

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.





To program your radio and to access advanced features, visit

rtsystemsinc.com

or contact them at 800-921-4834

CONTENTS

User Safety Information	05	Notes	25
Package Includes	06		
Main Features	07		
Installation	08		
Mobile Installation	08		
DC Power Cable Connection	09		
Replacing Fuses	10		
Accessory Connections	11		
4-Pin Connector	11		
External Speakers	11		
Antenna and Cable	12		
Installing the Antenna	13		
Getting Acquainted	14		
Front Panel Operation	14		
Rear Panel Operation	15		
Transmitting	16		
Menu	18		
Settings Expanded	19		
Troubleshooting	21		
Specifications	22		
General	22		
Receiver	23		
Transmitter	24		

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 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 its own dedicated port along with having an easy to access Accessory Hub for easy 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
- Large, Easy to read LED Display
- 15 GMRS Channels (1-7 & 15-22)
- 8 Repeater Channels

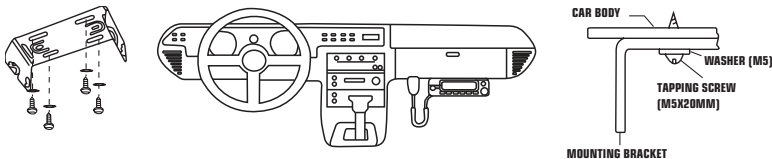
INSTALLATION

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.

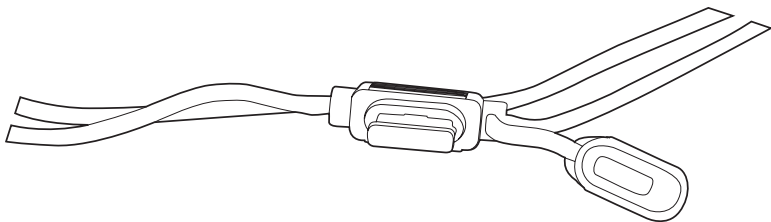
1. Route the DC power cable supplied with the radio directly to the vehicle's battery terminals using the shortest path from the radio. We suggest you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop. The entire length of the cable must 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 8ohms.

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:

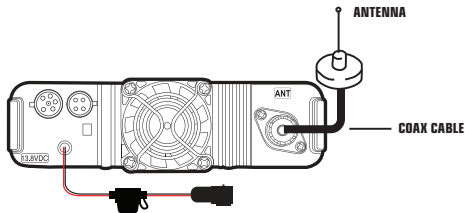
- This radio must be used with a 50Ω impedance antenna and antenna cable
- Transmitting without an antenna may damage the radio

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. Where you locate your antenna does make a difference!

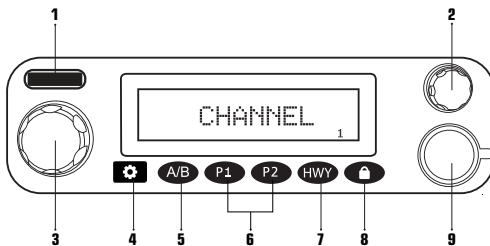
1. Mount the antenna as high on the vehicle as possible. The higher the better.
2. If possible, mount the antenna in the center of a metal roof
3. Be sure the mounting location is clean and dry before installing the antenna.
4. Route the antenna cable through an accessible entry point, such as a door 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 up high and do not coil-up excess cable.

GETTING ACQUAINTED

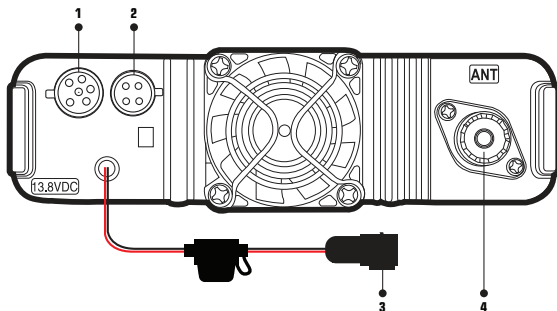
FRONT PANEL OPERATION



No.	Key	Function
1	Indicator Light	Illuminates while transmitting.
2	Volume Knob	Turns radio ON/OFF and controls volume.
3	Channel Knob	Turn to change channels.
4	Function Key	Quick-press to enter the menu/ confirm.
5	A/B	While in dual monitor mode, switches between channel A and B
6	P1/P2 Settings	Quick-press P1 for channel 1, quick-press P2 for channel 2.
7	TXT	While on digital channel will open text mailbox.
8	Lock	Quick-press for back/escape. Long-press for lock/unlock.
9	Microphone Port	6-Pin connection port for included hand-mic.

GETTING ACQUAINTED

REAR PANEL OPERATION

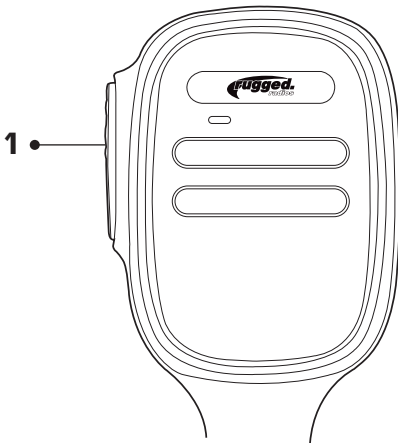


No.	Port	Function
1	Intercom	Port to attach cable to go to intercom.
2	Speaker/ Programming	Port to attach cable for external speaker and programming cable.
3	Power	Connector to connect to the power cable.
4	Antenna	Port to attach coax cable from antenna.

GETTING ACQUAINTED

TRANSMITTING

No.	Icon	Function
1	PTT	To transmit, hold microphone approximately 4 inches from mouth, press the key [#1], and speak into microphone.



GETTING ACQUAINTED

MENU

Menu Item	Operation
Scan	This function is designed to scan for signals in every channel on the scan list. Press [] to open settings menu. Use the Channel Knob to scroll to SCAN and press [] to accept. Press [] to select Turn On. To exit scan, press [] to open settings menu. Use the Channel Knob to scroll to SCAN and press [] to accept. Press [] to select Turn Off.
Zone Selection	Press [] to open settings menu. Use the Channel Knob to scroll to ZONE and press [] to accept. Use the Channel Knob to scroll to desired zone and press [] to accept.

GETTING ACQUAINTED

MENU

Menu Item	Operation
Utilities	Press [] to open settings menu. Use the Channel Knob to scroll to Utilities and press [] to accept. Use the Channel Knob to scroll to Radio Settings, for settings, or Radio Info, for firmware information. Press [] to accept.

GETTING ACQUAINTED

SETTINGS EXPANDED

Menu Item	Operation
Squelch	Squelch system allows you to mute the background noise when no signal is being received. Not only is the Squelch system “standby” operation more pleasant, it also significantly reduces battery current consumption. When in the Settings menu, use the Channel Knob to scroll to Squelch and press [] to accept. Use the Channel Knob to scroll to the desired Squelch level and press [] to accept.
Auto Lock	Choose whether to lock the radio keypad manually or automatically. When in the Settings menu, use the Channel Knob to scroll to Auto Lock and press [] to accept. Use the Channel Knob to select: Manual, 5S, 10S, or 15S and press [] to accept.

GETTING ACQUAINTED

SETTINGS EXPANDED

Menu Item	Operation
Monitor	Monitor will temporarily change the squelch to zero allowing you to hear very weak signals. When in the Settings menu, use the Channel Knob to scroll to Monitor and press [⚙] to accept. Use the channel knob to select Turn On or Turn Off then press [⚙] to accept.
Dual Monitor	Dual Monitor will allow you to monitor two channels at once. When in the Settings menu, use the Channel Knob to scroll to Dual Monitor and press [⚙] to accept. Use the channel knob to select Turn On or Turn Off then press [⚙] to accept.

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. 3.5mm external speaker jack is occupied.
(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

SPECIFICATIONS

GENERAL

Frequency Range	UHF: 400-480 MHz (Rx) UHF: GMRS MHz (Tx)
Channel Capacity	22
PLL Channel Spacing	12.5/25KHz
Voltage Rating	13.8V DC
Operating temperature	-30°C ~ +60°C
Storage temperature	-30°C ~ +85°C
Dimensions	143x50x175mm
Compatabile with American Military Standard	(MIL-STD-810C/D/E)

SPECIFICATIONS

RECEIVER

Frequency stability (-20C +60C, +25°C]	+/-1.0ppm
Digital Sensibility	0.3uV/-117.4dBm(BER 5%) 0.7uV/-110dBm(BER 1%)
Analogue Sensibility	0.35uV/-116dBm(20dB SINAD) 0.22uV/-120dBm(20dB SINAD)
Rated audio	5W
Adjacent Channel Selectivity	TIA603C:60 dB@ 12.5kHz ETSI: 60 dB@ 12.5kHz
Intermodulation	TIA603C:65 dB ETSI: 65 dB
CO-channel Rejection	12 dB@ 12.5kHz
Spurious Rejection	TIA603C:70 dB ETSI: 70 dB
Audio distortion @ rated audio	≤ 3%
FM Hum and Noise	-40dB @12.5kHz
Audio response	+1 dB-3dB
Spurious emission	-57dBm@< 1 GHz -47dBm@>1GHz
Block	84dB

SPECIFICATIONS

TRANSMITTER

FM Hum and Noise	-40dB @12.5kHz
Modulation limited	+/-2.5kHz @ 12.5kHz
Conducted/radiated emission	-36 dBm < 1 GHz -30 dBm >1GHz < 4GHz
Adjacent channel power	-60 dB @12.5kHz -65 dB @ 25kHz
Audio Response	+1dB-3dB
Audio distortion	3%
FM modulation	12.5kHz: 11KOF3E
RF Power	45W

NOTES

FCC Compliance Statements

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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, uses 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:

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

NOTES



RF Exposure Warning Statements:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment shall be installed and operated with minimum distance 191.6cm between the radiator & body.

WARNING:

MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

Licensing Information:

Use our radio in USA is subject to the rules & regulations of FCC. Changes or modifications not expressly approved by our may void the user authority granted by the FCC to operate this radio and should not be made. To comply with FCC requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services. Replacement of any transmitter component (crystal, semiconductor, etc) not authorized by the FCC equipment authorization for this radio could violate FCC rules.

NOTES

Note: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Important: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device. Your radio is set up to transmit a regulated signal on an assigned frequency. It is against the law to alter or adjust the settings inside the radio to exceed those limitations. Any adjustments to your radio must be made by qualified technicians.



WWW.RUGGEDRADIOS.COM