

QUAD-BAND *COLOR SCREEN*
FM TRANSCEIVER



USER'S MANUAL

**Thank you for your purchase of the product.
This quad-band FM transceiver will deliver instant reliable communication.
Please read this manual carefully before use!**

BEFORE PROCEEDING INSURE:

- Qualified technicians shall service this equipment only. Do not modify the radio for any reason.
- Use only original supplied or approved accessories.
- Turn off your radio prior to entering any area with explosive and flammable materials. Do NOT USE your transceiver at a gas/fuel station.
- Do not expose the radio to direct sunlight over a long time, nor place it close to a heating source.
- If the unit emits smoke or an odor, you should immediately cut off the power supply. Then send the radio to the nearest service center or dealer.
- Do not operate the mobile transceiver on high power unless it is necessary. Do not transmit for long periods of time, as it may overheat the transceiver.
- Keep the unit away from dusty, damp and wet environments.

TABLE OF CONTENTS

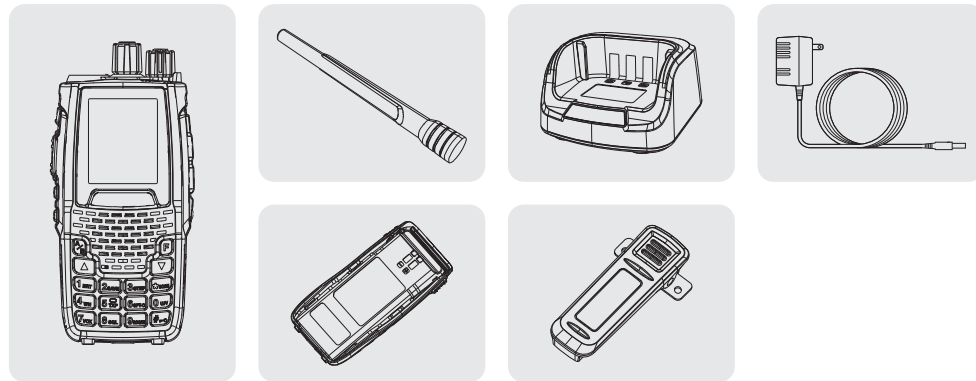
GETTING STARTED	1	OTHER SETTINGS	24
Unpacking and Inspecting	1	Toggle from High to Low Power	24
Overview	2	Storing an FM Radio Station and Scanning	24
Color Display and Icon Descriptions	4	Keypad Lock-out	24
BASIC SHORTCUTS AND USE	5	PTT ID Setting	24
Pound # Key (Keypad Lock).....	5	DTMF RX Settings	24
Star * Key	5	DTMF TX Settings	24
Turning the unit ON	5	Remote Stun	25
Turning the unit OFF	5	Remote Kill	25
Adjusting the volume	5	Remote Revive	26
Making a call	6	DTMF Receive Settings, Transmit Setting	26
Channel selection	6	2TONE Receive Settings, Transmit Setting	26
Monitor Both VFO & MR Modes.....	7	5Tone Receive Settings, Transmit Setting.....	27
MENU QUICK REVIEW	8	Scanning modes.....	27
Quick Menu Settings	8	TECHNICAL SPECIFICATIONS	28
Menu definitions	15		
PROGRAMMING	23		
Frequency Mode vs. Channel Mode	23		

GETTING STARTED

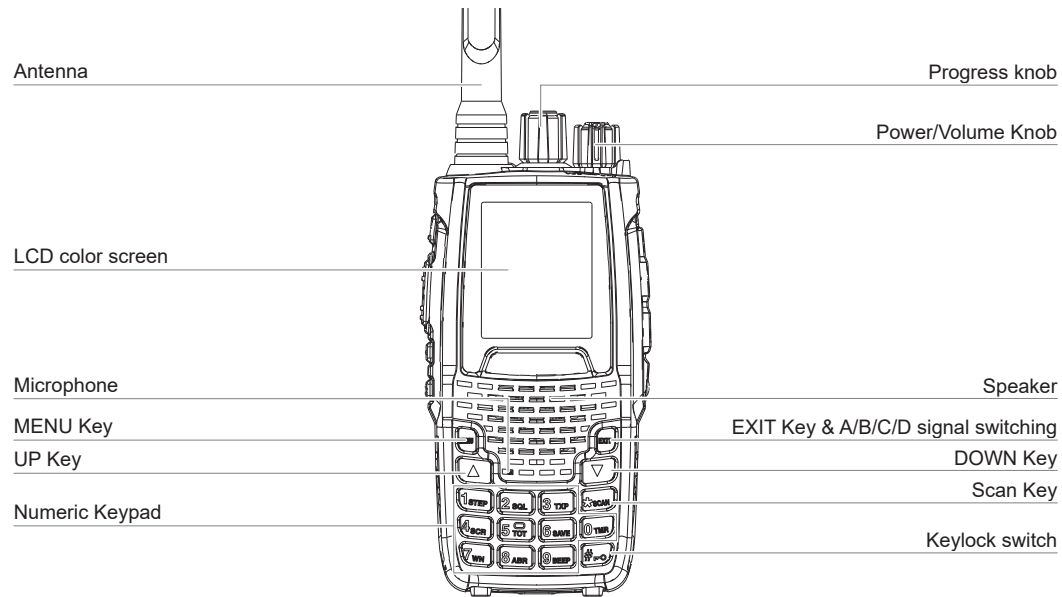
■ Unpacking and Inspecting

- Please check the packaging of your radio for any signs of damage.
- Carefully open the box, and confirm you received the items listed below.
- If you find the radio or the included accessories are damaged or lost, immediately contact your dealer.

What's in the Box



■ Overview

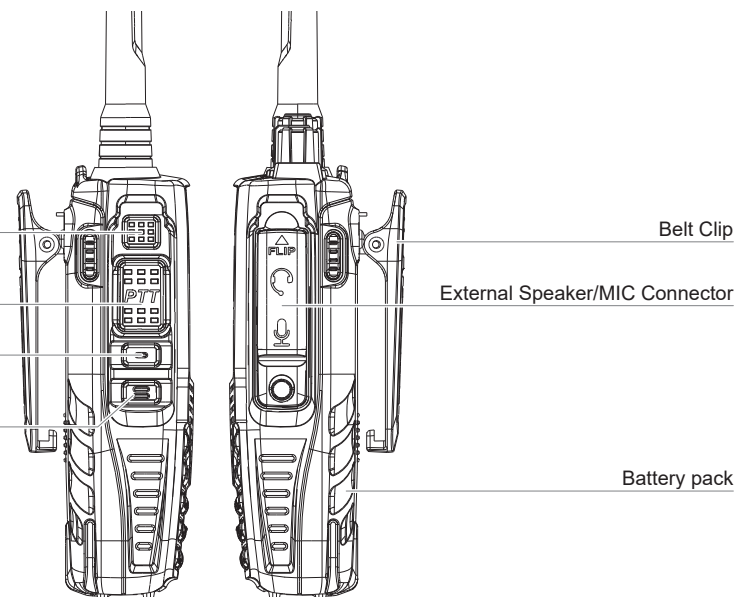


VFO/MR Key
Long press to alarm

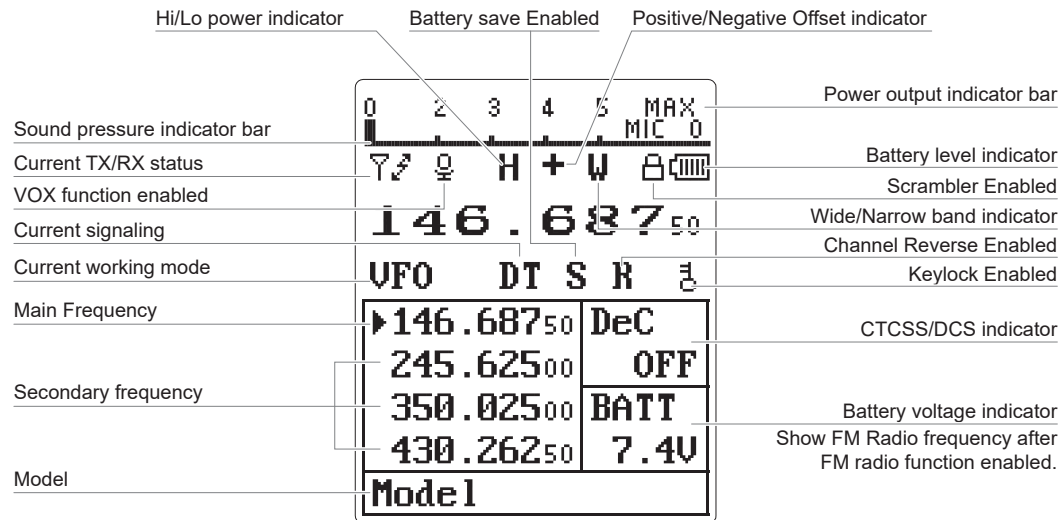
PTT Key (Push to talk)

FM Key
FM radio function key

Monitor Key [MONI]



■ Color Display and Icon Descriptions



BASIC SHORTCUTS AND USE

■ Pound # Key (Keypad Lock)

To enable or disable the keypad lock, press and hold the [#] key for about two seconds.

A quick toggle of the # will alternate power levels from High power to Low power.

The keypad lock will lock both the main radio buttons itself.

The PTT and MONI Buttons will not be locked when enabled.

■ Star * Key

A short momentary press of the key enables the reverse function (reverses the TX/RX settings according to Offset settings).

When listening to broadcast FM a momentary press will start the scanning. Scanning in broadcast FM will stop as soon as an active station is found.

To enable scanning, press and hold the [*SCAN] key for about two seconds.

■ Turning the unit ON

To turn the unit on, simply push and hold the power/volume knob until it turns on. If your radio powers on correctly there should be an audible tone after about one second and the display will show a message or flash the LCD depending on settings.

■ Turning the unit OFF

To turn the unit off, simply push and hold the power/volume knob until it turns off. The unit is now off.

■ Adjusting the volume

To turn up the volume, turn the volume knob clockwise.

To turn the volume down, turn the volume knob counter-clockwise.

⚠ By using the monitor function (MONI button), you can more easily adjust your volume by adjusting it to the un-squelched static.

■ Making a call

Press and hold the PTT button to transmit. While transmitting, speak approximately 3-5cm (1-2 inches) from the microphone. When you release the PTT your transceiver will go back to its receive mode.

■ Channel selection

There are two modes of operation: Frequency (VFO) mode, and Channel or Memory (MR) mode.

For everyday use, Channel (MR) mode is going to be a whole lot more practical than Frequency (VFO) mode. However, Frequency (VFO) mode is very handy for experimentation out in the field.

Frequency (VFO) mode is also used for programming channels into memory. For details on how to program your transceiver see Chapter “Programming”.

Ultimately which mode you end up using will depend entirely on your use case.

◇ Frequency (VFO) mode

In Frequency (VFO) mode you can navigate up and down the band by using the [▲] and [▼] keys (or rotating the selector knob).

Each press (or rotation click) will increment or decrement your frequency according to the frequency step you've set your transceiver to (Menu Item 1: Step).

You can also input frequencies directly on your numeric keypad with kilohertz accuracy. However, the radio will floor to the nearest frequency that corresponds to your frequency step, in other words, when you input frequencies with greater than 1kHz resolution (such as 145.6875 MHz in the example below), always round your input up.

⚠ *Just because you can program in a channel does not mean you're automatically authorized to use that frequency.*

⚠ *Transmitting on frequencies you're not authorized to operate on is illegal, and in most jurisdictions a serious offence. If you get caught transmitting without a license you can and will get fined, and in worst case sent to jail.*

⚠ *However, it is legal in most jurisdictions to listen. Contact your local regulatory body for further information on what laws, rules and regulations apply to your area.*

◇ Channel (MR) mode

The use of Channel (MR) mode is dependent on actually having programmed in some channels to use. To find out more on how to program channels see Chapter Programming.

Once you have channels programmed and ready, you can use the [▲] and [▼] keys to navigate between channels (or Rotate the Selector Knob).

If you have channels programmed with Transmit power set to Low, you can use the key to momentarily switch over to high power if you're having trouble getting through.

■ Monitor Both VFO & MR Modes

You can toggle from VFO and MR (Memory Recall) mode by pressing the [VFO/MR] button.

The VFO/MR mode will only toggle on the current selected A/B/C/D line – while the other channel lines will remain on channel or memory mode as they were selected.

This allows you to monitor channel and frequency mode simultaneously.

MENU QUICK REVIEW

■ Quick Menu Settings

To set the Menu options use the **[MENU]** Key to select and confirm the changes, while rotating the selector knob (or using the **[▲]/[▼]** keys) will change your settings.

0. **[Enter Menu]+[0]: TMR**

This mode selects what displays are monitored in the background besides the primary selected channel. You can mix and match between all or partial channels to allow dual, tri, or quad watch.

1. **[Enter Menu]+[1]: STEP**

Set the frequency increments step in VFO mode: 2.5kHz, 5kHz, 6.25kHz, 10kHz, 12.5kHz, 25kHz selectable.

2. **[Enter Menu]+[2]: SQL**

Sets the receiver squelch level: 0 is OFF, 1 is the lowest setting through 9 which is the highest setting.

3. **[Enter Menu]+[3]: TXP**

Sets the transmit power setting from HIGH to LOW.

4. **[Enter Menu]+[4]: SCR**

Scrambler (Optional Function)

Please confirm with the supplier before use whether this function can be used.

5. **[Enter Menu]+[5]: TOT**

Transmission time-out timer. Sets the maximum transmit time from 15 to 600 seconds (15 second steps).

6. **[Enter Menu]+[6]: SAVE**

Turns power save mode OFF or ON.

7. **[Enter Menu]+[7]: WN**

WIDE or NARROW band width settings (12.5/25kHz).

8. **[Enter Menu]+[8]: ABR**

Unused Setting.

9. **[Enter Menu]+[9]: BEEP**

Turns key beeps OFF or ON.

10. **[Enter Menu]+[1]+[0]: R-DCS**

DCS receive/squelch settings. Options include the D023N-D754N positive sequence and the D023I-D754I reversed sequence.

11. **[Enter Menu]+[1]+[1]: R-CTCS**

CTCSS receive/squelch settings. Selectable from 67.0HZ-254.1HZ. you can use the keypad to quickly enter in the desired setting.

12. **[Enter Menu]+[1]+[2]: T-DCS**

DCS transmit settings. Options include the D023N-D754N positive sequence and the D023I- D754I reversed sequence.

13. **[Enter Menu]+[1]+[3]: T-CTCS**

CTCSS transmit settings. Selectable from 67.0Hz-254.1Hz. you can use the keypad to quickly enter in the desired setting.

14. **[Enter Menu]+[1]+[4]: D-SUB**

Turns CTCSS/DCS code display OFF or ON.

15. **[Enter Menu]+[1]+[5]: DTMFST**

DTMF transmit tone settings.

• **OFF** : No tones heard through the speaker when transmitting.

• **KEY** : Only manually keyed DTMF codes are heard.

• **ANI** : Only automatically keyed DTMF codes are heard.

• **BOTH** : All DTMF codes are heard.

16. **[Enter Menu]+[1]+[6]: BCL**

Busy channel lock-out. If you have this turned on the transmitter will not transmit if a channel is receiving at the time.

17. **[Enter Menu]+[1]+[7]: SC-ADD**

Scan settings.

• **OFF**: This removes the channel from the scan list.

• **ON**: This adds the channel to scanning list.

18. **[Enter Menu]+[1]+[8]: SC-REV**

Scanning settings.

• **TO** : Time out scan, after the stopping on an active signal, scanning will resume after a few seconds.

• **CO** : Scanning will stop on a carrier channel and will resume after the carrier channel stops receiving.

• **SE** : Scanning will stop once an active carrier channel is found.

19. [Enter Menu]+[1]+[9]: OPTSIG

Turn on the optional signaling. OFF the channel or mode will not use optional signaling.

- **DTMF** : DTMF signaling required.
- **2TONE** : 2 tone signaling required.
- **5TONE** : 5 tone signaling required.

(PC programming is required to specify the DTMF, 2Tone, and 5Tone settings.)

20. [Enter Menu]+[2]+[0]: SPMUTE

Squelch settings when combining standard and optional tones.

- **QT** : The squelch will open for just a CTCSS or DCS Receive tone.
- **AND** : This requires both the optional tone settings (Menu 20) and CTCSS/DCS settings to be received.
- **OR** : If a either the DCS/CTCSS or optional signaling is received the squelch will open.

21. [Enter Menu]+[2]+[1]: PTT-ID

PTT-ID transmit setting.

- **OFF** : no ID code sent when transmitting.
- **BOT** : send ID code at Beginning of Transmit.

- **EOT** : send ID code at End of Transmit.
- **BOTH** : send ID code at both beginning and end of transmit.

(PTTID code information can only be set by the PC software)

22. [Enter Menu]+[2]+[2]: PTT-LT

PTT-ID transmit delay setting. (Delay Time range is 0-30 seconds.). This is the delay time before transmitting the PTTID.

23. [Enter Menu]+[2]+[3]: S-INFO

Signal information and automatic dialing memory. 1-15 group signal code/decode memory. The memory list is programmed through software.

24. [Enter Menu]+[2]+[4]: EMC-TP

Alarm mode settings.

- **ALARM** : turns on the alarm sound on the device itself.
- **ANI** : Sends the Alarm and PTT ID through the Transmitter.
- **BOTH** : combines both of the options above.
- **OFF** : Disables alarm.

25. [Enter Menu]+[2]+[5]: EMC-CH

Alarm channel setting. This is the channel that the alarm will transmit the PTTID and Alarm sound on.

26. [Enter Menu]+[2]+[6]: SIG-BP

Pager Ring at Reception of Matching 2Tone/5Tone/DTMF. (on/off)

27. [Enter Menu]+[2]+[7]: CHNAME

Channel name edit.

28. [Enter Menu]+[2]+[8]: CA-MDF

Display Mode (Display A)

- **FREQ** : displays Frequency.
- **CH** : displays channel number.
- **NAME** : displays assigned channel name.

29. [Enter Menu]+[2]+[9]: CB-MDF

Display Mode (Display B)

- **FREQ** : displays Frequency.
- **CH** : displays channel number.
- **NAME** : displays assigned channel name.

30. [Enter Menu]+[3]+[0]: CC-MDF

Display Mode (Display C)

- **FREQ** : displays Frequency.
- **CH** : displays channel number.

- **NAME** : displays assigned channel name.

31. [Enter Menu]+[3]+[1]: CD-MDF

Display Mode (Display D)

- **FREQ** : displays Frequency.
- **CH** : displays channel number.
- **NAME** : displays assigned channel name.

32. [Enter Menu]+[3]+[2]: LANGUA

Language Display Mode (English or Chinese)

33. [Enter Menu]+[3]+[3]: VOICE

Voice prompt function

- **OFF** : No voice prompt.
- **ENG** : English voice prompt selected.
- **CHI** : Chinese voice prompt selected.

34. [Enter Menu]+[3]+[4]: VOX

VOX function

Sets the VOX sensitivity from 1 to 10 levels or turn OFF.

35. [Enter Menu]+[3]+[5]: VOX-T

sets the delay time from the disappearance of the voice signal until the stop of transmission after VOX is launched. (0 > 20 seconds)

36. [Enter Menu]+[3]+[6]: AUTOLK

Keypad auto-lock setting. This activates the

keypad auto-lock feature, which lock the keypad after 8 seconds of no use; pressing the # key for 2 seconds will release the auto lock.

37. [Enter Menu]+[3]+[7]: ST-FC

Status (Top) Bar Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

38. [Enter Menu]+[3]+[8]: MF-FC

Primary Frequency Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

39. [Enter Menu]+[3]+[9]: SFA-FC

Channel A Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

40. [Enter Menu]+[4]+[0]: SFB-FC

Channel B Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

41. [Enter Menu]+[4]+[1]: SFC-FC

Channel C Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

42. [Enter Menu]+[4]+[2]: SFD-FC

Channel D Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

43. [Enter Menu]+[4]+[3]: SUB-FC

CTCSS/DCS code Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

44. [Enter Menu]+[4]+[4]: FM-FC

Battery voltage/FM Radio Frequency Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

45. [Enter Menu]+[4]+[5]: SIG-FC

Status (Bottom) Bar Display Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

46. [Enter Menu]+[4]+[6]: MENUFC

On Screen Menu Color (Text): Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

47. [Enter Menu]+[4]+[7]: TX-FC

Transmit Active Channel Text Color: Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

48. [Enter Menu]+[4]+[8]: RX-FC

Receive Active Channel Text Color: Color options are BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY.

49. [Enter Menu]+[4]+[9]: MEM-CH

Saves the selected channel.

50. [Enter Menu]+[5]+[0]: DEL-CH

Deletes the selected channel.

51. [Enter Menu]+[5]+[1]: SFT-D

Frequency difference direction setting.

- **OFF** : no frequency difference.

- **(+)** : Transmit offset amount will be a positive offset (higher than the receive frequency).

- **(-)** : Transmit offset will be a negative offset (amount will be lower than the receive frequency).

52. [Enter Menu]+[5]+[2]: OFFSET

Difference between the transmit and receive frequency.

53. [Enter Menu]+[5]+[3]: ANI

Displays the radio ID code. Code only can set by PC software.

54. [Enter Menu]+[5]+[4]: ANI-L

ID code length. Length = 3, 4, 5.

55. [Enter Menu]+[5]+[5]: REP-S

Tone burst repeater settings. Pressing CALL will send a predetermined tone. Options are 1000 Hz, 1450 Hz, 1750 Hz, 2100 Hz.

56. [Enter Menu]+[5]+[6]: TMR-MR

Transmit Delay Return time. Delay time before returning to the primary channel after the secondary signal is clear. (PTT Return Time)

57. [Enter Menu]+[5]+[7]: STE

Squelch Tail Elimination at the end of a received signal. Requires both transmitting radios to have the option ON.

58. [Enter Menu]+[5]+[8]: RP-STE

Repeater Squelch Tail Elimination requires a repeater with this function ON. (Reverses the CT/DCS settings at the end of a transmission to quickly turn of the squelch)

59. [Enter Menu]+[5]+[9]: RPT-DL

Repeater Squelch Tail Eliminator Delay time.
(use with Menu 46)

60. [Enter Menu]+[6]+[0]: DTMF-G

Adjust the gain of the DTMF tones. Selectable from 0-15. 0 being the quietest level and 15 being the loudest modulated DTMF tones.

61. [Enter Menu]+[6]+[1]: TMR-TX

Transmit in multi-standby.

- **FIXED** : Set current frequency as primary frequency.
- **TRACK**: Set current frequency as track frequency.

62. [Enter Menu]+[6]+[2]: RESET

Reset all VFO settings or ALL settings. (channels deleted and VFO settings cleared)

■ Menu definitions

0	TMR	Transmit Multi Receive	M+A	This mode selects what displays are monitored in the background besides the primary selected channel. You can mix and match between all or partial channels to allow dual, tri, and quad watch. Selected Memory + Displays (A,B,C,D) M = Selected Memory A = Display A B = Display B C = Display C D = Display D
			M+B	
			M+C	
			M+D	
			M+A+B	
			M+A+C	
			M+A+D	
			M+B+C	
			M+B+D	
			M+C+D	
			M+A+B+C	
			M+A+B+D	
			M+A+C+D	
M+B+C+D				
A+B+C+D				
1	STEP	Frequency Step Size Setup	2.5 to 25kHz	2.5, 5, 6.25, 10, 12.5, 25kHz
2	SQL	Squelch Level	00 > 09	10 squelch levels 00 = minimum / normally open
3	TXP	Transmit Power	High	Full Power
			Low	Reduced Power

4	SCR	Scrambler	1 > 8 group	Set scrambler function enabled for selected group (1~8 group)
			OFF	Scrambler Function Disabled
5	TOT	TX Time Out Timer	15 > 600 secs	15 second steps
6	SAVE	Power save mode	ON	Power save mode Enabled
			OFF	Power save mode Disabled
7	WN	Bandwidth	Wideband	25.0 kHz
			Narrowband	12.5 kHz
8	ABR	Auto backlight	OFF	Backlight always ON
			1 > 50 secs	Set backlight OFF Time
9	BEEP	Keypad Voice Prompt	ON / OFF	Turn ON / OFF keypad voice prompt
10	R-DCS	Receive - Digital Coded Squelch	D023N > D754I	Squelch opens when proper DCS code is detected
			OFF	No DCS code required
11	R-CTCS	Receive - Analog Tone Squelch	67.0 > 254.1Hz	Squelch opens when proper CTCSS tone detected
			OFF	No CTCSS tone required
12	T-DCS	Transmit - DCS Code	D023N > D754I	Transmits specified code
			OFF	No DCS code transmitted
13	T-CTCS	Transmit - CTCSS Code	67.0 > 254.1 Hz	Transmits specified tone
			OFF	No CTCSS tone transmitted
14	D-SUB		ON	CTCSS/DCS code display enabled
			OFF	CTCSS/DCS code display disabled

15	DTMFST	Determines when DTMF codes are heard through speaker	OFF	No DTMF tone heard
			DS-ST	Only manually keyed DTMF codes are heard
			ANI-ST	Only automatically keyed DTMF codes are heard
			DT-ANI	All DTMF codes are heard
16	BCL	Busy Channel Lockout	ON	Prevents transmit if active signal on the channel
			OFF	No lockout
17	SC-ADD	Add Scan Channel	ON	Add channel to scan list
			OFF	Remove channel from scan list
18	SC-REV	Scan Resume Method	TO	(Time Operation) Scan stops when signal detected. The scan resumes after approximately 5 seconds (even if the channel is still active).
			CO	(Carrier Operation) Scan stops when signal detected. Scan resumes when signal disappears.
			SE	(Search Operation) Scan stops when signal detected. Scanning will not resume.
19	OPTSIG	Optional Signaling	OFF	No optional signaling
			DTMF	DTMF signaling selected
			2TONE	2TONE signaling selected
			5TONE	5TONE signaling selected

20	SPMUTE	Speaker Mute Settings	QT	Squelch opens for CTCSS/DCS tones only.
			AND	Squelch opens when CTCSS/DCS tone is recognized along with the optional signaling.
			OR	Squelch opens when either the CTCSS/DCS tone OR the optional signaling is recognized.
21	PTT-ID	PTT ID - When to send	OFF	Do not send
			BOT	Send at Beginning of Transmission
			EOT	Send at the End of Transmission
			BOTH	Send at both Beginning and End
22	PTT-LT	PTT ID - Transmit Delay	0 > 30	Set Delay Time before transmitting PTT-ID
23	S-INFO	Auto Group Dialing	Group Signal Code Memory	1 > 15 (Can only be set with software)
24	EMC-TP	Alarm Mode	ALARM	Turn on Alarm sound
			ANI	Send Alarm code and ID code
			BOTH	Both of the above
			OFF	Alarm Mode Completely Disabled
25	EMC-CH	Alarm Channel	000 > 199	Specified Alarm Channel
26	SIG-BP	Signal Beep	ON	Pager Ring at Reception of Matching 2Tone/5Tone/DTMF
			OFF	Tone OFF
27	CHNAME	Channel Name Edit		In Channel Mode, edit the Current Name

28	CA-MDF	Channel A Display Mode	FREQ	In Channel Mode, display the selected format in display A
			CH	
			NAME	
29	CB-MDF	Channel B Display Mode	FREQ	In Channel Mode, display the selected format in display B
			CH	
			NAME	
30	CC-MDF	Channel C Display Mode	FREQ	In Channel Mode, display the selected format in display C
			CH	
			NAME	
31	CD-MDF	Channel D Display Mode	FREQ	In Channel Mode, display the selected format in display D
			CH	
			NAME	
32	LANGUA	Language	English	Screen Prompts Display
			Chinese	
33	VOICE	Voice prompt	OFF	No voice prompt
			ENG	English voice prompt selected
			CHI	Chinese voice prompt selected
34	VOX	VOX function	OFF	VOX function disabled
			1 > 10	VOX sensitivity level

35	VOX-T	VOX delay time	0 > 20	Delay time from the disappearance of the voice signal until the stop of transmission after VOX is launched.
36	AUTOLK	Auto Keypad Lock	ON	Keypad Auto Lock Enabled
			OFF	Keypad Auto Lock Disabled
37	ST-FC	Status (Top) Bar Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
38	MF-FC	Primary Frequency Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
39	SFA-FC	Channel A Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
40	SFB-FC	Channel B Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
41	SFC-FC	Channel C Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
42	SFD-FC	Channel D Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
43	SUB-FC	CTCSS/DCS code Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
44	FM-FC	Battery volt./FM Radio Freq. Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
45	SIG-FC	Status (Bottom) Bar Display Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
46	MENUFC	On Screen Menu Color (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY

47	TX-FC	Color when the current activating frequency transmitting (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
48	RX-FC	Color when the current activating frequency receiving (Text)	Select Color	BLACK, WHITE, RED, BLUE, GREEN, YELLOW, INDIGO, PURPLE, GRAY
49	MEM-CH	Memorize Channel	000 > 199	Indicates channel number to be stored.
50	DEL-CH	Delete Channel	000 > 199	Indicates channel number to be deleted.
51	SFT-D	Frequency Shift Direction	OFF	No Offset (simplex)
			+	Plus frequency shift
			-	Minus frequency shift
52	OFFSET	Frequency Shift Offset Amount	00.00 > 69.99	Frequency shift in MHz
53	ANI	ANI ID Code		Can only be set with software
54	ANI-L	ANI Length	3, 4, 5	Length of ANI ID code
55	REP-S	Repeater Activation Tone	1000Hz, 1450Hz, 1750Hz, 2100Hz	Audible tone for repeater activation
56	TMR-MR	TMR - Return Time Delay to Primary Channel; Sets the PTT to the last received transmission channel. Time delay selectable	OFF	Function OFF - Transmits always on Primary Channel
			1 > 50 seconds	This is the delay time before returning to the primary channel after secondary signal is clear.
57	STE	Squelch Tail Elimination, Requires both radios have function ON.	OFF	Function OFF
			ON	Eliminates squelch tail at end of transmission.

58	RP-STE	Repeater Squelch Tail Elimination, Requires a repeater using this function.	OFF	Function OFF
			1 > 10	Delay Time
59	RPT-DL	Repeater squelch tail delay.	OFF	Function OFF
			1 > 10	Delay Time
60	DTMF-G	DTMF Gain/Audio Level	0 > 15	0 = Lowest Audio Gain; 15 = Highest Gain
61	TMR-TX	Transmit in multi-standby	FIXED	Set current frequency as primary frequency
			TRACK	Set current frequency as track frequency
62	RESET	Initialize to Factory Defaults	VFO	Menu Initialization
			ALL	Menu and Channel Initialization

PROGRAMMING

■ Frequency Mode vs. Channel Mode

Switch between Modes by Using the [VFO/MR] Button. These two modes have different functions and are often confused.

Frequency Mode (VFO)

Used for a temporary frequency assignment, such as a test frequency or quick field programming if permitted.

Channel Mode (MR)

Used for selecting preprogrammed channels.

⚠ *All programming must be initially done in the frequency mode (VFO) only. From there you have the option of assigning the entered data to a specific channel for access in the channel mode.*

⚠ *Call tones, TX/RX tones, squelch, and power settings are adjustable on saved channels in channel mode.*

⚠ *Programming channels are different from the VFO settings; the offset settings are not stored, instead you enter a TX frequency directly (e.g. 145.000 RX with an offset of (+). 600 Would be a TX frequency of 145.600).*

OTHER SETTINGS

■ Toggle from High to Low Power

A quick press the [# PTT] will alternate power levels from High power to Low power.

■ Storing an FM Radio Station and Scanning

Use PC software to store FM radio channels names, you can name the FM channel and instead of display the frequency your FM station will display the name. (software FM option (FM channels are not stored, only the channel names are)) Press the [*SCAN] Key to scan the FM radio.

■ Keypad Lock-out

Hold the [# PTT] for 2 seconds at standby to turn on/off the keypad lock-out function. (The Lock icon appears, when the radio is locked out)

■ PTT ID Setting

1. Use PC software to change PTT-ID code.
2. Set the Menu 18 settings on the radio to select the PTTID signal mode (2Tone, 5Tone, or DTMF).
3. Set the Menu 20 settings to select when the PTTID is transmitted.
4. Set the Menu 21 settings to program the PTTID transmit delay time.
5. When all the settings are set, when you transmit (Press the PTT) The radio will transmit the PTTID.

■ DTMF RX Settings

This radio has DTMF coding and decoding. Use the PC software to set the DTMF signal settings first.

■ DTMF TX Settings

In two-way radio systems, DTMF is most commonly used for automation systems and remote

control. A common example would be in amateur radio repeaters where some repeaters are activated by sending out a DTMF sequence (usually a simple single-digit sequence).

DTMF frequencies and corresponding codes

	1209Hz	1336Hz	1477Hz	1633Hz
697Hz	1	2	3	A - [MENU]
770Hz	4	5	6	B - [▲]
852Hz	7	8	9	C - [▼]
941Hz	*	0	#	D - [EXIT]

The product has a full implementation of DTMF, including the A, B, C and D codes. The numerical keys, as well as the [*SCAN] and [# PTT], keys correspond to the matching DTMF codes as you would expect. The A, B, C and D codes are located in the [MENU], [▲], [▼] and [EXIT] keys respectively (+).

Manually TX DTMF Tones: To manually send DTMF codes, press the key(s) while holding down the [PTT] key.

Automatically TX DTMF Tones: Save it to Memory and Transmit: You can also program a DTMF tone to the saved calling list (requires the PC

software) to the one of the 15 Memory call banks in the radio. To transmit select the Pre-set DTMF saved setting on Menu 22 and then press the [PTT] key to send the saved DTMF TX tone.

■ Remote Stun

First set the DTMF Remote Stun Tone and Master Control ID in Software: When your radio receives the DTMF Remote Stun Tone Sequence (Set by software) (Requires Menu 18 and 19 to accept DTMF signaling) it will command the radio to disable transmitting abilities. The Master ID station must first identify and send the PTTID (set in software as "Master ID") – once the Master Station identifies itself, the radio is set to receive command tones, if the Monitor Remote Stun tone is received - the radio will no longer be able to transmit. Both the master ID station and remote stun signal must be set up in software.

■ Remote Kill

First set the DTMF Remote Kill Tone and Master Control ID in Software: When your radio receives the DTMF Remote Kill Tone Sequence (Set by software) (Requires Menu 18 and 19 to

accept DTMF signaling) it will command the radio to disable transmitting and receiving. The Master ID station must first identify and send the PTTID (set in software as "Master ID") – once the Master Station identifies itself, the radio is set to receive command tones, if the Monitor Remote Kill tone is received - the radio will no longer be able to transmit or receive. Both the master ID station and remote stun signal must be set up in software.

■ Remote Revive

First set the DTMF Remote Revive Tone and Master Control ID in Software: When your radio receives the DTMF Remote Revive Tone Sequence (Set by software) (Requires Menu 18 and 19 to accept DTMF signaling) it will reactivate the radio after it has been remotely stunned or killed. The Master ID station must first identify and send the PTTID (set in software as "Master ID") – once the Master Station identifies itself, the radio is set to receive command tones, if the Monitor Remote Kill tone is received - the radio will be revived from a stun/kill command. Both the master ID station and remote stun signal must be set up in software.

■ DTMF Receive Settings, Transmit Setting

1. Press **[MENU]** Key select 18 OPTSIG, press **[MENU]** Key select DTMF function.
2. Press **[MENU]** Key select 22 S-INFO, press **[MENU]** Key select pre-code signal group (1-15). (The DTMF Signal must be saved first in the PC software setting under DTMF settings).
3. If properly set up (on Menu 18 and 19), your radio will open the squelch when it receives the required DTMG signal.
4. Press **[PTT]** Key to send the same DTMF you have selected in Menu 22.

■ 2TONE Receive Settings, Transmit Setting

1. Press **[MENU]** Key select 18 OPTSIG, press **[MENU]** Key select 2TONE function.
2. Press **[MENU]** Key select 22 S-INFO, press **[MENU]** Key select pre-code signal group (1-15). (The 2Tone Signal must be saved first in the PC software setting under 2TONE settings)
3. If properly set up (on Menu 18 and 19), your radio will open the squelch when it receives the

required 2TONE signal.

4. Press **[PTT]** Key to send the same 2TONE you have selected in Menu 22.

■ 5Tone Receive Settings, Transmit Setting

1. Press **[MENU]** Key select 18 OPTSIG, press **[MENU]** Key select 5TONE function.
2. Press **[MENU]** Key select 22 S-INFO, press **[MENU]** Key select pre-code signal group (1-15). (The 5Tone Signal must be saved first in the PC software setting under 5TONE settings)
3. If properly set up (on Menu 18, and 19), your radio will open the squelch when it receives the required 5TONE signal.
4. Press **[PTT]** Key to send the same 5TONE you have selected in Menu 22.

■ Scanning modes

The scanner is configurable to one of three ways of operation: Time, carrier or search, each of which is explained in further details in their respective section below.

Setting scanner mode

1. Press the **[MENU]** key to enter the menu.
2. Enter "17" on your numeric keypad to come to scanner mode.
3. Press the **[MENU]** key to select.
4. Use the **[▲]** and **[▼]** keys to select scanning mode.
5. Press the **[MENU]** key to confirm and save.
6. Press the **[EXIT]** key to exit the menu.

Time operation:

In Time Operation (TO) mode, the scanner stops when it detects a signal, and after a factory pre-set time out, it resumes scanning.

Carrier operation:

In Carrier Operation (CO) mode, the scanner stops when it detects a signal, and after a factory preset time with no signal it resumes scanning.

Search operation:

In Search Operation (SE) mode, the scanner stops when it detects a signal. To resume scanning you must press and hold the key again.

TECHNICAL SPECIFICATIONS

GENERAL

Specification	Value
Frequency Range (MHz)	VHF: 136~174MHz (220~270MHz) UHF: 400~480MHz (350~390MHz)
Memory channels	200
Frequency stability	±2.5ppm
Frequency step (kHz)	2.5K/5.0K/6.25K/10.0K/12.5K/25.0K
Squelch Setup	CARRIER / CTCSS / DCS / 5Tone / 2TONE / DTMF
Operating temperature	-20°C to +60°C
Operating voltage	7.4V DC±15%:
Dimension	62 x 128 x 35 mm
Weight	230g

RECEIVER

	Broadband	Narrow band
Sensitivity	≤0.25μV	≤0.35μV
Channel choice	≥70dB	≥60dB
Intermodulation	≥65dB	≥60dB
Spurious Rejection	≥70dB	≥70dB
Audio response	+1~-3dB (0.3-3KHz)	+1~-3dB (0.3~2.55KHz)
Signal to noise ratio	≥45dB	≥40dB
Audio Distortion	≤5%	
Audio output power	≥1W±10%	

TRANSMIT

	Broadband	Narrow band
Output power	4W	
Modulation Mode	16KΦF3E	11KΦF3E
Channel Power	≥70dB	≥60B
Signal to noise ratio	≥40dB	≥36dB
Parasitic harmonic	≥60dB	≥60dB
Audio response	+1--3dB (0.3-3KHz)	+1--3dB (0.3-2.55KHz)
Audio distortion	≤5%	

QUAD-BAND *COLOR SCREEN*
FM TRANSCEIVER