

SAMCOM

MADE IN FAITH



CP-510

***On-site Business
Portable Radio***

User Guide

INTRODUCTION

Thank you for purchasing our products. Combined the latest technology along with a sturdy mechanical frame, our radios provide cost-effective communications for the people who need to stay in touch with the working team such as retail stores, restaurants, campuses and schools, construction sites, manufacturing, shows and trade fairs, property and hotel management and more, they are the perfect communication solutions for all of today's fast-paced industries.

We sincerely appreciate your interest on our products, and strongly suggest you to read the instruction carefully. Your comment will be highly valued. Please read through the manual in order to get familiar with the device and learn the features of this model.

Main Features

- IP55 rating dust and splash protection
- Robust, rugged and heavy-duty design
- Crisp, clear and high quality sound
- 7.4V, 2200mAh high quality Li-ion battery
- Multi-Icon backlit LCD display screen
- FM radio receiver
- 200 programmable channels
- CTCSS tone & DCS code on each channel
- VFO/MR working mode
- Time-out timer
- Squelch level setting
- Built-in VOX
- Battery status indicator
- PC programmable
- PTT ID / DTMF ANI
- Squelch tail elimination
- Roger beep tone

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SAFETY INFORMATION

Please read this information before using your radio. Failure to do so could result in personal injury, death, and/or damage to your radio, accessories and/or other property.

Radio Care

Advice

- Do not use options or accessories not specified.
- Ensure that the radio is used within the parameters for which it was designed.
- Turn the radio OFF before connecting optional accessories.

Warning

Turn the radio OFF in the following locations:

- In explosive atmospheres (flammable gas, dust including metallic & grain powders etc).
- Whilst taking on fuel or while parked near a fuel station.
- Near explosives or blasting sites.
- In aircraft, medical institutions or near persons known to be wearing a pacemaker.

Caution

- Do not disassemble or modify the radio for any reason.
- Do not transmit while touching the antenna terminal or any exposed metallic parts of the aerial as this may result in burn.
- Please check and observe regulation in your country with regards to use whilst driving.

End of Life Disposal

- When your radio reaches the end of its useful life, please ensure that the unit is disposed of in an environmentally friendly way.

Battery Care

Precautions

- Turn the radio OFF before charging.
- Charge the battery pack before use.
- Do not recharge the battery pack if it is already fully charged as this will use one of its charge cycles and may shorten its life.
- Charge the battery in accordance with the instructions enclosed with your charger.
- Do not charge the radio and/or battery pack if they are wet.

The battery pack includes potentially hazardous components. Please:

- Do not disassemble or reconstruct battery.
- Do not short-circuit the battery.
- Do not incinerate or apply heat to the battery.
- Do not immerse the battery in water or get it wet by other means.
- Do not charge the battery near fires or under direct sunlight.
- Use only the specified charger and observe charging requirements.
- Do not pierce the battery with any object or strike it with an instrument.
- Do not use the battery pack if it is damaged in any way.
- Do not reverse-charge or reverse-connect the battery.
- Do not touch a ruptured or leaking battery.

If liquids from the battery get on your skin or into your eyes, immediately:

- Wash your eyes out with fresh water avoiding rubbing them.
- Seek medical treatment.

Notes:

- If a battery is not to be used for an extended period of time (several months) remove the battery pack from the equipment and store in a cool and dry location part charged. Do not fully discharge the battery before storage.

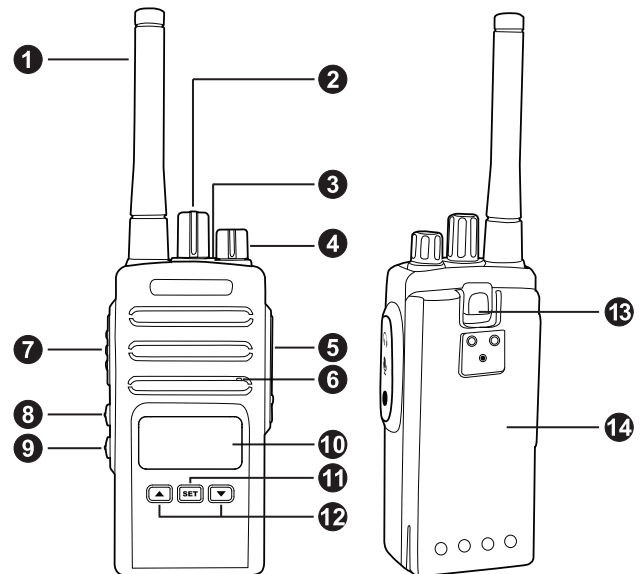
- Each charge cycle reduces the battery's life. Minimize the number of times you charge your battery especially in hotter environments which further shorten a battery's life.

RADIO OVERVIEW

Package Includes

- 1pcs radio unit
- 1pcs rubber antenna
- 1pcs rechargeable Lithium-ion battery pack
- 1pcs AC adapter & rapid desktop charger kit
- 1pcs belt clip
- 1pcs user's manual

At a Glance



1 – Antenna

Provide attached SMA rubber flexible antenna or another 50Ω impedance antenna.

Note: It may cause the damage to your radio if the antenna is connected inappropriately.

2 – Channel Selector Knob

Select the radio's different frequencies or channels.

3 – LED Indicator

Give radio battery status, TX & RX, scan information.

4 – On/Off/Volume Knob

Turn the radio ON or OFF and to adjust the radio's volume.

5 – Audio Accessory Jack (Motorola 2 Pin Connector)

Connect compatible audio accessories.

6 – Microphone

Speak clearly into the microphone when transmitting.

7 – PTT (Push-To-Talk) Button

Press and hold down this button to transmit and talk, release it to receive and listen.

8 – Side Button P1

Short press the button **P1** is 'Monitor' feature. Long press the button **P1** is 'Emergency Calling' feature.

9 – Side Button P2

Short press the button **P2** is 'Scan' feature. Long press the button **P2** is 'FM Radio Receiver' feature. (this feature maybe invalid in some districts).

10 – LCD display screen

You will see the working channel frequency, name, number and various icons which stand for the selected functions.

11 – SET Button

Short press this button is to enter menu mode or confirm the current operation. Long press the button a few seconds is to lock the side and front buttons operation. Press and hold this button and turn on the radio is switch between VFO and Channel mode.

12 – UP/DOWN Navigation Buttons

Press the two buttons to select the desired channels under Channel mode or menu items when operating in menu mode.

13 – Lithium-Ion Battery Pack

Radio comes equipped with a rechargeable Lithium-ion battery pack. This battery should be fully charged before initial use to ensure optimum capacity and performance. Batteries are designed specifically to be used with a supplied charger and vice versa.

14 – Battery Latch

Push down battery latch to release battery pack.

GETTING STARTED

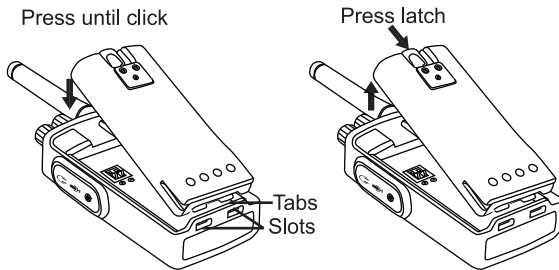
Install and Remove Battery Pack

Installing Battery

1. Turn the radio OFF.
2. With the top side up on the battery pack, fit the tabs at the bottom of the battery into the slots at the bottom of the radio's body.
3. Press the top part of the battery towards the radio until a click is heard.

Removing Battery

1. Turn the radio OFF.
2. Push down the battery latch and hold it while removing the battery.
3. Pull the battery away from the radio.



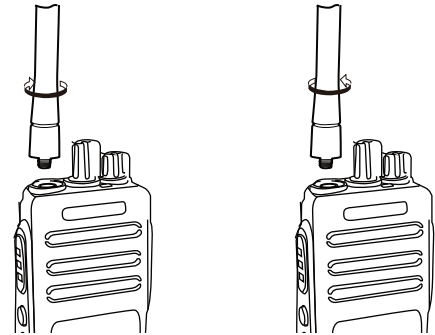
Install and Remove Antenna

Installing Antenna

Screw the antenna into the connector at the top of the radio by holding the bottom of the antenna, and turning it clockwise until secure.

Removing Antenna

Rotate the antenna counter clockwise by holding the bottom of antenna.



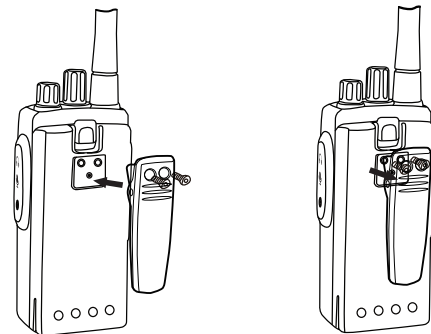
Install and Remove Belt Clip

Installing Belt Clip

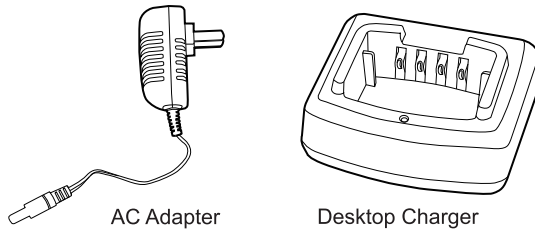
Align the screw eyelets of the belt clip with those on rear of radio and fasten the belt clip with enclosed screws.

Removing Belt Clip

Loosen the screws to remove the belt clip.



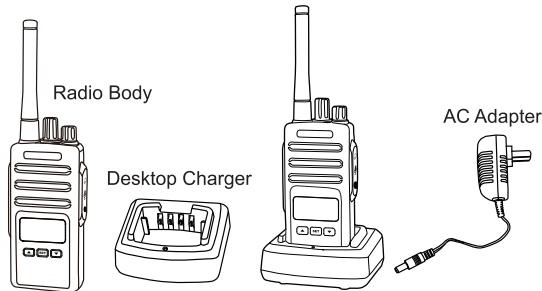
AC Adapter and Desktop Charger



The radio is equipped with 1pcs AC adapter and 1pcs desktop charger.

Charging the Battery Pack

To charge the battery pack, place it in the supplied desktop charger.



1. Place the desktop charger on a flat surface.
2. Insert the connector of the AC adapter into the charger port on the back of the desktop charger.
3. Plug the AC adaptor into a power outlet.
4. The charger is ready for charging if the indicator LED lights red for one second and turns off. If the indicator LED is flashing, the charger is not ready.

5. Place the battery into the charger aligning the battery slots with the charger guide rails.
6. The indicator LED lights red when charging. If the battery capacity is too low, the indicator LED flashes red. The battery first trickle charges and turns to normal charging automatically.
7. The battery is fully charged when the battery LED light is green. The charger stops charging automatically.

Notes:

- When you charge a battery attached to the radio, turn the radio OFF to ensure a full charge.
- The estimated charging time of the battery with charger is about 5 hours.

BASIC OPERATION

Turn the Radio ON/OFF

To turn on the radio, rotate on the On/Off/Volume Knob clockwise. The radio plays power up audio, displays current channel number or frequency on the screen.

To turn off the radio, rotate the On/Off/Volume Knob counter-clockwise until you hear a 'Click' sound.

Adjusting Volume

Turn the On/Off/Volume Knob clockwise to increase the volume, or counterclockwise to decrease the volume.

Note: Do not hold the radio too close to the ear when the volume is high or when adjusting the volume.

Working Mode

The radio has two working modes: VFO and Channel. Press and hold in [SET] button and turn on the radio to switch between VFO model and Channel mode.

Selecting a Channel

When the radio is under Channel mode, to select a channel, turn the Channel Selector Knob until you reach the desired channel. Each channel has its own frequency, privacy code and other settings.

Frequency Adjust

Under VFO mode, turn the Channel Selector Knob until you reach the desired frequencies.

Receiving a Call and Talking

1. Select a channel by rotating the Channel Selector Knob until you reach the desired channel.

2. Make sure the PTT button is released and listen for voice activity.
3. The LED indicator stays solid green when the radio is receiving a call. And the screen will show signal strength.
4. To respond, hold the radio vertically 1 to 2 inches (2.5 to 5 cm) from mouth. Press the PTT button to talk; release it to listen.
5. When transmitting, the LED indicator stays solid red or yellow. (Red means high TX power level setting; Yellow means low TX power level setting)

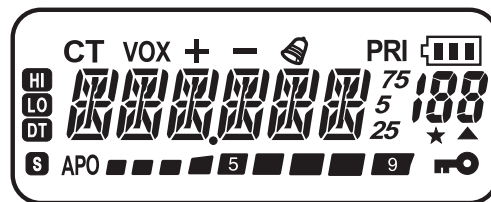
LED Indicators






Radio Working Status and LED Indicators

Radio Status	LED Indicator
Low Battery	Red Heartbeat
Transmit (TX) in High Power	Solid Red
Transmit (TX) in Low Power	Solid Yellow
Receive (RX)	Solid Green
Scanning	Green Heartbeat
PC Programming/Reading Data	Red Heartbeat
PC Programming/Writing Data	Green Heartbeat

LCD Display Screen

On the display screen, you will see various icons which stand for the selected functions. Here you will find the icons indicator as below.



ICON	Description
CT	Means current channel sets CTCSS tone.
VOX	Means the VOX is activated.
+	Means positive offset frequency.
-	Means negative offset frequency.
	Means the keypad tone is activated.
PRI	Means the priority scanning is activated.
	Means battery power indicator.
	Means channel frequency or menu item.
188	Means channel number or menu number.
★	Means current channel is enable scanning.
▲	Means current channel is priority channel.
APO	Means auto power off is activated.
	Means real time display receiving signal strength or power indicator.
	Means keypad lockout.
HI	Means current channel sets high power.
LO	Means current channel sets low power.
DT	Means current channel sets DCS code.
S	Means battery save is activated.

- Turn off the radio, press and hold **[SET]** button and turn on the radio, the radio will switch back VFO mode. So you may now enter other frequencies, and store them into additional memory channels, by repeating the above process.
- Under Channel mode, turn off the radio, press and hold **[▼]** button and turn on the radio, 'DEL?' will be displayed. Press **[▲]** or **[▼]** button to select the channel number you wish to delete, press **[SET]** button twice to confirm. If you want to cancel, press **P1** or **P2** button to exit.

Save/Delete a Channel

- Select the desired frequency, while operating in the VFO mode. Be sure to set up any desired CTCSS tone or DCS code, as well as any desired repeater offset. The power level may also be set at this time, if you wish to store it.
- Press and hold **[▲]** button for 2 seconds, and then the left top of the LCD displays 'F' icon.
- Press **[▲]** or **[▼]** button to select the channel number you desire to store (from 1 to 199).
- Press **[SET]** button to confirm and store the frequency into memory, and you will operate in the Channel mode.

ADVANCED OPERATOR

Monitor

This feature enables you to set squelch off and hear the calls with weak signal. Short press the side button **P1** to activate.

Emergency Calling

This feature allows you to send an emergency alert to other users on the same channel. Other radios on the same channel will sound an emergency alert after received emergency signal. Long press the side button **P1** to activate, press **PTT** button to disable it.

Scan

Scan allows you to hear conversations on all channels. When the radio detects a transmission, it stops scanning and goes to the active channel. This allows you to listen and talk to people in that channel without having to channel manually. If there are transmissions on another channel, you will not hear that activity once the radio has stopped scanning. Short press the side button **P2** to activate.

FM Radio Receiver

This radio comes with the FM radio function. Long press side button **P2** a few seconds to enter FM radio mode. To select your favorite radio frequency to listen directly, turn the Channel Selector Knob. Short press **[SET]** button to switch to FM radio Channel mode (if you have stored FM radio stations in the programming software). To exit the FM radio mode, long press side button **P2** a few seconds again.

Note: This feature may be invalid in some countries for local radio laws.

Default Setting Reset

Press and hold **[▲]** button and turn on the radio. The display will show **'RESET?'**. Press **[SET]** button once, the LCD will show **'VFO?'**. Press **[SET]** button again to confirm and all the setting of VFO mode will be deleted.

If you choose to **'FULL?'**, all settings under Channel and VFO mode will be deleted.

MENU OPERATOR

The general steps of menu operation are as follows:

- Press **[SET]** button to enter the menu mode;
- Press **[▲]** or **[▼]** button to select the desired item;
- Press **[SET]** button to enter the sub item;
- Press **[▲]** or **[▼]** button to select the desired setting;
- Press **[SET]** button to confirm;
- Press **PTT** button to return back to the standby screen.

Menu List

No.	Display	Instruction	Setting Contents
1	C-CDC	RX & TX CTCSS/DCS	OFF-254.1/D023-D754 N/I
2	R-CDC	RX CTCSS/DCS	OFF-254.1/D023-D754 N/I
3	T-CDC	TX CTCSS/DCS	OFF-254.1/D023-D754 N/I
4	POWER	TX power level	HIGH/LOW
5	TOT	Time-out timer	OFF/60S/120S/180S
6	SQL	Squelch level	0~9
7	PRI CH	Priority channel	CH-001~CH199
8	SCANMO	Scanning mode	NORMAL/PRI
9	APO	Automatic power off	OFF/10M/20M/30M/1H/ 2H/3H
10	LIGHT	LCD backlighting mode	OFF/AUTO/ON
11	VOX	VOX sensitivity	OFF/LOW/MID/HIGH
12	PTT ID	PTT unit identification	OFF/ON

13	BEEP	Keypad tone	OFF/ON
14	ROGER	Roger beep tone	OFF/ON
15	SAVE	Battery save	OFF/ON
16	BCLO	Busy channel lock-out	OFF/ON
17	STE	Squelch tail elimination	OFF/ON
18	SHIFTF	Offset frequency	0.000~80.000
19	SHIFT	Offset frequency direction	OFF/+/-
20	CHNAME	Edit channel name	-----
21	DSPMOD	Channel display mode	FREQ/CH/NAME
22	STEP	Frequency step	2.5/5/6.25/10/12.5/25/50/100
23	BAND	Channel bandwidth	WIDE/NARROW
24	DW	Dual watch	OFF/ON

Detail Function Introduction

01/02/03 – CTCSS/DCS (C-CDC, R-CDC, T-CDC)

CTCSS and DCS are functions that reject undesired signals on your channel. You will hear a call only when you receive a signal that contains a matching CTCSS tone or DCS code. If a call containing a different tone or code is received, squelch will not open and you will not hear the call. Likewise, when transmitting using CTCSS or DCS, the receiving station must have a matching tone or code to hear your call. Be aware that other parties can still hear your calls if they set up their radio with the same tone or code. It selects a CTCSS/DCS privacy code to be used when transmitting or receiving carrier for the current channel. No privacy code will be checked when carrier is received if “No CTCSS/DCS code” is chosen.

Procedure:

- 1) Press [**SET**] button to enter menu mode, then select No.1 'C-CDC', No.2 'R-CDC' or No.3 'T-CDC' item.
- 2) Press side button **P1** to select among OFF, CTCSS and DCS.

OFF: No CTCSS/DCS code

CTCSS: 67.0 – 254.1Hz.

DCS: D023 – D754 N/I

3) Press side button **P2** to select DCS code phase between normal and inverted.

04 - TX Power Level (POWER)

Allows the user to select TX power level in which the radio will operate on the current channel. Selecting '**LOW**' can extend the radio's battery life.

LOW: the value is 1 Watt. Used when communication in close proximity, and to keep the radio from transmitting into other geographical groups operating on the same frequency.

HIGH: The value is 4/5 Watts. Used when a stronger signal is needed to extend transmission distance.

Note: this item will be invalid in PMR version.

05 - Transmit Time-out Timer (TOT)

The Time-out Timer prevents callers from using a channel for an extended duration. If you continuously transmit for the duration programmed (default is 60s), transmission will automatically stop and an alert tone will sound. To stop the tone, release the **PTT** button.

06 - Squelch Level (SQL)

A squelch eliminates background noise. Higher level settings will keep the squelch 'closed' more tightly for quieter monitoring, but weak signals will not be heard. Lower settings allow weaker signals to 'open' the squelch but noise may also cause it to open. The radio has 10 (0~9) squelch levels:

0 – Squelch turns off (monitor on condition)

1 – Maximum sensitivity (minimum squelch)

9 – Minimum sensitivity (maximum/tight squelch)

07 – Priority Channel (PRI CH)

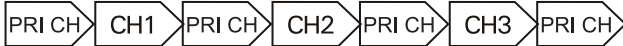
Set the priority channel from all the memory channels. This channel will be detected always when priority scanning is activated.

08 – Scanning Mode (SCANMO)

There are two scanning modes: normal and priority.

Normal: while in normal mode, short press **P2** side button to activate the channel/frequency scanning function. The radio will automatically scan from current channel through all the channels until an active channel is detected, the radio will stop scanning for 5 seconds.

Priority: when priority channel is pre-set through Menu 07 or programming software, you can activate priority scanning. Right now the icon 'PRI' will display on the screen. And the radio will start scanning from the priority channel first and then scans the other channels. The scanning sequence is:



09 – Automatic Power OFF (APO)

There are OFF/10MIN/20MIN/30MIN/1H/2H/3H for selection. While one of them is selected, the radio will automatically turn the power off when times out if none of the button is operated. The LCD screen shows 'APO' icon when this feature is activated.

10 – LCD Backlighting Mode (LIGHT)

There are OFF/AUTO/ON 3 options.

OFF: the backlight is always turned off.

AUTO: after enabling the backlight, it lights for a while before quench automatically.

ON: the backlight is always turned on.

11 – VOX Sensitivity (VOX)

VOX is a speech control giving the possibility to transmit without using the radio PTT. The VOX sensitivity can be set in OFF and LOW/MID/HIGH 3 levels.

LOW stands for the lowest sensitivity; **HIGH** stands for the highest.

12 – PTT Unit Identification (PTT ID)

A programmed tone sequence is used to control e.g. relays, repeater...

13 – Keypad Tone (BEEP)

If you enable this function, every time a button is pressed, you will hear a beep tone.

14 – Roger Beep Tone (ROGER)

When the **PTT** button is released, the radio will beep to confirm to other users that you've finished your transmission and that they can start talking.

15 - Battery Save (SAVE)

When it is activated, the radio decreases the amount of power used after no signal is present and no operations are being performed for 5 seconds. When a signal is received or an operation is performed, this feature turns off temporarily.

16 - Busy Channel Lock-out (BCLO)

It prevents the radio's transmitter from being activated if a signal strong enough to break through the 'noise' squelch is present. It prevents users from disrupting others' talking who are transmitting on the same channel frequency.

17 – Squelch Tail Elimination (STE)

A burst of noise (squelch tail) heard after a transmission ends. When **STE** is activated, the radio will send a sub-audible tone to be transmitted at the end of a transmission which cause the receiving radio to mute its speaker before loss of a carrier is detected. Muting the speaker eliminates unwanted noise during loss of carrier detection.

18/19 – Offset Frequency and Direction (SHIFTF, SHIFT)

These two items are used to determine the difference between TX and RX frequency.

The offset frequency range is 00.000-80.000MHz.

Note: this function can only be enabled in VFO mode.

20 – Channel Name Editing (CHNAME)

When you operate in Channel mode, you can edit the current channel name here.

Procedure:

- 1) Press [**SET**] button to enter menu mode, then select No.20 'CHNAME' item.
- 2) Rotate Selector Knob to edit 1st position content.
- 3) Press [**▼**] button to move forward to next position. Then repeat last step.
- 4) Press [**▲**] button to move backward to previous position and modify content if necessary.
- 5) When finish 6 positions editing, press [**SET**] button to confirm and exit.

Note: this function can only be enabled in Channel mode.

21 – Channel Display Mode (DSPMOD)

There are 3 display modes as channel frequency + number, channel number and channel name in total for option.

FREQ: Frequency + Channel number display. Press and hold in [**SET**] button and turn on the radio to switch into VFO mode.

CH: Channel number display.

NAME: Channel name display. When a channel is not named, LCD displays its channel number instead.

Note: this function can only be enabled in Channel mode.

22 – Frequency Step (STEP)

There are 2.5/5/6.25/10/12.5/25/50/100KHz 8 step options.

Note: This function can only be enabled in VFO mode.

23 – Bandwidth (BAND)

Select the transmitter deviation while operating on the current channel.

W: Max. Deviation = ± 5 KHz

N: Max. Deviation = ± 2.5 KHz

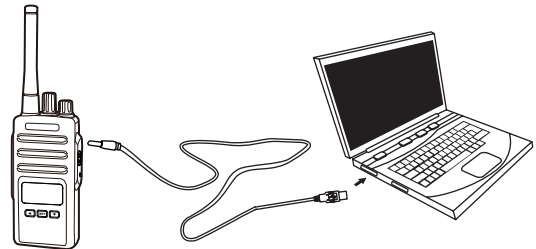
24 – Dual Watch (DW)

When dual watch feature is set as on, the radio will enable to monitor current frequency or channel signal even the FM radio mode is activated.

Programming Software

The easiest way to program or change features in your radio is via its programming software and programming cable.

To program, connect the radio with your PC via the programming cable, as shown picture as below.



The programming software allows you to program the frequencies, CTCSS/DCS privacy codes as well as other features such as: TX power, bandwidth, VOX, battery save, TOT, working mode, roger beep, busy channel lock-out...etc.

TROUBLESHOOTING

Problem	Possible Reasons and Potential Solutions
No Power	Recharge or replace the battery pack; Extreme operating temperatures may affect battery life.
Hearing other noises or conversation on a channel	Confirm CTCSS/DCS is set; Frequency or CTCSS/DCS may be in use; Change settings: either change frequencies or CTCSS/DCS on all radios; Make sure the radio is at the right frequency and privacy code when transmitting.
Audio quality not good enough	Radio settings might not be matching up correctly. Double check frequencies, CTCSS/DCS and bandwidths to make sure they are identical in all radios.
Limited talk range	Steel and/or concrete structures, heavy foliage, buildings or vehicles decrease range. Check for clear line of sight to improve transmission; Wearing radio close to body such as in a pocket or on a belt decreases range; Change location of radio. UHF radios provide great coverage in industrial and commercial buildings. Increasing power provides greater signal range and increases penetration through obstructions.
Can not transmitted or received	Make sure the PTT button is completely pressed when transmitting; Confirm that the radios have the same Channel, Frequency, Interference Eliminator Code and bandwidth settings; Recharge, replace and/or reposition batteries; Obstructions and operating indoors, or in vehicles, may interfere, change location; Verify that the radio is not in Scan.
Heavy static or interference	Radios are too close, they must be at least seven feet apart; Radios are too far apart or obstacles are interfering with transmission.
Low battery	Recharge or replace the battery pack; Extreme operating temperatures affect battery life.
Desktop Charger LED light does not blink	Check that the radio/battery is properly inserted and check the battery/charger contacts to ensure that they are clean and charging pin is inserted correctly.
Cannot activate VOX	VOX feature might be set to OFF; Use the programming software to ensure that the VOX sensitivity level is not set to '0'; Accessory not working or not compatible.

Battery does not charge	Check desktop charger is properly connected and correspond to a compatible AC adapter; Check the charger's LED indicators to see if the battery has a problem.
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Note: Whenever a feature in the radio seems to not correspond to the default or preprogrammed values, check to see if the radio has been programmed using the user program software with a customized profile.

SPECIFICATIONS

General

Frequency Range	VHF Version:136-174MHz UHF Version: 400-480MHz WFM: 87.5-108MHz
Channel Capacity	200 Channels
Channel Bandwidth	12,5 / 25KHz
Operating Voltage	7.4V DC
Dimensions (H x W x D)	130 x 57 x 35mm
Weight with battery	260g

Transmitter

RF Power	≤5W(High) / 1W(Low)
Frequency Stability	<1.5ppm
Spurious & Harmonics	-36dBm<1GHz, -30dBm>1GHz
FM Hum & Noise	65dB(Wide) / 55dB(Narrow)
Modulation Deviation	≤5kHz(Wide) / ≤2.5kHz(Narrow)
Adjacent Channel Power	70dBC(Wide) / 60dBC(Narrow)
Audio Frequency Response	+1 ~ -3dB
Audio Distortion	<3%

Receiver

Sensitivity (12 dB SINAD)	0.25μV(Wide) / 0.35μV(Narrow)
Adjacent Channel Selectivity	70dBC(Wide) / 60dBC(Narrow)
Audio Distortion	< 5%
Radiated Spurious Emissions	< -54dBm
Intermodulation Rejection	60dB
Audio Output	1000mW @ 16 ohms

Hereby, we declare that our radio is in compliance with the essential requirement and other relevant provisions of Directive.