# GMRS-7000

USER MANUAL

2-WAY PORTABLE

HANDHELD

RADIO

DECEMBER, 20 , 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 frequencies, 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 th e safety of life or property.

! You must take reasonable precautions to prevent harmful interference to other ser vices 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 communi cations 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 eli minate the interference by:

! Moving your transceiver away from the receiver
! Contacting your local authorized dealers 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 comple ted 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 a ll 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.**

# CONTENT

# 1. GENERAL

## 1.1 GENERAL

This equipment, GMRS-7000 is called 2 way portable handheld radio.
The frequency range is 462MHz, UHF operating Channel for international 2 way radio. Also it has a 38 CTCSS feature to achieve the clear communication without interference.

## 1.2 CHARACTERISTIC

a) All active device in this radio is composed of semiconductor and high density IC.
b) CPU of this equipment is H8/3802 from HITACHI
c) Its power is operated by Ni-MH 7.2V 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 : 462.5500 ~ 462.7250 MHz
b) Channel Frequency ( Weather ) : 161.6500 ~ 163.2750
c) Communication Mode : Half duplex
d) Channel Capacity : 15 channel
e) Channel Spacing : 12.5 kHz
f) Power : 7.2 V ( Ni-MH )
g) Battery Life : Alkaline. 9hours (Tx5%, Rx5%, Stand-by90%)
h) Operating Temperature : -30°C ~ +50°C
i) Dimension : 117(H) x 52(W) x 36(D) without antenna
j) Weight : 240.5g ( with battery ), 135.5g ( without battery )

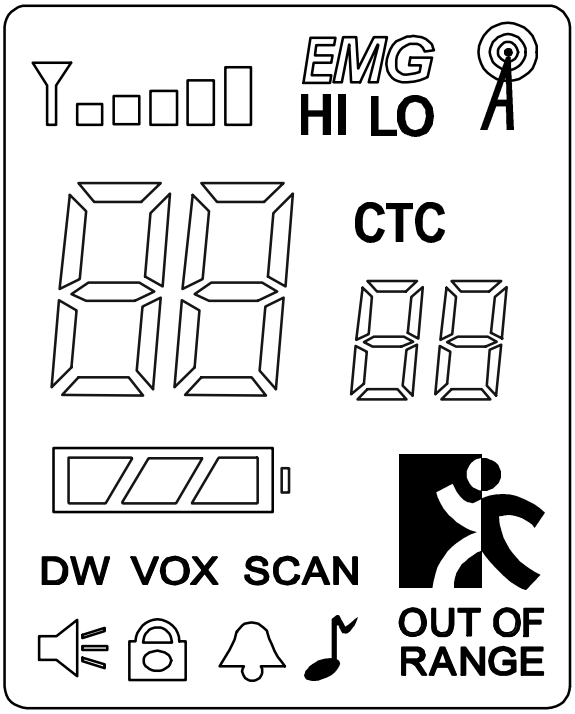
## 2.2 ELECTRICAL SPECIFICATION

a) TRANSMITTER
   1) Output power : Hi : 3.0W / Lo : 1.0W
   2) Frequency Stability : ± 5 ppm
   3) Modulation Method : FM
   4) Oscillation Method : PLL SYNTHESIZER
   5) Spurious Emission : < -60dBc
   6) FM Hum/Noise : 35dB Min
   7) Distortion : < 5% at 1 KHz
   8) Current Drain : 1200 mA Max

b) RECEIVER
   1) Sensitivity : 12dB SINAD
   2) Selectivity : -50dB
   3) Intermodulation : -50dB
   4) Spurious and Image Rejection : -50dB
   5) Audio Out Power : 300mW Max at 8 ohm
   6) FM Hum & Noise : -45dB

# 3. OPERATION

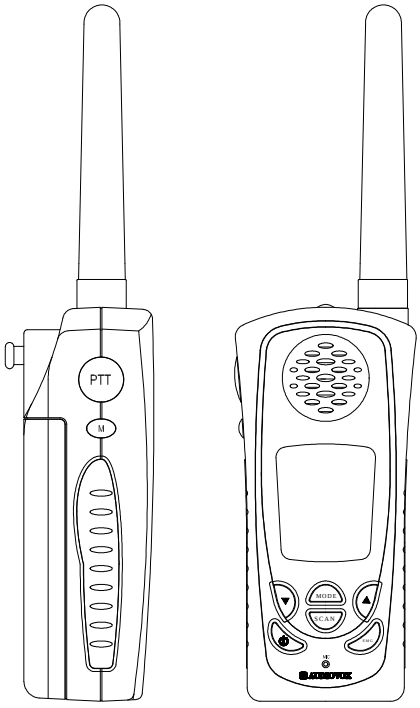
## 3.1 ICONS on LCD




1) Monitor indicator : Appears when the Monitor (M) button is pressed and the channel monitor function is activated.
2) Key lock indicator : Appears when the keypad is locked. This function disables keys such as channel up/down and MODE.
3) Beep ON/OFF indicator : Appears while key tone is in use and disappears when tone is off.
4) Roger On/Off indicator : Appears while Roger tone is on, and disappears when tone is not in use.
5) Battery indicator : Indicates the battery charge level.
6) Signal Strength Indicator : Appears when a signal is being received. The icon consists of five bars to indicate the received signal level. The icon is also represents transmit signal power during transmission.
7) 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 GMRS mode with the alert active.
8) Hi/LO Indicator : Appropriate icon appears when the transmit power is set to

desired output power level.
9) Channel readout : Shows the channel number in use.
10) SCAN indicator : Indicates that scan is enabled.
11) CTCSS indicator : Appears when the CTCSS function is in use.
12) Dual Watch indicator : Appears when the Dual Watch function is in use.
13) Out Of Range indicator : Appears when the Out Of Range function is in use.
14) VOX (Voice Activated Transmission ) Indicator : This function allows hands free conversation. The icon appears when the VOX mode is activated.
16) Emergency Indicator : EMG Icon appears when the EMG button is pressed ( The frequency is NOT monitored by authorities ).

**3.2 Key Function**




1) PTT Button : Push and hold to transmit ; release to receive.
2) Monitor Button : This button is used to check activity on the current frequency before transmitting.
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's settings..
4) Scan / Lock key : Press this button momentarily to enable or disable the scan mode. Press and hold the button for over 2seconds to lock

or unlock the keypad.

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

Brief press mode : 1'st press – Channel ,
2’nd press – CTCSS,
3’rd press – Power Hi / Lo
4'th press – VOX level
5’th press – Dual Watch
6'th press – Roger Beep
7’th press – Beep Tone
8’th press – Call

6) Emergency ( EMG ) Call Button : This radio has a quick access button( EMG ) to the Emergency and Assistance Channel. This channel is not monitored by local authorities. When using this channel, EMG appears on the display. Pressing this button will set the transceiver to the channel 10

7) Speaker / Microphone

8) LCD (Liquid Crystal Display)

9) 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.

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

**2) Function display**

Monitor Indicator: Icon appears when the monitor button is pressed and the channel monitor function is activated.

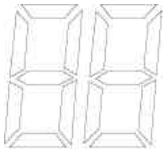
Key Lock Indicator: Icon appears when the keypad is locked. This function disables keys such as channel up/down and mode.

Signal Strength Indicator: Icon appears when a signal is being received. The Icon consists of five bars to indicate the received signal level.

Beep Tone Indicator: Icon appears when beep tone confirmation tone is selected. Icon disappears when tone is off.

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

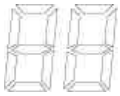
Battery Level Indicator: Icon indicates the battery charge level.



Large Segment Display: Indicates the channel number in use.

SCAN

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



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.

CTC

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

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 Alarm Indicator: Icon blinks as 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-7000 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 which 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 indicate 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 comfortable for you while monitor is active.

**2) Setting the Channel and Tone Code(CTCSS)**

GMRS-7000 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 oF, 01** up to **38**] will appear and CTC icon and tone code digit will blink on the LCD. “oF” 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 which do not have sub-*

*codes, switch your unit to the same channel with the sub-code setting 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 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 is dual-watched.

- Press the PTT button or MODE button to confirm.

**5) Power Selection Mode**

This feature permits selection of the transmitting power level to high or low. Using low power, the unit will have a lower transmit range but battery life will Be increased.

**To access the transmitter power selection function**

- Press the MODE button until the Po icon appears with a flashing Hi or Lo indication on the display.

- Press the Up or Down button to toggle between the Hi or Lo selections.
- Press the PTT button momentarily to confirm selection.

**6)Roger tone**

This feature will give the tone signal to other parties when transmitting is 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.

**7) Beep tone**

Hearing this tone, users will make sure that any button has been correctly pressed.

**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.

**8) 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.

**9) Out-of-range Alarm**

Icon blinks as the receiving signal is getting weaker. The Icon stops blinking when the receiving signal comes back to normal strength.

**10) 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 is no more receiving signal for 5 seconds, the unit will go into power save mode.

**11) Receiving**

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

** Upon receiving a signal, the LED will light green. In case that a signal, which has different CTCSS channel, is received when the Radio is on the CTCSS mode, the LED blinks in green.

**Important :**

Before transmitting or receiving, the users have to make sure that the correct channel ( 1 to 15 ) and code ( 00 to 38 ) are selected.

**12) 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, a signal will be received. If there is no more signal, the scan will resume automatically.

** If a channel is scanned, a user can resume the scan by pressing the monitor button.

**13) Call**

- Click the PTT button twice quickly.

**14) Monitoring the Channel**

It is used to check activity on the current frequency before transmitting.

**To activate the monitor feature**

- Press and hold the "**M**"(monitor) button for over two seconds.
- You will hear static if frequency is clear.
  ( The monitor icon will appear on the LCD.)

**To disable the monitor feature**

- Press and hold the "**M**"(monitor) button for over two seconds.
  ( The monitor icon will disappear on the LCD.)

**15) Keypad Lock**

The lock function is to avoid the accidental channel change to the preferred settings of the unit. All buttons will be locked except the Power, PTT, Monitor, Volume UP/Down.

**To lock the keypad**

- Press and hold the "**SCAN**" button for over two seconds.
- Keypad will be locked (**LOCK** icon will appear on the LCD)

**To unlock the Auto Key function**

- Press and hold the "**SCAN**" button for over two seconds.
- Keypad will be unlocked (**LOCK** icon will disappear on the LCD)

## 3-4. SETTING AND OPERATION ON WEATHER BAND

**1) Channel Selection**

This feature provides access to 10 channels within the weather band(7 NOAA channels and 3 Canadian marine channels. To select a weather channel, the unit must be in the weather channel mode. Press and hold the MODE button for at least 2 seconds, the weather alert icon(***A*** ) will appear, together with a channel number in the band. Press the mode button until the channel number flashes.

To change the channel,

- Press the Up button briefly to move to the next higher main channel number.
- Press the Down button briefly to move to the next lower main channel number.

**2) Weather Alert Mode**

The weather alert mode notifies the user of unusual weather situations. To access the weather alert function:

- From weather band standby mode, press the mode button once to access the weather channels and use the Up or Down button to select the desired channel.
- Press the mode button again to access the weather alert function; weather icon(***A***) and **AL On** or **oF** appear flashing on the display.
- Use the Up or Down button to enable(**On**) or disable(**oF**) the alert function. The weather icon will stop blinking on the display when the alert is disabled.
- Press the PTT button to confirm your selection
- Press and hold the mode button for at least 2 seconds to exit the weather

function.

When the unit is in GMRS/FRS, if a weather alert signal is received, the unit will generate a warning tone. The weather alert tone will be generated for 2 seconds and the unit will then automatically revert to a previously selected weather channel.

### 3-5. Battery status indicator

The Battery icon will blink when the radio is in low battery power. The alarm tone will beep once in 10 seconds. Then charge the rechargeable batteries or replace the batteries.

- Full battery – three segments are displayed.
- Low battery – the battery icon(only the rim) blinks.

# 4. CHANNEL DATA

## 1) GMRS 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 |

## 3) Weather Channel Frequencies:

| Channel | Freq. MHz | Channel | Freq. MHz |
|---|---|---|---|
| 1 | 162.550 | 6 | 162.500 |
| 2 | 162.400 | 7 | 162.525 |
| 3 | 162.475 | 8 | 161.650 |
| 4 | 162.425 | 9 | 161.775 |
| 5 | 162.450 | 10 | 163.275 |