EXPLORER ● QRZ-1

FC RoHs

User's Manual

Dot-Matrix LCD Display ● Multiple Key Lock Setting ● Multi-Display Mode Dual Band ● Dual Wait ● Dual Standby 200 Channels Battery Saving ● CTCSS

THANK YOU

for purchasing the Explorer QRZ-1 Transceiver. After reading this manual you will have an understanding of the features of this radio.

Main Features

Dual band, dual display, dual standby

DOT-MATRIX LCD display

A/B band independent operation

200 channels storage and scanning

FM Radio and 24 stations memory

Wide/Narrow band selectable

VOX 0-7 level setting

CTCSS and scanning

Shortcut menu operation mode

Multiple keys lock settings

Multi display mode

CONTENTS

MENU STRUCTURE (CONT.)

WHAT'S IN THE BOX

Please check if any damage to the package when you receive it. Carefully unpack the transceiver. We recommend that you check the items listed in the following table. If any items are missing or damaged during shipment, please contact with your local dealer immediately.

Supplied Items:
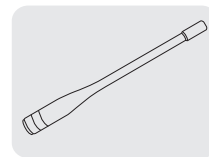
Body   Antenna   Li-ion battery(1400mAh)

Charger Kit   Belt Clip

Note: The antenna frequency range please refers to the annular label at the bottom of antenna.

CHARGING BATTERY PACK

INSTALLATION OF ACCESSORIES

EXPLORER QRZ-1

CHARGING BATTERY PACK

Charging Precaution

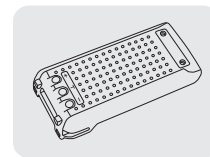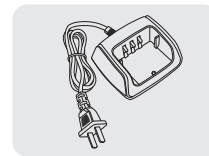**The supplied battery pack of this radio is a high-performance Li-ion with 7.4V standard voltage 1400mAh high capacity in a very compact package. Under normal use, the battery pack has an expected life span of 500 charge cycles. If you have a battery pack that has diminished capacity, replace the battery and dispose of the old one properly.**

Notice:
- Do not short-circuit the battery terminals or expose to fire.
- Do not disassemble the battery.
- The battery should be charged only when the ambient temperature is between 32°F and 110°F.
- Turn off the transceiver when charging.
- Do not charge when the battery or the radio is wet. Allow the radio and battery to completely dry before charging to avoid damage.

Warning: Do not allow conductive metals, such as jewelry, coins or keys, to come in contact with the battery terminals. It is especially dangerous to carry the battery in your pocket.

Charging Operation :

The light on the charger will indicate the charging status.

Indicator Display	Status
Red	Charging
Green	Completed

Battery Tips:
• Charge the battery before using for the first time. The battery is not fully charged at the factory.
• A new battery will reach its optimal performance after two or three charging cycles.
• To optimize battery life, do not operate when the battery voltage is below 7.3 VDC (approximately 20%) and do not store the battery for more than a couple of days with the battery voltage above 8.2 VDC (approximately 80%).

INSTALLATION OF ACCESSORIES

Installation of Battery Pack

1)   Align the two grooves of the battery to the guide rail on the back of the aluminum shell, then push the battery up until the battery latch locks. (Figure1)

2)   To remove the battery, make sure the radio is off, then push the battery latch down and slide the battery out from the radio. (Figure 2)
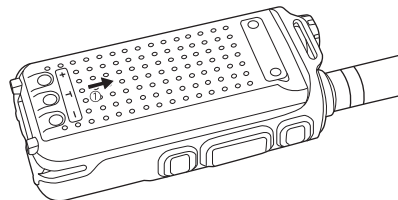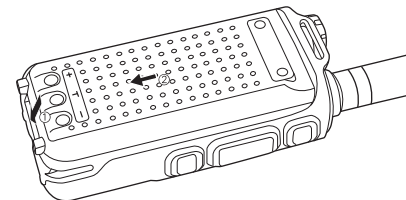
Figure 1   **Figure 2**

Installing and removing the antenna

1) Align the threaded end of the antenna and the threaded hole at the top of the radio, then rotate the antenna clockwise until it is secured. (Figure 3)
2) To remove the antenna, rotate it counter-clockwise until the antenna is detached.(Figure 4)

Figure 3   **Figure 4**

Installing Belt Clip

Align the two holes in the belt clip with the two holes in the radio and attach using the supplied M2.5x5 screws. (Figure 5)

Figure 5

THE BASICS

THE BASICS

If you are new to two-way radio, there are some basic concepts that you should be familiar with before using this device. By becoming familiar with these general ideas, you can avoid the improper operation of the device which can be harmful, injurious to health, or possibly illegal.
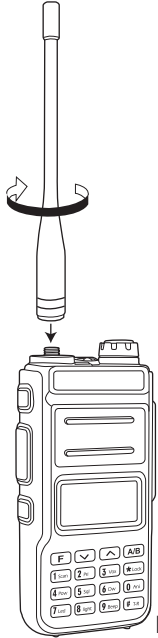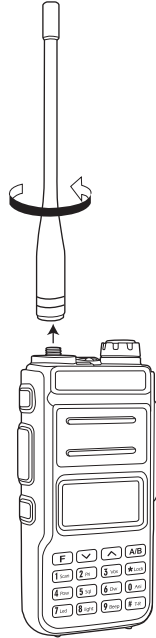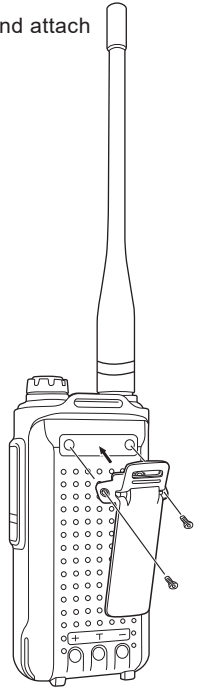Please be familiar with these terms:

Simplex :

Simplex is a mode of operation where two radios talk directly to each other, without any intervening assistance. Simplex is the classic "walkie-talkie" mode that most people use when communicating with friends that are nearby.

At the frequencies used by this radio, nearby obstructions matter.   For example, a signal will travel farther in an open field than it will in a forest. Trees, buildings, concrete, all of these things will absorb some of your transmitted and received radio signals. The rule of thumb is that for effective communications, there must be a line-of-sight path between the participants. It doesn't have to be physically transparent, i.e. the signal can easily penetrate a thin, nonmetallic surface.   Therefore, line-of-sight refers to radio wave propagation and not light.

One of the best ways to provide line-of-sight reception is to have one of the two radios located at a higher elevation than the other. A person standing on a small hilltop can therefore have line-of-sight propagation with everything seen below.

EXPLORER QRZ-1

THE BASICS

Radios still work in the forest, but not as well as when you're on a hilltop.

To use SIMPLEX mode, it is only necessary to set both radios to the same frequency. (if you use tone options, they must also match) Each user in a SIMPLEX group transmits and receives on the same frequency.   Be careful when choosing simplex frequencies because most of the available frequencies are already occupied, even though you may not hear anything.

Repeaters :

A repeater gives the benefit of line-of-sight to multiple users at once. Repeaters are unattended devices that receive signals on one frequency (the INPUT frequency), and they retransmit everything that is heard on another frequency (the OUTPUT frequency). Repeaters place their antennas atop a high structure or hill so that it has an excellent line-of-sight over a large area. Any user that is within the coverage area that is reached by the repeater will hear a clear, strong signal.   This enables users to communicate with each other despite not having a clear line of sight between them.

A repeater is an unattended radio that simply repeats everything it hears. It has a listening (INPUT) frequency and a transmit (OUTPUT) frequency. All users are tuned and listen to the repeater's OUTPUT frequency. When users want to speak, they transmit on the repeater's INPUT frequency.

The difference between an INPUT and and OUTPUT frequency is sometimes called a 'split', but more accurately referred to as the repeater's OFFSET, which is specified as some distance, plus or minus, from the repeaters OUTPUT frequency. There are standards for this and at VHF frequencies the standard offset is ±600 khz and at UHF frequencies the standard offset is ±5 mhz.

In addition to frequency and offset, many repeaters require a specific tone to be transmitted to enable the output. This tone is called CTCSS.   You can't hear CTCSS normally because it's a very low (sub-audible) tone. When the repeater hears the tone coming from your transmitter, it will open its output.

Information you will need to program a repeater into your radio.

1) Repeater's transmit frequency ("Output" frequency)
2) Offset
3) Offset Direction
4) CTCSS

THE BASICS

1) Transmit Frequency :

Repeaters can receive and transmit simultaneously by using different frequencies for each. Your radio will receive signals from the repeater by tuning to the repeater's transmit or OUTPUT frequency. There are several directories listed below that publish these frequencies.

Your radio will transmit to the repeater using a different frequency. This will allow you to talk to the repeater's receive or INPUT frequency. The difference, between these two frequencies, expressed in MHz, is called the offset.

To manually select a new frequency in the QRZ-1, you must be in VFO mode (press [# Radio] to toggle between VFO mode and Memory mode). Use the number keypad to enter the repeater's transmit frequency.

2) Offset :

Fortunately, the difference between these frequencies has been standardized and is referred to as the "offset" or "split." In the USA, the 2 meter band offset is 600 kHz, and the 70 cm band offset is 5 MHz

If the repeater you intend to use has a nonstandard offset, you can adjust the offset in the QRZ-1, by pressing [MENU] and using [⌃] / [⌄] to go to menu #16 (Offset). Press [MENU] again to select the frequency value field and use the number keypad to enter the repeater's offset frequency. The frequency value field is in MHz, so an offset of 600 kHz would be entered as "0 0 0 6 0 0 0". The display will indicate 0.60000 MHz. Press [MENU] to save your change and then the PTT button to exit the menu.

3) Offset Direction :

Depending on the repeater's OUTPUT frequency, the offset described above will be negative or positive. This is the offset direction.

To select the offset direction in the Explorer QRZ-1, go to menu #3 (Repeater) by pressing [MENU] followed by the number 3. Use [⌃] / [⌄] to choose the offset direction for the repeater, press [MENU] to save your change, and then the PTT button to exit the menu.

Offset and Offset Direction Table :

Repeater Transmit Frequency (MHz)	Offset (Split)
145.2 - 146.97	-600 kHz
147 - 147.39	+600 kHz
442 - 445	-5 MHz
447 - 450	+5 MHz

Example: The repeater you want to use has a transmit frequency of 146.94 MHz and a standard offset. Finding this frequency in the chart above, we know that the offset is 600 kHz (0.6 MHz), and the offset direction is negative. So, for this repeater, you use the default offset of 0.600 MHz (menu #16) and an offset direction of "-" (menu #3).

4) CTCSS :

To ensure that repeaters only receive/transmit intended signals, they are protected by a system called Continuous Tone Coded Squelch System (CTCSS), sometimes referred to as "PL tone." This is a sub-audible tone sent from your radio along with your signal and tells the repeater to receive and re-transmit your signal. Without the proper CTCSS setting, the repeater will ignore the signal from your radio, even if it is programmed with the correct transmit frequency.

To enter the repeater's CTCSS information in the QRZ-1, go to menu #1 (Tone Mode) by pressing [**MENU**] followed by the number 1 and selecting "TX" mode using [⌃] / [⌄], then press [**MENU**] to save your change and press the PTT button to exit the menu. Then go to menu #2 (Tone Sel) by pressing [**MENU**] followed by the number 2. Use [⌃] / [⌄] to select the correct tone frequency for the repeater, press [**MENU**]to save your change, and press the PTT button to exit the menu.

70cm Band
5 MHz Negative
Offset Example

100 Hz CTCSS
442.725 MHz

447.725 MHz

Repeater

447.725 MHz

100 Hz CTCSS
442.725 MHz

447.725 MHz: Your Listen
(Repeater Transmit)

447.725 MHz: Your Talk
(Repeater Receive)
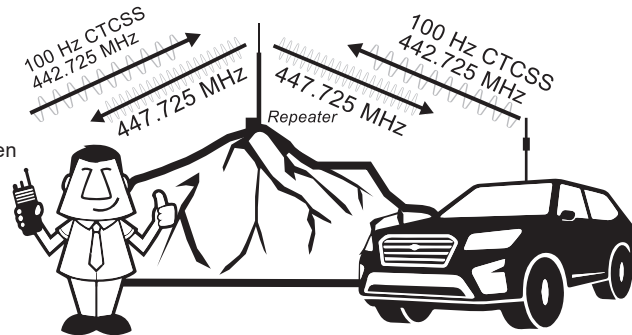
Repeater Directories :

RFinder	www.rfinder.net
RepeaterBook	www.repeaterbook.com
RadioReference	www.radioreference.com

Squelch :

Squelch is a circuit in the radio that can be adjusted to suppress the audio of the radio when receiving undesired weak signals or static noise.

Carrier Squelch (Noise Squelch) :

This is the most basic form of squelch and operates only on signal strength. In the Explorer QRZ-1, use menu #4 (Squelch) to adjust the received signal strength needed to unmute or break the squelch threshold on the receiver. The setting range is 0 through 9 with a default of 5. In normal operation, the user will adjust the squelch setting downward until the noise is heard and then increase the setting only until the noise is suppressed or squelched. This setting will allow even weak signals to be heard through the speaker. If desired, the squelch setting can be increased to allow only stronger signals to be heard.
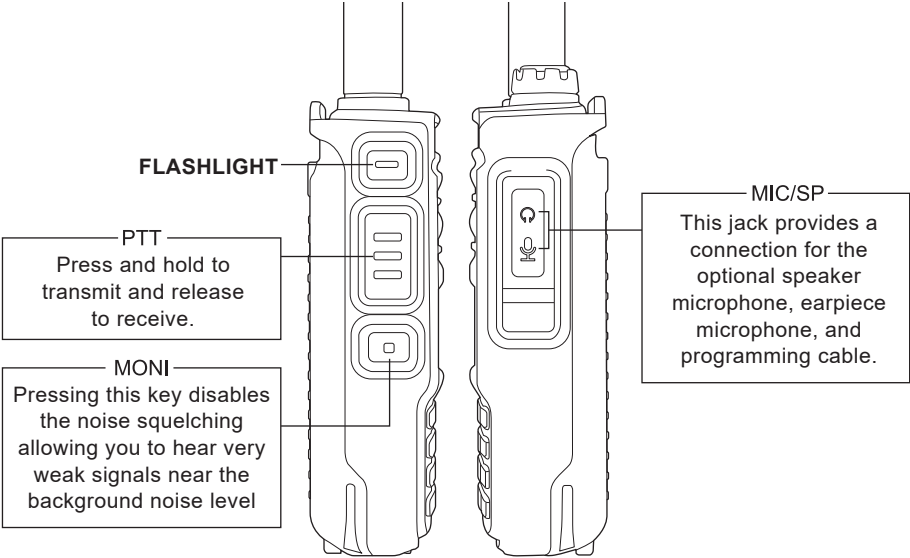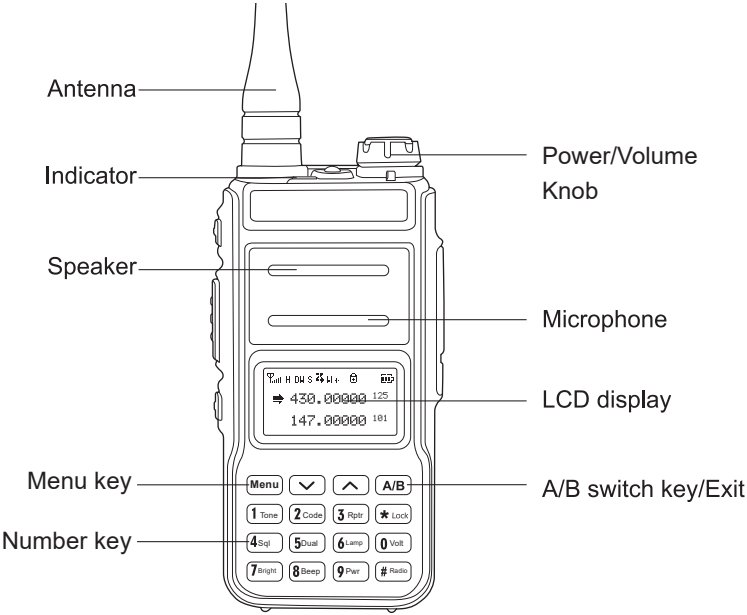
CTCSS (Continuous Tone-Coded Squelch System) :

CTCSS is a system that adds a tone to transmissions that is filtered out by the receiving radio. The CTCSS system includes about fifty tones ranging from 67 Hz to 254 Hz. If the same frequency is being used by more than one group of users, the CTCSS will only allow signals with the correct tone to be received by the radio. When menu #1 (Tone Mode) is set to "TX+RX" or "RX", the user will then use menu #2 (TONE SEL) to select the tone required by the repeater being used or the tone desired by a group of users on the same channel.
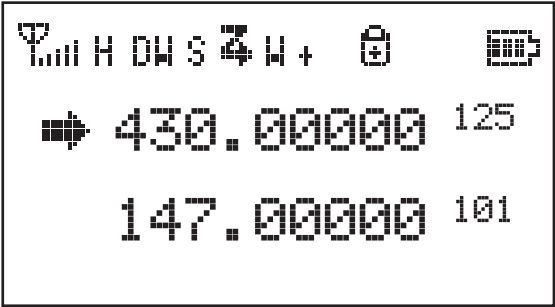
USING THE RADIO

EXPLORER QRZ-1

RADIO ILLUSTRATION

Antenna

Indicator

Speaker

Menu key

Number key

Power/Volume Knob

Microphone

LCD display

A/B switch key/Exit

FLASHLIGHT

PTT
Press and hold to transmit and release to receive.

MONI
Pressing this key disables the noise squelching allowing you to hear very weak signals near the background noise level

MIC/SP
This jack provides a connection for the optional speaker microphone, earpiece microphone, and programming cable.

LCD DISPLAY

You will see various icons shown on the screen when powered on.

```
📶 H DW S ⚡ W ↑      🔒        🔋

 ⇔  430.00000  125

     147.00000  101
```

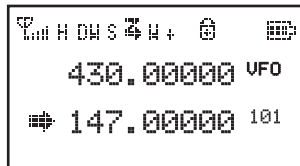| Icons	Description of functions
📶	Operating band signal & power meter
H	High TX power active
DW	Dual watch/standby active
S	RX power save active
⚡	Scanning active
W	Narrow/wide band mode active
↑	Repeater shift direction
🔒	Keypad lock
🔋	Battery fully charged
( )	Battery fully depleted
125	Channel number/Menu items number indicator

WORKING MODE

1)   Frequency Mode (VFO)

Press the PTT button to return to the main screen. The operating band is indicated by an arrow next to the frequency and can be either the A or B band. If the operating band is in VFO Mode, this will be indicated on the display beside the operating frequency. If the band is in Memory Mode (displaying a preset channel number) as shown below, press the [# Radio] to switch to VFO Mode. In this mode, you can use [⌃] / [⌄] keys to change the frequency, or you can input the frequency directly by using the keypad.

Frequency Mode (VFO)

```
 ▧▧ H DW S ▦ W ↓  🔒        ▥▥
   ⇲ 430.00000 VFO
      147.00000 101
```

Memory Mode (MR)

```
 ▧▧ H DW S ▦ W ↓  🔒        ▥▥
      430.00000 VFO
   ⇲ 147.00000 101
```
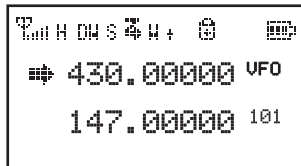
2)   Memory Mode (MR)

If the operating band is currently in VFO mode, press the [# Radio] to enter MR mode. The channel number will be indicated next to the frequency on the main screen. Use the [⌃] / [⌄] keys to navigate through the saved channel numbers or enter the channel number directly using the keypad.

3)   FM Radio Mode

Long press [# Radio] to enter and exit the FM Radio mode. FM Radio mode enables the radio to receive the FM broadcast band from 65 to 108Mhz.

5)   MENU Mode

Press the [MENU] to enter MENU mode. See page 25-28 for a complete list of menu items.

MENU STRUCTURE

Menu Items 1-10 can be accessed by using
[MENU] + desired number keys.

Menu Items 11-27 can be accessed by using
[MENU] + [⋀] / [⋁]

No.	LCD Display	Description	Options
1	Tone Mode	TX/RX Tone Coder Off: Disable CTCSS TX+RX: Radio will transmit the CTCSS and only open the squelch if the CTCSS is present on the receiving signal RX: Radio will not transmit CTCSS and will only open the squelch if the CTCSS is present on the receiving signal. TX: Radio will transmit the CTCSS but does not require CTCSS for receiving signals	Off/TX+RX/RX/TX
2	Tone Sel	If tone mode is not "off", then select the tone frequency to be used for the selected tone mode	62.5/67.0/69.3/71.9/74.4/77.0/79.7/82.5/
3	Repeater	Repeater Offset Direction	+/-/Off
4	Squelch	Carrier Squelch Level Setting. See page 17 for more information.	0-9
5	Dual RX	Monitor both the primary (operating) band and secondary band signals at the same time	On/Off
6	Lamp Mode	Set screen backlight mode. On: Always on Auto: on for 5 seconds after any key press Off: No backlight function	On/Auto/Off
7	Brightness	Adjust brightness of LED screen	0-7
8	Beep	Enable sound when keypad buttons are pressed	On/Off

No.	LCD Display	Description	Options
9	Power	Select low (1W) medium (2W) or high (5W) TX power. Power settings can be stored in each memory location.	Low/Medium/High
10	Battery	Displays battery voltage	X.X VDC
11	VOX	Provides automatic transmit/receive switching based on voice input. With VOX enabled, it is not necessary to press the PTT switch to transmit.	X.X VDC
12	VOX Level	When the VOX function is enabled, this setting adjusts the sensitivity (higher levels are more sensitive)	0-7
13	Scan Mode	Select the method in which the scanner will stop on a signal. Carrier: In this mode, the scanner will halt on a signal and will hold there as long as the station is active. After the carrier has dropped, scanning will resume. Time: In this mode, the scanner will halt on a signal and will hold there for some time. If the Menu key is not pressed to stop the scan within the time period, scanning will resume even if the station is still active. Stop: In this mode, the scanner will halt on a signal and will not restart automatically. Re-initiate the scan if desired.	Carrier/Time/Stop
14	Scan	In VFO Mode: Initiates a scan of the entire operating band starting with the currently selected frequency. In MR Mode: Initiates a scan of all memory channels starting with the currently selected channel.	
15	TX Block	Prevents the radio from transmitting if receiving a transmission on the same frequency	Off/Busy

No.	LCD Display	Description	Options
16	Offset	In VFO mode, this funtion sets the magnitude of the repeater shift	
17	Welcome	Choose options for the welcome screen that is displayed when powering on the radio.	DC/Message/Off
18	RX Sleep	When enabled, this function greatly reduces battery drain during periods of inactivity.	1:1 / 1:2 / 1:4 / Off
19	Time Out	This function limits the transmission to the selected value. This can save battery life and prevent interference to others in the case of a stuck PTT switch.	OFF/30/60/90/120/150/180/210/240/270 seconds
20	Step	This function sets the interval between frequencies when changing frequencies in VFO mode.	2.5/6.25/10/12.5/25/50/100 (kHz)
21	Nar/Wide	This function sets the FM transmission modulation level. "Wide" (25 kHz)is the default option and is most common for amateur repeaters in the US. The Narrow setting is 12.5 kHz.	Wide/Nar
22	Tone Scan	In situations where you don't know the CTCSS tone being used by another station(s), you can use the PL Decode function to scan for the CTCSS tone in use. To scan, press the Menu key and use the up/down arrows to navigate to menu #22 (PL Decode) and press the Menu key again to begin scanning. You can press the PTT switch at any time to halt the scan. You can press the Moni switch while scanning to listen to the signal from the station. When the Moni switch is released, the scan will resume.	

No.	LCD Display	Description	Options
23	Lock Mode	Press the "*Lock" button for 2 seconds to lock/unlock the keypad. The options control the behavior of the "*Lock" button. See page 29 for more information.	All/PTT/Key/Key+S
24	Disp Mode	When in Memory Recall (MR) Mode, this function allows the choice of displaying the Frequency, Name, or Channel.	Frequency/Name/Channel
25	Dual Watch	When "On", allows receiving on bands A and B simultaneously. When "Off", only the active band is received.	On/Off
26	Reset	"ALL" resets all settings - "VFO" resets all settings VFO mode - "FULL" resets all settings under VFO and Channel Mode (MR). Please see page XX for more information.	All/VFO/Full
27	Firmware	Displays the Radio Firmware Version	MCU BS1.xx/

KEYPAD LOCK

Press the **[🔒Lock]** button for 2 seconds to lock and unlock the keypad. The lock icon will be displayed at the top of the LCD when the keypad is locked.

To change how the Lock button functions, go to menu #23 (Lock Mode) and select from the options: (ALL/PTT/KEY/KEY+S)
The table below shows the behavior for each option.

Options

Lock Functions	ALL	PTT	KEY	KEY+S
Keypad	🔒		🔒	🔒
MONI and Flashlight	🔒			🔒
PTT	🔒	🔒		

CHANNEL STORAGE AND DELETE

Channel Storage
Under VFO mode, input the desired frequency by keypad directly or select one by pressing [⌃] / [⌄] and then long-press [MENU]. The digits will blink at the top of the LCD allowing you to select a preset number by inputting directly with the keypad or using [⌃] / [⌄] to choose. Press [#Radio] to store the preset.

Example: To store the frequency: 450.325MHz with CTCSS: 151.4 to the channel 05, the step are as follows:

1)   Under VFO mode, input 4-5-0-3-2-5

2)   Press then press [MENU] + 1 (Tone Mode) and select TX followed by [MENU] + 2 (Tone Sel) and select 151.4 followed by [MENU] then **[A/B]**

3)   Long press [MENU] until the digits blink at the top right of the LCD

4) Press [⌃] / [⌄] to select 005.

5)Press the [#Radio] to store this channel. The LCD display will now show your newly saved channel in Memory Mode.

Channel Delete

1) Under VFO mode, long-press [MENU] until the digits blink on the right side of the LCD.

2) Press [⌃] / [⌄] or input channel number you want to delete, then press [*Lock] to confirm.

3) After confirming, the radio will skip to the next channel. If you want to delete it, repeat the operation above.

FM Radio Function

1) From the home screen, access the FM radio function by long-pressing [# Radio] button. The word "RADIO" and the frequency will be displayed on the LCD. Long-pressing [# Radio] button again will return the home screen.

Note: If receiving a signal on the operating band while in FM Radio mode, the radio will switch to the operating band transmission. After 5 seconds of inactivity, the radio will switch back to FM Radio mode.

2) Mode selection:
Under FM radio mode, press [# Radio] button to switch between FM memory mode and FM frequency mode (this function is unavailable when no FM memory channel has been stored).

3) Frequency selecting
Under FM frequency mode, input the digits directly by keypad or press [⌃] / [⌄] arrows to choose the desired frequency. Under FM memory mode, press [⌃] / [⌄] arrows to choose the desired channel.

4) FM radio storage
While in FM frequency mode, long-press [MENU] button until the channel number or storage blinks on the right of the screen. Press [⌃] / [⌄] arrows to select the desired channel number, then press [# Radio] to confirm.

5) FM radio channel delete:
While in FM frequency mode, long-press [MENU] button until the channel number blinks. Use [⌃] / [⌄] arrows to choose the channel number you want to delete. Press [*Lock] button to confirm.

SPECIFICATIONS
SPECIFICATIONS
SAFETY PRECAUTIONS
WARRANTY

EXPLORER QRZ-1

SPECIFICATIONS

General

Channel	200
Operating Voltage	7.4VDC
Operating Temperature	- 10° C ~ +50° C
Weight	106g (battery and antenna included)
Dimension	116x53x36mm

Transmitter

Frequency	144.000 - 148.000MHz
	420.000 - 450.000MHz
Power	5W
Modulation Type	FM
Spurious Power	≤ -15db
Modulation Noise	<-40dB
Modulation Distortion	<5%
Frequency Stability	5ppm
Max Freq. Deviation	≤ ±5KHz
Current	≤ 1600mA
Audio Response (300-3400Hz)	+6.5~-14dB
Adjacent Channel Power	≥ 65dB

SPECIFICATIONS

Receiver

Frequency	136.000-174.000MHz
	400.000-480.000MHz
	65.000 - 108.000MHz
Sensitivity	≤ 0.2 μV
Occupied Bandwidth	≤ 16KHz
Selectivity	≥ 65dB
Intermediation	≥ 55dB
Audio Power	> 500mW
Audio Distortion	≤ 10%
Frequency Stability	5ppm
Current	standby: 60mA working: 250mA
Audio Response (300-3400Hz)	+7~-12.5dB

SAFETY PRECAUTIONS

WARNING ☠

- Do not remove or charge the battery where flammable conditions exist.
- Turn off the radio in hospitals and healthcare facilities.
- Disconnect any external antennas when near a thunderstorm.
- Do not touch any substance leaking from the battery or LCD display.
- To avoid short-circuiting the battery, do not carry or store it together with metal objects such as jewelry or coins.

CAUTION ⚠

- Do not attempt to open the radio. You won't understand what you see in there and it will be difficult to reassemble.
- Only use the specified voltage to power this product.
- Keep the battery terminals clean using a dry cloth.
- If the radio, battery, or battery charger emits an odor or smoke. Turn the radio off and remove the battery pack. Unplug the charger from the outlet.
- If a liquid is spilled on the product, immediately turn it off and remove the plug from the outlet.

SAFETY PRECAUTIONS

- Do not use the radio if any cables, power cords, or connectors are damaged or not fitting securely. Only use the DC power cord provided with this product.
- Know that stray RF and wire cables used for installation can cause automotive airbags to malfunction. Keep the radio and all wiring away from the airbag locations.
- Do not place the radio in wet or moist areas.
- When transmitting, keep the radio at least 5cm (2 inches) from your body.
- Please refer to the FCC's RF Safety FAQ at www.fcc.gov

ATTENTION

- To clean the exterior of the radio, use only a clean, dry cloth. Do not use solvents such as benzene, thinner, etc.
- Turn off the radio and remove the battery when storing or during extended periods of inactivity.
- Don't store the radio near a heater or in the sun.

ONE YEAR LIMITED WARRANTY

This Limited Product Warranty is provided by the Dealer where the QRZ-1 was purchased. The Product Warranty extends only to the original purchaser of the product and is valid for a period of one year from the date of purchase. Please keep your dated sales receipt as evidence of the date of purchase. You will need it to receive warranty service.

Your Dealer warrants the product will be free from defects in workmanship and materials under normal use. If the product fails to conform to the warranty and is within the warranty period of one year, contact your original dealer for a return authorization. Your dealer may choose to either repair or replace the non-conforming product.