

# BelFone

[www.belfone.com](http://www.belfone.com)



**BF-TD910**

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 radio.

**This manual is applicable to**

Digital FM transceiver model: BF-TD910

## Warning!

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

## Precautions

**It's important that the operator is aware of and understands 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 for transmission for many hours continuously, the radiator and chassis will become hot, allow the rear panel of the radio 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 radio while you are driving may be against traffic laws, please prohibit using it ;
- ◆ If you notice any problems on the radio, please turn off at first. Then contact with local dealer. Do not modify this radio 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 radio is clean and dry, clean the radio 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 shipment please contact with dealer 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



## Installation of Accessories

### Installing/ removing the antenna

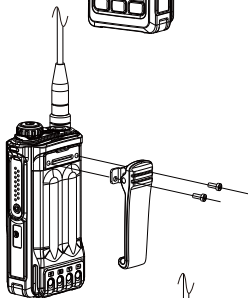
Hold the antenna base, screw it into the connector at the top of the radio until fasten.

Turn the antenna anticlockwise to remove it.



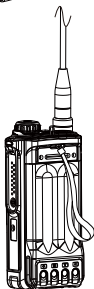
### Installing/ removing the belt clip

Attach the belt clip through two available 3\*4mm binding screws.



### Attaching/Removing the Strap

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



## Attaching/Removing the Battery

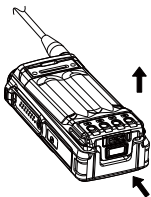
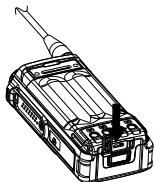
### Warning!

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

Following the guide, insert the contact side of the battery first, gently pushes the battery into place until hear “click” and slide battery latch into lock position.

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

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



## Battery Information

New battery shipped from factory is not fully charged, so please charge it for 5 hours before initial use. After then full charge and discharge cycles, battery capacity and performance will be best. Please charge the battery when notice that power is low.



## 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

- Batteries charge best at room temperature within 5°C—40°C, otherwise lead to battery leakage and damage.
- Prior to charging a battery with the radio, it is recommended to turn the radio off.
- Do not cut off the power supply or remove the battery during charging.
- Please ensure battery is dry instead of wet before charging.
- 5. Please change the battery when working time is shorter than normal performance even if the battery is fully charged.

## Prolong Battery Life

1. The performance of the battery will decrease under 0°C. Please prepare a spare battery in cold weather. Please don't throw away the batteries that can't work in cold as they may be usable at room temperature.
2. The dust on the battery contact may cause battery breakdown, please use a clean dry cloth to wipe it before attaching the battery to the radio.

## Battery Storage

1. Fully charge a battery before storing 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 your battery in a cool, dry place under room temperature, to reduce self-discharge.

## Charging the Battery

### Charging Procedure:

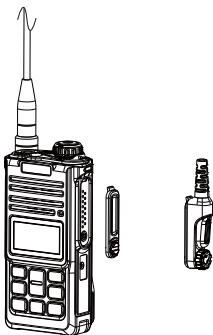
- 1.Insert AC plug into AC power socket and the indicator glows green.
- 2.Place the battery or the radio attached with battery in the charger;
- 3.Making sure the battery is connected to the charger. Charging starts if indicator turns red;
- 4.The charger indicator glows green when the battery is fully charged, please remove the battery.

### USB Charging Procedure:

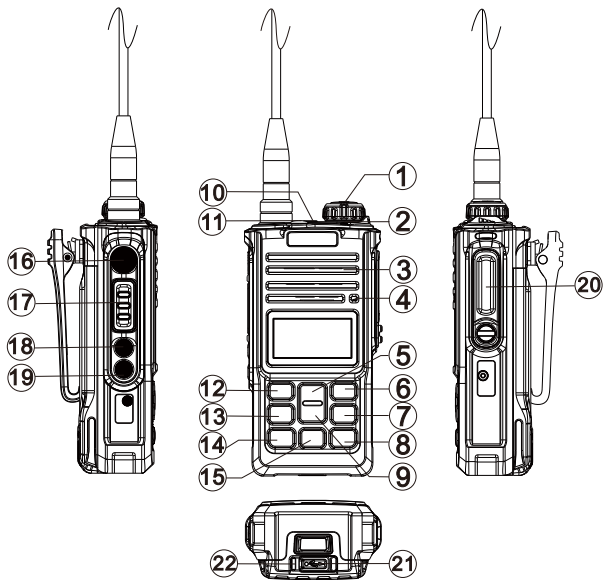
- 1.Insert USB cable into the power adapter;
- 2.Plug the power adapter into power socket;
- 3.Connect the other end of the USB cable to the USB port at the bottom of the battery, charging starts when the battery indicator glows red;
- 4.The battery indicator glows green when the battery is fully charged, please remove the battery.

## Attaching the Speaker/Microphone

Anticlockwise loosen the screw on the accessory connector cover to uncover the connector, align the accessory plug with the connector and tighten the screw on the accessory plug.



































## Getting Acquainted



①	Power On/Off & Volume Button	⑫	MENU/OK key
②	LED Indicator	⑬	Call Key
③	Speaker	⑭	POW Key: Short Press to switch TX power, Long press to adjust power automatically
④	Microphone	⑮	A/B key
⑤	Direction UP: CH UP or ZONE UP	⑯	PTT-A Key
⑥	Return Key	⑰	PTT-B Key
⑦	Hang Up Key	⑱	Button 1: Programmable Key
⑧	P Key: Short press to view battery level, long press to lock or unlock the keypad.	⑲	Button 2: Programmable Key
⑨	Direction Down: CH DOWN or ZONE DOWN	⑳	MIC-SP-USB Port
⑩	Flashlight	㉑	USB Charger Port
⑪	Flashlight	㉒	Charging Indicator

# Basic Operation

## LCD Icons

	Signal Strength		Call Log Menu
H	High Power		Setting Menu
M	Middle Power		Read Message
L	Low Power		Fail to send message
A	Power Adjusting Automatically (Display at power icon location)		Message send successfully
			Missed Call
A	Dual Band Mode , work on A band		Roam
			Emergency
B	Dual Band Mode , work on B band		Mute all
			VOX on
A	Band A Transmitting or Receiving		Plug in earphone
			Priority Scan Channel
B	Band B Transmitting or Receiving		Second Priority Scan Channel
			Direct /Talk around Mode
	Single Band mode A		Monitoring/Permanent Monitoring
	Single Band mode B		Keypad Locked
	Digital Mode		Battery Capacity
	Analog Mode		Phone Book Menu
	Private Call		Scan On/ Scan Menu
	Group Call		Roam Menu
	All Call		Zone Menu
	Contact Menu		Unread Message/SMS Menu
	Enable the rescued scanning		

## Turning the power on /off

Rotate the power On/off & volume button clockwise to turn on the radio.

Rotate the power On/off & volume button anticlockwise to turn off the radio.

## Adjusting the volume

Increase the volume by rotating the volume clockwise.

Decrease the volume by rotating the volume anticlockwise.

## Selecting a Channel




Press UP/DOWN button to select a channel. There will be voice prompt for channel switch.

## Selecting a Zone

There are three zones: Level 1, 2, 3. The radio supports up to 3000 zones, with a maximum of 3773 channels via programming software. Select the required zone on the menu and there will be voice prompt after successfully switch the channel.

Long press UP/ DOWN button to select level 3 zone.






## Selecting Band A or Band B

On dual band mode to select an operation mode, short press  key to select the A band or B band. Icon  indicating A band while icon  indicating B band.





If the radio just supports single frequency band, A and B band will be set in UHF or VHF band only. \*Dual Band supporting feature is optional, which means A and B band frequency could be different within UHF and VHF range.

**Note: On single band mode, short press  key is ineffective.**


## Dual band mode or Single band mode

Long press  key to select dual or single band mode, on single band mode, the icon indicates by  or , on dual band mode, the icon indicates by:  or .



## TX Power

Press  key to change the transmission output power, icon  indicating high power, icon  indicating middle power, icon  indicating low power.

## Keypad Locked

The lock function disables most of the keys to prevent you from accidentally activating a function. It will be locked via menu setting or long press [P] button and icon  appears after been locked. Long press [P] button for 2 seconds to unlock.

## Power on Password



If you activate power on password function via programming software, each time you turn on radio, 6-digit passwords will be required, and press  key to confirm, press  key to delete as needed.

**Note: There are only 3 times to input the correct password, otherwise the radio will be killed.**

## Self-killed

The radio will be killed by itself if you input inaccurate power-on password 3 times continuously, the killed radio will clear programming data except for programming password, device ID and device name, only if reprogram it to work normally again.

## Self-erase

Self-erase function can be activated via programming software, press the [Orange Button], and turn on the radio at the same time, then press  key to select “YES” item and press  key to confirm, the radio restarts automatically and shows “Self erase” on the screen. It will clear all programming data except programming password, only if reprogram it to work normally again.

## Call

In digital mode, you can transmit a private call, group call or all call. In dual band mode, press PTT-A to transmit on channel A, press PTT-B to transmit on channel B; In single mode, press PTT-A or PTT-B to transmit on current channel. Hold the radio vertically 3 to 4cm from your mouth, speak a normal tone of voice and the LED lights up red means transmitting.

### 1. Private Call

- If a private call ID in current digital channel has been defaulted, press PTT button to call.
- You can select the private call from address book and press PTT button

to call.

- You can select the private call from the missed/received/called out records and PTT button to call.
- You can set the One Touch Call button as private call, then press programmed button to transmit a private call.

## 2. Group Call

- If the group call ID in current digital channel has been defaulted, press PTT button to call.
- You can select group call from address book and press PTT button to call.
- You can set the One Touch Access button as group call, then press programmed key to transmit a group call.

## 3. All Call

- If the all call ID in current digital channel has been defaulted, press PTT button to call.
- You can select all call from address book and press PTT button to

## Calls on Analog

On analog channel, press the PTT button to talk and release it to listen.

## Receiving and calling back

On dual band mode, the **A** icon appears when received signal on A channel while **B** icon indicates the same. Press the PTT-A or PTT-B button to call back when hanging on; On single band mode, it will show A or B in current channel, and then press PTT-A or PTT-B button to call back.

## Reject Stranger Call

In digital mode, it will be unable to transmit or receive those ID not exist in address book once confirm the reject strange call feature.

## Programmed Button

For enhanced convenience, you may program the buttons P1, P2, short and long press of a key to be defined as different functions.



**Programmable keys are including functions listed below:**

No	Name	Description
1	Unassigned	Not assigned with any function
2	On Touch Call 1-6	In digital mode, to make group call/ private call/call alert or send defaulted SMS quickly;
3	Emergency On	To send emergency information, only set as short press
4	Emergency Off	To exit emergency mode, only set as long press
5	Monitor	To enable or disable monitor function quickly
6	Keypad Lock	To lock or unlock the keypad quickly
7	Battery Indication	Quick view battery capacity
8	Zone Toggle	Quick access to [Zone Toggle]
9	Priority Interrupt	To cut the call on current channel forcibly
10	High/Low Power	To switch High/Middle/Low Power quickly
11	Repeater/Talkaround	To enable or disable talk around quickly
12	Delete useless channel	Ignore unwanted channel temporarily
13	Radio activation	Quick access to [Radio activation]
14	Radio Kill	Quick access to [Radio Kill]
15	Radio Check	Quick access to [Radio Check]
16	Remote Monitor	Quick access to [Remote Monitor]
17	Flashlight On/Off	To enable or disable flashlight quickly
18	All Alert Tones On/Off	To enable or disable all tones quickly
19	Scan On/Off	To enable or disable scan function quickly
20	Vox On/Off	To enable or disable VOX quickly
21	Alone work On/Off	To enable or disable alone work quickly
22	Roam On/Off	To enable or disable roam function quickly
23	System Status Query	Quick to query system status
24	Site Lock on/off	Quick to lock current site
25	Manual Site Roam	Quick to roam to next available site
26	Remote Halo	Quick access to [Remote Halo] menu
27	Remote Awake	Quick access to [Remote Awake] menu
28	Covert Mode On/Off	To enable or disable covert mode quickly
29	Rescue Scan Mode On/Off	To enable or disable rescue scan mode quickly

30	Radio Ruin	Quick access to [Radio Ruin] menu
31	Address List	Quick access to [Address List]
32	List of telephone contacts	Quick access to [telephone contacts]
33	Short Message	Quick access to [SMS]
34	Permanent Monitor	To enable or disable permanent monitor function

## Functions and Operations

### Address Book

On the contacts menu, you can view the all contacts and contacts list, the number of 1600 contacts at most can add via the programming software.

- **Group Call**  / **All Call** 

While the contacts type as group call or all call, you can select the menu to view its ID or press PTT key to transmit.

- **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.

Feature	Description
Call Alert	To send an alert to private contact and remind other person to call back.
Device Check	Allow you check if the target radio is active on the current channel while don' t send any tone alert to the target device.
Remote Monitor	Allow you 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.
Device Enable	Allow you to send "Device enable" command to the target killed device, to allow it to be used normally.
Device Disable	Allow you to remotely disable another radio, the radio become unable to operation except receiving enable command, or re-program via the programming software to enable it.

Remote Erase	Allow you to send "Remote Erase" command to the target device, to clear all programming data including firmware version, only return to factory for maintenance.
Remote Stun	Allow you to send "Remote Stun" command to the target device, the radio become unable to transmit but allow receive except receiving enable command, or re-program via the programming software to enable it.
Remote Revive	Allow you to send "Remote Revive" command to the target stunned device, to allow it to be used normally.



## Scan

### • Scan On/Off


While current channel add scan list and the list contain 2 channels at least, you may enable the feature. Your radio cycles through the programmed scan list for the current channel looking for voice activity (Analog and digital channel are supported). On the scan list, if the channel is set to the required priority level, it will receive signal firstly. The LED blinks red during scanning, and will stop on a channel where activity is detected. If you don't want to receive calls on the channel, press the programmed [Nuisance Delete] key to temporarily remove the unwanted channel from the scan list. To exit scanning process, you can turn off in scan menu, switch channel or press the programmed Scan key.

**Note: If scanning is enabled, enter SCAN menu will stop scan , which means you have to exit the menu to restart scan.**

### • View/Edit List

Users can view the members, add, delete, or prioritize channels by editing a scan list. The list is with a maximum of 16 members. The Priority icon  appears if has been set as priority 1, while  for priority 2.

## Roam

Roaming is available in digital mode, thus to allow your radio to extend communication beyond a single site, by connecting to different available sites which are connected via an IP site connect system. Icon  appears when roaming is on while nothing shows if it is closed, and LED flashes red during searching. To open/close roam on the menu, set site lock or unlock, or start roam automatically.

**Note: Each channel can only have either Scan or Roam enabled, not both at the same time.**

## Zone

There are three zones, level 1-3. It supports up to four zones in Level 1, with a maximum of 1000 zones in Level 2 per and 2000 zones in Level 3 via programming software. On [Zone] menu, select the required zone or long press on UP/Down button to change, while voice prompts of channel number appear accordingly.

**Note: Only level 3 zone contains effective channel, you can switch to the selected zone.**

## SMS

### • Inbox



The Inbox can save up to 50 received messages. The unread message displays:

 ,read message displays: . you can reply, forward or delete them.

**Note: while received message from the center, the ID is 0.**

### • Outbox

Enter outbox menu, you can view the message is sent successfully or failed, outbox can save up 50 messages. If message is sent successfully, it will display

 while  appears if failed. You can resend, forward and delete.

### • Preset SMS

User can save 100 common preset text messages with maximum of 140 characters via programming software.

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

## Call Logs

### • Missed Call

The missed calls list can save up to 50 entries private call, user can view the details or press PTT key to call back.

### • Answered Calls

The answered calls list can save up to 50 entries private call, user can view the details or press PTT key to transmit.

### • Outgoing Calls

The outgoing calls list can save up to 50 entries private call, user can view the details or press PTT key to transmit.

# Setting


## 1. Radio Setting

Basic settings to meet customers' needs.

### ● Display Contrast

You can adjust the LCD contrast level from 0 to 30, the level is lower the display become grey, the level is higher the display become light.

### ● Tone/Indicator

To set tones for your radio, tone alerts include settings of keypad tone and message tone. If disable all tones, icon  appears, all alerts will be off except emergency tone.


### ● TX Power

Allow a user to change the power level, there are three levels available: high (indicated by H), middle (indicated by M) and lower (indicated by L).

### ● Boot Display

Allow a user to enable or disable the boot display via menu. If the Intro screen is enabled, while the radio power on, the screen display Belfone Logo.


### ● 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. Long press [P] key to unlock.

### ● LED Indicator

To set whether to enable LED indication via menu, all indicators including TX/RX indicator, scanning/roaming indicator, keypad indicator.


### ● 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.

**Note: To enable this function, TX frequency should be different from RX frequency, and the channel will set as allow talk around on the programming software.**

### ●VOX

While this function is enabled, you can enjoy hands-free communication. The radio will automatically begin transmitting when you speaking, and terminate transmitting when you stop 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. if VOX on and plug in the earphone indicate by:  .

**Note: The VOX feature only is used if you are using a supported earphone.**

## Emergency Operation/ Alarm

You are able to initiate an Emergency at any time on any screen display. The radio supports three Emergency Alarms.

### Emergency Type:

**Regular:** Radio transmits an alarm signal and shows audio and visual indicators.

**Silent:** Radio transmits an alarm signal without any audio or visual indicators.

**Silent with Voice:** Radio transmits an alarm signal without any audio or visual indicators, but allow incoming calls.


### Emergency Mode:

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

**Alarm with Call:** You can press programmed" Emergency On/Off" key to send emergency information, and 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 emergency system has been added to current channel which is defined as reply channel also press orange key to send alarm, the LED blinks red and emergency icon  appears.

### 2. Exit emergency mode

The radio exits Emergency mode when one of the following occurs: Emergency Alarm acknowledgement is received; all retries to send the alarm have been exhausted; the receiver long press the orange emergency key.

### 3. Receive Emergency Information

On receiving an emergency alarm, the emergency icon  appears, a tone sounds, t and the radio displays the emergency caller alias. Long press the orange button to exit.

## Alone Worker

This feature prompts an emergency to be raised if you can't press any button or send voice within limited time. The radio will alarm automatically to ask for help. Set work alone response and warn time via programming software to enable the feature.

## Covert Mode


If enable covert mode feature, the radio will be totally silent without any UI indication. When connects to earphone, the radio will enable covert mode feature, and then it be totally silent without any indication and hear via earphone only to get information.

**Note: If mute the device under covert mode via the programming software, there is no voice from earphone in any case.**

## SOS or Rescue Feature

If the radio is applicable to U band, the SOS or rescue mode works with frequency 435.5MHz and 145.5MHz on V band, or work with both 145.5MHz and 435.5MHz under dual band.

### Rescue Scan Mode

To enable the rescue scan feature, you can enter "Setting" menu or press the programmable button [Rescue Scan Mode On/Off], and then icon  appears, the scan mode search for a signal on current channel and rescue channel cyclically(the channel of A band the channel of B band Rescue Channel 145.5MHz Rescue Channel 435.5MHz)

### Rescue Mode

Enable rescue mode, the radio will work on fixed rescue channel to receive SOS signals by setting menu and press combination keys.

1. Press [Menu] key [Setting] menu [Radio Setting] menu "SOS/Rescue" Rescue Mode Enable; or long press [P1] + [P2] simultaneously to enable rescue scan mode

### SOS Mode

If enter the SOS mode, the radio will transmit the SOS signal on SOS channel of fixed frequency base on an interval set by the dealer. You can set parameters of the SOS mode via programming software, there are: Interval whistle, interval whistle time, flashlight, SOS send interval and SOS information etc. Operation as following:

1. Press [Menu] key [Setting] menu [Radio Setting] menu "SOS/Rescue" Siren Enable or Disable;
2. Press [Menu] key [Setting] menu [Radio Setting] menu "SOS/Rescue" LED Flashes Enable or Disable;
3. Press [Menu] key [Setting] menu [Radio Setting] menu "SOS/Rescue" SOS Mode Enable; or long press [Orange Key] + [P1] simultaneously to enable SOS mode

## Auto Power Adjustment

Auto Power Adjustment feature is effective only in repeater mode or the power in current channel is high. The TX power icon switches to: **A**, the radio will adjust the TX power value automatically while press PTT key to transmit. If the radio close to repeater, the receiving signal is strong, the power of radio will be lower automatically; if the radio far away from repeater, the receiving signal is weak, the power of radio will be higher automatically.

**Note: the value of TX power is effective on current communication, after communication the power will reset to default value.**

## Voice Encryption

The voice encryption can encrypt your audio signals to guarantee the privacy of your communication. User can select encryption type as XOR, Enhanced XOR, ARC4 or AES256 in programming software. Only if encryption type and encryption key is same, this function will be workable, or there will be no voice.

**Note: This feature is effective on digital channel.**

## Radio Priority-Based Interrupt

The call priority feature allows you to interrupt the on-going call on current forcibly, a preemptive call can interrupt other on-going calls 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 also can press the programmed [Priority Interrupt] key, in order to make the channel free for new call or message transmission.

**Note: This function is available only in digital operation.**

## Dual Capacity Direct Mode

In TDMA direct mode, all radios in same group must communicate in same slot.



Two communications paths at one frequency that is time slot 1 and slot 2, no interference between each other.

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

## Pseudo Trunk

While slot is set as pseudo trunk, and one time slot is already occupied, it can automatically switch into the free one. If the pseudo trunk TX time slot is set as none, both time slot 1 or time slot 2 can transmit; if the pseudo trunk TX time slot is set as 1, press PTT key to call only on time slot 1; if the pseudo trunk TX time slot is set as 2, press PTT key to call only on time slot 2. The TX time slot is invalid for replying, press PTT button to call on the slot which received signal.

**Note: In order to guarantee the stability of communication, the transmitter and the receiver will enable pseudo trunk function at the same time.**

## Direct Mode with Different Frequency

If enable direct mode feature you 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, you can directly communicate in DM mode.


## Battery Saver

This feature allows the standby radio to save radio battery time automatically and extend its service life, but response will be delayed. You can set battery saver time ratio as: 1:1, 1:2, 1:3, 1:4, the default setting is 1:2.

## Low Battery Warning

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

## Monitor and Permanent Monitor

**Monitor:** Monitor feature is available on analog and digital channel to check and receive weak signals, and the display shows . Press the programmed [Monitor] button to activate and exit automatically once the signal disappeared.

**Permanent Monitor:** Permanent monitor feature is the same as monitor, but long press the Permanent Monitor key to activate, the radio will remain on monitor mode until long press it again to exit.

## Squelch Level

On the analog mode, this feature allows you to adjust the squelch threshold required for the radio to un-mute. If two radios are at a close distance, the signals are strong, squelch level can be higher; If two radios are at a long distance, the signals are weak, squelch level can be lower. The appropriate squelch level depends on the ambient RF noise conditions. You can set SQL level as: 1 to 9, the default setting is level 3.

## Time Out Timer (TOT)

TOT prevents any user occupy a channel to long. If a channel is busy, the time will be shorter. If the preset time expires, the radio will generate beep and terminate transmission automatically.

## TX Permission

### ● Digital Channel

This feature can restrict the occupied channel from being unable to transmit. There are three options available: always, color code free, channel free. If choose always, whenever you 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 and a warning tone will be sounded.

### ● 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 you 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 and a warning tone will be sounded.

## CTCSS/CDCSS

On analog channel, you can set unique CTCSS/CDCSS to guarantee the privacy of your communication, if CTCSS/CDCSS has been set on the current channel, CTCSS/CDCSS match is required for the radio to receive an incoming signal. You can select a CTCSS/CDCSS from CTCSS standard frequency table or CDCSS standard code table or input non standard values manually via the programming software.

- Decode:** Only when receiver receives a call containing matching the decode, you can hear the call;
- Encode:** Signal that you transmit will only be heard by parties whose CTCSS/CDCSS signaling matches your transceiver.

## System Features

### Acquiring system status

Press programmable key [System Status Query] to acquire the system status of radio, you will hear a voice tone: In the network, Out of network or Log in Reject. If radio register in the system successfully will hear warning tone: In the network. Otherwise you will hear warning tone: out of network or log in reject.

**Note: Only on digital channel and check networking option, press the key [System Status Query] is available.**

## Phone Call feature

Allow user to make a telephone call or receive, you can enter "PHONE BOOK" menu to select desired phone contact to make a call, also support the telephone make a telephone call to radio.

### Making a telephone call

Via "PHONE BOOK" menu select a desired phone contact press [MENU] key press [MENU] key again to make a call, while the telephone is get through, then press PTT key to transmit, release PTT key to receive from telephone. To exit telephone system press [Hang Up] key.

### Receiving a telephone call

If telephone making a call to radio, firstly dial the telephone gateway number, and follow the prompts to input extension number, that the radio will receive the call from telephone. To end receiving press Hang UP key on radio or telephone.

## Networking

Via the programming software the current channel is configure Networking feature, the radio is allowed to log in system to operation. If current channel checked networking option, the radio will automatically register in the system within a certain period after power-on and give a voice prompts: in the network, otherwise the radio will give a voice prompts: out of network.

## Patrol System

In case of emergency, you can use the feature to ask for help from others or control center. If enable emergency feature, you can press orange button to transmit emergency information, within the automatic monitor time, the radio will transmit voice to center or others automatically. Via the programming software, on the patrol system options, you can configure the emergency types, sending times, contacts, auto monitor timer. To exit emergency mode, long press orange button or receive the emergency removing command from center.

**Note: The center also can transmit emergency setting command to the radio to configure the emergency enable option and auto remote timer option.**

## CTCSS Frequency Standard Stable

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

NO.	Normal	Inverted	NO.	Normal	Inverted	NO.	Normal	Inverted
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:400-480 MHz
Channel Capacity	3773
Zones	3000
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC 7.4V (±20%)
Battery Capacity	Accessory: 2500 mAh/Optional: 3350 mAh
Battery Life ( 5/5/90 )	Accessory: Digital 32 Hours, Analog 26 Hours;Optional: Digital 46 Hours, Analog 35 Hours.
Frequency Stability	±1.5ppm
Antenna Impedance	50Ω
Dimensions (L×W×H)	55 ( L ) * 35(W)* 115(H)mm
Weight	295g(including battery)
Transmitter	
RF Output Power	High Power : 2.0W ; Middle Power : 1.0W ; Low Power : 0.5W
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/-3dB
Audio Distortion	3%
Digital Voice coder Type	AMBE3000
Receiver	
Digital Sensitivity	5% BER : 0.25 uV
Analog Sensitivity	0.25 uV (12 dB SINAD)
Intermodulation	60dB
Adjacent Channel Selectivity	60dB
Spurious Response Rejection	60dB
FM Noise	-40dB
Audio Response	+1/-3dB
Audio output power	1.5W
Audio Distortion	3%( Typical)
Conducted Spurious Emission	-57dBm
Receiver	
Working Temperature	-30°C—+70°C
Storage Temperature	-40°C—+85°C
Humidity	MIL-STD-810C/D/E/F
Vibration & Shock	MIL-STD-810C/D/E/F
Dustproof & waterproof	IP68

### 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.

# BelFone

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