BelFone

www.belfone.com

BF-312

Professional FM Radio

Notice to the user

Government law prohibits the operation of unlicensed radio transmitters within the territories under government control.
Illegal operation is punishable by fine or imprisonment or both.

THANK YOU!

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

This manual is applicable to
BF-312 series

Warning !

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

Precautions

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

◆The recommended usage rate is 1 minute for TX and 4 minutes for RX, when the radio is used in thetransmission mode for many hours continuously, the radiator and chassis will become hot, don't allow the rear panel of the radio to contact a surface of low melting point /low Ignition point.

◆Don't expose the radio to direct sunlight for a long periods of time. Also, don't place the radio on sources ofextremely heat, humid, dusty area, or unstable surfaces.

◆In areas where the use of radio devices is restricted or warned, please obey the regulation and turn off the radio.

◆Use of the radio while driving may be against traffic laws in some countries, please check local traffic laws before using the radio while driving.

◆If there is any problems withthe radio, please turn the radio off immediately. Then contact the local dealer/technician.Do not modify this radio unless instructed by this manual. Please find a certified technician to repair it.

◆If secondary development is required, please contact with BelFone or the local dealer for technical assistance.

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

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Unpacking and Device Inspection

Notes: The following instructions regarding unpacking are only for BelFone's distributors, and service agencies or factories authorized by BelFone.

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

Accessories

items	Quantity
Antenna	1
Strap	1
Belt Clip	1
Charger	1
Li-ion Battery	1
Screws	1
User Manual	1
Warranty Card	1
Certificate	1

Antenna

Strap

Belt Clip

Charger

Belt Clip

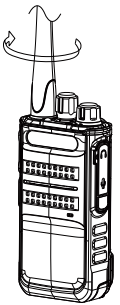
Screws

Installation of Accessories

Installing / Removing the antenna

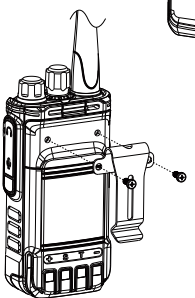
Hold the supplied antenna by its base, then screw it into the connector on the top panel of the radio until fasten.

Turn the antenna anti-clockwise to remove it.



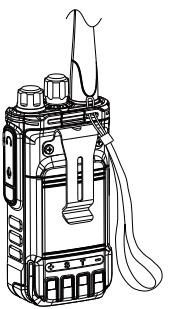
Installing/ Removing the Belt Clip

Attach the belt clip using the two supplied3*4mm binding screws.



Attaching the Strap

Thread the hand strap to the loop back of the radio.

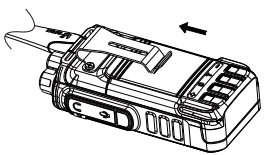


Attaching/Removing the Battery

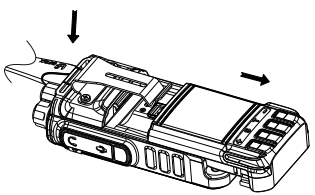
Warning!

- Don't short-circuit the battery, which may cause damaged or catch fire;
- Don't attempt to remove the case of the battery to prevent battery short circuit;
- Battery is flammable and explosive, don't throw it into fire or don't use it in dangerous area, such as gas stations.

Align the battery with the corresponding position on the back of the radio, then push the battery in parallel until hear a "click" sound and the latch on the back of the radio locks the battery.



To remove the battery, please turn the power off, then release latch to unlock the battery, and pull it away from the radio.



Note: Do not attach or remove the battery if the radio is on.

Battery Information

New battery shipped from the factory is not fully charged, so please charge it for 5 hours before initial use. After three full charge and discharge cycles, battery capacity and performance can reach the best condition. Please recharge/replace the battery in low power level.

Applicable Battery

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

Battery Tips

1.Batteries charge best at room temperature within 5℃—40℃, or it'll lead to battery leakage and damage.
2.Prior to charge a battery with the radio, it is recommended to turn the radio off.
3.Avoid to cut off the power supply or remove the battery during charging.
4.Please ensure that the battery is charged in a dry state before charging.
5.Please change the battery when working time is shorten than normal performance even if the battery is fully charged.

Extend Battery Life

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

Extend Battery Life

1.Fully charge the battery before long-term storage, to avoid battery damage due to over-discharge.
2.Recharge the battery after long-term storage, to avoid battery capacity reduction due to over-discharge.(NI-MH batteries:3 months, Li-Ion& Li-polymer batteries: 6 months)

3.Store the battery in a cool, dry place under room temperature to reduce self-discharge.

Charging the battery

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

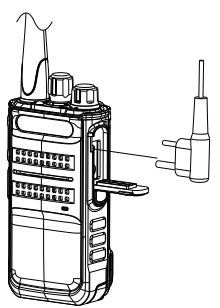
Charger Status	Charger Indicator
Standby(No-load)	Green
Battery is charging	Red
Battery is fully charged	Green

Charge Steps:

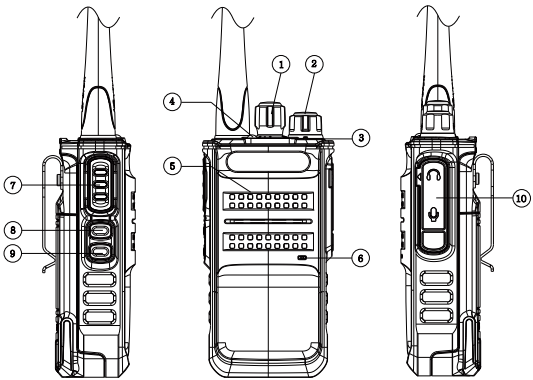
1.Plug the AC connector of the charger into the AC outlet socket.
2.Plug the battery or the radio with battery into the charger.
3.Making sure the battery plugs the charger, the charging process initiates when the charger indicator glows red.
4.The charger indicator glows green when the battery is fully charged, please remove the battery then.

Attach the Speaker/Microphone

Open the accessory jacket cover, then insert the speaker/microphone directly into the accessory port.



Getting Acquainted



①	Channel Selector Knob	⑥	MIC
②	Power &Volume Knob	⑦	PTT Key
③	LED Indicator	⑧	Button 1: Press and hold to monitor, release to cancel monitor by default.
④	Lamp	⑨	Button 1: Short press the key to switch the lamp mode, long press the key to switch scan on/off by default.
⑤	Speaker	⑩	MIC-SP Jack

Basic Operation

Turning the Power on /off

Rotate the power &volume knob clockwise to turn the power on.

Rotate the power &volume knob anti-clockwise to turn the power off.

Adjust the Volume

After the radio is powered on, rotate the power &volume knob to adjust the volume level, rotate the knob clockwise to increase the volume, or rotate the knob anti-clockwise to decrease the volume.

Note: Press and hold the Button1 to monitor the background noise and adjust the proper volume according to the level of the background noise.

Select a Channel

Turn the channel selector knob to select channel 1 to 16, rotate the knob clockwise to increase the channel number, or rotate the knob anti-clockwise to decrease the channel number.

Note: All channel edited in the programming software need to be preset channel frequency. While the current channel is un-programmed, an alarm sounds and LED indicator flashes red and green.

Transmit

While initiating a call, press and hold the PTT key and speak into the microphone, keep a distance of 3 to 4cm from the microphone, speak in a normal voice, to achieve the best sound quality on the radio. When calling, the LED indicator lights red, indicating that it is transmitting. Release the PTT key, and the radio will exit the transmitting state and enter the standby state.

Receive

While receiving a signal, LED indicator lights green.

●If the signal of the call is weak and the radio is set to a high squelch level, the radio will not be able to receive the call.

●If the channel has set with CTCSS or CDCSS signaling, radio can only receive calls with the same CTCSS or CDCSS signaling, other calls will not be received .

Functions and Operations

Noise Suppression

The radio supports voice noise suppression function, which can suppress environmental noise and ensure clear voice call quality.
Note: Only BF-312 version supports noise suppression function.

Tone Prompts

When turning on the radio or switching channels, the radio will broadcast the current channel number; when switching on or off the scanning function, there will be corresponding tone prompts; When the battery is low, it will prompt: Please charge. Select Chinese or English voice prompts via the programming software.

Squelch Level

Users can adjust the signal strength required for receiving by setting different squelch levels. The higher the squelch level, the stronger the signal strength required to be received. When the squelch level is 0, regardless of whether the carrier signal is received or not, the radio will continuously emit background noise of 'shua shua shua'. The squelch level can be set to 0 to 9 via the programming software, the default squelch level is 3.

Battery Voltage Detection

The radio will automatically detect the battery level, and when the battery capacity is below 20%, a voice prompt will be given every 3 minutes: Please charge. When the battery is low, please charge or replace it in a timely manner to avoid affecting normal use, otherwise the radio will automatically shut down if the battery is too low.

Battery Save

Enable battery save mode will extend battery service life, but the response time of the radio may be delayed. Power save ratio can be set to 1:1, 1:2, 1:3, 1:4 via the programming software, the smaller the rate, the more obvious the power save.

BCL

The busy channel lockout function can help avoid interference between radios transmit on the same channel. When the BCL function is enable and there is activity on the current channel, pressing the PTT key will cause a "beep" prompt sound, and the radio will not be able to transmit.

TX Tone

TX Tone provides a" high-pitched" tone to receiver when the transmitter presses PTT to start transmitting or release PTT to stop transmitting. If 'TX Tone' is set as BOT, when the transmitter presses the PTT to transmit, the receiver will sound a "beep" prompt tone; If 'TX Tone' is set as EOT, when the transmitter releases the PTT to stop transmitting, the receiver will sound a "beep" prompt tone; If 'TX Tone' is set as Both, both the transmitter presses the PTT to transmit and release PTT to stop transmitting, the receiver will sound a "beep" prompt tone;

VOX

The VOX function allows users enjoy hand-free communication. If this function is enabled and radio is connected to a supported earphone, the radio will automatically transmit when transmitter speaks, and terminate transmitting when transmitter stops talking for more than the VOX delay time. The greater VOX level, the higher sensitivity of the voice .VOX level can be set to 1 to 9 or closed, the default VOX level is 3.

Note: The VOX function only works when the earphone is plugged in.

Lamp

This radio supports lamp function with three flashlight modes: constant light, fast flash, and SOS mode (three short lights, three long lights, and three short lights, cycling in sequence). Short press Button 2 to keep the lamp on, then short press to switch the flashlight mode to fast flash, then short press to switch the flashlight mode to SOS mode, and then short press to turn off the lamp.

Scan

Scan is useful for monitoring signals on the channels.
To begin scanning, long press the Button 2 and there will be a voice prompt: Scan on, the LED indicator will flash green. Scanning starts from the channel with the minimum channel number that has been added to the scan list. The channel number is incremented and scanned in a cyclic manner. When a signal is detected on a channel, it pauses on that channel, users can press the PTT key within 3 seconds to callback.
To stop scanning, long press Button 2again, and there will be a voice prompt: Scan off, the LED indicator light will no longer flash green, the radio will return to the channel it was in before scanning.

Monitor

Press and hold Button 1 to start monitoring, release the button to return to normal status. During monitoring, user can switch channels and monitor the specified channel, weak signals that are difficult to hear in normal status can be received.

Bandwidth

There are two types of bandwidth available, users can set bandwidth as Broad(25 KHz) or Narrow (12.5 kHz).
Note: In order to guarantee the stability of communication, the receiver bandwidth of radio should set the same as the transmitter.

CTCSS/CDCSS

Users can set unique CTCSS or CDCSS to guarantee the quality of communication. If CTCSS or CDCSS has been set on the current channel, CTCSS/CDCSS match is required for the radio to receive an incoming signaling. When current channel is set with CTCSS or CDCSS, users can select sub tone mode as normal signaling or special signaling. Only the receiver and transmitter are set with the same signaling mode and same CTCSS/CDCSS value, the communication is effective.

Note:

1. If there are no special requirements, it is recommended to directly use the normal signaling mode;

2. The radio supports non-standard CTCSS and CDCSS, which can be manually input through programming software, and non-standard CTCSS and CDCSS also support special signaling modes.

CTCSS Standard Frequency Table

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

CDCSS Standard Code Table

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

Specifications

General	
Frequency Range	UHF: 400-480MHz
Channel Capacity	16
Channel Spacing	25 KHz /12.5 KHz
Operating Temperature	-20℃～+60℃
Operating Voltage	DC 3.7V (±20%)
Battery Capacity	2000mAh
Frequency Stability	≤±2.5 ppm
Antenna Impedance	50Ω
Dimensions	58（L）*35（W）*107（H）mm
Weight	195g（Including Battery）
Transmitter	
RF Output Power	≤5W
Modulation Mode	11KφF3E/16KφF3E
Maximum Frequency Deviation	≤±2.5KHz /±5.0KHz
Adjacent Channel Power	60dB
Audio Distortion	＜5%
Receiver	
Sensitivity	≤-123dBm（12dB SINAD）
Intermodulation	≥60dB(Broad)/ 55dB (Narrow)
Adjacent Channel Selectivity	≥60dB(Broad)/ 55dB (Narrow)
Spurious Response Rejection	≥60dB(Broad)/ 55dB (Narrow)
Rated Audio Output Power	0.5W
Maximum Audio Output Power	0.9W
Audio Distortion	≤5%

Statement

This manual has been compiled with the utmost effort to ensure the accuracy and completeness of its content. For any doubt, please contact BelFone. We will give you professional answers. As radio communication technologies develop rapidly, BelFone reserves the right to change product design and specification without prior notice to consumers.

BelFone

FUJIAN BELFONE COMMUNICATIONS TECHNOLOGY CO.,LTD.

Add: A-15 Huaqiao Economic Development Zone,
Shuangyang,Luojiang,Quanzhou,Fujian,China
Tel: +86 595 28396717
Fax: +86 595 22771635
Email: overseas@belfone.com
Website: www.belfone.com

RECYCLABLE PACKAGING