

## PREFACE

Thank you for purchasing our Amateur Radio. This easy-to-use radio will deliver you secure, instant and reliable communications at peak efficiency. Please read this manual carefully before use. The information presented here, it will help you to derive maximum performance from your radio.



**WARNING:** MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.



**ATTENTION!** When programming the radio, start by reading the factory software data, and then rewrite this data with your frequency etc., to a new saved code plug, otherwise errors may occur. You can use the programming cable with a PC to program the authorized frequency, bandwidth, power, etc. your programming must comply with your FCC (or EU other country) license certification.



**ATTENTION!** Before using this product, read the RF Energy Exposure and Product Safety Guide that ship with the radio which contains instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulation.

# Table of Contents

## 1. GETTING STARTED

- 1.1 Regulations and Safety Warnings
- 1.2 Maintenance
- 1.3 Content of the packaging
- 1.4 Main features

## 2. BATTERY RECHARGE

- 2.1 Charging the Battery Pack
- 2.2 Charger Supplied
- 2.3 Use Caution with the Li-ion Battery
- 2.4 How to Charge
- 2.5 LED Indicator

## 3. INSTALLATION OF ACCESSORIES

- 3.1 Installing the belt clip
- 3.2 Installing the battery pack
- 3.3 Additional Speaker/Microphone (Optional)

## 4. RADIO OVERVIEW

## 5. BASIC OPERATIONS

- 5.1 Power on/off and volume adjustment
- 5.2 Transmission
- 5.3 Monitor
- 5.4 VOX
- 5.5 FM Radio (FM)
- 5.6 Prompt voice switch settings
- 5.7 English/Chinese language switch
- 5.8 Squelch
- 5.9 CTCSS/DCS tones
- 5.10 Scan

## 6. ON-LINE SERVICE AND SUPPORT

# 1. GETTING STARTED

## 1.1 Regulations and Safety Warnings

### ■ FCC Regulatory Conformance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Verification of harmful interference by this equipment to radio or television reception can be determined by turning it off and then on. The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

### ■ EU Regulatory Conformance

As certified by the qualified laboratory, the product is in compliance with the essential requirements and other relevant

provisions of the Directive 2014/53/EU. All applicable EU regulations are regarded (2006/66/EC, 2011/65/EU,(EU)2015/863, 2012/19/EU).

**NOTE: It can be operating under 2000m.**

**Please note that the above information is applicable to EU countries only.**

## ■ Compliance with RF Exposure Standards

The radio complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR § 1.1307, 1.1310 and 2.1093
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95.1:2005; Canada RSS102 Issue 5 March 2015
- Institute of Electrical and Electronic Engineers (IEEE) C95.1:2005 Edition

## RF Exposure Compliance and Control

### Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/ controlled environmental exposure limits, always adhere to the following procedures.

#### Guidelines:

- Do not remove the RF Exposure Label from the device.
- User awareness instructions should accompany device when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

#### Operating Instructions:

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), press the Push-to-Talk (PTT) key. To receive calls, release the [PTT] key. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy only when transmitting (in terms of measuring for standards compliance).

- Keep the radio unit at least 2.5cm away from the face. Keeping the radio at the proper distance is important as RF exposure decreases with distance from the antenna. The antenna should be kept away from the face and eyes.
- When worn on the body, always place the radio in an approved holder, holster, case, or body harness or by use of the correct clip for this product. Use of non-approved accessories may result in exposure levels which exceed the FCC's occupational/ controlled environmental RF exposure limits.
- Use of non-approved antennas, batteries, and accessories causes the radio to exceed the FCC RF exposure guidelines.
- Contact your local dealer for the product's optional accessories.

## ■ Precautions for Portable Terminals

### Operating Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not operate the product in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials. In such location, only an approved Ex-protection model is allowed for use, but any attempt to assemble or disassemble it is strictly prohibited.
2. Do not operate the product near or in any blasting area.
3. Do not operate the product near any medical or electronic equipment that is vulnerable to RF signals.
4. Do not hold the product while driving.
5. Do not operate the product in any area where use of wireless communication equipment is completely prohibited.

### Important Tips

To help you make better use of the product, be sure to observe the following instructions:

1. Do not use any unauthorized or damaged accessory.
2. Keep the product at least 2.5 centimeters away from your body during transmission.
3. Do not keep the product receiving at high volume for a long time.
4. For vehicles with an air bag, do not place the product in the area over the air bag or in the air bag deployment area.

5. Keep the product and its accessories out of reach of children and pets.
6. Please operate the product within the specified temperature range.
7. Continuous transmission for a long time may lead to heat accumulation within the product. In this case, please keep it at a proper location for cooling.
8. Handle the product with care.
9. Do not disassemble, modify or repair the product and its accessories without authorization.

## ■Precautions for Batteries

### Charging Prohibitions

To protect you against any property loss, bodily injury or even death, be sure to observe the following safety instructions:

1. Do not charge or replace your battery in a location containing fuels, chemicals, explosive atmospheres and other flammable or explosive materials.
2. Do not charge your battery that is wet. Please dry it with a soft and clean cloth prior to charge.
3. Do not charge your battery suffering deformation, leakage and overheat.
4. Do not charge your battery with an unauthorized charger.
5. Do not charge your battery in a location where strong radiation is present.
6. Overcharge shall always be prohibited for it may shorten the life of your battery.

### Maintenance Instructions

To help your battery work normally or prolong its life, be sure to observe the following instructions:

1. Accumulated dust on charging connector may affect normal charging. Please use a clean and dry cloth to wipe it on a regular basis.
2. It is recommended to charge the battery under 5°C~40°C. Violation of the said limit may cause battery life reduction or even battery leakage.
3. To charge a battery attached to the product, turn it off to ensure a full charge.

4. Do not remove the battery or unplug the power cord during charging to ensure a smooth charging process.
5. Do not dispose of the battery in fire.
6. Do not expose the battery to direct sunlight for a long time nor place it close to other heating sources.
7. Do not squeeze and penetrate the battery, nor remove its housing.

### **Transportation Instructions**

1. Damaged batteries must not be transported.
2. To avoid short circuit, separate the battery from metal parts or from each other if two or more batteries are transported in one packaging.
3. The radio must be switched off and secured against switch-on, if the battery is attached.

The content of the shipment must be declared in the shipping documents and by a Battery Shipping Label on the packaging. Contact your hauler for the local regulations and further information.

## **1.2 Package Contents**

- 1 Transceiver
- 1 2800mAh Li-ion rechargeable battery pack
- 1 USB Cable
- 1 Belt clip
- 1 User Manual

**NOTE: If any item is missing, please notify your pofung dealer.**

## 1.3 Main features

- 420~450MHz Transceiver
- High performance antenna
- Channel spacing: 25.0/12.5 KHz
- VOX (voice activated transmit)
- Channels monitor (on channel 16)
- 2pin Kenwood accessory jack
- 50 CTCSS tones and 210 DCS codes
- PC programmable
- Output power: Max 4W
- Selectable output power: High (4W) or Low (1.5W)
- Channel Scan, Scan mode: Time, Carrier, and Search
- Battery saving
- Ten (10) levels of Squelch adjustment
- TOT (Time out timer)
- Li-Ion 2800mAh battery pack
- Ultra clear voice

## 2. BATTERY RECHARGE

### 2.1 Charging the Battery Pack

The Li-ion battery pack is not charged at the factory; please charge it before use. Charging the battery pack for the first time after purchase or extended storage (more than 2 months) may not bring the battery pack to its normal maximum operating capacity. Best operation will require fully charging/ discharging the battery two or three times before the operating capacity will reach its best performance. The battery pack life may be depleted when it's operating time decreases even though it has been fully and correctly charged. If this is the case, replace the battery pack.

### 2.2 Charger Supplied

Please use the specified charger provided by Pofung. Other models may cause explosion and personal injury. After installing the battery pack, and if the radio displays low battery with a voice prompt, please charge the battery.



## 2.3 Use Caution with the Li-ion Battery

- a. Do not short the battery terminals or throw the battery into a fire. Never attempt to remove the casing from the battery pack, as Pofung cannot be held responsible for any accident caused by modifying the battery.
- b. The ambient temperature should be between 5°C-40°C (40°F - 105°F) while charging the battery. Charging outside this range may not fully charge the battery.
- c. Please turn off the radio before inserting it into the charger. It may otherwise interfere with correct charging.
- d. To avoid interfering with the charging cycle, please do not cut off the power or remove the battery during charging until the green light is on.
- e. Do not recharge the battery pack if it is fully charged. This may shorten the life of the battery pack or damage the battery pack.
- f. Do not charge the battery or the radio if it is damp. Dry it before charging to avoid damage.

### **WARNING !**

**When keys, ornamental chain or other electric metals contact the battery terminal, the battery may become damage or injure a human. If the battery terminals are short circuited it will generate a lot of heat. Take care when carrying and using the battery. Remember to put the battery or radio into an insulated container. Do not put it into a metal container.**

## 2.4 How to Charge

- a. Plug the AC adaptor into the AC outlet, and then plug the cable of the AC adaptor into the DC jack located on the back of the charger. The indicator light blinks orange and is then ready to charge a battery.
- b. Plug the battery or the radio into the charger. Make sure the battery terminals are good in contact with charging terminals. The indicator light turns to red--- charging begins.
- c. It takes approximately 2-5 hours to fully charge the battery. When the lamp lights green, the charging is completed. Remove the battery or the radio unit with its battery from socket.

**When charging a radio (with battery) the indicating lamp will not turn into green to show the fully charged status if the**

radio is powered on. Only when the radio is switched off will the lamp indicate normal operation. The radio consumes energy when it is power-on, and the charger cannot detect the correct battery voltage when the battery has been fully charged. So the charger will charge the battery in constant voltage mode and fail to indicate correctly when the battery has been fully charged.

## 2.5 LED Indicator

STATUS	LED
No Battery	Green and red alternately flashing
Charge Normally	Red
Fully Charged	Green
Trouble	Red blinks fast for a long time

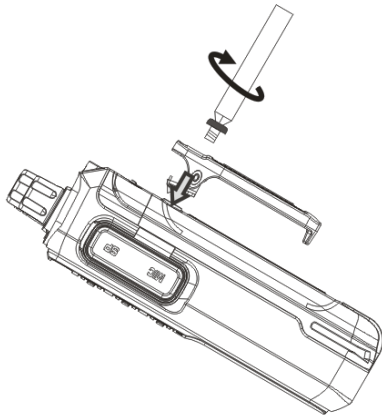
**NOTE:** Trouble means battery too warm, battery short-circuited or charger short-circuited.

## 3. INSTALLATION OF ACCESSORIES

Before the radio is ready for use we need to attach the antenna and battery pack, as well as charge the battery.

### 3.1 Installing the belt clip

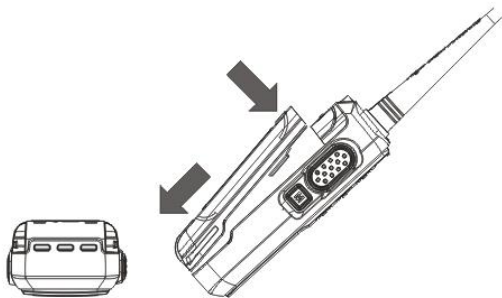
- a. At the back of the radio there are two parallel screws mounted above the battery, remove these and thread them through the holes on the belt clip as you screw them back into the radio body.
- b. Removing the Belt Clip: Unscrew counter-clockwise to remove the belt clip.



### 3.2 Installing the battery pack

Before attaching or removing the battery make sure your radio is turned off by turning the power/volume knob all the way counter-clockwise.

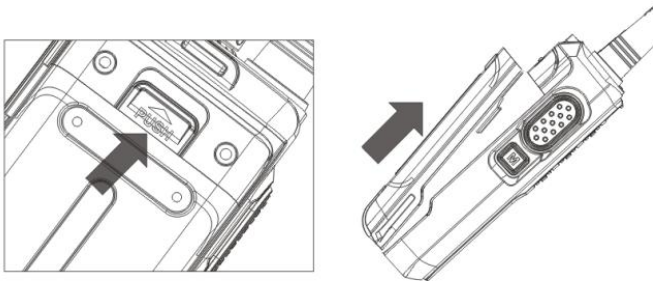
- a. Make sure the battery is aligned in parallel with the radio body with the lower edge of the battery about 1-2cm below the edge of the radio.
- b. Once aligned with the guide-rails, slide the battery upward until you hear a click as the battery locks in place.



**Installing the battery pack**

## Remove the battery pack

To remove the battery, press the battery release above the battery pack, as you slide the battery downward.



## Remove the battery pack

### 3.3 Installing the Additional Speaker/Microphone (Optional)

Pry open the rubber MIC-Headset jack cover and then insert the Speaker / Microphone plug into the double jack.

## 4. RADIO OVERVIEW

1. Antenna
2. Encoder: rotate clockwise or counter-clockwise to select the desired channel
3. Power/volume knob-turn clockwise to power on and increase the volume level.  
Turn counter-clockwise to decrease the volume level and power off.
4. Speaker
5. Built-in microphone
6. Led indicator: RED: TX; GREEN: RX.
7. Side key 1: Radio function key. Press to turn on the radio, short press again to turn off the radio.
8. PTT: push this button to transmit, release it to receive.
9. Side key 2: hold down this button to activate the Monitor function.
10. External Speaker/Mic Jack- allows the connection with external devices such as headsets, microphones.
11. Battery release latch.
12. 2800mAh Li-Ion battery pack.

## **5. BASIC OPERATIONS**

### **5.1 Power on/off and volume adjustment**

Rotate the **Power/Volume** knob clockwise to turn the radio on. Rotate the control clockwise /counter-clockwise to adjust the volume level as you prefer. To turn the radio off, rotate the control counter-clockwise till hearing a mechanical “click”.

### **5.2 Transmission**

To communicate, all radios in your group must be set to the same channel. Briefly press the **Side key 2** to enable the Monitor feature in order to make sure that the frequency is not busy, and then press the **PTT** key. Release the **PTT** key to receive. Only one user at a time can talk during radio communications. Therefore, it is important not to transmit when you are receiving a communication and use the transmission mode sparingly to allow other users to talk. Transmission consumes a significant amount of energy and should therefore be used sparingly to prolong the battery life. If you are unable to contact a station that you have no problems in receiving, the station may be using CTCSS tones or DCS codes.

### **5.3 Monitor**

The Monitor feature is for excluding (opening) the Squelch, in order to listen to signals that are too weak to keep the Squelch permanently opened. Hold down the **Side key 2** to enable such function.

### **5.4 Scan**

Before enabling the scan function, program the channels through the programming software and add these channels to the scan.

In the shutdown state, press and hold the **Side Key 2** to turn on the radios until it prompts "**Start scanning**", release the **Side Key 2**, the indicator light flashes green and scanning begins. Whenever a carrier signal is detected, scanning will stop on the

busy channel and broadcast the channel number that was scanned. If you press and hold PTT, you will be sent on the latest busy channel.

Press the **Side Key 2** to exit the scanning state.

## 5.5 Prompt voice switch settings

The encoder is selected to the **10th** channel. Press and hold the **PTT** and **Side Key 1** to turn on the radio, and turn the prompt voice on or off.

Turn on the prompt voice function, and there will be voice prompts when the encoder is turned on or operated. If you turn off the prompt voice function, there is only a “beep” prompt when you turn on or operate the encoder.

## 5.6 English/Chinese language switch

On the 15th channel, press and hold the **PTT + Side Key 1** to turn on the radio and switch the prompt language between Chinese and English.

## 5.7 Squelch

The Squelch function suppresses noises on free channels and allows receiving even weak signals. P53U has 10 different Squelch levels that can be set by programming software: 0 means that the Squelch is turned off; from level 1 to level 9 you will have different levels of noise reduction. The higher is the level, the louder will be the Squelch. By default, the Squelch level of P53U is set on level 4. Make sure you do not set an excessively high squelch level because in this case you may not be able to receive weaker signals. On the other hand an excessively low Squelch value could enable the Squelch even when no signals are present. Squelch must always be adjusted when no signals are present. The Time Out timer is settable from 30 sec to 270 sec. only through the programming software. This feature is disabled by default.

## 5.8 CTCSS/DCS tones

CTCSS and DCS tones are similar to access codes and enable the radio to communicate only with the users that are tuned on the same channel and have set the same code. For each channel, you can set up to 50 CTCSS tones and 210 DCS codes. The



CTCSS/DCS tones are a sort of “access codes” and enable the radio to communicate only with the other users set on the same frequency and on the same CTCSS/DCS tone. Undesired signals coming from other stations set on the same frequency but with different CTCSS/DCS tones won't be received.

## 5.9 VOX

The VOX feature enables hands free conversations without using PTT: just speak in the direction of the microphone and the communication will be automatically activated.

On channels 1, press and hold the **PTT + Side Key 2** key to turn on the radio and turn the VOX function on or off. Accompanied by a voice prompt VOX ON or VOX OFF.

The VOX sensitivity can be adjusted in 5 different levels (1...9) through the programming software:

Level 2 is set by default and has the lowest VOX sensitivity, 9 is the highest one.

With the programming software you can enable/disable the VOX feature and select the sensitivity levels.

**CPS programming path: Edit> VOX >Vox Gain(1-9).**

## Appendix A. – Trouble shooting guide

Phenomena	Analysis	Solution
You cannot turn on the radio.	The battery may be installed improperly.	Remove and reattach the battery.
	The battery power may run out.	Recharge or replace the battery.
	The battery may suffer from poor contact caused by dirty or damaged battery contacts.	Clean the battery contacts or replace the battery.
During receiving, the voice is weak or intermittent.	The battery voltage maybe low.	Recharge or replace the battery.
	The volume level may be low.	Increase the volume.
	The antenna maybe loose or maybe installed incorrectly.	Turnoff the radio, and then remove and reattach the antenna.
	The speaker maybe blocked.	Clean the surface of the speaker.
You cannot communicate with other group members.	The frequency or signaling type maybe inconsistent with that of other members.	Verify that your TX/RX frequency and signaling type are correct.
	You may be too far away from other members.	Move towards other members.
You hear unknown voices or noise.	You may be interrupted by radios using the same frequency.	Change the frequency, or adjust the squelch level.
	The radio in analog mode maybe set with no signaling.	Request your dealer to set signaling for the current channel to avoid interference
You are unable to hear anyone because of too much noise and hiss.	You may be too far away from other members.	Move towards other members.
	You may be in an unfavorable position. For example, your communication may be blocked by high buildings or blocked in an underground area.	Move to an open and flat area, restart the radio, and try again.
	It may be the result of external disturbance (such as electromagnetic interference).	Stay away from equipment that may cause interference.
The radio keeps transmitting.	VOX may be turned on or the headset is not installed in place	Turn off the VOX function. Check that the headphones are in place.

**NOTE: If the above solutions cannot fix your problems, or you may have some other queries, please contact your dealer for more technical support.**

## Appendix B. – Technical Specifications

### General Part

---

Frequency Range	420-450MHz(TX) 400-520MHz(RX)*
Working temperature	-10°C to +50°C
Operation Voltage	DC 7.4 V ±10%
Operation Mode	Simplex
Dimensions	138mm×60mm×39mm (without Antenna)
Weight	263g (Battery pack included)
Antenna Impedance	50ohm
Duty cycle	5/5/90%

### Transmitter Part

---

RF Output Power	High: 4W, Low: 1.5W
FM Modulation	11K0F3E@12.5KHz@25KHz
Adjacent Channel Power	60dB @ 12.5 KHz@25KHz
Transmission current	≤1500mA

### Receiver Part

---

Receive Sensitivity	0.25μV (12dB SINAD)
Adjacent Channel Selectivity	≥55dB@12.5KHz@25KHz
Inter Modulation and Rejection	≥55dB@12.5KHz@25KHz
Conducted Spurious Emission	≤-57dB@12.5KHz@25KHz
Rated Audio Power Output	1W @16 ohms
Rated Audio Distortion	≤5%

**NOTE:** All specifications may be modified without prior notice or liability.

## Disclaimer

The Company endeavors to achieve the accuracy and completeness of this manual, but no warranty of accuracy or reliability is given. All the specifications and designs are subject to change without notice due to continuous technological development. No part of this manual may be copied, modified, translated, or distributed in any manner without the prior written consent of the Company.

We do not guarantee, for any particular purpose, the accuracy, validity, timeliness, legitimacy or completeness of the third-party products and contents involved in this manual.



**PO FUNG ELECTRONIC (HK) INTERNATIONAL GROUP COMPANY LIMITED**

Room 1508, 15/F, Office Tower II, Grand Plaza, 625 Nathan Road, Kowloon, Hong Kong

Print version: [AR1909U\\_FCC\\_V1.0](#)