BelFone

www.belfone.com

BF - TR925D

Portable Dual-frequency Digital Repeater

Warning

Since purchase and use of this device involves use of radio (station), it is required to procure corresponding approval formalities and a radio station license. The device shall be so used as approved in the radio station license. Anyone who engages in unauthorized setup for use of radio (station) or jamming radio service, or fails to operate following the approved business scope or otherwise violates the radio regulations will be punished by the radio administration according to administrative regulations. Any serious radio violations will be in breach of national laws and punished by law.

Acknowledgement!

Thank you for choosing BelFone series professional radio communication products!

Since 1989, BelFone has been dedicated to research and exploration in the field of radio communication technology throughout the decades, and has developed leading smart technology in the industry. Underpinned by research, development and design geared towards modern complicated and changeable communication environment, it is capable of tailoring specific communication solutions to your needs based on features of your industry. Superior products with outstanding performance may help you control the overall situation, while providing you with the best choice for smart scheduling and instructions communicating.

This Operation Manual is applicable to:

Portable dual-frequency digital repeater: **BF-TR925D Series**

Instructions before Use

Following the safety precautions below may prevent damage to this product and personal injuries. To avoid potential risks, please read these instructions carefully before using the product, and operate the product as instructed.

◆ The repeater shall be protected from long-time direct exposure to the sun, kept in a place away from high temperature, high humidity, high dustiness or water splashes, and put on a stable surface;

◆Where use of the repeater is prohibited or use of intercommunication may cause interference or danger, the repeater shall have its power turned off as required by relevant regulations;

◆If you find any fault of the product, please turn off the power directly, and then contact the local distributor of BelFone; unless otherwise specified in this Manual, maintenance shall not be performed by any person other than a maintenance worker authorized by BelFone Company;

◆ If this product is needed for further development, please contact BelFone Company or BelFone's distributor;

◆Do maintain the product surface clean and dry; for cleaning, use a piece of soft cloth dipped with mild detergent or clear water (without water dripping) to wipe the product surface.

Contents

Unpacking and device inspection

Note: The following instructions regarding unpacking are only for BelFone's distributors, and service agencies or factories authorized by BelFone.
Be careful when taking the device out of the packing box. You'd better count the accessories against the following list before discarding the packaging. If any items are missing or damaged, please contact the local dealer of Belfone immediately.

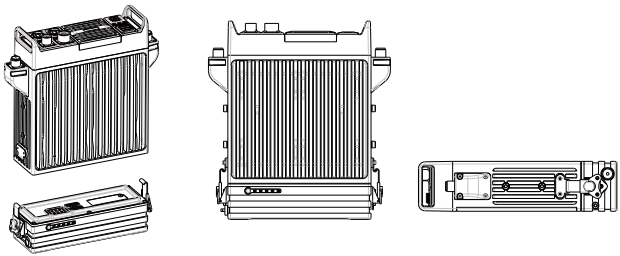
Accessories supplied along the device

Item	Quantity
Master	1
Palm microphone	1
Battery	1
Charging accessories	1
Antenna	2
Operation Manual	1
Warranty Card	1
Conformity Certificate	1

Note: The standard accessories will vary according to the model you choose: [Vehicle-mounted] or [Manpack Type].

Installation of Accessories

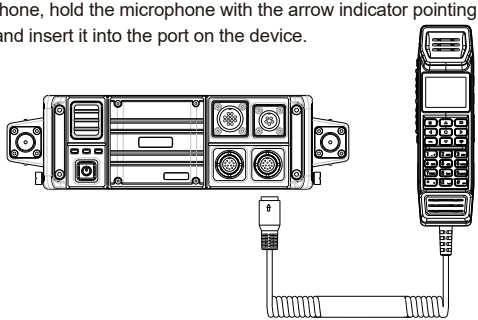
Battery installation and dismantling



1.Align the butterfly buckles on both sides of the battery with the ports on both sides of the body, and insert the buttery buckles into ports;
2.Tighten the butterfly buckles clockwise;
3.Flatten the rotary plate;
4.Dismantle the battery according to the opposite steps.

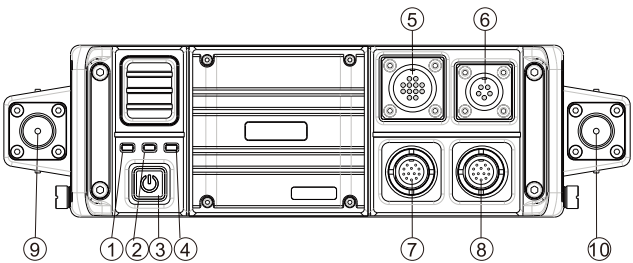
Microphone connection

If provided, the microphone can be connected to the microphone port for man-machine communication and operation. Upon connection of the microphone, hold the microphone with the arrow indicator pointing upwards; direct and insert it into the port on the device.



Get familiar with the device

Front view

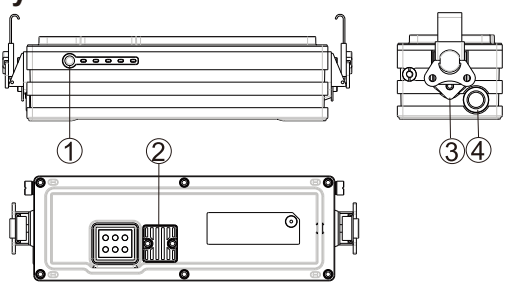


①	**LED indicator of unit A**: The transmitter indicator of the unit A is ON in red and the receiver indicator is ON in green.
②	**LED indicator of unit B**: The transmitter indicator of the unit B is ON in red and the receiver indicator is ON in green.
③	**Power switch/power indicator**: Long press it to turn on the product. This indicator will be ON in red after the product is turned on. Long press it again to shut down the product.
④	**Network indicator**: Display the current network status.
⑤	**ACC attachment unit interface**
⑥	**Network interface** : Connect a network cable.
⑦	**Microphone interface 1**: Connect the microphone or write frequency cable.
⑧	**Microphone interface 2**: Connect the microphone or write frequency cable.
⑨	**Antenna interface 1**
⑩	**Antenna interface 2**

Indicator status:

LED Indicator of Device Status	Device state	LED indication
	Excessively high voltage	Flashing in red (0.5s)
	Excessively low voltage	Flashing in red (2.0s)
	No channel configuration	Flashing in red and green alternately (1s)
	PLL unlocked	Orange light flickers (2s)
	Transmission	Red light normally on
	Reception	Normally ON in green
	Call holding	Normally ON in orange
Network indicator	The interface board is not powered on.	OFF
	The interface board is powered on and there is no network data.	Normally ON in green
	The interface board is powered on and there is network data.	Green light flickers
Power indicator	The device is powered on.	Red light normally on

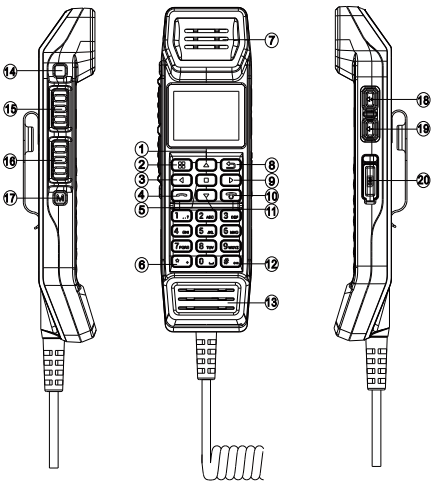
Battery



①	**Battery level check:** Press and hold it to check the remaining battery power. Each division indicates 20% power.
②	**Fuse**
③	**Butterfly buckle**
④	**Battery charging port**

Palm microphone

The device supports man-machine communication and operation by connecting the palm microphone through the microphone port.



①	**Up arrow button (P1):** In the main interface, press it to increase the channel number, and press and hold it to increase the zone number. Users are allowed to change the program (see the button definitions in the basic operation section).
②	**Menu button :** In the main interface, press it to enter the menu, and press and hold it to display the current channel information; In the menu interface: press it to confirm the setting, and press and hold it to display the current channel frequency.
③	**Left arrow button (P3) :** In the main interface, press it to decrease the backlight level, and press and hold it to simultaneously turn on and off the units A and B. Users are allowed to change the program (see the button definitions in the basic operation section).

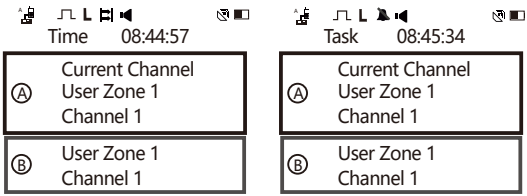
④	**Call :** In the main interface, press it to enter the DMR call record menu. In the independent microphone mode, short press it to hang up or initiate a call.
⑤	**Square button :** Press it to switch the interfaces of the units A and B, and press and hold it to simultaneously turn on and off the units A and B.
⑥	*** Button**
⑦	**Loudspeaker**
⑧	**Delete button :** Press it to go back except for the main interface. In the dialing/editing state: press it to delete a character, and press and hold it to clear all the currently edited content.
⑨	**Right arrow button (P4) :** In the main interface, press it to increase the backlight level, and press and hold it to simultaneously turn on and off the units A and B. Users are allowed to change the program (see the button definitions in the basic operation section).
⑩	**Hang up :** In the call holding status: press it to hang up; In the main interface: press it to turn off the microphone backlight; In interfaces other than the main interface: press it to return to the main interface; In all interfaces: press and hold it to turn on or off the microphone (the device is turned on or off by pressing the power button). In the independent microphone mode: Press it to hang up. **Note: Press and hold the power button to turn on and off the device. The microphone cannot be controlled by operating the power button.**
⑪	**Down arrow button (P2) :** In the main interface, press it to decrease the channel number, and press and hold it to decrease the zone number; Users are allowed to change the program (see the button definitions in the basic operation section).
⑫	**# Button**
⑬	**Microphone**
⑭	**Orange P/SOS button :** In the terminal mode, press it to disable a digital alarm, and press and hold it to enable a digital alarm; Users are allowed to change the program (see the button definitions in the basic operation section).
⑮	**Upper PTT button :** Transmit to the channel displayed at the top of the main interface.
⑯	**Lower PTT button :** Transmit to the channel displayed at the bottom of the main interface.

⑰	**M button :** Press it to select the unit A or B, and press and hold it to enable the independent mode or auxiliary mode of the microphone.
⑱	**Volume + button**
⑲	**Volume - button**
⑳	**SIM card slot**

Note: the clamping groove shall be installed and pressed to ensure the waterproof effect.

Basic operations

Main standby interface



The first line of text on the standby interface shows the “Astronomical Time” or “Task Time”. The astronomical time is the local time of the device. If the device receives GPS data, the local time will be automatically synchronized to GPS time. The Task time is displayed according to the offset astronomical time setting, which can be used in special occasions to hide the actual time of a Task.

The upper half of the standby interface shows the zone channel information of the unit A, while the lower half shows the zone channel information of the unit B. Press the confirmation button to change the main interfaces of the units A and B in the upper or lower position.

Note: The upper PTT button responds to calls in the upper interface, while the lower PTT button to calls in the lower interface.

Microphone LCD icon

Icon Display	Description of Icon State	Icon Display	Description of Icon State
	Signal intensity for the phone card		DMR voice and data encryption
	Independent microphone mode		DMR new SMS
	Auxiliary mode (currently available for unit A only)		Inbox full
	Auxiliary mode (currently available for unit B only)		Interface board registered with the main control panel
	Phone gateway enabled (no call forwarding)		Back-to-back mode: One-way (A to B)
	Phone-to-DMR inter-network call transfer (to unit A)		Back-to-back mode: Unidirectional (B to A)
	Phone-to-DMR inter-network call transfer (to unit B)		Back-to-back mode: Two-way (A to B or B to A)
	Digital channel		Interface board connected to the local network
	Analog channel		Interface board server connected
	Missed call		Successful connection of phone card and wireless network
H	Transmitting power: High		Successful connection of phone card and wireless network server
M	Transmitting power: Medium		Successful EPS registration in server
L	Transmitting power: Low		Keyboard locked
C	Transmitting power: Self-defined		USB connection
R	Single-frequency transfer		Satellite positioning ON
	Offline, direct connection		Battery power of manpack type carrier
	Emergency alarm		Microphone battery power (displayed when the repeater is not connected)
	Monitor		Ad-Hoc network
	All mute (in the independent microphone mode)		Channel configuration of "Register in network system"

Device power-on/off

Long press the power button to turn on the device. The power indicator will be ON in red;

Long press the power button to turn off the device. The power indicator

will be OFF.

Regulate the volume

Connect the palm microphone. In the power-on status, press the volume + or - button to adjust the volume. The volume will decrease by 5% once the volume - button is pressed. It will increase by 5% once the volume + button is pressed. The volume adjustment range is 0-100%.

Select a channel

Press the Up and Down arrow buttons on the microphone to switch channels. Press the Down arrow button to select the previous channel and the Up arrow button to select next channel. The interface will display the current channel name. If the channel name voice prompt is enabled, there will be a voice prompt for the current channel name during channel switching.

Switch the region

Zones are divided into the Level 1, 2 and 3 zones. Up to 3,000 zones and 3,776 channels can be added in the customer programming software. Enter the zone menu, and select the corresponding zone. If zones are successfully switched, there will be a voice prompt for the current channel name.

Channel mode switching

Three channel modes can be switched by pressing the menu or shortcut function buttons: Transfer: Single-frequency transfer mode; terminal: direct mode; terminal: Connection repeater mode. “Transfer” means that the current channel is used as a repeater, and “terminal” means that the current channel is used in the terminal mode.

Note:

1. When the transmission frequency of the current channel is the same as the reception frequency, “Terminal: Connection repeater mode” is unavailable.

2. After setting the channel mode, restart the device or switch channels into the channel mode.

Selection of unit A or B

Press the M button to switch the control authority of the unit A or B. The current microphone cannot be operated via buttons until the host icon with control authority in the standby interface turns green.

Key locking

Connect the microphone, and long press “#” for 2 seconds (according to the “holding” time set for the button). The interface will show the lock icon: . That is, all buttons cannot be operated. Press MENU and “#” to unlock.

Button setting

Set the functions corresponding to long- or short-press of P/SOS, P1, P2, P3 and P4 via the frequency programming software.

Programmable buttons include the following functions:

No.	Defined Name	Function Description
1	No setting	No function is assigned to the programmable button
2	Squelch level regulation	Press it to enter the squelch level setting menu, and set the squelch level of the current analog channel.
3	Channel setting	Press the button to enter the “Channel setting” menu
4	Channel+	Press it to switch channels and jump to next channel in the current Level 3 zone.
5	Channel -	Press it to switch channels and jump to the previous channel in the current Level 3 zone.
6	Region +	Press it to switch zones, and jump to next Level 3 zone.

7	Region -	Press it to switch zones, and jump to the previous Level 3 zone.
8	Background light +	Press it to switch the backlight level. The backlight level will increase.
9	Background light -	Press it to switch the backlight level. The backlight level will decrease.
10	Monitoring switch	Quickly turn on or off the monitor.
11	Power switch	Press it to quickly switch the transmitting power: Low, medium, high, user-defined
12	Low power	Press it to enable the low power level.
13	Medium power	Press it to enable the medium power level.
14	High power	Press it to enable the high power level.
15	Self-defined power	Press it to enable the custom power level.
16	Power query	Press it to query the battery power (optional for the lithium battery only).
17	Self-kill	The device is self-killed and the data is cleared (set the password to enable this function).
18	Theme switch	Press it to switch the theme type.
19	Disconnect	Directly reset the device when the call-back is during hang time.
20	Prior interruption	Directly interrupt the current voice session (only interrupt the voice call within the working time slot of the current channel).
21	Offline switch	Temporarily set the same transmission frequency and reception frequency of the channel to be disconnected from the network.
22	Telephone gateway switch	Enable or disable the phone gateway after the microphone is connected.

23	Root directory list	Press it to enter the “Main Menu”.
24	Contact list	Press it to enter the “contact list” menu
25	DMR contact list	Press this button to enter the DMR contact list menu
26	Short message	Press it to enter the “SMS” menu
27	DMR preset message	Press it to enter the DMR preset SMS box menu.
28	Write a message in DMR	Press this button to enter the DMR short message menu
29	DMR inbox	Press this button to enter the DMR inbox menu
30	DMR outbox	Press it to enter the DMR outbox menu.
31	DMR system message	Press it to enter the DMR system SMS box menu.
32	Call record	Press it to enter the “DMR call record” menu.
33	Bit error rate test transmitter	Press it to enter the “Bit error rate test transmitter” menu.
34	Bit error rate test receiver	Press it to enter the “Bit error rate test receiver” menu.
35	A/B unit selection	Select the unit A or B as the main operation interface.
36	A<->B connection switch	Set the A-to-B one-way back-to-back connection switch status of the current AB channel.
37	A<->B connection switch	Set the B-to-A one-way back-to-back connection switch status of the current AB channel.
38	A<->B connection switch	Set the two-way back-to-back connection switch status of the current AB channel.
39	Channel mode setting	Press it to enter the channel mode setting menu, and select the working mode of the current channel.
40	AB interface switching	Display the main standby interface of the unit A or B in the upper or lower part.
41	Astronomical/task time switching	Change the time type.
42	Task time offset setting Emergency mode ON	Press it to enter the task time offset setting menu. Press it to enable the digital alarm.

43	Emergency mode OFF	Press it to disable the digital alarm.
44	Online login and query	Check “Register to network system” under the channel, and press this to query the online status.
45	Backlog query	Press it to query and upload the backlog in the current virtual punching record.
46	Ad Hoc network switch	Press it to enable or disable the Ad Hoc network function.
47	Encryption switch	Quickly set the encryption function: Enable/Disable.

One-button call function

In the digital channel, the one-button call function supports Group Call, Individual Call and All Call. Users can set 0-9 on the numeric keypad as the call keys, and set individual, group or all call contacts to the corresponding numeric keys. Long press the numeric keys to enter the call interface and then press “PTT” to directly initiate a call.

Signal code query

Set the password and corresponding function in the signal code configuration interface via the frequency programming software. Users can set *(0~99)# as the password. The corresponding functions are the same as those in the button configuration table.

Call

Individual, group or all calls can be initiated in the digital mode. Press the PTT button to initiate a call directly in the analog mode. Long press the PTT button, keep a distance of 3-4cm away from the microphone, and speak in a normal tone. If the LED indicator is ON in red, it means that a call is being transmitted.

Group call

（1）When the default communication address of the current digital channel is set to the group call ID, press the PTT button to initiate a group call.

（2）In the contact list menu, select the group call ID and press the PTT button to initiate a group call.

（3）Enter the manual dialing menu, and select the group call type. Enter the group call ID to be dialed, and press the PTT button to initiate a group call.

（4）When the one-button call is set to a group call, a group call can also be initiated.

Individual call

In the digital mode, the device supports the confirmation type individual call. If the individual call confirmation is checked, the target unit will be detected before a call.

（1）When the default communication address of the current digital channel is set to the individual call ID, press the PTT button to initiate a individual call to the current contact.

（2）In the address book menu, select a individual call contact and press the PTT button to initiate a individual call to the selected individual call contact.

（3）When keyboard input is allowed, directly enter the number, or enable the manual dialing mode and enter the individual call ID to initiate a call to the specific individual call contact.

（4）Select a individual call contact in the missed/received/outgoing numbers, and press the PTT button to initiate a single call.

（5）When the one-button call is set to a individual call, a individual call can also be initiated.

All call

（1）When the default communication address of the current digital

（2）In the contact list menu, select the All Call ID and press the PTT button to initiate an all call.

Call reception and reply

When a individual call is received in the digital mode, the individual call icon will appear in the interface. During the individual call suspension period, press the PTT button to answer the current individual call. If the suspension timeout is up, the call will be recorded as a missed call. When a group call is received, the group call icon will appear in the interface. During the group call suspension period, press the PTT button to answer the current group call. When an all call is received, the all call icon will appear in the interface. As suspension does not apply to the all call, the all call will not be answered.

Note: If the idle channel indicator is set, a “beep” end prompt will be provided after the PTT button is released from the transmitter.

Function introduction and operation

Contact list

DMR contact list

Enter the DMR contact list through the main menu or function keys. The DMR address book menu includes the frequent contacts, contact groups, all contacts, new group, new contact and manual dialing. At most 1,600 contacts can be added in the DMR contact list.

1. Group call /all call type

When the selected member type in the address book is a group call or all call, the contact number can be viewed.

2. Individual call type

When the selected member type in the contact list is individual call, you can view the number, or edit or delete the name or number of the

individual call contact.
●Edit name: Modify the name of the individual call contact. Press “Delete” to delete it. While editing the name, press “#” to change the input method. The entered name must not exceed 16 characters.
●Edit number: Modify the number of the individual call contact. Press “Delete” to delete it and enter a new one. The ID input range is 1-16776415. (If a individual call contact is set to one-button call or the default address is added, the number cannot be edited.)
●Delete: Delete the individual call contact. When the contact is added to the default communication address of the channel or set in the one-button call, the individual call contact cannot be deleted.

3. New Group

Select New Group to create a new contact group. Enter the group name, and press OK to successfully create a new group. It is allowed to add contacts and edit names in the contact group or delete this group. At most 17 contact groups can be created. The maximum number of contacts in each group is 100.

4. New Contacts

Only individual call contacts can be added in this device. Edit the number, consisting of digits (1-16776415) at most. Press OK, and then edit the name (press # to change the input method and Delete to delete it). Enter 16 characters or less, and press OK to save it. New contacts can be found in the list of all contacts.

5. Manual dialing

Manual dialing is used to make calls to individual or group call contacts that are not saved in the contact list. Press the PTT button to initiate a call.

Short message

DMR SMS

1. Write SMS

Users can directly write text messages and send them to other users. A single text message can contain up to 140 characters. During message editing, press “#” to change the input method, “Delete” to delete the SMS, and Up or Down arrow buttons to change the input cursor position. In the pinyin or letter mode, “1” corresponds to the punctuation and “0” corresponds to the space. The SMS can be sent to individual or group call contacts, but not all call contacts.

Note: When “Register to network system” under the channel is checked, the SMS can only be received correctly by the device that supports this system.

2. System SMS

After the SMS sent by the system center is received, the sender side will display the name of the “system”. The system SMS is for reference only and cannot be replied or deleted.

3. Inbox

At most 50 received SMS records can be stored in the inbox. Enter the inbox. The unread SMS will be displayed as:  . The read SMS will be displayed as:  . The SMS in the inbox can be played, replied, forwarded and deleted.

4. Outbox

At most 50 received SMS records can be stored in the outbox. Enter the outbox. The successfully sent SMS is displays as:  . The SMS that is not sent successfully is displayed as:  . The SMS records can be forwarded, resent (if not sent successfully) and deleted.

5. Preset SMS

Add some common text messages via the frequency programming software. At most 10 pieces of preset SMS can be added. Each SMS contains up to 140 characters. The preset SMS can be temporarily edited and then sent or directly sent.

Call record

1. Dialed calls

The device will record all recent individual calls made in the digital mode. At most 20 recent records can be stored. Users can view the calling and called contacts in the detailed list, or delete the call records. Unknown call IDs can be stored in the contact list.

2. Received calls

The device will record all recent individual calls received in the digital mode. At most 20 recent records can be stored. Users can view the calling and called contacts in the detailed list, or delete the call records. Unknown call IDs can be stored in the contact list.

3. Missed calls

The device will record all recent individual calls missed in the digital mode. At most 20 recent records can be stored. Users can view the calling and called contacts in the detailed list, or delete the call records. Unknown call IDs can be stored in the contact list.

Region

Zones are divided into Level 1, 2 and 3 zones. At most 4 Level 1 zones can be added in the frequency programming software, 1,000 Level 2 zones under the Level 1 zones, 1,000 Level 3 zones under the Level 2 zones, and corresponding channels in Level 3 zones. Enter the zone menu, and select the corresponding zone, or Long press the Up and Down arrow buttons to change zones. After zones are changed successfully, there will be a voice prompt for the channel name.

Note: Zones cannot be switched until there are valid channels in Level 3 zones.

Setting

1. Device setting

and supports access to the system network for repeating DMR digital voice and data services, so as to realize interconnected communication in the networked mode.

Note: System networking is optional.

● **Register in network system**

A channel shall have the Register with the network system option ticked for the device to login to the system for corresponding operations. If the channel is configured as registered with the network system, the interface will show the following icon:

● **Local call**

After the Register with the network system option is ticked for the channel, interconnection between all devices in the system can be realized upon calling. If a device is connected with a palm microphone and the local call option ticked, then voice calls made on this device will only be forwarded via this repeater, but when it receives calls from other devices in the system (regardless of whether it is networked), callbacks can be made during the hang up time. .

Analog mode function

1. Analog repeater mode

Both TR900L and TR900M support analog repeating. If the channel operates in the analog repeater mode, the interface will display the following icon: ; if the current channel currently has any voice service under repeating, indicator A will flash green, indicator B will flash red, and the interface will show the received signal intensity.

● **Monitoring**

If the current channel operates in the repeater mode and the automatic monitoring function is enabled, the interface will show the following icon: ; when voice service is detected, the voice can be cast. At this time, the call can be answered by pressing the PTT button.

Note: If the analog channel operates in the repeater mode and the monitoring function is enabled, then it is permitted to make calls by pressing the PTT button.

●**Language selection:** The menu display supports both Chinese and English.

●**LED indicator:** Users can turn on or off the LED indicator via the menu, and simultaneously control the ON/OFF status of the LED indicators and network indicators of the units A and B.

Note: This does not apply to the power indicator.

●**Device password:** The device password includes the power-on password and channel setting password, which can be modified via the menu. Users must enter the original password correctly to set a new password. The password will not be modified successfully until the two new passwords entered are the same.

Note: The password modification option is not unavailable until the device password is written via the frequency programming software.

● **Real time setting:** The display time of the standby interface of the device can be set. Enter the real time setting menu, press P3 or P4 to change the cursor input position, and directly enter the value. Users can enter 1-6 and 0 corresponding to Monday to Sunday.

●**Task time:** Users can set the astronomical time or task time, change the alias of task time, and also set the astronomical time offset.

●**Theme setting:** The theme color options are as follows: “Theme 1”, “Theme 2” and “Custom Theme”. Users can directly enter the RGB (input range: 0-65535) to customize the theme, or set and preview the foreground and background color of the title bar as well as the foreground and background color of text via the frequency programming software.

2. Channel setting

●**Channel name:** Set the alias of the current channel, consisting of 16 characters or less.

●**Power setting:** Set the transmission power of the current channel. The high power is displayed as **H**, medium power as **M**, low power as **L**, and self-define setting as **C**.

●**Transmission frequency:** Set the transmission frequency of the current channel.

●**Receiving frequency:** Set the receiving frequency of the current channel.

●**Transmission frequency:** Set the transmission frequency of the current channel.
●**Receiving frequency:** Set the receiving frequency of the current channel.
●**Transmission time limit:** Set the transmission time limit of the current channel. Range: 15-495 seconds; step: 15 seconds. If the set value is 0 second, it means that this option is disabled.
●**Color code:** Set the color code of the current channel. Range: 0-15. This is valid only in the digital mode.
●**Hang time:** Set the channel hang time. Range: 1000-7000ms; step: 500ms.
●**Channel mode setting:** Switch 3 channel modes: Transfer: single-frequency transfer mode; terminal: direct mode; terminal: Connection repeater mode.
●**Receiving group list:** Set the receiving group of the current channel.
●**Offline switch:** When the device is working in the repeater mode but the transfer service is not available, the offline function can be enabled for communication. Transmission is performed at the receiving frequency, to enable the direct call between two devices. After the channel is changed or the device is restarted, the offline function will be disabled automatically.
●**Ad Hoc network:** Enable or disable the ad hoc network function of the current channel.
●**Squelch level:** Set the squelch level (0-15) of the current channel, which is valid only in the analog mode.
●**CDCSS:** Set the CDCSS transmission or reception type of the current channel as well as the specific CDCSS code, which is valid only in the analog mode.
●**Encryption:** Set the encryption function of the current channel. Users can create a new encryption key or select an encryption key from the key list. This is valid only in the digital mode.

Device information

View relevant information of the device, including the device name, device number, connection repeater number, real time, firmware version, and CP

version.

● **Device number:** Register and log in the central server with the repeater ID in the single-frequency transfer channel, or with the terminal ID in other channels.

●**Connection repeater ID:** During repeater connection in the terminal channel in the non-direct mode, get access to the authentication repeater ID of the target repeater.

Accessories

1. Positioning service

This device supports satellite positioning. The positioning type can be set via the frequency programming software: GPS/BD/GPS+BD。 This function can be applied to query the position information of the device, including: time, date, latitude, altitude, elevation, speed and number of satellites. When satellite positioning is enabled, the following icon will appear on the interface: .

2. Network service

To register the device into the network system for online system functions, the network setting and server setting need to be done through the frequency programming software. This function can be applied to check the local network configuration, including the DHCP enabling/disabling, local IP, gateway IP, netmask and DNS server IP. In addition, the server network configuration can be viewed, including the server URL address, server UDP port number, and local UDP port number.

3. Battery power

Check the remaining power of the device.

4. Telephone service

Enable or disable the phone gateway function. Enable the phone gateway. Calls between the DMR voice and ordinary 4G phone voice can be switched through the supporting microphone of the device.

5. Standing wave

The standing wave can be set to 1.5, 2.0, 2.5 or 3.0.

Connection (back-to-back) mode

The device supports the transmission and reception by the unit A or B separately and also the A/B connection (back-to-back) mode for cross-band and cross-mode communication. Check the channel connection parameters via the frequency programming software, or use shortcut buttons to change the “A->B connection switch”, “A<-B connection switch” and “A<->B connection switch”.

1. Standalone A/B: When the channels of the units A and B are not connected, the signal received by the unit A cannot be forwarded through the unit B, and the signal received by the unit B cannot be forwarded through the unit A. That is, the communication of the unit A is independent of that of the unit B.

2. A->B connection: Only the channel of the unit A is connected. The signal received by the unit A is forwarded through the unit B, while the signal received by the unit B cannot be forwarded through the unit A. That is, communication is performed only from the unit A to B.

3. A->B connection: Only the channel of the unit B is connected. The signal received by the unit B is forwarded through the unit A, while the signal received by the unit A cannot be forwarded through the unit B. That is, communication is performed only from the unit B to A.

4. A<->B connection: When the channels of the units A and B are connected, the signal received by the unit A is forwarded through the unit B, and the signal received by the unit B is forwarded through the unit A. That is, two-way communication is performed between the units A and B.

In the back-to-back mode, start failure will be prompted in the following cases:

1. If the unit B is not successfully registered in the unit A, there will be a prompt that “the module is not registered”.
2. When the host judges that another host is set to “Register to network system”, there will be a prompt that “it is forbidden to simultaneously register the units A and B in the network system.”
3. When the host or another host is set to “single-frequency transfer + register in network system”, there will be a prompt that “single-frequency

transfer + register in network system must not be applied to the units A and B simultaneously".

Note:

1. In the back-to-back mode, if the monitor is not enabled, and a voice call unrelated to the device ID or receiving group number is received, only the call information will be displayed, and the call voice will not be played. The monitored can be enabled manually to listen to the voice.

2. The back-to-back mode does not support cross-band individual call confirmation type frame transfer services (e.g. individual calls and single call SMS services of cross-band individual call configuration type).

3. In the back-to-back mode, if the unit A receives the SMS first, the SMS will be saved only in the unit A; and if the unit B receives the SMS first, the SMS will be saved only in the unit B (that is, the same SMS will not be saved repeatedly).

Phone gateway

After the phone gateway function is enabled, the matching 4G module microphone（TC981） can be applied for switching between DMR voice and ordinary 4G telephone voice.

Digital alarm

The digital channel supports the emergency alarm function. If "Register in network system" is not checked for the channel, a normal digital alarm can be initiated in any interface at any time, enabling the emergency mode.

Alarm type:

Normal: After an emergency alarm is initiated, the emergency mode will be displayed on the screen, and the alarm sound will be played continuously.

Mute: After an emergency alarm is initiated, there will be no prompt on the screen, no alarm sound and no voice call that meets the reception requirements.

Mute with voice: After an emergency alarm is initiated, there will be no prompt or alarm sound, but the voice that meets the reception require-

requirements will be played.

Alarm mode:

Emergency alarm: Only the alarm sound will be initiated. It is forbidden to press the PTT button to initiate a voice call.

Emergency alarm and call: When the alarm sound is initiated, the PTT button can be pressed to initiate a voice call.

Emergency alarm and voice: After the alarm sound is initiated, the microphone will be activated automatically to initiate an emergency voice call. If the microphone activation time is up, the PTT button can be pressed to initiate a voice call. The microphone activation time can be set via the programming software.

1. Sending of emergency alarm

If the current channel is equipped with the alarm system and set as a reply channel, alarm information can be sent through the current channel. Press the emergency alarm button. The device will continuously play the alarm prompt and the screen will display the following icon: .

2. Disabling of emergency alarm

The sender can disable the emergency alarm by pressing the emergency alarm OFF button. In the normal + emergency alarm mode, when the sent alarm is confirmed or the number of attempts is reached, the alarm mode will be disabled automatically. After receiving the alarm, the recipient can press the emergency alarm OFF button to disable the alarm mode.

3. Reception of emergency alarm

After an alarm is received, the device will be in the emergency mode. If the emergency alarm indication is checked, the interface will display the icon and the user alias and ID of the alarm initiator, and the alarm sound will be played continuously.

Monitor

Both the digital channel and analog channel support automatic monitoring, and are able to play all voice services of the current channel. After automatic monitoring is enabled, the interface will display the following icon: .

When the channel is in the single-frequency transfer mode, it is not allowed to press the PTT button to initiate an interrupt call or send the SMS until monitoring is enabled. In the individual call, an interrupt individual call will be initiated, and the number is the interrupted individual call number. In the group call mode, an interrupt group call will be initiated.

Note:

1. Monitoring is temporarily enabled or disabled via the functional keys. The original channel configuration will be restored after channel switching or device restart.

2. If "Automatic monitoring ON" is checked, monitoring will be enabled in the default working time slot of this channel.

Voice frame transfer check

The digital and digital-analog channels support voice frame check to improve the quality of voice calls. The voice frame transfer check is selected by default for the channel.

Direct mode

When the device is in the terminal mode but not in the single-frequency transfer mode, and the transmission frequency is different from the receiving frequency, direct forwarding through the repeater will not be activated.

Single-frequency transfer

The single-frequency transfer mode can save frequency resources, in which both DMR channel slots are used. One channel slot is used to receive signals, and the other channel slot is used to forward signals, which have the repeater function at a single frequency to expand the signal coverage.

After single-frequency transfer is enabled, the interface will display the following icon: **R** .

Ad Hoc network function

The digital channel supports the ad hoc network function, which can be used for long-distance effective transmission and coverage of wireless intercom signals. After the ad hoc network function is enabled, the interface will display the following icon:  . In the ad hoc network mode, the channel does not support individual call or other services involving confirmation.

1. The ad hoc network mode cannot be configured until the transmission frequency of the channel is the same as the receiving frequency.

2. When the default working channel slot is a virtual cluster, the ad hoc network mode cannot be configured.

3. When "Single-frequency transfer" is not checked and "Register in network system" is checked, the ad hoc network mode cannot be configured.

4. After the ad hoc network is enabled, it is prohibited to set the transmission and receiving frequency and channel mode via the menu.

5. After the ad hoc network is enabled, it is prohibited to actively press the priority interruption function to initiate priority interruption.

6. The ad hoc network is optional, and the software of corresponding version needs to be purchased.

Restoration of default settings

Long press P1+P4+Menu buttons at the same time for 5 seconds in the standby interface to restore default settings (only the device name, device ID, language environment and default channel parameters remain unchanged).

Self-kill

After the device is self-kill, data will be cleared and default settings will be restored. There are two self-kill modes: When "*" and on-hook keys are pressed at the same time in the standby interface, the device will be self-killed and the interface will display kill 1. When the device is powered on and the incorrect password is entered for the set times in the power-on password interface, the device will be self-killed and the interface will

display kill 2.

Note:

1. In case of self-kill, data of the units A and B will be cleared and default settings will be restored.

2. Self-destruction cannot be enabled until the “device password” is set.

Encryption

Encryption functions to encrypt voice and data transmitted via the current channel, so as to protect security of the voice and data. The device supports 4 encryption types: XOR, enhanced XOR, advanced encryption ARC4, advanced encryption ARS. Among them, XOR and enhanced XOR can be used for voice encryption only, and communication will not be performed until the sender and receiver set the same encryption type and encryption key.

The encryption function can be enabled via the channel setting menu or shortcut buttons. A new key can be directly created in the channel setting menu of the device. The key name consists of Chinese characters, uppercase and lowercase letters, numbers or symbols, and the key consists of uppercase and lowercase letters or numbers. Finally, the target encryption key can be selected from the list of encryption keys during setting.

Note: This function needs to be upgraded to take effect.

Transmission time limit

The transmission time limit is used to prevent the current channel from being occupied by a single user for a long time. For busy channels, a shorter transmission time limit can be set. If the continuous transmission time exceeds the set value, the device will send a “beep” warning sound, and automatically terminate the transmission.

Transmission authority

Digital channel

The transmission authority limits the transmission enabled by pressing the PTT button in services through the current channel. The transmission permissions can be set via the frequency programming software to: Always, Available Color Code, Idle Channel. In the “Always” mode, transmission can be performed directly once the PTT button is pressed, regardless of channel conditions. In the “Available Color Code” mode, if the color code of the current channel is occupied and the PTT button is pressed, there will be a prompt that the channel is busy and transmission is prohibited. In the idle channel mode, if there are services in the current channel and the PTT button is pressed, the following prompt will appear: The channel is busy and transmission is prohibited.

Analog channel

The transmission authority limits the transmission enabled by pressing the PTT button in services through the current channel. The analog busy channel lock can be set via the frequency programming software as follows: Always, Idle Channel, CTCSS/CDCSS. In the “Always” mode, transmission can be performed directly once the PTT button is pressed, regardless of channel conditions. In the “Available Color Code” mode, if there are services in the current channel and the PTT button is pressed, there will be a prompt that the channel is busy and transmission is prohibited. In the CTCSS/CDCSS mode, if the CTCSS/CDCSS received by the current channel is the same as the carrier, and the PTT button is pressed, there will be a prompt that the channel is busy and transmission is prohibited.

Squelch level

The analog channel supports the adjustment of the squelch level, i.e. to adjust the intensity of the received signal. Under normal circumstances, the squelch level can be increased in case of short communication distance and high signal intensity, and decreased in case of long communication distance and low signal intensity. This can not only suppress noise but also receive the voice signal. The squelch level can be set to 0-15.

Analog CDCSS and digital CDCSS

The analog channel supports the CDCSS function to guarantee the quality of calls. Voice output is not allowed until the reception CDCSS matches the transmission CDCSS. The analog CDCSS audio, digital CDCSS code or reverse CDCSS code can be set. One CDCSS value can be selected from the available list for encoding or decoding. (For specific CDCSS values, please refer to the following CTCSS frequency table and CDCSS digital table.)

●**Decoding:** The receiver needs to decode the CDCSS sent by the transmitter. The speaker will not be enabled for voice output until the set CDCSS matches the CDCSS sent by the transmitter.

●**Edit number:** Before transmitting voice, the transmitter first encodes the CDCSS and adds it into voice. The code will be sent through the carrier. The speaker will not be enabled for voice output until the CDCSS received by the receiver matches the set value.

System function

The device supports the online transfer of DMR digital voice and SMS data services through the access system, to realize the interconnected communication in the online mode.

Note: The system function is optional, which can be used with the intelligent IP interconnection system of BelFone, so the software of corresponding version needs to be purchased.

Register in network system

The device cannot log in the system for corresponding operations until the “Register in network system” is checked under the channel. There are three modes of registration in the network system. In the single-frequency transfer mode, the system can be connected through the interface board network or microphone, phone card or wireless network. In the non-single-frequency mode, i.e. terminal mode, the device can be connected to the system through the RF access transfer link.

Note:1. In the back-to-back connection mode, only the unit A or B can be connected separately to the system. The units A and B cannot be connected to the system at the same time.

2. If the A/B two-way back-to-back connection mode is enabled and the online function is enabled, the back-to-back mode will be automatically disabled.

Agency mode

One host channel of the device is set to the terminal mode and registered in the network system, and the other host is in any mode but not registered in the network system. After the back-to-back mode is enabled, the voice received by the host that is not registered in the network system will be forwarded to the host that has been registered in the network system, and ultimately transferred into the system. The system will display the call initiated by the host that has been registered in the network system.

Local call

After the “Register in network system” is checked under the channel, all devices in the system will be interconnected when a call is made. If the local call is checked, the voice initiated actively by the device will be forwarded only in the current repeater. However, when a call is received from another device (online or offline) in the system, callback will be performed in the hang up time.

System status query

Press the function key [Online Login and Query] to query the current working status of the device. There will be corresponding voice prompts: Outside Network, Inside Network or Reject Login.

Note: This function key is not valid until the “Register in network system” is checked under the channel.

Patrol system

Emergency alarm

When the alarm switch is ON, press the emergency alarm button to initiate an emergency call. During the automatic monitoring, the voice and position information will be sent automatically to the center and designated contact. The screen will display the icon . Users can set the alarm type, sending times, call contact, automatic monitoring time and

automatic positioning time via the frequency programming software.
When the device receives an emergency alarm, there will be a voice broadcast “XXX emergency call”, and the voice at the emergency alarm scene can be heard.
Users can release the emergency alarm button or send the alarm reset command via the system center to disable the emergency alarm.
Note: The activation of the alarm system and time of automatic monitoring can also be set by sending the alarm setting command.

Tracking monitor

When the tracking monitor is turned on, the device will continuously send the position information to the system according to the set tracking interval and minimum distance.

Independent microphone mode

Long press the M button to change the auxiliary mode of the palm microphone （BF-TC981）to independent mode. In the independent mode, the microphone service and status are displayed on the microphone screen and can be operated via the keyboard. When the gateway is not enabled, the microphone can be used like a normal mobile phone for incoming and outgoing calls. After the gateway is enabled, the microphone supports two-stage phone dialing and DMR dialing for DMR voice and ordinary 4G phone voice calls.

Contact list

The contact list menu contains the DMR contact list and new contacts. For individual calls, the numbers can be viewed and edited, the names can be edited, or contacts can be deleted. For group calls and all calls, only the numbers can be viewed. At most 500 DMR contacts can be stored.
Note: The contact list menu is displayed only when the microphone is not connected to the device.

Phone book

In the phone book menu, the phone numbers of contacts can be viewed, or the names and numbers can be edited or deleted. This menu also supports new contacts and manual dialing. At most 500 contacts can be added.

Note: The phone contacts added into the DMR two-stage dialing list cannot be edited or deleted.

Phone blacklist

The microphone cannot receive calls from the numbers in the phone blacklist. Users can view the blacklist or manually add numbers into the blacklist. For the members in the members, the numbers can be edited or deleted.

Call record

The call record only includes ordinary incoming and outgoing calls, and excludes cross-network forwarding.

1. Dialed calls

Record the ordinary phone numbers dialed recently, but not DMR outgoing calls. At most 50 recent records can be stored. Users can view the dialed numbers and call time through the detailed list.

2. Received calls

Record the phone numbers of recent received calls, including call-ins, manual check-in, and manually received but hang-up calls, excluding phone-to-DMR calls in the auto or manual check-in mode. At most 50 recent records can be stored. Users can view the call numbers and durations of received calls through the detailed list.

3. Missed calls

Record the phone numbers of recent missed calls, including call-ins, manual check-in, and hang-ups without answering. At most 50 recent records can be stored. Users can view the numbers of missed calls through the detailed list.

Setting

1. Basic settings

●**Pitch/prompt tone:** Users are allowed to enable or disable relevant prompt tones through the menu, including key tones and power-on/off prompt tones. When the mute mode of prompt tones is enabled, all prompt tones will be disabled, and the interface will display .

● **Language selection:** The system supports Chinese and English. The language environment includes the menu display language and prompt tone language.

●**Voice broadcast:** Users are allowed to select the voice cast sound and voice cast rate through the menu.

●**Keyboard lock:** Users are allowed to enable or disable the keyboard lock through the menu. The power-on delay time of the automatic keyboard lock can be set via the frequency programming software. In case of no button operation after the keyboard lock is enabled, the keys will be locked automatically, and users need to press the menu + "#" to unlock them.

●**Power-on password:** Users are allowed to modify the power-on password through the menu. The power-on password must consist of 6 digits. The power-on password of the microphone can be modified via the software. A new password cannot be set until the original password is set correctly. The password will be modified successfully if the two new passwords entered are the same. The password can also be modified directly or cleared through the frequency programming software.

●**Backlight:** Users are allowed to enable or disable the automatic backlight function through the menu. The automatic backlight time can be set via the frequency programming software. In case of no button operation after the automatic backlight is enabled, the button and screen backlight will be disabled automatically. The backlight will be turned on again if any key is pressed or there are voice services. The backlight level can be set to 1-10 through the menu. The lower the backlight level, the darker the screen will be, and vice versa.

● **Theme setting:** The theme color options are as follows: "Theme 1", "Theme 2" and "Custom Theme".

●**Network data switch:** Control the ON or OFF status of the microphone

2. Gateway settings

●**Gateway Enable:** Users are allowed to enable or disable the phone gateway function through the menu.

● **Check-in mode:** The check-in modes of the DMR and phone can be set separately, including manual check-in and automatic check-in.

●**Manual check-in**

Manual check-in timeout: Set the maximum waiting time for users to hang up in the manual check-in mode of the DMR and phone. The setting range is 3-8 seconds.

Processing of manual check-in timeout: Set the timeout processing in case of no hang up in the manual check-in mode of the DMR and phone, including hang-up, automatic call forwarding, and automatic check-in.

● **Extension number**

DMR side: Set the phone number to be forwarded automatically by the microphone after receiving a DMR call in the automatic check-in mode, including the default phone numbers in the repeater, and contacts in the phone book of the microphone.

Phone side: Set the DMR number to be forwarded automatically by the microphone after receiving a phone call in the automatic check-in mode, including the default channel DMR numbers in the repeater, and contacts in the contact list of the microphone.

●**IVR enabling:** Users are allowed to enable or disable the IVR function of the DMR and phone through the menu.

System information

View relevant information of the microphone, including the device number, device name, battery power, firmware version, CP version, UI version, and real time.

● **Device number:** Check the phone number of the device.

●**Battery power:** Include the power of this device and external devices.

●**Real time:** When the microphone is connected with the repeater, and the repeater time is synchronized, the current system time is displayed in real time.

Voice service

When the microphone is not connected to the repeater, the device does not support the conversion to DMR voice, and only relevant voice services of ordinary phones are available. Select the contact in the phone book or manually dial a number. Press the call button to initiate a call. Two-stage dialing is supported during the call. When an incoming call is received, press the call button to answer the call.

When the microphone is connected with the repeater, the phone gateway function of the microphone is enabled, and the repeater with the phone gateway enabled is currently in the digital channel, a call can be made between the phone and DMR device.

1. Manual check-in

Phone side

When the microphone receives an incoming call from the phone, press the call button to answer the call, and the menu button to forward to the corresponding DMR number, thus making a call between the phone and DMR device. When an incoming call is received by the microphone but not answered, and the timeout is up, the call will be processed according to the timeout processing mode in the frequency programming software. If the user chooses to hang up, the phone call will be disconnected directly. If the user chooses automatic forwarding, the call will be forwarded to the default DMR contact, thus making a call between the phone and manual console. If the user chooses automatic check-in, the automatic check-in function will be enabled.

DMR side

When the microphone receives an incoming call from the DMR, press the call button to answer the call, and the menu button to forward to the corresponding phone number, thus making a call between the phone and DMR device. When an incoming call is received by the microphone but not answered, and the timeout is up, the call will be processed according to the timeout processing mode in the frequency programming software. If the user chooses to hang up, the DMR call will be disconnected directly. If the user chooses automatic forwarding, the call will be forwarded to the

default phone contact, thus making a call between the phone and DMR device. If the user chooses automatic check-in, the automatic check-in function will be enabled.

2. Automatic check-in

Phone side

If the IVR function is not enabled, and the microphone receives an incoming call from the phone, the call will be answered automatically and forwarded to the default DMR contact, thus making a call between the phone and DMR device.

If the IVR function is enabled, and the microphone receives an incoming call from the phone, the call will be answered automatically. After a voice call is made between the microphone and phone, the microphone will play the IVR two-stage dialing prompt tone to the phone. When the time of playbacks reaches the maximum number set for the prompt tone of the phone, there will be a prompt tone of playback failure. Then the entire call will be terminated. If there is no number corresponding to the entered DTMF string in the two-stage dialing list of the phone, or there is no input, the prompt tone will be replayed. The DTMF monitoring timeout on the phone side is the receiving time. If the entered number ends with “#”, the number will be received immediately. If the number starts with “0”, manual check-in will be enabled.

DMR side

If the IVR function is not enabled, and the microphone receives an incoming call from the DMR device, the call will be answered automatically and forwarded to the default phone contact, thus making a call between the phone and DMR device.

If the IVR function is enabled, the microphone receives an incoming call from the DMR device, and a voice call is made between the microphone and DMR device, the microphone will play the IVR two-stage dialing prompt tone to the DMR device. When the time of playbacks reaches the maximum number set for the prompt tone of the DMR device, there will be a prompt tone of playback failure. Then the entire call will be terminated. If there is no number corresponding to the entered DTMF string in the

two-stage dialing list of the phone, or there is no input, the prompt tone will be replayed. The DTMF monitoring timeout on the DMR side is the receiving time. If the entered number ends with “#”, the number will be received immediately. If the number starts with “0”, manual check-in will be enabled.

Standby phone call

Check the standby phone call function via the frequency programming software. In the standby interface, directly press numeric keys to make a call.

Rejection of unknown calls

Check the function of rejecting unknown calls through the frequency programming software. Then only the calls from the numbers in the phone book will be received. If this function is not checked, the calls from the numbers in the phone blacklist will not be received.

Table of Standard CTCSS Frequencies

CTCSS No.	Frequency [Hz]	CTCSS No.	Frequency [Hz]	CTCSS No.	Frequency [Hz]	CTCSS No.	Frequency [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		

Table of Standard CDCSS Codes

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

Technical indicators

General	
Frequency range	VHF: 136-174MHz UHF: 350-400MHz/400-480MHz/450-520MHz
Number of channels	3776
Channel spacing	12.5KHz /25KHz
Antenna impedance	50Ω
Operating voltage	Vehicle-mounted: DC13.8V(± 15%), negative grounded Manpack type: 10.8-12.6V
Current consumption	< 6A
Operating environment	-30℃~+70℃
Storage temperature	-40℃~+85℃
Volume	302mm(L)*218mm(W)*76mm(H) (excluding antenna and antenna pedestal)
Weight	≤5.3kg (including battery)
Emission	
RF power	Vehicle-mounted: 5-25W (continuous emission) Manpack type: 3-15W (continuous emission)
Frequency stability	≤0.5ppm
4FSK digital modulation	12.5KHz only data: 7K60FXD 12.5KHz data and voice: 7K60FXW
Power of adjacent channel	≤60dB
Spurious emission	-36dBm<1GHz -30dBm>1GHz
Digital voice encoder	AMBE++
Receiving	
Sensitivity	3%BER≤0.35μV
Frequency stability	≤0.5ppm
Adjacent channel selectivity	≥60dB
Intermodulation immunity	≥65dB
Spurious response	≥70dB
Blocking	≥90dB
Rated audio output power	This device includes no speaker, and the microphone can be connected.
Environmental Specifications	
Working Temperature	-30℃~+70℃
Storage Temperature	-40℃~+85℃
Vibration & Shock	MIL-STD-810G Standard
Humidity	MIL-STD-810G Standard
Dustproof & waterproof	IP68

Simple Troubleshooting

Fault	Solution
All indicators are OFF.	1. Check whether the switch of the device is turned on.
	2. Check whether the battery is connected properly.
	3. Check whether the battery voltage is normal.
The manpack type carrier is not suitable for transfer.	Check whether the back-to-back function of AB connection is enabled.
The connected microphone is not suitable for intercommunication.	1. Check whether the microphone is plugged in.
	2. Check whether the configuration is correct.
The device fails to communicate with other radio stations properly.	1. Check whether the antenna is in the normal status.
	2. Check whether the frequencies of related device are consistent with each other.

Note: If the fault still exists after the aforesaid measures are taken, contact the supplier.

Statement

To the best of our knowledge, this Manual has been prepared in an accurate and complete manner. For any doubt, please contact us timely for specific explanation. Considering the fast development of wireless communication technology, BelFone reserves the right to modify the product design and specification without any further notification. Your understanding in this respect will be much appreciated!

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RECYCLABLE PACKAGING