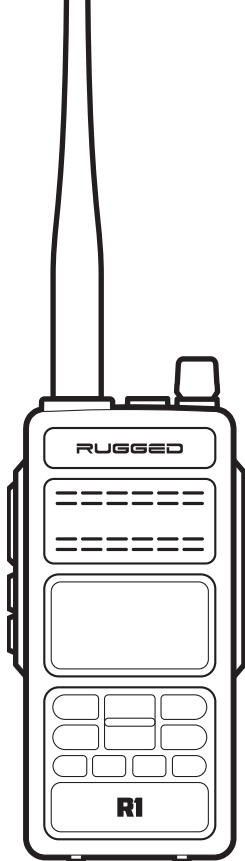# rugged.
radios

R1

USER MANUAL   VERSION 1.0.2

SAFETY

Safety: This 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, this 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 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Acids. American National Standards Institute (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 (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields— RF and Microwave. The following accessories are authorized for use with this product. use of accessories other than those (listed in the instruction) specified may result in RE exposure levels exceed the FCC requirements for wireless RE exposure. To ensure that your exposuree 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 this radio by the manufacturer or antenna specifically authorized by the manufacturer for use with this radio. DO NOT transmit for more than 50% of total radio use time. Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded. The radio is transmitting when the 'TX indicator' lights up red. You can cause the radio to transmit by pressing the PTT switch. ALWAYS keep the antenna at least 2.5 cm (1 inch) away from the body when transmitting and only use the provided belt-clip to ensure FCC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the antenna at least 5 cm (2 inches) from your mouth, and slightly off to one side. The information outlined in this manual provides the user with the information needed to make him or her aware of RF exposure and what to do in order to assure this radio is operated safely within the FCC exposure limits.

Electromagnetic Interference/Compatibility During Transmission: Your 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 that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use: The radio transmitter is used in situations in which persons are exposed as consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

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

- Please read the following brief instructions, non-compliance with these rules may cause danger or violate the law.
- Obey the local government regulation before using this radio, improper use may violate the law and be punished.
- Turn off the radio before entering flammable or explosive areas.
- Do not charge or change the battery in flammable or explosive areas.
- Turn off the radio before getting close to the blasting zone or detonator areas.
- Do not use radio whose antenna is damaged, touching of damaged antenna will cause heat injury.
- Do not attempt to open the radio; the maintenance work should be done by technical expert only.
- To avoid troubles caused by electromagnetic interference or electromagnetic compatibility, please turn off the radio in places where the banner displays "Do not use wireless equipment", such as hospitals and other healthcare locations.
- In vehicles, do not put the radio within the area of airbag deployment.
- Do not store the radio under the direct sunshine or in hot areas.
- When you transmit with the radio, do keep away from its antenna for 5cm at least.
- If the radio appears defective or starts to smoke, please shut off its power immediately and contact your local dealer.
- Do not transmit too long, for the radio may heat and cause injury.

PACKAGE INCLUDES

Please check if any damage to the package when you receive it. Carefully unpack the transceiver. We recommend that you check the items listed in the following table. If any items are missing or damaged during shipment, please contact with your local dealer immediately.

- R1 handheld radio
- Antenna
- Rechargeable Li-ion Battery
- USB charging cable / power adapter
- Belt Clip

CHARGING YOUR BATTERY PACK

CHARGING PREPARATION

Precaution: The supplied battery pack of this radio is a high-performance Li-ion with 7.4V standard voltage 2000mAh high capacity in a very compact package. Under normal use, the battery pack may be used for approximately 500 charge cycles and more, after which operating time maybe expected to decrease. If you have an old battery pack which is displaying capacity which has become diminished, you should replace the pack with a new one.

- Do not short-circuit the battery terminals or expose to fire. Do not disassemble the battery.
- Charge the battery between 32°F and 113°F. The battery cannot normally be charged beyond this temperature range.
- Turn off the transceiver when you charge it. Transmitting with the transceiver in charge will affect its normal charge.
- Do not unplug the Power Adapter or battery when it is charging.
- If the battery does not last its normal charge, it means that the battery is depleted, change the battery pack.
- Do not charge when the battery or the radio is wet. Dry it with a cloth and wait for it to be fully dry before charging to avoid any danger.

Warning: When the conductive metals such as jewelry, keys, or decorative chains touch the battery terminals, all the batteries are likely to cause damage to the items or personal injury. These conductive metals may form a short circuit and generate heat. Handle the battery carefully, especially when placed in a pocket or metallic container.

CHARGING YOUR BATTERY PACK

CHARGING OPERATION

After installing the battery pack, if the battery icon shows [ ], it means that the battery pack is out of power. Please charge it.

Charging indicator light conditions:

Indicator Display	Status
Red	Charging
Green	Completed

Battery Tips

- The battery is not fully charged at the factory, please charge it before using it.
- Charge and discharge the battery two or three times, the battery capacity will reach the best condition. When the battery capacity is low, please charge or change the battery.
- If the battery lasts a short time, even if it is fully charged, the battery is depleted, please contact your local dealer to buy a new battery.

ACCESSORIES CONNECTIONS

BATTERY PACK

1. Align the two grooves of battery and the guide rail on the back of the aluminum shell, ensure full contact and in parallel, then push the battery up to the radio base along the rail on the back of the aluminum shell, until the battery latch locks up.

2. To remove the battery, please make sure the radio is off, push the battery latch down, and make sure the radio and battery is on the releasing state, and then push the battery out from the radio.

BELT CLIP

Align the two holes of belt clip and the two holes of the radios, fix them with the supplied M2.5x5 screws. Loosen the screw set to remove belt clip.
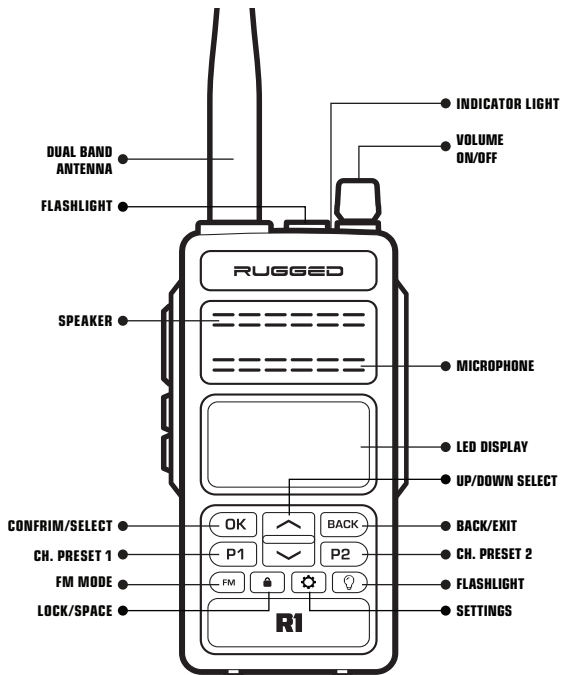
EXTERNAL MICROPHONE/SPEAKER

Open the cover of the microphone/speaker jack and insert the microphone/speaker plugs into the jack.

*   Using the external headset or mic/speaker will affect the water-tightness performance of radio.

GETTING ACQUAINTED

FRONT PANEL OPERATION

INDICATOR LIGHT

VOLUME ON/OFF

DUAL BAND ANTENNA

FLASHLIGHT

RUGGED

SPEAKER

MICROPHONE

LED DISPLAY

UP/DOWN SELECT

CONFRIM/SELECT — OK

BACK/EXIT — BACK

CH. PRESET 1 — P1

CH. PRESET 2 — P2

FM MODE — FM

FLASHLIGHT

LOCK/SPACE

SETTINGS

R1

GETTING ACQUAINTED

SIDE PANEL OPERATION

VOLUME ON/OFF

ACCESSORY PORT

MIC SP

BELT CLIP

RECHARGEABLE LITHIUM ION BATTERY

DUAL BAND ANTENNA

PTT

PUSH TO TALK

SIDE KEY 1

SIDE KEY 2

BATTERY CHARGING PORT
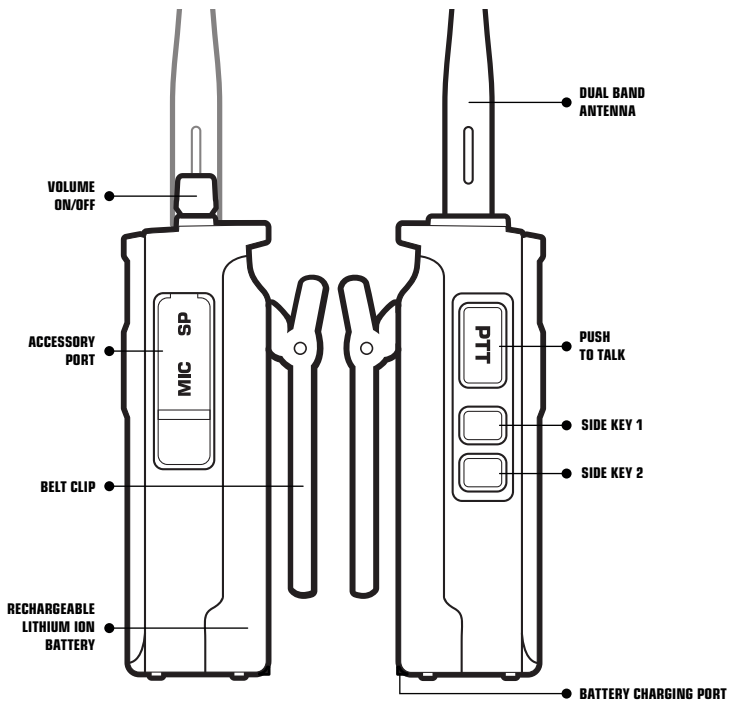
GETTING ACQUAINTED

CHANGING CHANNELS
Use [∧ ∨] to scroll through the channels until you have reached your desired channel. To avoid accidental changes, always lock.

PUSH-TO-TALK (PTT)
Press it to transmit and release it to receive after your transmission is completed.

2-PIN MIC/ACCESSORY PORT
The jack provides connection points for microphone input, audio output, and program cable.

SETTINGS
Long-press [⚙] to open settings menu. When dual monitor is activated, quick-press [⚙] to

switch between channel A and channel B.

FLASHLIGHT
Hold [⚙] and quick-press [🔦] to turn flashlight on and off.

SIDE KEY 1
Press and hold to view battery voltage.

SIDE KEY 2
Press and hold to monitor a channel by temporarily changing the squelch to zero allowing you to hear very weak signals.

GETTING ACQUAINTED

FM RADIO MODE
Long-press [FM] to activate FM radio mode. Use [∧ ∨] to scroll through the channels until you have reached your desired channel. Quick-press [BACK] to exit FM radio mode.

LOCK
Long-press to lock and unlock the radio.

P1 SETTING
Channel 1 in active zone.

P2 SETTING
Channel 2 in active zone.

OK
Confirm

BACK
Exit

GETTING ACQUAINTED

MENU

Menu Item	Function	Operation
Zone Selection	Select your active zone.	Long-press [⚙] to open menu. Use [∧∨] to scroll to Zone and press [OK] to accept. Press [OK] to select On. Use [∧∨] to scroll to desired zone and press [OK] to accept.
Scan	Scan for signals in every channel in the current zone.	Long-press [⚙] to open menu. Use [∧∨] to scroll to SCAN and press [OK] to accept. Press [OK] to select On. To exit scan, long-press [⚙] to open settings menu. Use [∧∨] to scroll to SCAN and press [OK] to accept. Press [OK] to select Off.
Message (Only Shown When Selected Zone is Digital)	Send, receive, and manage text messages.	Long-press [⚙] to open menu. Use [∧∨] to scroll to Message and press [OK] to accept

GETTING ACQUAINTED

MENU

Menu Item	Function	Operation
Setting	Access Radio Settings and Radio Info.	Long-press [⚙] to open menu. Use [∧ ∨] to scroll to Setting and press [OK] to accept. Use [∧ ∨] to scroll to Radio Settings, for settings, or Radio Info, for firmware information. Press [OK] to accept.

GETTING ACQUAINTED

SETTINGS EXPANDED

Menu Item	Function	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 [∧∨] to scroll to Squelch and press [✿] to accept. Use the [∧∨] to scroll to the desired Squelch level and press [✿] to accept.
Dual Monitor	Dual Monitor will allow you to monitor two channels at once.	When in the Settings menu, use [∧∨] to scroll to Dual Monitor and press [✿] to accept. Use [∧∨] to select Turn On or Turn Off then press [✿] to accept.

GETTING ACQUAINTED

SETTINGS EXPANDED

Menu Item	Function	Operation
Beeps	Enable or disable tones.	When in the Settings menu, use [∧∨] to scroll to Beeps and press [OK] to accept. Select All Tone press [OK] to accept. Use [∧∨] to select On or Off and press [OK] to accept.
Backlight	Set the Backlight setting.	When in the Settings menu, use [∧∨] to scroll to Backlight and press [OK] to accept. Use [∧∨] to select the desired backlight setting and press [OK] to accept.
Auto Lock	Choose whether to lock the radio keypad manually or automatically.	When in the Settings menu, use the [∧∨] to scroll to Auto Lock and press [OK] to accept. Use [∧∨] to select: Manual, 5S, 10S, or 15S and press [OK] to accept.

GETTING ACQUAINTED

SETTINGS EXPANDED

Menu Item	Function	Operation
Mic Level	Adjust microphone sensitivity.	When in the Settings menu, use [∧∨] to scroll to Mic Level and press [OK] to accept. Use [∧∨] to select the desired microphone sensitivity level and press [OK] to accept. Default sensitivity setting is 2. **Analog:** 0 is the least sensitive setting and 6 is the most sensitive setting. **Digital:** 0 is the least sensitive setting and 4 is the most sensitive setting.

GETTING ACQUAINTED

MESSAGES EXPANDED

Menu Item	Function	Operation
Inbox	All recieved text messages will be stored here.	When in the Messages menu, use [∧∨] to scroll to Inbox and press [OK] to accept.
New Message	Write and send text messages.	When in the Messages menu, use [∧∨] to scroll to New Message and press [OK] to accept. Use [∧∨] to select your symbols or letters. Use [▣] to advance spaces and [BACK] to backspace. Review the drafted text message then press [OK] to accept. Use [∧∨] to select Send, Save, or Clear then press [OK] to accept.
Outbox	All sent text messages will be stored here.	When in the Messages menu, use [∧∨] to scroll to Outbox and press [OK] to accept.

GETTING ACQUAINTED

MESSAGES EXPANDED

Menu Item	Function	Operation
Draft	All text messages saved as draft will be stored here.	When in the Messages menu, use [∧∨] to scroll to Draft and press [OK] to accept.
Quick Text	Choose from pregrogammed text messages to send or send your own programmed quick texts.*	When in the Messages menu, use [∧∨] to scroll to Quick Text and press [OK] to accept. Use [∧∨] to scroll to the desired, preprogramed, text message and press [OK] to accept. Review the selected text message then press [OK] to accept. Use [∧∨] to select Send, Save, or Clear then press [OK] to accept.

*Enabled via software available from RT Systems.

SPECIFICATIONS

GENERAL

Frequency Range	136-174 & 400-480MHz
Operating voltage	DC 7.4 V ±10%
Operating temperature	-10 ℃ to +40 ℃
Antenna Impedance	50Ω
Duty cycle	5/5/90%

TRANSMITTER

RF Output Power	≤5 W /1W
FM Modulation	11K0F3E@12.5KHz
4FSK Digital Mode	7K60FXD@12.5KHz (Date only) 7K60FXE@12.5KHz (Date +Voice)
Spurious Emission	-36dBm<1GHz , -30dBm>1GHz
Adjacent Channel Power	60dB @ 12.5KHz

SPECIFICATIONS

RECEIVER

Receive Sensitivity	0.25μV (12dB SINAD)
Channel spacing	12.5KHz
Adjacent Channel Selectivity	≥55dB
Inter Modulation and Rejection	≥55dB
Conducted Spurious Emission	≤57dB
Rated Audio Power Output	1W @16 Ωs
Rated Audio Distortion	≤5%

NOTES

WWW.RUGGEDRADIOS.COM