G1

USER MANUAL

VERSION 1.0

SAFETY

FCC NOTICE

The G1 operates on GMRS (General Mobile Radio Service) frequencies, which require a

Federal Communications Commission (FCC) license. You must be licensed prior to operating

on channels 1-7, 15-22 or RP15-22 which comprise the GMRS channels of the G1.

Serious penalties may result from unlicensed use of GMRS 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 that should be used for station identification when operating your

radio on GMRS 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

To obtain a license or ask questions about the license application, contact the FCC at

1-888-CALL-FCC or go to the FCC's website: http://www.fcc.gov and request Form 605.

rt SYSTEMS

To program your radio and to access advanced features, visit

rtsystemsinc.com
or contact them at 800-921-4834

CONTENTS

USER SAFETY INFORMATION

- Do not attempt to configure your radio while driving.
- This radio is designed for a 12 Volt DC power supply. Do not use a 24 Volt battery to power this radio.
- Keep this radio away from devices that cause interference, such as TV's, Generators, etc.
- Do not expose the radio to long periods of direct sunlight. Do not expose the radio to heat sources.
- If an abnormal odor or smoke is detected coming from the radio, turn off the power immediately, disconnect the power source, and contact your dealer.
- Do not transmit at high power for extended periods as overheating may occur.

PACKAGE INCLUDES

- Radio unit x 1
- Hand Mic with Scosche® MagicMount Magnetic Mount x 1
- Scosche® Magnetic Hand Mic Hanger x 1
- Mobile mounting bracket x 1
- DC power cable with fuse holder x 1
- Screw packs x 1
- Protection fuses x 1

MAIN FEATURES

Go Further® with our industry leading G1 mobile radio. More wattage equals more power and range, giving you the ability to transmit long-distances when it matters. Easily connect to an intercom with it's own dedicated port. Use the included Accessory Hub for easy radio programming and external speaker connection! Loaded with channels and features, the G1 is ideal for installation into your vehicle or setup at base camp.

FEATURES:

- Waterproof, IP67 sealed housing
- Easy access remote Accessory Hub
- RFI reflective aluminum chassis shielding
- Large, Easy to read LED Display
- 15 GMRS Channels (1-7 & 15-22)
- 8 Repeater Channels
- Programmable with RT Systems

INSTALLATION

MOBILE INSTALLATION

Mobile Installation: Select a location that is safe and easy to reach, and protect you and your passengers while the vehicle is in motion. Consider installing the radio in a location and position in which knees and legs will not strike it during sudden braking. Choose a well-ventilated location that is shielded from direct sunlight and heat sources.

Note: Extreme care should be taken if drilling into the dash or other areas of any vehicle to avoid damaging vehicle components.

1. Install the mounting bracket in the vehicle using the supplied self-tapping screws.
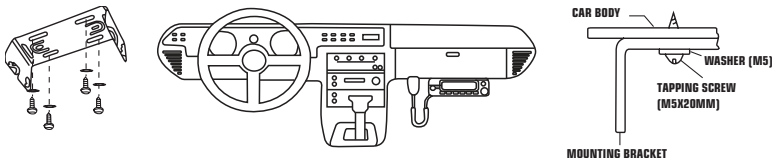
2. Position the radio, then insert and tighten the supplied hex/Phillips screws.

    • Determine the appropriate angle of the radio using the 3 screw hole positions on the side of the mounting bracket.
    • Double check that all screws are tightened to prevent vehicle vibration from loosening the bracket or radio.

INSTALLATION

DC POWER CABLE CONNECTION

This radio is designed to operate on 12 Volt systems. Never connect to a 24 Volt system without reducing to 12 Volts. If the power supply is lower than 12 Volts, the display may darken during transmissions, transmit power may decrease dramatically, and/or the radio may reboot. **Note:** Loose or poor connections can also cause this.

1. Route the DC power cable supplied with the radio directly to the vehicle's battery terminals using the shortest path from the radio. We suggest that 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 routed so it is isolated from heat, moisture and the engine secondary (high voltage) ignition system, componets, or cables.

2. 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. **Note:** Connecting the power cables incorrectly will damage the radio!

3. Connect the DC power cable to the radio's power supply connector. Press the connectors firmly together until the locking tab clicks.

Note: If you use the radio for a long period when the vehicle battery is not fully charged or when the engine is OFF, the battery may become discharged and will not have sufficient reserves to start the vehicle. Avoid using the radio in these conditions.

INSTALLATION

REPLACING FUSES

If a fuse blows, determine the cause and correct the problem. After the problem is resolved replace the fuse. If newly installed fuses continue to blow, disconnect the power cable and contact Rugged Radios for assistance. Only use fuses of the specified type and rating otherwise the radio could be damaged.
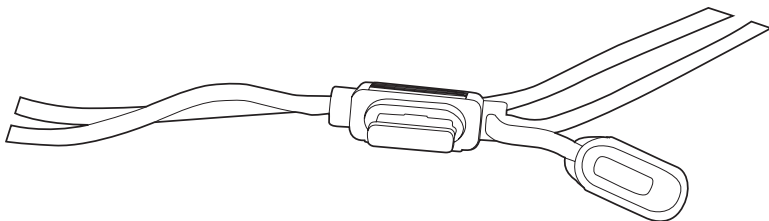
Fuse Location	Fuse Current Rating
Transceiver	15A

ACCESSORY CONNECTIONS

4-PIN CONNECTOR

Connect the Accessory Hub that comes with your radio.

Accessory Hub is used for external speaker and easy access for plugging in and programming the radio.

EXTERNAL SPEAKERS

If you plan to use an external speaker, choose a speaker with an impedance of 8 ohms.

The external speaker jack accepts a 3.5mm mono (2-conductor) plug.

EX-SPK-X
EXTERNAL SPEAKER

ACCS-HUB
ACCESSORY HUB

G1 RADIO
YOUR RADIO

ANTENNA AND CABLE

Radio performance relies greatly on the antenna and antenna cable!

Before operating, install an efficient, well-tuned antenna and a high-quality antenna cable. Failure to do so will reduce transmit and receive range, radio call clarity, and can damage the radio.

Notes:
• This radio must be used with a 50Ω impedance antenna and antenna cable.
• Transmitting without an antenna may damage the radio.

INSTALLING THE ANTENNA

For vehicle-mounting, the best place for an antenna is the center of a metal roof. Note that if your specific vehicle configuration, accessories, or intended use do not allow this - radio range may decrease.

For the best range, only the Rugged Radios GMRS POINT5 antenna should be used. Specific installation requirements vary between vehicles. Use the following guidelines to install the antenna. The location of your antenna will significantly effect your radio's performance!

1. Mount the antenna as high on the vehicle as possible. The higher the better.
2. If possible, mount the antenna in the center of a metal roof.
3. Be sure the mounting location is clean and dry before installing the antenna.
4. Route the antenna cable through an accessible entry point, such as a door or trunk opening.
5. When routing the antenna cable inside the vehicle, keep the cable away from noise sources, such as the ignition system, gauges, etc.
6. Exercise care to prevent cable damage. Make use of existing gaskets, grommets and weather stripping to protect the cable along its route.
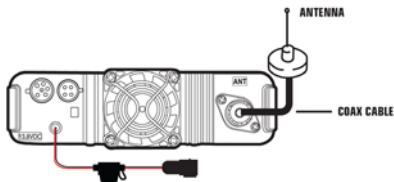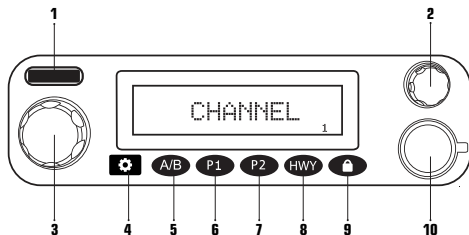

Important: Mount antenna as high as possible and away from obstructions.
Do not coil excess cabling. This will drastically reduce radio performance.

GETTING ACQUAINTED

FRONT PANEL OPERATION

CHANNEL

No.	Key	Function	QuickPress	Long-Press
1.	**Indicator Light**	Illuminates while transmitting	N/A	N/A
2.	**Volume Knob**	Turns radio ON/OFF and controls volume	N/A	N/A
3.	**Channel Knob**	Turn to change channels/ scroll menu	N/A	N/A
4.	**Menu**	Enter into Menu/ Use as a confirm button	Menu/Confirm	N/A
5.	**A/B**	Switch between monitored channels while in "Dual Monitor Mode". Tone code display switch. Change to see Number or Frequency.	A/B	Tone Code
6.	**P1**	Quick access to the channel you set as P1	Preset Ch. 15	Programmable
7.	**P2**	Quick access to the channel you set as P2	Preset Ch. 16	Programmable
8.	**HWY**	Automatically switch to highway channel 19	Go to Ch. 19	Programmable
9.	**Lock**	Lock your radio to avoid accidentally changing channel	Back	Lock/ Unlock
10.	**Microphone Port**	6-Pin connection port for included hand-mic	N/A	N/A

GETTING ACQUAINTED

HAND MIC OPERATION
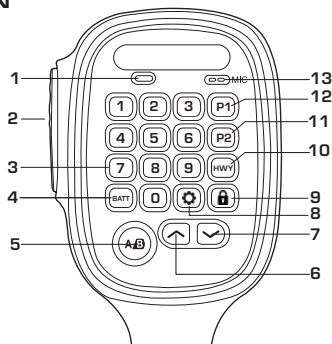
No.	Key	Function
1.	Indicator Light	Light is red during transmission
2.	PTT	Press to transmit
3.	Number Pad	Input channel number or DTMF dial out
4.	BATT	Shows vehicle battery voltage
5.	A/B	Swap between home and sub screen
6.	⌃	Increase volume or setting value
7.	⌄	Decrease volume or setting value
8.	Menu	Access the menu
9.	Lock	Lock your radio to avoid accidentally changing channel
10.	HWY	Automatically switch to highway channel 19
11.	P2	Quick access to the channel you set as P2
12.	P1	Quick access to the channel you set as P1
13.	MIC	Speak here during transmission

GETTING ACQUAINTED

REAR PANEL OPERATION
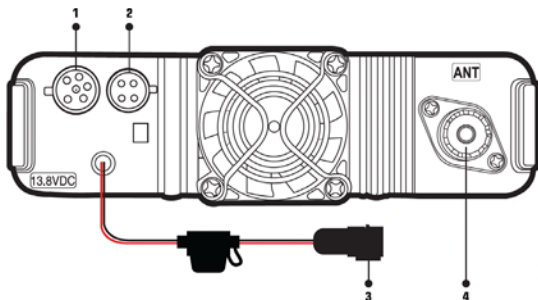
No.	Port	Function
1	Intercom	Port to attach cable that connects to the intercom.
2	Speaker/ Programming	Port to attach cable for external speaker and programming cable (Accessory Hub).
3	Power	Power connector port (connects to the power cable).
4	Antenna	Port to attach coax cable from the antenna.

GETTING ACQUAINTED

MENU

Menu Item	Operation
Scan	This function is designed to scan for signals on every channel in the scan list.
Dimmer	Increases or decreases the display brightness.
Display Color	Changes the display color.
Backlight	Dims the display after so many seconds of inactivity.
Dual Monitor	Allows you to monitor two channels at once.
CH Display	Shows the frequency or channel name.
Squelch	The squelch system allows you to mute background noise when no signal is being received. The squelch system's "standby" operation is audibly more pleasant, and significantly reduces battery current consumption.

GETTING ACQUAINTED

MENU CONTINUED

Menu Item	Operation
Tone Codes	Prevents hearing radio traffic on the same frequency.
Tx Power	The level of power output used during transmission.
Bandwidth	Wide - Used for shorter distances, with a broader range of frequency communication. Narrow - Used for long-range communication with a comparatively smaller range of frequency communication.
Reset	Resets the radio to factory settings.
B Chan Alert	Gives warning of a transmission coming from B channel (when turned on).
Tx Filter	*Dual Active Voice Enhancement filters out background noise from transmitting voice.
Rx Filter	*Dual Active Voice Enhancement filters out background noise from receiving voice.
VOX Sensitivity	Turns VOX on or off.

GETTING ACQUAINTED

ADVANCED MENU

Menu Item	Operation
VOX Level	Increases or decreases the volume threshold in which your voice automatically activates a radio transmission. Adjusting this level will make it easier or harder to trigger a VOX transmission.
Radio Info	Displays firmware version and the date it was updated.

***D.A.V.E. (Dual Audio Voice Enhancement)** is a groundbreaking feature designed to enhance communication in noisy environments, such as loud vehicles. This advanced technology filters out unwanted background noise, ensuring crystal-clear audio by isolating the speaker's voice.

How to Enable D.A.V.E. on Your Radio:
Power On: Turn on your mobile radio.
Access the Menu: Press the gear ⚙ icon button to enter the menu.
Navigate to Advanced Settings: Turn the left knob until you see the "Advanced" menu. Select the "Advanced" menu by pressing the gear ⚙ icon button.
Adjust Filters:
Locate settings 4 and 5, labeled TX Filter and RX Filter.
TX Filter: If others are having trouble hearing you, enable this filter.
RX Filter: If you are having trouble hearing others, enable this filter.

GETTING ACQUAINTED

ADVANCED MENU CONTINUED

Bluetooth	Turns BT On/Off
	BT Pairing - Connect headsets or BT speakers
	Paired Names - Shows BT devices that are connected
	BT PTT Pair - Connect a BT PTT button
	BT Hold Time - BT power-saving mode. Increase/decrease how long the hold time is.
	BT Mic Gain - Increase or decrease how loud the mic receives your voice
	BT Spk Gain - Increase or decrease how loud the incoming audio is.

TERMINOLOGY

Abbreviation	Meaning
VOX	Voice-activated transmission
PTT	Push-to-talk
BT	Bluetooth

TROUBLESHOOTING

Problem	Possible Cause and Potential Solutions
(a) Power is on, nothing appears on Display.	+ and - polarities of power connection are reversed. Connect red lead to plus terminal and black lead to minus terminal of DC power supply.
(b) Fuse is blown.	Check and solve problem resulting in blown fuse and replace fuse with new fuse.
(c) No sound comes from speaker	Squelch is muted. Decrease squelch level. Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off.
(d) Key and Dial do not function.	Key-lock function is activated. Cancel Key-lock function.

For additional help call our Tech Department at (888) 541-7223. We are here to help!

HOURS OF OPERATION: Monday - Friday: 8:00 AM - 5:00 PM PST

TONE CODES

CHANGING TONE CODES

Press [⚙] to get into menu. Use the [Channel Knob] to navigate to "Tone Codes", then press [⚙] to select it. From within the "Tone Codes" menu, select your desired tone type: "Cross Tone", "CTC RX", "CTC TX", "DCS RX", "DCS TX". Then press the [⚙] to select it. Our tone codes use the same chat and numbering system as listed in GMRS charts.

GMRS TONE CODES

CTCSS Analog Tone Codes

This is the number you toggle to on your radio!

No.	Freq. (Hz)
1	67.0
2	71.9
3	74.4
4	77.0
5	79.7
6	82.5
7	85.4
8	88.5
9	91.5
10	94.8
11	97.4
12	100.0
13	103.5
14	107.2
15	110.9
16	114.8
17	118.8
18	123.0
19	127.3
20	131.8
21	136.5
22	141.3
23	146.2
24	151.4
25	156.7
26	162.2

No.	Freq. (Hz)
27	167.9
28	173.8
29	179.9
30	186.2
31	192.8
32	203.5
33	210.7
34	218.1
35	225.7
36	233.6
37	241.8
38	250.3
39	62.5
40	69.3
41	159.8
42	165.5
43	171.3
44	177.3
45	183.5
46	189.9
47	196.6
48	199.5
49	206.5
50	229.1
51	254.1

Codes 38-51 may not be supported by other brand GMRS radios

For info on updating firmware, call us at: (888) 541-7223

This is the number you toggle to on your radio!

No.	DCS (Digital) Code	No.	DCS (Digital) Code	No.	DCS (Digital) Code	No.	DCS (Digital) Code
1	23	27	165	53	413	79	731
2	25	28	172	54	423	80	732
3	26	29	174	55	431	81	734
4	31	30	205	56	432	82	743
5	32	31	223	57	445	83	754
6	43	32	226	58	464	84	36
7	47	33	243	59	465	85	53
8	51	34	244	60	466	86	122
9	54	35	245	61	503	87	145
10	65	36	251	62	506	88	212
11	71	37	261	63	516	89	225
12	72	38	263	64	532	90	246
13	73	39	265	65	546	91	252
14	74	40	271	66	565	92	255
15	114	41	306	67	606	93	266
16	115	42	311	68	612	94	274
17	116	43	315	69	624	95	325
18	125	44	331	70	627	96	332
19	131	45	343	71	631	97	356
20	132	46	346	72	632	98	446
21	134	47	351	73	654	99	452
22	143	48	364	74	662	100	454
23	152	49	365	75	664	101	455
24	155	50	371	76	703	102	462
25	156	51	411	77	712	103	523
26	162	52	412	78	723	104	526

Codes 84-104 may not be supported by other brand GMRS radios

STANDARD GMRS CHANNELS

Channel	Frequency (MHz)
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6875
14	467.7125
15	462.5500
16	462.5750
17	462.6000
18	462.6250
19	462.6500
20	462.6750
21	462.7000
22	462.7250

GMRS REPEATER CHANNELS

Channel	Transmit Frequency (MHz)	Receive Frequency (MHz)
15RP	467.5500	462.5500
16RP	467.5750	462.5750
17RP	467.6000	462.6000
18RP	467.6250	462.6250
19RP	467.6500	462.6500
20RP	467.6750	462.6750
21RP	467.7000	462.7000
22RP	467.7250	462.7250

SPECIFICATIONS

GENERAL

Frequency Range	TX-462-467MHz RX: 400-480MHz
Channel Capacity	350
Frequency Stability	±2ppm
Working Temperature	-30°C ~ +60°C
Working Voltage	13.8V DC
Dimension(HxWxD)	53*138*153mm
Weight	2.55 lbs.

SPECIFICATIONS

RECEIVER

Receiving Sensitivity	0.25µV @ 12dB SINAD
Adjacent Channel Selectivity	≤-60dB@12.5KHz
Inter-modulation	≥60dB
Spurious Rejection	≥70dB
Audio response	+1~-3dB
Audio Distortion	<5%
Audio power	≤3W
Hum/Noise	≥40dB@25KHz /≥35dB @12.5KHz
Standby current	0.16A
RX current	0.4A

SPECIFICATIONS

TRANSMITTER

Output Power	High:40W Middle:25W Low:5W
TX Current	≤9A
FM Modulation	11K0F3E @ 12.5KHz 14K0F3E @ 20KHz 16K0F3E @ 25KHz
Modulation Distortion	<5%
Hum/Noise	≥40dB@25KHz /≥35dB@12.5KHz
Adjacent Channel Power	≤-60dB@12.5KHz
Audio Response	+1~-3dB
Spurious	≤-30dBm12.5kHZ data and audio:7K60FXE

NOTES

WWW.RUGGEDRADIOS.COM