BelFone

www.belfone.com

BF-TD505

Commercial Portable Radio

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 engaged in research and exploration in the field of radio communication technology for decades, and has a global leading position in the field of private network communication technology. Based on research and development design, adapt to the modern complex communication environment, It is able to customize specific communication solutions according to different industry characteristics. High-performance, high-quality products that can control the overall situation, while providing smart dispatching and command communication.

This manual is applicable to

BF-TD505 series

WARNING !

◆ **In an explosive atmosphere (the mixture with air, under atmospheric conditions, of flammable substances in the form of gases, vapors or dust), please turn off the radio.**

Instructions before Use

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

◆It is recommended to use 1 minute for TX and 4 minutes for RX, when the radio is used in the transmission mode for many hours continuously, the radiator and chassis will become hot, allow the rear panel of the radio to contact a surface of low melting point /low Ignition point.

◆Don' t expose the radio to direct sunlight for a long periods of time. Also, don' t place the radioon 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 BelFone or the local dealer for technical assistance.

◆Please keep the surface of radio clean and dry. To clean the radio, use a damp fabric soaked in mild washing liquid.

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Unpacking and Device Inspection

Note: The following instructions regarding unpacking are only for BelFone's distributors, and service agencies or factories authorized by BelFone.
After carefully unpacking the 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
Charger	1
Li-ion Battery	1
Screws	1
Instruction Manual	1
Warranty Card	1
Certificate	1

Antenna

Strap

Charger

Li-ion Battery

Belt Clip

Screws

Installation of Accessories

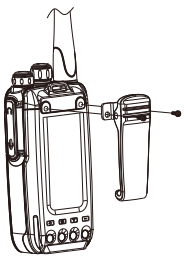
Installation/ removing the antenna

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.

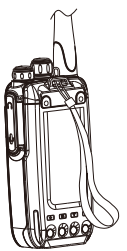
Installation/ removing the belt clip

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.

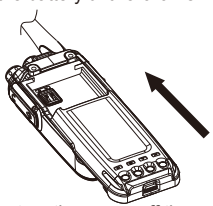


Attaching/Removing the Battery

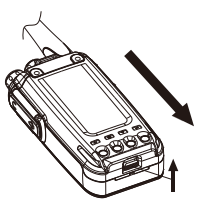
Warning !

- 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 radio 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 body injury and property damage.

Battery Tips

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

Extend Battery Life

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

Battery Storage

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

Charging the battery

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

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

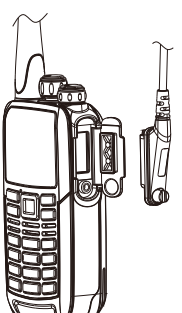
Charge Steps:

1.Plug the AC connector of the switching power into the AC outlet socket.
2.Place the battery or the radio 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.

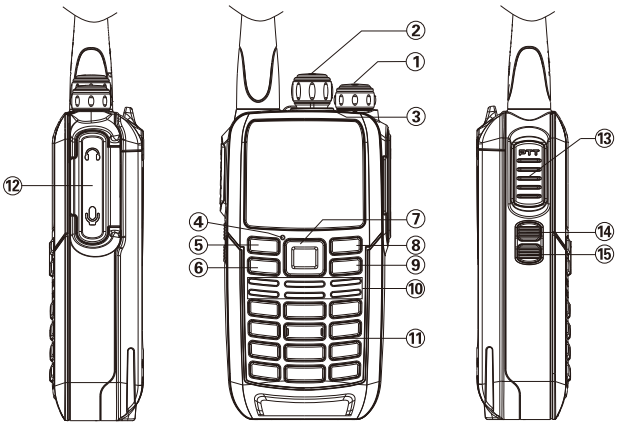
Note: While charging the temperature out of the limit the LED indicator of charger will flash red and green. If battery has damaged or battery is not connected to the charger correctly, the LED indicator of charger also will flash red and green.

Attaching the Speaker /Microphone

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



Getting Acquainted



①**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.

②**Channel Selector Knob**

Turn the knob to select channel 1-16.

③**LED Indicator**

1.When the radio is transmitting, the LED will glow red;

2.When the radio is receiving, the LED will glow green;

3.When the radio rotate to a un-programmed channel, the LED will glow red;

4.When the radio is scanning, the LED will flashe orange.

④**MIC**

⑤**Left key**

Press to move to the next step or store the setting.

⑥**MENU**

Press to enter menu mode to select the desired menu item.

⑦**Selection Key**

Press up or down/left or right to select the menu function item

⑧**Right key**

Press to move back to the previous menu.

⑨**HOME key**

Press to quickly return home screen.

⑩**Speaker**

⑪**Numerical**

To input numbers and letters

⑫**MIC-SP-USB Jack**

Connect to optional speaker/MIC and USB programming cable.

⑬**PTT key**

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

⑭**Button 1**

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

⑮**Button 2**

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

Basic Operation

LCD Icons

H/L	High/Low Power		Unread Message Inbox
	Digital Mode		Missed Call
	Analog Mode		Keypad Locked
	Digital Compatible Analog Mode		disable all tone alert
	Analog Compatible Digital Mode		Emergency on
	Private Call		VOX on
	Group Call		Plug in earphone
	All Call		Direct /Talk around Mode
	Scanning on		Monitoring
	unread message		Connect to Computer
	Inbox or Outbox Full		Battery Capacity
	Message send successfully		Roam on
	Message send failed		Channel Locked
	Read Message		

Turning the power on /off

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

Note: If the radio actives power on password function via program software ,each time the radio turned on, a 6 digit password must be entered. If a password error occurs, the radio will restart automatically and need input password again . After 3 times wrong password inputs continuously, the radio will be killed, and need to be reprogrammed to work normal. Enable power on password with due care.

Adjusting the volume

After the radio 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 ,chang channel and a channel number will sound.

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 64 zones, each zone with a maximum of 16 channels, all 64 zones can support up to 1024 channels. Select a desire zone through zone menu or set zone selection function to button 1 or button 2, then handover zone. While all tone alert is enabled, select zone and 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 only switches the channel mode temporarily, restart the radio or rotate channel selector knob, the current channel will return to default channel mode.
A/D mode is analog compatible digital mode.
D/A mode is digital aompatible analog mode.

Voice Call

Each digital channel may initiate a private call, a group call or an all call. On analog channel press PTT key to directly initiate an analog voice call. On D/A channel press PTT key to set up a digital voice call; On A/D channel press PTT key to set up an analog voice call;
To transmit press and hold down the PTT key, LED indication glows red, speak into the microphone, hold the palm microphone approximately 3 to 4 centimeters away from mouth.

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

Private Call

If the feature “private call ACK” is enabled, to set up a private call it needs to confirm whether the called is activated on the current channel.
（1）If a private call contact is preset for current digital channel, press PTT key to set up the private call;
（2）Enter contacts menu to select the private call number, then press PTT key to set up the private call;
（3）Enter contacts menu and go to manual dial menu or press programmed “Manual Dial” key. Input the private call number, then press PTT key to set up the private call;

（4）Enter call log menu and select the private call number, then press PTT key to set up the private call;
（5）Set the one touch call key as private call feature, then press programmed key to set up the private call.

Group Call

（1）If a group call contact is preset for current digital channel, press PTT key to set up the group call;
（2）Enter contacts menu 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 and 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 talk; while an all call is received, it cannot respond to an all call. On D/A channel or A/D channel, the radio will detect digital and analog signal (must have a subsonic) simultaneously when receiving, and if matching signals detected, the current call can be called back within the hang time.

Note: While channel free indication feature is enabled, 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 :

●**Unassigned**：The key is not assigned with any functions.

●**One Touch Call** 1~6：Allow user to initiate digital group call, digital private call, call alert or send preset message via the one touch call function.

●**Manual dial**：Manually input the private call number for calling.

●Emergency on/off: Enable the emergency call or disable emergency call.

●**Monitor**：Enable monitor function.

●**Backlight automatic on/off**: This function allow user to make the backlight automatic on or still on. The light will keep on all the time when the backlight is still on, while automatic on is selected, the light will become dark after 5 second no operating the key.

●**Keypad Lock**: Allows user to enable the keypad lock feature, if it is enabled keys cannot be operated except PTT key and side button. Press MENU and # key to unlock.

●**Scan on/off**: Allow user to enable or disable the scan function.

●**All alert tone on/off**: Allow user to enable or disable all alert tones.

●**Battery Indication**：It's convenient to know battery capacity

●**Short Massage**: This function will be convenient to enter message function menu.

●**Zone toggle**：This function will be convenient to enter zone selection function menu.

●**Priority Interrupt**: Interrupt activity of current channel forcibly

●**AD Switch**: Temporarily switch channel mode to AD or DA

●**Address list**：This function will be convenient to enter address list function menu.

●**Device enable**：Send an enable command to a private call contact.

●**Device Disable**: Send a disable command to a private call contact.

●**Device check**：Send a device check command to a private call contact.

●**Remote Monitor**：Send a remote monitor command to a private call contact.

●**High/low power**：Allow user to switch between high power and low power.

●**Repeater/talk around**： Allow radio connect through repeater or achieve standalone communication in talk around mode.
●**VOX on/off**: This function will be convenient to enable VOX function, the default level is 5
●**Nuisance Delete**: While scanning on, If receiving unwanted activities on the channel, press the programmed Nuisance Delete key to remove the channel from the scan list temporarily . Next scanning on the channel will be recovery.
●**Permanent Monitor**: Permanent monitor feature is the same as monitor, but permanent monitor feature only can be set as long press key. Long press the programmed Permanent Monitor key to enable or disable this function.
●**Site Lock/Unlock**: Quickly to enable or disable lock site function.
●**Manual Site Roam**: Quickly to search the available site manually.
●**Channel Lock**: Quickly to enable or disable channel lock function.

Note:

●Short or long programmable key-press can be assigned any of the functions.
●On analogy mode, programmable keys are including effective functions list: Unassigned、monitor、backlight automatic on/off、keypad lock、scan on/off、all alert tone on/off、Battery Indicator 、Zone Toggle、High/Low power、repeater/Talk around、VOX on/off、Nuisance Delete、Permanent Monitor 、Channel Lock.

Functions and Operations

Digital channel and Digital Analog Compatible Channel Contacts

Press the key to access the contact list, on the contacts, it allows to search address list members, add new contacts, manual dialing.

1. Group Call（ ）
While selecting a contact as group call, it allows to view its ID and send group message or set up voice group call.

2. Private Call（ ）
While selecting a contact as private call , it allows to view its detail, send call alert, send message, edit name or number, delete, send device check, disable or enable, send remote monitor.

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

●**Device Check**: This function can check if the target radio is active in the system without sending any tone alert to the target radio. While the radio is available, the screen displays: target radio has replied, while the radio is unavailable, the screen displays: fail!

●**Remote Monitor**: Allow a user to send a "Remote Monitor" request to the target radio via menu. If the request is sent successfully, the microphone of the target radio will be enabled to monitor its activities. Only when the target radio is set remote monitor decode can the monitor allowed.

●**Device Enable**: Allow a user to send "Device enable" command to the killed radio and revive it.

●**Device Disable**: Allow a user to send "Device Disable" command to kill a radio via menu, and all other functions of the target radio will be disabled except remote monitor. However, the killed radio will continue monitoring air interface to receive its "Device Enable" command to rivive.

●**Edit**: Modify the number or name of a private call contact. Press"*" key to delete, press "#" to switch input method, the available number range is 1~16776415, name inputs 16 characters at most.

●**Delete**: Delete unwanted contacts from the address list, if private call contact is set as channel default address or call number on one touch call, it's unable to be deleted.

3. All Call （ ）

While selecting a contact as all call, it allows to view its ID:16777215.

4. Manual Dial

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

5. New Contact

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

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 connected to the current channel to locate qualified channel for receiving or voicing. If the scan function is enabled, the icon " " and scan group name appear on the home screen, and LED indicator flashes red. When activities are detected on a channel, the radio will stay on the channel to receive current activities, and LED indicator flashes green. If unwanted call is received on the channel, press the programmed Nuisance Delete key to remove the channel from the scan list temporarily. To exit the scanning process, enter 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 appear in the same scan list.

Zone

The radio supports up to 64 zones, each of zone supports 16 channels, 1024 channels can support totally. Enter “Zone” menu to select a zone.

Messages

1. New SMS

It allows to edit text message(140 characters at most) and send it to a private call contact or group call contact. When editing a message, press “# ”key for switching input method, press “ * ” key for deletion and modification, press left or right key to switch input cursor. For non-numeric input method, key “ 1 ” is a symbol key. Key “ 0 ” is a space key. After the message is edited, select a contact from the contact list which the message is sent to or manually dial a number to send.

2. Inbox

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

3. Preset SMS

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

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

4. Outbox

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

5. Delete All

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

Call Logs

1. Missed Call

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

2. Answered Calls

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

3. Outgoing Calls

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

4. Clear Record

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

Settings

1. Settings

Allow a user to perform basic settings for the radio.

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

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

●**Tone/Alerts**: Set tones for radio, tone alerts include settings of all tones, call alert tone, message tone, 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 suports the modes: on or automatic , while "automatic on" is selected ,the light will become dark after 5

second not operating the key, and the light will keep on all the time when "on" is selected.

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

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

●**Channel Lock**: Allows a user to lock the channel via the menu. If channel is locked , it indicates: , and remain in the current channel, and 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 will become dark and Tx red indicator, Rx green indicator, scan orange indicator be off. Please use this function with due care.

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

Note: The VOX feature only is used if using a supported headphone.

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

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

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

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

●**Theme Choose**: Allow 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, the basic information of the radio can be viewed.

●**Battery Status**: Vew the radio’s rest battery capacity. It’s convenient for user to know battery capacity and charge the battery in time.

●**My Number**: View the radio ID number, which is same as device ID.
●**Firmware version**: View firmware version information.
●**CP Version**: View CP version information.

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

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

Roam

This feature allows the radio communicate between available sites in the IP Site Connection system. If the Roaming feature is enabled, the radio can communicate via any site in the IP Site Connection system, thus ensuring seamless communication in the system. After the feature enabled, the icon will appear, and during the roaming, LED indicator flashes red. The radio supports start roam automatically and site roam manually.

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

Digital Emergency

In case of an emergency the user can enter emergency mode to ask for help. For each 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, the user can send alarm information, while ACK is received or the maximum retries expires the radio will exit emergency mode.
Alarm with Call: Press programmed" Emergency On/Off" key to send emergency information, then press PTT to transmit an emergency call.
Alarm with voice to follow: Press programmed" Emergency On/Off" key to send emergency information, then speak into the microphone, voice and background noise can be transmitted automatically without the need to press PTT key.

1. Initiating Emergency Alarm

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

2. Exit emergency mode

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

3. Receive Emergency Information

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

Voice Encryption

The voice encryption can encrypt the audio to guarantee the privacy of the communication, via the programming software the user can select encryption type as static or dynamic. 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 rejecting strange call function is enabled, and the call ID is not in the contacts list, the call cannot be set up. On group call or all call, the

caller's ID, group call ID or all call ID must be preset on address list.

Direct Mode Operation

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

TDMA Direct Mode

If TDMA direct mode is enabled, the members in the same group call must use the same slot. One frequency supports calls in two slots synchronously, slot 1 and slot 2, in order to avoid interfering communications in the other slot.

Note: This feature is available only in digital mode.

Pesudo 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.

Note: In order to guarantee the stability of communication, the transmitter and the receiver should enable Virtual Trunking function at the same time.

Priority Interrupt

The call priority feature allows the user to interrupt the currently on-going call forcibly. This means a call can interrupt other on-going calls with lower priority to release the channel for itself. There are 5 voice priorities available, level 0 is lower, level 3 is higher, and emergency call is the highest. To transmit the Priority Interrupt command, 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 already in use. If always is set, whenever pressing PTT key, the radio can transmit directly. If color code free is set, the radio will be unable to transmit on the channel if a radio with that color code is already in using the channel. If channel free is set, the radio will be unable to transmit on the channel if the channel is already in use. If the channel is busy, press PTT key a warning tone will sound.

Analog Channel

This feature is available in the analog mode and can restrict the channel to transmit if it is already 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 being used by others. 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 using the channel . 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 may 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.

Analog Channel

On analog mode, the radio only supports the menu of scan, zone and settings. The feature and operation of scan and zone select are the same as digital mode. The menu of radio settings is added with squelch level.

●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 0~9, Level 3 is set to its basic 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 the received call matching the decode, can it be heard.

●Encode: The CTCSS/CDCSS will be attached to the signal before transmitting. The transmitted signal will only be heard by parties whose CTCSS/CDCSS signaling matches.

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	D464I
3	D026N	D026I	31	D223N	D223I	59	D465N	D465I
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	D731I
24	D155N	D155I	52	D412N	D412I	80	D732N	D732I
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	400-480MHz 137-174MHz
Channel Capacity	1024
Zones	64
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC 7.4V (±20%)
Battery capacity	1800 mAh
Battery Life（5/5/90）	Digital 20 hours / Analog 14 hours
Frequency Stability	±1.5ppm
Antenna Impedance	50Ω
Dimensions (L×W×H)	56（L）* 32(W)* 109 (H)mm
Weight	239g(include battery)
Transmitter	
RF Output Power	≤5W
4FSK Modulation	12.5kHz only data：7K60FXD 12.5kHz data and audio：7K60FXE
FM Modulation	12.5 kHz：8K50F3E； 25 kHz：16KΦF3E；
Modulation Limiting	+/- 2.5kHz @ 12.5kHz; +/- 5kHz @ 25kHz
FM Noise	-40dB
Conducted Emission	-36 dBm≤1GHz/-30 dBm≥1GHz
Adjacent Channel Power	≤-60dB
Audio Response	+1/-3 dB
Audio Distortion	3%
Digital Voice coder Type	AMBE

Receiver	
Digital Sensitivity	5% BER：0.25 uV
Analog Sensitivity	0.25 uV (12 dB SINAD)
Intermodulation	60dB
Adjacent Channel Selectivity	60 dB
Spurious Response Rejection	60 dB
FM Noise	-40dB
Audio Response	+1/-3 dB
Rated Audio output power	0.5W
Max Audio output power	1.2W
Audio Distortion	3% (Typical)
Conducted Spurious Emission	-57dBm
Environmental Specifications	
Operating Temperature	-20℃—+60℃
Storage Temperature	-30℃—+85℃
Humidity	MIL-STD-810G Standard
Vibration & Shock	MIL-STD-810G Standard
Dustproof & waterproof	IP54

Statement

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

BelFone

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