BelFone

www.belfone.com

BF - TR900

Professional 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:

Professional digital repeater: BF-TR900 series

Version L: Conventional digital repeater

Version M: Adaptable to BelFone smart IP interconnection system

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

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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.

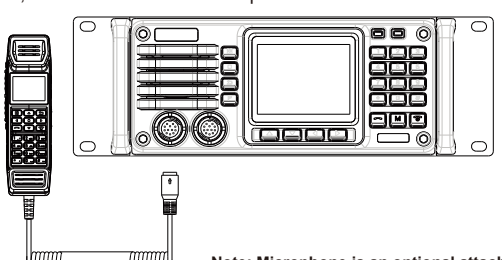
Be careful when taking the device out of the packing box. You'd better count the accessories against the following list before discarding the packaging. If you find any item is missing or damaged, please contact the local distributor of BelFone or directly contact BelFone Communication immediately.

Accessories supplied along the device

Item	Quantity
Master	1
Power cord	1
Operation Manual	1
Warranty Card	1
Conformity Certificate	1

Connect the palm microphone

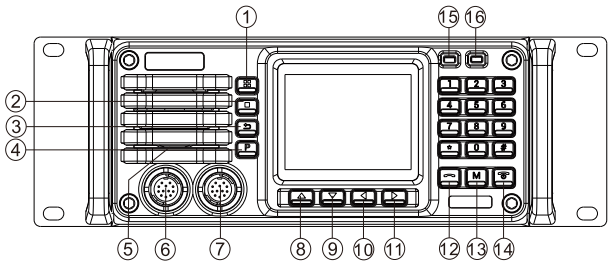
If provided, the palm microphone can be connected to the microphone port for man-machine communication and operation. Upon connection of the microphone, hold the microphone with the arrow indicator pointing upwards; direct and insert it into the port on the device.



Note: Microphone is an optional attachment.

Get familiar with the device

Front view



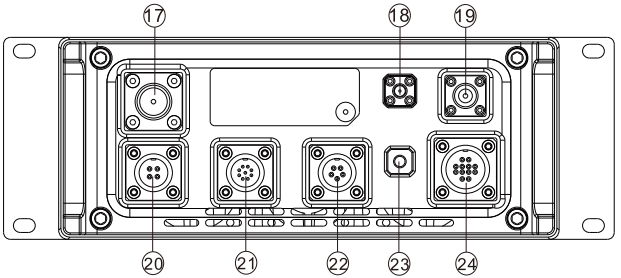
①	Menu button: When this button is pressed, the main menu will show; when it is long pressed , the current region and channel number will show	⑨	Down arrow button: When this button is pressed, the channel number will decrease; when it is long pressed , the region number will decrease (programming supported)
②	Mode button: Press this button to select the working mode	⑩	Left arrow button: When this button is pressed, the background light will darken; when it is long pressed, the repeater volume will turn down (programming supported)
③	Back button: Press this button to go back; long press this button to return to the main interface; in the dial/edit state, press this button to delete a character, or long press this button to clear all the text currently being edited.	⑪	Right arrow button: When this button is pressed, the background light will brighten; when it is long pressed, the repeater volume will turn up pported)
④	P button: Programming button	⑫	Call: Press this button to enter the call record menu (900L) Press it to enter the DMR contact list (900M)

⑤	Loudspeaker	⑬	M button: Channel slot switch
⑥	Microphone/frequency programming port 1	⑭	Hang up: Press this button to hang up, or long press to turn off/on the device
⑦	Microphone/frequency programming port 2	⑮	A indicator: Channel slot 1 working state indication
⑧	Right arrow button: When this button is pressed, the channel number will increase; when it is long pressed, the region number will decrease (programming supported)	⑯	B indicator: Channel slot 2 working state indication

Indicator state

LED indication		Device state
A indicator	**B indicator**	
Red light normally on	/	Channel slot 1 emission
Normally ON in green	/	Channel slot 1 detects effective signal
Green light flickers (1s)	/	Analog receiving
/	Red light normally on	Channel slot 2 emission
/	Normally ON in green	Channel slot 2 detects effective signal
/	Flashing in red (1s)	Analog transmission
Orange light flickers (1s)	Red light flickers slowly (2s)	Excessively high voltage
Orange light flickers (1s)	Green light flickers slowly (2s)	Excessively low voltage
Orange light flickers (1s)	Green light flashes quickly (0.5s)	PLL receiving abnormality
Orange light flickers (1s)	Red light flickers quickly (0.5s)	PLL transmitting abnormality

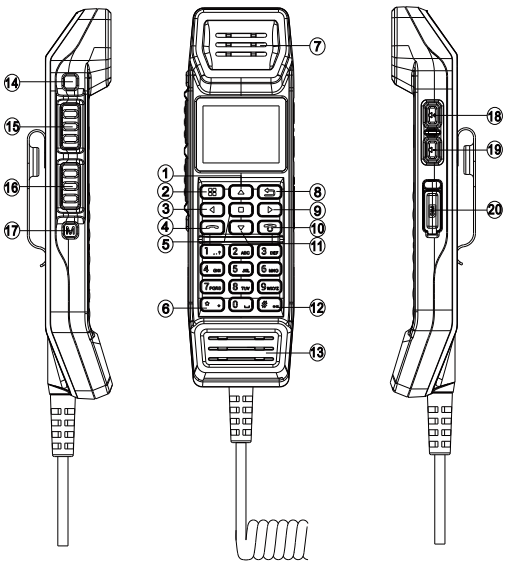
Back view



⑰	TX RF output port	㉑	Satellite attachment unit port
⑱	GPS antenna port	㉒	Network port
⑲	RX RF input port	㉓	Ground terminal
⑳	DC power input port	㉔	ACC attachment unit port

Palm microphone(optional)

An external microphone can be connected via the microphone port to realize man-machine conversation, and a palm microphone is supported.



①	Up arrow button	⑪	Down arrow button
②	Menu/OK	⑫	# Button
③	Left arrow button	⑬	Microphone
④	Call	⑭	Orange alarm
⑤	Mode selection (only for BF-TR900L)	⑮	PTT up
⑥	* Button	⑯	PTT down
⑦	Loudspeaker	⑰	M button: Press it to switch time slot Long press to switch between independent/auxiliary mode
⑧	Back	⑱	Volume +
⑨	Right arrow button	⑲	Volume -
⑩	Hang up	⑳	SIM card slot

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

Basic operations

LCD icon (TR900L)

Icon Display	Description of Icon State	Icon Display	Description of Icon State
H	Transmitting power: High		Incoming voice call for first channel slot (grey: not cast the voice; orange: cast the voice)
M	Transmitting power: Medium		Incoming voice call for second channel slot (grey: not cast the voice; orange: cast the voice)
L	Transmitting power: Low		Analog repeater mode; Analog base radio mode; (Orange indicates the current repeater is working in the analog mode)

C	Transmitting power: Self-defined		Analog incoming voice call (grey: not cast the voice; orange: cast the voice)
	DMR encryption		Monitor enabled
	All muted		Keyboard locked
	Digital channel		GPS enabled
	Analog channel		USB connection
	Digital-analog compatible channel		Interface board connected
	Unread message		Master:Currently 2 slave repeaters are connected
	Inbox full		Standby slave repeater
	Base radio mode of first channel slot ; Repeater mode of first channel slot ; IP interconnection mode of first channel slot (When the icon is in orange, it means that the current repeater is working at first channel slot)		Slave repeater (connected to the master)
	Base radio mode of second channel slot ; Repeater mode of second channel slot ;IP interconnection mode of second channel slot (When the icon is in orange, it means that the current repeater is working at second channel slot)		Slave repeater(not connected to the master)

LCD icon (TR900M)

Icon Display	Description of Icon State	Icon Display	Description of Icon State
4G	Signal intensity for the phone card		Loudspeaker on
	Auxiliary mode		Unread message

	Phone gateway enabled (no call forwarding) Phone-to-DMR inter-network call transfer		Loudspeaker on
H	Transmitting power: High		Unreadmessage
M	Transmitting power: Medium		Inbox full
L	Transmitting power: Low		Interface board registered with the main control panel
C	Transmitting power: User-defined		Interface board connected to the local network
	All muted		Interface board server connected
	Digital channel		Keyboard locked
	Analog channel		Registry network configured
	Channel slot 1		USB connection
	Channel slot 2		Satellite positioning: The icon is black when positioning is off, and green when positioning is on.
	Analog		DMR encryption
	Monitor enabled		

Power on/off

Hold down the [Hang up] button for about 3s, and the screen will light up; at this time, the power is connected, and the interface will display the logo and the device name.

Hold down the [Hang up] button for an additional about 3s, and the interface will display: Shutting down..., the screen will go dark and the device is shut down.

Regulate the volume

After startup, long press the Left or Right direction button to regulate the volume. Long press [Left], and the volume will reduce by 10%; long press [Right], and the volume will increase by 10%; the volume can be regulated within the range of 0~100%.

Note: If the device is connected with a palm microphone, the volume can also be regulated by pressing the volume +/- buttons on the microphone.

Select a channel

Press Up or Down to change the channel. Press [Up], and the channel number will progressively increase; press [Down], and the channel number will progressively decrease; the current channel number will be displayed on the interface.

Note: If the device is connected with a palm microphone, the channel can also be switched by pressing the Up and Down buttons on the microphone.

Switch the region

TR900L can support up to 128 regions, and each area may include a maximum number of 128 channels; namely, 128 regions may support up to 2,048 channels. Enter the region list via the menu, select the desired region, and switch to the region. Or long press [Up] or [Down] (programmable by default) to switch the region.

TR900M regions comprise 4 first-level regions, 3,000 second-level regions and 3,000 third-level regions. Each third-level region includes 16 channels to the maximum extent, and totally supports 3,776 channels. Enter the region list via the menu, select the desired region, and switch to the region. Or long press [Up] or [Down] (programmable by default) to switch the region.

Note: If the device is connected with a palm microphone, the region can also be switched by holding down the Up and Down buttons on the microphone.

Key locking

Long press [#] for about 2s, and the interface will display the lock icon: ; in this case, no operation on the buttons is effective. Long press the [Menu] and press [#] to unlock the buttons.

Channel slot selection

When TR900L is at the digital channel, press [M] to switch the current operation to channel slot 1 or 2; when the current operation is set to channel slot 1, the icon of channel slot 1 will become orange; or otherwise when the current operation is set to channel slot 2, the icon of channel slot 2 will become orange; at the analog channel, the operation is in the analog mode by default, and operation on [M] is ineffective; at the digital-analog channel, [M] can be pressed to switch the current operation to channel slot 1, channel slot 2 or analog mode.

When TR900M is at the digital channel, press [M] to switch the current operation to channel slot 1 or 2; when the current operation is at channel slot 1, the interface will display icon: ; when the current operation is at channel slot 2, the interface will display icon: ; at the analog channel interface displays icon: , and operation on [M] is ineffective.

Work mode switching

For TR900L, press [Mode] to switch the operating mode; in the digital mode, base radio, independent repeater or IP interconnected repeater mode (configuration of network connection type required) can be selected for channel slot 1 or 2; in the analog mode, repeater or base radio mode can be selected.

Note: For TR900M, the mode button is unavailable for the time being.

Button configuration

Use the frequency programming software to configure an orange alarm button, while corresponding the Up, Down, Left and Right buttons to pressing and holding-down operations.

Programmable buttons include the following functions:

No.	Defined Name	Function Description
1	Undefined	No function is assigned to the programmable button
2	Channel setting	Press the button to enter the "Channel setting" menu
3	Power switch	Press it to quickly switch the transmitting power: Low, medium, high, user-defined
4	Monitoring switch	Press the button to turn on/off the monitoring switch
5	Prompt tone switch	Use the button to quickly turn on or off the prompt tone
6	Inbox	Press the button to enter the short message inbox
7	Squelch level regulation	In the analog mode, press this button to enter the squelch level setting menu
8	Root directory list	Press the button to enter the root directory menu
9	Encryption switch	Use this button to quickly turn on or off the encryption switch
10	Region-	Press this button to switch the region - the region number will progressively decrease
11	Region +	Press this button to switch the region - the region number will progressively increase
12	Channel -	Press this button to switch the channel - the channel number will progressively decrease
13	Channel+	Press this button to switch the channel - the channel number will progressively increase
14	Background light -	Press this button to set the background light – the brightness will progressively reduce

15	Background light +	Press this button to set the background light – the brightness will progressively increase
16	Low power	Press this button to switch to lower power
17	Medium power	Press this button to switch to medium power
18	High power	Press this button to switch to high power
19	User-defined power	Press this button to switch to a user-defined power
20	Outbox	Press this button to enter the short message outbox
21	Repeater volume +	Press this button to progressively increase the repeater volume
22	Repeater volume -	Press this button to progressively reduce the repeater volume
23	Back-to-back switch	Press this button to turn on/off the back-to-back switch
24	Self-kill	Press this button to trigger the self-kill operation (only for TR900M)
25	Theme switch	Press this button to switch the themed style (only for TR900M)
26	Disconnect	Press the button for resetting upon suspension of a call or call-back (only for TR900M)
27	Channel slot switch	Press this button to switch the working Channel slot (only for TR900M)
28	Prior interruption	Press this button to interrupt the current voice call (only for TR900M)
29	Networking switch	Use this button to quickly turn on or off the networking

30	Telephone gateway switch	Use this button to quickly turn on or off the telephone gateway function (only for TR900M)
31	Contact list	Press this button to enter the contact list menu (only for BF-TR900M)
32	DMR contact list	Press this button to enter the DMR contact list menu (only for TR900M)
33	Short message	Press this button to enter the short message menu (only for TR900M)
34	DMR preset message	Press this button to enter the DMR preset message menu (only for TR900M)
35	Write a message in DMR	Press this button to enter the DMR short message menu (only for TR900M)
36	DMR inbox	Press this button to enter the DMR inbox menu (only for TR900M)
37	DMR outbox	Press this button to enter the DMR outbox menu (only for TR900M)
38	DMR system message	Press this button to enter the short message menu in the DMR system (only for TR900M)

One-button call function

In the digital mode, digit buttons 0~9 can be set for the one-button call function. The function supports group call, individual call and all call. For indi or all call, it is required to configure corresponding digit button; after configuration, long press the digit button when the device shows the standby interface and press PTT button to make the call.

Set signal code

The signal code configuration of the frequency programming software allows setting signal code operation to realize corresponding function; configurable functions can be quickly configured with reference to the buttons by entering corresponding function codes (*0~99#) when the device shows the standby interface. For example: If signal code *1# corresponds to the low power function, then when *→1→# is entered on the main interface, the power will be directly switched to low power.

Self-kill function

When this device has a password, it supports self- kill to destroy corresponding parameter by using combined keys. When the device shows the home screen, hold down [*]+[Hang up], and enter the password to the device; press [OK[1]], and after self- kill, the interface will show: Kill: 1. Or upon startup, if the correct password fails to be entered after the number of attempts reaches the threshold, the device will enter the self-kill state, and the interface will show: Kill: 2.

Restore factory settings

The device may have its factory settings restored by using combined keys. When the device shows the standby interface, hold down [Up]+ [Right]+[Menu] for 5s, and the screen will show: Restore the factory settings of data? Then press [Menu] to confirm the restoration.

Functions and operation instructions

Digital mode

1. Digital repeater mode

Both TR900L and TR900M support digital repeater function. If the current channel operates in the repeater mode,

then the interface will display icon: (channel slot 1) (channel slot 2);

if voice service occurs at channel slot 1, indicator A will turn orange, and the interface will display the received signal intensity; if voice service occurs at channel slot 2, and it is at the repeating state, then indicator B will turn orange, and the interface will display the received signal intensity.

•Monitoring

If the current channel slot is operating in the repeating mode and the automatic monitoring function is enabled, then the interface will display icon: ; when voice service is detected at the current channel slot, the voice can be received, while information of the calling and the called will be displayed on the interface. At this time, the call can be answered by pressing the PTT button.

Note: When the channel is at the repeater mode with the monitoring function enabled, a call can be made by pressing the PTT button.

•Voice frame repeater calibration

In the digital mode, voice frame repeater calibration is enabled by default, so as to improve the quality of voice calls.

2. Digital base radio mode

TR900L supports digital base radio mode. When the device operates in the base radio mode, the interface will show the icon: (channel slot 1), (channel slot 2). If a palm microphone is connected, a call can be made or voice call can be received by pressing the PTT button.

Note: Only one of channel slot 1 and 2 may operate in the base radio mode.

•Voice calling

If the current channel slot operates in the base radio mode, a call to the default contact can be made by pressing the PTT button. When channel slot 1 is currently in operation, and the PTT button is pressed to make a voice call, indicator A will turn red, and the calling information will show on the standby interface. When channel slot 2 is currently in operation, and the PTT button is pressed to make a voice call, indicator B will turn red, and the calling information will show on the standby interface.

•Voice receiving

If the current channel slot 1 operates in the base radio mode and receives any voice, then indicator A will turn normally green, the channel slot 1 icon

will show as a yellow loudspeaker, and the interface will show information of the calling and the called. If channel slot 2 is currently in operation and receives any voice, then indicator B will turn normally green, the channel slot 2 icons will show as a red loudspeaker, and the interface will show information of the calling and the called.

- **Short message**

When the current time slot is in the base radio mode, short messages, for either group call or all call other than individual call, can be sent or received.

- **Voice encryption**

Encryption functions to encrypt voice and data transmitted via the current channel, so as to protect security of the voice and data. Four encryption types are supported: xor, enhanced xor, ARC4 and ARS, in which xor and enhanced xor only function to encrypt voice. When the encryption function is enabled for the channel, the interface will show the following icon: ; in this case, communication is permitted only when both the sending and the receiving sides have the same encryption type and key.

1.Enable encryption

[Setting] menu → Channel setting → Encryption switch → On

Press the function button [Encryption switch]

2.Create a key

Select “Create a key” in the encryption menu, edit the key name and then the key; the key name shall comprise Chinese characters, uppercase/lowercase letters, digits or symbols; the key shall comprise uppercase/lowercase letters or digits.

3.Encryption key

Select a target key from the encryption key list to set a key.

Note: The voice encryption function is only effective in the digital repeater mode with the monitoring function enabled or in the base radio mode.

3. Digital IP interconnection mode

TR900L supports IP interconnection, and may realize interconnection between IP sites of multiple repeaters. When frequency programming software is used to configure network services with one master repeater

and multiple slave repeaters, it is required to configure a channel slot thereof to the IP interconnected repeater mode, so that after the network is connected, services may be transmitted from one repeater to the other repeaters. When the current channel slot operates in the IP interconnected mode, the interface will show icon: (channel slot 1), (channel slot 2).

Network setting

Connection type

Connection type	Function
None	IP interconnection function disabled
Equivalent	Set to slave (registration of the master repeater required)
Master station	Set to master (waiting for slave repeater registration)
Master repeater backup	A type of slave repeater that will automatically become a master repeater when the master repeater fails.

Master station:

In an IP interconnected system, it is permitted to configure only one master repeater, while other repeaters shall be configured as slave repeater, with IP addresses registered with the master repeater for IP interconnection. If the current channel slot operates in the IP interconnected mode at the master repeater, the interface will display the following icon:

Backup master repeater:

The backup master repeater is a slave repeater. In a system, it is permitted to configure a backup master repeater, which in normal operating conditions is the same with other slave repeaters. Only when the master repeater fails and cannot be connected, the backup master repeater will act to play the role of a master repeater in lieu of the original master repeater for registration of other slave repeaters. If the current channel slot operates in the IP interconnected mode at the backup master repeater, the interface will show the following icon:

When the original master repeater is reconnected to the network (or

recovers from failure after restart), all slave repeaters will become registered with the original master repeater again.

Equivalent:

An equivalent is a slave repeater. In a system, it is permitted to configure multiple slave repeaters. Upon frequency programming, it is required to configure slave repeaters, the backup master repeater and the current repeater's IP address for successful registration with the master repeater. If the current channel slot operates in the IP interconnected mode at an equivalent with the master repeater is connected, the interface will show the following icon:

Authorization code: Equivalents shall have consistent authorization codes with the master repeater for successful registration. For an authorization code, it is allowed to enter a maximum of 16 digits and letters from 0~9 and A~F; it can be null if nothing is entered.

DHCP: When an equivalent is set to DHCP, the router will act as the DHCP server and automatically assign an IP address to the equivalent. (The router shall support DHCP, and the IP address assigned shall be within the same network segment of the master repeater's IP).

●When the current device is connected as a master repeater, it is required to configure its IP, UDP port, gateway IP, network mask, NDS server IP, UDP port;

●When the current device is connected as a backup master repeater, it is required to configure its IP, UDP port, gateway IP, network mask, DNS server IP, UDP port and master repeater IP, master repeater UDP port;

● When the current device is connected as an equivalent, it is required to configure its IP, UDP port, gateway IP, network mask, DNS server IP, UDP port and master repeater IP, master repeater UDP port, backup master repeater IP, backup master repeater UDP port.

Note: In one system, only one "master repeater" and on "backup master repeater" are permitted; other repeaters shall be configured as "equivalents". The function is optional.

4. System networking function

TR900M can be connected to BelFone intelligent interconnection system,

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.

2. Analog base radio mode

TR900L supports the analog base radio mode. When the channel operates in the base radio mode, the interface will show the following icon: . If a microphone is connected, it is permitted to make a call or receive a voice call by pressing the PTT button.

- **Voice calling**

If the current channel operates in the base radio mode, then it is permitted to make a call by pressing the PTT button. Upon calling, indicator B flashes red, and the standby interface shows the transmitting and receiving frequency of the current channel.

- **Voice receiving**

If the current channel operates in the base radio mode, and receives any voice, then indicator A will flash green, and the interface will show a yellow loudspeaker icon and the transmitting/receiving frequency of the current channel.

Back-to-back function

The device supports the back-to-back function to realize back-to-back connection between a single repeater and other device for repeating voice. The current device supports back-to-back connection of digital channels and that of analog channels. The back-to-back function can be set via the setting menu or the programming button of the device. When the function is enabled, the relay icon on the main interface will turn green; or otherwise it is red.

Note: Back-to-back connection of analog channels requires the GPIO BUSY line set via the frequency programming software to output an active level and the PTT line to input an active level. The "active level output by the BUSY line" of the current device shall be the same with the "active level input by the PTT line" of the other back-to-back device.

Simulcast function

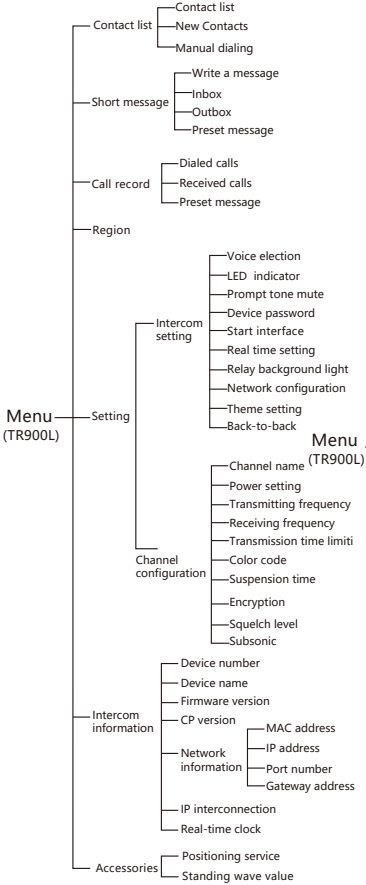
TR900L supports Simulcast function. When the Simulcast function is enabled, the repeater can be registered as an equivalent with the base

radio controller of BelFone intelligent interconnection system to realize networking of Simulcast function. The function is optional.

Telephone gateway function

TR900M supports connecting to TC981 microphone, and can realize voice call between DMR voice service and ordinary 4G telephone voice service via the built-in 4G module of the microphone. If the telephone gateway function is enabled and calls are forwarded via DMR service, the interface will display the following icon: radio controller of BelFone intelligent interconnection system to realize networking of Simulcast function. The function is optional .

Menu function



Contact list

To the TR900L contact list, up to 500 contacts can be added (including for individual, group and all calls).
To the TR900M DMR contact list, up to 1,600 contacts can be added.

Short message

The TR900L message function is only valid in the digital base radio mode. TR900M messages include DMR messages..

Call record

TR900L call record supports recording of individual calls made, received, picked up and missed in the digital mode, and can store the latest 50 entries of records.

Setting

1. Device setting

In the device setting menu of TR900, the voice environment can be selected, the LED indicator can be turned on/off, the prompt tone can be enabled/disabled, the password of the device can be modified, the real-time clock can be set (by directly entering numerical values; to set a day of a week, a digit from 0~6 is entered, and 0 corresponds to Sunday), the background light can be set from level 1 to 10, the themed style can be switched, and the back-to-back function can be enabled/disabled. TR900L supports configuration of network parameters; for entering an IP address, * represent a dot.

2. Channel setting

In the channel setting menu of TR900, the channel name and power can be set, the sending and receiving frequency can be modified, and the transmission time limit, color code, encryption, hang up time, squelch level and CTCSS/CDCSS can be set. TR900M supports the networking on/off function.

Note: When the sending/receiving frequency (manual frequency setting) is

modified to be optional, the frequency entered will be restricted to the frequency range of the device.

Device information

In the information menu of TR900, the name, number, real-time clock, firmware and CP version of the device can be viewed; TR900L allows viewing network information (MAC address, IP address, port number and gateway address), and IP interconnection information; TR900M allows viewing repeater number.

Accessories

1. Positioning service

The device supports satellite positioning, and can have the positioning type set via a frequency programming software to: GPS/BD/GPS+BD。When GPS is enabled, the interface will show the following icon: . After successful positioning, the position information of the device can be viewed via the attachment unit menu of the device; the information includes: time, date, latitude, altitude, elevation, speed and number of satellites.

2. Standing wave

In the attachment unit menu, the standing wave can be set to 1.5, 2.0, 2.5 or 3.0; when the standing wave for the device port is less than or equal to the set value, the antenna icon on the main interface will be green; or otherwise it will be red.

3. Network service

TR900M supports viewing the local network and server network information via the network service menu.

4. Telephone service

TR900M supports enabling or disabling the telephone gateway via the telephone service menu.

Technical indicators

General		
Frequency range	VHF：150MHz UHF：350MHz/400MHz/450MHz	
Region	TR900L	128
	TR900M	First-level regions: 4 Second-level regions: 3000 Third-level regions: 3000
Number of channels	TR900L	2048
	TR900M	3776
Channel spacing	12.5KHz /25KHz	
Antenna impedance	50Ω	
Operating voltage	DC13.8V(± 15%)，negative grounded	
Current consumption	< 9A	
Volume	330mm(L)*218mm(W)*88mm(H)	
Weight	≤6kg	
Emission		
RF power	5-50W（continuous emission）	
Frequency stability	≤±0.5ppm（without positioning） ≤±0.02ppm（with positioning）	
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（without positioning） ≤±0.02ppm（with positioning）
Adjacent channel selectivity	≥60dB
Intermodulation immunity	≥70dB
Spurious response	≥70dB
Blocking	≥95dB
Rated audio output power	2W(8Ω)
Environmental Specifications	
Working Temperature	-30℃~+70℃
Storage Temperature	-40℃~+85℃
Vibration & Shock	MIL-STD-810G Standard
Humidity	MIL-STD-810G Standard
Dustproof & waterproof	IP54

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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