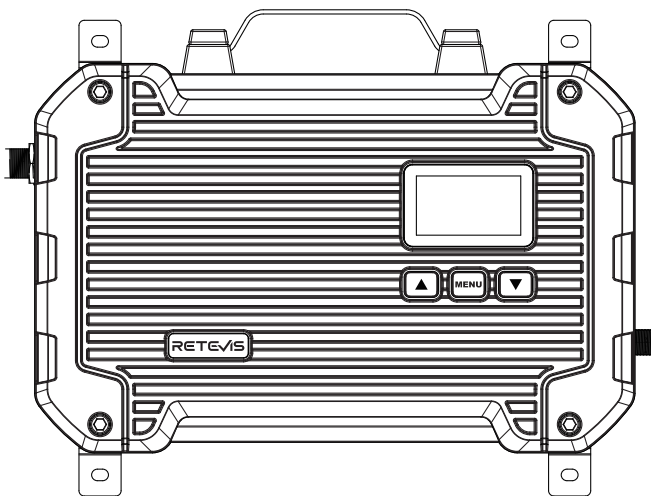


# RETEVIS



## **RT97L GMRS Repeater USER'S MANUAL**

# Contents

To users-----	01
Installing/Removing the Power Adapter -----	02
Get Familiar with the Repeater -----	03
Key Functions-----	04
Radio Settings -----	05
Basic Operation -----	05
Frequency List -----	07
CTCSS/DCS List -----	08
Features-----	10
Technical Parameters -----	10
Troubleshooting Guide-----	11
Warnings -----	12
Guarantee -----	16

## **To users:**

Welcome to choose our company repeater. We will provide you with the reliable, clearly, efficient communication service. In order to let you learn more functions, usage and maintenance method about this repeater, please read this manual carefully before you use the product.

- Please keep the manual, in order to offer reference or use of this product
- In order to safeguard your legitimate rights and interests from infringement, please seriously truthfully fill in when buying the company's products(with repair service card), and ask for the purchase vouchers of real and effective.
- This product relates to upgrade or improve, the company reserves without prior notice to change this manual at any time above the rights of software and hardware specifications
- All specifications mentioned are only for reference.
- Although all words are carefully check, it is hard to avoid errors, the company reserves the final explanation.

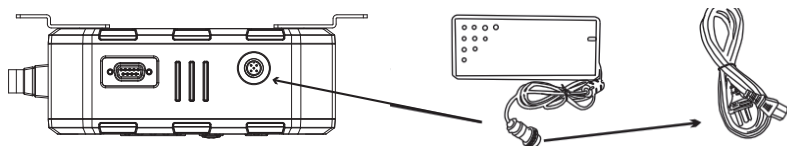
## **Safety Information to Users**

For your efficient and safe use of this repeater, please read the following information carefully.

- This repeater input power is DC15V~24V.
- The maintenance of this repeater can be only performed by professional technicians. Unauthorized self-disassembly is not allowed.
- To avoid EMC interference or EMC compliance problem, please do not install or use this repeater in areas with labels that read "Please Turn Off the Radio."
- When in the car with airbags, do not install the repeater in the area where the airbags may be functioning.
- When approaching the blasting area and the detonator area, please turn off the repeater first.
- You are forbidden to operate this repeater in flammable and explosive environments.
- Please do not place this repeater at a wet, rainy or overabundance of dust areas.
- Please do not expose this repeater to direct sunlight for a long time or near the heating devices.
- When install the repeater antenna outdoor, the lightning arrester must be install Firstly then connected to the antenna, and the chassis must be reliably grounded to prevent lightning.

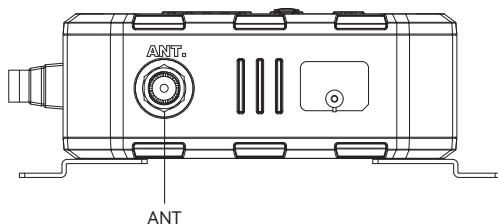
### ➤ Installing/Removing the Power Adapter

Hold the power adapter connector and rotate it clockwise into the power port on the side of the repeater until it is securely tightened. To remove the power adapter, rotate it counterclockwise and detach the connector.



### ➤ Installing/Removing the Antenna or Feedline

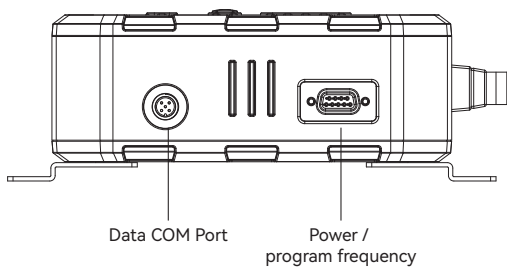
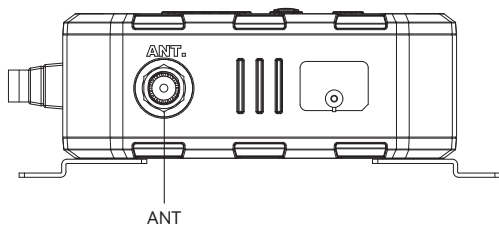
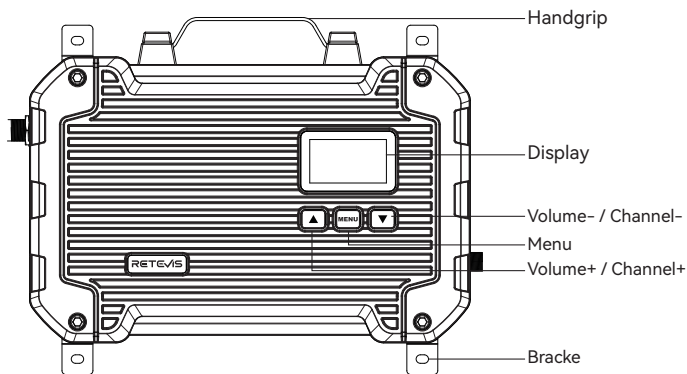
Hold the base of the antenna or one end of the feedline, and rotate it clockwise into the antenna port on the side of the repeater until it is securely tightened. To remove the antenna or feedline, rotate it counterclockwise and detach it.



### ➤ Installation/Dismounting of Stand

If necessary, the 4 mounts can be inserted into the screw holes on the rear panel of the repeater. To remove the mounts, unscrew the screws.

## Get Familiar with the Repeater



## Key Functions

### 1. “MENU” Menu Button

Short Press: Acts as the menu button on the standby interface; serves as the confirm button within menus.

Long press: Locks or unlocks the channel on the standby interface.

### 2. “▲” Upward Button

Short Press: Incrementally cycles through channels on the standby interface.

Long Press: Cycles upward through options within menus.

### 3. “▼” Downward Button




Short Press: Decrementally cycles through channels on the standby interface.

Long Press: Cycles downward through options within menus.

### 4. “▲” Upward and “▼” Downward

Pressed Simultaneously: Displays the sub-audio frequency of the current channel.

## Get Familiar with the Repeater

Seq.	Character	Description
1	 RX	Reception Indicator
2	 TX	Transmission Indicator
3	L	Low Power
4	H	High Power
5		Keypad Lock
6	W	Wideband
7	N	Narrowband
8	CT	Continuous Tone Controlled Squelch System
9	DCS	Digital Controlled Squelch
10	°C	Low Temperature Mode
11	CH	Channel

## Radio Settings

Seq.	Function	Options Menu	Description
1	Channel Lock	Manual / Auto	Channel Lock Setting
2	Scan Channel	On / Off	Channel Scanning
3	Backled	On / Auto / Off	Display Screen Brightness Setting
4	Low Temperature Mode	On / Off	Low Temperature Operation Setting
5	Volume Set	0-9 Levels	External Speaker Volume Adjustment
6	Modem Set	-3 to +3 Adjustable	Repeater Audio Relay Setting
7	Init Option	Confirm	Menu Reset to Factory Defaults
8	Software Version	On / Off	Check Firmware Version

## Basic Operation

### 1.Channel lock

Manual: Lock the channel by pressing and holding the MENU button for over 2 seconds; unlock by repeating the action.

Auto: Automatically locks the channel after 10 seconds of inactivity; unlock by pressing and holding the MENU button for over 2 seconds.

### 2.Scan Channel

On: Enables scanning of programmed channels; exits scan upon receiving a signal and returns to scan mode after the transmission ends.

Off: Disables scanning.

### 3.Backled

On: Backlight stays on.

Off: Backlight stays off

Auto: Backlight turns on with keypad operation or signal reception; turns off automatically after 10 seconds of inactivity

### 4.Low Temperature Mode

Off: Disables operation in low temperatures

On: Enables operation in temperatures down to -30°C

### 5.Volume Set

Adjustable audio output levels ranging from 0 to 9, when the device receives a signal, it outputs a corresponding audio amplitude via the DB9 interface

level 0 disables audio output

level 9 outputs approximately 150mV audio

## **6.Modem Set**

Adjustable from -3 to +3. Adjusting this setting changes the volume of the audio relayed by the repeater, and consequently, the sound received by the radio will also vary accordingly.

-3: Minimum Volume Level

0: Medium Volume Level

+3: Maximum Volume Level

## **7.Init Option**

Resets menu settings to default; does not affect frequency settings.

## **8.Software Version**

Displays the current software version of the radio.

## **9.Repeater Switch**

On: Activates the relay mode

Off: Deactivates the relay mode

## **10.Repeater Delay**

Adjustable Levels 1-9

Off: Turns off the delay feature entirely

Adjust the delay level according to your needs. When the radio receives a reply signal from the repeater, it indicates that the radio is within the repeater's signal coverage area

## **11.Squelch Level**

Adjustable from 0 to 9 levels

0: Squelch Always On

At lower squelch levels, the squelch threshold is shallower, resulting in a longer reception distance but weaker interference rejection.

At higher squelch levels, the squelch threshold is deeper, limiting the reception distance but enhancing the interference rejection capability.

## **12.Roger beep Elimination (STE)**

Off: After transmission, the speaker of the radio will produce a brief "click" sound

On: After transmission, the speaker of the radio will be muted

Elimination Modes: Frequency、120°C、180°C、240°C

## **13.Channel Mode**

Channel Mode: Channels are displayed by their channel numbers.

Channel & Frequency Mode: Channels are displayed by both their channel numbers and frequencies

#### 14.High/Low Power

Select high or low power for each channel through programming software

#### 15.Wide/Narrow Band

Select wide or narrow bandwidth for each channel through programming software

#### 16.Increase/Decrease Volume

Press the ▲ button briefly to increase volume

press the ▼ button briefly to decrease volume

#### 17.CTCS/DCS

Set CTCSS/DCS signaling on channels through programming software. When CTCSS/DCS signaling is set for a channel, only signals with the same CTCSS/DCS code can unlock the squelch. If different CTCSS/DCS codes are used on the same channel for calling, the repeater will not forward the signal

### Frequency List

Channel I	Receive Frequency	Transmit Frequency	Sub-audio	Power	Bandwidth
1	467.5500	462.5500	136.5	H	W
2	467.5750	462.5750	136.5	H	W
3	467.6000	462.6000	136.5	H	W
4	467.6250	462.6250	136.5	H	W
5	467.6500	462.6500	136.5	H	W
6	467.6750	462.6750	136.5	H	W
7	467.7000	462.7000	136.5	H	W
8	467.7250	462.7250	136.5	H	W
9	467.5500	462.5500	136.5	H	N
10	467.5750	462.5750	136.5	H	N
11	467.6000	462.6000	136.5	H	N
12	467.6250	462.6250	136.5	H	N
13	467.6500	462.6500	136.5	H	N
14	467.6750	462.6750	136.5	H	N
15	467.7000	462.7000	136.5	H	N
16	467.7250	462.7250	136.5	H	N

## CTCSS/DCS List

CTCSS CHART (Hz)									
Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency
1	67.0	2	69.3	3	71.9	4	74.4	5	77.0
6	79.7	7	82.5	8	85.4	9	88.5	10	91.5
11	94.8	12	97.4	13	100.0	14	103.5	15	107.2
16	110.9	17	114.8	18	118.8	19	123.0	20	127.3
21	131.8	22	136.5	23	141.3	24	146.2	25	151.4
26	156.7	27	159.8	28	162.2	29	165.5	30	167.9
31	171.3	32	173.8	33	177.3	34	179.9	35	183.5
36	186.2	37	189.9	38	192.8	39	196.6	40	199.5
41	203.5	42	206.5	43	210.7	44	218.1	45	225.7
46	229.1	47	233.6	48	241.8	49	250.3	50	254.1

## DCS CODELIST

Number	DCS-N	Number	DCS-N	Number	DCS-N	Number	DCS-N	Number	DCS-N
1	D023N	2	D025N	3	D026N	4	D031N	5	D032N
6	D036N	7	D043N	8	D047N	9	D051N	10	D053N
11	D054N	12	D065N	13	D071N	14	D072N	15	D073N
16	D074N	17	D114N	18	D115N	19	D116N	20	D122N
21	D125N	22	D131N	23	D132N	24	D134N	25	D143N
26	D145N	27	D152N	28	D155N	29	D156N	30	D162N
31	D165N	32	D172N	33	D174N	34	D205N	35	D212N
36	D223N	37	D225N	38	D226N	39	D243N	40	D244N
41	D245N	42	D246N	43	D251N	44	D252N	45	D255N
46	D261N	47	D263N	48	D265N	49	D266N	50	D271N
51	D274N	52	D306N	53	D311N	54	D315N	55	D325N
56	D331N	57	D332N	58	D343N	59	D346N	60	D351N
61	D356N	62	D364N	63	D365N	64	D371N	65	D411N
66	D412N	67	D413N	68	D423N	69	D431N	70	D432N

71	D445N	72	D446N	73	D452N	74	D454N	75	D455N
76	D462N	77	D464N	78	D465N	79	D466N	80	D503N
81	D506N	82	D516N	83	D523N	84	D526N	85	D532N
86	D546N	87	D565N	88	D606N	89	D612N	90	D624N
91	D627N	92	D631N	93	D632N	94	D645N	95	D654N
96	D662N	97	D664N	98	D703N	99	D712N	100	D723N
101	D731N	102	D732N	103	D734N	104	D743N	105	D754N

Number	DCS-I	Number	DCS-I	Number	DCS-I	Number	DCS-I	Number	DCS-I
106	D023I	107	D025I	108	D026I	109	D031I	110	D032I
111	D036I	112	D043I	113	D047I	114	D051I	115	D053I
116	D054I	117	D065I	118	D071I	119	D072I	120	D073I
121	D074I	122	D114I	123	D115I	124	D116I	125	D122I
126	D125I	127	D131I	128	D132I	129	D134I	130	D143I
131	D145I	132	D152I	133	D155I	134	D156I	135	D162I
136	D165I	137	D172I	138	D174I	139	D205I	140	D212I
141	D223I	142	D225I	143	D226I	144	D243I	145	D244I
146	D245I	147	D246I	148	D251I	149	D252I	150	D255I
151	D261I	152	D263I	153	D265I	154	D266I	155	D271I
156	D274I	157	D306I	158	D311I	159	D315I	160	D325I
161	D331I	162	D332I	163	D343I	164	D346I	165	D351I
166	D356I	167	D364I	168	D365I	169	D371I	170	D411I
171	D412I	172	D413I	173	D423I	174	D431I	175	D432I
176	D445I	177	D446I	178	D452I	179	D454I	180	D455I
181	D462I	182	D464I	183	D465I	184	D466I	185	D503I
186	D506I	187	D516I	188	D523I	189	D526I	190	D532I
191	D546I	192	D565I	193	D606I	194	D612I	195	D624I
196	D627I	197	D631I	198	D632I	199	D645I	200	D654I
201	D662I	202	D664I	203	D703I	204	D712I	205	D723I
206	D731I	207	D732I	208	D734I	209	D743I	210	D754I

## Features

- Small and compact, solid and dust-proof.
- Simple and convenient installation, flexible operation, can be operated as fixed or mobile.
- Multi working power selection, working with the matching power adapter, and also can work under DC15V~24V power or car power.
- The use of antenna can be selected according to actual demand.

## Technical Parameters

### Specifications

Frequency Range	462.550~462.725 MHz (TX) 467.550~467.725 MHz (RX)
Channel Capacity	16 CH
Bandwidth	20KHZ/12.5KHZ
Audio Distortion	≤5%
Frequency Stability	±2.5ppm
Output Power	22W / 5W
Maximum Frequency Deviation	4.5KHZ/2.5KHZ
Modulation Mode	FM
Adjacent Channel Selectivity	≥65dB
Transmit Current	≤6A
Operating Voltage	15V DC
Antenna Impedance	50Ω
Operating Temperature	-30°C~+60°C
Dimensions	285x185x68mm
Weight	3563g

Note: Power will further attenuate after passing through the feeder. The degree of attenuation depends on the diameter, length, and material of the feeder. Please select an appropriate feeder according to your specific situation.

## Troubleshooting Guide

Common Problem	Solution
LCD no display Repeater can not be power-on	Checking the power cord and adapter
The repeater can not receive intercom signal Or User can not received the signal from Repeater send out	<ol style="list-style-type: none"> <li>1. The connector of RF cable is loosed</li> <li>2. Antenna or cable is damaged</li> <li>3. Talking range is exceed repeater effect range</li> <li>4. Check if the transmit frequency of the walkie-talkie matches the receive frequency of the repeater, including the CTCSS/DCS settings. This repeater operates in the GMRS frequency band.</li> </ol>
Front part of the speech is not been relayed	<p>Enter PTT in 0. 5s then begin speaking, Delay speech to allow the system delay:</p> <p>System delay owing to:</p> <ol style="list-style-type: none"> <li>1. CTCSS/CDCSS decode</li> <li>2. Requirements for signaling systems</li> </ol>
Heating up after one hour or less of use	It is normal for the device to reach around 50°C after continuous use for one hour, and the temperature remains similar even after 24 hours of continuous operation. If the temperature exceeds this range, please check the connection between the feeder and the antenna.
Noise during transmission	<ol style="list-style-type: none"> <li>1. Check if the antenna is properly seated.</li> <li>2. Check for potential interference from nearby signals.</li> <li>3. Verify if the antenna is compatible with the RT97L frequency band.</li> <li>4. Try adjusting the squelch level to its mid-range value.</li> </ol>

## **EN:User' instructions should accompany the device when transferred to other users.**

When transferring the equipment to another user, CN shall include the user instructions.

## **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.

## **Radio License**

The detailed classification and the use of your two-way 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.

This two-way radio is a GMRS station. A valid individual license is required to operate a GMRS station. To obtain an individual license, an applicant must be eligible and follow the applicable rules and procedures established by FCC. The applicant must pay the required application and regulatory fees. Each individual license in the GMRS will normally have a term of ten years from the date of grant or renewal, and may be renewed pursuant to the procedures of FCC. To obtain a GMRS operator license, you need FCC Form 605 & 159, we suggest visiting the FCC website at <https://www.fcc.gov/wireless/-support/fcc-form-605>, which includes necessary instructions. More questions about the license application, please contact the FCC at 1-888-225-5322 or go to the FCC's website: <http://www.fcc.gov>.

## **FCC**

EN: 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);

CN: This equipment complies with Part 15 of the FCC Rules. Operation of this equipment is subject to the condition that it does not cause harmful interference.

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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

## **Disposal**

Note: Applicable to electronic products.



The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that all electrical and electronic products, batteries, or accumulators 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 and rules in your area.lug

## RF Safety

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. 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/>

Transmit no more than the rated duty factor 50% of the time. Transmitting necessary information or less, is important because the radio generates measurable RF energy exposure only when transmitting in terms of measuring for standards compliance. For users who wish to further reduce their exposure, some effective measures to reduce RF exposure include:

- Reduce the amount of time spent using your wireless device.
- Use a speakerphone, earpiece, headset, or other hands-free accessory to reduce proximity to the head (and thus head exposure). While wired earpieces may conduct some energy to the head and wireless earpieces also emit a small amount of RF energy, both wired and wireless earpieces remove the greatest source of RF energy (handheld device) from proximity to the head and thus can greatly reduce total exposure to the head.
- Increase the distance between wireless devices and your body.

This radio is designed for and classified as “Occupational/Controlled Use Only”. Occupational/Controlled environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential of exposure, for example, as a result of employment or occupation. It means a radio must be used only by individuals aware of the hazards, and the ways to minimize such hazards; Not intended for use in a General population/uncontrolled environment.

### RF Safety distance

Keeping the radio at a proper distance is important as RF exposure decreases with increasing distance from the proper antenna. A proper antenna is an antenna supplied with this radio by the manufacturer or specifically authorized by the local authority for use with this radio. This radio can only be operated by use of an antenna of a type and maximum (or lesser) gain approved for the transmitter under regulations and rules.

During operation, the separation distance (1.2m, Safety Distance in Meters) between the user and the antenna subject 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. Transmit only when people are the recommended minimum lateral distance away from a properly installed externally mounted antenna according to installation instructions.

## Electromagnetic Interference/Compatibility

Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed, or otherwise configured for electromagnetic compatibility. 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, such as hospitals or healthcare facilities.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device. 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.

### **Turn off your radio in the following conditions:**

Note: Avoid mixing ordinary walkie-talkies with explosion-proof devices

- Turn off your radio prior to entering any area with a potentially hazardous or explosive atmosphere. Only radio types that are especially qualified should be used in such areas as “Intrinsically Safe”.

Note: the areas with potentially explosive atmosphere referred to above include blasting caps, blasting areas, inflammable gas, dust particles, metallic powders, grain powders, fueling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles (such as grain, dust or metal powders) and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often – but not always posted.

- Turn off your Radiocommunication device when taking on fuel or parked at gasoline service stations.
- 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.
- Do not use any radio that has a damaged antenna. If a damaged antenna comes into contact with the skin when the radio is in use, a burn can result.
- Turn off your radio before removing or installing accessories.
- When the transceiver is used for long transmissions, the radiator and chassis will become hot.

### **Use of Communication Devices While Driving**

Note: Applicable to handheld or mobile stations

- Always check the laws and regulations on the use of radios in the areas where you drive. Use of Communication Devices, for example, mobile radio, may not be allowed.
- Give full attention to driving and to the road.
- Use hands-free operation, if available.
- Pull off the road and park before making or answering a call, if driving conditions or regulations so require.
- Do not place a portable device in the area over an air bag or in the airbag deployment area. The device may be propelled with great force and cause serious injury to occupants of the vehicle when the airbag inflates.

**Dedicated for Children's Devices**

WARNING: CHOKING HAZARD—Small Parts. Not suitable for children under 3 years old.

**Adapter**

The plug of the adapter is considered a disconnect device. The socket-outlet shall be installed near the equipment and shall be easily accessible.

**Authorized Accessories List**

Antennas: C9082B

- Contact Retevis for assistance regarding repairs and service.
- For a list of Retevis-approved accessories for your radio model, visit the website:

<http://www.Retevis.com>

## Guarantee

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Purchasing Date: \_\_\_\_\_

Dealer: \_\_\_\_\_ Telephone: \_\_\_\_\_

User's Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Country: \_\_\_\_\_ Address: \_\_\_\_\_

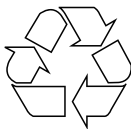
Post Code: \_\_\_\_\_ Email: \_\_\_\_\_

### Remarks:

- 1.This guarantee card should be kept by the user, no replacement if lost.
- 2.Most new products carry a two-year manufacturer's warranty from the date of purchase. Further details, pls read <http://www.retevis.com/after-sale/>
- 3.The user can get warranty and after-sales service as below:
  - Contact the seller where you buy.
  - Products Repaired by Our Local Repair Center
- 4.For warranty service, you will need to provide a receipt proof of purchase from the actual seller for verification

### Exclusions from Warranty Coverage:

- 1.To any product damaged by accident.
- 2.In the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs.
- 3.If the serial number has been altered, defaced, or removed.



FR

Cet appareil,  
ses accessoires  
et câbles se  
recyclent



A DÉPOSER  
EN MAGASIN

OU



A DÉPOSER  
EN DÉCHÈTERIE



FR

EMBALLAGES A  
SEPARER ET A  
DÉPOSER DANS  
LE BAC DE PRI



Points de collecte sur [www.quefaire-demedejets.fr](http://www.quefaire-demedejets.fr)  
Privilégiez la réparation ou le don de votre appareil !



**Shenzhen Retevis Technology Co., Ltd.**

7/F, 13-C, Zhonghaixin Science&Technology Park, No.12 Ganli  
6th Road, Jihua Street, Longgang District, Shenzhen, China

Web: [www.retevis.com](http://www.retevis.com)

E-mail: [info@retevis.com](mailto:info@retevis.com)

Facebook: [@retevis.fans](https://www.facebook.com/retevis.fans)



Made in China