
OWNER'S MANUAL

GMRS/FRS RADIO 21-1904

June 11, 2003

INTRODUCTION

Your GMRS/FRS radio is a portable, easy-to-use, two-way radio that you can carry almost anywhere. Use it to contact family and friends at shopping malls, amusement parks, sports events, or at the beach to, or for making vital communications in a neighborhood watch.

Your radio has 22 GMRS/FRS channels, 38 CTCSS codes and 10 NOAA weather channels. If someone else is using the same channel as you selected but you do not want to hear that person, select another channel or use the CTCSS feature. You can talk with a person who has a GMRS/FRS radio if both radios are tuned to the same channel and CTCSS code.

Your radio has auto-squelch, which means you will not hear anything on a channel unless someone is transmitting nearby the same channel. You can turn off auto-squelch to hear weaker and more distant transmissions.

Also, if the radio is idle for 30, 60 or 90 minutes, it will automatically shut off. It can be wakened up when you press any key.

You can connect an optional speaker/microphone and earphone, charger (not supplied) to the radio. In addition, the belt clip on the back of the radio makes you take it very conveniently, you can carry it almost anywhere.

FCC INFORMATION

Caution: This two-way radio operates on GMRS (General Mobile Radio Service) frequencies which require an FCC (Federal Communications Commission) license. A user must be licensed prior to operating on channels 1 through 7 or 15 through 22, which comprise the GMRS channels of this radio. Serious penalties could result for unlicensed use of GMRS channels, in violation of FCC rules, as stipulated in the Communications Act's Sections 501 and 502.

For licensing information and application forms, please call the FCC Hotline at 800-418-FORM. Request form #159 and form #605. Questions regarding the license application should be directed to the FCC at 888-CALL-FCC. Additional information is available on the FCC's website at www.fcc.gov.

Do not open your radio to make any internal adjustments. Your radio is set up to transmit a regulated signal on one of 22 assigned frequencies. It is against the law to alter or adjust the settings inside the radio to exceed those limitations. Any adjustments for your radio can only be made by a qualified technician via using the proper test equipment.

To be safe and sure:

- Never open your radio's case.
- Never change or replace anything in your radio except the batteries.

Your radio might cause interference with TV or radio even if it is being operated properly. To determine whether your radio is causing the interference, you'd better turn it off. If the interference goes away, your radio is causing it. You can try to eliminate the interference by:

- moving your radio away from the receiver
- calling your local RadioShack store for help

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

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.

SAFETY INFORMATION

Your wireless hand-held portable transceiver contains a low power transmitter. When the Push-to-Talk button is pushed, it will send out radio frequency (RF) signals. The device is authorized to operate at a duty factor not to exceed 50%. In August 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless devices.

CAUTION:

To maintain compliance with the FCC's RF exposure guidelines, you should hold the transmitter and antenna at least 2 inch (5 centimeters) from your face and speak in normal voice, with the antenna pointed up and away from the face. If you wear the handset on your body while using the headset accessory, only the supplied belt clip for this product can be used, and when transmitting, take it out of the belt to ensure that the antenna is at least 1 inch (2.5 centimeters) from you body.

Only the supplied antenna can be used, any unauthorized antennas, modifications, or attachments could damage the transmitter and may violate FCC regulations.

LCD DISPLAY :

Your radio is designed to have a multifunctional backlight display. By pressing any button except the CALL and PTT, the backlight will illuminate for 5 seconds.



- | | |
|--|----------------------------------|
| 1. Miss a call Indicator | 2. Call ID Indicator |
| 3. C-Tone Indicator | 4. Vibrator Indicator |
| 5. CTCSS code Indicator | 6. Weather Indicator |
| 7. Alert Indicator | 8. Auto Power Off |
| 9. Scan Indicator | 10. Lo Power Indicator |
| 11. Function activated Indicator | 12. Transmit Indicator |
| 13. Voice Operated transmitter Indicator | 14. RX Signal Strength Indicator |
| 15. Battery Level Indicator | 16. Key Beep Indicator |
| 17. Keypad Lock Indicator | 18. Channel Indicator |

Key Configuration

	Tap	Hold	Function+
	Channel Up / Setting Up	Press and hold down 2 seconds Scan Up	CTCSS Up
	Channel Down / Setting Down	Press and hold down 2 seconds Scan Down	CTCSS Down
	Tx / Save Setting		Lock /Unlock
	Transmit Caller ID	Press and hold down 2 seconds Set Caller ID	Set Home ID
	Enter menu / Next menu		
	Function		
	Within vibration period, Stop Panic Function	Press and hold down 0.5 second Trigger Panic Function	
		Press and hold down 2 seconds Stop Panic Function	

	Turn On Wx	Alert ON/OFF	
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USING THE RADIO

In order to use your new radio properly, please read this reference guide completely before attempting to operate the unit.

1. Turning the radio ON and adjusting the Volume

- 1) Rotate the **ON/OFF/Volume** control switch counterclockwise to turn the unit **ON** and increase the speaker volume.
- 2) Rotate the **ON/OFF/Volume** control clockwise to decrease the speaker volume and turn the unit **OFF**.

2. Setting the Channel

To choose a channel:

- Press **Up/Down** key to increase or decrease the Channel Number displayed.

3. Setting the CTCSS code

Each of the channels 1-22 may have any one of the codes 0-38 selected. Code “0” means no CTCSS code was selected and your radio can receive a signal regardless of the code settings of the transmitting radio. When setting CTCSS code 0, the unit does not display CTCSS code.

To set a CTCSS code:

- Press and hold down **Function** key first and then press **Up/Down** key to change CTCSS code.

4. Scan Feature

Your radio has a channel scan feature that allows you to scan through all CTCSS codes while scanning through all channels. The CTCSS code feature automatically turns on and the backlight will illuminate 5 seconds when a signal is detected on an active channel and CTCSS code, and turns off after signal disappears.

- Press and hold down **Up/Down** key to scan Channel & CTCSS code.
- While scanning, press **Up/Down** to change the scanning direction
- To stay on the active channel and CTCSS codes, press **PTT** to exit scanning before the signal disappears.

5. Keypad Lock/Unlock

You can lock your radio setting to avoid accidental pressing of keys by activating the keypad lock. When keypad is locked, user can still transmit signal, send a Call, run Panic or temporarily enable/disable VOX function (short press **PTT** key when VOX level is 1-4).

To Lock/Unlock keypad:

- Press and hold down **Function** key first and then press **PTT** key to Lock/Unlock the keypad.

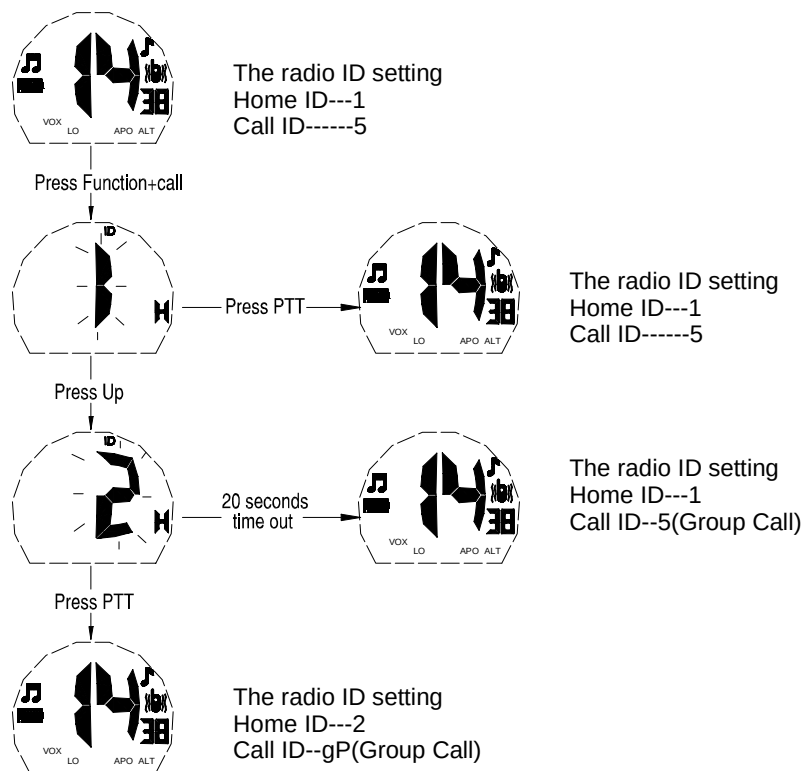
6. Talking on your radio

To talk to others using the radio:

- Press and hold down **PTT** key and speak in a clear, normal voice with your mouth about 2-3 inches away from the microphone, when the **TX** icon is displayed.
- When you have finished speaking, release the **PTT** button, then you can just receive incoming

calls.

7. Setting Home ID



The CALL ID is call type that let user call every desired individual within a group just through inputting their ID code, the operation of which is as convenient as that of traditional telephone and mobile phone, and at the same time it can also support the call type of one-to-all. The Home ID is call sending transceiver's ID code, the Caller ID is call receiving transceiver's ID code. User can select CALL ID 1-16 or CALL ID gP (group call).

To set Home ID:

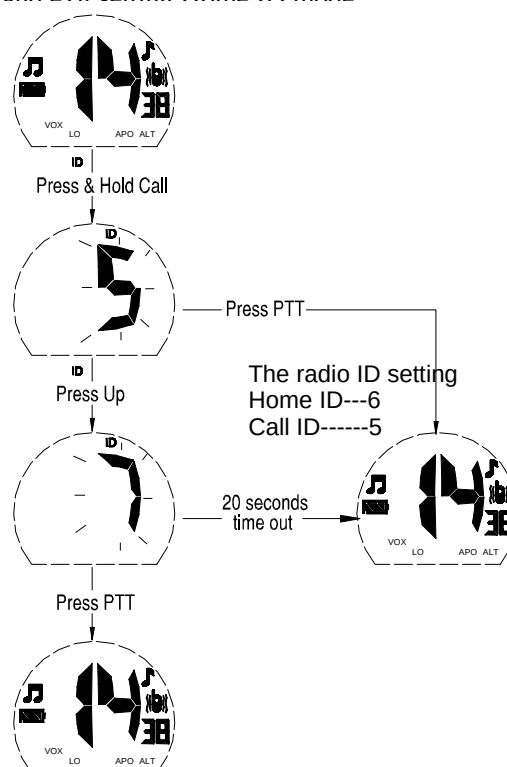
- Press and hold down **Function** key first and then press **Call** key.
- Press **Up/Down** key to change Home ID number.
- Press **PTT** key to save and exit setting Home ID mode

Note:

The Caller ID will auto Home ID setting.

is **PTT** key to confirm the

8. Setting Caller ID



The radio automatically skipped Call ID 6

The radio ID setting
Home ID---6

To set Caller ID:

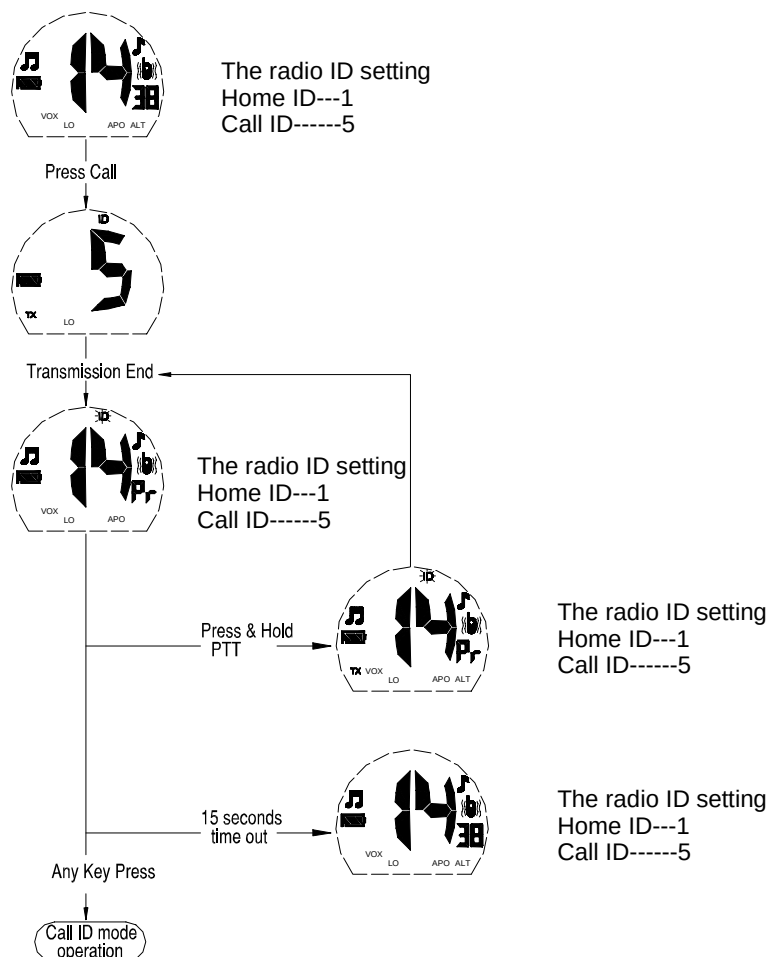
- Press and hold down **Call** key to enter Setting Call ID mode.
- Press **Up/Down** key to change Call ID number.
- Press **PTT** key to save and exit setting Call ID mode.

Note:

- If user presses **Up/Down** to change Caller ID number and the number is **equal** to the Home ID, then the LCD will display the **next** Caller ID number in order to prevent any match of Home ID and Caller ID.
- The call melody will be generated after Call ID data is sent. The Call tone melody map is stated as following table:

Call Melody No.	1	2	3	4	5
ID	Call ID = Group Call	Call ID = 1~4	Call ID = 5~8	Call ID = 9~12	Call ID = 13~16

9. Transmit Caller ID



You can send a Caller ID to contact with someone you want to talk with. In Caller ID mode, ID icon will flash on display to indicate the radio has entered the Caller ID Mode.

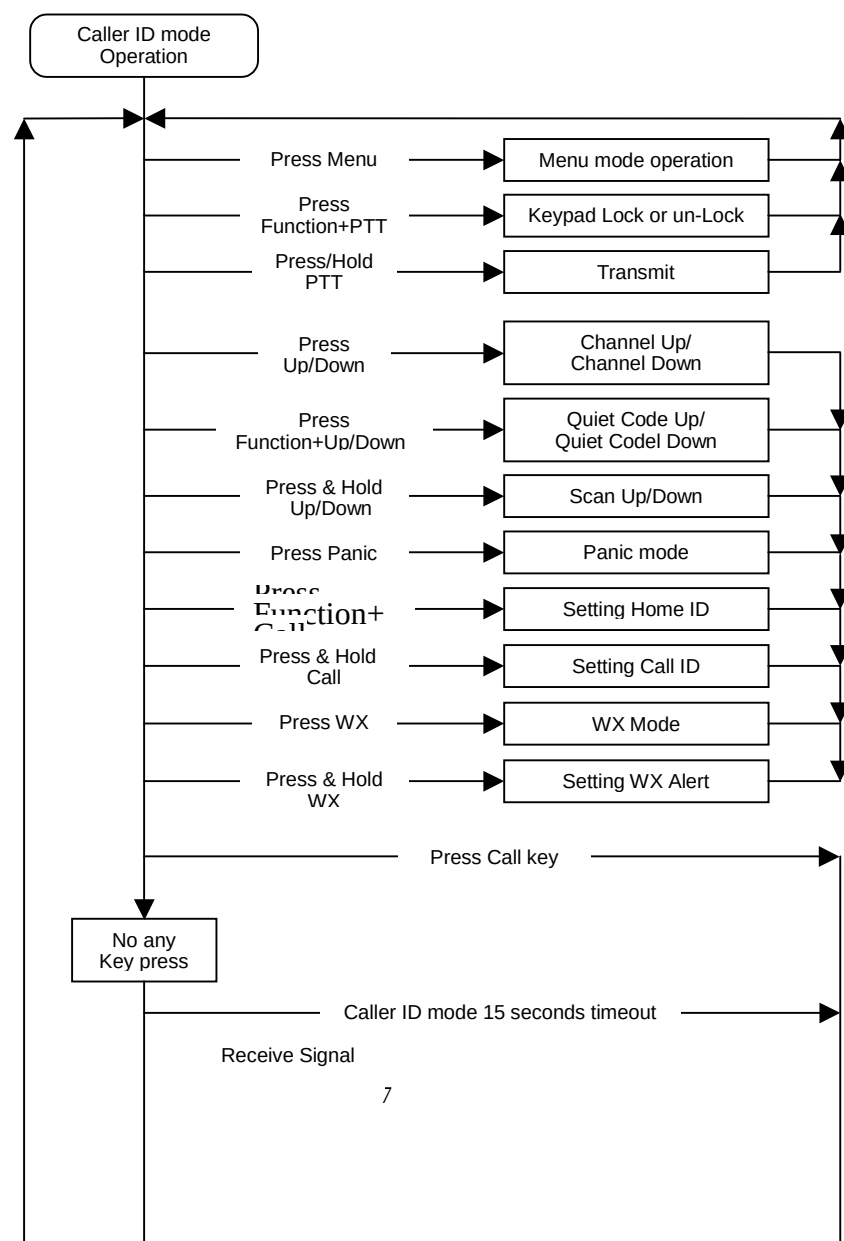
To transmit Caller ID:

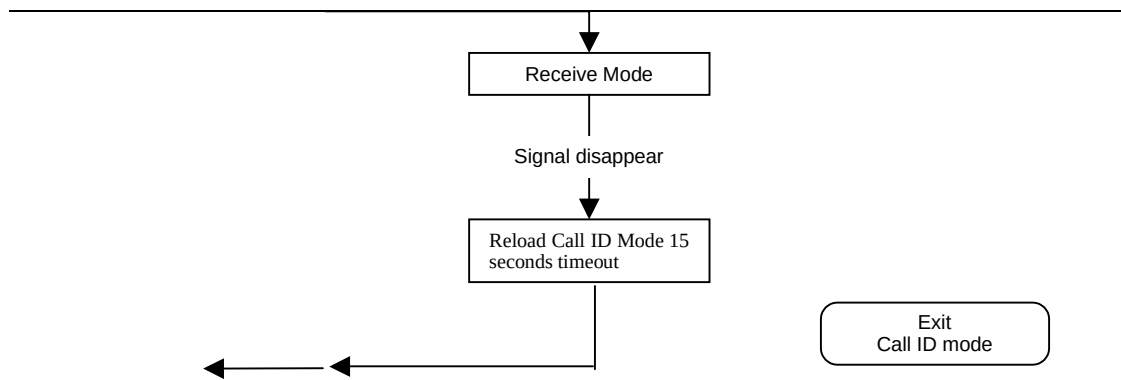
- Toggle **Call** key to transmit Caller data, the call melody will be generated after the Call ID data was sent.
- Press **Call** key again to leave Caller ID mode. The radio will also exit Caller ID mode if users change Channel, CTCSS Code, Scanning, Panic, Set Call ID, Set Home ID, Turn on WX, Set WX Alert, 15 seconds timeout.

Notes:

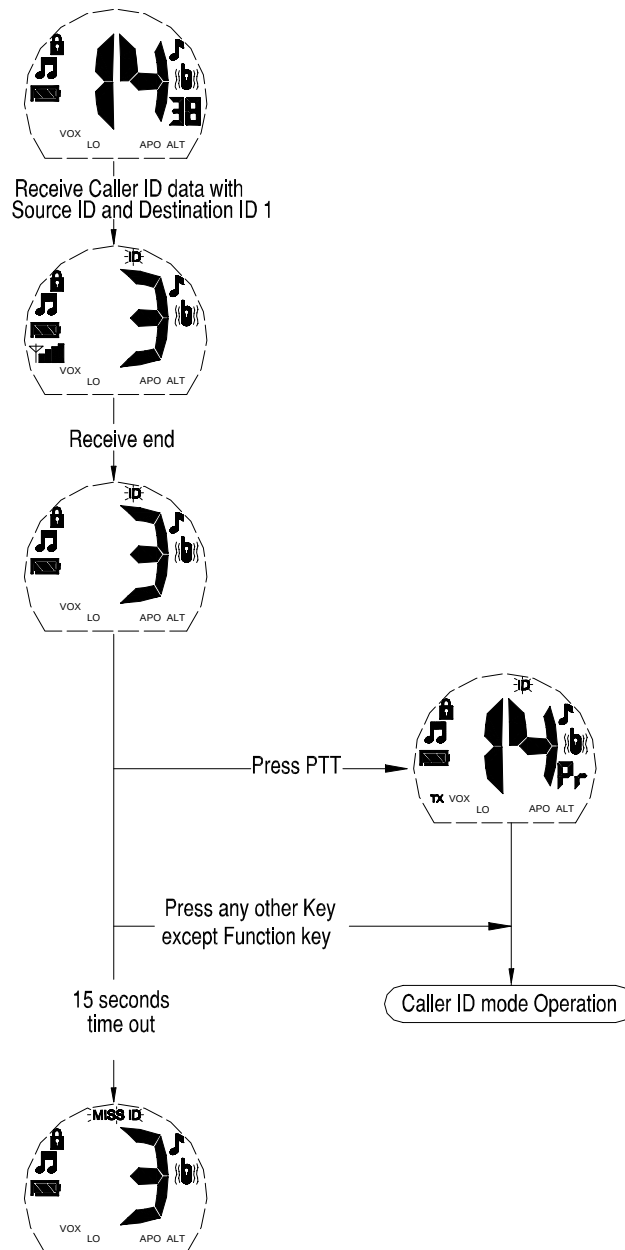
- Once the **Call** key is triggered, the radio will transmit Caller ID data until the end of transmission, no any other key can stop the transmission.
- After the end of transmission, the radio will enter into the Caller ID mode. That means the radio will automatically change its CTCSS Code to Private Tone(Pr) for 15 seconds. At this moment, the radio cannot transmit and receive voice message at the original Channel and CTCSS Code. The radio can only communicate with other radio at the original Channel and Private Tone(Pr). If conversation is made in Caller ID mode, the timeout will be extended for another 15 seconds.

9.1. Caller ID mode operation





10. Receive Caller ID

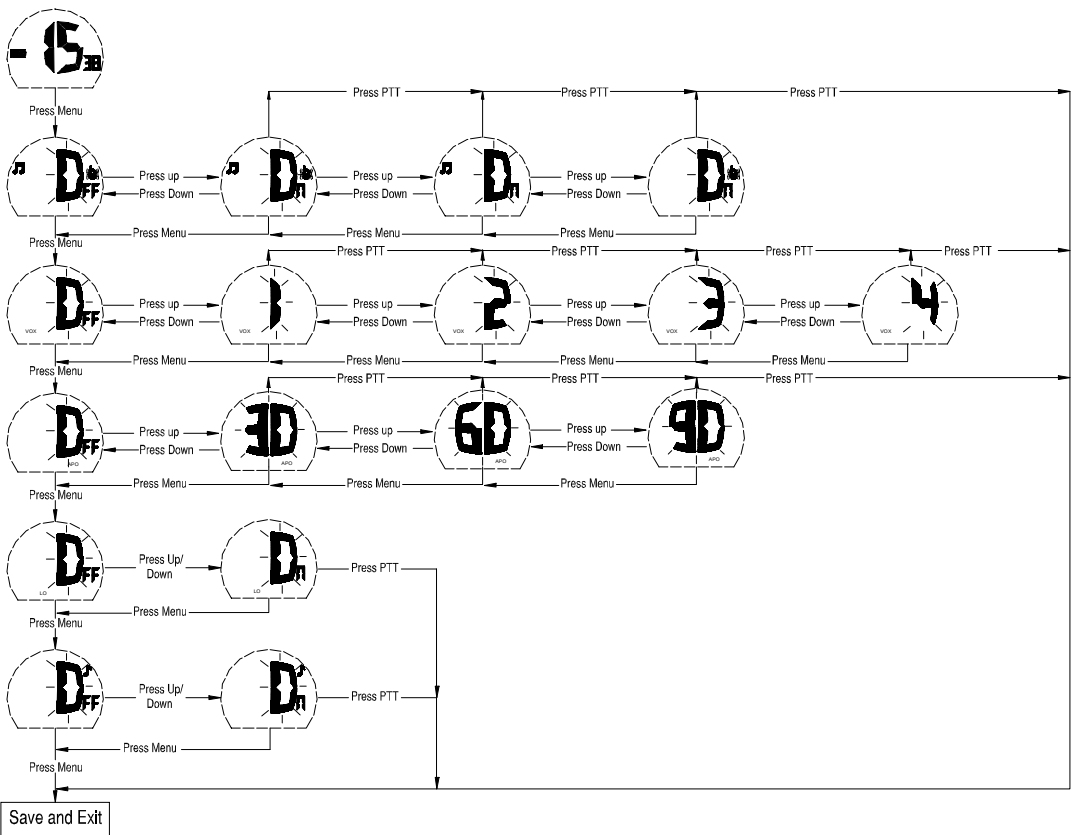


When the received Caller ID number matches with your Home ID, the transmitter's ID number will be displayed on LCD and then the receiver radio will generate Call melody. Miss ID icon will flash on LCD if no any key is pressed after 15 seconds. Reminder Beep also will be generated to remind user that there is an incoming call and it will beep once every 10 minutes for a period of 30 minutes. It will be removed when the user presses any key except **Function** key (Press Function key to turn on backlight 5 seconds to watch the Miss ID number in dark environment).

Note:

- If **PTT** key is pressed during call tone generation, the radio will stop Call tone immediately and transmit voice message (same Channel & Private tone).
- When correct ID is received, the radio will change its Quiet Code setting to Private Tone(Pr) for 15 seconds. When conversation is made within this period, the 15 seconds timeout will be extended for another 15 seconds.

11. Menu Setting



In Menu mode operation, you can set **Key Beep**, **Vibrator**, **VOX**, **APO**, **C-Tone** and **Hi/Lo Power** features for your radio.

11.1. Key Beep

- The radio will generate key beep if any key is pressed (except **PTT** & **Function** key).
- The factory default setting is **ON**.

11.2. Vibrator

- If the radio is idle (no Tx and Rx) for 30 seconds, the radio will vibrate for 2 seconds when receiving signal.
- The factory default setting is **ON**.

11.3. VOX

- After power on, the radio will automatically turn on **VOX** (Voice Activated Transmission) function and be set to Level 4 if a **VOX** headset has been plugged-in, the radio is still set to Level 4 even if VOX function is off before power on.
- **VOX** operation can be temporarily disabled (**VOX** icon not flashes) by pressing PTT. To re-enable **VOX** mode, short press the **PTT** (**VOX** icon flash) or enter menu mode (with save menu setting).
- Select **VOX** sensitivity Level 1, 2, 3 or 4 in Menu mode:
4 = High Sensitivity,

-
- 3 = Medium Sensitivity,
 - 2 = Low Sensitivity,
 - 1 = Ultra-Low Sensitivity.
 - The factory default setting is **OFF**.

11.4. APO

- APO (Auto Power Off) – The radio will automatically power off when the radio is idle (no any key-press or Tx or Rx) for 30, 60 or 90 minutes. Before the radio shuts off, the radio will vibrate & alert beep sounds. After auto power off, the radio can be wakened up by any key-press when rotary switch is in an **ON** state.
- The factory default setting is **OFF**.

11.5. C-Tone

- The radio transmits a roger beep when stopping transmission.
- The factory default setting is **ON**.

11.6. Hi/Lo transmit Power selection

- The radio transmitting power of Channel 1-7 and 15-22 can be selected 0.5Watt (ERP) or 1.5Watt (Conducted). The transmitting power of Channel 8-14 is fixed at 0.5Watt(ERP). If current channel number is 8-14, there will be no Hi/Lo transmit Power selection Menu.
- In Menu mode, the “Lo” and “ON” icon display on LCD to indicate that Lo (0.5 Watt(ERP) transmit power is selected. Otherwise, 1.5Watt (Conducted) transmit power is selected.
- The factory default setting is 1.5Watt (Conducted).

Note:

- The backlight will always turn on in Menu mode and turn off after 5 seconds when pressing **PTT** key to confirm save and exit.
- When no key-press is found in Menu mode, the radio will **exit without save** after 20 seconds.
- To save the Menu setting, press **PTT** key or continue pressing **Menu** key until exiting the Menu.

12. Panic Function

The panic function will emit alarm when you encounter an emergency situation by pressing **Panic** key even if the radio is power off (rotary switch off) or battery is being charged or battery is low, the alert will sound even if the batteries level is dead, battery icon will flash.

To enable Panic function:

- Press **Panic** key to enable Panic function.
- Press and hold down **Panic** key 2 seconds to stop panic function and “**Stop**” icon will display on LCD until the key is released.

13. WX Function

When in **WX** (Weather Radio Broadcast) mode, your radio can receive weather broadcasts from the NOAA National Weather Service. There are 10 NOAA channel frequencies available and these frequencies are common between the US and Canada. The radio monitors the selected

weather channel for alerts (The speaker will still sound even if no signal is received). When it detects **WX** Alert signal, your radio will alarm for 5 sec every time and the duration is longer than 600ms, and **ALT** icon will flash and listen to **WX** broadcasting.

1). To turn on the WX mode and choose a weather channel:

- Pressing **WX** key switches between GMRS/FRS and **WX** mode until the **WX** icon on the display is shown.
- Select WX Channel in WX mode by pressing **Up/Down** key.

2). To Enable WX alert setting:

- Holding down **WX** Key for 2 seconds enables (or disable) **WX** Alert feature, the **ALT** icon will show.
- Pressing **PTT** key or no any key operation for 15 seconds confirms the setting.

14. Reset Feature

The radio can be reset to the default value that it was made in the factory.

To reset your radio:

- Press **Func** key to turn on the radio.

15. Charging battery

When you use Ni-MH batteries and begin to recharge your batteries, the **CHARGE ON/OFF** switch (inside the battery compartment) should be set to the position of **ON**. Open the battery door, and you will find this switch.

1). Using standard charging cradle

- Trickle charge method is used.

2). Using 21-1930 charging cradle

- For fast charge, the radio is required to power off first and then plugged into the charger.
- If radio is **ON** while charging, trickle charge method is used.

3). Using CLA jack

- Before connect the Adapter plug, make sure setting **CHARGE ON/OFF** switch to **ON** inside the radio, otherwise battery level meter icon will appear on the display improperly.
- The radio can be used and charged at the same time when using CLA jack.

Note:

Do not set the switch at the position of **ON** when Alkaline batteries are being used. It may cause the radio to burst and cause personal injury when you recharge the batteries.

TECHNICAL SPECIFICATIONS

RX Frequency.....	462-467 MHz
Channels.....	22
Modulation type.....	FM
Antenna impedance.....	50 Ohm
Microphone.....	condenser type
Power supply.....	4× AAA Alkaline
Sensitivity at 12dB Sinad.....	0.5μV
Adjacent Channel Rejection.....	45dB
Audio Squelch	Auto
Audio output power.....	200mW @ 8 Ohm
Audio Distortion	5%
RF Output Power(FRS).....	500 mW @6V DC
RF Output Power(GMRS).....	1.5W (conducted) @6V DC
Harmonic Emissions.....	more than 50dB
Dimensions(HWD).....	116×60×35mm
Weight (without batteries).....	(estimated) 130g

CHANNEL FREQUENCIES

Frequency: MHz

1=462.5625	2=462.5875	3=462.6125	4=462.6375
5=462.6625	6=462.6875	7=462.7125	8=462.7375
9=462.7625	10=462.7875	11=462.8125	12=462.8375
13=462.8625	14=462.8875	15=462.9125	16=462.9375
17=462.9625	18=462.9875	19=463.0125	20=463.0375
21=463.0625	22=463.0875		

CTCSS PRIVACY CODES

Frequency: Hz

1: 67.0	11: 97.4	21: 136.5	31: 192.8
2: 71.9	12: 100.0	22: 141.3	32: 203.5
3: 74.4	13: 103.5	23: 146.2	33: 210.7
4: 77.0	14: 107.2	24: 151.4	34: 218.1
5: 79.7	15: 110.9	25: 156.7	35: 225.7
6: 82.5	16: 114.8	26: 162.2	36: 233.6
7: 85.4	17: 118.8	27: 167.9	37: 241.8
8: 88.5	18: 123.0	28: 173.8	38: 250.3
9: 91.5	19: 127.3	29: 179.9	

10: 94.8	20: 131.8	30: 186.2	
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