit voluntary only in time slot 1 and if the Specify Transmit Slot 2, press PTT key to transmit voluntary only in time slot 2. The Specify Transmit Slot set is invalid for replying.




SVT

The standby interface of the SVT channel is different from regular channels. The first line displays the name of the belonging group, the second line displays the current channel name, the third line displays the current region name, and the fourth line displays the current networking status.

After entering the pseudo trunk channel, the radio will login its belonging group. If registration fails, there will be a voice prompt of "refuse to log in". Registration can be initiated again after restarting or switching channels. After successful registration, a voice prompt of "single station", "multi station disconnection", "disconnection mode", "multi station interconnection", and "network mode" will be displayed based on the site type and whether the controller is connected. If it is currently in "weaken mode", the voice prompt will be "weaken mode".

Networking status:

Connection Status	Site type	Standby interface (fourth line)	Status Icon
The radio is not synchronized with repeater, and is in scanning		Connecting...	
The radio is synchronized with repeater, but the repeater is not connected to controller		Weaken mode	

Connection Status	Site type	Standby interface (fourth line)	Status Icon
The radio is synchronized with repeater, and the repeater is connected to controller, but the radio is not successfully registered		Unregistered	
The radio is synchronized with repeater, the repeater is connected to controller, and the radio is successfully registered, but the controller is not connected to network	Single site	Single site	
	IP interconnection	Multi station disconnection	
	8200 system	OFFNET mode	
The radio is synchronized with repeater, the repeater is connected to controller, the radio is successfully registered, and the controller is connected to network	IP interconnection	Multi site interconnection	
	8200 system	Network mode	

Note: The standby interface of the SVT channel is not affected by the channel display mode.

Voice Receiving and transmitting status

Radio Status	Transmit	Receive
Connecting...	Prohibit	Prohibit
Weaken mode	Allow	Allow
Unregistered	Prohibit	Prohibit
Single site	Allow	Allow
Multi station disconnection	Allow	Allow
OFFNET mode	Allow	Allow
Multi site interconnection	Allow	Allow
Network mode	Allow	Allow

In the SVT channel, directly press PTT to transmit a call to the default number, or select a contact via the menu to transmit the call. The hang time of private and group calls is controlled by the system. All calls do not support callback, and releasing PTT will end the call.

When pressing PTT to transmit a belonging group call, if the belonging group is already in the call, the radio will join the group call and a prompt "Group call merge" will sound, and then receive the group call.

SVT Settings

This is to set the belonging group and cross station roaming list for the radio on the pseudo trunk channel. After entering the pseudo trunk channel, the radio will login its belonging group. When the authentication function of the repeater belonging to the radio is enabled, it is also necessary to configure the activation authentication key to be consistent with the repeater.

Note: The SVT feature is only valid for the SVT version.

Priority Interrupt

The call priority interrupt feature allows the radio to interrupt the currently on-going call forcibly. This means a call can interrupt other on-going calls which with lower priority to release the channel for itself. There are 5 voice priorities available, level 0 is lower, level 3 is higher, and emergency call is the highest. To transmit the Priority Interrupt command, press the programmed [Priority Interrupt] key to make the channel free for new call or message transmission.

Note: This feature is available only in digital mode.

Time Out Timer (TOT)

The purpose of TOT is to prevent any user from occupying a channel for an extended period. If a channel is busy, the time will glow shorter. If the preset time expires, the radio will generate beep and terminate transmission automatically.

TX Permission

Digital Channel

This feature can restrict the channel to transmit if it is busy. If always is set, whenever pressing PTT key, the radio will transmit directly. If color code free is set, the radio will be unable to transmit on the channel if a radio with color code is in use. If channel free is set, the radio will be unable to transmit on the channel if the channel is already in use. If the channel is busy, press PTT key, a warning tone will sound.

Analog Channel

This feature is available in the analog mode and can restrict the channel to transmit if it is busy. If Off is set, whenever pressing PTT key, the radio can

transmit directly; If carrier is set, the radio will be unable to transmit on the channel if the channel is in use; If CTCSS/CDCSS is set, the radio will be unable to transmit on the channel if a radio with the same CTCSS/CDCSS code is in use. If the channel is busy, press PTT key a warning tone will sound.


Battery Saver

This function allows an idler radio to automatically enter battery saver mode which will extend battery service life, but response time will be delayed. Battery saver time ratio can be set, the smaller the time rate is, the more obvious the power saving.

Low Battery Warning

When the battery gets low, LED indicator glows red and there will be a warning tone: "Please Charge", please replace the battery or charge the battery in time, otherwise the radio will turn off automatically while battery is too low.

Monitor

Both analog and digital channel support to monitor current channel activities and receive weak signals. Long press the [Monitor momentary] programming key to start monitor, and release the key to immediately exit monitor. It can also press the [Monitor On/Off] programming key to start monitor, and press this key again manually to exit monitor. When monitor starts, the icon  appears.

Voice Recording

When voice recorder is enabled, it will continuously record all transmitted and received signals. There are 2 recording modes available: compress or uncompress. The compress mode can reduce memory but uncompress mode can make the quality of audio excellent. On Voice Records menu input the date to view or play the voice . Recording files are created at half hour intervals, the suffix of records as 000 represents uncompress, 0001 represents compress. When the radio is switched to U disk mode, the voice records can download to PC to play.

Note:

- While battery gets low, the auto voice recording function will disable automatically.
- Voice recording is an optional feature.

Analog Mode ()

On analog mode, the radio only supports the menu including scan, zone, settings, voice records.

●**Squelch Level:** On the analog mode, this feature can adjust the squelch threshold required for the radio to un-mute. SQL can be set to 1~9, Level 3 is the default setting.

CTCSS/CDCSS

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

●**Decode:** Only when receiver receives a call which match the CTCSS/CDCSS, the voice can be decode;

●**Encode:** Signal that transmit will only be heard by parties whose CTCSS/CDCSS signaling matches the transceiver.

CTCSS Standard 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:136-174 MHz / UHF:350-400 MHz / UHF:400-480 MHz / UHF:450-520 MHz
Channel Capacity	512
Zones	32
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC 7.4V (±20%)
Battery Capacity	2000 mAh
Battery Life (5/5/90)	Digital 22 Hours / Analog 16 Hours
Recording Time	400 Hours
Frequency Stability	±1.5ppm
Antenna Impedance	50Ω
Dimensions (L×W×H)	61 (L) * 35 (W)* 118 (H)mm
Weight	283g(Including Battery)
Transmitter	
RF Output Power	High Power: 4.5W Low Power: 1W
4FSK Modulation	12.5kHz Only data: 7K60FXD 12.5kHz 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

Receiver	
Digital Sensitivity	5% BER: 0.25 uV
Analog Sensitivity	0.25 uV (12 dB SINAD)
Intermodulation	60dB
Adjacent Channel Selectivity	60 dB
Spurious Response Rejection	60 dB
FM Noise	-40dB
Audio Response	+1/-3 dB
Rated Audio output power	0.5W
Max Audio output power	1.3W
Audio Distortion	3% (Typical)
Conducted Spurious Emission	-57dBm
Location Accuracy	Horizontal Accuracy≤10m(with well signal)
TTF (Time To First Fix) Cold Start	< 1 Minute(with well signal)
TTF (Time To First Fix) Hot Start	< 10 Second(with well signal)
Environmental Specifications	
Working Temperature	-20 C—+60 C
Storage Temperature	-30 C—+85 C
Humidity	MIL-STD-810G Standard
Vibration & Shock	MIL-STD-810G Standard
Dustproof & waterproof	IP68

Statement

This manual is compiled to be accurate and complete for operator's use. For any doubt, please contact Belfone. We will give you professional answers. As radio communication technologies develop rapidly, Belfone reserves the right to change product design and specification without prior notice to consumers.

Belfone

FUJIAN BELFONE COMMUNICATIONS TECHNOLOGY CO.,LTD.

Add: A-15 Huaqiao Economic Development Zone,
Shuangyang, Luojiang, Quanzhou, Fujian, China

Tel: +86 595 28396717

Fax: +86 595 22771635

Email: overseas@belfone.com

Website: www.belfone.com



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