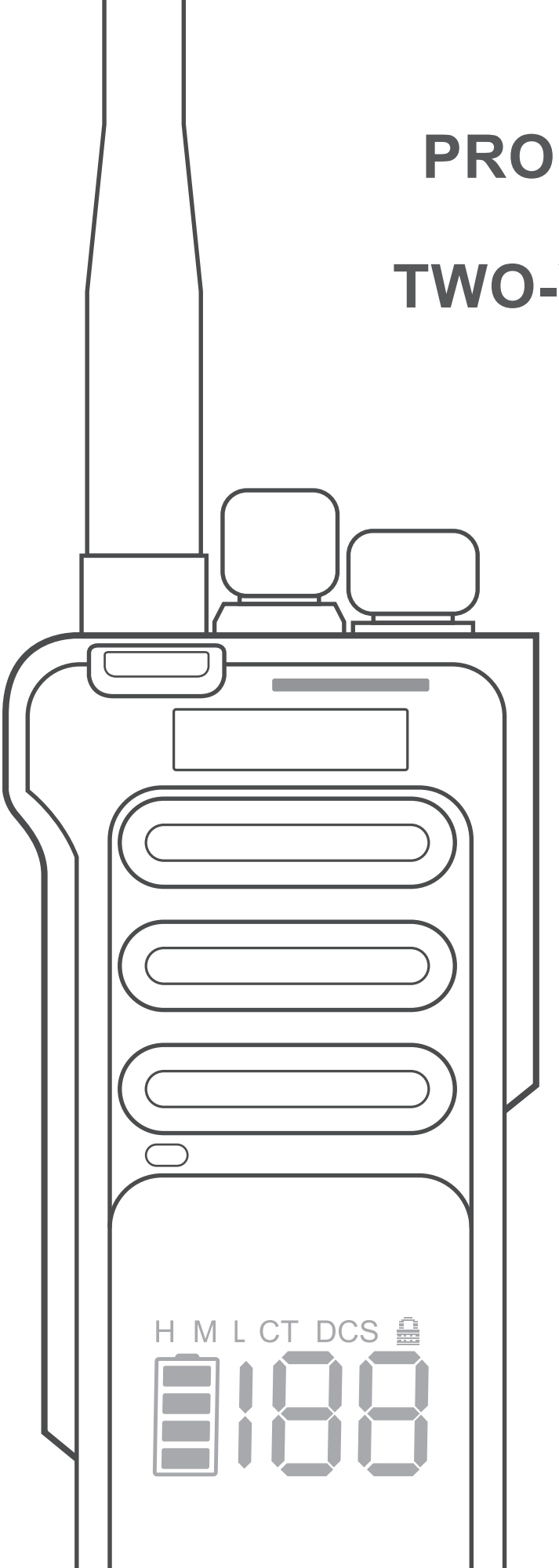
PROFESSIONAL HANDHELD TWO-WAY RADIO

USER'S MANUAL



Thank you very much for using our handheld two way radio. This radio of modern design is reasonable structure with stable functions. It is design to meet customers' needs for the high quality with easy operation and perfect capability. We believe this easy-to-use radio will provide you with dependable and reliable communications.

PRECAUTIONS

- Refer service to qualified technicians only.
- Do not operate the transceiver or charge a battery pack in an explosive atmosphere (gases, dust, fumes, etc.)
- Turn OFF the transceiver while talking on fuel or while parked in a gasoline service station.
- Do not modify or attempt to adjust this transceiver for any reason.
- Do not expose the transceiver to long periods of direct sunlight, nor place it close to heating appliances.
- Do not place the transceiver in excessively dusty, humid, and / or wet areas, nor on unstable surfaces.

SAFETY

It is important that the operator is aware of, and understands, hazards common to the operation of any transceiver.

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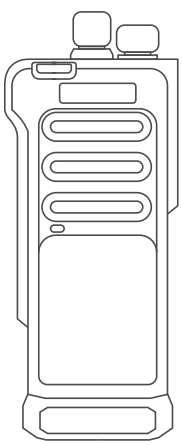
Unpacking And Checking Equipment

Carefully unpack the transceiver. We recommend that you identify the items listed in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.

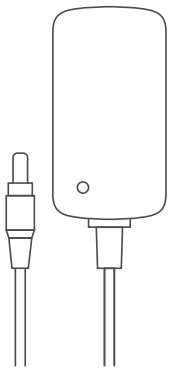
Supplied Accessories

Item	Quantity
(host) Radio	1
Antenna	1
Charger	1
Adaptor	1
Li–polymer Battery	1
Belt Clip	1
Hand Strap	1
User Manual	1

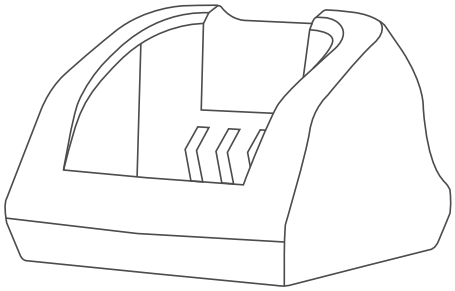


Radio

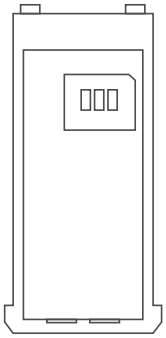
Antenna



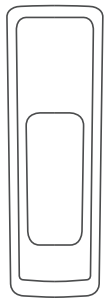
Adaptor



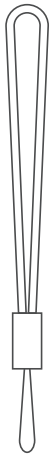
Charger



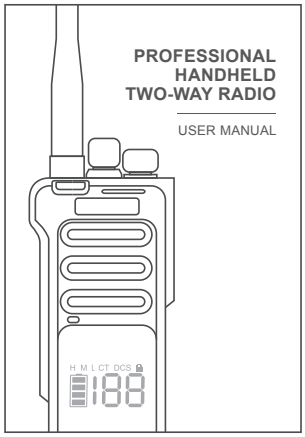
Li–polymer Battery



Belt Clip



Hand Strap



User Manual

Preparation

Charging the Battery Pack

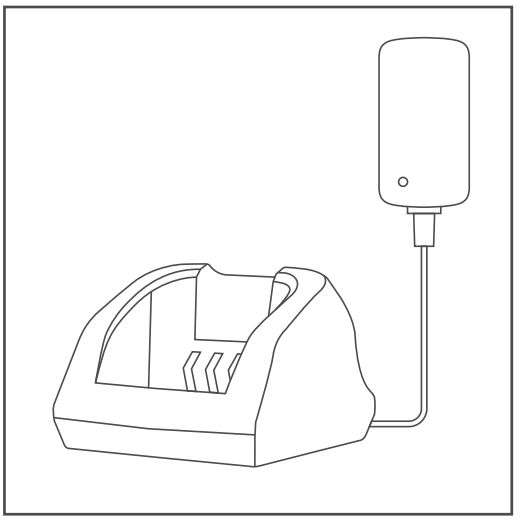
The battery pack is not charged at the factory, charge it before use. Initially charging the battery pack after purchase or extended storage (greater than 2 months) will not bring the battery pack to its normal operating capacity. After repeating the charge/discharge cycle two or three times, the operating capacity will increase to normal.

> ⚠ **CAUTION**
>
> - Do not recharge the battery pack if it is already fully charged. Doing so may cause the life of the battery pack to shorting or the battery pack may be damaged.
> - After recharging the battery pack, disconnect it from the charger. Charging the battery pack for more than 5 days may reduce the battery pack life due to overcharging.

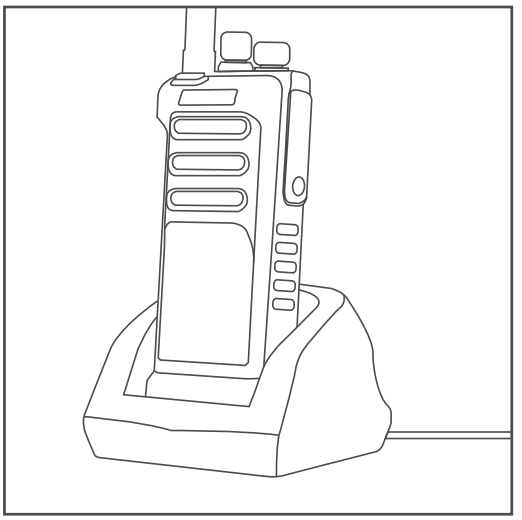
Note:

- The ambient temperature should be between 5 and 40℃ while charging is in progress. Charging outside this range may not fully charge the battery.
- Always switch OFF the transceiver equipped with a battery pack before charging. Using the transceiver while charging its battery pack will interfere with correct charging.
- The battery pack life is over when its operating time decreases even though it is fully and correctly charged. Replace the battery pack.

Plug the AC adaptor cable into the adaptor jack located on the rear of the charger.
Plug the AC adaptor into an AC outlet.

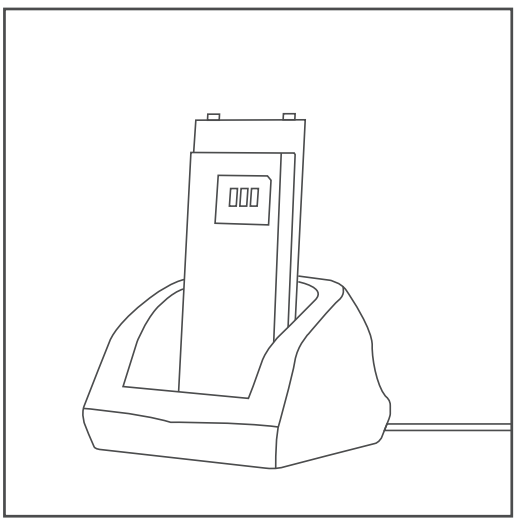


Slide the battery pack or transceiver with a battery pack into the charger.
Make sure the battery pack contacts are in contact with the charging terminals.
The charger LED lights and charging begins.



After charging the supplied battery pack for 8 hours, remove it or the transceiver equipped with it from the charger.
The charger does not turn OFF automatically after charging is completed.

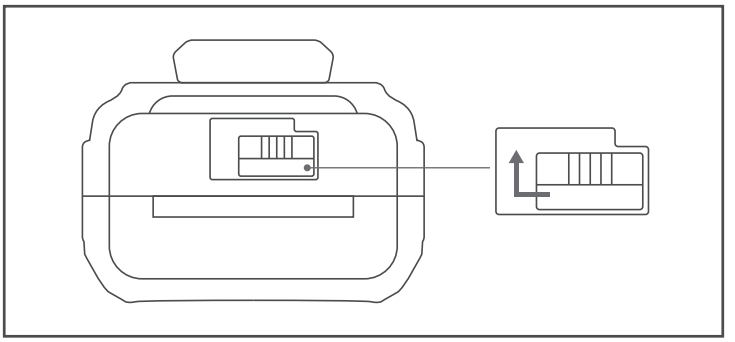
Unplug the AC adaptor from the AC outlet.

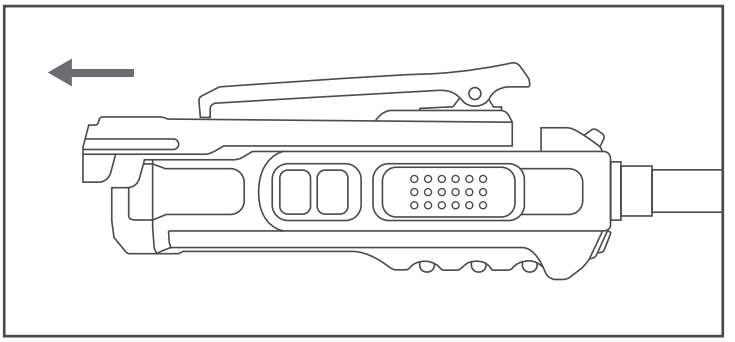


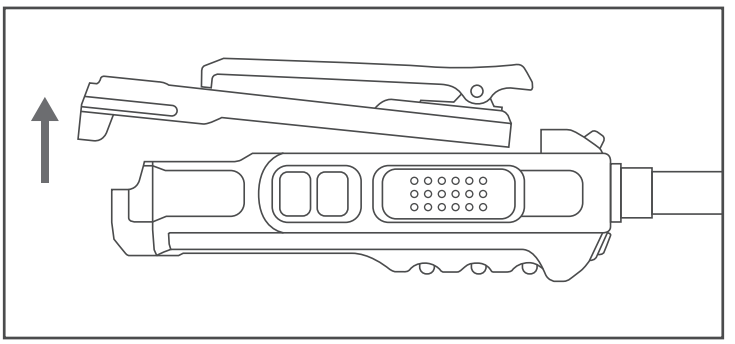
Installing/Removing the Battery Pack

⚠ CAUTION

- Do not short circuit the battery terminals or dispose of the battery by fire.
- Never attempt to remove the casing from the battery pack.

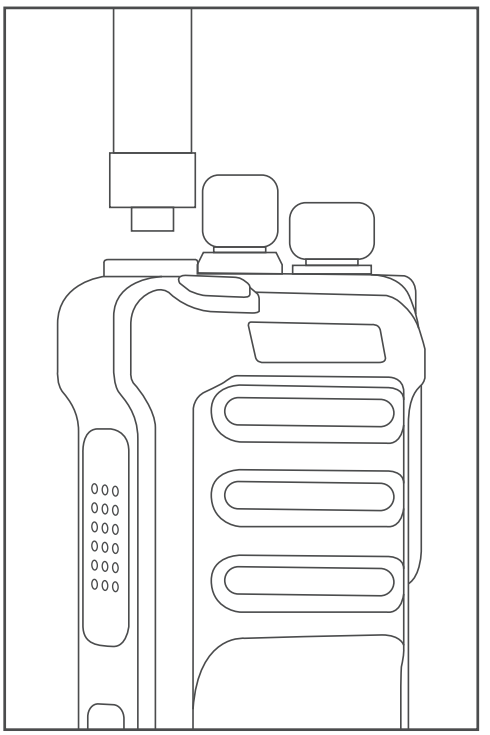






Installing the Antenna

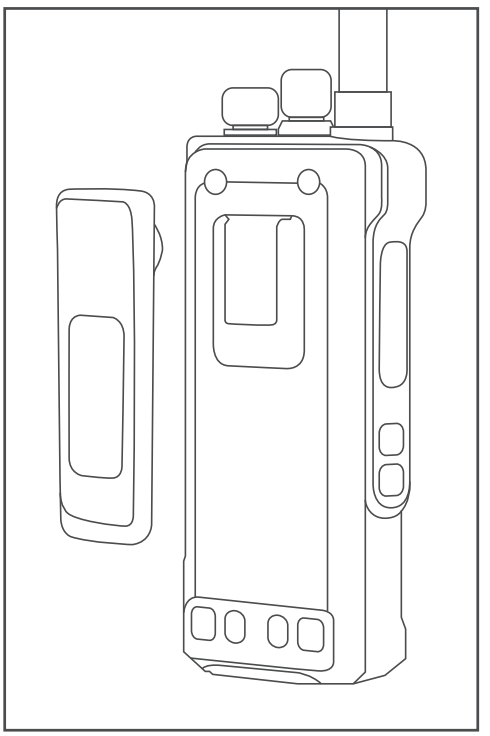
Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.



Note:
The antenna is neither an handle, a key ring retainer, nor a speaker/ microphone attachment point. Using the antenna in these ways may damage the antenna and degrade your transceiver's performance.

Installing the Belt Clip

If necessary, insert the belt clip at the back of battery pack.



Note:
If the belt clip is not installed, its mounting location may get hot during continuous transmission or when left sitting in a hot environment.

Installing the Cover over the Speaker/Microphone Jacks

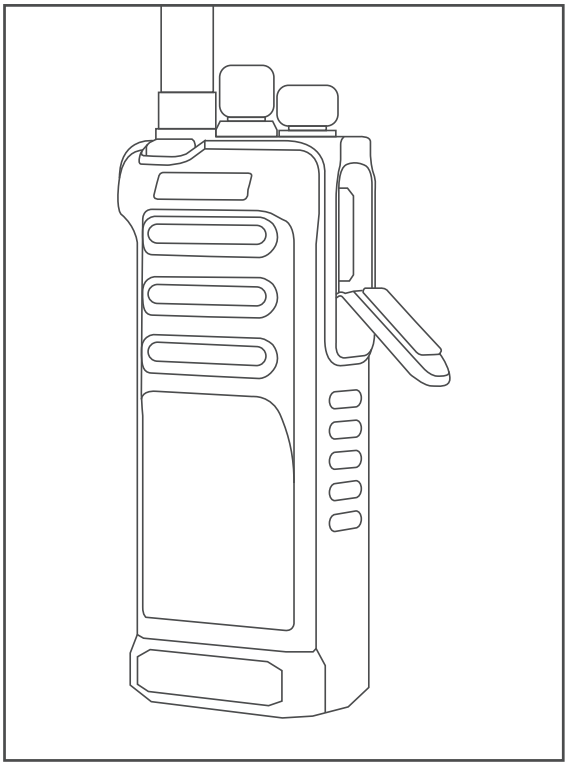
If you are not using a speaker/microphone, pls cover the speaker/microphone jacks.

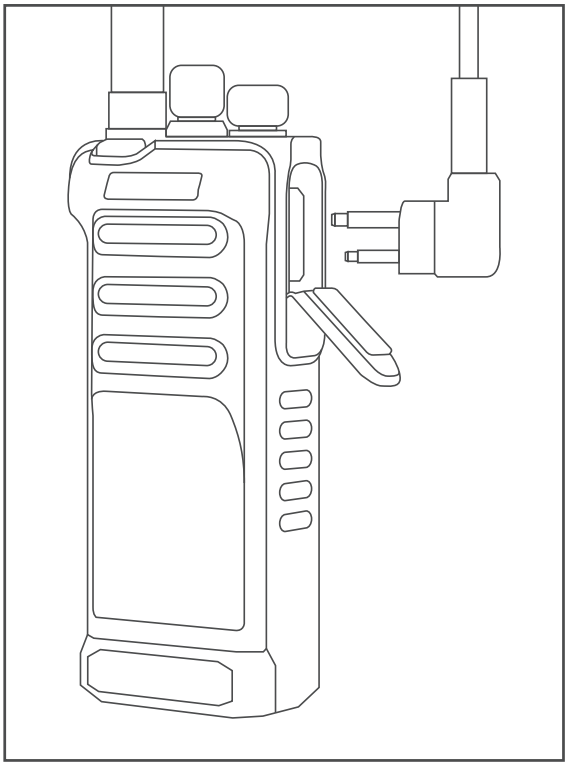
Note: To keep the transceiver water resistant, you must cover the speaker/microphone jacks with the supplied cover.

Installing the Optional Speaker/Microphone

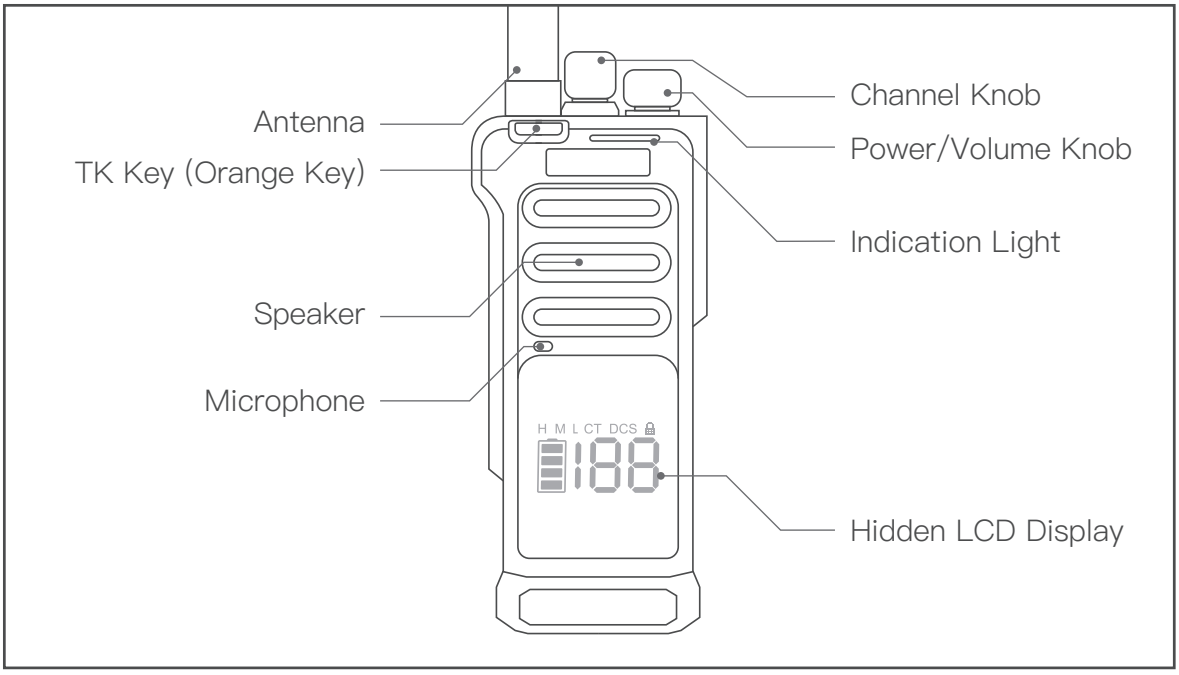
Insert the speaker/microphone plugs into the speaker/microphone jack.

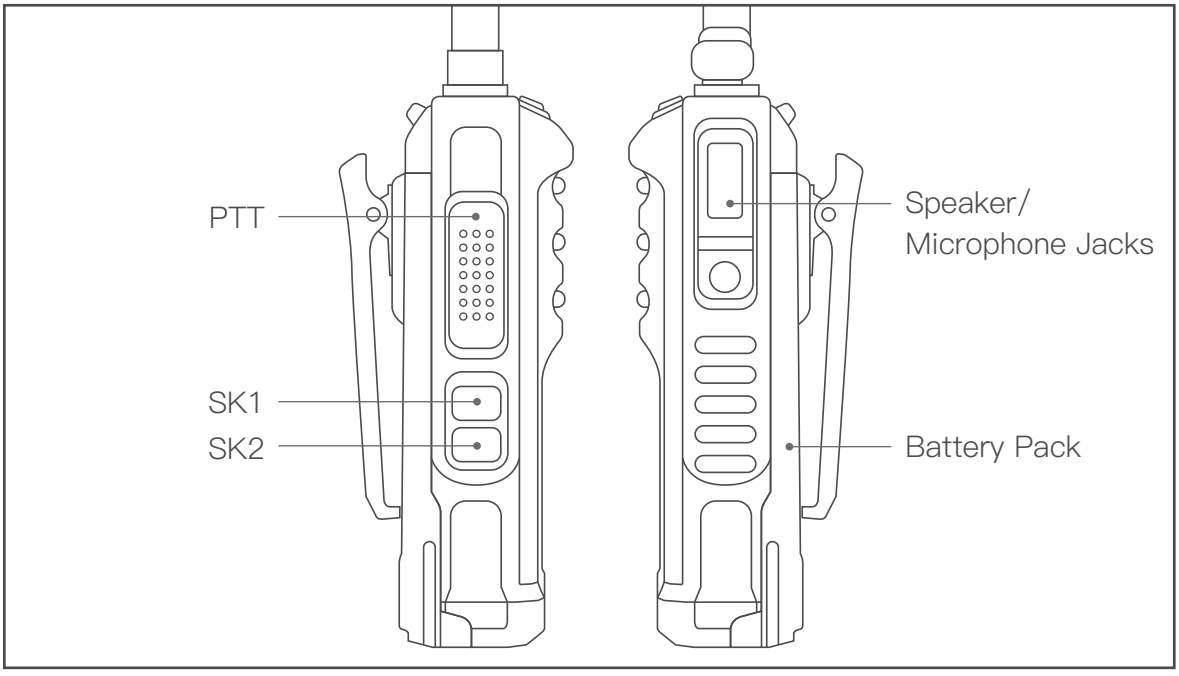
Note: The transceiver is not fully water resistant while using the speaker/microphone.



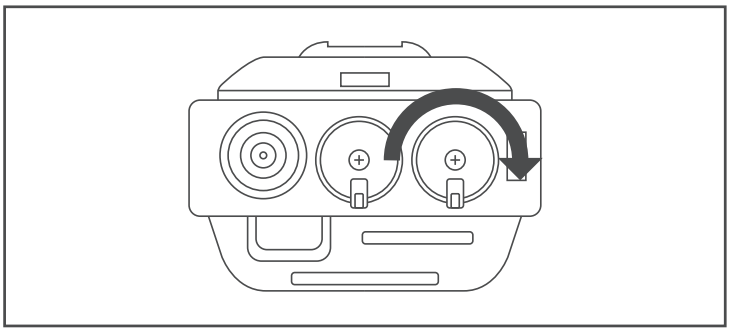


Radio Diagram

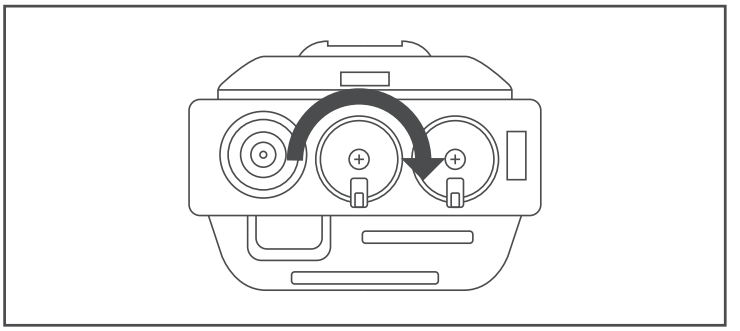




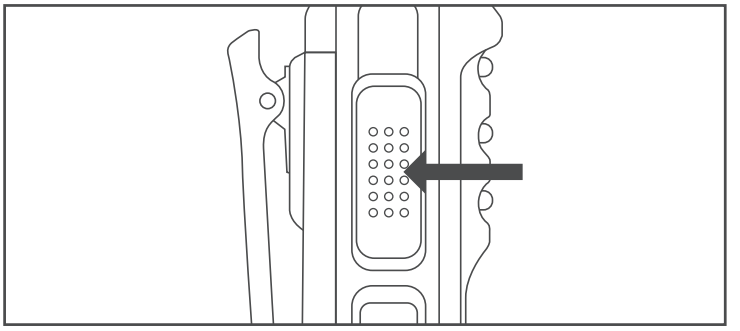
Basic Operation



Switch ON the transceiver by turning the Power/ Volume Knob clockwise.



Rotate the Channel Knob to select your desired channel.



To make a call, press and hold the PTT key, then speak to the microphone using your normal speaking voice.

Release the PTT key to receive.

Hidden LCD Display Icon Notes

Icon	Notes
H	High power
M	Middle power
L	Low power
CT	CTCSS
DCS	DCS
	Current channel locked
	Display current balance power of the battery. When the power of battery will be used up, only display , and indication light will flash red, and remind “ charge battery ” if open voice prompt
	The current channel number

Function Information Notes

1.CTCSS/DCS

CTCSS/DCS can be pre-programmed by programmable software in the transceiver’s channel. Set up a channel with unique CTCSS/DCS, to prevent unwanted conversations on the same frequency. If CTCSS/DCS has been set on the current channel, CTCSS/DCS match is required for the radio to unmute to an incoming signal. If CTCSS/DCS is not set, the radio can receive calls from all users operating on the same frequency.

Note:

Although using channels set up with CTCSS/DCS tone relieves you from listening to unwanted calls, it does not mean your calls will be private.

2. Output power

Long press TK key (Orange key) to switch power between high power, middle power and low power.

3. Wide/Narrow band

Wide band 25KHz, Narrow band 12.5KHz

4. Scan ADD/Delete

ADD: Add Scan

DEL: Delete Scan

5. Busy Channel Lockout (BCL)

This function can help avoid interference between radios operating on the same channel. When the channel is already in use, the radio will sound a continuous warning tone and return to Receive mode upon PTT press. To cancel the tone, release the PTT key.

6. Compander Function

Compander function can be turned on/off by program software in every effective channel. Voice companding technique is to compress the transmitted signals, and then expend the signals when they are received, which greatly reduce environmental background noise and improve voice quality.

OFF: Do not use compander function, the signals are transmitted directly without compression and expansion.

ON: Compander function is used, the signals are transmitted by way of compression and expansion, so as to improve voice quality.

Note: This function is only workable when the radio has voice companding technique.

7. Scrambler

Scrambler function can be turned on/off by program software in every effective channel. Scrambler is one of message encryption; it transmits the changed frequency spectrum through cepstrum, and the signal will be restored after being received so as to achieve privacy of your talk.

8. End tone elimination

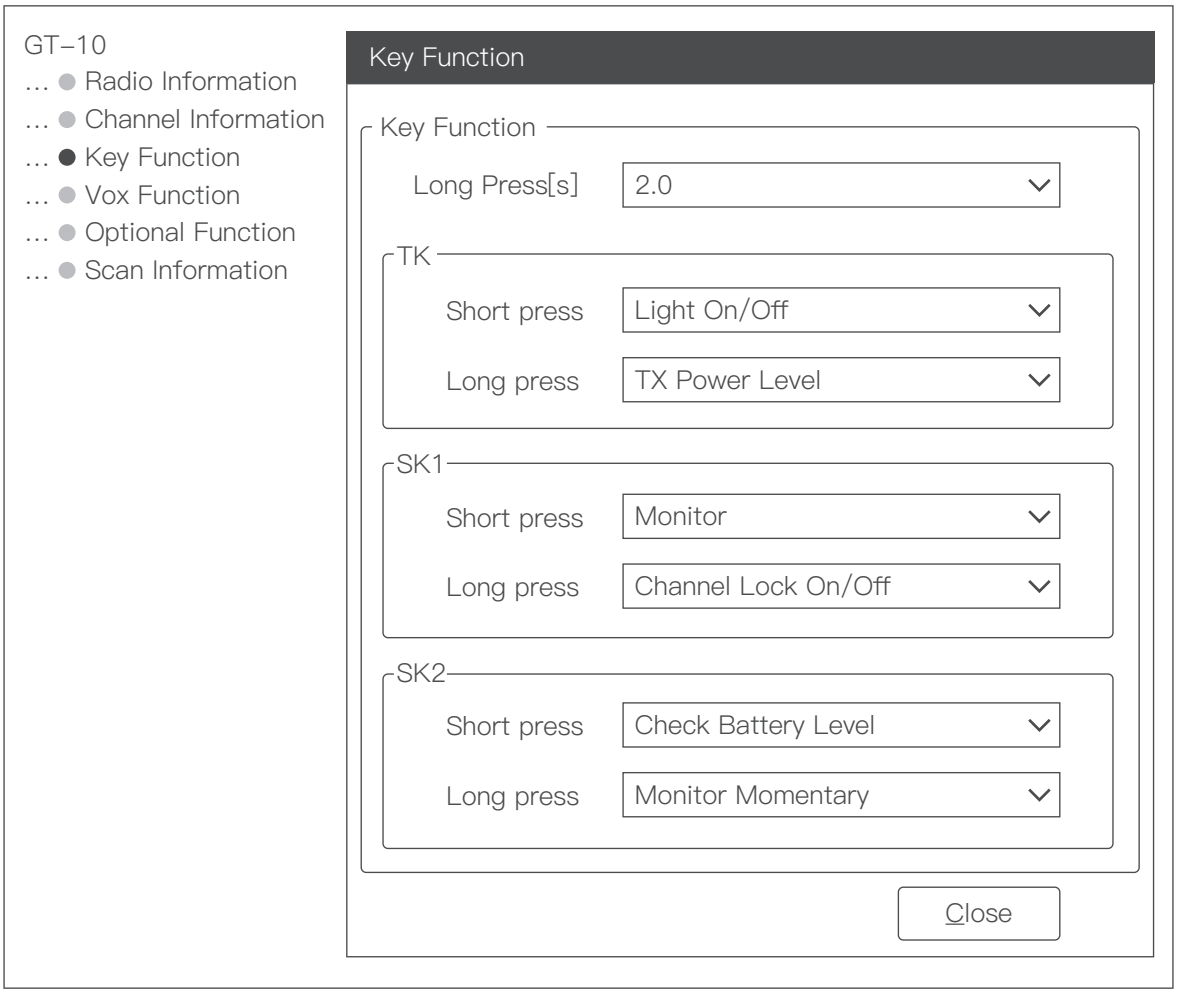
It is a way to eliminate the end tone of transmitted signals which have CTCSS/DCS after they are transmitted. It work by reversing sub-audio signal waveforms by receiver after the sub-audio signal is transmitted and the carrier disappears. The specific reversal phase size can be selectable.

OFF: End tone elimination is turned off.

ON/180: 180° reversal of CTCSS

ON/120: 120° reversal of CTCSS

Key Function



The programmble key that can be assigned with long/short press functions by programming software.

1. **OFF**

   The key is invalid.

2. **Monitor**

   When no signals are present, the squelch on the transceiver automaticaly mutes the speaker so you will not hear background noise. Press the programmed key to manually deactivate the squelch.

3. **TX Power Level**

   Users can switch the TX Power level between high, middle and low power by pressing the programmed Power Adjust key.

4. **Scan**

   When scanning is active, the radio will continuously scan for activity on scan list members. Once activity is detected on a channel, scanning will pause on the active channel for you to receive activity.

5. **VOX**

   This function allows you to talk handsfree, you do not need to press PTT key to transmit. You can turn on VOX via program software, you can VOX gain level, VOX delay time and VOX inhibit on Receive.

6. **Compander**

   This function is to compress the transmitted signals, and then expend the signals when they are received, which greatly reduce environmental background noise and improve voice quality.

7. Scrambler

Scrambler is one of message encryption; it transmits the changed frequency spectrum through cepstrum, and the signal will be restored after being received so as to achieve privacy of your talk.

8. Emergency Alarm

In case of emergency, press emergency key, the radio will sound alert tone.

9. Check Battery Level

Press the programmed key to check battery level.

10. Backlight ON/OFF

Press the programmed key to display backlight.

11. Channel Lock ON/OFF

When the Channel Lock function enable, the current channel number will be remain unchanged.

12. Monitor Momentary

Press the key defined with monitor momentary function to turn off CTCSS or DCS and the squelch turns on. Release to exit.

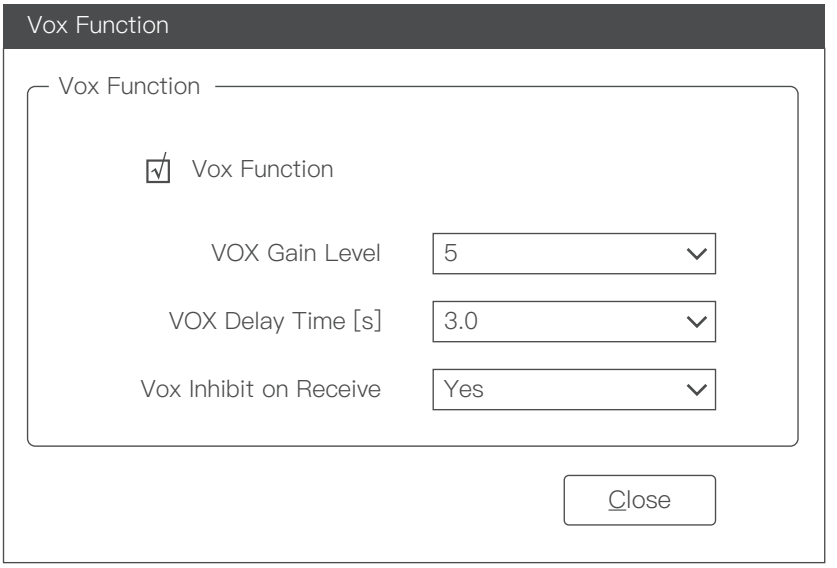
13. Channel Step

Press the programmed key to set the channel step: 10KHz.

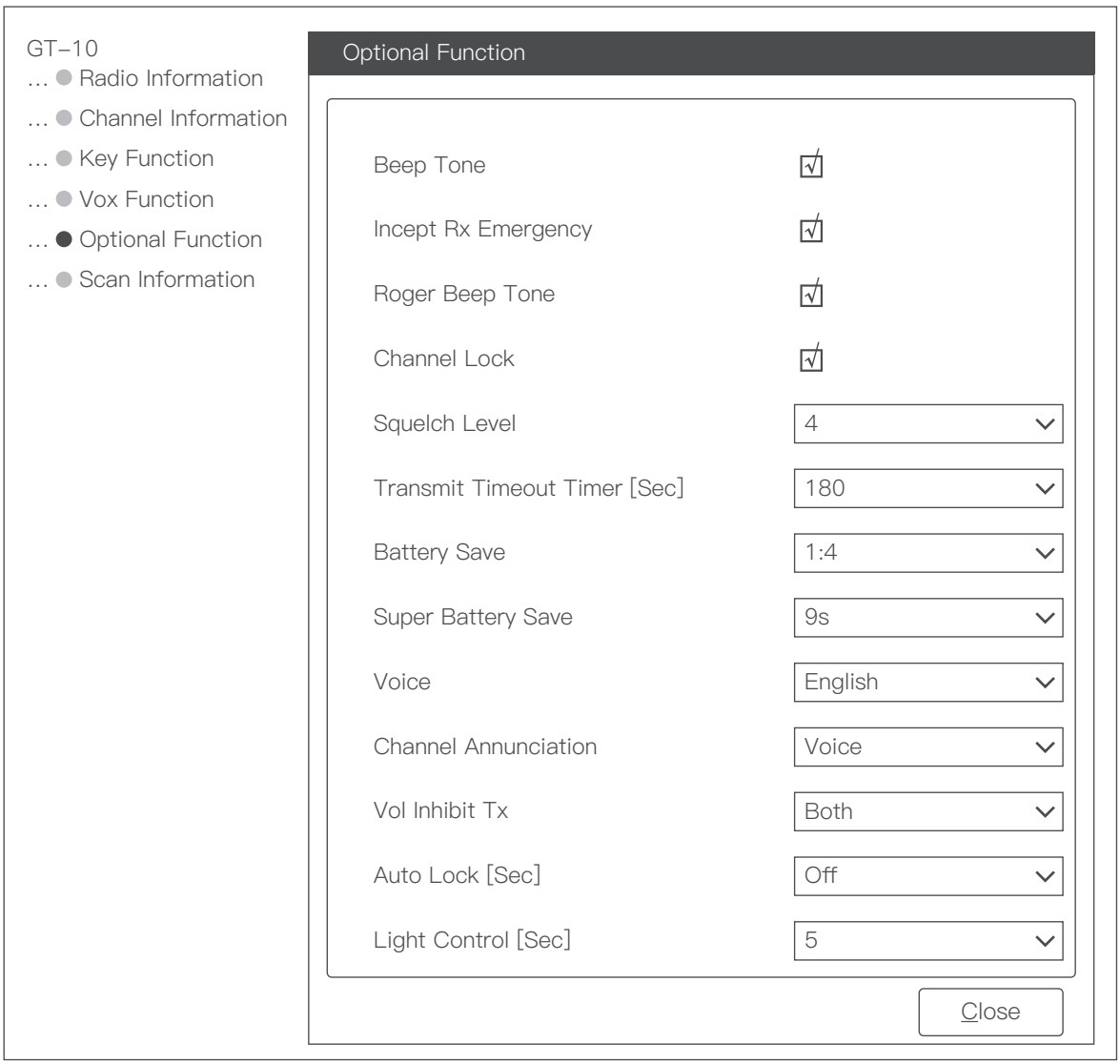
Vox Function

If activate VOX function, it allows you to talk handsfree, you do not need to press PTT key to transmit.

1. VOX Gain Level: 1–9
2. VOX Delay Time(s): 0.5S/ 1.0S/ 2.0S/ 3.0S
3. VOX Inhibit on Receive: YES/NO



Optional Function



1. Beep Tone

OFF / ON

2. Incept Rx Emergency

OFF / ON

3. Roger Beep Tone

OFF / ON

4. Channel Lock

OFF / ON

5. Squelch Level

0.....9

6. Transmit Timeout Timer(Sec)

OFF / ON: 15S...600S

7. Battery Save

OFF / ON: 1:1 / 1:2 / 1:3 / 1:4

8. Super Battery Save

OFF / ON: 1s.....9s

9. Voice Prompt

OFF / English / Chinese

10. Channel Annuciation

OFF / Voice Prompt / Beep Tone

11. Vol Inhibit Tx

OFF / High Voltage / Low Voltage / Both

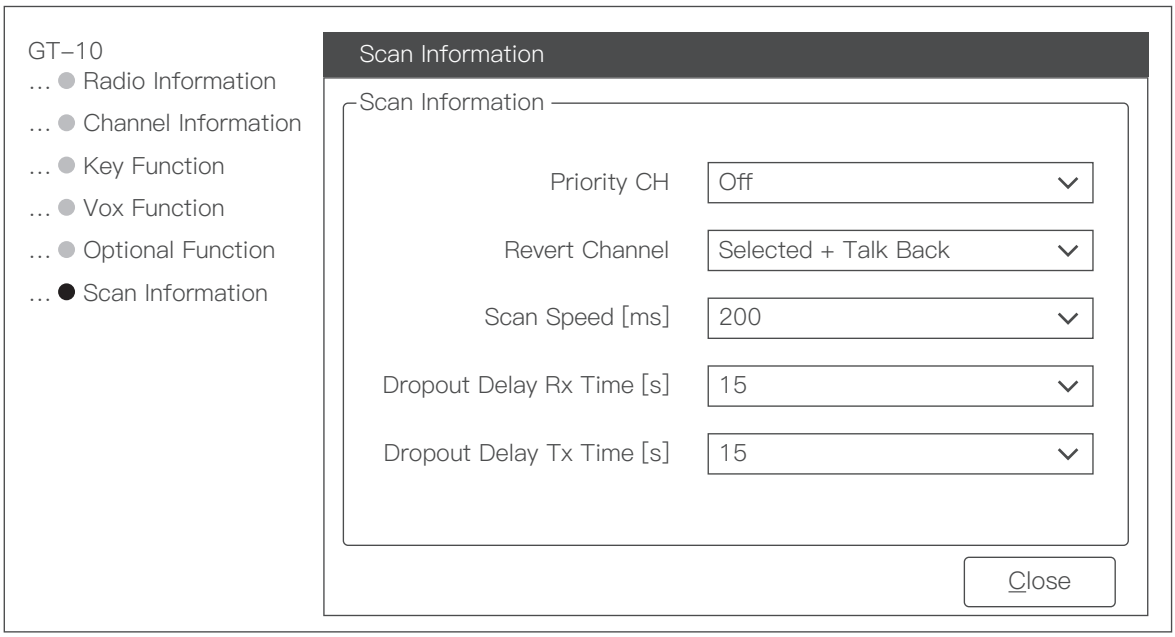
12. Auto Lock(Sec)

OFF / ON: 1.....60S

13. Light Control(Sec)

OFF / ON: 1.....60

Scan Information



1. Priority Channel

OFF: Not activated.

ON: 1/...../199

2. Revert Channel

Selected / Selected + Talk Back / Priority / Priority + Talk Back / Scan Channel

3. Scan Speed(ms)

100/...../1000

4. Dropout Delay Rx Time(s)

3/...../30

5. Dropout Delay Tx Time(s)

3/...../30

CTCSS

01 67.0	18 118.8	35 183.5
02 69.3	19 123.0	36 186.2
03 71.9	20 127.3	37 189.9
04 74.4	21 131.8	38 192.8
05 77.0	22 136.5	39 196.6
06 79.7	23 141.3	40 199.5
07 82.5	24 146.2	41 203.5
08 85.4	25 151.4	42 206.5
09 88.5	26 156.7	43 210.5
10 91.5	27 159.8	44 218.1
11 94.8	28 162.2	45 225.7
12 97.4	29 165.5	46 229.1
13 100.0	30 167.9	47 233.6
14 103.5	31 171.3	48 241.8
15 107.2	32 173.8	49 250.3
16 110.9	33 177.3	50 254.1
17 114.8	34 179.9	

DCS

01 D023N	19 D116N	37 D225N	55 D325N
02 D025N	20 D122N	38 D226N	56 D331N
03 D026N	21 D125N	39 D243N	57 D332N
04 D031N	22 D131N	40 D244N	58 D343N
05 D032N	23 D132N	41 D245N	59 D346N
06 D036N	24 D134N	42 D246N	60 D351N
07 D043N	25 D143N	43 D251N	61 D356N
08 D047N	26 D145N	44 D252N	62 D364N
09 D051N	27 D152N	45 D255N	63 D365N
10 D053N	28 D155N	46 D261N	64 D371N
11 D054N	29 D156N	47 D263N	65 D411N
12 D065N	30 D162N	48 D265N	66 D412N
13 D071N	31 D165N	49 D266N	67 D413N
14 D072N	32 D172N	50 D271N	68 D423N
15 D073N	33 D174N	51 D274N	69 D431N
16 D074N	34 D205N	52 D306N	70 D432N
17 D114N	35 D212N	53 D311N	71 D445N
18 D115N	36 D223N	54 D315N	72 D446N

DCS

73 D452N	91 D627N	109 D032I	127 D132I
74 D454N	92 D631N	110 D036I	128 D134I
75 D455N	93 D632N	111 D043I	129 D143I
76 D462N	94 D654N	112 D047I	130 D145I
77 D464N	95 D662N	113 D051I	131 D152I
78 D465N	96 D664N	114 D053I	132 D155I
79 D466N	97 D703N	115 D054I	133 D156I
80 D503N	98 D712N	116 D065I	134 D162I
81 D506N	99 D723N	117 D071I	135 D165I
82 D516N	100 D731N	118 D072I	136 D172I
83 D523N	101 D732N	119 D073I	137 D174I
84 D526N	102 D734N	120 D074I	138 D205I
85 D532N	103 D743N	121 D114I	139 D212I
86 D546N	104 D754N	122 D115I	140 D223I
87 D565N	105 D023I	123 D116I	141 D225I
88 D606N	106 D025I	124 D122I	142 D226I
89 D612N	107 D026I	125 D125I	143 D243I
90 D624N	108 D031I	126 D131I	144 D244I

DCS

145 D245I	163 D346I	181 D464I	199 D662I
146 D246I	164 D351I	182 D465I	200 D664I
147 D251I	165 D356I	183 D466I	201 D703I
148 D252I	166 D364I	184 D503I	202 D712I
149 D255I	167 D365I	185 D506I	203 D723I
150 D261I	168 D371I	186 D516I	204 D731I
151 D263I	169 D411I	187 D523I	205 D732I
152 D265I	170 D412I	188 D526I	206 D734I
153 D266I	171 D413I	189 D532I	207 D743I
154 D271I	172 D423I	190 D546I	208 D754I
155 D274I	173 D431I	191 D565I	
156 D306I	174 D432I	192 D606I	
157 D311I	175 D445I	193 D612I	
158 D315I	176 D446I	194 D624I	
159 D325I	177 D452I	195 D627I	
160 D331I	178 D454I	196 D631I	
161 D332I	179 D455I	197 D632I	
162 D343I	180 D462I	198 D654I	

Technical Specification

General

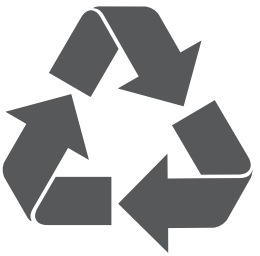
Frequency Range	VHF: 136–174MHz
	UHF: 400–470MHz
Output Power	2W/5W/8W/10W
Storage Channel	199CH
Channel Spacing	12.5KHZ or 25KHZ
Operating Voltage	8.4V DC ±20%
Frequency Stability	±2.5ppm
Operating Temperature	–20˚C~ +50˚C
Antenna Impedance	50Ω
Dimension(H*W*D)	160x65x46mm
Weight	368g

Transmitter

Modulation	16kΦF3E(Wind Band) 11kΦF3E(Narrow Band)
MAX. Frequency Deviation	<5KHZ(Wind Band) <2.5KHZ(Narrow Band)
Adjacent Channel Power	⩾60dB
S/N	⩾45dB
FM	⩽–36dB
Audio Response	6dB/Each octave
Audio Distortion	⩽3%

Receiver

Sensitivity(12dB SINAD)	⩽0.25uV
Intermodulation	⩾65dB
Adjacent Channel Selectivity	⩾65dB
Spurious Response Rejection	⩾80dB
Audio Distortion	⩽3%
Audio Output	1000mW

Troubleshooting Guide

Problem	Solution
No power.	The battery pack may be dead. Recharge or replace the battery pack. The battery pack may not be installed correctly. Remove the battery pack and install it again.
Battery power dies shortly after charging.	The battery pack life is finished. Replace the battery pack with a new one.
Cannot talk to or hear other members in your group.	Make sure you are using the name frequency and Quiet Talk tone as the other members in your group. Ohter group members may be too far away. Make sure you are within range of the other transceivers.
Other voices (besides group members) are present on the channel.	Change the Quiet Talk tone. Be sure to change the tone on all transceivers in your group.