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BAOFENG

Two Way Radio

BF-88ST/PMR446

User Manual

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Chapter I. Getting Started

Safety Information

Please read the following brief instructions, non-compliance with these rules may improper use may cause danger and violate the law.

1.Refer to local government regulations before using this radio, improper use may violate the law.
2.Turn off the radio before getting close to combustible or hazardous area.
3.Do not charge the battery in the combustible or hazardous area.
4.Do not use the damaged antenna, which will easily get burnt while touching.
5.Do not try to disassemble the radio, the maintenance work should be only done by technical expert.
6.To avoid electromagnetic interference or electromagnetic compatibility, please turn off the radio in places where prohibit from using wireless equipment, such as hospital and other healthcare facilities.
7.In the car with an airbag, do not put the radio within the scope of the airbag long deployment.

What's in the Box?

Thanks for choosing BAOFENG two way radio. We recommend you to check the items listed in the following table before discarding the package box.

Li-ion Battery	Belt Clip	USB Charger	Earpiece	Wrist Strap	User Manual

Note: The radio is compatible with other accessories which are available on:
https://www.baofengradios.com/
•Speaker microphone
•Programming cable
• Earphone

Chapter 2. Getting Familiar

Antenna

Channel knob
Power/ volume knob

Flashlight

Speaker
• Sound output

Indicator light
• Red light:Transmitting
• Green light: Receiving
• Red flashing light: Low battery

Microphone
• Sound input

PTT switch
• Press to transmit
• Release to receive
MONI/Alarm Key
LED key

Mic/speaker jack/ programming port
• Usetoconnect headset/ microphone / external programming cable

Li-ion battery
• Supplyingpower to radio

Battery Maintenance

Caution Please use BAOFENG designated battery; other batteries can cause explosion. ***Note*** 1.Do not short-circuit the battery terminals or dispose of in fire. Do not disassemble the battery by yourself. 2.Charge the battery between temperature 0°C and 45°C. The battery cannot be fully charged beyond this temperature range.

3.Turn off the power when you charge the radio.
4.Remove battery from charger when charging has completed.
5.Replace battery when operating time becomes insufficiently low.
6.Do not charge when the battery or the radio is wet. Please dry it with a cloth before charging to avoid any danger.

Warning
If conductive metals, such as jewelry, keys or chains, contact the external charging contacts, damage or persona injury may occur.

Installing/Removing the battery

1. Align the two grooves of battery and the guide rail on the back of aluminum shell ensuring full contact and in parallel, then push the battery up to the radio base along the rail on the back of aluminum shell, until the battery latch locks up.

2.To remove battery, please make sure the radio is off, push the battery latch down, and make sure the radio and battery is on the releasing state, and then push the battery out from the radio.

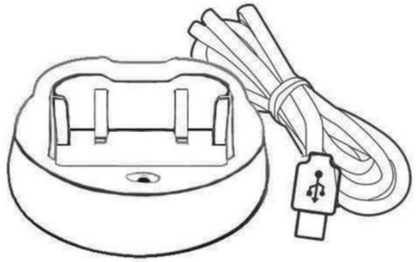
Charging

How to use the USB desktop charger:

1.Plug the USB connector into a suitable USB power source. LED will become YELLOW indicating ready to commence the charging cycle.

2.Place either the Radio (OFF) or just the battery into charger. Charger LED will show RED indicating the charging cycle has commenced.

3.When the LED turns GREEN, charging has completed and the radio or battery should be removed from the desktop charger.



NOTE

1.Before inserting the battery, it is abnormal if the charging indicator blinks.
2.Wait until the indicator is stable before placing battery in charger.
3.When the battery is properly inserted, the indicator turns red and starts the charging process. If the indicator blinks, then the battery is damaged or the temperature is too high or too low.

Installing external headset

Gently displace (do not remove) the speaker jack cover, insert the headset into the speaker jack.

Chapter 3. Basic operation

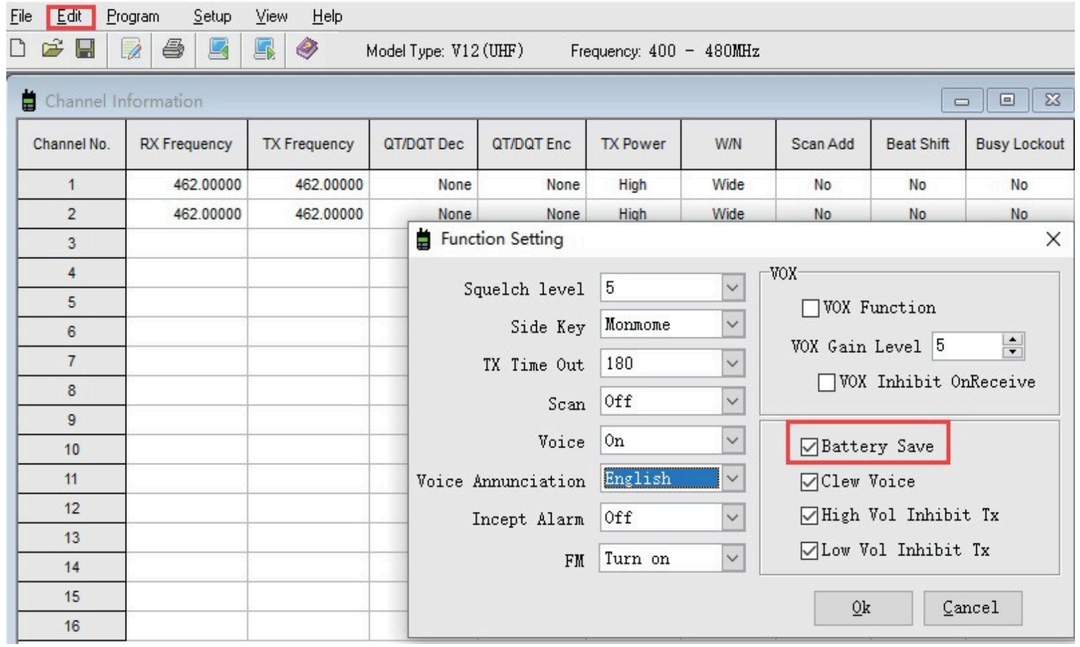
Quick Start Guide

1.Carefully open the box and remove radio body, battery and antenna.
2.Install battery in radio body until it clicks (be gentle!) (See specific directions in previous section)
3.Turn on power knob by twisting gently clockwise. The radio will respond with, “Open the radio, 1, ” or whatever channel is selected by the taller selector.

4.Select your desired channel，radio will respond with “One, Two, etc.”
5.Press the PTT and talk!
NOTE The battery included with the radio generally has enough power in it to test your radio. You should fully charge the battery for optimal performance. The BF-88ST is a cost effective PMR radio. It can communicate with any other brand of radio that with PMR frequency, but without spending an exorbitant amount of cash! You just need to make sure they are in the same channels/frequencies, and this can be simply checked by using the software. If they are not in the same frequency, just program via computer. (See chapter 4)

Battery Save Function

This function can be set by the software.
By turning on this function the standby time can be much longer.



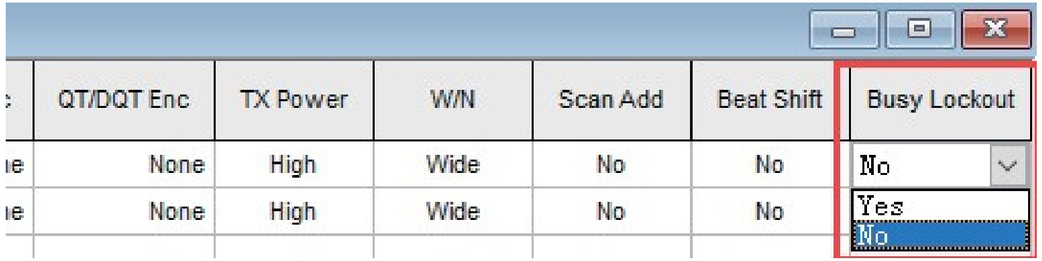
Busy Channel Lockout

You can turn on/off this function via software.

A: If the current channel does not have CTCSS/DC, when there is a signal, TX prohibited when you press PTT.

B: If the current channel does not have CTCSS/DCS, when there is signal which does not have CTCSS/DCS, TX prohibited when you press PTT.

C: If the current channels does not have CTCSS/DCS, when there is signal which have CTCSS/DCS, the radio will transmit when you press PTT.



VOX

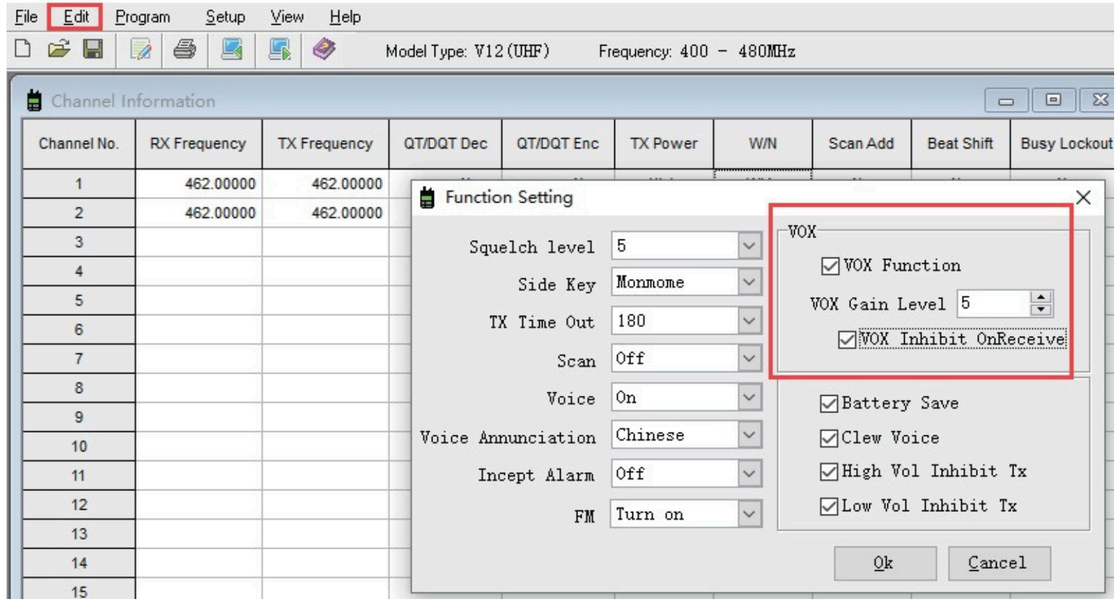
Turn VOX on/off though the software or special key combinations. Speak to the microphone in normal voice to transmit, no need to press PTT switch.

A. When VOX is on in your working channel:

Speak to the microphone directly, it will transmit automatically.

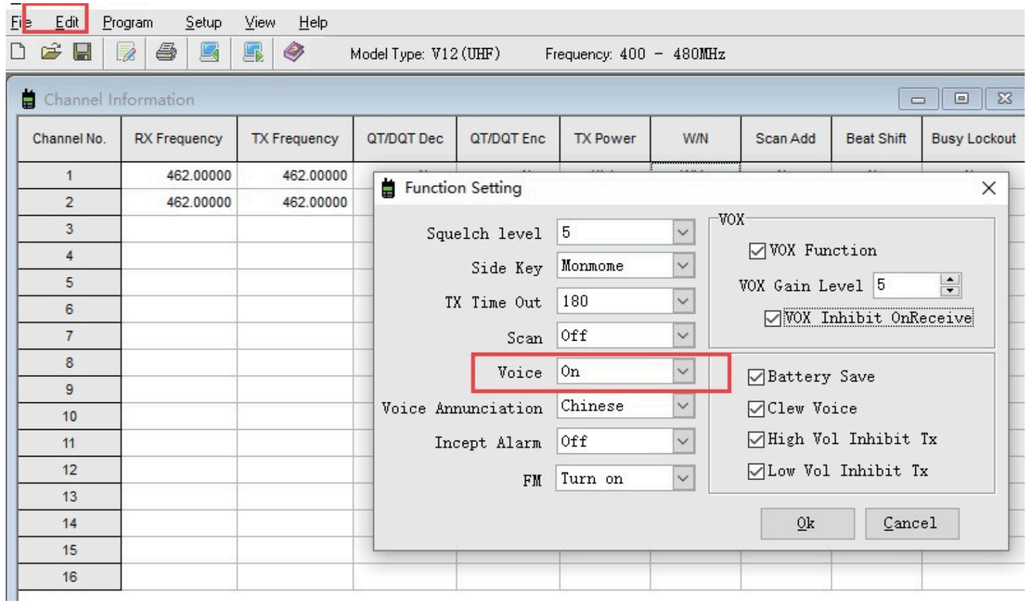
B. When a headset with a microphone is used:
When VOX is on, you should VOX again for the radio to identify voice volume.

If the microphone is sensitive enough, the radio will start transmit.
If the microphone is not sensitive enough, the radio cannot collect your voice. Please adjust your voice volume to guarantee smooth communications.



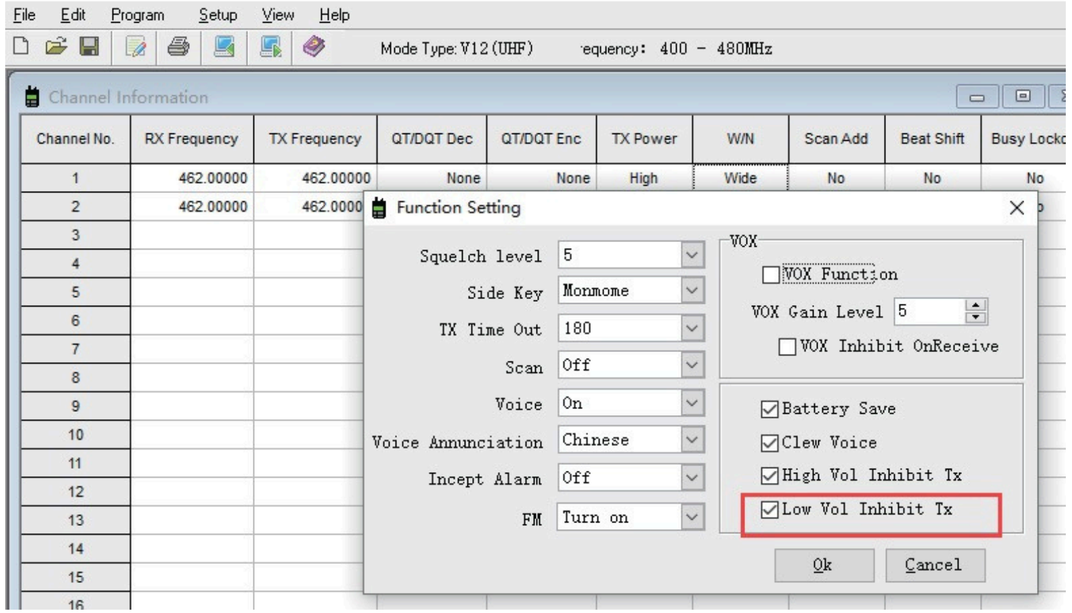
Voice Prompt

1. The voice prompt can be selected to “ON/OFF” through the menu voice/Beep Tone of the “Optional Feature” in the software. When choosing OFF, voice prompt turns off.
2. Channel annunciation: You will get to know the working conditions of current channel which is being operated.
3. Low battery alert: The radio will remind you when the battery capacity reaches the minimum operating voltage.



Low Battery Indication

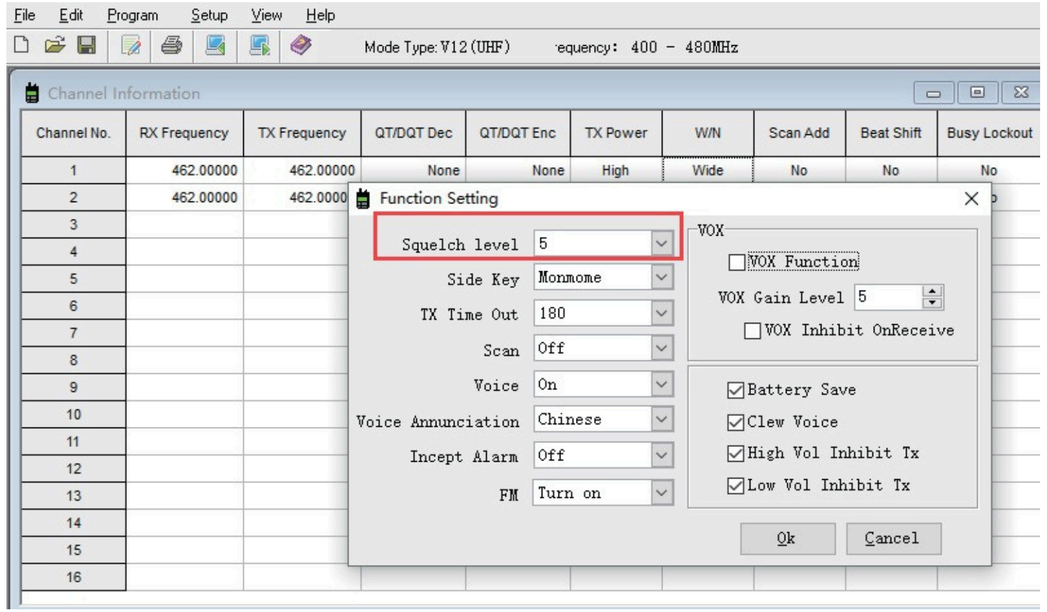
When the radio is in transmitting or standby, if the battery capacity reaches the predetermined low level, the indicator light blinks red, and a low battery alert tone will be heard. The indicating tone will be “Please change the battery”. When the low battery alert occurs it cannot transmit, please change or charge the battery.



Squelch

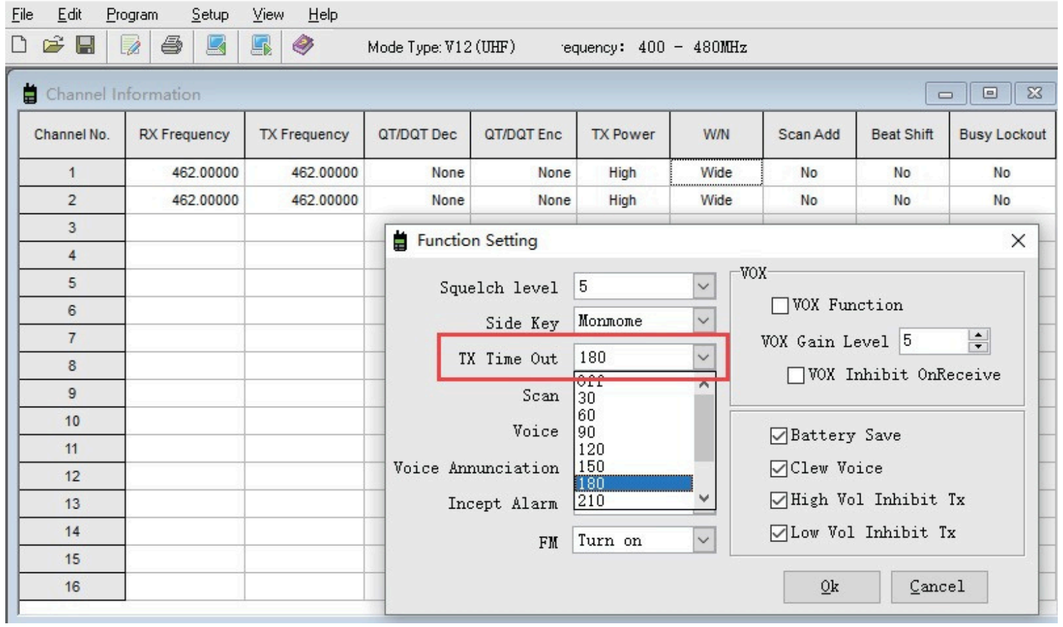
The squelch level will determine the signal strength at which the radio speaker is turned on. If the squelch level is low, the background noise of the radio speakers will be higher, the corresponding communication range will be further, but the anti-interference ability will be weaker.

The default setting of squelch level is 5. You can adjust it through the menu “Squelch Level” in the software from level 0 to 9, and 0 is the lowest level.



Time-Out-Timer (TOT)

This feature provides a safety switch that limits transmission time to a programmed value. This will promote battery conservation by not allowing you to make excessively long transmissions, and in the event of a stuck PTT switch it can prevent interference to other users as well as battery depletion. If the transmitting time exceeds the TOT preset time, a beep will be heard and the radio will stop transmitting.



QT/DQT (CTCSS/DCS)

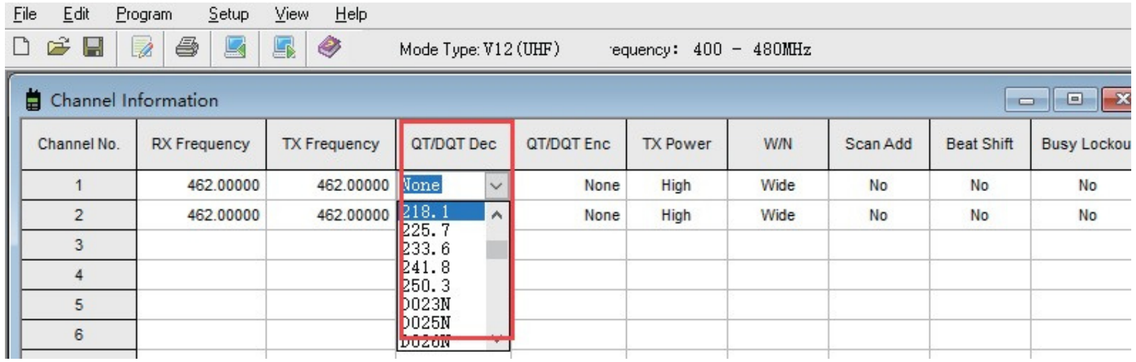
QT/DQT (CTCSS/ DCS) is the sub-audible signaling, to prevent the radio from receiving unwanted signals on the same frequency. When CTCSS/DCS is set, then within the communication range, you can only receive signals from the same frequency with the same QT/DQT setting. When the QT/DQT is off, you will get all the signals from the same frequency within the communication range. **CTCSS**

67.0	69.9	71.9	74.4	77.0	79.7	82.5	85.4	88.5	91.5
94.8	97.4	100.0	103.5	107.2	110.9	114.8	118.8	123.0	127.3
131.8	136.5	141.3	146.2	151.4	156.7	162.2	167.9	173.8	179.9
186.2	192.8	203.5	210.7	218.1	225.7	233.6	241.8	250.3	

DCS

D023N	D025N	D026N	D031N	D032N	D043N	D047N	D051N	D054N	D065N
D071N	D072N	D073N	D074N	D114N	D115N	D116N	D125N	D131N	D132N
D134N	D143N	D152N	D155N	D156N	D162N	D165N	D172N	D174N	D205N
D223N	D226N	D243N	D244N	D245N	D251N	D261N	D263N	D265N	D271N
D306N	D311N	D315N	D331N	D343N	D346N	D351N	D364N	D365N	D371N
D411N	D412N	D413N	D423N	D431N	D432N	D445N	D464N	D465N	D466N
D503N	D506N	D516N	D532N	D546N	D565N	D606N	D612N	D624N	D627N
D631N	D632N	D654N	D662N	D664N	D703N	D712N	D723N	D731N	D732N
D734N	D743N	D754N							

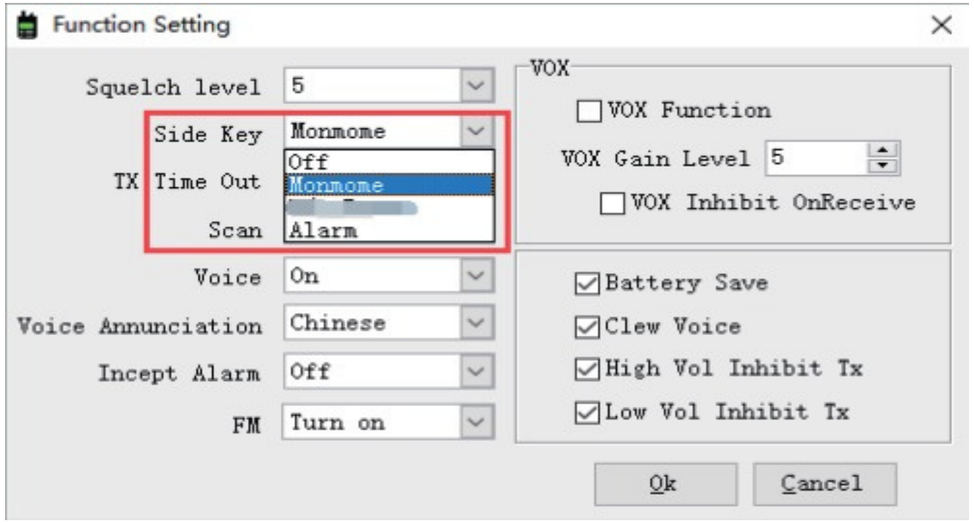
	D025I		D031I		D043I		D051I		D065I
	D072I		D074I		D115I		D125I		D132I
	D143I		D155I		D162I		D172I		D205I
	D226I		D244I		D251I		D263I		D271I
	D311I		D331I		D346I		D364I		D371I
	D412I		D423I		D432I		D464I		D466I
	D506I		D532I		D565I		D612I		D627I
	D632I		D662I		D703I		D723I		D732I
	D743I								



Side Key Custom Setting (Monitor/Alarm)

You can custom the second side key as Monitor key or Alarm key by programming in the CPS software.

Click Edit > Function Setting, under “Side Key”, you can activate 3 optional functions: “Off means side key function is unavailable，“Monmome” means Monitor function, “Alarm” means Emergency Alarm function.



Monitor This feature allows users to check whether a channel is clear before transmitting. If a frequency is in use, you can hear what is transmitting. If s important to check the frequency and privacy code you intend to use and select clear frequencies to set your channels.

If s also helpful to use the radio when receiving a weak signal. Press and hold MONI button, the

indicator light will turn green which indicates the radio is receiving signal.

Emergency Alarm Emergency Alarm is used to indicate an emergency situation. When press and hold the Alarm key, it makes a loud alarm so that other people will know you are in trouble. You can initiate an emergency call at any time, even if there is activity on the current channel.

Chapter 4. Computer Programming

The Radio kit does not include a programming cable. To attain a PC cable please visit:
https://www.baofengradios.com/

1. Computer System Requirements
Operating System: Windows 98, Windows Me, Windows XP, Windows 7, Windows 8 and Windows 10.
Hard Disk Space: at least 50MB of available
The minimum memory: 64M

2. Programming Cable
A. USB programming cable - The driver needs to be installed before writing any frequencies.

(1). Find the corresponding driver of the system;
(2). Click install and wait for the installation to succeed.

B. If you are using a serial cable a driver is not required. You can just plug in and use directly.

3. Software Download & Install
(1). Turn onthe computer, check if your computer system meets the requirements;
(2). Download the programming software on baofengradios.com;
(3). Install the programming software.

4. Connect your BF-88ST with Computer
(1).USB (or serial) programming cable connects with the computer end.
(2).Connect the other end of the cable with your BF-88ST.
(3).When the both ends have been connected, turn on your radio. Make sure it has enough power during the programming procedure.

Note

In some cases, the cable does not fully seat in a new radio. Make sure the cable isFULLY seated prior to transferring data.

5. Read & Write Data via Software

(1).Inthe software menu, clickSetup> Communication Port and select proper COM port (COM port may be located by using Windows Device Manager).

(2).Inthe menu, Select Program> Read from Radio> OK to read frequencies. This process takes afew seconds and progress in shown by a green progress bar in the software.

(3).Now you can edit any data and set all the functions that you want.

(4).Towrite you completed data file, select Program> Write to Radio> OK.

(5).Ifyou have to program multiple BF-88ST, you can repeat the above steps.

6. If you have to program multiple walkie talkies, you can repeat the above steps. FRS, GMRS,MURS and PMR446

You may be tempted to use FRS? GMRS? MURS (in the USA) or PMR 446 (in India) Frequencies. Do note however there are restrictions on these bands that make this transceiver illegal for use.

Chapter 5. Trouble Shooting Guide

1. When reading or writing frequency, I do not get a responseoritreports a communication error?
   a. Check your programming cable to see if it is damaged.
   b. Check the connection of the programming cable and computer serial port.
   c. Check to find if the BF-88ST battery level is low or depleted. If it is please replace or charge the battery.
   d. Check the programming software is matched with the current model.
   e. Check if you turn ON your radio.
   f. Check that the proper software drivers are properly installed.

2. When programming is done, why can't my two radios talk to each other?
   a. Make sure the two radios are on the same channel.
   b. Check the same channel is set to receive the same QT/DQT (CTCS / DCS).
   c. Check if the two radios' volume control level is high enough. Depress the MON button and adjust volume to comfortable levels.
   d. Check range of the radios (Line of Sight).

Troubles	Solution
Radio cannot turn on	1. The battery is out of power. Replace or recharge the battery. 2. The battery is installed incorrectly. Remove and install it again.
The operating time becomes short, even the battery is fully charged	Replace the battery.
Unable to communicate with the transceivers of the same group	1. Confirm the QT/DQT is the same 2. The distance is out of range
The voice of another group can be heard	Change all QT/DQT of the group
Other radios cannot receive the TX signals or receive signals in a low volume	1. Switch the volume knob to the highest 2. The microphone may be damaged, send it to the local dealer for checking.
Noise is always heard	The distance is out of range. Turn on the radio in shorter distance and try again.

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Appendix A. RF Energy Exposure and Product Safety Guide for Portable Two-Way Radios

ATTENTION!

Before using this radio, read this guide which contains important operating instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulations.

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health, and industry work with organizations to develop standards for safe exposure to RF energy. These standards provide recommended levels of exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection.

All BAOFENG two-way radios are designed, manufactured, and tested to ensure they meet government established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of two-way radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it.

Please refer to the following websites for more information on what RF energy exposure how to control your exposure to assure compliance with established RF exposure limits: **http://www.who.int/en/**

Radio License

Governments keep the radios in classification, most of the classified walkie-talkie needs to get local government License and operation is allowed. For the following specified classification: the USA FRS, Australian CB, the individual license is not required.

RF Energy Exposure Standards and Guidelines (If appropriate)

Your BAOFENG two way radio complies with the following RF energy exposure standards and guidelines: 1. United States Federal Communications Commission (FCC), Code of Federal Regulations; 47 CFR

part 2 sub-part J.

2. American National Standards Institute (ANSI) institute of Electrical Electronics Engineers (IEEE) c95.1-2005.
3. IEEE Std. 1528: 2013 and KDB447498, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
4. Institute of Electrical and Electronics Engineers (IEEE) C953-2002.
5. International Commission on Non-Ionizing Radiation Protection (ICNIRP).
6. Ministry of Health (Canada) Safety Code 6& Industry Canada RSS-102.
7. International Electrotechnical Commission IEC62209-2. 2010.

Operating Instructions

1. Transmit no more than the rated duty factor of 50% of the time. To Transmit (Talk), push the Push To Talk (PTT) button to receive calls(listen), release the PTT button. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy exposure only when transmitting in terms of measuring for standards compliance.

2. Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away from a properly installed according to installation instructions, externally mounted antenna.
3. When operating in front of the face, worn on the body, always place the radio in a BAOFENG approved clip, holder, holster, case, or body harness for this product. Using approved body worn accessories is important because the use of BAOFENG approved accessories may result in exposure levels, which exceed the IEEE/ICNIRP occupational/controlled environment RF exposure limits.
4. If you are not using a body worn accessory and are not using the radio in the intended use position, in front of the face or at the body in the PTT mode or alongside of the head in the phone mode, then ensure the antenna and the radio are kept 2.5 cm (one inch) from the body when transmitting. Keeping the radio at a proper distance is important because RF exposures decrease with increasing distance from the antenna.

Protect Your Hearing

1. Use the lowest volume necessary to do your job.
2. Turn up the volume only if you are in noisy surroundings.
3. Turn down the volume before adding headset or earpiece.
4. Limit the amount of time you use headsets or earpieces at high volume.
5. When using the radio without a headset or earpiece, do not place the radio's speaker directly against your ear.

Note:

Exposure to loud noises from any source for extended periods of time may temporarily or permanently affect your hearing. The louder the radio's volume, the less time is required before your hearing could be affected.

Hearing damage from loud noise is sometimes undetectable at first and can have a cumulative effect.

Safety Operation

Forbidden:

1. Do not use charger outdoors or in moist environments, use only in dry locations/conditions.
2. Do not disassemble the charger, which may result in risk of electrical shock or fire.
3. Do not operate the charger if it has been broken or damaged in any way.
4. Do not place a portable radio in the area over an air bag or in the air bag deployment area. The radio may be propelled with great force and cause serious injury to occupants of the vehicle when the air bag inflates.

To Reduce Risk

1. Pull by the plug rather than the cord when disconnecting the charger.
2. Unplug the charger from the AC outlet before attempting any maintenance or cleaning.
3. Contact support@baofengradios.com for assistance regarding repairs and service.

Use of Communication Devices While Driving

1. Always check the laws and regulations on the use of radios in the countries and areas where you drive.
2. Give your full attention to driving and to the road.
3. If available, use the hands-free facility.
4. If driving conditions or regulations require it, pull off the road and park before making or answering a call.

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Appendix B-Specifications

General

Model Number	BF-88ST
Frequency Range	PMR
Channel Number	16 DC
Working Voltage	3.7V
Working Temperature	-10°C … +50°C
Antenna	High Gain Antenna
Antenna Impedance	50Ω
Mode ofOperation	Simplex

Receiver

Frequency Range	PMR
Sensitivity	< 0.2 μV
Occupied Bandwidth	≤16KHz
Squelch Selectivity	< 0.2 μV
Intermediation	≥65dB
Selectivity	≥55dB
Audio Power	1W
Audio Distortion	≤5%
Frequency Stability	5ppm
Current	80mA(when standby) 200mA(when working)
Audio Response	+712.5dB

Transmitter

Frequency Range	PMR
Output Power	0.5 W
Modulation mode	16KF ¢ 3E
Spurious Radiation	7_5uW
Modulation noise	<-40dB
Modulation distortion	<5%
Frequency Stability	5ppm
Maximum deviation	< ± 5KHz
Current	< 2300mA
Audio response(300-3000Hz)	+6.5 ~-14dB
Adjacent Ch. power	>65dB
Intermediation sensitivity	8 ~12mv

Note

The specifications will be revised due to technical improvements without prior notice. Thanks for understanding.

Contact Us:

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