RECYCLED PACKAGING

PROFESSIONAL TWO WAY RADIO

USER MANUAL

Model: RT28 / RT28P

Function Operation Instruction

Function Introduction

- Frequency
  FRS/PMR/UHF
- Up to 16 Channels
- Chinese/English Language
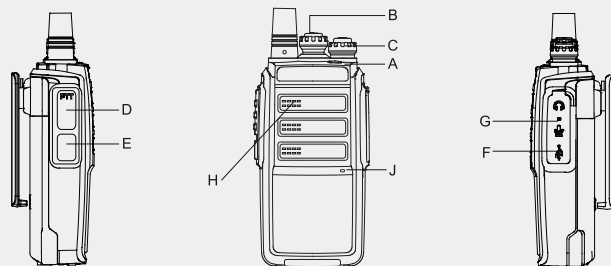- 50 Groups CTCSS，105 Groups of standard DCS
- Time-out timer(TOT)
- Battery saving function
- Alarm function
- USB rapid charge
- Programmable by PC

Item Description

Note: The radio outlook based on the real radio.

A. LED Indicator: Green LED flashes when receive the signal, Red LED flashes when transmission.

B. Channel knob: Rotate the knob to choose the channel (CH1-CH15), CH16 is scan channel.

C. ON/OFF knob/Volume knob: Rotate the knob clockwise to turn on the radio, anticlockwise to turn off the radio. By rotating to control the volume.

D. PTT switch: Press PTT and speak to the microphone to call, listen when release.

E. Monitor: When press Monitor key, the squelch opened and the background noise comes out; the squelch close when release the monitor key.

F. USB Rapid charge plug.

G. Speaker/Microphone rubber plug: Please cover when not use the speaker and microphone.

H. Insert loudspeaker.   J. Microphone

Battery Charging

1. Take out the charger, plug the AC（100-240V）50/60Hz, then Green LED flashes;

2. Plug the battery or the radio with battery on the charger; make sure the battery is connected with the charger.

3. The charging process initiates when the red LED lights, the charging time based on the battery capacity. The light turns off when the the battery is fully chraged.

4. Use the USB cable to plug to the radio, the orange lights when charging, while the light turns off indicates it is fully charged.

Function Operation

SWITCHING POWER ON/OFF

Turn the power switches/volume control clockwise. You will hear a channel number, indicating the radio is ON.

ADJUSTING THE VOLUME

Hold MONI button down to listen to audio level while rotating the Power switch/Volume control. Rotate clockwise to increase volume and counterclockwise to decrease volume.

SELECTING THE CHANNEL

Turn the channel switch to select your desired channel. NO.16 is Scanning Channel

PTT TRANSMIT

To transmit, press and hold [PTT] and speak into the microphone in your normal tone of voice.

SQUELCH LEVEL

The purpose of Squelch is to mute the speaker when no signals are present (Squelch OFF). With the squelch level correctly set, you will hear sound only while actually receiving signals (Squelch ON). The squelch level can be adjusted via program software.
The frequency of squelch is 0 (on) -9 (deep), steps: 1.

SCANNING SWITCH

When walkie-talkie is set as scan via software, turn the channel selector to channel 16, the radio will automatically detect the activity of scanning channel from CH1 to CH15 channel (each channel can bet set scan or not via software) , When the signal is scanned channel, the radio will automatically stop on the channel for the call.

a. Walkie-talkie will stay on the signal channel, when the signal disappears and then after 15s, continue scanning the next channel.

b. If there are less than 2 channels, it cannot scan.

c. On channel 16, press and hold the PTT and MONI key, it will turn on the SCAN or turn off the SCAN.

d. If the FM radio function is activated, it cannot scan.

VOX

a. VOX function is effective when the function is turn on.

b. VOX gain level: When the sound level is higher than the set level of VOX, VOX automatically transmit. The VOX gain level can adjust from 1 to 9 levels.

c. When a signal is received, VOX will not transmit even if the sound level is higher than the set VOX gain level.

d. On channels CH1 ~ CH5, press and hold the PTT and MONI, then switch on the radio, thus to activate the VOX function ON/OFF.

MONITOR

When you are receiving and no signals present, the squelch function can mute the speaker, so you cannot hear the background noise .If you want to switch the squelch function OFF, press and hold MONI button .It is very helpful when you want to adjust the volume level and receive the week signals.

Battery Saving
a.ON: Entering into the battery saving state automatically without any operation for 10 seconds
b.OFF: Battery saving is off.

Busy Channel Lockout (BCL)
Switch on or off each effective channel busy lockout function via PC programming software. When open this setting, signal from the current channel is banned to transmit.

Beep
a. The beep is on, and the "Di" sounds is emitted for every rotation of the channel
b. The beep is off, and no "Di" sounds for every rotation of the channel

Low Battery Voltage Warning
When the voltage is lower than the present value, a prompt "Please change battery" is issued every 5 seconds, press the PTT buttons is invalid and make "Di" sounds.

Chinese / English Prompt
This radio includes Chinese and English two kinds of voice signal mode (channel knob must be switched to channel CH15), firstly turn off the radio, and then hold the PTT button and MONI button while turning on the power to convert another way. Each time you switch a way so repeated.

Time-out timer (TOT)
The function of the time-out timer is to prevent the speaker from using a channel too long and continuously, and the interphone emits continuously too long and the body heats up. If you continuously transmit the interphone, the TOT limit time set by the machine is exceeded; the radio will stop transmitting (the time can be programmed by computer while the factory setting time is 1 minute). Release the PTT button and press PTT again to resume transmitting.

QT / DQT
The radio's QT/DQT for each channel can be program by software. When the channel set the QT/DQT, the radio squelch open only if it receives a signal that uses the same QT or DQT. The radio squelch does not turn on if the same channel uses different QT / DQT calls, only lights in green, sub-CTCSS 50 groups, and digital sub-audio DCS 105 groups.
Note: Although using a channel with CTCSS / DCS sub-audio may be preferable to receiving unwanted calls, it does not mean your call is a secret.

TECHNICAL SPECIFICATION

General

Frequency range	US： FRS　EU： PMR　UHF： 400-480MHz
Memory channels	16
Operation voltage	3.7V DC
Frequency stability	±2.5ppm
Operation temperature	-20℃—+50℃
Mode of operation	Simplex
Antenna impedance	50Ω

Transmitter

RF Power	US： ≤2W　EU： ≤0.5W　UHF≤2W
Maximum deviation(W/N)	≤5KHz/≤2.5KHz
Spurious emission	≤ 7.5uW
Adjacent channel power	≤-65dB / ≤ -60dB
SNR(W/N)	≥ -45dB/≥-40dB
QT/DQT (W/N)	0.7±0.1KHz/0.4±0.1KHz
Modulation sensitivity	8-12mV
Transmission current	≤ 1.2A

Receiver

Sensitivity	-122dBm (12dB SINAD)
Audio power	0.4W (8R Load)
Audio distortion	≤10%.
Intermediation(W/N)	≥65dB/≥ 60dB
Adjacent channel selectivity(W/N)	≥ 65dB/≥ 60dB
Clutter suppression	≥ 65dB
Receiver current	≤ 380mA

Note： The above specifications/technical instructions are for reference only because of the continuous improvement of the technology. Please refer to the physical object.

Guard Patrol System (RT28P additional function)

● A patrol personnel goes to the patrol routine and read the checkpoint along the way with the patrol radio.
● The patrol radio can automatically record the time on the checkpoint.
● After the radio is connected to a PC via a USB cable, collect the data from radios into the management software.
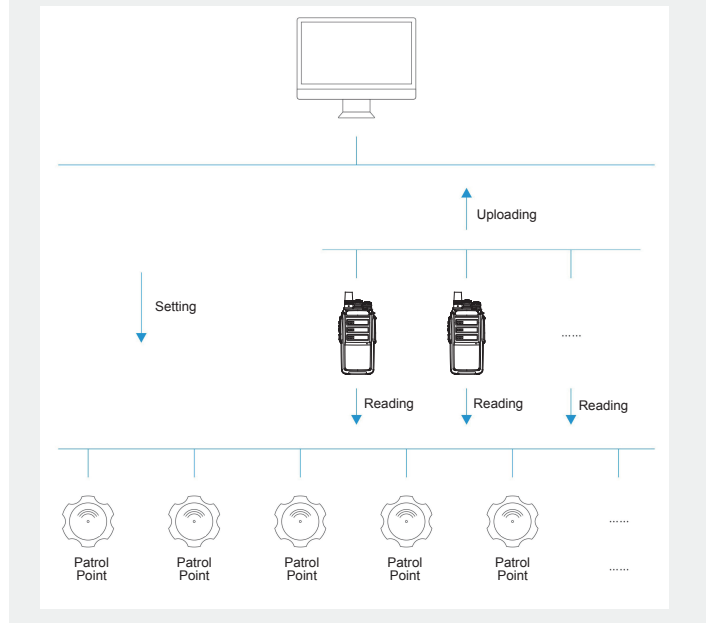
Instruction Manual (RT28P additional function)

1) Reading: There will be a voice prompt when a patrol radio is about 3 to 5 cm away from the zone in which the checkpoint tag is installed.
2) Communicating: A USB cable can be used for the two-way communication between your PC and the patrol radio.
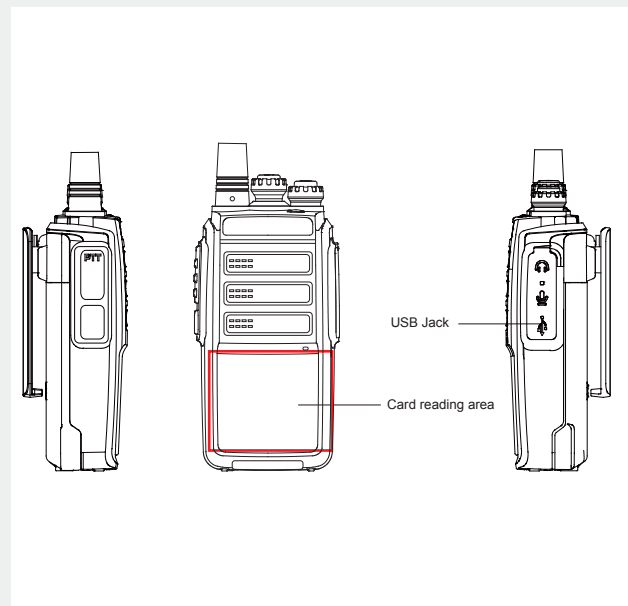
Operating the software (RT28P additional function)

SETP 1 — **Installation of the software and its driver**
1. Download a software and locate its driver program (for the driver-based software) for your computer operating system ;
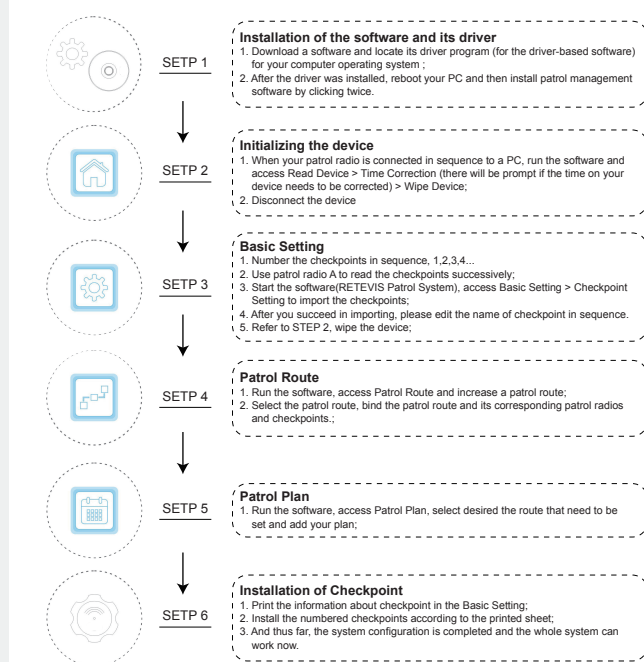2. After the driver was installed, reboot your PC and then install patrol management software by clicking twice.

SETP 2 — **Initializing the device**
1. When your patrol radio is connected in sequence to a PC, run the software and access Read Device > Time Correction (there will be prompt if the time on your device needs to be corrected) > Wipe Device;
2. Disconnect the device

SETP 3 — **Basic Setting**
1. Number the checkpoints in sequence, 1,2,3,4...
2. Use patrol radio A to read the checkpoints successively;
3. Start the software(RETEVIS Patrol System), access Basic Setting > Checkpoint Setting to import the checkpoints;
4. After you succeed in importing, please edit the name of checkpoint in sequence.
5. Refer to STEP 2, wipe the device;

SETP 4 — **Patrol Route**
1. Run the software, access Patrol Route and increase a patrol route;
2. Select the patrol route, bind the patrol route and its corresponding patrol radios and checkpoints.;

SETP 5 — **Patrol Plan**
1. Run the software, access Patrol Plan, select desired the route that need to be set and add your plan;

SETP 6 — **Installation of Checkpoint**
1. Print the information about checkpoint in the Basic Setting;
2. Install the numbered checkpoints according to the printed sheet;
3. And thus far, the system configuration is completed and the whole system can work now.

Caution:
1. When the patrol radio was first used in the system, run the software and access Basic Setting> Patrol Setting to add the information about corresponding patrol radio.
2. As for Personnel Setting and Event Setting in Basic Setting, you can make selective use of them. The method of configuration is quite similar to the checkpoint.
3. The function of login is not enabled in the default system setting. If need be, please add user information to User Setting.

Notice & Solution (RT28P additional function)

● Patrol radio can read the checkpoint but cannot communicate with the computer;
1. Check if the software and driver are installed properly;
2. Check if the port of patrol radio or cable is damaged;
3. Check if the port of patrol or cable is dirty;

● Patrol radio cannot read the checkpoint;
1. Check if the patrol battery is dead. If so, please recharge or replace the battery.
2. Check the time on the patrol radio and connect it to adjust the time if need be.

● The patrol radio can read the checkpoint automatically no matter whether it is on or off.
● The patrol radio will beep when it succeeds reading the card.
● The patrol radio will beep when it is connected or disconnected.
● The patrol radio will beep a while when it is used to read a checkpoint if the time in radio system is not correct.

Remarks: Patrol system software, Patrol operation instructions, please find here: https://www.retevis.com/resources-center

The charger is the Device that disconnects the units from the AC mains
line, the AC plug shoultd be readily accesssible.
Do not transmit too long. for the radio may heat and hurt the user

WARNING

**TURN THE TRANSCEIVER POWER OFF IN THE FOLLOWING
LOCATIONS:**
In explosiver atmospheres (inflammable gas, dust particles, metallic
powders, grain powders, etc.)
While taking on fuel or while parked at gasoline service stations.
Near explosives or blasting sites.
In aircraft.(Any use of the transceiver must follow the instructions and
regulations provided by the airline crew.)
Where restrictions or warnings are posted regrding the use of the radio
devices, including but not limited to medical facilities.
Near persons using pacemakers.

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**RF ENERGY EXPOSURE AND PRODUCT SAFETY GUIDE
FOR PORTABLE TWO-WAY RADIOS**

| ATTENTION! | Before using this radio, read this guide which contains important operating instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulations. |

This two-way radio uses electromagnetic energy in the radio frequency
(RF) spectrum to provide communications between two or more users
over a distance. RF energy, which when used improperly, can cause
biological damage.
All Retevis two-way radios are designed, manufactured, and tested to en-
sure they meet government-established RF exposure levels. In addition,
manufacturers also recommend specific operating instructions to users
of two-way radios. These instructions are important because they inform
users about RF energy exposure and provide simple procedures on how
to control it.
Please refer to the following websites for more information on what RF
energy exposure is and how to control your exposure to assure
compliance with established RF exposure limits:http://www.who.int/en/

Local Government Regulations
When two-way radios are used as a consequence of employment, the
Local Government Regulations requires users to be fully aware of and
able to control their exposure to meet occupational requirements.
Exposure awareness can be facilitated by the use of a product label
directing users to specific user awareness information. Your Retevis
two-way radio has a RF Exposure Product Label. Also, your Retevis
user manual, or separate safety booklet includes information and
operating instructions required to control your RF exposure and to
satisfy compliance requirements.

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Radio License

Governments keep the radios in classification, business two-way radios operate on radio frequencies that are regulated by the local radio management departments (FCC, ISED, OFCOM, ANFR, BFTK, Bundesnetzagentur...).To transmit on these frequencies, you are required to have a license issued by them. The detailed classification and the use of your two radios, please contact the local government radio management departments.
Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Unauthorized modification and adjustment

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority granted by the local government radio management departments to operate this radio and should not be made. To comply with the corresponding 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 local government radio management departments equipment authorization for this radio could violate the rules.

FCC Requirements:

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference. (Licensed radios are applicable);
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (Other devices are applicable)
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including

interference that may cause undesired operation.
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Requirements:

• (Simple EU declaration of conformity) Shenzhen Retevis Technology Co.,Ltd. declares that the radio equipment type is in compliance with the essential requirements and other relevant provisions of RED Directive 2014/53/EU and the ROHS Directive 2011/65/EU and the WEEE Directive 2012/19/EU; the full text of the EU declaration of conformity is available at the following internet address: www.retevis.com.
• Restriction Information
 This product can be used in EU countries and regions, including: Belgium(BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romaniam (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and United Kingdom (UK).
For the warning information of the frequency restriction, please refer to the package or manual section.

• Disposal
  The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that in the European Union, all electrical and electronic products, batteries, and accumulators (rechargeable batteries) must be taken to designated collection locations at the end of their working life. Do not dispose of these products as unsorted municipal waste. Dispose of them according to the laws in your area.

IC Requirements
Licence-exempt radio apparatus
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF Exposure Information
• DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio, and the antenna gain shall not exceed the specified gain by the manufacturer declared.

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• DO NOT transmit for more than 50% of total radio use time, more than 50% of the time can cause RF exposure compliance requirements to be exceeded.
• During transmissions, 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.
• Portable Device, this transmitter may operate with the antenna(s) documented in this filing in Push-to-Talk and body-worn configurations. RF exposure compliance is limited to the specific belt-clip and accessory configurations as documented in this filing and the separation distance between user and the device or its antenna shall be at least 2.5 cm.
• Mobile Device, during operation, the separation distance between user and the antenna subjects to actual regulations, this separation distance will ensure that there is sufficient distance from a properly installed externally-mounted antenna to satisfy the RF exposure requirements.
• Occupational/Controlled Radio, this radio is designed for and classified as "Occupational/Controlled 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; NOT intended for use in a General population/uncontrolled environment.
• General population/uncontrolled Radio, this radio is designed for and classified as "General population/uncontrolled Use".

RF Exposure Compliance and Control Guidelines and Operating Instructions
To control your exposure and ensure compliance with the occupational/controlled environment exposure limits, always adhere to the following procedures.

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Guidelines:
• User awareness instructions should accompany the device when transferred to other users.
• Do not use this device if the operational requirements described herein are not met.

Operating Instructions:
• Transmit no more than the rated duty factor of 50% of the time. To Transmit (Talk), push the Push to Talk (PTT) button. To receive calls (listen), release the PTT button. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy exposure only when transmitting in terms of measuring for standards compliance.
• Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away from a properly installed according to installation instructions, externally mounted antenna.
• When operating in front of the face, worn on the body, always place the radio in a Retevis approved clip, holder, holster, case, or body harness for this product. Using approved body-worn accessories is important because the use of Non-Retevis approved accessories may result in exposure levels, which exceed the IEEE/ICNIRP RF exposure limits.

Hand-held Mode
• Hold the radio in a vertical position with the microphone (and other parts of the radio including the antenna) at least 2.5 cm (one inch) away from the nose or lips. The antenna should be kept away from the eyes. Keeping the radio at a proper distance is important as RF exposure decreases with increasing distance from the antenna.

Phone Mode
• When placing or receiving a phone call, hold your radio product as you would a wireless telephone. Speak directly into the microphone.

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Electromagnetic Interference/Compatibility
NOTE: Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed, or otherwise configured for electromagnetic compatibility.

Avoid Choking Hazard

Small Parts. Not for children under 3 years.

Turn off your radio power in the following conditions:

• Turn off your radio before removing (installing) a battery or accessory or when charging battery.
• Turn off your radio when you are in a potentially hazardous environments: Near electrical blasting caps, in a blasting area, in explosive atmospheres (inflammable gas, dust particles, metallic powders, grain powders, etc.).
• Turn off your radio while taking on fuel or while parked at gasoline service stations.
To avoid electromagnetic interference and/or compatibility conflicts
• Turn off your radio in any facility where posted notices instruct you to do so, hospitals or health care facilities (Pacemakers, Hearing Aids and Other Medical Devices) may be using equipment that is sensitive to external RF energy.
• Turn off your radio when on board an aircraft. Any use of a radio must be in accordance with applicable regulations per airline crew instructions.

Protect your hearing:

• Use the lowest volume necessary to do your job.
• Turn up the volume only if you are in noisy surroundings.

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WARNING • Turn down the volume before adding headset or earpiece.
• Limit the amount of time you use headsets or earpieces at high volume.
• When using the radio without a headset or earpiece, do not place the radio's speaker directly against your ear
• Use careful with the earphone maybe possible excess- ive sound pressure from earphones and headphones can cause hearing loss
Note: Exposure to loud noises from any source for extended periods of time may temporarily or permanently affect your hearing. The louder the radio's volume, the less time is required before your hearing could be affected. Hearing damage from loud noise is sometimes undetectable at first and can have a cumulative effect.

Avoid Burns

WARNING **Antennas**
• Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with the skin when the radio is in use, a minor burn can result.
Batteries (If appropriate)
• When the conductive material such as jewelry, keys or chains touch exposed terminals of the batteries, may complete an electrical circuit (short circuit the battery) and become hot to cause bodily injury such as burns. Exercise care in handling any battery, particularly when placing it inside a pocket, purse or other container with metal objects
Long transmission
• When the transceiver is used for long transmissions, the radiator and chassis will become hot.

Safety Operation

WARNING **Forbid**
• Do not use charger outdoors or in moist environments, use only in dry locations/conditions.
• Do not disassemble the charger, that may result in risk of electrical shock or fire.
• Do not operate the charger if it has been broken or damaged in any way.
• Do not place a portable radio in the area over an air bag or in the air bag deployment area. The radio may be propelled with great force and cause serious injury to occupants of the vehicle when the air bag inflates.
To reduce risk
• Pull by the plug rather than the cord when disconnecting the charger.
• Unplug the charger from the AC outlet before attempting any maintenance or cleaning.
• Contact Retevis for assistance regarding repairs and service.
• The adapter shall be installed near the equipment and shall be easily accessible

Approved Accessories

WARNING • This radio meets the RF exposure guidelines when used with the Retevis accessories supplied or designated for the product. Use of other accessories may not ensure compliance with the RF exposure guidelines and may violate regulations.
• For a list of Retevis-approved accessories for your radio model, visit the following website: http://www.Retevis.com