

BelFone

www.belfone.com



TD588UV

Digital FM Two-way 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!

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-TD588UV series

Warning!

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

Instructions before Use

It's important for the operator to be aware of and understand hazards common to the operation of any radio .Please observe the following safety precautions to prevent radio damage 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 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 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.

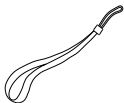
After carefully unpacking the radio, identify the items listed in the table below. If any items are missing or have been damaged during shipment please contact dealer or BelFone immediately.

Accessories

Items	Quantity
Antenna	1
Strap	1
Belt Clip	1
Screw Set	1
Charger	1
Power Adapter	1
Battery	1
User Manual	1
Warranty Card	1
Certificate	1



Antenna



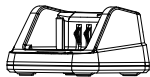
Strap



Belt Clip



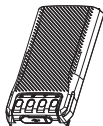
Screw Set



Charger



Power Adapter



Battery

Installation of Accessories

Installing/Removing the Antenna

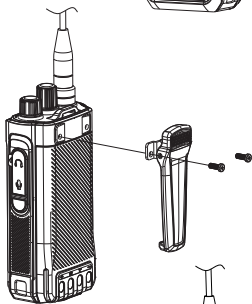
Hold the bottom of the antenna and screw it clockwise into the interface on the top of the radio until it is tightened.

Turn the antenna anti-clockwise to remove it.



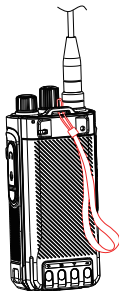
Installing/Removing the Belt Clip

Secure the belt clip with two M3×7mm screws.



Attaching the Strap

Thread the hand strap into the loop on the top of the back of the radio.

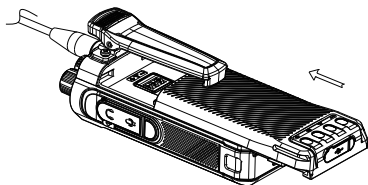


Attaching/Removing the Battery

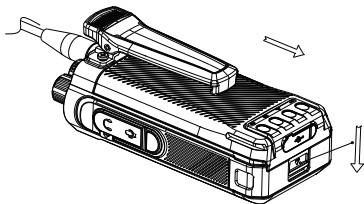
Warning!

- 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.

Align the battery with the corresponding grooves on the back of the radio, and then push the battery in parallel until a "click" is heard to lock it in place.



To remove the battery, first turn off the radio, then press down the latch on the bottom of the back of the radio, at the same time push down the battery and then take out the battery.



Note: Do not insert or remove the battery when the radio is powered on.

Battery Information

The new battery is not fully charged before shipment, please charge the new battery before use. Generally, the battery needs to be charged for 5 hours when it is used for the first time. The first three full charge and discharge cycles will optimize the battery capacity. When the battery power is low, it needs to be charged or replaced.

Applicable battery

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

Battery Tips

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

Extend Battery Life

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

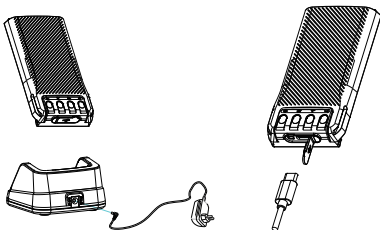
Battery Storage

1. Fully charge a battery before storing it for a long time, to avoid battery damage due to over-discharge.

- 2.Recharge a battery after several months' storage, to avoid battery capacity reduction due to over-discharge.(NI-MH batteries:3 months, Li-Ion& Li-polymer batteries: 6 months)
- 3.Store the battery in a cool, dry place under room temperature, to reduce self-discharge.

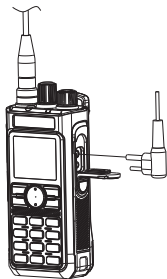
Charge the Battery

- 1.Insert the AC plug of the power adapter into the AC power output socket;
- 2.Insert the battery or the radio with battery into the charger;
- 3.The indicator light at the bottom of the battery is red, indicating the start of charging;
- 4.The indicator light at the bottom of the battery is green, indicating that charging has been completed.

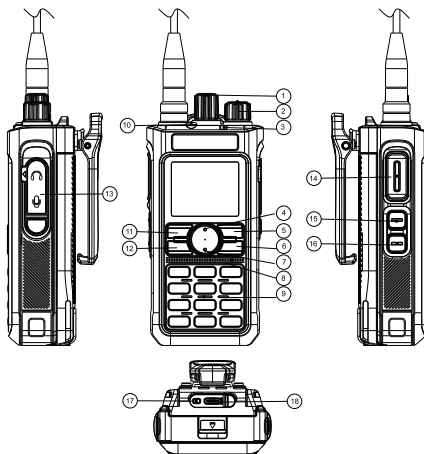


Attaching the Speaker/Microphone

Open the headphone cover and insert the speaker/microphone headphones directly into the speaker/microphone jack.






































Getting Acquainted



①	Channel Switch Knob	⑩	Orange Key P1 (Emergency alarm key)
②	Power Switch/ Volume Adjustment Knob	⑪	OK key
③	LED indicator	⑫	Pick up button
④	Up key	⑬	MIC-SP-USB interface
⑤	Return key	⑭	PTT key
⑥	Hang-up key	⑮	S1 key
⑦	Down key	⑯	S2 key
⑧	Microphone	⑰	Charging indicator light
⑨	Speaker	⑱	TYPE-C charging interface

Basic Operation

LCD icon

	Signal strength		Missed call		Location on
	High/Medium /Low power		Unread SMS		Keyboard lock
	Digital mode		SMS box full		Direct mode
	Analog mode		SMS read		Mute all
	D&A mode		SMS unread		Battery level
	A&D mode		SMS sent successfully		Bluetooth enabled
	Private call		Message sent failed		Bluetooth headset connected
	Group call		Main channel		Bluetooth device connected
	All call		Secondary channel		Recording on
	Emergency alarm		Monitoring		Call prompt
	Scanning		USB connected		Encryption off
	Roaming		VOX		

Power on/ Power off

Rotate the Power switch/Volume adjustment knob clockwise to power on.

Rotate the Power switch/Volume adjustment knob counterclockwise to power off.

Note: When the radio is configured with a power-on password, the correct 6-digit password must be entered each time it is powered on. When the password is entered incorrectly three times, the radio will self-kill and clear all data except for the device ID, device name, and language environment. It can only be used normally by re-programmed. Users are advised to use the power-on password with caution.

Adjust volume

In the powered-on state, rotate the Power switch /Volume adjustment knob to adjust the volume. Rotate clockwise to increase the volume, and rotate counterclockwise to decrease the volume.

Select a channel

Rotate the channel encoder to select the desired channel. Rotate clockwise to increase the channel number, or rotate the knob anti-clockwise to decrease the channel number

Select a zone

The radio supports up to 64 zones, each zone can contain up to 64 channels, and 64 zones can support up to 4000 channels. Select a desired zone through zone menu or press the programmed [ZoneToggle] key to switch zones.

Single/Dual standby switching

Press the programmed [Standby Switch] key to switch between single and dual standby mode. In single standby mode, the main working frequency band A lights up, and the secondary working frequency band B is displayed in gray. In dual standby mode, both A and B bands are displayed simultaneously.

Main/Secondary channel switching

In dual-standby mode, press the programmed [Main Channel Switch] key to switch the main working frequency band, and the main working frequency band A will display in blue. The radio of single-band version is divided into single UHF or single VHF, and the channel frequency can only be set within the frequency range of UHF or VHF. The channel frequency of the UV dual-band version can be set freely within the frequency range of U/V bands.

Note: If the radio is working in single standby mode, short pressing the programmed [Main Channel Switch] key cannot switch the working main frequency band.

VFO/channel mode switch


Press the programmed [VFO mode on/off] key to switch between VFO mode and channel mode. In VFO mode, rotate the channel encoder to adjust the frequency or directly enter the frequency through the numeric keypad.

A/D switching

When the channel mode is D/A compatible, press the programmed [ADon/off] key to switch the channel mode. If the current channel is D/ A mode, press the key to switch to A/D mode; if the current channel is A/D mode, press the key to switch to D/ A mode.

Note: Digital/Analog Switch function only switching the channel mode temporarily, restart the radio or rotate channel selector knob, the current channel will return to its default channel mode.

Call

In digital mode, private call, group call or all call can be initiated; In analog mode, press PTT key to directly initiate an analog call; In dual standby mode, press the PTT key to initiate a call on the main working frequency band A, and the interface displays the icon:  ; In single standby mode, press the PTT key to initiate a call on the current working channel. While calling, hold down the PTT button and speak with a normal tone at a distance of 3~4cm from the microphone. The LED indicator light is red, indicating that it is transmitting.

Private call

If “private call ACK” is enabled, the private call can be established only after the called pressing the answer button.

- (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 manual dial menu under contacts menu, or in the home interface with keyboard allows input, directly input a 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 a private call contact to the one touch key, then press PTT 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 manual dial menu under contacts menu, or in the home interface with keyboard allows input, press the # key to switch to the group call type and input a group call number, then press PTT key to set up the group call;
- (4) Enter call log menu and select the group call number, then press PTT key to set up the group call;
- (5) Set a group call contact to the one touch key, then press PTT 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;

Long press key call

In digital mode, the number keys 0-9 can be set as long-press call function, and private call or group call contacts are assigned to the corresponding number keys. In the standby interface, long press the corresponding number key to enter the call interface and then press the PTT key to initiate a call or directly send a pre-set text message.

Receiving and calling back

In dual-standby mode, while the main working frequency band A receives a signal, the interface displays the icon: ; while the secondary working frequency band B receives a signal, the interface displays the icon: .

In single-standby mode, only band A is the working frequency, while receiving a signal, the interface displays the icon: . In digital mode, while a private call is received, press the PTT key within the hang time to set up the private call and then talk to each other. If there is not respond to a received private call within the hang time, the radio will display the missed call icon; while a group call is received, press the PTT key within the hang time to call back; while an all call is received, it cannot respond to an all call.

Button configuration

All keys in the key definition can be programmed through the programming software to configure the corresponding functions to different function keys.

The programmable buttons include the following functions:

NO.	Define Name	Function Description
1	Un assigned	No function is assigned to the programmable keys.
2	One Touch Call 1-6	Quickly initiate digital group calls, digital private calls, call alerts, or send pre-composed text messages.
3	Preset Channel 1~4	Quickly switch to the preset channel.
4	Emergency On	Enable the emergency alarm.
5	Emergency off	Disable the emergency alarm.
6	Monitor	Quickly enable or disable the monitoring function.
7	Permanent monitor	Quickly enable or disable the permanent monitoring function.
8	Keypad lock	Quickly enable or disable the keyboard lock function.
9	Battery indicator	Quickly check the battery level.
10	Current Date Prompt	Quickly check the current date and time.
11	Zone Toggle	Quickly switch zones, and the zone number increases.
12	Channel up	Quickly switch channels, and the channel number increases.
13	Channel down	Quickly switch channels, and the channel number decreases.
14	Priority interrupt	Forcibly interrupt the current activity on the channel.
15	AD on/off	In the digital and analog compatible channel, one key temporarily switches the channel mode.
16	Power switching	Enter the power switch menu with one key.
17	Repeater/Talk around	Quickly enable or disable the talk around function.
18	Nuisance delete	Temporarily delete the unnecessary active channels received during scanning.
19	Radio enable	Quick access to Radio Enable menu
20	Radio disable	Quick access to Radio Disable menu

NO.	Define Name	Function Description
21	Radio check	Quick access to Radio Check menu
22	Remote monitor	Quick access to Remote Monitor menu
23	Backlight auto on/off	Quickly switch the backlight to automatic or always-on mode.
24	All alert tones on/off	Quickly enable or disable all alert tones.
25	Scan On/Off	Quickly enable or disable the scanning function.
26	VOX on/off	Quickly enable or disable the VOX function.
27	Satellite Location On/Off	Quickly enable or disable the satellite location function.
28	Record on/off	Quickly enable or disable the recording function.
29	Work Alone On/Off	Quickly enable or disable work alone function.
30	Upend off/on	Quickly enable or disable the upend function.
31	Roam on/off	Quickly enable or disable the roaming function.
32	Site lock on/off	Quickly enable or disable the site locking function.
33	Manual site roam	Quickly search the available site manually..
34	Covert mode on/off	Quickly enable or disable the covert mode.
35	Encrypt On/Off	Quickly enable or disable the voice encryption function.
36	Bluetooth on/off	Quickly enable or disable the Bluetooth function.
37	Bluetooth search and automatic connection	Quickly search for and connect to Bluetooth headphones.
38	Channel lock	Quickly enable or disable the channel locking function.
39	De-noise On/Off	Quickly enable or disable the noise reduction function.
40	VFO mode on/off	Quickly enable or disable the VFO mode.
41	FM mode on/off	Quickly enable or disable FM mode.
42	FM Search	Search FM channel.
43	Main channel switch	Quickly switch the main working channel to A or B.
44	Inversion On/Off	Exchange receive and transmission frequency.
45	Standby switching	Quickly switch the current working mode to single standby or dual standby.
46	Open main menu	Quick access to the main menu.
47	Return to main interface	Quick access to the main interface.
48	Manual dial UI	Quick access to the [Manual Dialing] menu.
50	Contact List	Quick access to the [Contact List] menu.
51	Short message	Quick access to the [Short Message] menu.
52	New short message	Quick access to the [New SMS] menu.
53	Inbox	Quick access to the [Inbox] menu.
54	Outbox	Quick access to the Sent Messages menu.
55	Preset short message	Quick access to the [Pre-set SMS] menu.
56	Call log	Quick access to the [Call Log] menu.

NO.	Define Name	Function Description
57	Missed call	Quick access to the [Missed Call] menu.
58	Received call	Quick access to the [Received Call] menu.
59	Dialed call	Quick access to the [Dialed Numbers] menu.
60	Zone	Quick access to the [Zone] menu.
61	Device config	Quick access to the [Settings] menu.
62	Channel settings	Quick access to the [Channel Settings] menu.
63	Bluetooth	Quick access to the [Bluetooth] menu.
64	Record	Quick access to the [Recording] menu.
65	Recording List	Quick access to the [Recording List] menu.

Functions and Operations

Contact

Contacts list can contain a maximum of 2000 members, including contact list, contact group, manual dialing, new contact and contact group configuration options.

1. Group call

While the contacts type is Group Call, select the menu to view its detail, send message, edit name or number, delete the contact, join in or exit the contact group.

2.Private call

While the contact type is private call, select the menu to view its detail, send control service, send message, edit name or number, delete the contact, join in or exit the group. Control services are including:

Control Services	Description
Call Alert	Prompt the private receiver to respond the transmitter if communication is available.
Device Check	Check if the target radio is active in the system without sending any tone alert to the target device.
Remote Monitor	Send a "Remote Monitor" request to the target device. If the request is successful, the microphone of the target radio will be activated to monitor its activities.

Device Enable	Send a "Device enable" command to the killed radio and revive it.
Device Disable	Send a "Radio Disable" command to a kill a radio, all other functions of the radio will be disabled except remote monitor. The radio must be reprogrammed or receive a "device enable" command to revive.
Distance measurement	When both parties obtain effective positioning data, the transmitter can query the receiver's distance and orientation.

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

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

Add to group: Add a private call contact to a group.

3. All call

While the contact type is All Call, select the menu to view its ID 16777215 or add it to the group.

4. Contact groups

View the list of groups, and each group can add up to 150 contacts.

5. Manual dialing

It is convenient for calling private or group contacts not in the contact list. On manual dial menu, press the # key to switch the call type between private and group, then input the ID code and press PTT to initiate the call, or press the OK key to send a message. For private contacts, users can also perform operations such as call alert, radio check, remote monitor, radio enable, radio disable, and distance measurement.

6. New contact


The radio allows adding private call and group call type contacts. Press * key to delete when editing name, # key to switch input method, and enter up to sixteen characters; after entering the name, press the confirm key to edit the number (1~16776415), then press OK key to save. The newly added contact can be found in the contact list.

7. Subgroup management

In the subgroup management menu, it allows creating a new subgroup, edit the subgroup name, or delete a subgroup. Up to 16 contact subgroups can be created.

Scan

1. Scan On/Off

For scanning to work, the current channel must be added to the scan list and the list must contain 2 channels at least. When the scan feature is enabled, the icon  appears on the home screen and LED indicator flashes red. During scanning, the radio searches the scan list connected to the current channel to locate qualified channel for receiving or voicing. If scanning priority is set, priority channels are scanned first and then ordinary channels are scanned to ensure the service reception of high-priority channels. Enhanced scanning function is also supported to improve scanning efficiency. When activities are detected on a channel, the radio will stay on the channel to receive current activities and LED indicator is always 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 and turn off scanning, switch channel or press the programmed Scan key.

Note:

- During scanning, entering the menu list will stop the scanning process. Exiting the menu will restart the scanning.
- If the channel enables the feature "Auto Scan" via the programming software, switching to the channel will enter scanning automatically;
- While programmed key is programmed as Scan on/off, press it to enable scan feature.


2. View / Edit

Allow a user to view/edit the scan list via menu. In the "View members" menu, users can view the members in the current scan list or delete a channel from the scan list. In the "Add scan channel" menu, users can add new channels to the current scan list, with a maximum of 16 channels. In the "Priority channel" menu, channels can be set as the first and second priority channels, with a maximum of two priority channels set in each scan list.

Roam

Digital channels support roaming function, which allows the radio to communicate between available sites in the IP Site Connection system. It can only be configured through the menu after adding a roaming list to the current

1. Roaming on/off

The roaming feature can only be enabled if the roaming list contains at least two channels and the screen will display the icon . When roaming, the LED indicator flashes red and the radio will automatically search for valid sites and switch to the channel for communication. To disable roaming, enter the roaming menu and select "Roaming Off", switch channels, or press the programmed [Roaming On/Off] key.

2.Edit list

Users can edit the roaming list through the menu. In the "View Members" menu, users can view all members in the current roaming list or remove a channel from the roaming list. In the "Add Members" menu, users can add new roaming members to the current roaming list, with each list containing up to 16 channels. Only channels with different frequencies and enabled for "IP Site Connection" can be added to the roaming list.

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

Zone

The radio supports up to 64 zones, each zone supports up to 64 channels, and 64 zones can support up to 4000 channels. Users can select the desired zone through the menu.



Note: Zone switching can only be possible when he radio contains two or more zones.

SMS

1. New SMS

It allows editing desired text message and sending 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 up or down key to switch input cursor. For non-numeric input method,key"1" is a symbol key and key "0" is a space key. The message contains 140 characters at most. After the message is edited, select a contact from the contact list or manually dial a number to send.

2. Inbox



The Inbox can save up to 50 received messages, and a (*/*) is displayed behind the inbox menu. The number in front indicates the number of unread received messages, and the number behind indicates the total number of messages in the inbox. 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 100 text messages and each message contains 140 characters at most. 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

Outbox can save up 50 sent messages. If the message is successful sent, it displays ; If the message is failed, it displays , The sent messages support forwarding, resending, and deleting operations.

5. Delete All

It is used to delete all messages in the inbox or outbox at once. The “Delete all” option will simultaneously delete all messages in the inbox and outbox, but pre-set messages will not be deleted.

Call Logs

1. Missed calls

The radio will record all recent missed private calls, with a maximum storage capacity of 50 records. When the missed records are full and there are new records, the oldest record will be automatically cleared. The calling, called and call time can be viewed through the details menu.

2. Answered calls

The radio will record all the recent received private calls, with a maximum storage capacity of 50 records. When the received records are full and there are new records, the oldest record will be automatically cleared. The calling, called and call time can be viewed through the details menu.

3. Outgoing calls

The radio will record all recent private calls, group calls and all calls, with a maximum storage capacity of 50 records. When the outgoing records are full and there are new records, the oldest record will be automatically cleared. The calling, called and call time can be viewed through the details menu.

4. Clear records

It is allowed to separately clear missed calls, answered calls, and outgoing calls. The "Clear all" option will simultaneously clear all call records.

Setting

1. Radio settings



This function provides users with basic settings of the radios to meet different user needs.

- **Talk around:** When the repeater malfunctions, or the radio is out of repeater's range, communications can be continued in talk around mode. While talk around is enabled, the screen displays: |→| , the TX frequency will be set the same to the RX frequency. Switching channel, enabling scan feature or restarting radio will disable the feature.


Note:

To enable this feature, TX frequency should be different from RX frequency, and the channel should be set as allowing talk around on the programming software. Press the programmed [Repeater/Talk Around] key to switch DM mode and RM mode.


- **Tone/Alerts:** It is allowed to enable or disable the tones including call alert tone, message tone and keypad tone. If "All tones" option is set to off, the radio will be mute including the voice prompt, but the alarm tones can still be played normally.
- **TX Power:** Set current channel transmitting power level, high power displays: [H] ,medium power displays: [M] , low power displays: [L] .
- **Backlight:** It controls both the screen and keypad lights. If "automatic" is selected, the light will turn off within preset time not operating the key. If "on" is selected, the light will keep on all the time.
- **Boot Interface:** Allow a user to enable or disable the boot screen via menu. If the intro screen is enabled, while the radio is power on, the screen displays

- **Keypad Lock:** Allow a user to enable or disable keypad lock via menu. While Keypad is locked it displays: , and keypad operation is not allowed except for PTT . Long press the # key to unlock.
- **Channel Lock:** Allow a user to lock the channel via the menu. If channel is locked, it displays: , and remains in the current channel, rotating the channel knob cannot switch to other channels.
- **LED indicator:** Allows a user to enable or disable the LED indicator via menu. If it is set to off, both the backlight and keypad lights will disable, and the LED indicators for transmitting, receiving, scanning and other operations will not light up.
- **Power-on Password:** If power-on password feature is enabled via programming software, the password can be modified by this menu. 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.

- **Language:** The radio supports two languages: Chinese and English.
- **VOX:** While VOX is enabled the radio displays: , 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. Via the menu, can select the voice control level can be set as 1 to 9, the voice delay can be set as 0.5 to 10 seconds, and the step value is 0.5

Note: The VOX feature is invalid after plugging in an earphone.

- **RTC Configure:** View real time or modify the zones, dates and time via settings menu.
- **Location Switch:** The radio supports three modes: Off, power-saving, and high-performance. In power-saving mode, the battery life can be extended. When the location feature is enabled, the radio displays:  .
- **Work Alone:** Enable or disable the work alone function through a menu.
- **Upend:** Enable or disable the upend function through the menu.
- **Convert Mode:** Enable or disable the convert mode through the menu.
- **De-noise:** Enable or disable noise reduction feature via settings menu.

2. System Info

View the basic information of the radio, including battery status, serial number, device number, device name, firmware version, CP version, hardware version, record version, location data, sending location message. RSSI indicate, date time, etc.

- **Location data:** When location is enabled and valid data is received, users can view longitude, latitude, time, date, speed, altitude, and satellite count.
- **Sending location information:** When the location function is enabled, the location data can be sent to the desired contacts.


3. Channel configure

Channel configure feature is used to modify the current channel parameters, on digital channel, it is allowed to modify RX/TX frequency, Channel Name, Sending Timeout, TX contacts, Color Code, Slot Selection and RX Group List; on analog channel it is allowed to modify RX/TX frequency, Channel Name, Sending Timeout, CTCSS.

- **Channel Name:** Set the current channel alias, supporting up to 16 characters.
- **TOT:** Set the current channel transmission time duration.
- **TX/RX frequency:** Set the receiving and transmitting frequency of the current channel, the value is limited by the frequency range.
- **CTCSS/CDCSS:** Set the transmitting and receiving CTCSS/CDCSS type of the current channel, and the CTCSS/CDCSS code.
- **Color Code:** Set the current channel color code, range: 0~15. When the channel is in TDMA direct mode, the color code range is 0~14.
- **Choose slot:** Set the current channel time slot, time slot one, time slot two, virtual time slot none, virtual cluster time slot one and virtual cluster time slot two can be set.
- **TX contact:** Set the default contact for the current channel, select private call or group call or all call from the contact.
- **RX group list:** Set the receive group for the current channel.

Voice Recording

1. VR switch

After the radio is enabled with the recording function, the screen will display the icon: , and it will automatically record during transmitting or receiving.

2. Voice Records


Enter the recording date in the voice records menu to view or play the recording. Recording files can also be read by programming software and played on the PC.

3. Delete all recording files

Delete all recording files through the menu.

Bluetooth

1. Bluetooth switch

The radio supports Bluetooth function and can be connected to Bluetooth headphones or Bluetooth PTT for calls. When the Bluetooth function is enabled, the status bar displays an icon: .


2. My device

View the Bluetooth address, version and other information of the radio, and view or modify the Bluetooth name.

3. Earphone pairing

When using Bluetooth earphones for the first time, pairing is required to connect them. The operation steps are as follows:

(1) Turn on the Bluetooth earphones and automatically enter a state of waiting for connection and pairing. At this time, the LED indicator lights will flash alternately in red and blue;


(2) Enter the "Search Earphone" menu on the radio to search for devices and select the paired Bluetooth earphones via the "Search List" menu. After successful pairing, the radio displays: . Users can view the connection history via the "Paired Devices" menu and view the names of the connected device via the "Connected Device" menu. Press the PTT button on the Bluetooth earphones to speak and transmit, or release the PTT button to receive voice.

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

4. PTT pairing

When using Bluetooth PTT for the first time, pairing is required to connect them. The operation steps are as follows:

(1) Turn on the Bluetooth PTT and automatically enter a state of waiting for connection and pairing. At this time, the LED indicator lights will flash blue;

(2) Enter the "PTT Pairing" menu on the radio to search for devices, and after successful pairing, the radio displays . In the "PTT Info" menu, users can view the names and battery level of the connected devices. Press the PTT button to speak and transmit, or release the PTT button to receive voice. When the PTT keep feature is enabled, it is not need to long press the PTT during the call. Press the PTT once and release it to enter and maintain the transmitting state, and press the PTT again to exit the transmitting state.

Note: Bluetooth is an optional feature.

Digital Emergency

In case of an emergency the user can enter emergency mode to ask for help. There are three emergency types and three emergency modes available.

Emergency Type:

Regular: The radio sends emergency alarm and continuously plays the audio alert.

Silent: The radio sends emergency alarm but no audio/ visual alert, the speaker will be muted when receiving speech signal.

Silent with voice: The radio sends emergency alarm but no audio/ visual alert, when receiving speech signal the speaker will turn on to receive call.


Emergency Alarm Mode:

Emergency Alarm: The radio will exit emergency mode while ACK is received or the maximum retries expires.

Emergency Alarm with Call: The radio will remain in alarm and call mode while ACK is received or the maximum retries expires, and pressing PTT can transmit an emergency call.

Emergency Alarm with Voice: Once the "Emergency Alarm" button is pressed, an emergency alarm will be sent, and the radio can automatically transmit voice without pressing PTT.


1. Initiate 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  in regular type.

2. Exit emergency mode

Long press the programmed [Emergency Off] key to exit emergency state. In regular type and emergency alarm mode, when ACK command is received or the alarm cycles expire, 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.

Analog Emergency

If the analog channel has five-tone signaling or DTMF signaling, it supports the analog emergency alarm function.

1. Initiate/Exit emergency alarm

If the signaling type of the current channel is five-tone or DTMF, and an analog alarm system is added, press the programmed [Emergency On] key to initiate an emergency alarm, and press the programmed [Emergency Off] key to exit the emergency alarm.

2. Receive emergency alarms

After receiving the signaling, if the radio decodes successfully and the decoding type is "emergency alarm", the interface will display "alarm received".

Work alone

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


Upend

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

Convert Mode

When the radio is working in covert mode, it will block all external UI instructions and disable all sounds. When the radio is connected to headphones and covert mode is turned on, voice can be received through the headphones.

Location

The radio supports the satellite location mode of GPS, Beidou, GLONASS and Galileo, which provides location data including time, date, longitude, latitude, speed, altitude, and number of available satellites. The location mode can be set as power-saving mode or high-performance mode. When location is enabled, the status bar displays the icon , and the radio will transfer its location information automatically to the center if call counts or PTT counts is reached. Location data also can be manually reported to a private contact via "Send Location SMS" menu. After receiving the data, the target radio will store it in the form of an SMS, which can be viewed in the inbox.

●Query Location information of another radio user


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

Note: Location is an optional feature.

VFO Mode

The VFO mode supports two channels, VFOA and VFOB, and allows frequency adjustment between the U/V bands. In channel mode, press the programmed key [VFO Mode On/Off] to switch the main channel to VFO mode. If the main channel is above the interface, it switches to the VFOA channel; if below, it switches to the VFOB channel. Rotating the channel encoder to adjust the frequency according to the set step value, or directly enter the frequency on the numeric keypad.

VFO scanning

The VFO scanning function can be enabled through the scanning the menu or the programmed [Scan On/Off] key and the status bar displays the icon: . The radio will automatically scan within the set scanning start and end frequency range according to the set step value, and stay on the channel for receiving when scanning a certain frequency with activity.


The radio supports 3 VFO scanning modes:

TO: After scanning the signal, stay for a period of time before continuing scanning;

CO: After scanning the signal, continue scanning after the signal disappears for 2 seconds;

SE: Stop scanning when a signal is detected.

Voice Encryption

The encryption feature can encrypt the audio and data to guarantee the privacy of the communication, via the programming software encryption type can be set as XOR, enhanced XOR, ARC4, AES256, advance ARC4 or advance AES256. XOR, enhanced XOR, ARC4 and AES256 encryption only encrypt the audio. If the encrypt feature is enabled, the transmitter and receiver should be set as the same encryption type and same encryption key, otherwise the receiver cannot get the normal audio and data. When the digital channel does not have encryption enabled, the status bar displays an icon: .

Note: The audio encryption is available only in digital operation.

Radio Priority–Based Interrupt

The call priority feature is allowed to interrupt the on-going call on current forcibly. This means a higher priority 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, 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 channel.

TDMA Direct Mode

If it 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 operation.

Voice with Location Information

When the transmitter is configured with the "voice with location information" feature, location information will be sent simultaneously with the voice. When both sides have valid location data, the receiver's communication interface will display the transmitter's location information.

Alias Display

The radio supports alias display feature. When receiving a call from a contact not in the contact list, the sender's device alias will be automatically displayed, and the stranger can be automatically added to the contact list.

Device ID Editing

The radio can store multiple device IDs, and can freely choose the ID for working on each channel.

PseudoTrunk

While slot is set as pseudo trunk, and one time slot is already occupied, it can transmit and receive on the other free time slot. If the pseudo trunk TX time slot is set as none, both time slot 1 or time slot 2 can transmit; if the pseudo trunk TX time slot is set as 1, press PTT key to transmit voluntary only in time slot 1; if the pseudo trunk TX time slot is set as 2, press PTT key to transmit voluntary only in time slot 2. The TX time slots set is invalid for replying.

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

Direct Mode in Different Frequency

When the transmitter and receiver are both configured with direct mode and the transmitting frequency corresponds to the receiving frequency, the signal can be directly forwarded without activating the repeater to realize the direct communication between the two radios.

Time Out Timer (TOT)

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

Transmission 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 the 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 "Always" 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 the CTCSS/CDCSS code is in using the channel. If the channel is busy, press PTT key a warning tone will sound.

Noise Reduction

The noise reduction feature can filter out environmental noise, and accurately obtain human voices in noisy environments, so that the receiver can hear a clear and loud voice.

Battery Saving

This feature allows an idler radio to automatically enter battery saver mode, which will extend battery service life, but response time may be delayed. Users can set the sleep-wake time ratio when the radio enters power-saving mode, the smaller the ratio, the more power-saving the radio will be.


Low Battery Warning

When the battery gets low, there will be a warning tone: “low battery”, please replace the battery or charge the battery in time, otherwise the radio will turn off automatically while battery is too low.

Reject Strange Calls

On digital mode, when reject strange call feature is enabled, the radio can successfully receive the call only if the device ID and call ID of the transmitter exist in the contact list. When initiating a strange number call, the radio will prompt: invalid number. When a strange number calls in, the LED indicator light is green, but there is no voice.

Monitor

Both digital channels and analog channels support monitoring function. Digital channel can set whether monitoring needs to match color code or call number. Press the programmed [Monitor] key to start monitoring, and the status bar will display the icon: . Switching channels will automatically exit monitoring; long press the programmed [Permanent Monitor] key to enable permanent monitoring, and only manually press the key again to exit permanent monitoring.

FM

The radio supports FM radio function. Press the programmed [FM Mode On/Off] key to enable or disable the FM mode. Press the programmed [FM Search] key, the radio will automatically scan the frequency and stay on the radio station that receives the signal. permanent monitoring.

Analog APRS

The radio supports analog APRS function and can automatically report location information.

Weather Forecast

The radio supports the weather forecast function and can receive NOAA weather forecasts.

Squelch Level

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 relatively close and the signal is strong, the squelch level can be higher. If the communication distance of the radio is relatively far and the signal is weak, the squelch level can be lower. This not only suppresses noise but also allows for the reception of voice signals.

Analog Signaling

•Two tone signaling

Two-tone contact

If the current analog channel is configured with two-tone signaling, users can view the two-tone contact list in the contact menu and initiate the selected two-tone signaling. The two-tone contact list can add up to 32 two-tone contacts.

Sending a two-tone signaling

In analog channel, press the programmed key to send two-tone signaling, the interface displays: two-tone call, sending.If it is successfully sent, the interface displays: sending successful, and the LED lights orange within the reset time.

Receiving a two-tone signaling

In the two-tone signaling configuration, the decoding signaling call type can be set to "call prompt", "voice call prompt", or "selective call". Therefore, when the radio receives a matching two-tone signaling, the interface can display "call prompt", "voice call prompt", or "selective call" according to the received type, and there is a decoding prompt tone. The LED lights orange within the reset time.

•Five tone signaling

Five-tone contact

If the current analog channel is configured with five-tone signaling, the five-tone contact can be viewed in the contact menu. The five-tone contact list can add up

to 200 five-tone contacts, and the current five-tone contact can be selected from this list to replace the address code of the decoding sequence and encoding sequence.

Sending a five-tone signaling

In analog channel, press the programmed key to send five-tone signaling, the interface displays: five-tone call, sending. If the expected response is set to only expect ACK through the programming software, it is considered successful after receiving the ACK from the other party; if set to none, it is considered successful regardless of whether the other party receives the signal. After successfully sending the signal, the LED lights orange within the reset time.

Receiving a five-tone signaling

In the five-tone signaling configuration, the decoding type can be set to "ordinary call", "emergency alarm", "remote kill", "activation", "silent query", and "ACK2 authorization". When the radio receives a signaling sequence that is consistent with the decoding sequence, it decodes and the LED lights orange within the reset time.

•DTMF signaling

DTMF contact

If the current Analog channel is configured with DTMF signaling, the users can view the DTMF contact in the contact menu. The DTMF contact list can add up to 200 DTMF contacts, and select the current DTMF contact from the list to replace the address code of the decoding sequence in the encoding sequence and decoding definition.

Sending a DTMF signaling

In analog channel, press the programmed key to send DTMF signaling, the interface displays: DTMF call, sending. If the expected response is set to only ACK through the programming software, it is considered successful after receiving the ACK from the other party; if set to none, it is considered successful regardless of whether the other party receives the signal. After the signal is successfully sent, the LED lights orange within the reset time.

Receiving a DTMF signaling

In DTMF signaling configuration, the decoding type can be set to "ordinary call", "emergency alarm", "remote kill", "activation", "silent inquiry", "ACK2 authorization". When the radio receives a signaling sequence consistent with the decoding sequence, it decodes and the LED lights orange within the reset time.

CTCSS/CDCSS

On analog channel, unique CTCSS/CDCSS can be set to guarantee the privacy of the communication, 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, it can be heard;

Encode: The CTCSS/CDCSS will be attached to the signal before transmitting.

The transmitting signal will only be heard by parties whose CTCSS/CDCSS signaling matched .

CTCSS Standard Frequency Table

CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]	CTCSS No.	Freq. [Hz]
1	67.0	11	94.8	21	131.8	31	186.2
2	69.3	12	97.4	22	136.5	32	192.8
3	71.9	13	100.0	23	141.3	33	203.5
4	74.4	14	103.5	24	146.2	34	210.7
5	77.0	15	107.2	25	151.4	35	218.1
6	79.7	16	110.9	26	156.7	36	225.7
7	82.5	17	114.8	27	162.2	37	233.6
8	85.4	18	118.8	28	167.9	38	241.8
9	88.5	19	123.0	29	173.8	39	250.3
10	91.5	20	127.3	30	179.9		

CDCSS Standard Code Table

CDCSS NO	Positive Code	Negative Code	CDCSS NO	Positive Code	Negative Code	CDCSS NO	Positive Code	Negative Code
1	D023N	D023I	29	D174N	D174I	57	D445N	D445I
2	D025N	D025I	30	D205N	D205I	58	D464N	D464N
3	D026N	D026I	31	D223N	D223I	59	D465N	D465N
4	D031N	D031I	32	D226N	D226I	60	D466N	D466I
5	D032N	D032I	33	D243N	D243I	61	D503N	D503I
6	D043N	D043I	34	D244N	D244I	62	D506N	D506I
7	D047N	D047I	35	D245N	D245I	63	D516N	D516I
8	D051N	D051I	36	D251N	D251I	64	D532N	D532I
9	D054N	D054I	37	D261N	D261I	65	D546N	D546I
10	D065N	D065I	38	D263N	D263I	66	D565N	D565I
11	D071N	D071I	39	D265N	D265I	67	D606N	D606I
12	D072N	D072I	40	D271N	D271I	68	D612N	D612I
13	D073N	D073I	41	D306N	D306I	69	D624N	D624I
14	D074N	D074I	42	D311N	D311I	70	D627N	D627I
15	D114N	D114I	43	D315N	D315I	71	D631N	D631I
16	D115N	D115I	44	D331N	D331I	72	D632N	D632I
17	D116N	D116I	45	D343N	D343I	73	D654N	D654I
18	D125N	D125I	46	D346N	D346I	74	D662N	D662I
19	D131N	D131I	47	D351N	D351I	75	D664N	D664I
20	D132N	D132I	48	D364N	D364I	76	D703N	D703I
21	D134N	D134I	49	D365N	D365I	77	D712N	D712I
22	D143N	D143I	50	D371N	D371I	78	D723N	D723I
23	D152N	D152I	51	D411N	D411I	79	D731N	D731N
24	D155N	D155I	52	D412N	D412I	80	D732N	D732N
25	D156N	D156I	53	D413N	D413I	81	D734N	D734I
26	D162N	D162I	54	D423N	D423I	82	D743N	D743I
27	D165N	D165I	55	D431N	D431I	83	D754N	D754I
28	D172N	D172I	56	D432N	D432I			

Specifications

General	
Frequency range	400-480 MHz; 136-174 MHz
Performance	DMR
Channel Capacity	4000
Zone	64
Channel Spacing	12.5KHz/25KHz
Operating Voltage	DC 7.4V (±20%)
Battery Capacity	2000 mAh
Battery Life (5/5/90)	Analog 15 hours Digital 21 hours
Frequency Stability	±0.5ppm
Antenna Impedance	50Ω
Current	Receiving:300mA Transmitting:800mA
Display	TFT, 128*160RGB, 1.77inch
Keypad	18 buttons on the front
Dimensions	58 (L) * 36 (W) * 121 (H) mm
Weight	288g (including battery)
Recording (optional)	15 hours
Bluetooth (optional)	BT5.0
Transmitter	
RF Output power	< 5W
4FSK Modulation	12.5kHz data only: 7K60FXD 12.5kHz data and voice: 7K60FXE
FM Modulation	12.5 kHz: 8K50F3E;
Modulation Limiting	±2.5kHz @ 12.5kHz;
FM noise	-40dB
Conducted Emission	-36 dBm≤1GHz/-30 dBm≥1GHz

Adjacent Channel Power	≥60dB
AudioResponse	+1/-3dB
Free Time Slot Power	≅ -57dBm
Digital Voice Coder Type	AMBE
Receiver	
Digital Sensitivity	5% BER: 0.22uV
Analog Sensitivity	0.165uV (12 dB SINAD)
Intermodulation	≥65dB
Adjacent Channel Selectivity	≥60dB
Spurious Response Rejection	≥65dB
FM noise	-40dB
Audio Response	+1/-3dB
Rated Audio Output Power	0.5W
Maximum Audio Output Power	2W
Audio Distortion	3%
Harmonic suppression	-57dBm
If rejection	≅ 70dBm
co-channel rejection	≅ 70dBm
Image Rejection	≅ 70dBm
Conducted radiation	≅ -57dBm
spurious radiation	≅ -57dBm
Blocking	≅ 90dBm
Environmental	
Operating Temperature	-20°C—+60°C
Storage Temperature	-30°C—+85°C
ESD	±5kV (contact discharge) ±8kV (air discharge)
Dustproof & waterproof	IP54

Location System	
Location Accuracy(optional)	Horizontal location accuracy \leq -2.5m (under good signal conditions)
TTF (Time To First Fix) Cold Start	<1minute
TTF (Time To First Fix) Hot Start	<10seconds
Re-capture TTF	<10seconds

Note: The above specifications are tested according to the trial standard. Due to the continuous development of technology, the above index data may be subject to change without further notice.

Statement

In the process of compiling this manual, we have strived for accuracy and completeness in its content.. 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

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RECYCLABLE PACKAGING