MADE IN CHINA

USR'S MANUAL

Safety and Overview

We are grateful that you chose TYTECH TM-D60W UHF/VHF FM Mobile Transceiver.
We believe this easy-to-use transceiver will provide dependable communication to people who are operating efficiently. The transceivers incorporate the latest in advanced technology. As a result, we feel strongly that you will be pleased with the quality and features of this product!

Product safety and RF exposure for handheld

Before using this two way radio,please read the manual which contains important operating instructions for safe usage, RF Energy Awareness, control information and operational instructions for compliance with RF Energy Exposure limits inapplicable national and international standards. also read the operational instructions for safe use.

Features

- Detachable control panel for separate control;
- The large LCD display on both sides is easy to identify the current working status;
- Ultra wide receiving range: including 108-180 and 400-520 MHz frequency bands;
- The left and right bands can be independently operate;
- Simultaneous reception of V+V, U+U, and V+U;
- Cross-band repeater and full duplex operation, and be used as a simple repeater;
- Standard 50 sets of CTCSS simulated sub tones and 104 sets of DCS digital sub tones;
- Users can use their own defined CTCSS to simulate sub tone frequencies and DCS digital sub tone codes;DTMF/2-tone/5-tone optional signaling;
- Voice compression and scrambling encryption function;
- Automatic transfer frequency difference function;
- User customization features for hand microphones;

Specifications

PRECAUTIONS

Observe the following precautions to prevent fire, personal injury, and transceiver damage.

•When operating mobile, do not attempt to configure the transceiver while driving; it is too dangerous.

•Do not transmit with high output power for extended periods. The transceiver may overheat.

•Do not disassemble or modify the transceiver for any reason.

•Do not expose the transceiver to long periods of direct sunlight, nor place it near heating appliances.

•Do not place the transceiver in excessively dusty, humid, or wet areas, nor on unstable surfaces.

•If an abnormal odor or smoke is detected coming from the transceiver, switch the transceiver power off immediately, and contact Bossradio customer service or your dealer.

•Use of the transceiver while you are driving may be against traffic laws. Please check and observe the vehicle regulations in your area.

⚠ CAUTION

The transceiver is designed for a 13.8 V DC (±15%) power source! Never use a 24 V battery to power the transceiver. Check the battery polarity and voltage of the vehicle before installing the transceiver.

⚠ WARNING

Do not cut or remove the fuse holder on the DC power cable. Improper connections or current surges may cause smoke or fire.

For passenger safety, install the transceiver securely using the supplied mounting bracket and screw set so the transceiver will not break loose in the event of a collision.

Various electronic equipment in your vehicle may malfunction if they are not properly protected from the radio frequency energy that is present while transmitting.

CONTENTS

PREPARATION

SUPPLIED ACCESSORIES

Item	Quantity
Microphone	1
Microphone hanger	1
DC power cable (with 20 A fuses)	1
Mounting bracket	1
Screw set	1
Fuse (15 A)	1
Instruction manual	1

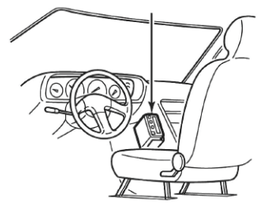
Initial Installation

Mobile installation

To install the transceiver select a safe and convenient location inside your vehicle that minimizes danger to your passengers and yourself while the vehicle is in motion.
Consider installing the unit at an appropriate position so that knees or legs will not strike it during the sudden braking of your vehicle.
Try to pick a well-ventilated ventilated location that is shielded from direct sunlight.

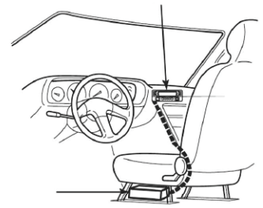
Installation methods

1-Single Body Installation



The supplied mounting bracket can be used for the main unit installation.

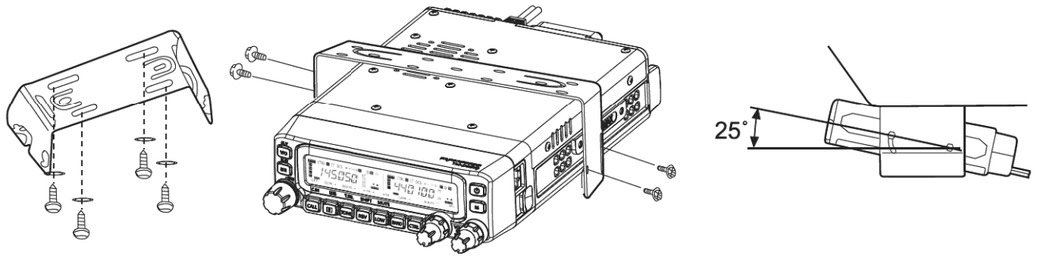
2-Remote Control Installation



The supplied remote controller mounting bracket and separation cable can be used for installation.

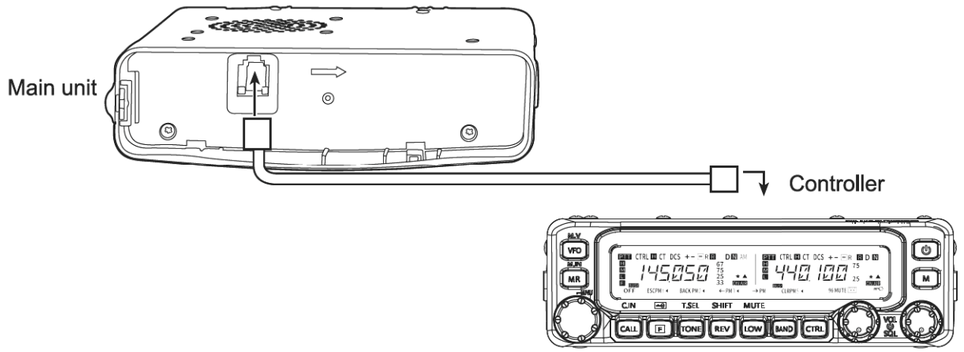
Mounting bracket installation

1.Drill 4 holes where the mounting bracket is to be installed.
2.Insert the supplied screws,nuts and washers through the mounting bracket and tighten.
3.Adjust the angle for your suitable position.



Front panel cable connection

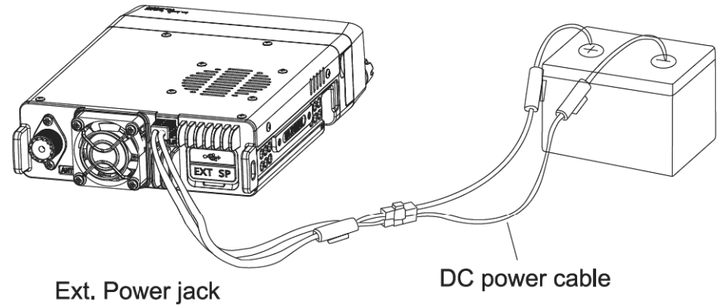
The radio support the front panel to be separated via the panel cable .
Connect the controller and the main unit using the cable as follows.



DC Power Cable Connection

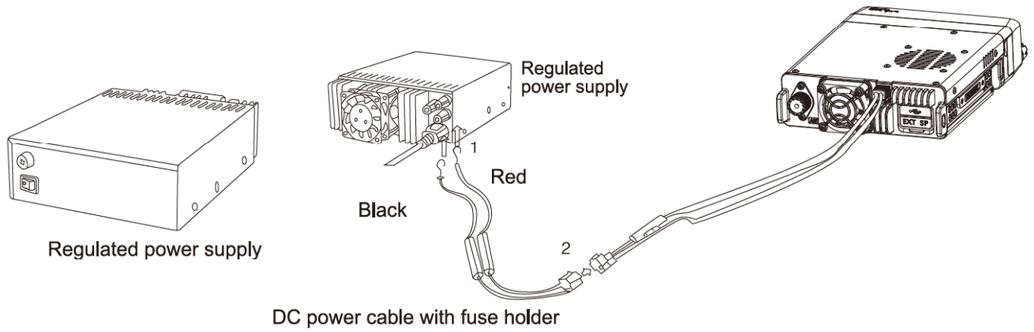
Note: Locate the power input connector as close to the transceiver as possible.The vehicle battery must have a nominal rating of 12V. Never connect the transceiver to a 24V battery, Be sure to use a12V vehicle battery that has sufficient current capacity. If the current to the transceiver is insuficient the display may darken during transmission or transmitting output power may drop excessively.1. Route the DC power cable supplied with the transceiver directly to the vehicle's battery terminals using the shortest path from the transceiver. We suggest you do not use the cigarette lighter socket as some cigarette lighter sockets intr.oduce an unacceptable voltage drop, The entire lenath of the cable must be dressed so it is isolated from heat, moisture and the engine secondary (high voltage) ignition system/cables.2. After installing the cable, in order to avoid the risk of damp, please use heat-resistant tape to tie together with the fusebox. Do not forget to reinforce the whole cable.
3. Confirm the correct polarity of the connecions, then attach the power cable to the battery terminals: Red connects tothe positive (+)terminal and black connects to the negative (-) terminal.

4.Reconnect any wiring removed from the negative terminal.
5. Connect the DC power cable to the transceiver's power supply connector. Press the connectors firmly together unti the locking tab clicks.



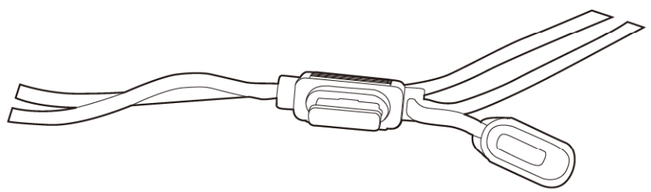
Fixed Station Operation

In order to use this transceiver for fixed station operation you will need a separate 13.8V DC power supply (not included).Please contact your local dealer about it.
The recommended current capacity of your power supply is 12A.
1. Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct. (Red: positi. ve; Black: Negative).
Do not directly the transceiver to an AC outlet.
Use the supplied DC power cable to connect the transceiver to a regulated power supply.
Do not substitute a cable with smaller gauge wires.
Connect the transceiver's DC power connector to the connector on the DC power cable.
3. Press the connectors firmly together until the locking tab clicks.
Note:
Before connecting the DC power to the transceiver be sure to switch the transceiver and the DC power supply OFFe Do not plug the DC power supply into an AC outlet until you make all connections.



Replacing Fuses

If the fuse blows, determine the cause then correct the problem. After the problem is resolved replace the fuse. If newlyinstalled fuses continue to blow, disconnect the power cable and contact your local dealer for assistance.



Fuse Location	Fuse Current Rating
Transceiver	15A
Supplied Accessory DC power cable	20A

Only use fuses of the specified type and rating otherwise the transceiver could be damaged.Note: If you use the transceiver for a long period when the vehicle battery is not fuly charged or when the engine is OFFthe battery may become discharged and will not have sufficient reserves to start the vehicle. Avoid using the transceivelin these conditions.

Antenna Connection

Before operating install an efficient well-tuned antenna. The success of your installation wil depend largely on the type oantenna and its correct installation, The transceiver can give excellent results if the antenna system and its installation aregiven careful attention.

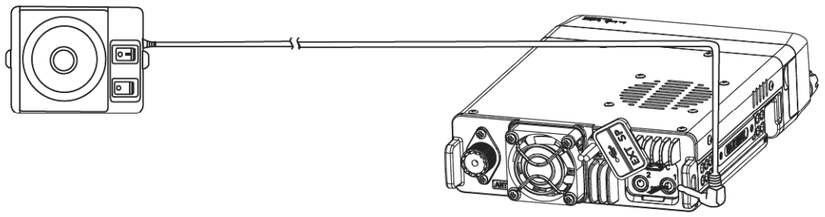
Jse a 500 impedance antenna and low-loss coaxial feed-ine that has a characteristic impedance of 50 0 . to match thetransceiver input impedance. Coupling the antenna to the transceiver via feed-lines having a impedance other than 50 creduces the eficiency of the antenna system and can cause interference to nearby broadcast TV receivers, radio receiers and other electronic equipment.

Note: Transmiting without first connecting an antenna or other matched load may damage the transceiver. Always conn.ect the antenna to the transceiver before transmiting. All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock and transceiver damage

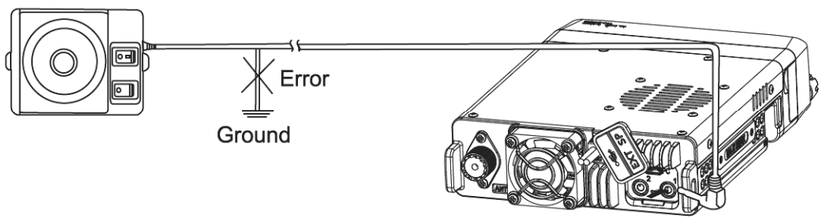
Accessories Connections

External Speaker

If you plan to use an external speaker, choose a speaker with an impedance of 8Ω. The external speaker jack accepts a 3.5mm mono (2-conductor) plug.

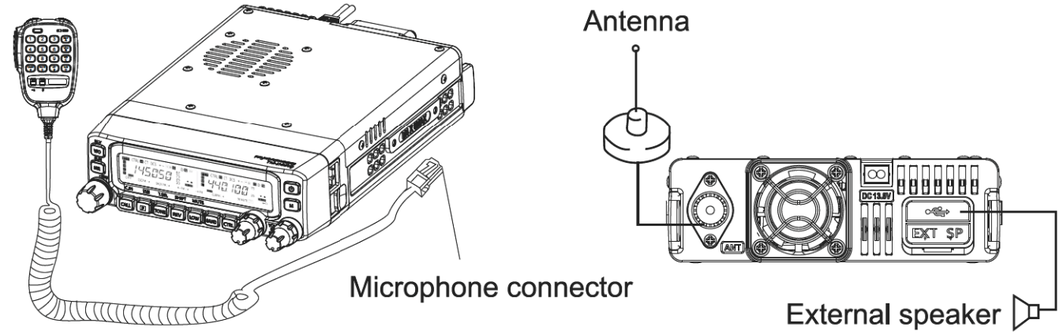


Note: External speaker output adopts double port BTL. Please be aware that the speaker can't connect to the ground otherwise the speaker will fault. The wrong connection way is as below:



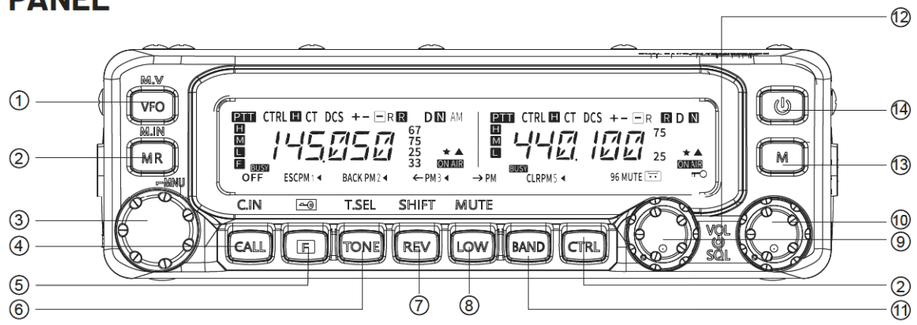
Microphone

For voice communications connect a microphone equipped with an 8-pin modular plug into the modular socket on the side of the main unit. Press firmly on the plug until the locking tab clicks. Attach the supplied microphone hanger in an appropriate location using the screws included in the screw set.



Familiar with the device

FRONT PANEL



NO.	Button/Knob	Description
1	【VFO】	Press [VFO] to enter VFO mode, rotate the tuning control knob to select the operating frequency.Press [VFO] 1 second to start the VFO scanning. Press [F] and then[VFO] to copy the current memory channel or the current call channel to VFO (memory shift).
2	【MR】	Press [MR] to enter memory channel mode, rotate the tuning control knob to select the memory channel. Press [MR] 1 second to enable memory channel scanning. Select a memory channel and press [F] then [MR] to store the current operating frequency in the memory channel.
3	【LEFT DIAL】	Rotate this knob to select the operating frequency or memory channel, change the scanning direction, select audio, etc. Pressing the tuning knob can enter MHz mode (in VFO or call mode) or switch channel name and frequency display (in memory channel mode). Press [F], then press the tuning control knob to enter the menu mode. Pressing the tuning control (1 second) can start the MHz scanning or group scanning.
4	【CALL】	Press [CALL] to select the call channel. Press [CALL] 1 second to start the call scanning. Press down [F], [CALL] can store the current operating frequency to the call channel.
5	【F】	Press [F] to enter the function mode. Press [F] for one second to enable or disable the key lock function on the radio.

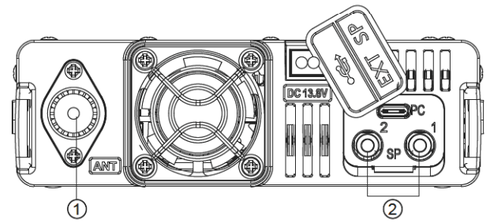
6	【TONE】	Press [TONE] to enable audio function. Continuously press [TONE] to switch functions in the following order: audio on > CTCSS on > DCS on > off. If Tone, CTCSS, or DCS is enabled, pressing [F] and [TONE] will enter the CTCSS or DCS setup mode.
7	【REV】	Press [REV] to turn the reverse function on or off; Press [F], [REV] to enter the transmission difference frequency offset direction selection mode. Each time you press [F], [REV], the transmission offset direction will be switched in the following order: positive (+) direction - > Negative (-) direction - > Off.
8	【LOW】	Press [LOW] to switch the transmit output power in the following order: High > Medium > Low. Press [F], [LOW] to turn on or off the mute function.
9	【PF1】	This key can be programmed , default is band selected
10	【PF2】	This key can be programmed , default is Control swtich
11	【BAND SEL(VOL)】	Turn the BAND SEL control knob to adjust the speaker volume. Press [BAND SEL] on the left to select Band A. Press [BAND SEL] on the right to select Band B. Press [BAND SEL] one second to switch between single-band and dual-band modes. (i.e. switch left and right screens)
12	【SQL control】	Rotate the [SQL] control button to adjust the squelch level. Turn clockwise to turn on the squelch, turn counterclockwise to turn off the squelch.
13	【M】	Press [M] to enable its programmable function. The default is monitor.
14	⏻	Long press to turn on or off the radio.

LCD display icons

NO.	ICONS	Function
1	PTT	Appears when there is an available transmission frequency band. Blinks when the cross-band repeater is ON.
2	CTRL	Appears when there is an available operating frequency band.
3	T	Appears when the audio function is turned on. (Single transmission sub tone not received)
4	CT	Appears when CTCSS is enabled.
5	DCS	Appears when DCS is enabled.
6	+	Appears when the transmission frequency offset function is set to positive.
7	−	Appears when the transmission frequency offset function is set to negative.

8	R	Appears when the reverse function is turned on.
9	AM	Appears when in AM mode.
10	N	Appears when in narrowband FM mode.
11	BUSY	Current channel busy state (or mute off)
12	▲	Appears when setting the selected channel in memory input mode.
13	MUTE	Mute function status.
14	000	Display the memory channel and menu number.
15	★	Appears when channel scanning is skipped.
16	L	Transmitting low-power state.
17	M	Transmitting middle-power state.
18	H	Transmitting high-power state.
19		Keyboard knob lock.
20		Display the signal strength meter when receiving signals and display the selected power level when transmitting.
21	ON AIR	Appears during transmitting.
22	F	Appears when the [F] key is pressed.
23	BACK	Appears when accessing the menu.
24	ESC	Appears when in menu mode and when selecting audio/CTS/DCS codes.

REAR PANEL



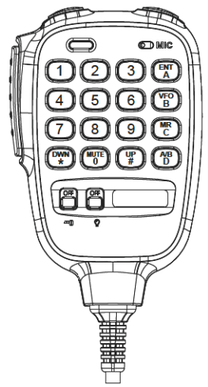
①ANT

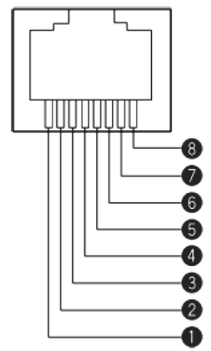
Connect an external antenna to this terminal . When making test transmissions, connect a dummy load in place of the antenna. The antenna system or load should have an impedance of 50 Ω .

② SP (SP 1/ SP 2)

If desired, connect 1 or 2 external speakers for clearer audio. These jacks accept 3.5 mm (1/8") diameter, 2-conductor plugs.

MICROPHONE





Microphone Jack

Basic Operation

1. Radio on and off.

Press down the power key ⏻ to turn on or off the radio. The power on message “HELLO xxx” will display on the screen. If the radio has set the password, You must first enter the password to operate the radio.

2. Adjust the volume level

Rotate the BAND SEL (VOL) control clockwise for the selected band to increase the volume, and counterclockwise to decrease the volume.

be careful:

①Adjusting the volume during a call will be more accurate.

②The volume adjustment of the left and right is independently and separately adjustable.

3. Adjust the squelch level

The squelch function is used to turn off the speaker volume when there is no signal. If the squelch level is set correctly, you will only hear sound when the signal is actually received. The higher the squelch level, the stronger the signal strength must be to hear the sound.

When there is no signal for the selected frequency band rotation [SQL] control knob, select the static exposure level that can effectively eliminate surrounding noise.

be careful:

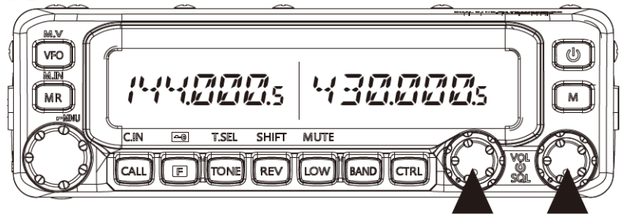
The squelch level of the left and right are also independently adjusted separately.

4. Band Select

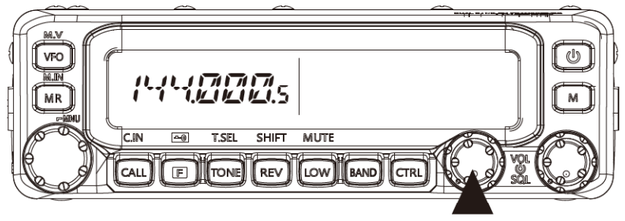
Press the left [Band SEL] control knob to select Band A, and press the right [Band SEL] control knob to select band B.

The [CTRL] icon appears above the band you are operating on, and the [PTT] icon appears above the band you are currently setting to transmit.

select Band A and B

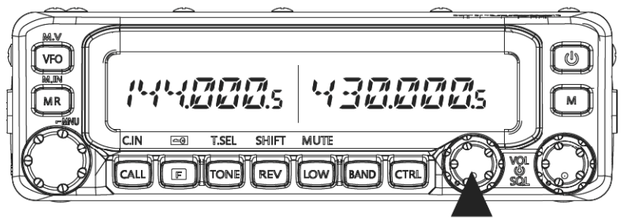


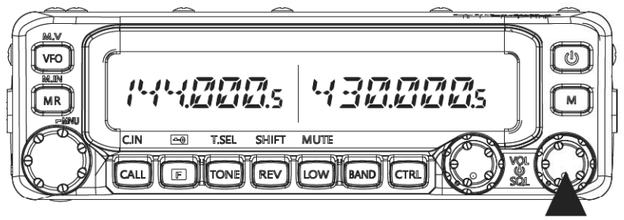
select band A:



5. Single Band or Dual Band Select

Press [Band SEL] can do the switch between the single band and dual band





6. Select operating band

You can change the default frequency bands for bands A and B.

①Select band A or B by pressing the [BAND SEL] control button or [BAND] button.

②For the selected frequency BAND, each time you press [F], [BAND], you can switch the next frequency band, and the default setting of the [BAND] key allows you to switch to the next frequency band.

A Working frequency band: cyclic switching from 144 MHz > 430 MHz > 108MHz.

B Operating band is switched between 144 MHz and 430 MHz.

Attention:The radio supports work in the VHF (V-V) or UHF (U+-U) at the same time.

VHF-VHF (V-V) Operation

UHF-UHF (U-U) Operation

7. Operation Mode Select

There are 3 operation modes: VFO mode, memory channel mode, call mode.

VFO mode

VFO mode allows you to manually change the operating frequency.

1.Press [VFO] to enter VFO mode.

2.Rotate the Tuning control to select your desired operating frequency.

Memory Channel Mode

Memory Channel mode allows you to quickly select a frequently used frequency and related data which you have saved in the transceiver memory.

1.Press [MR] to enter Memory Channel mode.

2.Rotate the Tuning control to select your desired Memory channel.

Call Channel Mode

Call Channel mode allows you to quickly select a preset channel to allow immediate calls on that frequency.

The Call channel can be conveniently used as an emergency channel within your group.

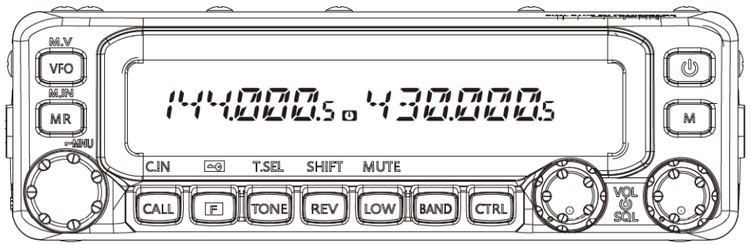
1 Select your desired band (A or B).

• The Call channel has a dedicated frequency for both bands A and B.

The default frequency for band A is 144 MHz. The default frequency for band B is 430/440 MHz.

2 Press [CALL] to enter Call Channel mode.

• “C” appears on the display.



3 Press [CALL] again to return to your previous operating frequency.

Receiving

When you receive a call on the current channel, an icon and field strength will appear on the screen.

Note: When the radio's squelch level is set too high, you may not be able to hear the call.

Transmitting

Select your desired band and frequency/channel.

Press and hold the microphone [PTT] switch and speak into the microphone to transmit. Please keep the microphone 2.5 ~ 5CM away from your mouth, not too close or too far, and speak in a normal voice. Speaking too close to the microphone or too loudly may increase distortion and reduce intelligibility of your signal at the receiving station.

Select the transmit power level

Press the [LOW] key repeatedly to select the transmit power level, there are 3 levels in total. The transmit power of the stored channel can only be adjusted temporarily. After switching to another channel and then returning, it will return to the original transmit power level. The H/M/L icon appears on the display, depending on what output power you have selected.

Menu Settings

1 Press [F], Tuning control to access the Menu.

The Menu name and number appears on the display.

2 Rotate the Tuning control to select your desired Menu.

3 Press the Tuning control to set up the current Menu.

4 Rotate the Tuning control to select your desired value for the selected Menu.

5 Press the Tuning control to set the selected value.

6 Repeat steps 2 to 5 to set up additional Menus.

• Press [F] (ESC) at any time to exit Menu mode.

• Press [TONE] (BACK) at any time to cancel the Menu setup and return to the Menu selection.

Menu No.	Display	Description	Setting Values	Default setting
000	BEEP	Beep sound	OFF/ON	ON
001	BP.VOL	Beep volume level	1-15	5
101	STEP	Step frequency	2.5,5,6.25,7.5,8.33,10,12.5,15,20,25,30,50，100	--
102	MODLAT	Modulation/demodulation mode	FM Wideband NFM Narrowband AM Modulate	
108	B.SHIFT	Beat shift	OFF/ON	OFF
109	TOT	Time-out timer	OFF/0-30（mins）	10
200	M.NAME	Memory name setup	Maximum 6 characters	
202	L.OUT	Memory channel lockout	OFF/ON	OFF
300	DT.HOLD	DTMF transmission hold	OFF/0-10 s	2S
301	DT.MEM	DTMF memory	d1-d16	
302	DT.SPD	DTMF memory transmission speed	50 / 75 / 100 MS.	50 MS
303	DT.PAUS	DTMF pause code time	50 / 250 / 450 / 750 / 1000 MS	450 MS
304	DT.LOCK OFFSET	DTMF key lock	OFF/ON（Lock the microphone digital buttons to prevent the microphone digital buttons from transmitting DTMF	OFF
400	ARO	Offset frequency	0.00 ~ 99.95 MHz	
401	RPT.MOD	Auto Repeater Offset	OFF/ON	OFF
403	RPT.HLD	Repeater mode	CROSS/A-TX/B-TX	CROSS
404	P.ON.MSG	Repeater transmission hold	0FF-5s	0FF
500	BRIGHT	Power on message setup	Maximum 6 characters	HELLO
501	AUTO.BR	Display brightness	OFF/1-8	8
502		Display auto brightness	OFF/ON（Adjust the brightness to level 1-3 to turn on automatic brightness. After a while, the screen will automatically turn off. Press the panel button to turn on the screen.）	OFF

507	PF1	PF1 key programmable function value		
508	PF2	PF2 key programmable function value		
509	MIC.PF1	Microphone PF1/D key programmable function value	A/B	A/B
510	MIC.PF2	Microphone PF2/C key programmable function value	MR	MR
511	MIC.PF3	Microphone PF1/B key programmable function value	VFO	VFO
512	MIC.PF4	Microphone PF4/A key programmable function value	ENT,MONI,CALL,LOW,SHIFT,MUTE	ENT
513	MIC.LCK	Microphone key lock	OFF/ON	
514	SC.RESM	Scan resume method	TO/CO/SEEK	TO
516	APO	Auto Power Off time	OFF/0.5/1.0/1.5/2.0/2.5/3.0	OFF
527	DP.BAR	Display partition bar	OFF/ON	OFF
600	PF3_M	M key programmable function value		
601	SCR	Scramble	OFF/ON	OFF
602	SPK	Squelch Mode	SQ: Squelch is turned on when the received signals have the same carrier; CTC: Squelch is turned on when the received signals have the same carrier and carry the same CTCSS sub-audio/DCS mute code. TON: Squelch is turned on when the received signals have the same carrier and carry the same DTMF/2-tone/5-tone signaling. C+T: Squelch is turned on when the received signals have the same carrier and carry the same CTCSS sub-audio/DCS mute code and DTMF/2-tone/5-tone signaling. C/T: Squelch is turned on when the received signals have the same carrier and carry the same CTCSS sub-audio/DCS mute code or DTMF/2-tone/5-tone signaling.	SQ
603	2 TONE	2-tone number memory	2T-01-2T-16	
604	5 TONE	5-tone number memory	5T-01-5T-16	
605	RXSUBM	Receive CTCSS/DCS mode	"OFF", "CTCSS", //Continuous Tone Controlled Squelch System "DCS", //digitally coded squelch "DCS.R", //Reverse digitally coded squelch	
606	RXSUBF	Receive CTCSS/DCS tone	Select 106 groups of standard DCS codes or 50 groups of standard CTCSS frequencies according to the receiving sub-tone mode.	
607	TXSUBM	Transmit CTCSS/DCS mode	"OFF", "CTCSS", //Continuous Tone Controlled Squelch System "DCS", //digitally coded squelch "DCS.R", //Reverse digitally coded squelch	
608	TXSUBF	Transmit CTCSS/DCS tone	Select 106 groups of standard DCS codes or 50 groups of standard CTCSS frequencies according to the transmitting sub-tone mode.	
609	TX ANC	Transmit/uplink Noise Cancellation	OFF/ON	
610	VOX	Noise Cancellation with VOX	OFF/1/2/3/4	OFF
998	PASSWD	Power on password	Set the PASSWD in the CPS	OFF
999	RESET	Reset	VFO/PART/FULL	VFO

Advanced Features

Automatic Repeater Offset
This function automatically selects an offset direction and activates the Tone function, according to the frequency that you have selected.
To obtain an up- to-date band plan for repeater offset direction, contact your national Amateur Radio Association.
1.Enter Menu mode and access Menu 401 (ARO)
2.Set the ARO to ON.
3.Press [BAND SEL A] to select the A band.
4.Press [VFO] to select VFO mode.
5.Rotate the Tuning control to select your desired frequency.

Scan Function

This transceiver provides the following types of scans:

Scan Types	Description
VFO Scan	Scans all frequencies on the current band.
Memory Scan	Scans all frequencies stored in the Memory channels.
Group Scan	Scans the frequencies in the Memory channels which belong to the group you have specified.
Program Scan	Scans all frequencies within the programmed range, on the current band.
MHz Scan	Scans all frequencies within a 1 MHz range from the originating frequency.
Call Scan	Scans the Call channel as well as the currently selected VFO frequency or Memory channel.

VFO SCAN

VFO Scan monitors all frequencies tunable on the band, using the current frequency step size.
1. Select your desired band.
2. Press [VFO] (1s).
- Scan starts at the current frequency.
- The 1 MHz decimal blinks while scanning is in progress.
- To reverse the scan direction, turn the Tuning control clockwise (upward scan) or counterclockwise (downward scan).

You can also press microphone [UP]/ [DWN].
3. To quit VFO Scan, press [VFO] again.

MEMORY Channel SCAN

Use Memory Scan to monitor all Memory channels programmed with frequency data.
1. Select your desired band.
2. Press [MR] (1s).
- Scan starts at the current channel.
- The 1 MHz decimal blinks while scanning is in progress.
- To reverse the scan direction, turn the Tuning control clockwise (upward scan) or counterclockwise (downward scan).

You can also press microphone [UP]/ [DWN].
3. To quit Memory Scan, press [MR] again.

MHz SCAN

MHz Scan monitors a 1 MHz segment of the band, using the current frequency step size. The current 1 MHz digit determines the limits of the scan.
For example, if the current frequency is 145.400 MHz, the scan range would be from 145.000 MHz to 145.995 MHz (the upper limit depends on the current frequency step size).
1. Select your desired band.

2. Press [VFO].
3. Rotate the Tuning control to select a frequency within your desired 1 MHz range.
4. Press and hold the Tuning control for 1 second to start scanning. The 1 MHz decimal blinks while scanning is in progress. To reverse the scan direction, turn the Tuning control clockwise or counterclockwise adjust the scan direction. You can also press microphone [UP]/ [DWN] key.
5. Press the Tuning control again to stop scan.

Scan Boundary Channels

This function allows you to scan a specified frequency range and store the channel, which is called scanning boundary channels.
1. If necessary, press the [VFO] key to enter VFO mode.
2. Store frequency 1 in channel number #L1 (scan lower boundary channel #1, L represents lower boundary).
3. Similarly, store frequency 2 in channel number #U1 (scan upper boundary channel #1, U represents upper boundary).
4. Press the [MR] key to enter channel mode, and then select channel #L1.
5. Press and hold the [MR] key for 1S to start scanning. The scan will be performed within the frequency range of #L1 and #U1.
6. There are 5 pairs of scanning boundary channels, namely L1/U1 – L5/U5. You can select other scanning boundary channels as needed.

Note: When scanning boundary channels, the L#1 channel must be smaller than the U#2 frequency, and cross-segment scanning is not supported, otherwise it will become scanning the current segment frequency.

DUAL TONE MULTI-FREQUENCY (DTMF) Function

There are two ways to send DTMF signaling:
1.Use the microphone's numeric keys.
Press and hold the PTT key to directly enter the other party's phone number, including numbers 0~9, *, # and letters A/B/C/D.
2.Use DTMF automatic dialer

The DTMF automatic dialer memory of this radio can store 16 phone numbers or access code numbers.

To store numbers in the number memory, the operation is as follows:
1. Press the [F] key + tuning key to enter the menu.
2. Rotate the tuning knob to select menu No. 301 (DT.MEM).
3. Short press the tuning knob, and then rotate it to select a memory to store the number. There are a total of 16 number memories, numbered "d-1" ~ "d-16".
4. Short press the tuning knob again, and then rotate it to select the first number.
5. After selecting, press the tuning knob to confirm, and then rotate it again to select the second number.
6. Repeat the above steps to enter all numbers. If the input is incorrect, press the [DOWN] key on the microphone to return to the previous character and re-enter.
7. After all numbers are entered, press the tuning knob to store the set numbers in the machine.
8. If you want to store another set of numbers, rotate the tuning knob to select another number memory. Then repeat the above steps 1-7.
9. After all the inputs are completed, press the tuning knob to confirm, save and exit.

To send numbers in the number memory, the operation is as follows:
1. Press the [F] key + tuning key to enter the menu, and rotate the tuning knob to select the number memory where the number to be sent in menu 301 (DT.MEM) is located.
2. Short press the tuning key to confirm the save and exit.
3. Press and hold the PTT key and press the [CALL] key of the main working machine to transmit the selected number.
Once you press the [CALL] key, you can release the PTT key and the machine will continue to send numbers until it is finished.
You can select the sending speed of the machine's automatic number sending and the delay time for sending DTMF numbers after pressing the [CALL] key through menu 302 (DT.SPD) and menu 303 (DT.PAUS).

2-Tone and 5-Tone signaling operations
Unlike DTMF signaling operations, 2-tone/5-tone signaling can only be sent through the autodialer, not directly through the microphone. At the same time, the number can only be stored in the dialing memory through the frequency writing software, and cannot be achieved through menu operation.
Sending 2-tone/5-tone signaling:

1. Select the memory where the number you want to send is located through Menu 603(2 TONE) and Menu 604(5 TONE).
2. Press and hold the PTT button and shortly press the [F] button to send 2-tone signaling; shortly press the [Tone] button to send 5-tone signaling.

Cross-band repeater function
This mobile radio can be easily set up as a full-featured cross-band repeater station through the menu. This is very useful when you are in a remote area or in an emergency and need to set up a small cross-band relay.
Note:
1.Choose the uplink and downlink frequency carefully to avoid affecting other people's communications. If you are not sure about the frequency usage in your area, it is best to use simplex communication on all bands, or consult the local frequency management department.
2.Remember that the communication traffic of your repeater system may far exceed your expectations, so it is best to reduce the power coverage as much as possible.
3.For the best relay effect, when selecting cross-band repeater, do not set the left and right frequencies to double the frequency, such as the left frequency is 150M, the right frequency should not be 450M. (450=150*3 times)
Cross-band repeater function operation method:

Enable the cross-band repeater function as follows:
Press and hold the TONE key and then turn on the machine to turn on the cross-band repeater. Repeat the action to turn it off.
1. Press F key + tuning knob to enter menu 403 to set the cross-band frequency.
2.Adjust to menu 403 and the screen will show RPTMOD 403 CROSS (both left and right can be transmitted) A-Tx (left frequency transmission) B-Tx (right frequency transmission)
Note: It is forbidden to enter the cross-band repeater mode when the left and right frequencies are not cross-band
3.Press the tuning knob to confirm and press F key to exit.
Note: Once the cross-band repeater is enabled, it will still be in this operation mode when the radio is turned on next time. The radio is locked at this time. Please turn off the cross-band repeater mode to enable normal function.

Button Customization Operation

The functions of the [PF1]/[PF2]/[PF3]/[PF4] buttons on the microphone can be defined by the user.

The definition method is as follows:

1. Short press the [F] button + tuning knob to enter the menu mode.
2. Rotate the tuning knob to menus 509-512, which correspond to the 4 buttons [PF1]/[PF2]/[PF3]/[PF4] respectively.
3. Short press the tuning knob, then rotate it to select the function option of the corresponding button.
4. Press the tuning knob to save the set value. If you want to define other buttons, rotate the tuning knob and repeat the above steps.
5. Press the tuning knob to save and exit.

Name Function	Function
FRBAND	Frequency band switching.
CTRL	Control switching.
MONI	Monitor function switch.
MENU	Enter menu mode.
MUTE	Speaker mute mode.
SHIFT	Frequency difference direction switching
DUAL	Single and dual band mode switching
M>V	Memory channel to VFO copy
VFO	switch to VFO
MR	switch to memory channel
CALL	switch to CALL channel
MHz	VFO channel frequency MHz switch
TONE	switch TONE
REV	Reverse function
LOW	Power switch
LOCK	Panel key lock
A/B	A/B band switching PTT and Ctrl switch together
ENTER	VFO mode frequency editing MR mode channel number input
1750Hz	transmit 1750 tone.

Restore factory settings

Reset process:

1. Turn off the power.
2. Press and hold the [F] key on the left side of the radio and power on the radio.
3. Rotate the tuning knob and select the reset options as below 3 methods:

VFO Reset: Use to initialize the VFO and accompanying settings.

PART (Partial) Reset: Use to initialize all settings other than the Memory channels, the DTMF memory, and the PM channels.

FULL Reset: Use to initialize all transceiver settings that you have customized.

4.Press the Tuning control to set the reset type. A confirmation message appears on the display.

5.Press [TONE] (BACK) to return to the previous display or [F] (ESC) to cancel the reset.

6.Press the Tuning control again to perform the reset.

MUTE (speaker mute mode): The same frequency is used on the left and right testers. The mute mode is used on the left or right tester. When receiving, the muted frequency band cannot make any sound.

Auto AM mode: If enable the Auto AM mode, turn on the left side of the radio and enter the frequency of 108-134M in VFO mode. The AM icon will be automatically displayed. If the auto AM function is turned off, it will not be displayed.

FM Radio Function

1.Press [F] key and then [BAND] key to turn on the FM Radio Function, again this operation will turn off the FM Radio.

2. Press [VFO] switch to FM radio VFO mode. The microphone can input the frequency.

3. Press[MR] switch to FM radio MR mode. There are 32 MR channels. The microphone can input the channel number.

4. Press [F] and rotate the tuning knob to select the MR channel to be saved. Short press the tuning knob to save to the corresponding channel.

5. In the VFO mode, press the tuning knob to start the FM Radio frequency search.

PREPARATION

General	Frequency range:
	FM 144 ~ 146MHz ; 430 ~ 440MHz EU / 144-148Mhz ; 420-450Mhz US
	Channel capacity: 999
	Channel spacing: 5/6.25/10/12.5/15/20/25/30/50/100KHz
	Modulation type: F3E
	Antenna impedance: 50Ω
	Frequency stability: ±5ppm @(-10℃-+55℃)
	Working voltage: DC: 13.8V (±15%)
	Receiving current: ＜0.5A;
	Transmission current ＜ 9A (power=50W/40W)
	Working temperature: -10℃~+55℃
	Dimension: 140×43×215mm
	Weight: 1100g
Receiver	PCB type: Double conversion Super-heterodyne
	Medium Frequency: 38.85MHZ/450KHz (Left band)
	49.95MHZ/450KHz (Right band)
	Sensitivity: 0.8uV for 12dB SN (108MHz ~ 134MHz, AM)(Left band)
	0.2uV for 12dB SN (136MHz ~ 174MHz, FM)
	0.25uV for 12dB SN (168MHz ~ 180MHz, FM)
	0.2uV for 12dB SN (400MHz ~ 480MHz, FM)
	0.25uV for 12dB SN (480MHz ~ 520MHz, FM)
	Squelch sensitivity: 0.16uV
	Selectivity: 2KHz/30KHz (-6dB/-60dB)
	Audio output: 8Ω, 2W
	Audio distortion＜5%
	AF output impedance: 4~16Ω
Transmitter	RF Power Amplifier:RF Power Mosfet
	Output power: 50W/25W/10W/VHF ; 40W/25W/10W/UHF
	Modulation type: Variable Reactance
	Max. modulation deviation: ≤5KHz/2.5KHz
	Spurious emission: ≥ -60dB (144MHz/440MHz)
	Microphone impedance: 2KΩ
	Modulation distortion: ＜3%/1000Hz

Warranty card

Note:

1. This guarantee card to be kept by the user, no replenishment if lost.
2. This warranty card is only applicable to Mobile radio of the above-listed model and serial number.
3. The warranty card shall be filled and chopped by the dealer, or it is invalid.
4. One-year guarantee, Charger, ear-phone,antenna and cable are not under guarantee.
5. The user can get repairing service from the followingways:
   - Go to the shop where you buy the machine.
   - Our local repairing agents.
   - Send back to our company.

Customer's name: Gender:

Add and postal code:

Customer's Tel:

Model:

Serial number:

Purchasing date:

Invoice No.:

Dealer: Stamp:

Add and postal code of the dealer:

Contact Tel:

Handling people:

EU Warning Statement
Use the Mobile RADIO in the environment with the temperature between -10℃ and 55℃, otherwise, it may damage your radio. It can be operating under 2000m.

Hereby, We, declare that the radio equipment type Mobile Radio is compliance with RED Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address: www.XXXXX.com

RF Exposure Warning Statements:
This equipment complies radiation exposure limits set forth for an uncontrolled environment. This equipment shall be installed and operated with minimum distance 189.5 cm between the radiator & body.

FCC Warning Statement
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 including received 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.

RF Exposure and Separation Distance
This radio transmitter has been approved by FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

External Antenna:
Maximum Antenna Gain: 3 dBi
Antenna Impedance: 50 Ohms

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