

# BelFone

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



**BT** - TD512

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

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-TD512 series**

## WARNING!

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

## Precautions

**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 and 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 object.
- ◆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 is clean and dry. To clean the radio, use a damp fabric soaked in mild washing liquid.

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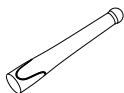
# Unpacking and Device Inspection

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

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 BellFone 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



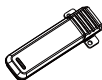
Strap



Charger



Li-ion Battery



Belt Clip



Screws

# Installation of Accessories

## Installation/ Removing the Antenna

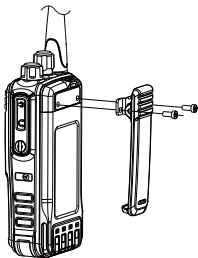
Hold the antenna base, screw it into the connector at the top of the radio until fasten.

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.

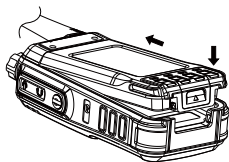


## Attaching/Removing the Battery

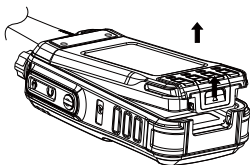
### Warning!

- 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 the 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 shorter 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 the 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.

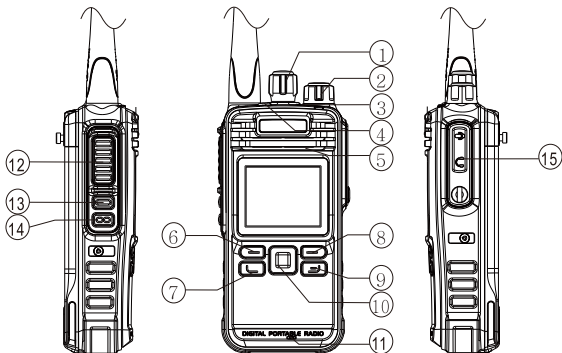
**Note: While charging the temperature out of the limit the LED indicator of charger will flash red and green. If battery has damaged or battery is not connected to the charger correctly, the LED indicator of charger also will flash red and green.**

## 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 flash red; when scanning the LED will flash 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 OK Key

## ⑦ MENU Key

## ⑧ Back Key

## ⑨ HOME Key

## ⑩ UP and DOWN Key

⑪ **Microphone**

⑫ **PTT Key**

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

⑬ **Button 1**

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

⑭ **Button 2**






























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

⑮ **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		Read Message Inbox		Connect to Computer
	Digital Compatible Analog		Unread Message Inbox		GPS On
	Private Call		Missed Call		Record On
	Group Call		Keypad Locked		Battery Capacity
	All Call		Disable All Tone Alert		Channel Locked
	Scanning On		Emergency On		

### 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.

## 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 enter 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 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 switching the channel mode is a temporal function. 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 and hold down the PTT key to directly initiate call. On digital compatible analog channel press PTT key, if is not within hang time to transmit analog call, within the hang time to call back; On analog compatible digital channel press PTT key, if is not within hang time to transmit digital call, within the 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 transm 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 Call Log menu and select the private call number, then press PTT key to set up the private call;
- (4) 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 to 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 to select the all call number, then press PTT key to set up the all call;


## Receiving and responding to a call

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	Emergency On	Send emergency information, only set short press on orange button
4	Emergency Off	Exit emergency mode, only set long press on orange button
5	Monitor ~	Enable or disable monitor function
6	Backlight Auto On/Off ~	Quick switch backlight mode
7	Keypad Lock ~	Lock or unlock the keypad quickly
8	Scan On/Off ~	Enable or disable scan function quickly
9	All Alert Tones On/Off ~	Enable or disable all tones quickly
10	Battery Indication ~	Quick view battery capacity
11	Short Message	Quick access to short message
12	Zone Toggle ~	Quick access to Zone Toggle
13	Satellite positioning On/Off	Enable or disable Satellite positioning function quickly
14	Priority Interrupt	Interrupt activity of current channel forcibly
15	AD Switch	Temporarily switch channel mode to AD or DA
16	Flashlight On/Off ~	Enable or disable flashlight quickly
17	Address List	Quick access to Address List
18	Radio Enable	Quick access to Radio Enable
19	Radio Disable	Quick access to Radio Disable
20	Radio Check	Quick access to Radio Check
21	Remote Monitor	Quick access to Remote Monitor
22	High/Low Power ~	To switch High/Low Power quickly
23	Repeater/Talkaround ~	Enable or disable talk around quickly
24	Vox On/Off ~	Enable or disable VOX quickly
25	Nuisance Delete ~	Temporarily ignore unwanted channel activity
26	Record On/Off	Enable or disable record quickly
27	Permanent Monitor ~	Enable or disable permanent monitor function
28	Channel Lock ~	Quick to enable or disable channel lock function.



# Functions and Operations

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## Contacts

Contacts list can contain a maximum of 512 members, including private call, group call, all call.

### 1. Group Call ( )

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

### 2. Private Call ( )

While the contact type is private call, it can view its detail, send call alert, send message, delete, send device check, disable or enable, send remote monitor.

● **Call Alert:** Call alert is used for prompting the private receiver to respond to 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. When 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 radio will continue to be in monitoring mode in order to receive "Device Enable" command and revive the radio.


● **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 group call, the radio supports to view its ID via menu or press PTT to call.

## 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 appears on the home screen, and LED indicator flashes. 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 contain 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, each of zone supports 16 channels, totally support 512 channels. Enter “Zone” menu to select a desired zone.

## SMS

### 1. 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.

## 2. Preset SMS

Via programming software, user can save 10 text messages and each of a message contains 140 characters at most on preset SMS. The preset SMS can be directly sent.

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

## 3. Outbox

Enter outbox menu to 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.

## 4.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 Calls

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, and also it can be deleted manually.

## 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, and also it can be deleted manually.

## 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, and also it can be deleted manually.


## 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 the repeater malfunctions, or the radio is out of repeater's range, communications can be continued in talk around mode. While talk around feature is enabled, the screen displays:  , By this time TX frequency will be set the same as to 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 menu. If the Intro screen is enabled, while the radio power on, the screen display Belfone Logo and device name; while the Intro screen is disabled, the screen only displays device name.

●**Keypad Lock:** Allow a user to enable or disable keypad lock via menu. While Keypad is locked it indicate: , and keypad operation is not allowed except PTT key and orange button, button 1 or button 2. Press "MENU" and" HOME" 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:** While this function is enabled, the radio will automatically begin transmitting when speaking, and terminate transmitting when you 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.**

- 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:** While 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 into 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 your radio, including battery status, my 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 on contacts.

## 3. Channel Configure

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

**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 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 displays 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, the radio tilts to a specified gradient ( $30^{\circ}$ ,  $45^{\circ}$ ,  $60^{\circ}$ ) within a preset period, the radio gives 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. While 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.

**Note: GPS Positioning is an optional feature.**

## Voice Encryption

The voice encryption can encrypt the audio signals to guarantee the privacy of the communication, 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.

## 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 function is available only in digital operation.**

## 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.

## Priority Interrupt

The call priority feature allows the radio to interrupt the currently on-going call on forcibly, a preemptive 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 in use. 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 the color code is in use. If channel free is set, the radio will be unable to transmit on the channel if the channel is 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 in use. 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, 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

While 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 select 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. While the radio switches to U-Disk mode, the voice records can download to PC to play.

**Note:**

- **While the 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 22Hours / Analog 16 Hours
Recording Time	400 Hours
Frequency Stability	±1.5ppm
Antenna Impedance	50Ω
Dimensions (L×W×H)	57 (L) * 32(W)* 119 (H)mm
Weight	239g(Including Battery)
Recording (optional)	400 hours
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

<b>Receiver</b>	
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
Rated Audio output power	0.5W
Max Audio output power	1.3W
Audio Distortion	3% (Typical)
Conducted Spurious Emission	-57dBm
GPS 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)
<b>Environmental Specifications</b>	
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	IP67

### **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.



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