BelFone

www.belfone.com

BF-TD920

Digital FM Two-way Radio

THANK YOU!

Founded in 1989, BelFone is a leading technology and solution provider of mission and business-critical communications, dedicated to bringing cut-edge communications technologies and empowering our customers with integrated radio solutions. With outstanding performance and excellent communication capabilities, BelFone products are the proper choices for mastering the overall situation and achieving intelligent dispatching and command delivery.

This manual is applicable to
BF-TD920 series

Instructions before Use

It's important for the operator to be aware of and understand hazards common to the operation of any radios .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, don't allow the rear panel of the radio to contact a surface of low melting point /low Ignition point.

◆Don't expose the radio to direct sunlight for a long periods of time. Also, don't place the radio on sources of extremely heat, humid, 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 radio.

◆Use of the radio while driving may be against traffic laws in some countries, please check 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. Please find a certified technician to repair it.

◆ If secondary development is required, please contact with 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.

Content

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 radio, 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
Power Adapter	1
Charger	1
Li-ion Battery	1
User Manual	1
Warranty Card	1
Certificate	1

Antenna
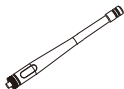
Strap

Belt Clip

Li-ion Battery
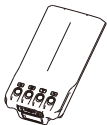
Charger

Power Adapter
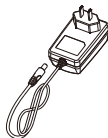
Installation of Accessories

Installing / Removing the antenna

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

　　Turn the antenna anti-clockwise to remove it.

Installing/ Removing the Belt Clip

Attach the belt clip using with two supplied M3×7mm screws.
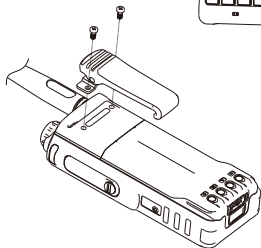
Attaching the Strap

Thread the hand strap to the loop back of the two-way radio.
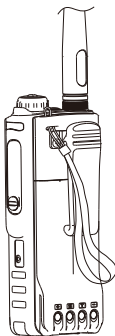
Attaching/Removing the Battery

Warning!

- Do not short-circuit the battery, as this may cause damaged or catch fire;
- Never attempt to remove battery case, as this may cause battery short circuit;
- Batteries are flammable, 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.
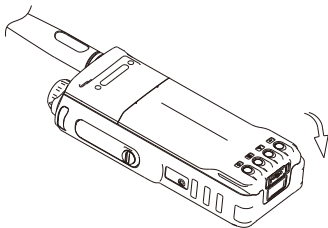
To remove the battery, please turn the power off then press the latch to unlock the battery and pull it away from the radio.
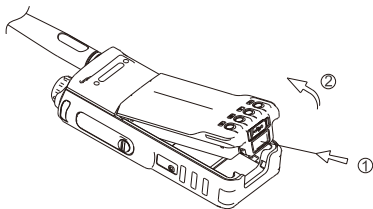
Note: Do not attach / remove the battery while the radio is on.

Battery Information

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

Applicable Battery

To avoid the risk of body injury and property damage caused by using other batteries, please use only the battery and charger specified by BelFone.

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.
5.Replace the battery when working time is shorter than normal performance even after fully charged.

Extend Battery Life

1.Battery performance will be decreased under 0°C. Please prepare a spare battery in cold weather. A battery that does not work properly in a cold environment does not mean 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 be sure it is clean before using.

Battery Storage

1.Due to the self-discharge phenomenon of batteries, please fully charge the battery before storage if it will not be used for a long time, to avoid damage caused by excessive discharge.
2.To avoid battery capacity reduction due to over-discharge, recharge it after several months' storage.(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
Charging	Charge Indicator glows red
Fully charged	Charge Indicator glows green

Charge Steps:

1.Plug the AC plug of the power adapter into the AC power outlet.
2.Plug the battery or the battery-equipped radio into the charger.
3.Ensure that the battery is properly connected to the charger, the charging indicator light turns red, and charging begins.
4.After charging for about 4 hours, the indicator light turns green, indicating that the charging is complete.
Note: During the charging process, if the temperature exceeds the usage range, the charger indicator light flashes alternately in red and green; if the battery is damaged or has poor contact, the charger indicator light also flashes alternately in red and green.

Attaching the Speaker/Microphone

Rotate the screw of accessory interface cover counterclockwise, loosen the screw and remove the accessory earphone cover, insert the MIC-SP-USB interface, and tighten the screw clockwise.
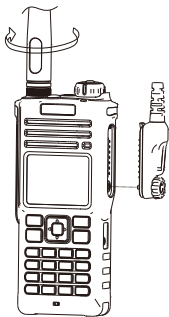
Getting Acquainted
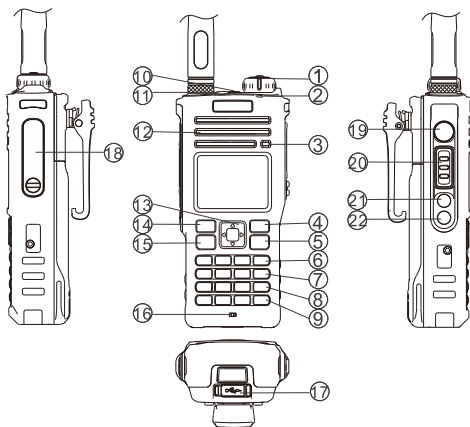
①	Power /Volume Knob	⑫	Speaker
②	LED Indicator	⑬	Direction Key：Short press: channel switch; long press: zone switch
③	MIC1	⑭	Menu/Select Button
④	Return Button	⑮	Off hook Button
⑤	Hold Button	⑯	Microphone MIC2: Dual-mode MIC
⑥	A/B Button	⑰	USB Port
⑦	POW Key：Short press to switch power, long press for automatic power adjustment	⑱	MIC-SP-USB Port
⑧	P1: Programmable Button	⑲	PTT-B Button
⑨	P2: Programmable Button	⑳	PTT-A Button: Main PTT
⑩	Flashlight	㉑	S1: Programmable Button
⑪	Orange Button：Emergency Alarm	㉒	S2: Programmable Button

Basic Operation

LCD Icons

Icon	Meaning	Icon	Meaning	Icon	Meaning
Signal Strength	Signal Strength		Mailbox Full		Relay Channel
H M L A	High/Medium/Low/ Auto Power		Message Read	|→|	DMO
	Digital Mode		Unread Message		Silence
	Analog mode		Message Sent		Battery Capacity
	D/A mode		Failed to Send		Bluetooth on
	A/D mode		Main Channel		Bluetooth Headset Connected
	Individual Call		Subchannel		Bluetooth Connected
	Group Call		Monitoring		Recording On
	All Call		USB Connected	SOS	SOS
	Emergency Alarm	V	VOX	+	Rescue Mode
	Scan On		Headphone Connected		Rescue Channel Scanning
	Roam On		Enable Positioning		Call Prompt
	Missed Call		Keyboard Lockout		Encryption Off
	Unread Message		Networking Channel		

Turning the Power on /off

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

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

Note:By using programming software to set a startup password, users must enter the correct 6-digit password each time you restart to access the normal working interface. If the password is entered incorrectly three times, the radio will automatically enter self-destruct and erase all data.

Only by reprogramming can restore to its normal operation. Please use the startup password with caution.

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 anti-clockwise to decrease the volume.

Selecting a Channel

Press the up key and the down key to switch channel. Press the up key will move to the previous channel, and the down key move to the next channel. The channel number will sound when change channel when voice prompt enabled.

Zone Switch

Zones can be divided into first-level, second-level, and third-level. The programming software allows a maximum of 3000 zones and 3773 channels. Enter the area menu and select the desired zone. Upon successfully zone switch, there will be prompt indicating the channel number.

Note: Long press the up/down key can also switch the third-level zone that belongs to the second-level zone.

A/B Band Switch

In dual standby mode, pressing the (A/B) key to switch the main working band (band A is displayed on the upper half of the screen while band B is on the lower half). Single band only allows setting the AB band within the UHF or VHF range while the UV dual band allows AB frequencies to be set freely within U/V dual band.

Note: When operating in single standby mode, short pressing the [A/B] button will not switch the primary working band.

Single/Dual Standby Switch

Long press the (A/B) key to switch the operating mode. In single standby mode, only Band A is displayed. In dual standby mode, Bands both A and B bands are displayed.

Power Switching

Press the (POW) to switch power level, it supports high/medium/low power setting. (H indicates high power, M indicates medium, and L indicates low power.)

Self-Destruction

The radio supports a self-destruct function. After enabling the self-destruct function through the programming software, press and hold the [orange key] while turning on the radio to enter self-destruct mode. Press the confirm key to select "Yes", and the interface will display "Self-destruct". After self-destruct, all data in the radio will be cleared, only the programming password will be retained. Restoring the normal working state requires reprogramming.

Call

The digital channel supports individual call, a group call or an all call.In analog mode, press the PTT key to directly initiate a call. On dual standby channel press the PTT-A key to initiate a call on band A, and display the icon 📶; Press PTT-B to initiate a call on band B, and display the icon 📶; On single standby mode, press the PTT-A or PTT-B key to initiate calls on the current channel. Hold the PTT button during the call and keep a distance of 3 to 4 cm from the microphone. In half-duplex mode, speak into the microphone 1, and speak into the microphone when in duplex mode. Use the normal speaking voice, and the LED indicator glows red indicating that it is transmitting.

●Individual Call

This radio supports a confirmed individual call. Select the individual call the, call party should press the answer key to initiate calls.

(1) If a individual call contact is preset for current digital channel, press PTT key to set up the individual call;

(2)Select the contact on the contact page and press PTT key to launch individual call;

(3)Entering the number or entering manual dialing mode and inputting the desired calling ID to launch individual call;

(4)Selected contacts from the call log's the missed/ received/ dialed calls, and press the PTT button to initiate individual call.

(5)Set programmable key to individual call, press to launch individual 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） Select the contact on the contact page and press PTT key to launch group call ;

（3） Input numbers directly or enter the manual dialing menu when the keyboard allows it. Press the # key to switch the group call type and enter the group call ID to be dialed. Press the PTT key to initiate the group call.

（4） Selected contacts from the call log's the dialed calls, and press the PTT button to initiate group call.

（5） Set programmable key to individual call, press to launch 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） Select all call ID on the contact page and press the PTT Button to launch all call.

（3） Select the all call ID from the dialed calls and press the PTT button to launch all call.

Receiving and Responding to a Call

On digital channel, while a individual call is received, press the PTT key within the ring time to set up the individual call and then to talk each other. Calls that are not answered within the ring time will be marked as missed call; 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. Signal received band A: 📶 ; signal received band B: 📶 , press the PTT-A or PTT-B within the ring time to call back to the current(except the digital all call).; On single standby mode, when channel locked band A, display the icon 📶 when received signal, press the PTT-A or PTT-B within the ring time to call back to the current(except the digital all call).

Button Setting

Use the customer programming software to configure programmable buttons, and assigned with different functions.

The programmable buttons include the following functions:

NO.	Shortcut Keys	Description
1	Unassigned	No function is assigned to the programmable button.
2	One Touch Call 1~6	Quick transmit group call/ private call/call alert or preset SMS.
3	Preset Channel 1~4	Quick switch to correspond the channel.
4	Emergency On	Send emergency information, only set short press.
5	Emergency Off	Exit emergency mode, only set long press.
6	Monitor	Enable or disable monitor function.
7	Permanent Monitor	To enable or disable permanent monitoring, only set to long press.
8	Keypad lock	Enable/disable keypad lock.
9	Battery Indication	Quick check to battery capacity.
10	Zone Switch	Quickly handover zones.
11	Priority Interrupt	Interrupt activity of current channel forcibly.
12	Power Switch	Switch High/Low Power quickly.
13	Repeater/Talk around	Enable or disable talk around quickly.
14	Nuisance Delete	Temporarily ignore unwanted channel activity.
15	Revive	One touch to revive.
16	Remote Kill	One touch to enter remote kill.
17	Testing	One touch to enter radio testing.
18	Remote Monitor	One touch to enter remote monitoring.
19	Flashlight On/Off	Enable/ disable flashlight.
20	All Alert Tones On/Off	Enable/ disable all alert tones.
21	Scan On/Off	Enable/ disable scan.
22	VOX On/Off	Enable/ disable VOX.
23	Satellite Positioning On/Off	Enable/ disable satellite positioning.
24	Recording On/Off	Enable/ disable recording.
25	Lone Worker On/Off	Enable/ disable lone worker function.
26	Man Down On/Off	Enable/ disable man down function.

27	Roam On/Off	Enable/ disable roam.
28	Site Lock On/Off	Enable/ disable site lock.
29	Manual Site Roam	Enter manual site roam.
30	Remote Stun	One touch to enter remote stun.
31	Remote Restore	One touch to enter remote restore.
32	Stealth Mode On/Off	Enable/ disable stealth mode.
33	Rescue Scan On/Off	Enable/ disable rescue scan.
34	Remote Destruction	One touch to enter remote destruction.
35	Vibration On/Off	Enable/ disable vibration alerts.
36	Encryption	Enable/ disable voice encryption.
37	Bluetooth	Enable/ disable Bluetooth.
38	Channel Lock	Enable/ disable channel lockout.
39	Manual Dialing Interface	One touch to enter manual dialing.
40	Contact List	One touch to enter contact menu.
41	Phone Contacts List	One touch to enter phonebook menu.
42	SMS	One touch to enter short message.

Functions and Operations

Contacts

The contact menu includes contact list, contact group, manual dialing, edit contacts, and group management. (It can add up to 1600 contacts)

1.Group Call

For group call type contacts, it supports contacts detail check, SMS, edit and delete name or number, and adding to groups.

2.Single Call Type

For single-call contacts, it supports contact detail check, preset SMS, sent control services, edit or delete contact name and number, and adding to group, etc. Control services including:

Control Services	Describe
Call Prompt	Launch call prompt to specific contact, the recipient can press the PTT button to call back.
Device check	Detecting whether other radios are powered on or using the current channel without displaying any indicators to the radio users.
Remote Monitor	Send monitoring request, and activate microphone to monitor voice/ background voice secretly if remote monitor is confirmed.
Device enable	Enable the remotely disabled device to restore its normal working condition.
Remote Kill	Send remote kill command to disable the radio. In remote kill, the device can still be remotely monitored, but all functions disabled. The radio can only be activate by revive or reprogramming.
Remote Stun	Send stun command to disable transmission functions, allows only receiving. Only by remote wake-up or reprogramming to restore the radio to the normal state.
Remote awake	Wake up devices that have been remotely stunned, allowing the radio to resume normal operation.
Device erase	Send remote-destruction command to ease all data, and will only resume normal operation after being returned to the factory for repairs.

●Edit Names

Edit contact names, press * to delete, press # to switch input methods. The name can be up to 16 characters long.

●Edit Number

Edit contact number, press * to delete and retype, ID input range1~16776415. (Single-call contacts are not allowed to be edited if they were set to one-touch call or added as a default address.)

●Delete

Delete single-call contacts. (Single-call contacts are not allowed to be deleted when set to one-touch call or added as a default address.)

●Add to Group

Add individual-call contact to a group.

3.All Call Type

Allow to check all call ID: 16777215 when select group call contact.

4.Contact Group

Check Group List

5. Manual Dialing

To call an individual-call or group-call contact that is not in the Contacts list, enter the ID code and press # to switch the call type to single-call or group-call, and then press and hold PTT to launch a call.

6. Add Contacts

Allow to add individual-call or group-call contact. For number editing, enter up to 8 digits (1~16776415), press OK for name editing (* key to delete, # key to switch input method), support up to sixteen characters, and press OK to save. Check and find the new contact in the contact list.

7. Group Management

Create a new group, edit the group name, or delete the group in the Group Management menu.

Phone Book

Phonebook can support contact list check, adding contacts, phone dial etc. The contact list can store up to 100 phone contacts, supports to check, edit, and delete the contact name and number. When making a phone call, you can select a contact in the contact list or dial the contact number manually and then press the confirmation button to initiate the call.

Scan

1. Scan On/Off

Scanning can only be enabled when a scan group (should contain at least 2 channels) has been added to the scan list of the current channel.

During scanning, the device listens to the channels in the scan list in a loop to determine if there is any voice activity or other activity on each channel. If scan priorities are set, it will prioritize scanning the high-priority channels before scanning the regular channels to ensure efficient reception in high-priority communications. To start scanning, select "Scan On" from the scan menu. The status bar will display the icon: ↻ , and the LED indicator flashes red. When the scanner detects activity on a channel, it will stay on that channel to receive the transmission, and the LED indicator remains green.

Note: Enter the menu list while scan on will stop scanning, upon exiting the menu the scan will resume.

2.Edit Channel List

Edit the scan list from the menu page to check and add list members. Each scan group can contain up to 16 channels, there will be a popup prompt if a new channel is added when scan list is full. Allow to set first priority and second priority to facilitate quick operation (each channel list supports up to two priority channels).

Roam

The digital channel supports the roaming function, and with multiple Repeater IP interconnections, a larger coverage of the system is achieved.

1.Roam On/Off
The status bar displays the icon: ✈ when the channel added roam group. Enable the roaming in the roaming menu, the LED indicator flashes red when in roaming search, and stay on the active site to receive. To turn off the roaming function, enter the roam menu and select roam off, switch channels or press the side roam button to toggle roaming on/off.

2.Site Lock On/Off
Turn site lock on to stop automatic roaming.

3. Manual Site Roaming
Enable manual site roaming, the radio will search for active sites again.

4. Edit Roam List
Edit the scan list from the menu page to check and add list members. Each roaming group can contain up to 16 channels, there will be a popup prompt if a new channel is added when scan list is full.

Note: Each channel can only be configured for either the scanning or roaming function, not both.

Zones

Zones include first-level zone, second-level zone, and third-level zones, each terminal can add up to 4 first-level zones, each containing up to 1000 second-level zones, and each second-level zones containing up to 2000 third-level zones. Channels can be added in the third-level zones. Enter the 【zone】 menu to select the desire channel, or long press the upper or down key to switch zones. Upon successfully zone switch, there will be prompt indicating the channel number.

Short Message

1. Edit Message

When editing short messages. Press the # key to switch input methods, the * key to delete, and the direction keys to move the cursor. In Pinyin or alphabet mode, the 1 key is for punctuation and the 0 key is for spaces. A text message can contain up to 140 characters. Enter a number directly or select a contact from the address book or contact group to send the message. A ringtone will sound when successful send and the screen will display: "Send Successful." A ringtone will also indicate when failed to send, and the screen will display: "Send Failed."

2. Inbox

The inbox can store up to 50 received message records. The (*/*) in the inbox menu indicates the number of messages, with the first number indicating unread messages and the second number indicating the total messages in the inbox. In the inbox, unread messages are marked with " ," and read messages are marked with a " ." Messages in the inbox can be replied to, forwarded, or delete.

3. Preset Message

Commonly used text messages can be added via the programming software, with a maximum of 100 preset messages. Each message can contain up to 140 characters. Preset messages can be temporarily edited before sending or sent directly.

Note: Users can assign preset messages to single-key function calls, and then quickly send the preset messages through the side key.

4. Sent Message

This terminal can store up to 50 message record. The icon indicates successfully sent message, while indicate failed message. Sent messages support forwarding, resending, and deleting.

5. Message Clearing

Message clearing is used to delete all messages in the inbox or sent messages at once, saving the trouble of deleting messages one by one. Clearing all messages will delete all messages in both the inbox and sent messages, but will not delete preset messages.

Call Logs

1. Missed Call

The radio will record all recent missed calls, storing up to 50 records. When the missed call list is full and a new record is added, the earliest record will be automatically deleted. Check the caller, called party, and the call time from the details menu.

2.Received Calls

The radio will record all recent received calls, storing up to 50 records. When the received call list is full and a new record is added, the earliest record will be automatically deleted. Check the caller, called party, and the call time from the details menu.

3.Dialed Call

The radio will record all recent outgoing calls, storing up to 50 records. When the dialed call list is full and a new record is added, the earliest record will be automatically deleted. Check the caller, called party, and the call time from the details menu.

4. Clearing Call Logs

Clearing call logs can individually delete missed call records, received call records, and dialed call records. Clearing all will delete all call records simultaneously.

Setting

1.Interphone settings

This feature provides users with basic radio settings to meet different user needs.

●**Talk Around:** When the radio is operating in Trunking mode but the Trunking service is unavailable, the talkaround function can be enabled for communication. When the talkaround function is enabled, an icon $|{\rightarrow}|$ is displayed in the status bar, indicating the talkaround mode. In talkaround mode, the radio uses the receiving frequency for transmission, and establishing communication between two terminals. The talkaround function automatically turns off when switching channels, enabling scanning, or restarting.

Note：**To enable this function, the transmission frequency and receiving frequency must be different, and the channel must be set to allow talk around in programming software.**

If the side key is set to Trunking/talkaround,press to enable talkaround operation.

●**Tones/Alerts:** Allows the user to enable or disable sound alerts through the menu. This includes settings for all tones, call ringtones, SMS ringtones, and keypad sounds. The "All Tones" control includes all alert sounds including voice prompts. If all tones are turned off, alarm sounds will still play normally.

●**Transmission Power:** Allows users to adjust the handheld terminal's transmission power to high, medium, or low through the menu. High power displays: $\boxed{H}$, Medium power displays: $\boxed{M}$, Low power displays: $\boxed{L}$.

●**Backlight:**Change the backlight settings in the menu. The backlight controls both the screen and the keyboard lights. If set to "Auto," the backlight will turn off if no key operation is performed during the suspend time. If set to "On," the backlight will remain on continuously.

●**Startup Screen:** Allow users to enable or disable the startup screen through the menu. When the startup screen is enabled, the BelFone logo will be displayed during startup.

●**Keyboard Lock:** Lock the keyboard through the menu. The keyboard lock status bar displays an icon: ⊶ . When the keyboard is locked, no keys can be operated except for the PTT button. Press and hold the # key to unlock.

●**Channel Lock:** Lock the channel through the menu. Once the channel is locked, it will remain on the current channel, and the up and down buttons cannot be used to switch to other channels.

●**LED Indicator:** Turn the handheld terminal's LED indicator on or off through the menu. When the LED indicator is turned off, it also disables backlight and keyboard light, and the LED indicator will not light up for transmission, reception, scanning, or other operations. Users should be cautious when turning off the LED backlight, as it may make the screen menu unreadable unless in sunlight or by using programming software to turn the LED indicator back on.

●**Power-on Password:** When the radio has set startup password, it can be modified here. The correct old password must be entered to set a new password. The new password must be entered twice to ensure consistency to change password.

Note: The password modification option is only valid if the startup password has been written using programming software.

●**Language Selection:** Supports Chinese and English.

●**VOX:** When VOX function is enabled, transmission can be initiated directly by using voice commands without pressing the PTT button. Transmission automatically stops after voice input ceases. Users can open the VOX function and set the VOX delay through the menu. Enable the VOX function or set VOX delay in the menu, set VOX level from1~9 or disabled, set VOX delay from 0.5~1.0 second. Connect to the headphones to activate the VOX, and the status bar displays: Ⓥ .

Note: The VOX is avails only when the headphone is plugged in.

●**Time Setting:** Allow to set time zone, date, and time.

●**Location Switch:** To select On/Off, Power Saving, and High Performance modes. In Power Saving mode, the battery last longer. When the positioning function is enabled, an icon ⊙ is displayed in the status bar.

●**Lone Worker:** Enable or disable the lone worker function in the menu.

●**Man Down:** Enable or disable the man down function in the menu

●**USB Mode:** If the radio supports the recording function, you can enable USB mode to copy the recorded files to a computer for playback. Restarting the radio will exit USB mode.

●**SOS/Rescue:** Set to SOS or Rescue mode.

●**Covert Mode:** Enable or disable the stealth mode.

●**Vibration Mode:** When vibration is enabled, there will be a vibration alert when an individual call, short message, or call is received

2. System Info

Check radio information including battery capacity, serial number, local number, device name, firmware version, CP version, hardware version, signal strength information, date and time, location information, sending location SMS, etc.

●**Locating Data:** Enable positioning and receive valid data. Allow to check longitude, latitude, time, date, speed, altitude, and number of satellites.

●**Send Location Information:** The positioning function supports sending location data to the desired contacts.

3. Channel Setting

Modify the current channel parameters on the menu. In digital mode, it supports to change the channel name, transmit timeout, transmit and receive frequency, color code, timeslot selection, transmit contact, and receive group list.

●**Channel Name:** Set the alias for the current channel, supporting up to 16 characters.

●**Transmitting Power:** Set transmission power for the current channel. $\boxed{H}$ for high power, $\boxed{M}$ for medium power, and $\boxed{L}$ for low power .

●**Transmit and Receive Frequency:** Set transmit and receive frequency for the current channel, with values restricted by the frequency band range.

●**CTCSS:** Set the transmit CTCSS type and receive CTCSS type for the current channel, as well as the specific CTCSS code.

●**Color Code:** Set the color code for the current channel, range: 0~15; in TDMA mode: 0~14.

●**Select Time Slot:** Set the timeslot for the current channel. Choose from timeslot 1, timeslot 2, virtual timeslot none, virtual Trunking timeslot 1, or virtual Trunking timeslot 2.

●**Transmit Contact:** Set the default communication address for the current channel selecting a transmit contact from the address book.

●**Receive Group List:** Set the receive group for the current channel.

Recording

1. Record Setting

Enable recording function and the status bar will display an icon: ◉ . Recording will automatically occur during transmission or reception. In the recording settings menu, choose to compress or not compress the recording files. Compressed files take up less storage space, while uncompressed files have better audio quality.

2. Recording Field

Enter the recording date in the Recording file menu to view or play the recording. Recording files are created at half-hour intervals. A file suffix of "00" indicates an uncompressed file, while "01" indicates a compressed file. Switching to USB mode to read the record or play the recording file on the PC.

3. Recording Version

Check recording version.

Note: Recording is an optional function.

Bluetooth

1. Bluetooth On/Off

This radio supports Bluetooth functionality and can connect to a Bluetooth headset or a Bluetooth ring PTT for communication. When Bluetooth is enabled, an icon ⚡ will be displayed in the status bar.

2. My Device

View the Bluetooth address, version, and other information, as well as allow to view or modify the Bluetooth name.

3. Headset pairing

Bluetooth headsets need to be paired for the first time. The operation steps are as follows:

(1) Turn on the Bluetooth headset and automatically enter the state of waiting for connection and pairing, with the LED indicator flashing red and blue alternately.

(2)Enter the "Search Headset" menu to search for devices. In the "Search List," select the Bluetooth headset to pair. Once pairing is successful, an icon will be displayed in the status bar. The connection history and names of connected devices can be seen in the "Connected Devices" menu. Press the PTT button on the Bluetooth headset to transmit, or release the PTT button to receive audio.

(3) Disconnect the Bluetooth headset in the "Exit Pairing" menu.

4. PTT Pairing

The Bluetooth PTT ring needs to be paired for the first time use. The operation steps are as follows:

(1) Turn on the Bluetooth ring and automatically enter the state of waiting for connection and pairing, with the LED indicator flashing red and blue alternately.

(2)Enter the "Search Headset" menu to search for devices. In the "Search List," select the Bluetooth headset to pair. Once pairing is successful, an icon will be displayed in the status bar. The connection history and names of connected devices can be seen in the "Connected Devices" menu. Press the PTT button on the Bluetooth ring to transmit, or release to receive audio. Enable "PTT Hold" function, no need to long press PTT while are talking, press PTT and then release it to hold the transmitting state, press PTT again to exit the transmitting.

Note: The Bluetooth is an optional function.

Digital Emergency Alarm

The digital channel supports emergency alarm functionality. Allow to initiate emergency alarms at any time from any operation interface. Short press the orange button to activate the emergency alarm and long press to deactivate. This radio supports three types of alarms and three emergency alarm modes:

Alarm Types:
●**Conventional:** Displaying alarm mode on the screen and continuously playing alarm tones.

●**Silence:** There is no on-screen prompt, and the alarm tone will not play. No incoming voice calls will be played either.

●**Alarm with voice:** Playing incoming calls that match the reception criteria but no on-screen prompt, and the alarm tone will not play.

Alarm Modes:

●**Emergency Alarm:** Enter alarm mode, and exit when confirmation is received or when the number of attempts is exhausted.

●**Alarm With Call:** Enter alarm mode, press the PTT button to launch alarm calls.

●**Alarm With Voice:** Enter the alarm mode and automatically sent emergency calls.

1. Launch Emergency Alarms

When the current channel has an emergency system added and the reply channel is set to this channel, just press the orange button or the programmed emergency button to initiate emergency alarms. The LED indicator will light up red, and the screen will display the icon:⌐ and the message "Sending...".

2.Receiving Emergency Alarms

When the emergency alert indicator is selected for the channel, upon receiving an alert, the handheld terminal will enter alert mode. The interface will display the icon⌐ , the ID or name of the alert initiator, and continuously play the alert tone.

3.Exit The Emergency Alarm

The transmitter exits the alert by long-pressing the orange button or the programmed emergency button. In conventional + emergency alert mode, the transmitter will automatically exit alert mode when the alert is confirmed or when the number of attempts is exhausted. The receiver can exit alarm mode only by long-pressing the orange button.

Lone Worker

Lone worker mode is set for individual worker who need to work alone to ensure personnel safety. By detecting if users transmit voice or performance within certain time to judge if users are be in danger, and automatically launch emergency alarms for help.

Man Down

The man down mode is set for user who needs to work in an isolated environment to ensure personnel safety. The man down trigger method can be selected as either tilt or motion detection. If the trigger method is tilt, the radio will emit a warning tone when tilted to the preset angle. If the terminal is not corrected within

the preset time, it will automatically send an emergency alarm. If the trigger method is motion detection, the radio will emit a warning tone if it remains stationary for a preset period and automatically send an emergency alert if the radio does not move within the preset time. If the user accidentally tilts the handheld terminal, it will emit a warning tone for a period before sending the emergency alert. This allows the user to address the situation during the warning tone to prevent false alarms.

Note: The man down function is an optional function.

Covert Mode

The radio will block all external UI indicator and disables all sounds when operate in the stealth mode. When connected to a headset in the stealth mode, voice can be received through the headset.

Satellite Positioning

The radio supports satellite positioning function, and the type of satellite positioning can be switched through the programming software: GPS/Beidou/Beidou+GPS. This function can query the position information of the device, including: time, date, longitude, latitude, altitude, speed and number of satellites. The positioning mode can be selected as power-saving mode or high-performance mode. When the satellite positioning is enabled, the status bar will display an icon ⊙ . If the number of call connections or PTT times reaches the set value, the radio will automatically send its position information to the center, or it can also send the positioning information to the specified number through the "Send Positioning SMS" menu. After receiving the data, the target radio will store it in the form of SMS, and the received positioning data can be viewed in the inbox.

●**Querying radio positioning information:** Set query command on the programming software, allow to querying target radio's positioning information via SMS. The operation steps are as follows:

1. Enables positioning feature and sets the "Query Command" in the programming software's settings to: ABC.

2. Enter SMS in terminal B and add the content: "ABC", and sent to terminal A.

3. Upon receiving the SMS from Terminal B, Terminal A will send its location information to B.

4. If the Terminal A has no location data, terminal B will receive an SMS with the

Voice Encryption

The voice encryption can encrypt the audio signals to secure communication privacy. This radio supports XOR, enhanced XOR, ARC4, AES256, advanced ARC4, advanced AES encryption. Among these XOR, enhanced XOR, ARC4, and AES256 only encrypt voice. If the encrypt feature is enabled, the transmitter

and receiver must be set as the same encryption type and encryption key, otherwise the receiver cannot get the normal audio. Among these, the XOR, enhanced XOR, ARC4.AES256 only encrypt voice. If the encrypt feature is enabled, the transmitter and receiver must be set as the same encryption type and encryption key to conduct communication. If encryption is not enabled on a digital channel, the status bar will display icon ▤ .

Note: The voice encryption function is only valid in digital mode.

Emergency SOS/Rescue Function

The SOS/rescue mode operates on channels with a fixed frequency. The SOS/rescue channel frequency fixed at 435.5 MHz when operate in U band, fixed at 145.5 MHz when operate in V bands, and fixed at 145.5 MHz/435.5MHz when the radio supports both U band and V band operation.

●Rescue Scan
Enable the rescue scan function on the setting menu or the programming button (rescue scan on/off). The status bar displays the icon: ☺ when enables the rescue scan function. The scanning method will be a loop scan of the current working channel and the rescue channels (A -> B -> rescue V channel -> rescue U channel).

●Rescue Mode
In the rescue mode, the radio works on the rescue channel with fixed frequency to receive the SOS information. The rescue mode can be turned on or off through the menu or key combination.
1. [Settings] Menu -> "Radio Settings" -> "SOS/Rescue" -> "Rescue Mode" -> "On" or long-press [S1] + [P1] keys simultaneously to enable rescue mode.

●SOS Mode
Enable the SOS mode, the radio transmits SOS messages at set intervals on the SOS channel. The settings on the radio are as follows:
1. [Settings] Menu -> "Radio Settings" -> "SOS/Rescue" -> "Siren" -> "On" or "Off"
2. [Settings] Menu -> "Radio Settings" -> "SOS/Rescue" -> "Light Flash" -> "On" or "Off";
3. [Settings] Menu -> "Radio Settings" -> "SOS/Rescue" -> "SOS Mode" -> "On" or long-press [S1] + [Orange Key] simultaneously to enable distress mode.

Radio Priority-Based Interrupt

The call priority feature allows the radio 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 4 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: The priority interrupt function is only valid in digital mode.

Networking

The radio supports registration to the network system, and can adapt to the Belfone Smart interconnection system to realize for interconnected communication.

Note: Networking feature is an optional feature.

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 (networked or not).

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.

Pseudo Trunk

When the radio selects "Pseudo Trunk" as the "Time Slot", either Time Slot 1 or Time Slot 2 can receive. In the direct Pseudo Trunk mode, any one of the two time slots can be used for voice Transmission and data transmission. In the Repeater mode, when selecting Pseudo Trunk, a free time slot can be randomly chosen for transmission. When the 'time slot'is selected as 'Pseudo Trunk', the time slot for initiating a call in pseudo trunk mode can be set. When the "pseudo trunk TX slot" is "none", transmission occurs in whichever slot is free; when the "pseudo trunk TX slot" is "1", the radio initiating the call can only transmit in slot 1; when the "pseudo trunk TX slot" is "2", the radio initiating the call can only transmit in slot 2. The transmission slot setting has no effect on the response. When the user presses PTT to respond, the radio always transmits in the time slot where the call is being received.

Note: When using the pseudo trunk option, it is recommended that the transmitting and receiving parties pair up to use this function.

When selecting the networking function for the digital channel, it is recommended to choose pseudo trunk as the time slot.

Full Duplex Call

It allows one-to-one full-duplex communication between different users, meaning both the caller and the receiver can send and receive voice simultaneously. Full-duplex calls are only applicable for individual calls, and the working channels of both handheld terminals establishing the call must be configured to "Voice Duplex" mode.

Direct-through Mode at Different Frequencies

When the transmitter and receiver are both configured with direct mode and the transmit and receive frequency correspond, the signal can be forwarded directly without using the Repeater, achieving direct communication between two terminals on different frequencies.

Voice Call Location Display

When the transmitter configures the "Voice call embedding location information" function, location information will be sent along with the voice. When both parties have valid location data, the receiver's call interface will display the transmitter 's location information.

Transmission Time Limit

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.

Transmission permission

Digital Channel
The transmission permission limits the transmission situation when the PTT key is pressed while there is activity on the current channel. In the "always" condition, regardless of the channel situation, transmission occurs directly when the PTT is pressed; in the " color code free" condition, if the color code of the current channel is occupied, pressing the PTT prompts that the channel is busy and transmission is prohibited; in the "channel free" condition, if there is activity on the current channel, pressing the PTT prompts: the channel is busy and transmission is prohibited.

Analog Channel
The transmission permission limits the transmission situation when the PTT key is pressed while there is activity on the current channel. In the "OFF" condition, regardless of the channel situation, transmission occurs directly when the PTT is pressed; in the "carrier" condition, if there is activity on the current channel, pressing the PTT key indicates that the channel is busy and transmission is prohibited; in the "CTCSS/CDCSS" condition, when the current channel receives a carrier CTCSS/CDCSS, pressing the PTT key indicates that the channel is busy and transmission is prohibited.

Noise Reduction

This radio comes with a built-in noise reduction module, to filter background noise and suppress feedback delivering clear voice.

Note: The noise reduction function is an optional feature.

Text-to-Speech (TTS)

This radio supports Text to Speech functionality. Enter the inbox menu select to convert the text content into voice for playback . A radio registered to the network system will also automatically play the content that automatically sent from the system.

Note: The TTS (Text-to-Speech) feature is an optional function.

Power Saving

Enable this function to enter automatic power saving which can extend battery service life, but response time will be delayed.

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.

Reject Stranger Call

When the reject stranger call feature on digital mode is enabled, initiating or receiving calls from no exist in the contacts list will be disallowed. On group call or all call, the caller's ID and group call ID or all call ID must be preset on address list.

Monitor

Both digital channels and Analog channels support the monitoring function. When monitoring is enabled, an icon 🔈 will be displayed in the status bar. Press the [Monitor] function key to enable monitoring. Switching channels will automatically disable monitoring; long press the [Permanent Monitor] function key to turn on monitoring, which will only be disabled by manually pressing the key again.

Squelch Level Adjustment

The analog channel supports squelch level adjustment, which adjusts the signal strength required for receiving signals. Under normal circumstances, if the communication distance of the radio is closer and the signal is stronger, the squelch level can be raised. If the communication distance of the radio is farther and the signal is weaker, the squelch level can be lowered. This not only suppresses noise but also ensures the reception of voice signals.

CTCSS/CDCSS

The radio simulation channel supports the CTCSS/CDCSS function to ensure the quality of the call. The voice output is allowed only when the received CTCSS/CDCSS matches the transmitted one.

●**Decoding:** The receiving radio must decode the CTCSS/CDCSS sent by the transmitting radio. The speaker will only be activated and voice output when the CTCSS/CDCSS set here matches the CTCSS/CDCSS sent by the sender;

●**Encoding:** The transmitting radio encodes the CTCSS/CDCSS before sending the voice, and the encoded voice is transmitted through the carrier wave. The receiver will only turn on the speaker and output the voice when it receives the CTCSS/CDCSS that matches the one set here.

CTCSS Frequency Table

CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]
1	67.0	14	103.5	27	159.8	40	199.5
2	69.3	15	107.2	28	162.2	41	203.5
3	71.9	16	110.9	29	165.5	42	206.5
4	74.4	17	114.8	30	167.9	43	210.7
5	77.0	18	118.8	31	171.3	44	218.1
6	79.7	19	123.0	32	173.8	45	225.7
7	82.5	20	127.3	33	177.3	46	229.1
8	85.4	21	131.8	34	179.9	47	233.6
9	88.5	22	136.5	35	183.5	48	241.8
10	91.5	23	141.3	36	186.2	49	250.3
11	94.8	24	146.2	37	189.9	50	254.1
12	97.4	25	151.4	38	192.8		
13	100.0	26	156.7	39	196.6		

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			

Technical Specifications

General	
Frequency range(Optional)	400-480 MHz 136-174 MHz
Channels	3773
Zones	3000
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC 7.4V (±20%)
Battery Capacity	2500mAh
Average Battery Working Hour (5/5/90)	16 hours (Analog) 21 hours (number)
Frequency Stability	±1ppm
Antenna Impedance	50Ω
Dimensions	66（L）* 35(W)* 145 (H)mm
Weight	540g(Including Battery)
Recording (Optional)	400 Hours
Bluetooth (Optional)	BT5.0
Transmitter	
Output Power	＜5W
4FSK Modulation	12.5kHz data only: 7K60FXD 12.5kHz Data and Voice: 7K60FXE
FM Modulation	12.5 kHz：8K50F3E；
Modulation Limitation	±2.5kHz @ 12.5kHz;
FM Noise	-40dB
Spurious Emission	-36 dBm≤1GHz/-30 dBm≥1GHz
Adjacent Channel Power	≥60dB
Frequency Response	+1/-3 dB
Audio Distortion	3%
Digital Vocoder	AMBE

Receiver	
Digital sensitivity	5% BER: 0.22uV
Analog sensitivity	0.22uV (12 dB SINAD)
Inter modulation	≥60dB
Adjacent channel selectivity	≥60dB
Spurious response rejection	≥65 dB
FM noise	-40dB
Audio response	+1/-3 dB
Rated audio output power	500mW
Maximum audio output power	1.1W
Rated audio distortion	3% (typical)
Conducted Spurious Emission	-57dBm
Location accuracy	Horizontal accuracy ≤ -10m (with well signal)
TTFF (Time to first fix) Cold Start	Less than 1 minute
TTFF (Time to First Fix) Hot Start	Less than 10 seconds
Environmental	
Operating temperature range	-20℃—+60℃
Storage temperature range	-30℃—+85℃
Humidity	MIL-STD-810C/D/E/F/G
Shock and vibration	MIL-STD-810C/D/E/F/G
Dust and waterproof	IP68

Note: The above specifications are tested according to trial standards. Due to continuous technological advancements, the data provided are for reference only.

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

RECYCLABLE PACKAGING