GMRS-1200

USER MANUAL

2-WAY PORTABLE
HANDHELD
RADIO

NOVEMBER 2, 2001

FCC License required

This Transceiver is intended for use in the operation of commercial activities.

The Federal Communications commission (FCC) requires you to be licensed before you operate this transceiver. Unless you are already licensed to operate on one of the preset fequencies, you must apply for a frequency through the PCIA (Personal Communication Industry Association), a non-profit organization that assigns frequencies nationwide to help prevent conflicts between different businesses using transceivers in the same area. For more information about getting a license, contact the PCIA at 800-759-0300, extension 3068 (in Virginia 703-739-0300, extension 3068)

For other questions concerning the license application, contact the FCC at 717-337-1212, or wirte:

FCC
P.O.Box 1040
Gettysburg, PA 17325

For the latest FCC application form and instructions, call the FCC's fax-on-demand service at 1-202-418-0177 from a fax machine and request one or more of the following documents:
All forms and instructions ……000600
Form 600 instructions only……006001
Main Form 600 only……006002
Form 600 schedules only……006003
If you do not have a fax machine, you can call the Government Forms Distribution Center at 1-800-418-FORM and request that the form and instructions be mailed to you.

FCC Part 95 Rules
You must be familiar with Part 95 of FCC Rules before you operate your transceiver. The operation instructions in this manual conform to Part 95, but do not cover all items in Part 95.
Overall, Part 95 states that:
! You must have a valid license before you use the transceiver.

! As licensee, you are responsible for proper operation of all transceivers operating under your license's authority.

! You can let unlicensed persons operate transmitter, as long as you take precautions to prevent unauthorized transmissions.

! You must use this transceiver only for commercial use of your business, and only when other commercial channels (such as the telephone) are either not available or not practical.

! You must always yield the operating frequency to communications that involve the safety of life or property.

! You must take reasonable precautions to prevent harmful interference to other services operating on the same frequency.

! You must not transmit program material of any kind used in connection with commercial broadcasting.

! You must not provide a service that is normally handles by telephone or telegraph unless such broadcasts involve the safety of life and property or in emergencies such as an earthquake, hurricane, flood or

a similar disaster where normal communications channels are disrupted.

! During each transmissions or exchange of transmissions, you must identify your station with the call sign issued to you by the FCC, or once each 15 minutes during periods of continuous operation.

! You must keep a written record of any maintenance or modifications made to the transceiver, and you must make this record available for inspection upon demand by the FCC.

Violating any of the provisions of Part 95 can result in fines and/or confiscation of equipment.

Your transceiver might cause TV or Radio interference even when it is operating properly. To determine whether your transceiver is causing the interference, turn off your transceiver. If the interference goes away, your transceiver us causing it. Try to eliminate the interference by:

! Moving your transceiver away from the receiver
! Contacting your local RadioShack store for help

If you cannot eliminate the interference, the FCC requires that you stop using your transceiver.

Before you operate the transceiver, you must obtain your license. It is illegal to transmit without the appropriate license, which you can get by submitting a completed FCC Form 600 to the FCC (or through the PCIA). Furthermore, your are required to understand Part 95 of the FCC Rules and Regulations prior to operating your transceiver. It is the user's responsibility to see that this unit is operating at all times in accordance with the FCC Rules and Regulations.

Safety Information

Your Handheld Radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as " Occupational Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment.

This radio has been tested and complies with the FCC RF exposure limits for "Occupational Use Only." In addition, your Handheld radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic
energy levels and evaluation of such levels for exposure to humans:

• FCC OET Bulletin 65 Edition 01-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

• American National Standards Institute (ANSI) (C95.1—1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

• American National Standards Institute (C95.3—1999), IEEE Recommended Practice for the Measurements of Potentially Hazardous Electromagnetic Fields — RF and Microwave.

To ensure that your exposure to RF electromagnetic energy is within the FCC allowable limits for occupational use, always adhere to the following guidelines:

DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also

cause you to exceed FCC RF exposure limits. A proper antenna is the antenna supplied with the radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio.

For body worn operation, this handheld radio has been tested and meets the FCC RF exposure guidelines when used with the TTI or authorized OEM dealers accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guideline.

To provide the recipients of your transmission the best sound quality, hold the antenna at least 2.5 cm (1 inch) from your mouth.

USE ONLY authorized accessories (speaker/microphones, handstraps, etc.) with your radio. Use of unauthorized accessories can cause the FCC RF exposure compliance requirements to be exceeded.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates within the FCC RF exposure limits of the radio.

ELECTROMAGNETIC INTERFERENCE/COMPATIBILITY
During transmissions, your handheld radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so.

DO NOT operate the transmitter in areas sensitive to electromagnetic radiation, such as hospitals, aircraft, and blasting sites.

CAUTIONS:
• NEVER hold the transceiver so that the antenna is very close to, or touching exposed parts of the body while transmitting. The transceiver will perform best if the microphone is 2.5– 5 cm (1 to 2 inches) away from the mouth and the transceiver is vertical.

• For body worn operation, this handheld radio has been tested and meets the FCC RF exposure guidelines when used with the TTI or authorized OEM dealers accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guideline.

• DO NOT push the PTT when not actually desiring to transmit.

CONTENT

1. GENERAL

1.1 GENERAL

This equipment, GMRS-1200 is called 2 way portable handheld radios.

The frequency range is 462MHz, UHF operating Channel for international 2 way radio. Also it has a 38 CTCSS feature to get the clear communication without interference.

1.2 CHARACTERISTIC

a) All active device in this radio is composed of semiconductor and high density IC.
b) To design this radio in compact and weight approximately 110g with out battery.
c) CPU of this equipment is H8/3802 from HITACHI
d) It's power can operate by use of alkaline 4 cell(1.5V AAA) battery.

1.3 COMPOSITION

This radio is composed of following.

a) Transceiver (W/Antenna)
b) Belt clip

2. SPECIFICATION

2.1 GENERAL SPECIFICATIONS

a) Frequency range : 462.5625 ~ 462.7250 MHz
b) Communication Mode : Half duplex
c) Channel Capacity : 15 channel
d) Channel Spacing : 12.5 kHz
e) Power : 6.0V(alkaline)
f) Battery Life : Alkaline. 20hours (Tx5%, Rx5%, Stand-by90%)
g) Operating Temperature : -20°C ~ +60°C
h) Dimension : 174(H) x 58(W) x 39(D)
i) Weight : 110g (without battery)

2.2 ELECTRICAL SPECIFICATION

a) TRANSMITTER

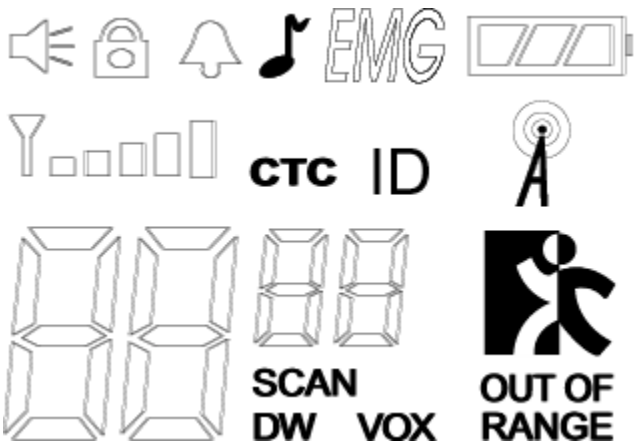
1) Output power : Max . 1.8W
2) Frequency Stability : ± 5 ppm(-20°C ~ +60°C)
3) Modulation Method : FM
4) Oscillation Method : PLL SYNTHESIZER
5) Max. Frequency Deviation : < ± 2.5 kHz (with tone)
6) Cooling Method : air-cooling Method
7) Spurious Emission : < -60dB
8) FM Hum/Noise : > -40dB(1kHz 60% modulation, w/CCITT)
9) Distortion : < 5% (1kHz 60% modulation)
10) Tx Audio Response : 6dB / OCT ± 3dB Pre-Emphasis(300Hz ~ 3kHz)

b) RECEIVER

1) Receiver Method : Double Super Heterodyne
2) Receiver Sensitivity : < 0.28uV(12dB SINAD) : > -118dBm
3) Squelch Sensitivity : -120dBm ~ -130dBm(AUDIO On/Off Point)
4) Bandwidth : > 8kHz (6dB ATT point)
5) Selectivity : < - 60 dB (12.5kHz)
6) Local Frequency Stability : ± 2.5ppm(-30°C ~ +60°C)
7) Spurious Response : > 45 dB
8) Audio output : 200mW (Internal 8Ω load THD 10%)
9) Distortion : < 5% (1kHz 60% Modulation)
10) RxAudio Response : 6dB/OCT +1/-10dB De-Emphasis(300Hz~2.5kHz)
11) S/N Radio : < 40 dB(1kHz 60% Modulation)
12) IF : 1'st IF --- 21.7MHz
2'nd IF --- 450kHz
13) Local Frequency : 1'st Local Frequency --- fc – 21.7MHz
2'nd Local Frequency --- 21.250MHz

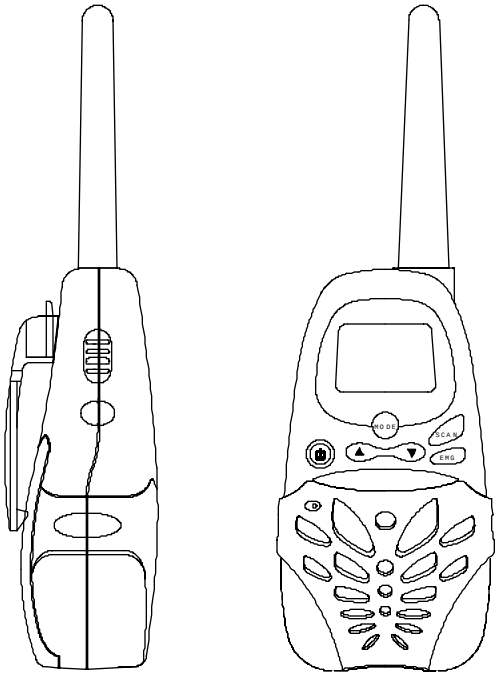
3. OPERATION

3.1 ICONS on LCD



1) Monitor indicator : Appears when the CTCSS isn't in use and squelch is open.
2) Key lock indicator : Indicates that the key lock function is in use.
3) Beep ON/OFF indicator : Appears while key tone is in use.
4) Roger On/Off indicator : Appears while Roger tone is in use.
5) Battery indicator : Indicates the battery status
6) Receive signal indicator : Appears when receiving signal or squelch noise is existing.
7) ID indicator : Appears when the ID function is in use.
8) Weather mode indicator : Icon will be on steady when in the weather band mode. The Icon will blink in every 2 seconds when in the FRS mode with the alert active.
9) Channel readout : Shows the current channel number.
10) CTCSS readout : Shows the operating CTCSS frequency or code.
11) SCAN indicator : Indicates that scan is enabled.
12) CTCSS indicator : Appears when the CTCSS function is in use.
13) Dual Watch indicator : Appears when the Dual Watch function is in use.
14) Out Of Range indicator : Appears when the Out Of Range function is in use.
15) VOX (Voice Activated Transmit) Indicator : Turning on the power while pressing PTT button activates VOX function.

3.2 Key Function



1) PTT switch : Push and hold to transmit ; release to receive.

2) Monitor : Press and hold this key for over 2 seconds to enable the receive CTCSS feature.

3) Up/Down key : In the stand-by mode, Pressing this button will increment or decrement the listening volume. When in function edit mode, this button will be used to adjust the unit settings..

4) Scan / Lock key : Push this key to momentarily to enable or disable the scan. Press and hold this key for over 2seconds to lock or unlock keypad.

5) Mode (Function) key : Push to select the following function setting mode.

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Brief press mode :    1'st press – Channel ,
                      2’nd press – CTCSS,
                      3’rd press – VOX level,
                      4'th press – Dual Watch Channel,
                      5’th press – Roger On/Off,
                      6'th press – Beep On/Off,
                      7’th press – Out Of Range On/Off,
                      8’th press – ID,
                      9’th press – Alert On/Off,
                      10’th press – Call
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6) Speaker / Microphone

7) LCD (Liquid Crystal Display)

8) Transmit / Receive indicator : When receiving an incoming signal, the LED indicator will light green, and while the PTT button is pressed, the LED will light red. These LED’s are used for backlighting as well.

9)External speaker/mic jacks : Connect an optional speaker/mic or headset, if desired. The internal mic and speaker will not function when either is connected.

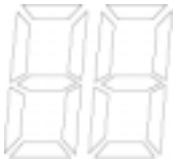
2) Function display

Key Lock Indicator: Icon appears when the keypad is locked. This function disables keys such as channel up/down and mode.

Signal Strength Indicator: Icon appears when a signal is being received. The Icon

Roger Beep Tone On/Off Indicator: Icon appears when the roger beep tone is selected. Icon disappears when tone is off.

Battery Level Indicator: Icon indicates the battery charge level.



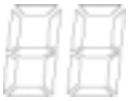
Large Segment Display: Indicates the channel number in use.

ID

Caller ID Indicator: Icon appears when caller ID function is turned on. Icon disappears when the function is off. This work with small segment display.

CTC

Coded Tone Controlled Squelch System(CTC) Indicator: Icon appears when the CTCSS tone function is active.



Small Segment Display: Displays CTCSS tone option in the channel from 00 to 38, and also displays the caller ID number(01–10) when caller ID function is active.

SCAN

Scan Indicator: This function allows users to scan a channel to search for a valid signal.

DW

Dual Watch mode Indicator: Icon appears when dual watch mode is active.

VOX

Voice Activated Transmission (VOX) Indicator: This function allows handsfree conversation. The Icon appears when the VOX mode is activated.

OUT OF RANGE

Out of Range Alarm Indicator: When this function is active, Icon blinks the receiving signal is getting weaker. The Icon stops blinking when the receiving signal comes back to the normal strength.

Weather Mode Indicator: Icon will be on steady when in the weather band mode. The icon will blink when in the GMRS mode with the alert active.

3-3. SETTING AND OPERATION

In order to communicate with other GMRS/FRS units, both you and the receiving party must be on the same channel.
GMRS-1200 has 15channels indicated by the large digits on the LCD display panel. Before trying to transmit on the selected channel, you should press the Monitor Button to check the activity on that channel. If someone is already on the selected channel, you should try another channel that is clear

1) On/Off & Volume control Switch

Radio ON : Press the power button at least for 2 seconds.You will hear confirming melody to indicated the unit is on.

Radio OFF : Press the power button at least for 2 seconds.

Volume setting : Press up[″]or down[…] button to adjust a level that is comfortable for you while monitor is active.

2) Setting the Channel and Tone Code(CTCSS)

GMRS-1200 has 15 main channels and 38 sub-channels.

* 14 Frequency channels
* 38 CTCSS Code (indicated by CTC icon on the LCD)

To select the channel

* Turn the radio on.
* Press MODE button once, [XX] digit will blink on the LCD. XX is a channel.
* Press up[″]or down[…] button to choose the channel.
* Press the PTT button or MODE button to confirm.

To set the tone codes(CTCSS)

* Press MODE button once more, [**XX 00** up to **38**] will appear and CTC icon and tone code digit will blink on the LCD. “00” means no CTCSS code.
* Press up[″]or down[…] button to choose the desired sub-channel to use.
* Press the PTT button or MODE button to confirm.

NOTE : **To communicate with other GMRS/FRS units, they must be switched to** the same channel and CTCSS sub-code. To communicate *with other GMRS/FRS units that do not have sub-codes, switch your unit to the same channel with the sub-code set to OFF.*

3) VOX (Voice Operated Switching)

This option enables you to have hands-free conversation. You do not have to operate the PTT button each time when you want to transmit.
You can also choose the VOX sensitivity so suit your environment of operation.

(Ex : noisy road, motor bike, factory etc.)

To Set the VOX mode

* Press the MODE button until the [**Uo oF** Or **XX**] appears. **XX** is a vox level
* **VOX** icon will be appeared on the LCD.

To Set the VOX level

* Press the up[″]or down[…] button to set the VOX level from 1 to 5.
  "**oF**" is disable the VOX function.
  "**01**" is least sensitive.
  "**05**" is most sensitive.
* Press the PTT button or MODE button to confirm.

4) Setting the DW (dual watch)

To set the DW mode

* Press the MODE button until the [**oF of 01** up to **15**] and **DW** icon blink on the LCD.
* DW icon will appear on the LCD.

To set the dual watch(DW) channel

* Press the up[″]or down[…] button to choose the channel.
  "**oF**" means no DW mode.
  "**01** up to **15**" means the channel that is dual-watched.
* Press the PTT button or MODE button to confirm.

5) Roger tone

This feature will give the tone signal to other parties when transmitting finished (when PTT button is released.)

To activate or disable the Roger tone

* Press the Mode button until [**rb on** or **oF**] and the **roger** icon blink on the LCD.
* Press the up[″]or down[…] button.
* Press the PTT button or MODE button to confirm.

6) Beep tone

To set the beep tone

* Press the Mode button until [**bP on** or **oF**] and the **BELL** icon blink on the LCD.
* Press the up[″]or down[…] button.
* Press the PTT button or MODE button to confirm.

7) Setting Out of Range

To set the Out of Range

* Press the Mode button until [**ir on** or **oF**] and the **Out of Range** icon blink on the LCD.
* Press the up[″]or down[…] button.
* Press the PTT button or MODE button to confirm.

8) Setting ID code

To set the Caller ID

- Press the MODE button until the ID Icon and small segment display blinks.
- Then press the Up or Down button to select the desired ID number from 01 to 10. "**oF**" means no ID mode.
- Press the PTT button or Mode button momentarily to confirm the ID number.

** When a signal is received from the radio where the one Caller ID is selected, the radio that is receiving the signal displays the Caller ID number of the transmitting radio.

9) Weather alert setting

To set the Weather alert receiving mode

* Press the **MODE** button until the [**AL on** or **oF**] blinks
* Press the up[″]button or down […]button to set the alert function.
* While the alert is ON, **weather icon** will blink both in FRS and weather mode.
* **Weather icon** will stop the blinking on the LCD when the alert is OFF.

** While the unit is GMRS/FRS mode, if the alert signal is received, the unit will set to Weather Radio mode automatically and warning beep tone will generate.
** While the unit is in Weather mode, if the alert signal is received, the unit will generate the warning beep tone.

10) Call Ringer Selection Mode

This feature Provides 3 user selectable call ringer signal.

To set your favorite call ringer signal.

* Press the MODE button until the [**C 01** or up to **03**] appears on the LCD.
* Press the up[″]or down[…] button to select the call melody type.
* Press the PTT button to confirm.
* To activate the call, click the "**PTT**" button twice quickly.

11) Transmitting

* Press and hold the PTT button (The LED light red during transmission.)
* Speak slowly and clearly
* To Stop the transmission, release the PTT button.

* if there are no more receiving signal for 5 seconds, the unit will go into power save mode.

12) Receiving

The Coding feature reduces the possibility of interference and provide enhanced Communication. You can only listen to a call that has correct matching code.

** Upon receiving a signal, the LED lights green. When radio is on CTCSS mode and then a signal that has different CTCSS code on the same channel is received, the LED blinks in green.

Important :

Before transmitting or receiving to the other parties
* Correct channel is selected (1 to 15) and
* Correct code is set (00 to 38)

13) Channel Scanning

This feature allows you to monitor all activated channels while scanning.

To activate the Scan
* Press the **SCAN** button
* Radio will begin scanning.
* When in scan mode, the display will show each scanning channel.
* After an activated channel is scanned and received signal and then if there is no more signal, the scan will resume automatically

** Once a channel has been scanned, pushing the monitor button makes the radio resume the scanning with the scanned channel skipped.

14) Call

* Click the PTT button twice quickly.

15) Monitoring the Channel

It is used for listening the week signal or to here all activities on the channel by Manually overriding channel sub tone code setting.

To activate the monitor feature
* Press and hold the "**MON**"(monitor) button for over two seconds.
* When you hear the sound, release the "MON" button.
(The monitor icon will appear on the LCD.)

To disable the monitor feature
* Press and hold the "**MON**"(monitor) button for over two seconds.
(The monitor icon will disappear on the LCD.)

16) Keypad Lock

The lock function is to avoid the accidental changes to channel with other radio settings. All buttons will be locked except the Power, PTT, Monitor, Charger and Volume UP/Down.

To lock the keypad
* Press and hold the "**SCAN**" button for over two seconds.
* Keypad will lock. (**LOCK** icon will appear on the LCD)

To disable the monitor feature
* Press and hold the "**SCAN**" button for over two seconds.
* Keypad will unlock. (**LOCK** icon will disappear on the LCD)

17) Battery status indicator

The Battery icon will blink when the radio is in low battery power.
Charge the rechargeable battery or replace the batteries.
* Full battery – three segments are displayed.
* Low battery – one segments is displayed
* Low battery Warning – one segments will blinking.

4. CHANNEL DATA

1) FRS Frequency Chart

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	462.5625	8	462.5750
2	462.5875	9	462.6250
3	462.6125	10	462.6750
4	462.6375	11	462.5500

5	462.6625	12	462.6000
6	462.6875	13	462.6500
7	462.7125	14	462.7000
		15	462.7250

2) CTCSS Tone Frequency Chart

NO	FREQ.(Hz)	NO	FREQ. (Hz)	NO	FREQ. (Hz)
1	67.0	14	107.2	27	167.9
2	71.9	15	110.9	28	186.2
3	74.4	16	114.8	29	179.9
4	77.0	17	118.8	30	186.2
5	79.7	18	123.0	31	192.8
6	82.5	19	127.3	32	203.5
7	85.4	20	131.8	33	210.7
8	88.5	21	136.5	34	218.1
9	91.5	22	141.3	35	225.7
10	94.8	23	146.2	36	233.6
11	97.4	24	151.4	37	241.8
12	100.0	25	156.7	38	250.3
13	103.5	26	162.2	OF	0