



GMRS-50PRO

INSTRUCTION MANUAL

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Disclaimer: Due to changes in the development of this radio, there will be functions or options which are removed or added. This will not be noted in this manual, as manual re-writes are not done with each change.

THANK YOU FOR YOUR PURCHASE OF THE GMRS-50PRO. THIS GMRS RADIO (WITH UHF/VHF SCANNER CHANNELS) WILL DELIVER YOU SECURE INSTANT RELIABLE COMMUNICATION.

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE

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Installation

This chapter describes the installation procedure for integrating the transceiver into a typical mobile radio station. It is presumed that you possess technical knowledge and conceptual understanding consistent with your status as a licensed radio GMRS. Please take some extra time to make certain that the important safety and technical requirements detailed in this chapter are followed closely.

Preliminary Inspection

Inspect the transceiver visually immediately upon opening the packing carton. Confirm that all controls and switches work freely, and inspect the cabinet for any damage. Gently shake the transceiver to verify that no internal components have been shaken loose during shipping.

If any evidence of damage is discovered, document it thoroughly and contact the shipping company (or your local dealer, if the unit was purchased over-the-counter) so as to get instructions regarding the prompt resolution of the damage situation. Be certain to save the shipping carton, especially if there are any punctures or other evidence of damage incurred during shipping. If it is necessary to return the unit for service or replacement, use the original packing materials. Then put the entire package inside another packing carton to preserve the evidence of shipping damage for insurance purposes.

Installation Tips

To ensure long life of the components, be certain to provide adequate ventilation around the cabinet of the transceiver.

Do not install the transceiver on top of another heat-generating device (such as a power supply or amplifier) and in a location exposed to dust and/or high humidity. Avoid heating vents and window locations that

could expose the transceiver to excessive direct sunlight, especially in hot climates. This transceiver should not be used in an environment where the ambient temperature exceeds +140 °F (+60 °C).



This transceiver is designed for a 13.8 V power source.
Never use a 24 V battery to power the transceiver.

-  The vehicle battery must have a nominal rating of 12 V. Never connect the transceiver to a 24 V battery. Be sure to use a 12 V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmit output power may drop excessively.
-  If you use the transceiver for a long period when the vehicle battery is not fully charged, or when the engine is OFF, the battery may be discharged, and will not have sufficient reserves to start the vehicle. Avoid using the transceiver under these conditions.
-  Transmitting without first connecting an antenna or other matched load will damage the transceiver. Always connect the antenna to the transceiver before applying power or transmitting.

Safety Information

This transceiver is an electrical apparatus, as well as a generator of High RF (Radio Frequency) energy. You should exercise all safety precautions that are appropriate for this type of device. These safety tips apply to any device installed in a well-designed amateur radio station.

-  Never allow unsupervised children to play in the vicinity of your transceiver or antenna installation.

-  Be certain to wrap any wire or cable splices thoroughly with insulating electrical tape, to prevent short circuits.
-  Do not route cables or wires through doorjambes or other locations where they may become frayed and shorted to ground or to each other.
-  Do not stand in front of a directional antenna while you are transmitting into that antenna.
-  Do not install a directional antenna in any location where humans or pets may walk in the main directional lobe of the antenna's radiation pattern.
-  In mobile installations, it is preferable to mount the antenna on top of the vehicle, if feasible, this will utilize the car body as a counterpoise and raise the radiation pattern as far away from passengers as possible.
-  During mobile operation when stopped (in a parking lot, for example), make it a practice to switch to Low power if there are people walking nearby.
-  Never wear dual-earmuff headphones while driving a vehicle. Do not attempt to drive your vehicle while making a telephone or auto patch call.
-  While using the optional DTMF microphone. Pull over to the side of the road, whether dialing manually or using the auto-dial feature.
-  Do not connect the modular connector of the telephone line to MIC jack.
-  **Warning!** High RF voltage is present in the TX RF section of the transceiver while transmitting. Do not touch the TX RF section while transmitting.

Exposure to Radio Frequency Energy

Your BTECH radio is designed to comply with the following national and international standards and guidelines regarding exposure of the human body to radio frequency electromagnetic energy.

- *United States Federal Communications Commission, Code of Federal Regulations: 47 CFR part 2 sub-part J*
- *American National Standards Institute (ANSI)/Institute of Electrical & Electronic Engineers (IEEE) C95. 1-1992*
- *Institute of Electrical and Electronic Engineer (IEEE) C95. 1- 1999 Edition*
- *National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986*
- *International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998*

To control your exposure and ensure compliance with the occupied or controlled environment exposure limits, transmit no more than 50% of the time. The radio generates measurable RF energy only when transmitting.

FCC Notice and Declaration

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

The scanning receiver in this equipment is incapable of tuning, or be readily altered, by the user to operate within the frequency bands allocated to the Domestic Public Cellular Telecommunications Service in Part 22 of the FCC rules.

Any modification to a scanning receiver to receive transmissions from the Cellular Radiotelephone Service frequency bands voids the certification

of the scanning receiver, regardless of the date of manufacture of the original unit. In addition, the provisions of FCC §15.23 shall not be interpreted as permitting modification of a scanning receiver to receive Cellular Radiotelephone Service transmissions.

FCC License Required for GMRS Operation

The GMRS-50PRO operates on GMRS (General Mobile Radio Service) frequencies, which require an FCC (Federal Communications Commission) license. You must be licensed prior to transmitting on any of the channels, which are comprised of GMRS channels. Serious penalties could result for unlicensed use of these channels, in violation of FCC rules, as stipulated in the Communications Act's Sections 501 and 502 (amended).

You will be issued a call sign by the FCC, which should be used for station identification when operating the radio on these channels. You should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other GMRS users, and being prudent with the length of your transmission time.

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 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:

- Re-orientate or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an electrical outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio technician for help.

“The Radio is pre-configured with 8 GMRS repeater channels: 467.5500, 467.5750, 467.6000, 467.6250, 467.6500, 467.6750, 467.7000, and 467.7250 MHz. In basic terms, a repeater is a device that is used to increase the range of two way radios. Repeaters will receive a transmission on one frequency and simultaneously rebroadcast that transmission on a different frequency. Repeaters are often set up in a fixed location and connected to an antenna that is mounted at a higher elevation to provide better range than is normally available with radio-to-radio (simplex) communications.

Using GMRS repeaters can significantly increase the range of your radio, but just tuning to one of the repeater channels isn't necessarily going to work. You first have to be sure there is a repeater listening on that channel's frequency, and you have to be within range of that repeater. It is important to keep in mind that a GMRS repeater is not necessarily intended for public use.

They are owned by individuals and are sometimes intended for private use or require permission to use. Before connecting to a GMRS repeater, be sure that you have permission or that the owner is fine with public use. The description on the myGMRS website usually indicates if permission is required and provides a way to get in touch with the owner.”

-----§ 95.1743 Minor GMRS operators.

Operators under the age of 18 will not be held personally responsible, pursuant to § 95.343, for improper operation of a GMRS repeater or base station. The holder of the individual license under which the minor operates is solely responsible for any improper operation that occurs while an individual under the age of 18 is operating the station

Features and Functions

- GMRS Transceiver and UHF&VHF Scanner
- APP Programming
- Multiple Bluetooth connection methods
- Radio short message function
- GPS positioning system
- Partner location and direction reporting system
- Multiple emergency functions
- Broadcast FM receiver 87-108 MHz
- 30x6 channel groups
- NOAA Weather Alert
- Dual watch / Dual reception
- USB direct charging, convenient and fast

DC Power Cable Connection

Locate the power input connector as close to the transceiver as possible.

Mobile Operation

The vehicle battery must have a nominal rating of 12 V. Never connect the transceiver to a 24 V battery. Be sure to use a 12 V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmit 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.

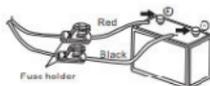
If using a noise filter, it should be installed with an insulator to prevent it from touching metal on the vehicle.

We recommend you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop.

The entire length of the cable must be dressed so it is isolated from heat, moisture, and the engine secondary (high voltage) ignition system/ cables.

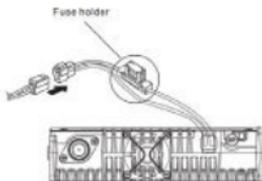
2. After the cable is in place, wrap heat-resistant tape around the fuse holder to protect it from moisture and tie down the full run of cable.
3. To prevent the risk of short circuits, disconnect other wiring from the negative (-) battery terminal before connecting the transceiver.
4. Confirm the correct polarity of the connections, then attach the power cable to the battery terminals; red connects to the positive (+) terminal and black connects to the negative (-) terminal.

Use the full length of the cable without cutting off excess even if the cable is longer than required. In particular, never remove the fuse holders from the cable.



5. Reconnect any wiring removed from the negative terminal.
6. Connect the DC power cable to the transceiver's power supply connector.

Press the connectors firmly together until the locking tab clicks.

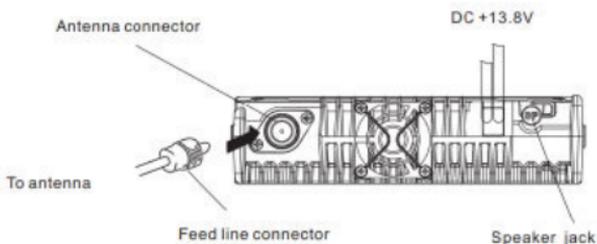


Antenna Connection

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

Use a 50Ω impedance antenna and low-loss coaxial feed line that has a characteristic impedance of 50Ω , to match the transceiver input impedance. Coupling the antenna to the transceiver via feed lines having an impedance other than 50Ω reduces the efficiency of the antenna system and can cause interference to nearby broadcast television receivers, radio receivers, and other electronic equipment.

- Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.
- All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage.

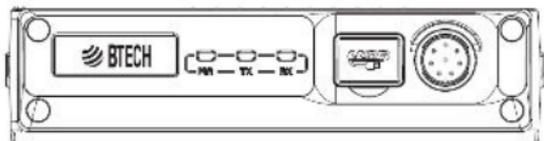


What's in the box

This transceiver comes shipped with the following items in the box:

- GMRS-50PRO Radio Body
- GMRS-50PRO Speaker Microphone
- Mobile Bracket
- DC (12V) Power Cord
- Mounting Hardware w/ Microphone Holder

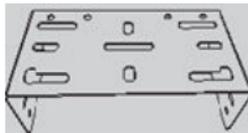
Mobile Radio



Microphone



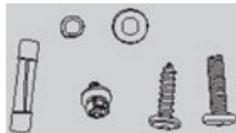
Mounting Bracket



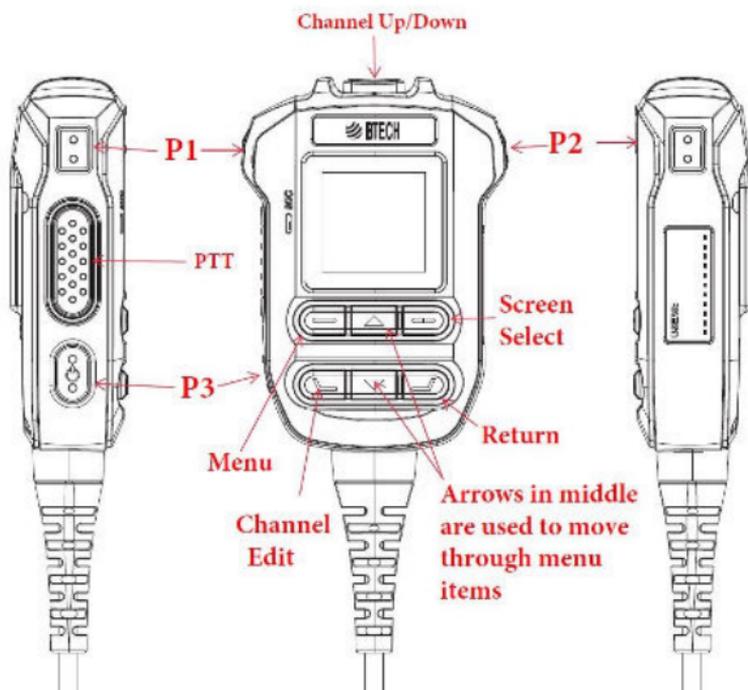
Power Cable



Mounting Screws and Fuse



Microphone Controls



GMRS Frequency Chart, Channel Guide

* Per FCC GMRS Radio Guidelines; Channels 1-7 are limited to Low Power 5-Watt output

** Per FCC GMRS Mobile Radio Guidelines Channels 8-14 transmitting is disabled; they can receive and monitor communications, but GMRS mobile radios cannot transmit on these channels.

GMRS FREQUENCY CHART

CH: Name	Ch. Freq	CH: Name	Ch. Freq	CH: Name	Ch. Freq	CH: Name	Ch. Freq	Offset
01: GMRS01*	462.56250	08: GMRS08**	467.5625	15: GMRS15	462.5500	23: REPT15	462.5500	+5MHz
02: GMRS02*	462.58750	09: GMRS09**	467.5875	16: GMRS16	462.5750	24: REPT16	462.5750	+5MHz
03: GMRS03*	462.61250	10: GMRS10**	467.6125	17: GMRS17	462.6000	25: REPT17	462.6000	+5MHz
04: GMRS04*	462.63750	11: GMRS11**	467.6375	18: GMRS18	462.6250	26: REPT18	462.6250	+5MHz
05: GMRS05*	462.66250	12: GMRS12**	467.6625	19: GMRS19	462.6500	27: REPT19	462.6500	+5MHz
06: GMRS06*	462.68750	13: GMRS13**	467.6875	20: GMRS20	462.6750	28: REPT20	462.6750	+5MHz
07: GMRS07*	462.71250	14: GMRS14**	467.7125	21: GMRS21	462.7000	29: REPT21	462.7000	+5MHz
				22: GMRS22	462.7250	30: REPT22	462.7250	+5MHz

App Introduction

CONNECTING GMRS-50PRO TO A CELL-PHONE

For Android users

Go to Google Play and, Search for “BTECH GMRS Programmer”

For iOS users

Search “BTECH GMRS Programmer” in APPLE store to download

Using the app

Pairing your cell phone to the radio

1. Open the app, Turn-on the radio, then press the **P3** button twice OR scroll to [Pairing] in the menu, then select the **OK** button to enter the pairing state, a ‘BEEP’ will be heard and a red-green light flashing means the radio is now in pairing status (APP requires Bluetooth permission, please make sure the Bluetooth status is on), The APP will search for active Bluetooth devices, and it will display as shown in Figure 1

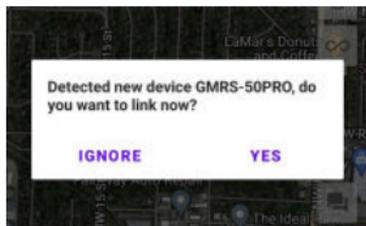


Figure 1

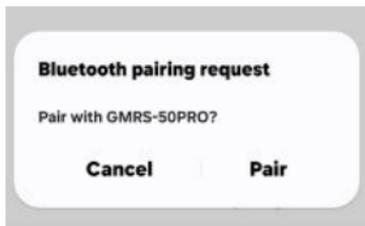


Figure 2

2. Select **YES** to allow Bluetooth connection
3. Bluetooth pairing requires confirmation of Bluetooth authorization, select **PAIR** to confirm the pairing status as seen in Figure 2

App Permissions

NOTE: The App will request permission to use the Location, Nearby Devices, Microphone, and Media Storage of your phone. These privileges will allow the app to send and receive audio and data to work with the radio.

4. Select **PAIR NEW DEVICE** — this will connect your phone or tablet to your radio. The App will store these connections for the next time you wish to use the App. You can store more than one radio, and you can name them differently in the App to make sure you are working on the proper unit. The unit will show as numbers until paired. These numbers are the Bluetooth code — select to “bind” that device and it should then show as “GMRS-50PRO”

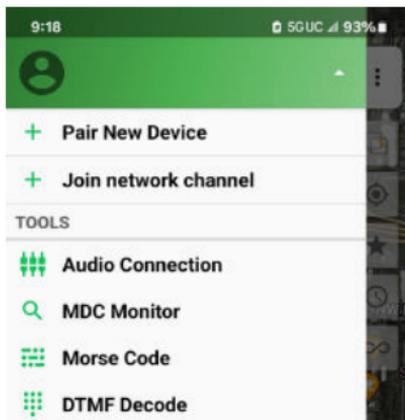


Figure 3

Network Channels

BTECH radios have the unique capability of being involved in an online network. Individual groups can be created. This expands the capabilities of the radio. An example is a member is outside of radio coverage, but is logged into the network and group — you can still communicate with them via the Network Channel. Info can be found here:

<https://baofengtech.com/harnessing-the-power-of-community-with-btech-gmrs-programmers-networking-groups/>.

Getting Started with Your Account

Accessing Sign-In Options

If you're new or haven't set up an online profile yet, start by selecting the "Sign In" button located beside your "Nickname"

Creating a New Account

If you need to create an account, choose the option to "Sign Up". This will allow you to setup a Username and password with the email address of your choice. You can create an account here at: <https://account.benshikj.com/user/register>

Using OAuth Authentication

For a quicker setup, you can also use OAuth authentication with Google or Apple. This will link to your existing Google or Apple account for a seamless sign-in experience with no additional username or password to use.

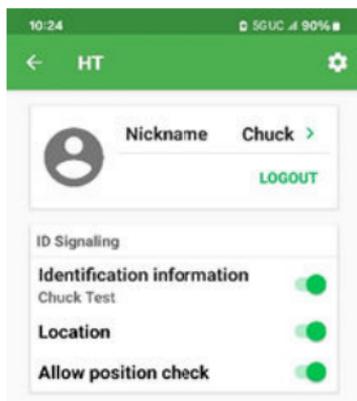
General Profile Account Options

Nickname and Identification

Customize your nickname and identification details to be recognized by fellow users within groups.

Privacy Settings

Adjust your location sharing preferences in the 'User Settings' to manage your footprint and privacy.



Engage with the UV Pro Community through Network Groups

Before diving into group chats, you'll need to connect to a network channel.

Join a Network Channel

Navigate to the main menu and select 'Join Network Channel'. Here, you'll find a list of available channels.

Select the Default Group

Choose 'BTECH GMRS', which is the default network channel for all app users. This is the primary hub for BTECH community interactions. The 'BTECH GMRS' default network group is your gateway to the community

Connection Status

The cloud icon's appearance is your indicator of connection status—a slashed cloud means you are offline, while a clear icon signifies active connection.

Notification Settings

Control the audio alerts for new messages and conversations with the speaker icon. A slashed speaker denotes silent mode, allowing you to browse the log without interruption.

Real-Time Communication at Your Fingertips

The app's interface is designed for real-time interaction.

Voice Communication

Use the 'Hold to Speak' button for instant voice messaging with other group members, visible in the chat as audio waveforms.

Text Messaging

Tap the keyboard icon to compose and send text messages to the group, facilitating quick and convenient typed communication.

Location Sharing

Share and request locations with group members to enhance your collaborative experience, especially useful during events or meet-ups.

Understanding Data Privacy and Access in Real-Time

As you engage with the community through the BTECH GMRS Programmer app, it's essential to understand how your data is handled.

Real-Time Access

The app operates on a real-time access model. This means that to view conversations and archives, you must be online. This design ensures that you have immediate and continuous access to the group's dialogue as it unfolds.

Online Presence

To ensure you don't miss any part of the conversation, maintain your online status. Being online is crucial as it allows the app to sync and display the latest communications from other users in real-time.

Data Privacy

BTECH takes your privacy seriously. No logs or conversation data are stored on our servers. All information is relayed live and is only stored locally on your device. BTECH does not store conversations, but simply relays them to active users.

Archiving Conversations

If you wish to review past conversations, you must be part of the network channel when the conversations occur, as the app does not retroactively provide chat logs for periods when you were offline.

This approach not only respects your privacy but also aligns with the real-time nature of radio communication. It ensures that your communications remain private, secure, and under your control.

Create Exclusive Groups for Focused Communication

For those desiring more private and focused discussions.

Private Group Creation

Establish your own private group and safeguard it with a passcode. Only members with the passcode can join, ensuring exclusivity and control.

Searchable Database

Your private group will be listed in the app's searchable database, making it discoverable to users you choose to share the passcode with.

Continuous Connectivity

Stay connected to the conversation by keeping the app active on your device, ensuring you never miss a message with the cloud icon enabled.

Accessing iOS Settings

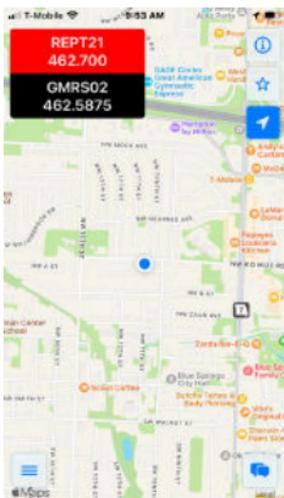


Figure 4

iOS Main Screen –
Click the 3 bars on
lower left

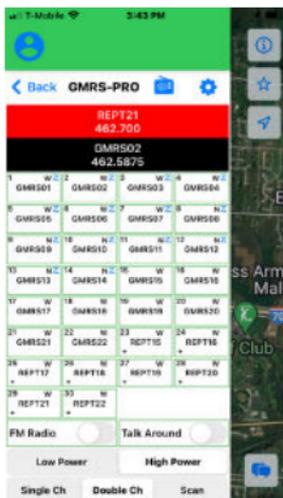


Figure 5

Click the Gear Icon

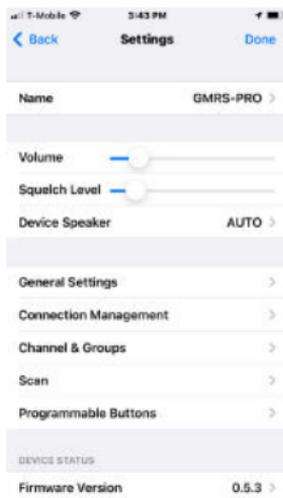


Figure 6

Settings Menu

Editing a channel

Long press the channel square, you will be taken to the **Edit Channel** screen, enter your changes, and when you complete the edit of the channel parameters, click the 3 dots, then select **SAVE** to save the Channel Parameters. Click **MORE** to show a more detailed channel editing interface at the main editor screen.

Control Interface

Select Channel

Click the channel square to switch the channel, and the radio will emit a “beep” tone.

Low/Mid/High Power

Refers to the output power of the current channel

Single CH

Refers to monitoring the frequency of the current channel

Dual CH

Refers to monitoring the frequency of two channels

Scan

Means the channel list allows the scanned channel to enter the status of scanning

FM Radio

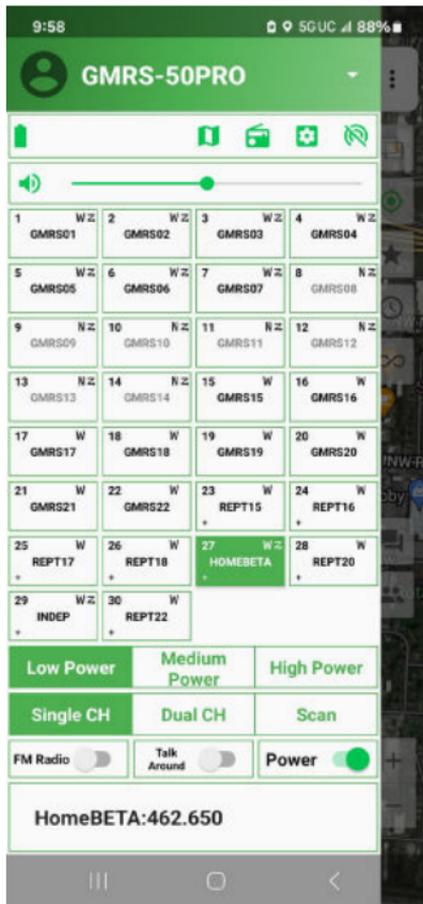
Click to turn on or off the FM radio

Talk Around

Turning on sets the TX and RX frequency as the same frequency (no offset on TX).

Power

Turn the radio on or off



GMRS channels are “fixed” frequencies, they cannot be adjusted from the factory settings. If you need to use other frequencies, please create a new channel group. Please follow FCC regulations to use with walkie-talkies. The non-GMRS channels will be Monitor Only.

New Channel

Make sure radio is connected to phone before adding channels, and for RX only channels, set TX Freq to 0

Title

Means the channel name, you can name the channel

RX/TX Freq

Click to edit transmit and receive frequencies

RX/TX CTCSS/DCS

Click to edit transmit and receive CTCSS/DCS

TX Power

Set the output power of the current channel

Bandwidth

Set the communication bandwidth of the current channel

Disable TX

When this option is turned on, it means that transmission is not allowed

Mute

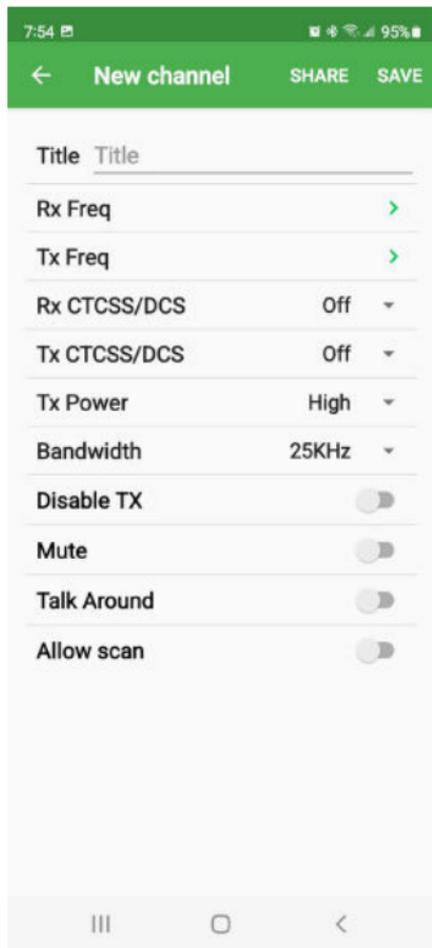
Turning on means that this channel is muted

Talk Around

Turning this on sets the transmit and receive frequencies the same

Allow Scan

Allows the channel to be added to scan lists



Device Settings

Volume

Adjust the volume of the device

Squelch Level

Squelch level adjustment, 0 is the weakest required signal level to monitor (loose squelch), the larger the number (tight squelch), the stronger the received signal strength needs to be to be heard

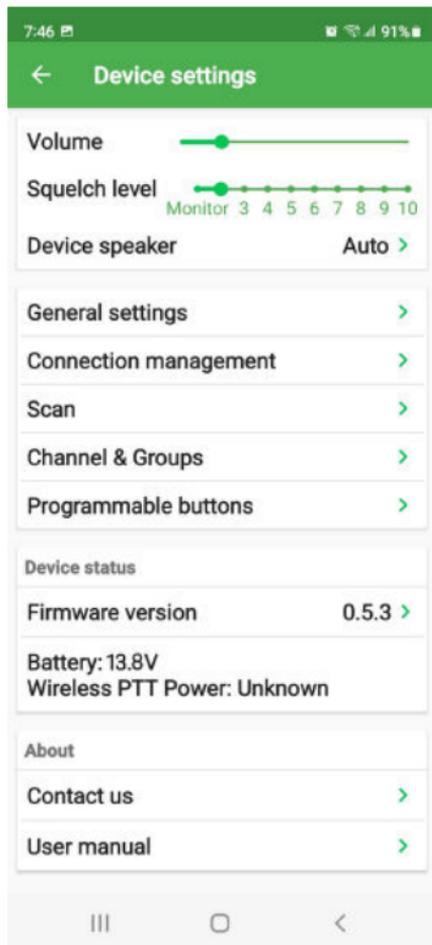
Device Speaker

Working mode of built-in speaker

ON — Turn on the built-in speaker

OFF — Built-in speaker mute

AUTO — When connected to a wireless hand microphone or wireless headset, the speaker will be automatically muted, and the built-in speaker will automatically exit the mute state when the wireless device is disconnected



General Settings

WX Mode

Use this to select Off, Monitor (to Listen), or Alert (NOAA WX Warnings only) After using Monitor, you need to adjust the squelch tighter to quiet the receiver — found under Device Settings

WX Channel

Choose local NOAA channel

TX Time Limit

Set the time limit for device transmit

TX Hold Time

When connect to the repeater, the lag time for the end of transmission

PTT Follow

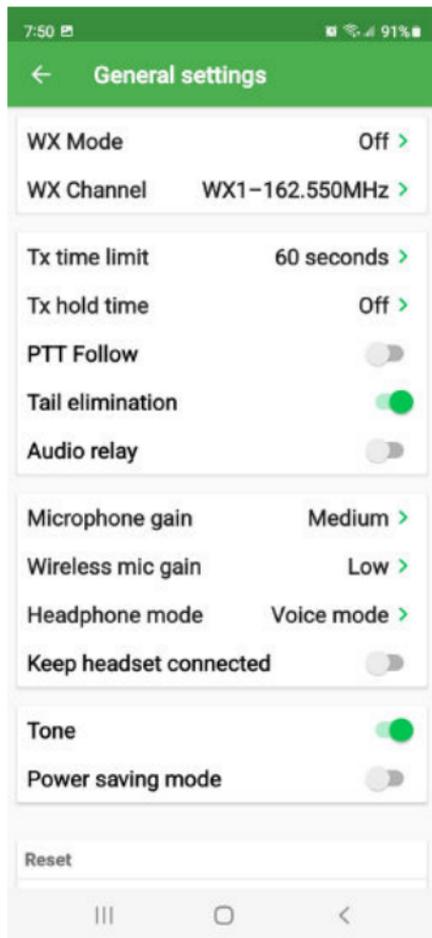
PTT follows the current signal channel

Tail Elimination

Automatically eliminate the noise after the end of transmission

Audio Relay

Replay and transmit the received voice — *Recording time is up to 30 seconds*



Please be cautious when using Audio Relay. If two radios are too close, the radios will fall into an endless loop of transmitting and receiving. Please do not turn on this function on a repeater channel.

General Settings

Microphone Gain

Set the microphone gain of the internal microphone

Wireless Mic Gain

Set the microphone gain of the wireless microphone

Headphone Mode

Set the access mode of the headphone system (voice mode or call (phone) mode)

Keep Headset Connected

Select the continuous connection and operation via the headset

Tone

Set the operation beep tone on the device

Power Saving Mode

Turn on/off the power saving mode

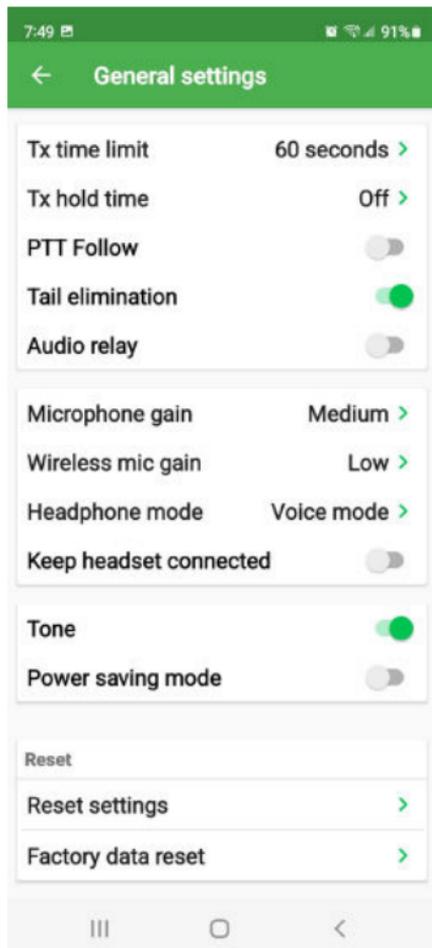
Reset Settings

This will reset all user settings- back up settings before performing this

Factory Data Reset

This function will restore all the data of the radio to the factory settings

Please back up data such as frequency and channels before performing this operation



Connection Management

Slide **SCAN** to scan for active Bluetooth devices and perform pairing operations

Scan

Used to check for active frequencies.

Click the **START** frequency to set the lowest scanned frequency, and **END** to set the highest scanned frequency

Click the ▶️ to start the scan. Hit the ◀️ next to **SCAN** to go back and stop the scanning

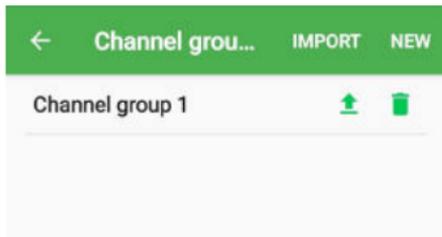
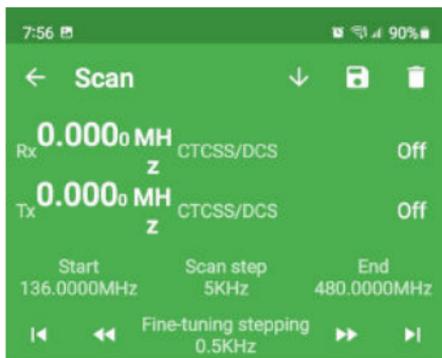
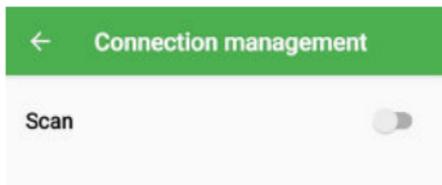
Channel Groups

Click **NEW** to create a new group, after completing all channel information, click the up arrow to synchronize to 2- 6 channel groups of the walkie-talkie, Channel group 1 is the GMRS channel by default and cannot be changed

IMPORT allows importing shared channels

📶 Uploads the channel group to the radio

🗑️ Deletes the channel group





On the channel group editing page, when you finish editing all the channel information and click **SHARE**, a string of characters will be generated. You can save this string of characters or send it to the partner. When the partner copies this string of characters and opens the APP, all channel information will be copied to their device.

Firmware Version Updates

When there is firmware that can be updated, click on the firmware version to update the firmware.

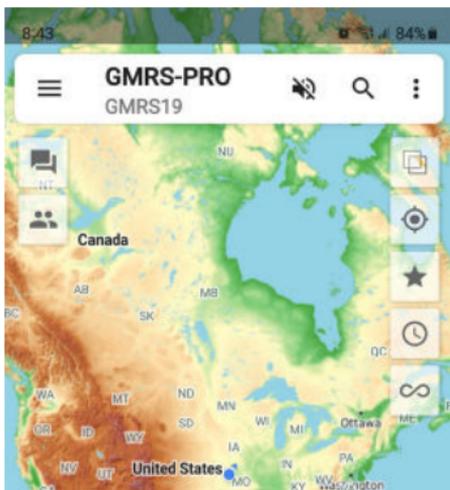
*If you have a new radio, or need to reinstall the app, then you need to bring up the **CHANNEL LIST**, then go to the **CHANNEL GROUP** and create a New Group and Save what was read from the radio.*

App Screen

Click ☰ to return to the main interface

 Means the cell phone will be muted, if the speaker is ON, the radio and cell phone will sound at the same time

 Go to the **MESSAGE** page



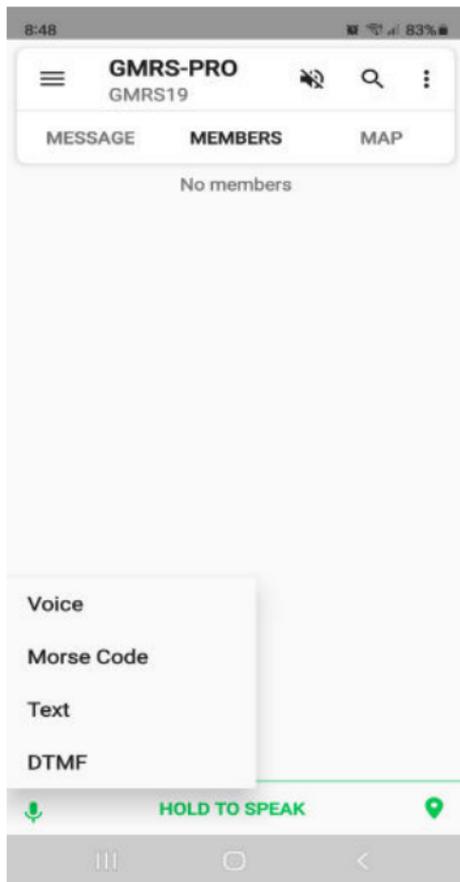
App Screen

Chat history will be searched.
(If the radio is not connected to the phone, no chat history will be displayed)

In the **MESSAGE** page, click on the microphone icon



(At the lower left of screen) to switch between voice and text input modes



Radio/Microphone Buttons

Microphone Function Keys

Up key

Menu Page up

Down key

Menu Page down

Return

In the menu mode, press this key to enter the menu setting and to set and accept changes made

Menu key

Turn on the menu function

Change Screen key

(Screen Select)

In the standby screen mode, it is the switch screen key. Press this key repeatedly to switch back and forth between the three screen modes

Return key

Exit the current setting / Menu function

Channel Up/Down

(top of Microphone)

Use this key to change between stored memory channels

P1 Key

Short Press — Lower Volume

Long Press — A/B Band Switching

Double Click — Mute/Unmute

P2 Key

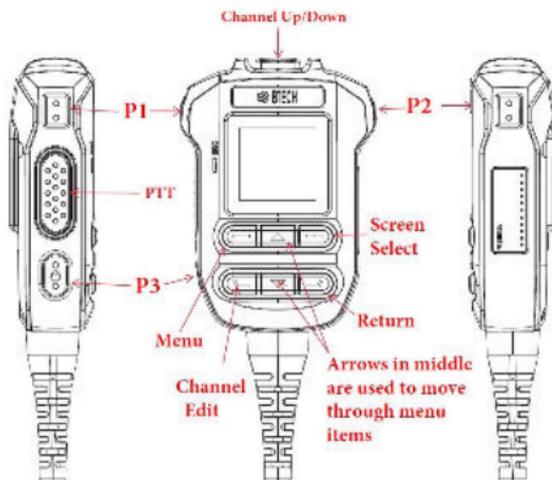
Short Press — Increase Volume

P3 Key

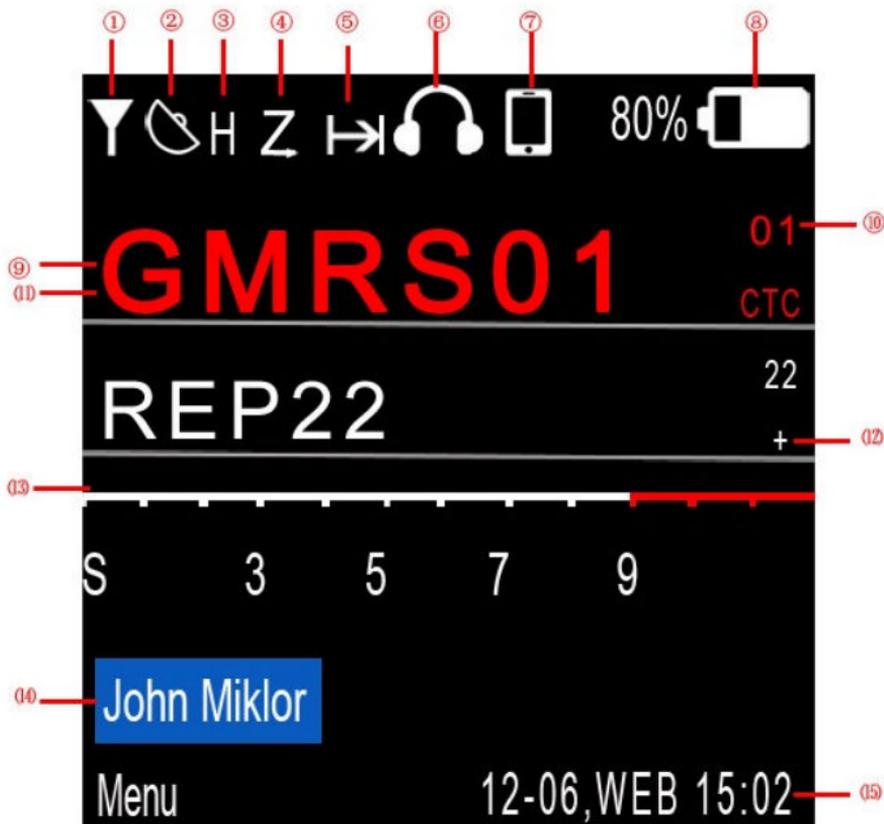
Short Press — Speak the current channel

Long Press — Turn Mic on/off

Double Click — Place Mic in Pairing Mode (red/green flashing LED)



Icon Functions



- 1. Radio**
Represents the normal standby state of the radio
- 2. GPS On**
On behalf of the GPS function. GPS is turned on by default when powering on
- 3. Transmit Power icon**
H stands for high power and L stands for low power

- 4. Scan**
It means the scanning function is on
- 5. Talk Around**
- 6. It means the talk around function is on**
Headset Connected
The device is connected to wireless headset
- 7. Connected to mobile phone**
The device is connected to the mobile phone
- 8. Battery Power Level**
Battery level display. (The specific battery percentage can be queried by entering [Status] in the menu)
- 9. Channel Name**
The current memory channel name
- 10. Channel Number**
The current channel number for the frequency
- 11. Main Band**
After dual standby is turned on, the frequency of the main band will be red and with red arrow
- 12. Repeater Shift Direction**
+ means transmit shift up in frequency
– means transmit shift down in frequency
- 13. Signal Strength Level.**
When receiving, display the receiving signal strength indicator
- 14. ID Name**
The device name of this device, you can customize the ID name in the menu (*Signaling setting*)
- 15. Status Bar**
After receiving the GPS or connecting the mobile phone, the actual time and date of satellite time service or network time service will be displayed
- 16. Transmitting Status Indicator**
(2 GPS on indicator) The up arrows (^) means the radio is transmitting, and the down arrows (v) means the radio is receiving

Electronic Compass

1. Sensor prompt icon

The “=” icon in the middle of the electronic compass means that it is disturbed by the external environment. You need to enter the [Compass] menu and perform correction operations according to the on-screen instructions. At this time, after entering the [Compass] menu, the screen will prompt “Please place the device (microphone) on a level surface (screen facing up), and then press the [OK] button in the upper left corner of the keyboard.

- ### 2. Sensor prompt icon. The “8” icon in the middle of the electronic compass indicates that it is disturbed by the external environment. You need to enter the [Compass] menu and perform correction operations according to the screen prompts. At this time, after entering the [Compass] menu, the screen will prompt “Please calibrate the sensor according to the figure 8 rotating device”. At this time, please hold the device and extend it forward, and draw the figure eight (i.e., “8”) quickly and forcefully. It is better to complete one to eight characters in about 2 seconds.



Tips: Try to keep the device away from strong magnets, which will affect the device sensors.

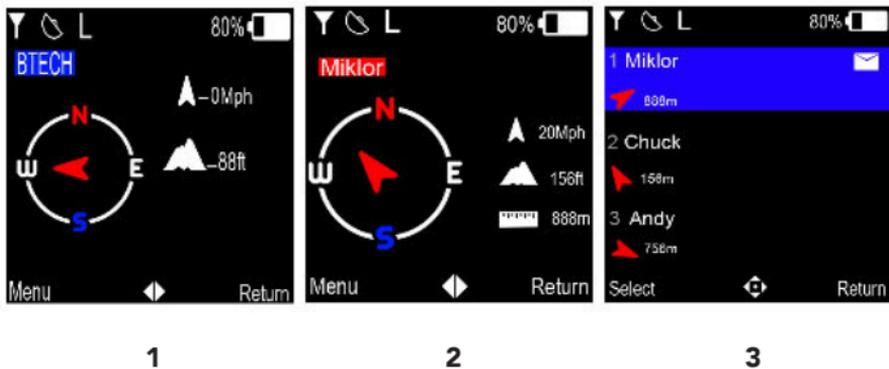
*If it is sometimes close to a strong magnet, the screen will prompt an “=” icon, and the icon will be restored immediately after it is far away, and no correction is required at this time. If the electronic compass is found to be unresponsive during use, please enter the **COMPASS** menu to calibrate the sensor to avoid being misled by any strong external magnetism.*

Edit Frequency and Memory Settings

1. **Refers** to the next digit of the cursor.
2. **Press** to move down list.
3. **Cursor** Under the current cursor, you can use the up or down keys to select the specific value you need.



Split Screen Display



1. The user's name or call sign is displayed when Dual Watch is off.
2. Display the last contact information received. Such as the name or call sign of the other party plus location information and direction.
3. Display a list of recently received contact information. Press the key to select the list of information to be viewed. Press **ENTER** key to view the detailed location information direction of the other party when communicating.



Note: In the standby mode, please press the [Back] key on the upper right corner of the keyboard to switch back and forth between the above three screens.

Adding New Frequency



Tip: GMRS only allows the creation of new channels between channel groups 2-6

1. Add a regular frequency

Create a new frequency list in new Group, press the **ENTER** button to add to the channel list, press the up or down keys to select channel number press **EDIT** button to edit the frequency, Press **EDIT CHANNEL**, then edit the frequency and memory settings to set your frequency.

2. Add a GMRS frequency

Create a new frequency list in new Group, press **ENTER** button to the channel list, press up or down keys to select channel number. press **Edit** button to edit the frequency, Press **GMRS CHANNEL** to select the Channel, then press **EDIT CHANNEL**, to set your frequency. If you add a GMRS frequency, all the restrictions stipulated by the FCC will take effect, and you can only modify the parts that are allowed to be modified, if you want to clear the GMRS channel information, you can select **CLEAR CHANNEL**.

Radio Menu Settings (All menu options are also in Appendix A)

FM Radio

Press the menu key to enter the menu, turn on the FM radio, and press the up key to scan the available frequencies up.

Press the down key to scan down the available frequencies, press the OK button to exit the radio mode

Signaling

Send Message

Send text message to partners (Channel 23 - Channel 30 prohibit sending data packets)

Call

When the receiving device receives the **CALL** command, the radio will ring, please enter the ID to be searched

Check

When the receiving device receives the **CHECK** command, the radio will feed back the current location, this option requires the receivers **ALLOW CHECK** to be effective, please enter the ID to be searched

Nearby People

This option sends the **CHECK** command at the current frequency, and all radios of the same frequency will feedback their current position after receiving the command. This option requires the receiver **ALLOW CHECK** to be active

Radio Settings

Dual-Watch

If active, it will be watching activity for two channels, Press the up and down keys to switch between the main band and sub band, and press the side key to switch the waiting channel

Scan

If active, the radio will be in scanning state, and all channels between the start and stop frequencies will be scanned

Talk Around

On a channel with an offset frequency, if the option is activated, the TX becomes the same as the RX frequency

Power

Change the output power

TX Subtone

Set the TX subtone (CTCSS or DCS) on the present channel

RX Subtone

Set the RX subtone (CTCSS or DCS) on the present channel

Channel Group

Change the Channel Group for use

Squelch Level

Adjust the squelch Level of the received signal, level 0-9, the smaller the number, the easier it is to receive weak signals

TX Time Limit

Limit the maximum time of each transmit

Tail Elimination

With this option turned on, no end tone will be heard between radios of the same brand

PTT Follow

When this option is on, and the sub band receives a signal, press the PTT to reply within 10 seconds, you can transmit on the sub band frequency without switching to the main band

PTT Release

This activates an audio transmission when you release the PTT button. The options are: NONE, ID+GPS (ANI ID must be entered and GPS must be on and showing your location), ID sends the ANI ID, GPS Sends your location, Roger Beep places a beep at the end of your transmission. All of these will NOT be audible on your radio- only the radios receiving your transmissions will hear them.

General Settings

Bluetooth Settings

Pairing

Enable Bluetooth pairing

Available Devices

List paired devices that are in range

Scanning

Indicates unit is scanning for devices

Paired Devices

List devices already paired with unit

Signaling Settings

ID

Set ID to be sent

Allow Check

Allow other members to find your position

Sound Settings

Speaker

Select Speaker function (Auto/On/Off)

Mic Gain

Set Microphone Sensitivity (Low/Med/High)

BT Mic Gain

Set Bluetooth Mic Sensitivity (Low/Med/High)

Keep Connected

Maintain a connection with paired Bluetooth Device

Tone

Turn On/Off Keypad Beep

Display Settings

Brightness

Set brightness of display (1-Dim to 15-Bright)

Screen Timeout

Set time to turn off display while unit is on
(3 secs to 300 secs, Never-leave display on)

Time Zone

Set present time zone

Imperial Units

Use USA standard of Feet/Miles

Low Power Mode

Turn on to reduce current consumption

Reset Settings

Reset user settings

(See alert on next page)

Restore Factory Settings

Reset all settings to factory default (See Alert on next page)



Alert: Back up (save to app) any settings you made. Doing the reset options will remove any user changes.

NOAA

WX Scan

Scan for the closest NOAA Weather Transmission channel

WX Channel

1 162.550MHz **2** 162.400MHz

3 162.475MHz **4** 162.425MHz

5 162.450MHz **6** 162.500MHz

7 162.525MHz

WX Alert

Turn on this option, and when the NOAA weather warning message is received, the device will sound an alarm, and the weather message will be heard. During the alarm state, you can press any key to mute the alarm message, and the alarm state will be released after 3 minutes

WX Monitor

Turn On/Off NOAA Weather Audio

Sync Settings

Send Channels

Send your stored channel groups to a teammate

Receive Channels

Receive your teammates stored channel group

Tone Scanning

Select Either RX or TX tone frequency to start the tone scanner.

Once a signal is received, the scanner will search and will stop on the tone that is being used.

GPS Status

This screen will show you the info from the GPS satellite, once you are locked on. To enable, GPS must be on and if needed, go outside with a clear view of the sky to obtain a GPS lock.

Compass

This is the Compass Calibrate screen. Follow the instructions with the Microphone to calibrate the Internal compass

Status

This screen will show your Firmware revision, Voltage, and Factory model designator

Pairing

Check the box to turn on/off Bluetooth Pairing (Same as P3 mic function)

APPENDIX A

RADIO MENU

FM Radio	Select Frequency of FM Radio	88-108 MHz	
Signaling	Send Message	Enter Text Message to Send	
	Call	Call other members of your group	
	Check	Check location of your group members and allow other to check your location	
	Nearby People	Show nearby members of your group	

	Signaling Settings	Identification Information (ID)	Text Input
		Send ID	ON: Box checked
			Off: Not Checked
		Position Send	ON: Box checked
			Off: Not Checked
		Allow Check:	ON: Box checked
			Off: Not Checked
		Radio Settings	Dual Watch
Off: Not Checked			
Scan	Allow Scan		On: Box Checked
			Off: Not Checked
Talk Around	Set TX and RX frequencies to same		On: Box Checked
			Off: Not Checked
Power	Set TX Power level		High / Low
Channel Group	Select Channel Group		01 to 06
Squelch Level	Set Required Signal Level to Be Heard		0 (Open Squelch)
			9 (Strong Signal Needed)

	TX Time Limit	Set Maximum TX Time	10 Seconds to 300 Seconds, Unlimited (No Timer)
	PTT Follow	Used with Sub Band on	See Page 45 for explanation
	Tail Elimination	Remove noise burst at end of signal reception	On: Box Checked
Off: Not Checked			
Sound Settings	Speaker	Auto	Automatic detection of ear piece
		On	Speaker On
		Off	Speaker Off (Muted)
	Mic Gain	Low	Sets Level of Microphone Sensitivity
		Med	
		High	
	BT Mic Gain	Low	Sets Level of Bluetooth Microphone Sensitivity
		Med	
		High	

	Keep Connected	Keep Bluetooth Device Connected	On: Box Checked
			Off: Not Checked
	Tone	Beep when a key is pressed	On: Box Checked
			Off: Not Checked
Display Settings	Brightness	Sets the display brightness	1 (Dim)-15 (Brightest)
	Screen Timeout	Timer to leave screen active	3 Seconds to 5 Minutes, or Never shut off display
	Time Zone	Set the time zone of the radio clock	Used to correct Time Zone Selection
	Pairing	Enable Bluetooth Pairing	On: Box Checked
Off: Unchecked (Turns off once pairing is completed)			

Display Settings	NOAA	WX Scan	Scan of nearby NOAA Stations
		WX Channel	Manually select NOAA Channel
		WX Alert	Turn on Weather Alerts (Check to activate)
		WX Monitor	Listen to Local NOAA Station (Check to turn on) Turn on Weather Alerts (Check to activate)
	GPS Status	Shows GPS Information	
	Compass	Calibrate Compass	
	Status	Shows Various Radio Info	

APPENDIX B

CPS MENU

Team	Create a Team	Select Members to be on Your Team	
	Join A Team	Join an existing Team	
Nearby People	Show People nearby you	Show map with locations of nearby people	
Device Settings	Volume	Set volume level of radio	
	Squelch Level	MON to 10	Open Squelch to Tight Squelch (10)
Device Speaker	Auto	Auto select either earpiece or speaker	
	On	Speaker On	
	Off	Speaker off	
General Settings	WX Mode	Off	Disable NOAA reception
		Monitor	Monitor NOAA Broadcast
		Alert	WX Alert (warnings turn on audio)

General Settings	WX Channel	WX1 to WX7	Select local NOAA broadcast
	TX Time Limit	Set TX Time out timer	10 to 300 sec or Unlimited (no timer)
	TX Hold Time	TX off delay	Off, 0.1sec to 1 sec in 0.1 sec steps
	PTT Follow	Used with Sub Band on	See Page 45 for explanation
	Tail Elimination	Remove noise burst at end of signal reception	Slider on (to right)
			Slider off (to left)
	Audio Relay	Record the received voice and then re-transmit it, the recording time is limited to 30 seconds.	When you turn on this feature, you will hear repeated voices, please be cautious.
	Microphone Gain	Low	Set the sensitivity of the microphone
		Medium	
		High	
Wireless Mic Gain	Low	Sets the sensitivity of the wireless mic	
	Medium		
	High		

General Settings	Headphone Mode	Voice	Switches between Radio and Phone Mode
		Call Mode	
	Keep Headset Connected	Maintain connection to Bluetooth Headset or Speaker/mic	On/Off
	Tone	Turn on /off radio beep	
	Power Saving Mode	On/ Off	
	Auto Power On	Use to automatically turn on unit	
	Automatic Shut Down	Used to turn off unit after preset time	OFF, 15m, 30m, 1h, 2h, 4h, 8h, 16h
	Reset Settings	Clear all user settings	
	Factory Data Reset	Return Device to factory default settings	CAUTION: This will clear ALL user settings

Connection Management	Scan	Start	Start Frequency of scan range
		End	Stop Frequency of Scan Range
		>	Start Scanning
		Click Arrow next to SCAN	Go back a screen and stop scanner.
SCAN	Used to Scan frequencies for activity		
Channel & Groups	List of Channels and Channel Groups		
Programmable Buttons	Variable Programming for P1 Set user desired functions to P1	Set user desired functions to P1	Refer to page 33 for button layout
Firmware Version	Shows FW revision number		
Battery	Shows Battery Voltage		

Wireless PTT Power	Shows Wireless PTT module battery level		
Contact Us	Contact Information for BTECH (opens web browser)		
User Manual	Opens browser to online user manual		
Settings	ID Signaling	ID Information On/Off	Set with "Nickname"
		Location On/Off	
		Allow Position Check On/Off	
	BBS Routing	Time to Live	0-8
		Maximum Forwarding Times	0-8
	Channel Manager	Add/Delete Channels	
	Channel Group Manager	Import or Create New Channel Groups	
	Offline Maps	Satellite (Google)	Download Maps
		Terrain (Google)	
		Terrain (OpenTropoMap)	

	Simple Mode	Place user Interface in Simple Mode	Limit number of available functions
	Keep Screen On	On/Off	
	Save Voice History	On/Off	Record Voice to phone
	Microphone Gain	Low	Set Microphone Sensitivity
		Medium	
		High	
PTT Button	Select Button for PTT Function		
PTT Lock	Lock PTT on	Use with Caution	
Morse Code	Speed	Set Speed of Morse Code	1-200 words per minute
	Pitch	Set sidetone pitch	320 to 3000 Hertz
DTMF	Speed	Set Characters per minute	10-500 cpm
About (CPS)	CPS Version		
	Privacy Policy		
	Open-Source License		

DCS Table

Table C.1. DCS Codes

NUM	CODE	NUM	CODE	NUM	CODE	NUM	CODE
001	D023N	002	D025N	003	D026N	004	D027N
005	D032N	006	D036N	007	D043N	008	D047N
009	D051N	010	D053N	011	D054N	012	D065N
013	D071N	014	D072N	015	D073N	016	D074N
017	D114N	018	D115N	019	D116N	020	D122N
021	D125N	022	D131N	023	D132N	024	D134N
025	D143N	026	D145N	027	D152N	028	D155N
029	D156N	030	D162N	031	D165N	032	D172N
033	D174N	034	D205N	035	D212N	036	D223N
037	D225N	038	D226N	039	D243N	040	D244N
041	D245N	042	D246N	043	D251N	044	D252N
045	D255N	046	D261N	047	D263N	048	D265N
049	D266N	050	D271N	051	D274N	052	D306N
053	D311N	054	D315N	055	D325N	056	D331N
057	D332N	058	D343N	059	D346N	060	D351N
061	D356N	062	D364N	063	D365N	064	D371N
065	D411N	066	D412N	067	D413N	068	D423N
069	D431N	070	D432N	071	D445N	072	D446N
073	D452N	074	D454N	075	D455N	076	D462N
077	D464N	078	D465N	079	D466N	080	D503N
081	D506N	082	D516N	083	D523N	084	D526N

085	D532N	086	D546N	087	D565N	088	D606N
089	D612N	090	D624N	091	D627N	092	D631N
091	D627N	092	D631N	093	D632N	094	D645N
094	D645N	095	D654N	096	D662N	094	D645N
097	D664N	098	D703N	099	D718N	100	D723N
101	D731N	102	D732N	103	D734N	104	D743N
105	D754N	106	D023I	107	D025I	108	D026I
109	D031I	110	D032I	111	D036I	112	D043I
113	D047I	114	D051I	115	D053I	116	D054I
117	D065I	118	D071I	119	D072I	120	D073I
121	D074I	122	D114I	123	D115I	124	D116I
125	D122I	126	D125I	127	D131I	128	D132I
129	D134I	130	D143I	131	D145I	132	D152I
133	D155I	134	D156I	135	D162I	136	D165I
137	D172I	138	D174I	139	D205I	140	D212I
141	D223I	142	D225I	143	D226I	144	D243I
145	D244I	146	D245I	147	D246I	148	D251I
149	D252I	150	D255I	151	D261I	152	D263I
153	D265I	154	D266I	155	D271I	156	D274I
157	D306I	158	D311I	159	D315I	160	D325I
161	D331I	162	D332I	163	D343I	164	D346I
165	D351I	166	D356I	167	D364I	168	D365I
169	D371I	170	D411I	171	D412I	172	D413I
173	D423I	174	D431I	175	D432I	176	D445I

177	D446I	178	D452I	179	D454I	180	D455I
181	D462I	182	D464I	183	D465I	184	D466I
185	D503I	186	D506I	187	D516I	188	D523I
189	D526I	190	D532I	191	D546I	192	D565I
193	D606I	194	D612I	195	D624I	196	D627I
197	D631I	198	D632I	199	D645I	200	D654I
201	D662I	202	D664I	203	D703I	204	D712I
205	D723I	206	D731I	207	D732I	208	D734I
209	D743I	210	D754I				

CTCSS Table

Table C.2. CTCSS Frequencies

NUM	FREQ	NUM	FREQ	NUM	FREQ	NUM	FREQ
01	67.0	02	69.3	03	71.9	04	74.4
05	77.0	06	79.7	07	82.5	08	85.4
09	88.5	10	91.5	11	94.8	12	97.4
13	100.0	14	103.5	15	107.2	16	110.9
17	114.8	18	118.8	19	123.0	20	127.3
21	131.8	22	136.5	23	141.3	24	146.2
25	151.4	26	156.7	27	159.8	28	162.2
29	165.5	30	167.9	31	171.3	32	173.8
33	177.8	34	179.9	35	183.5	36	186.2
37	189.9	38	192.8	39	196.6	40	199.5
41	203.5	42	206.5	43	210.7	44	218.1
45	225.7	46	229.1	47	233.6	48	241.8
49	250.3	50	254.1				

General

Frequency Range

87-108MHz (FM Radio ONLY)

136-174MHz (RX Only)

400-520MHz (RX Only)

GMRS Channel (RX/TX)

Memory Channel

30

Channels

* 6 Groups

Frequency Stability

±5ppm

Antenna Impedance

50 ohm

Operating temperature

-20~+60°

Operating voltage

13.8V

Size

140 x 46 x 150mm

Weight

1.1kg

Transmit Specifications

RF Power

5W/25W/50W

(L/M/H)

Channels 1-7@5w Max, 8-14 TX not allowed, 15 to 30@5/25/50W)

	Wide Band	Narrow Band
Modulation:	16K0F3E	11K0F3E
Adjacent channel power	≥70db	≥60db
FM noise	≥45db	≥43db
Spurious and harmonic	≥60db	≥60db
Audio response	±1~- 3db(0.3~3khz)	±1~- 3db(0.3~2.55khz)
Modulation distortion	≤3%	

Receive Specifications

	Wide Band	Narrow Band
Sensitivity (12dB SINAD)	$\leq 0.20\mu\text{V}$	$\leq 0.22\mu\text{V}$
Adjacent channel selectivity	$\geq 70\text{db}$	$\geq 65\text{db}$
Intermodulation	$\geq 65\text{db}$	$\geq 60\text{db}$
False signal response	$\geq 70\text{db}$	$\geq 70\text{db}$
Audio response	$\pm 1 \sim -3\text{db}(0.3 \sim 3\text{khz})$	$\pm 1 \sim -3\text{db}(0.3 \sim 2.55\text{khz})$
Signal-to-noise ratio	$\geq 45\text{db}$	$\geq 40\text{db}$
Modulation	$\leq 3\%$	
Audio output power	$\leq 2\text{W}$	



Note: All specifications are subject to change without notice or responsibility.

