

User Manual

For User

Do not charge the radio or battery in an explosive environment, such as gas, dust, smoke area etc. Please turn off the radio when nearby gas station. Do not disassemble or modify the radio. do not leave the reaio under dusty or wet environment. It' s very important for users to understand all instruction knowledge before using the radio, please obey the local legal rules.



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

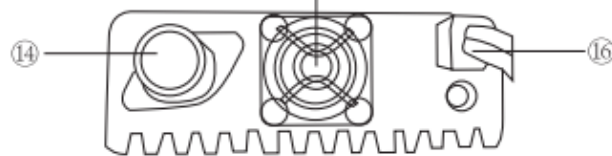
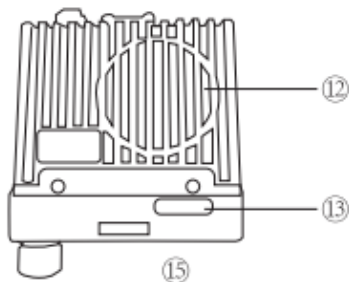
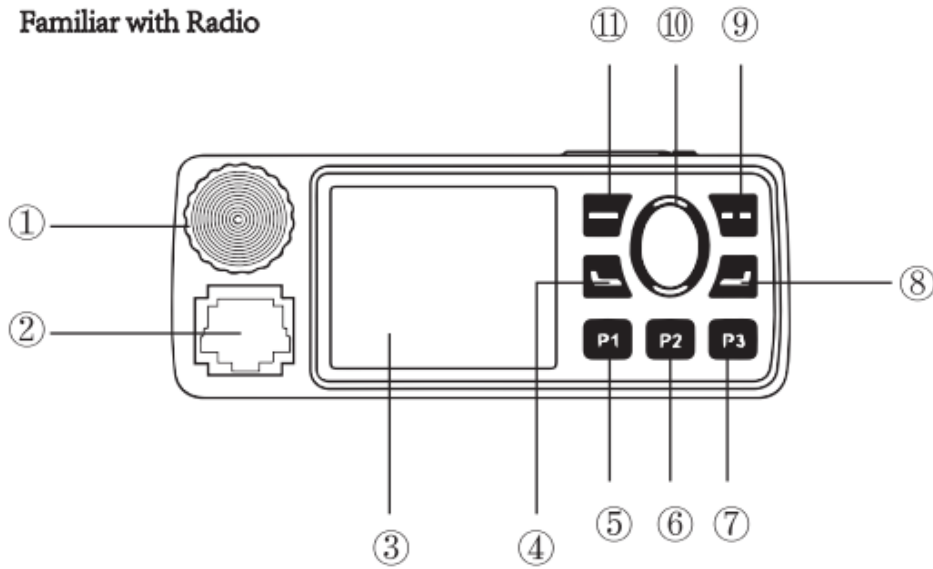
Product Checking

Thanks for choosing our radio. please unbox and check whether the following accessories are included and well-packed. If there' s anything missing or damaging after unboxed, please contact your local distributor.

NO	Item	QTY
1	Device	1
2	Microphone	1
3	Holder	1
4	Screw	1
6	User Manual	1
7	Guarantee Card	1

Familiar with Radio

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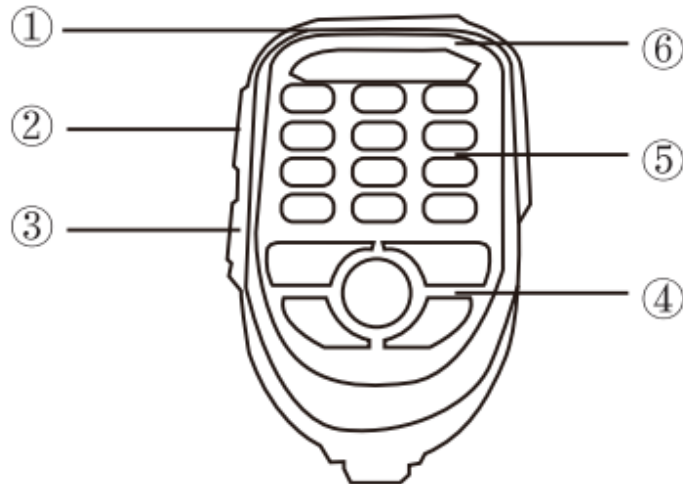


- ① ;Turn ON/OFF & Volume Button
- ② Hand-MIC & Earpiece Jack
- ③ Screen Area
- ④ Left Key
- ⑤ Definable Key 1

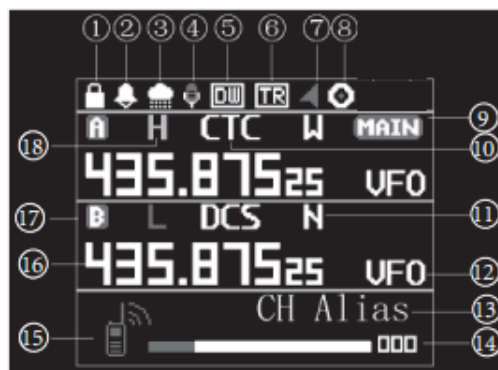
- ⑥ Definable Key 2
- ⑦ Definable Key 3
- ⑧ Right Key
- ⑨ Exit
- ⑩ UP/DOWN Key

- ⑪ Confirm Key
- ⑫ Speaker
- ⑬ TF Card Slot
- ⑭ Antenna Connector
- ⑮ Radiator Fan

- ⑯ Power Cable



① Indicator Light ②PTT-1 ③PTT-2 ④Function Key Area ⑤Numeric Key Area ⑥ MIC



① Lock key & Remote Stun ②TX End Tone ③ NOAA ④VOX ⑤Dual Band Standby
 ⑥ Talk Around & Reverse Frequency ⑦ GPS
 ⑧ Voice Recording ⑨ Main Working Frequency
 ⑩ CTCSS/DCS ⑪ Wide/Narrow Band ⑫ VFO Frequency Mode or Channel Number Mode
 ⑬ Channel Name ⑭ Channel Strength or MIC Strength Indicator ⑮ TX/RX Indicator or
 ON/OFF Fan Indicator ⑯ Working Frequency ⑰ AB Frequency Indicator
 ⑱ High/Low Power

Radio Keys	Hand-MIC Keys	Function
ON/OFF/Volume		Short-press:lock/unlock the keypad
		Long-press:Turn on/off the radio
		Clockwise:turn up the volume
		Anti-clockwise:turn down the volume
【-】	【MENU】	Short-press:confirm setting or enter into menu
		Long-press: enter into/exit DTMF input mode
		DTMF Code : A
【--】	【EXIT】	AB Short-press:cancel setting or exit menu,switch working frequency AB band
		Long-press:switch single/dual display
		DTMF Code : D
【~】	【▲】	Short-press:switch frequency/channels/menu list upward
		Long-press:fast switching of frequency/channels/menu list,FM scanning upward
		DTMF Code : B
【~】	【▼】	Short-press:switch frequency/channels/menu list downward
		Long-press:fast switching of frequency/channels/menu list,FM scanning downward
		DTMF Code : C
【L】		Short-press:switch from channel report methods to channel name report or channel number report
【J】		Short-press:switch channel mode or frequency mode
【P1】 【P2】 【P3】		Definable keys
	【1】	Short-press:input digit 1
		Long-press:enter/exit frequency input mode, which is used via repeater
		DTMF Code: 1
		Character Input:ASCII code (symbol,digit,letter)
	【2】	Short-press:input digit 2
		Long-press:switch from priority TX to edit or busy

		DTMF Code: 2
		Character Input: A B C a b c
	【3】	Short-press:input digit 3
		Long-press:turn on/off VOX
		DTMF Code: 3
		Character Input: D E F d e f
	【4】	Short-press:input digit 4
		Long-press:Switch high/low power
		DTMF Code: 4
		Character Input: G H I g h i
	【5】	Short-press:input digit 5
		Long-press:switch to squelch level
		DTMF Code: 5
		Character Input: J K L j k l
	【6】	Short-press:input digit 6
		Long-press:turn on/off dual-band standby
		DTMF Code: 6
		Character Input: M N O m n o
	【7】	Short-press:input digit 7
		Long-press:turn on/off backlight
		DTMF Code: 7
		Character Input: P Q R S p q r s
	【8】	Short-press: input digit 8
		Long-press:shift to frequency space menu
		DTMF Code: 8
		Character Input: T U V t u v
	【9】	Short-press:input digit 9
		Long-press:turn on/off keypad tone
		DTMF Code: 9
		Character Input: W X Y Z w x y z
	【0】	Short-press:input digit 0

		DTMF Code: 0
		Character Input: space key
	【*】	Short-press:switch from channel report method to channel name report or channel number report
		Long-press:enter/exit FM radio
		DTMF Code: *
		Character Input>Delete Characters
	【#】	Short-press:switch channel mode to frequency mode
		Long-press:turn on Scan
		DTMF: #
		Character Input:turn on/off character inputting
	【PTT-1】	Main PTT, press this button to transmit signals of the main working frequency
	【PTT-2】	Sub-PTT, press this button to transmit signals by B band frequency

4 Function and Operation

4.1 Transmitting Signal

Press **【PTT-1】** or **【PTT-2】** to transmit signals, icon ⑰ turns red, and hand-mic light turns green.

Press **【PTT-1】** to transmit main working frequency signals, press **【PTT-2】** to transmit B band frequency signals.

4.2 Receiving Signal

When the device receives same frequency signal with current working channel and the CTCSS matches with each other's, the radio will receive and send out the voice, and the icon ⑰ turns blue. If A band receives signals, hand-mic light turns green, while B band receives

signals, hand-mic lights turns blue.

4.3 Working Mode Switching

Short press **【#】** button to change the working mode to VFO frequency mode or Channel MODE. When it is changed to VFO frequency mode, the icon ⑭ will show up as **VHF**; When it is changed to channel mode, the icon ⑭ will show up as channel number.

4.4 Display Mode Switching

Short press **【EXIT】** key to turn on/off dual-band display. When turn off dual-band display, the sub-frequency area will show are as system time.

4.5 Frequency Changing and Repeater Frequency Setting

While under VFO mode, input frequencies manually via keypads, input 6 digits, the inputting is done. After this, the input frequencies will be set to receiving and transmitting frequencies.

If need to use repeater to relay the signals, set the TX frequencies according to the repeater frequency table. Operation: Under VFO mode, long press **【1】** button, the frequency turns red, the input function activates, and input 6 digits, so the inputting is done automatically. The input frequencies will set to TX frequencies. Long press **【#】** to exit TX frequency setting. Once the inputting is done, please enter MENU list **Save CH** to save frequency to appointed channel.

Short press **【▲】 / 【▼】** can switch preset working frequencies. Long press **【▲】 / 【▼】** is fast switching function.

4.6 Channel Switching

Under channel mode status, input channel number via keypads to switch to appointed channel directly. Short press **【▲】 / 【▼】** to switch to working channels one by one. Long press **【▲】 / 【▼】** is fast switching function.

4.7 Air Band Receiving

When the working frequency is set within the range of 108–136MHz, the device enters aviation frequency receiving mode.

The device is not allowed to transmit signals under aviation frequency band status.

4.8 Frequency Detecting and Decoding (One-click Decoding)

【P1】 / 【P2】 / 【P3】 is set to Freq Detect, and press these definable buttons while it is under standby status. Then the device begins to detecting and decoding. This function cannot detect CTCSS and anti-decoded radios. Press 【PTT】 button to exit.

If the frequencies are changing constantly before detecting actives, which means the nearby electromagnetic environment is complicated, in order to avoid strong electromagnetic interference, please choose proper detecting place. After detecting is done, press 【MENU】 to save the detected frequency and CTCSS/DCS to current channel, and press 【PTT】 to exit, press 【EXIT】 to re-detect. If detecting result is standard CTCSS/DCS, it will show up as standard CTCSS/DCS. If the result is non-standard CTCSS/DCS, it will show up as “23b” or “24b” plus a series of digits. After saving, if you want to check the result, please check Menu List Mute Code.

4.9 FM function

Long press 【*/FM】 to enter into FM radio mode. Long press 【▲】 / 【▼】 to search for signals, or input frequencies manually via keypads. And short press 【▲】 / 【▼】 to stop scanning.

If you want to receive signals while under FM radio mode, please check with MENU list **FM Standby**, and turn it on.

4.10 NOAA

【P1】 / 【P2】 / 【P3】 key to set to NOAA channels and press the side-key to NOAA weather report channels under standby status. Press 【▲】 / 【▼】 to switch NOAA channels. If not to operate for 2 seconds, the device will scan NOAA channels automatically.

NOAA function is available in countries and areas that are supported only. The followings are 11 NOAA working frequencies.

1	162.55000M	7	162.52500M
2	162.40000M	8	161.65000M
3	162.47500M	9	161.77500M

4	162.42500M	10	161.75000M
5	162.45000M	11	162.00000M
6	162.50000M		

4.11 GPS(Optional)

While turn on GPS ON-OFF, the icon ⑦ shows up and the GPS activates.

Define **【P1】** / **【P2】** / **【P3】** as GPS, and press the button under standby interface, then enter into GPS interface, which will show current longitude, latitude, height and the number of effective satellites. Please use GPS at open area, if there are too many obstacles, GPS will drift and affect the positioning accuracy.

Single radio measuring distance: when GPS is set successfully, press **【MENU】** key, to set current position as the starting, then move to other positions, once the GPS settles down, press **【#】** key then will show up the orientation and distance from the starting to the final position.

GPS sending: turn on GPS in menu list GPS ON-OFF-ON; or list Roger Beep-choose **Send GPS** . When GPS is set successfully, press **【PTT】** to send local longitude and latitude to receiving part. When the GPS of receiving is turned on and set successfully, the receiving radio will show up the orientation and distance of transmitting radio. While the GPS of receiving is turned off or be set unsuccessfully, the receiving radio will show up the longitude and latitude of transmitting radio.

4.12 Inputting Method

You can change relative characters via inputting method both in Menu list **Personal ID** and Menu list **CH Name**.

4.12.1 Delete Character

when in **Person ID**, the display content will be added blank characters automatically to 16 bytes (2 bytes per Chinese character, 1 byte per Digit/English letter/symbol). while in **Channel Name**, the display content will be added blank characters automatically to 10 bytes. You can move the cursor via **【▲】** or **【▼】** to certain place, then press **【*】** to delete the characters before it.

4.12.2 Inputting of Digit/Symbol/English Letter

When in **Personal ID** or **CH Name** status, input numeric keys directly to finish the numeric inputting.

Press **【#】** button to input English letter, press relative keys to complete the inputting.

Steps to input characters

- 1.press **【#】** key to start inputting
- 2.Press **【1】** key,open ASCII code table(the table consists of digits/symbols/English letters , and the initial character is blank character)
- 3.press **【▲】** or **【▼】** key to find the needed characters.
- 4.press the digit key which holds the characters to complete the inputting.

The match-up relationship of digit keys and letters

【1 Characters】 **【2 ABC】** **【3 DEF】**

【4 GHI】 **【5 JKL】** **【6 MNO】**

【7 PQRS】 **【8 TUV】** **【9 WXYZ】**

Functions of Definable Keys

To define **【P1】** / **【P2】** / **【P3】** functions in Menu, the following are side-key functions:

1. off:press defined key , and nothing happen
2. Monit:to monitor the signal of working frequency, and ignore the TX/RX sub-tone setting, force to turn on squelch.
3. Freq Detect:to detect frequencies and CTCSS of nearby radios.
4. Repeat Mode:to switch working mode from talk around mode (TX and RX at the same frequency , and the icon ⑥ shows up as RR)to reverse frequency (reverse TX/RX frequencies,and the icon ⑥ shows up as TR).
5. Preset CH: to fast switching from current channel to preset shortcut channels. Shortcut channels are

set by software.

6. Local Alarm: to give out emergency alarm and report to surroundings at the same time.
7. Remote Alarm: to give out emergency alarm and transmit the alarm via main working frequency.
8. NOAA CH: to enter/exit NOAA weather report channels.
9. Send Tone: to transmit a fixed frequency Tone via main working mode. The tone is set by software.
10. Roger Beep: to change end tones.
11. GPS: to enter/exit GPS status.

Instruction of Menu

【startup logo】 to turn on/off the image of startup

【ringtone】 to turn on/off startup tone

【prompt text】 to turn on/off startup greeting

【key beep】 to turn on/off keypad tone

【roger beep】 to turn on/off TX end tone

【dual display】 to turn on/off dual display

【TX priority】 to switch priority transmitting to edition mode or busy mode. If set to edition mode the radio transmits the signal under main channels. If set to busy mode, the main channel is set to the receiving channel to transmit signals under receiving.

【freq step】 to set frequency switching and scanning frequency step

【SQ level】 to set SQ level

【LED timer】 to set backlight time

【TOT】 to set the max TX time.

【VOX level】 to set VOX level

【VOX delay】 to set VOX delay time

【NOAA Monitor】 to turn on/of NOAA monitor.

【FM Standby】 to turn on/off main frequency receiving function while in FM status.

【Tail Tone】 to turn off/on tail tone.

【scan DIR】 to set scan direction.

【scan mode】 T0:to continue to scan after receiving.

C0:start to scan once the signal gone.

SE: stop scanning after receiving signal.

【scan timer】 to set standing time.

【scan end】 to exit scan.

【Personal ID】 to set local ID.

【Repeater Mode】 to change working mode to talk around or reverse frequencies.

【CTCSS/DCS】 to set the sub-tones of TX/RX frequency, switching sub-tone mode via **【*】** key, press

【▲】 or **【▼】** to switch sub-tones.

【RX CTCSS/DCS】 to set RX CTCSS/DCS of main frequency.

【TX CTCSS/DCS】 to set TX CTCSS/DCS of main frequency.

【TX Power】 to set High/Low power of transmitting.

【Band Width】 to set Narrow/Wide band .

【Busy Lock】 to set busy lock. If carriers match, and the channel is not allowed to transmit no matter their CTCSS/DCS matches or not. If CTCSS/DCS matches successfully, the radio is not allowed to transmit.

【Scrambler】 to set voice scrambler number on main frequencies, if the number is 0, the scrambler is turned off.

【DCS Encrypt】 When there is digital sub-tones on main frequencies, turn on encryption function will re-encrypt to digital sub-tones. Only supported to digital sub-tones.

【Mute Code】 This is non-standard DCS, can be defined to 23 or 24 digits. Press the **【▲】** or **【▼】** to choose CTCSS mode, input digits to become non-standard DCS code. The saved non-standard DCS code can be checked in this list.

【CH Name】 to set channel name of main frequency.

【Save CH】 Copy and save information of current channel to appointed channels. The CH-XXX N/Y shows up when enter the list. N means empty channel. Y means not empty channel. To input the digits manually to shift to appointed channel.

【Delete CH】 to delete information of appointed channels. To input the digits manually to shift to appointed channel.

【RX record】 to turn on/off RX record.

【TX record】 to turn on/off TX record.

【record log】 to check recorded voice, and the recording shows up as “sequence number+ channel number+recording duration + recording time” . Red characters means to transmit recording, blue characters means to receive recording. Press **【*】** to delete current recording. Press **【#】** to play current recording.

Note: do not remove the TF card arbitrarily, or the recording will not match.

【GPS】 to turn on/off GPS.

【GPS Monit】 if the radio has GPS, please turn on the GPS and GPS monit, the radio will send the GPS module to the connected computer. The data can be parsed via GPS monitor software or port instrument. The Bard rate of programming cable is Normal mode 115200, slow mode 19200. please turn off this rate while write or read data, or it will fail to write or read.

【UTC area】 to set UTC area to match local time.

【APO】 to set shutoff time to reduce power consumption.

【Initialize】 to initialize the radio to the last writing status.

【Version】 to check firmware version and version date.

【Instruction】 to scan QR code to check with user manual.

Specifications

General Part	
Frequency Range	RX : 64-108MHz(FM band,should be turned on while use) Scanning: 108-520MHz TX : 144-148MHz/420 - 450MHz (Amateur radio)
Channel Capacity	999
Channel Spacing (W/N)	25kHz/12.5kHz
Voltage	13.8V DC
Working Mode	Same frequency simplex,different frequency simplex
Antenna	Removable Antenna
Frequency Stability	≤5ppm
Working Temperature	-20 ~ +60°C
Dimension	126 X 100 X 40 without holderabout455g without holder
Transmitting Part	
Modulation Mode	F3E
Maximum deviation (W/N)	≤5KHz /≤2.5KHz
SNR (W/N)	-45dB/ -40dB
Modulation distortion	<7%
Spurious emission	≤-13DB
TX Current	≤4A
Receiving Part	
Sensitivity (W/N)	0.22μV/ 0.25μV 12dB SINAD
Inter modulation (W/N)	65dB/ 60dB
Audio Distortion	<5%
Audio Output Power	≤3W (16Ω)
RX Current	≤500mA
Standby Current	≤70mA

Note: The above parameters are subject to change without prior notice!

Any 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 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.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and 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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .

This equipment should be installed and operated with minimum distance 100cm between the radiator& your body.