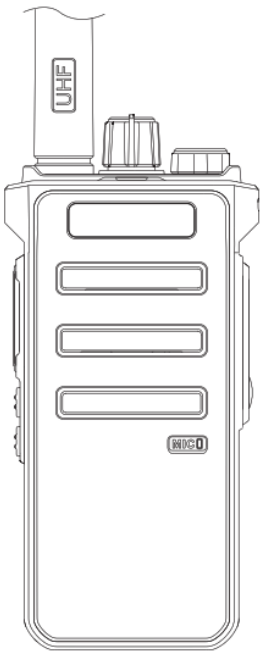
# RETEVIS RT86 Hidden Display UHF Handheld Two Way Radio User Manual



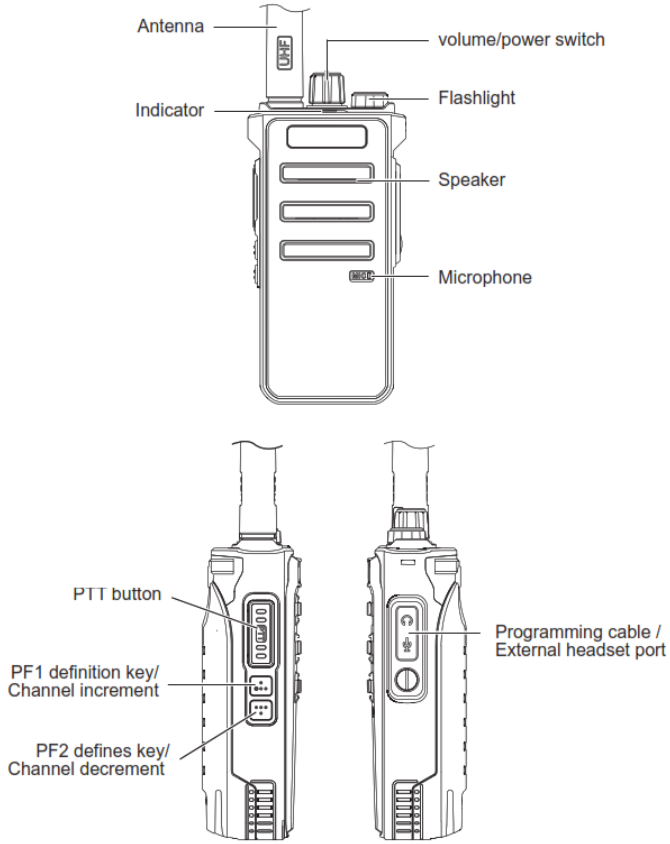



**RT86/RT86B**
**Two Way Radio**
**User's Manual**

**Package Include**

| Product | Qty | Product |
|---|---|---|
| Walkie talkie | 1 | Belt clip |
| lithium battery 7.4V | 1 | Manual |
| Charger | 1 | Lanyard |

**Familiar with walkie-talkie**



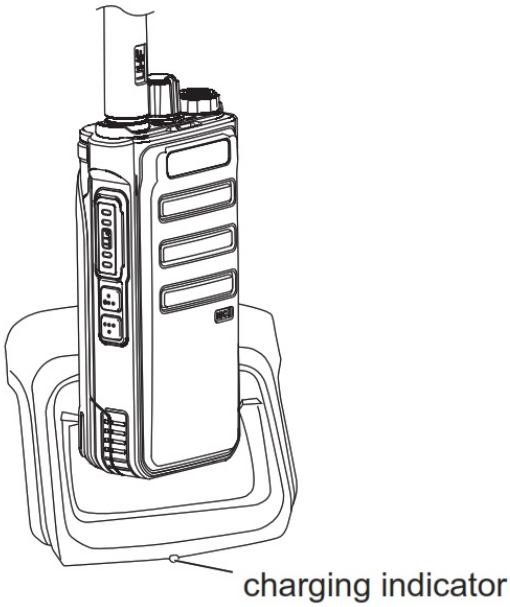

**Charging instructions**

Charging mode: Insert the walkie-talkie into the charger's charging slot. At this time, the charger is on. The red light indicates that charging is started, and the green light indicates that the battery is fully charged. (as the picture shows)

**Basic operation and function description**

**Power on/off:**

Turn the volume switch potentiometer clockwise to hear a "click" to indicate that the power is on, counterclockwise rotate the volume switch potentiometer and hear a "click" to indicate that the power is off.




**Talking:**
Press and hold the PTT button to launch, the indicator light turns red, and speak at the microphone hole, at this time, the other party will hear your own speaking information. After speaking, release the PTT button, to receive the other party's speaking information. The green indicator lights up at the same time when the other party's information is reached.

**Volume up/down:**
Turn the volume switch potentiometer clockwise to increase the volume, and turn the volume switch potentiometer counterclockwise to decrease the volume.

**Channel adjustment:**
Press the PF1/channel increase button to increase the channel in sequence, and press the PF2/channel decrease button to decrease the channel in sequence.

**Low battery voltage reminder:**
When the walkie-talkie reports the voice prompt "please charge" and the indicator flashes red, it means that the battery voltage is lower than the working voltage. Please charge the walkie-talkie.

**VOX:**
Press and hold the PF1/PF2 side key function definition button with VOX for 2 seconds to turn on the VOX function, and repeat the operation to adjust the VOX level. The higher the level, the lower the voice when activating VOX. Turn off the VOX function by hearing a beep.

**Monitor:**
Press and hold the definition key set with the monitor function for 2 seconds to turn on the monitor function, and release the button to turn off the monitor function.

**Flashlight:**
Press and hold the definition key set with the flashlight function for 2 seconds to turn on the flashlight function, repeat the operation to turn off the flashlight.

**Alarm:**
Press and hold the definition key with the alarm function set for 2 seconds to turn on the alarm function, and press the PTT button to cancel the alarm. Press the PF1/chann.

**Channel-lock:**
Press and hold the definition key set with the channel lock function for 2 seconds, the radio will emit a beep to indicate that the channel lock function is enabled, and the channel adjustment cannot be performed at this time. Repeat the operation to turn off the channel lock Features.

**Read and write frequency and encryption**
Available with programming software settings ————————

**Frequency Hopping Spread Spectrum:**
The frequency hopping function is the digital subtone encryption function of the walkie-talkie.
Selectable frequency hopping 1, frequency hopping 2, frequency hopping 3. Or frequency hopping 4. Choosing different frequency hopping items can not communicate with each other, and can only communicate with each other under the same frequency hopping item.
Wireless copy:

1. Press and hold the PF2 button, at the same time power on and keep pressing the PF2 button for about 1 second. After seeing the green light flashing and hearing three beeps, it enters the wireless copy and receiving mode.
2. Press and hold the PF1 button, at the same time power on and keep pressing the PF2 button for about 1 second, see the red light flashing and hear three beeps, and then enter the wireless copy transmission mode.

   ! Press the PTT button, the red light is flashing and data is being transmitted at this time, and it will automatically exit this mode after rebooting.

   ! When the red and green lights of the receiving radio are flashing crosswise, data is being received. When the receiver finished receiving the data, the power will restart.

**Note:** The wireless copy frequency and ID code of the transmitter and receiver must be the same when transmitting data. The wireless copy frequency and ID code can be changed by programming software.
CTCSS/DCS:
You can use programming software to set CTCSS/DCS on the channel of the walkie-talkie. When the channel is set with CTCSS/DCS, it can only open the squelch when receiving a frequency signal with the same CTCDD/DCS. If the same channel uses different CTCSS/DCS for calling, the squelch cannot be turned on and only the green light is on. The list of CTCSS/DCS is as follows: DCS 116*2 in total)

**DCS 116*2 in total)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| D017N | D023N | D025N | D026N | D031N | D032N | D036N | D043N | D047N | D050N |
| D051N | D053N | D054N | D055N | D065N | D071N | D072N | D073N | D074N | D114N |
| D115N | D116N | D122N | D125N | D131N | D132N | D134N | D135N | D143N | D145N |
| D152N | D155N | D156N | D162N | D165N | D172N | D174N | D205N | D212N | D217N |
| D223N | D225N | D226N | D243N | D244N | D245N | D246N | D251N | D252N | D254N |
| D255N | D261N | D263N | D265N | D266N | D271N | D274N | D305N | D306N | D311N |
| D315N | D325N | D331N | D332N | D343N | D345N | D346N | D351N | D356N | D364N |
| D365N | D371N | D411N | D412N | D413N | D423N | D425N | D431N | D432N | D445N |
| D446N | D452N | D454N | D455N | D462N | D464N | D465N | D466N | D503N | D506N |
| D516N | D523N | D526N | D532N | D534N | D546N | D565N | D606N | D612N | D624N |
| D627N | D631N | D632N | D645N | D654N | D662N | D664N | D703N | D712N | D723N |
| D731N | D732N | D734N | D743N | D754N | D765N | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| D017I | D023I | D025I | D026I | D031I | D032I | D036I | D043I | D047I | D050I |
| D051I | D053I | D054I | D055I | D065I | D071I | D072I | D073I | D074I | D114I |
| D115I | D116I | D122I | D125I | D131I | D132I | D134I | D135I | D143I | D145I |
| D152I | D155I | D156I | D162I | D165I | D172I | D174I | D205I | D212I | D217I |
| D223I | D225I | D226I | D243I | D244I | D245I | D246I | D251I | D252I | D254I |
| D255I | D261I | D263I | D265I | D266I | D271I | D274I | D305I | D306I | D311I |
| D315I | D325I | D331I | D332I | D343I | D345I | D346I | D351I | D356I | D364I |
| D365I | D371I | D411I | D412I | D413I | D423I | D425I | D431I | D432I | D445I |
| D446I | D452I | D454I | D455I | D462I | D464I | D465I | D466I | D503I | D506I |
| D516I | D523I | D526I | D532I | D534I | D546I | D565I | D606I | D612I | D624I |
| D627I | D631I | D632I | D645I | D654I | D662I | D664I | D703I | D712I | D723I |
| D731I | D732I | D734I | D743I | D754I | D765I | | | | |

**CTCSS (50 in total)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 67.0 | 69.3 | 71.9 | 74.4 | 77.0 | 79.7 | 82.5 | 85.4 | 88.5 | 91.5 |
| 94.8 | 97.4 | 100.0 | 103.5 | 107.2 | 110.9 | 114.8 | 118.8 | 123.0 | 127.3 |
| 131.8 | 136.5 | 141.3 | 146.2 | 151.4 | 156.7 | 159.8 | 162.2 | 165.5 | 167.9 |
| 171.3 | 173.8 | 177.3 | 179.9 | 183.5 | 186.2 | 189.9 | 192.8 | 196.6 | 199.5 |
| 203.5 | 206.5 | 210.7 | 218.1 | 225.7 | 229.1 | 233.6 | 241.8 | 250.3 | 254.1 |

Contents



## Specifications

| | |
|---|---|
| Frequency range | 430-440MHz/400-480MHz |
| **Channel capacity** | **16** |
| **Audio distortion** | **<5%** |
| **Frequency stability** | **±2.5ppm** |
| **Maximum frequency deviation** | **<5KHz/c 2.5KHz** |
| **Stray radiation** | **<7uW** |
| **Module Mode** | **16KcpF3E/11KwF 3E** |
| **Reference sensitivity** | **<0.25uV/ < 0.3uV** |
| **Squelch open sensitivity** | 4 **0.2uVic 0.25uV** |
| **Adjacent channel selectivity** | **>65dB** |
| **Spurious response suppression** | **>55dB** |
| **Intermodulation** | **>60dB** |
| **Current** | 4 **2.5A** |
| **Operating Voltage** | 7.4V DC |
| **Operating Temperature** | -20`C – +60˚C |
| **Output Power** | **— 10W** |

**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, when used improperly, can cause biological damage.

All Retevis two-way radios are designed, manufactured, and tested to ensure 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 require 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 an 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.

**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.

- 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.

**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 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 license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-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.

**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 an 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.

- 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 the user and the device or its antenna shall be at least 2.5 cm.
- Mobile Device, during operation, the separation distance 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.
- 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.

**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 installation instruction, 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.
  **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:**


**WARNING**

- Turn off your radio before removing (installing) a battery or accessory or when charging the battery.
- Turn off your radio when you are in a potentially hazardous environment: 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.


**WARNING**

**Protect your hearing:**

- Use the lowest volume necessary to do your job.
- Turn up the volume only if you are in noisy surroundings.
- Turn down the volume before adding a 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 care with the earphone may be possible excessive 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.

 **WARNING**

**Avoid Burns**
**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 another 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 the charger outdoors or in moist environments, use only in dry locations/ conditions.
- Do not disassemble the charger, that may result in a 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 airbag or in the airbag deployment area. The radio may be propelled with great force and cause serious injury to occupants of the vehicle when the airbag 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**

**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. For further details, pls read **http://www.retevis.com/after-sale/**
3. The user can get a 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.

Made in China

RoHS Compliant

0-3

**Shenzhen Retevis Technology Co., Ltd.**
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**E-mail:kam@retevis.com**
**Facebook: facebook.com/retevis**
**Cut along this line**

## Documents / Resources

| | |
|---|---|
|  | RETEVIS RT86 Hidden Display UHF Handheld Two Way Radio [pdf] User Manual<br>RT86, RT86B, Hidden Display UHF Handheld Two Way Radio |

## References

- Walkie Talkie Home | retevis.com
- Retevis.com After-sale service | retevis.com
- World Health Organization (WHO)
- Site officiel de l'Organisation mondiale de la Santé