

TO CUSTOMERS

Thank you very much for using our two way radio. This radio of modern design is reasonable structure with stable functions. It is designed to meet different customers' need for high quality with easy operation and perfect capability. We believe you are pleased with its nice shape and excellent performance.

This manual is suitable for using the model of RT21.

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Using tips

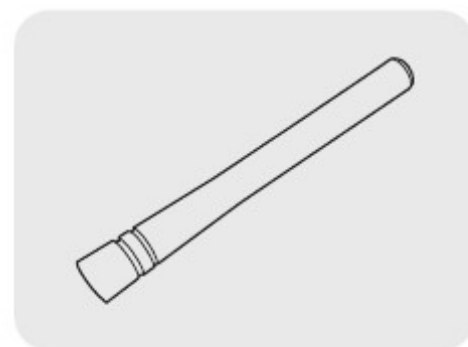
Please read the following brief instructions, non-compliance with these rules may cause danger or violate the law.

- 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 have the banner "Do not use wireless equipment", such as hospital and other healthcare places.
- In the car with an airbag, do not put the radio within the scope of the 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 smelly or smoke, please shut off its power immediately and contact with your local dealer.
- Do not transmit too long, for the radio may heat and hurt the user.

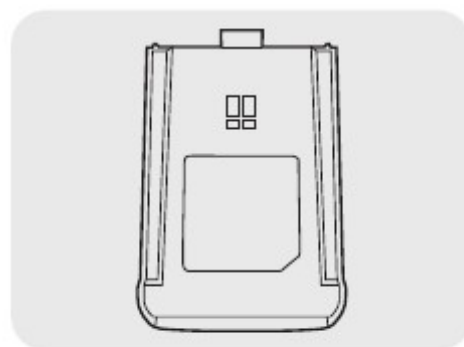
Unpacking and checking equipment

Welcome to use two-way radio. Carefully unpack the radio. We recommend you check the items listed in the following table before discarding the package. If any item is missing, please contact local dealer immediately.

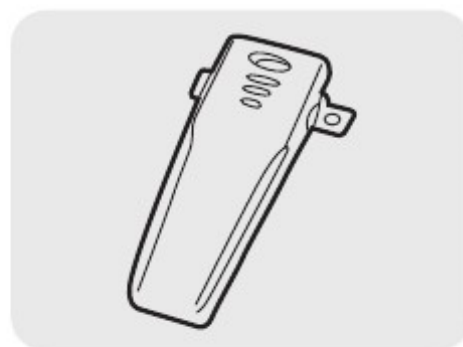
Supplied accessories:



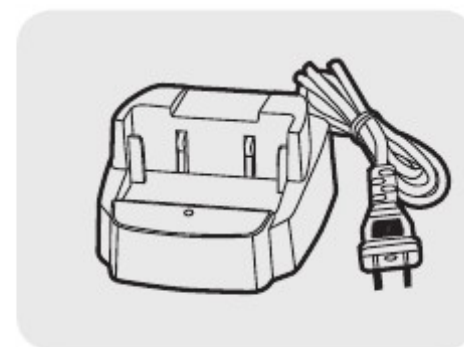
Antenna (1)



Li-ion battery (1)



Belt Clip (1)



Charger (1)



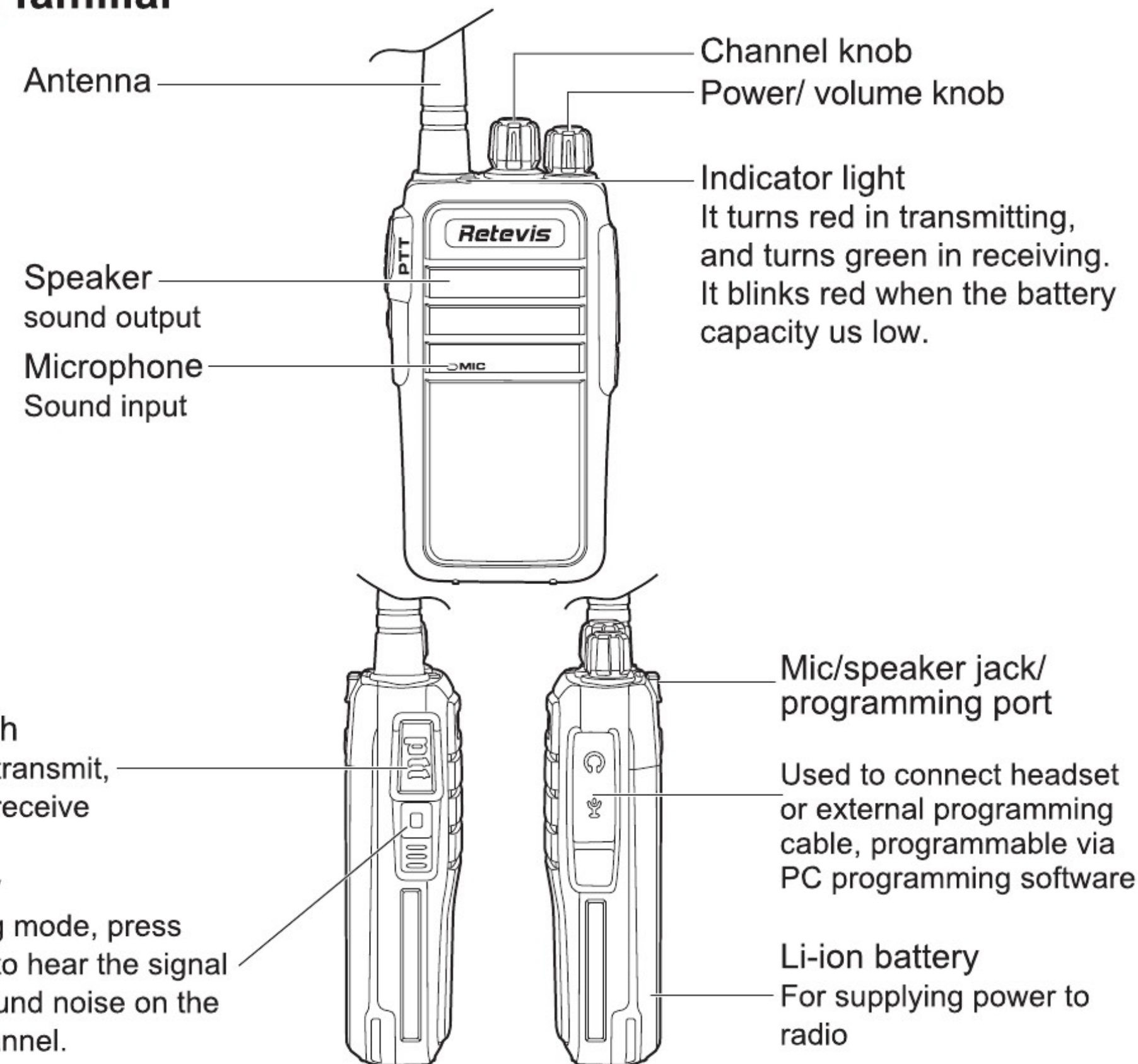
Verification (1)



User's Manual (1)

Note: The antenna frequency range please refers to the annular label at the bottom of antenna.

Getting familiar



Please use **Retevis** designated battery; other batteries can cause explosion and hurt people.

Notice: 1. Please do not short-circuit the battery terminals or expose of in fire. Do not disassemble the battery by yourself.

2. Charge the battery between temperature 0℃ and 45℃. The battery can not be fully charged beyond this temperature range.

3. Please turn off the power when you charge the radio with battery. Transmit with the radio in charge will affect its correct charge.

4. Do not unplug the power or battery when it is charged.

5. The operating time becomes short even the battery is fully charged, the battery is exhausted, please replace battery.

6. Please do not charge when the battery or the radio is wet. Please dry it with a cloth before charging to avoid any danger.

Warning: When the conductive metals such as jewelery, key 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 generates much heat. Do deal with any battery carefully, especially when put it into pocket, wallet or other metallic containers.

Charging operations:

Charge the battery as follows:

1) Power off

2) Insert the DC adaptor plug in the DC jack on the back of charger

3) Insert the AC adaptor plug in the AC power output socket

4) Insert the battery or radio with battery vertically in a charger, to check whether the battery and charger terminal is in normal contact.

5) Make sure the battery and charger terminal is in good contact, when the charging indicator light turns red, it starts charging.

Note: 1. Before inserting the battery, it is abnormal if the charging indicator blinks
2. To change the battery for charging, please wait until the indicator is stable.
3. When the battery is well inserted, the indicator turns red and the charging is on the process, if the indicator blinks, then the battery is damaged or the temperature is too high or too low.

Self-testing

When the charger powers up, if the orange indicator lights for one second and then goes out, entering the standby mode, the charger passes the self-testing and can charge the battery. If the orange indicator blinks constantly, the charger fails to pass the self-testing, and can not charge the battery.

Normal charging indicator

When charging the battery, if the indicator light turns red, the battery is on the normal charge; if the red indicator light blinks constantly, the battery capacity is too low, and is on the trickling charge, and after the battery capacity reaches a certain level, it will switch to the normal charge.

Note: Trickle charge does not exceed 30 minutes, if the red indicator light blinks after 30 minutes, it means the charger can not charge battery, please check whether the battery or the charger has been damaged.

Charging precautions:

- 1) The battery is not fully charged in factory, please charge before using it.
- 2) Charge and discharge the battery for two or three times, the battery capacity will reach the best condition. When the battery capacity is low, please charge or change the battery.
- 3) The battery lasts shortly even if it is fully charged, the battery is exhausted, please contact your local dealer to buy a new authentic **Retevis** battery.

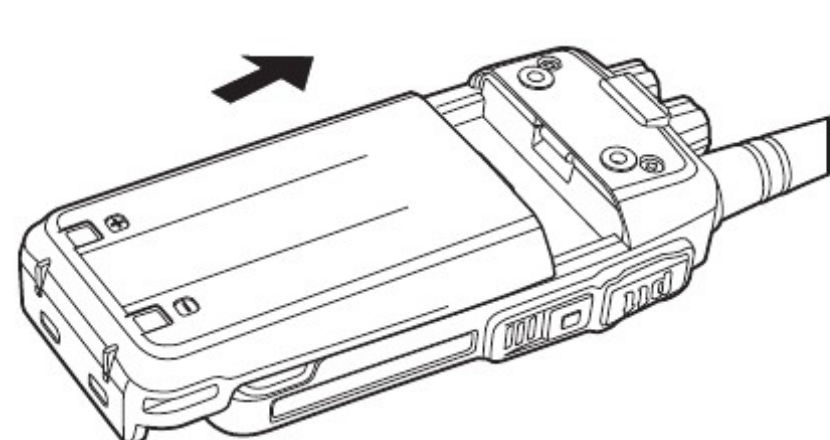
Antenna

- Short thick antenna is suitable for short-distance communication, while long thin antenna will offer you a better communication effect. Wearing the radio in your waist will not make you feel uncomfortable.
- The communication range will be shortened in bad weather or among the trees, please prepare in advance to avoid any inconvenience of your communication and security.

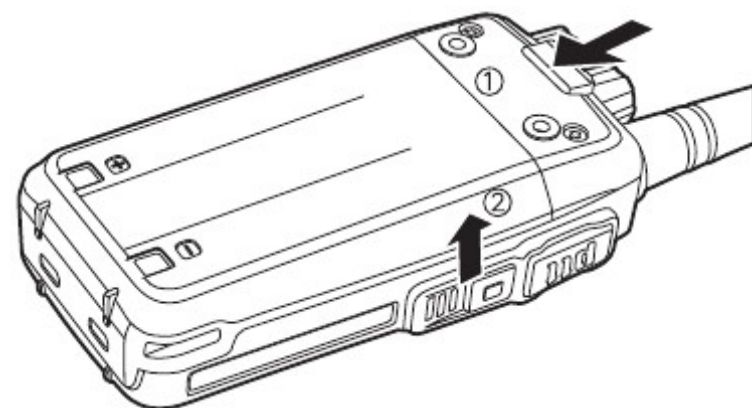
Installing and uninstalling of the accessories

Installing/Removing the battery

- 1) Align the two grooves of battery and the guide rail on the back of aluminum shell, ensuring full contact and in parallel, then push the battery up to the radio base along the rail on the back of aluminum shell, until the battery latch locks up. (picture 1)
- 2) To remove the battery, please make sure the radio is closed, 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. (picture 2)



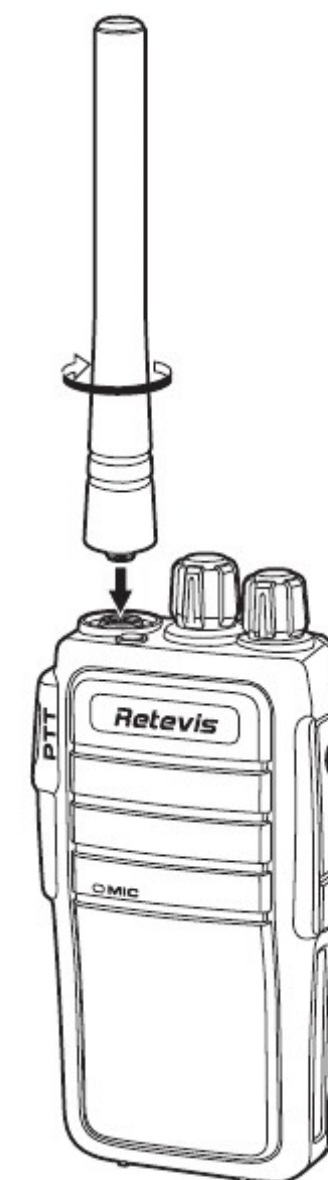
(picture 1)



(picture 2)

Installing and removing the antenna

- 1) Align the threaded end of antenna and the threaded hole at the top of radio, rotate the antenna clockwise until it is tight. (picture 3)
- 2) To remove the antenna, rotate it counter-clockwise until the antenna spirals out. (picture 4)



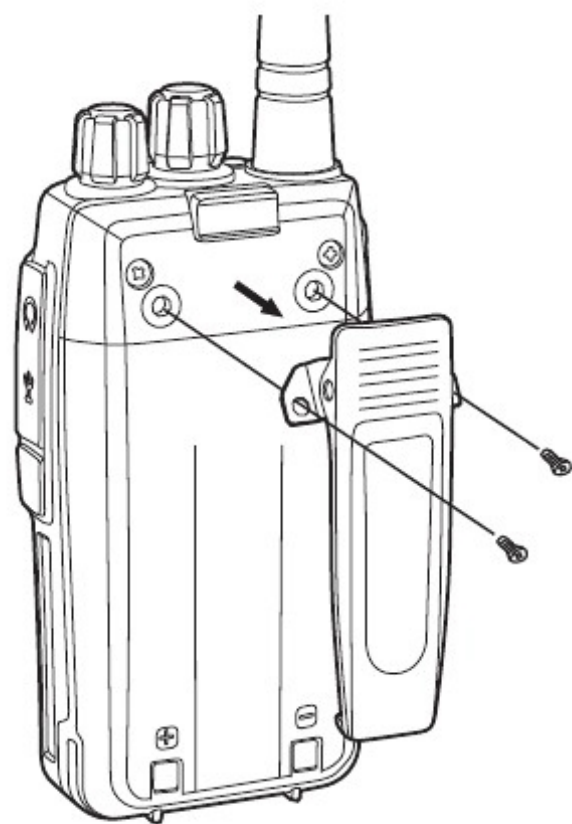
(picture 3)



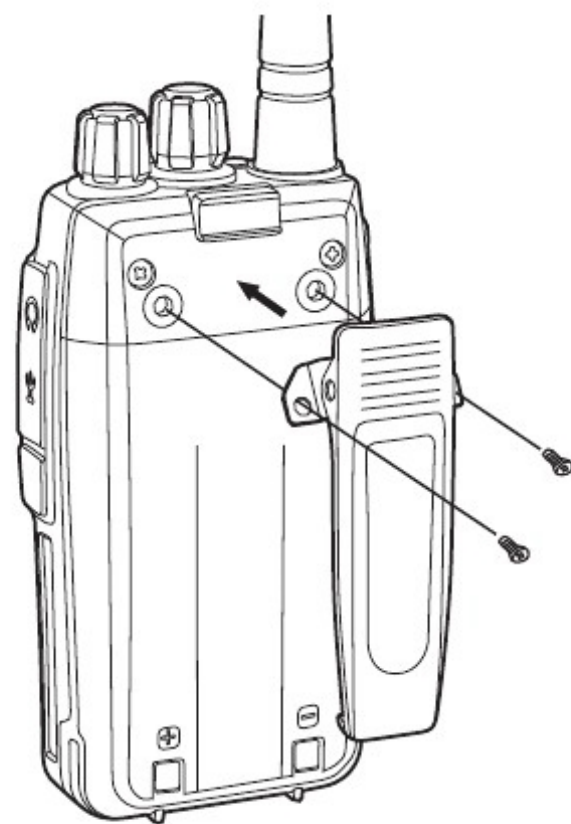
(picture 4)

Installing/removing the belt clip

- 1) Align the two holes of belt clip and the two holes of the radio, fix them with the supplied M2.5x5 screw. (picture 5)
- 2) Loosen the screw set to remove the belt clip (picture 6)



(picture 5)

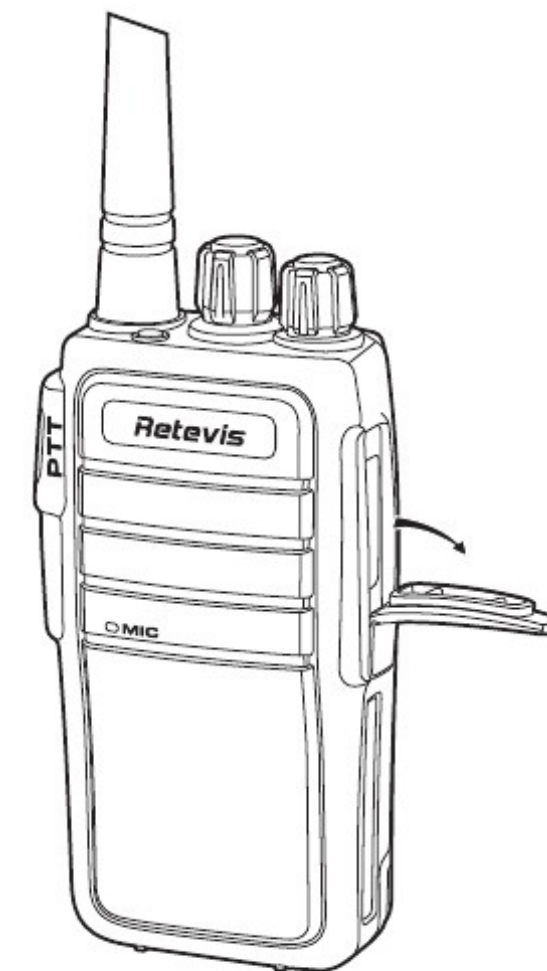


(picture 6)

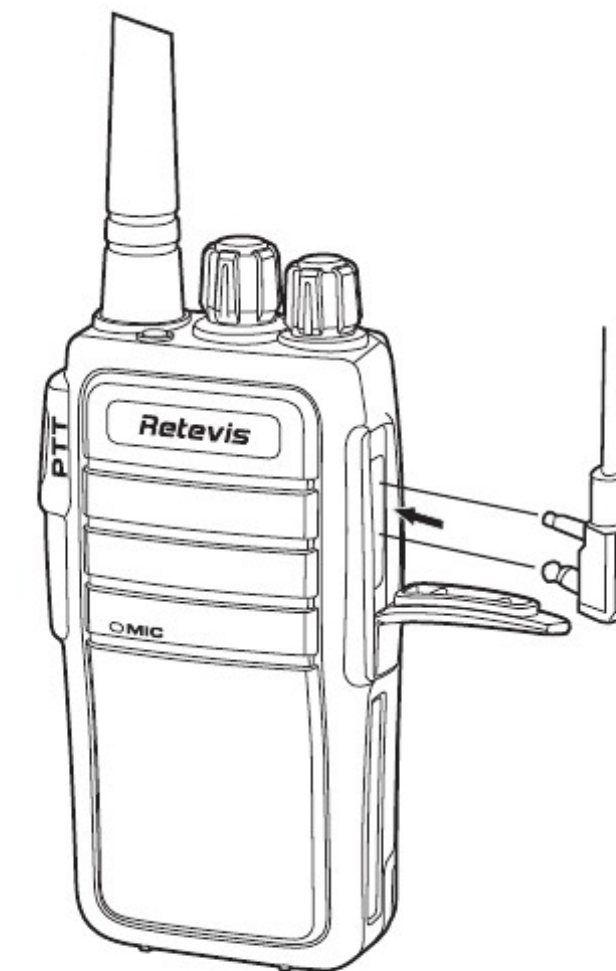
Installing external headset

Reveal (do not remove) the mic/speaker jack cover (picture 7), insert the headset into the mic/speaker jack (picture 8).

Note: Using the external headset will affect the water-tightness performance of radio.



(picture 7)



(picture 8)

Retevis

Basic operation

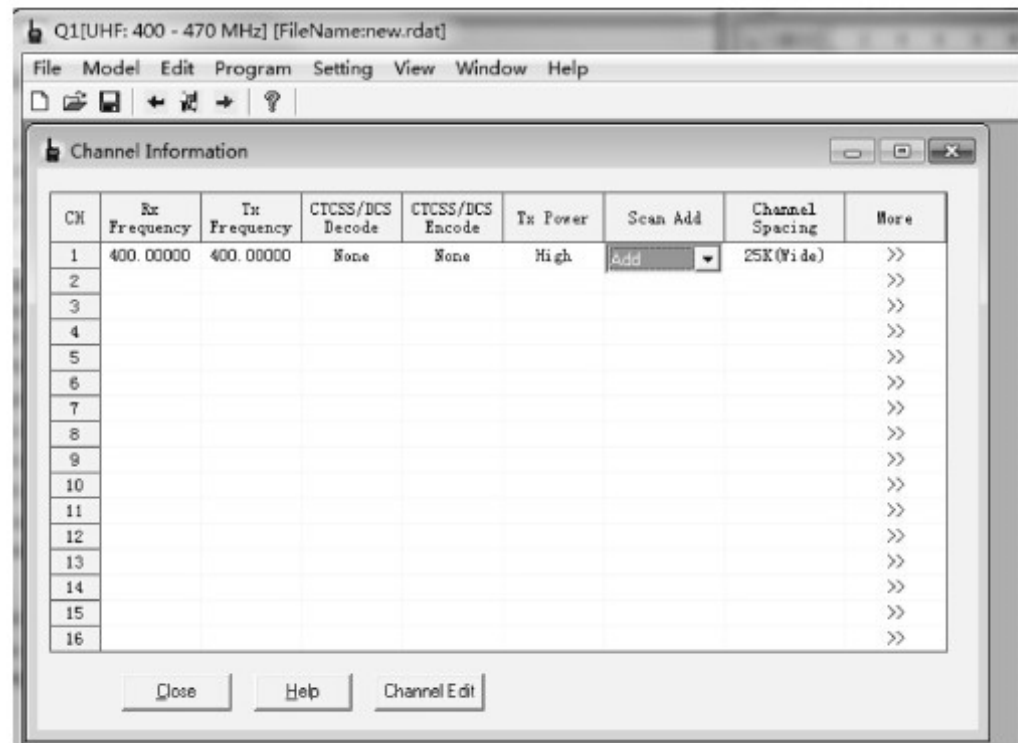
1. Scan Function

When the radio is allowed to be scanned, which can be set by the software, you can press the Monitor key to turn on or turn off the scan. When the scan begins, indicators lights green, the radio will scan automatically from channel 1 to 16 which is defined as scan added. When there is signal in the scanning channel, it will stop in the channel for talk.

Note:

When there is signal in the scanning channel, it will stop in the channel for a talk and after several seconds.

Please note that scan is only available when there are two or more than two memory channels and two or more scan added channels.



2. Battery Save Function

This function can be set by the software.

Turn on this function can make the standby time more longer.

In the software:

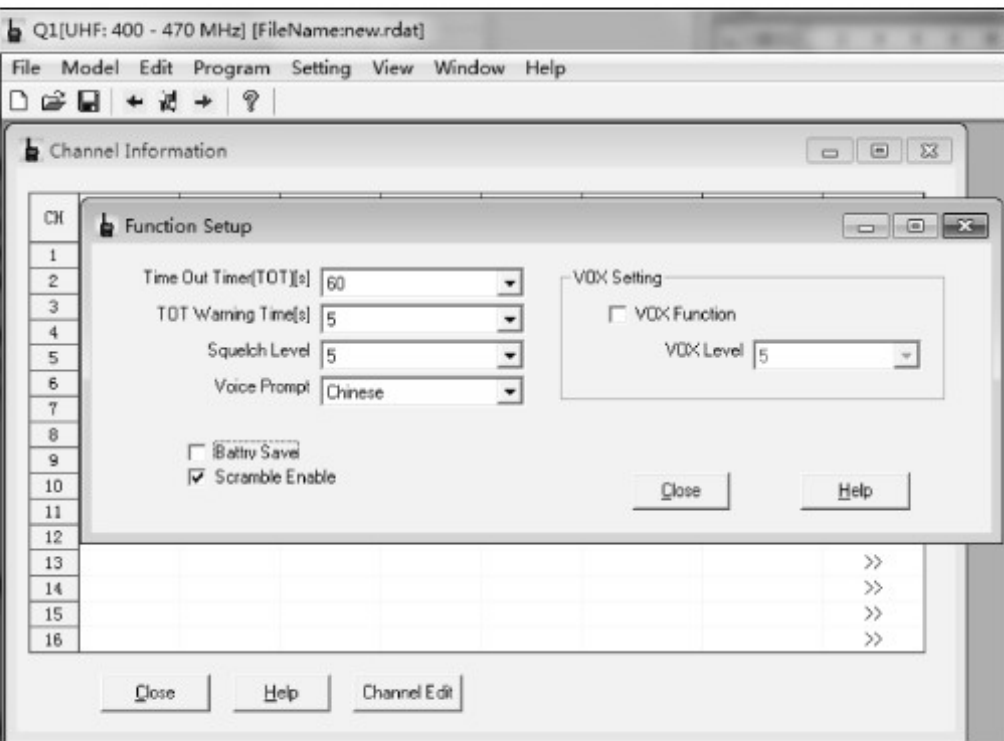
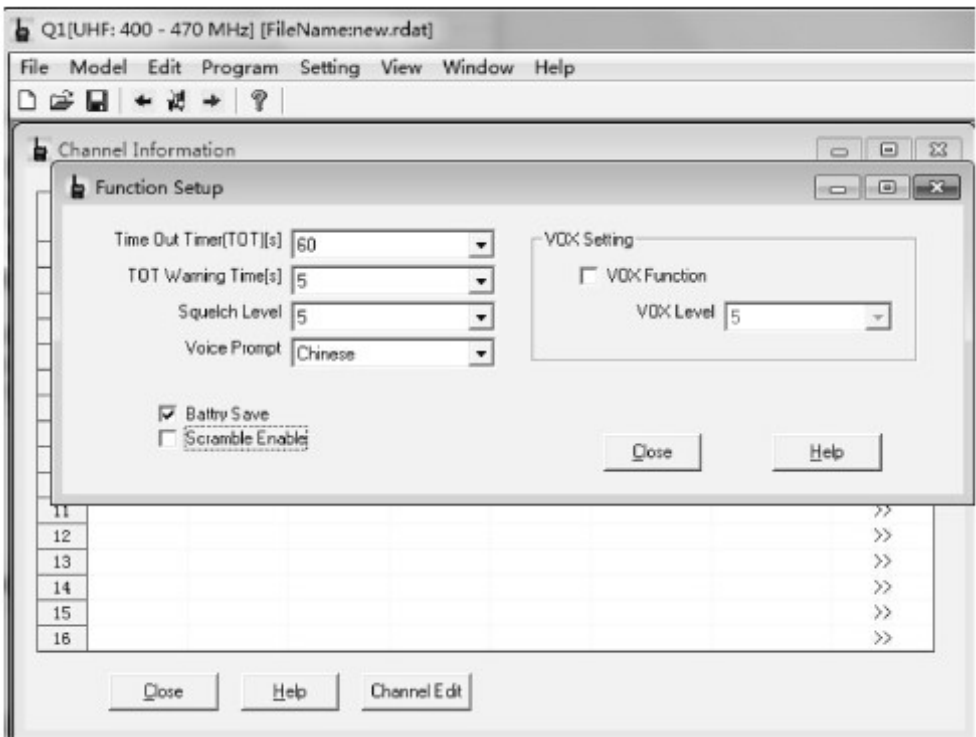
“Edit” → “Function Setup” → “Battery Save”

Off: Battery save function is off.

ON: Battery save function is on.

3. Scrambler

When the radio is allowed the scrambler function, and press the key, TX voice will be sent out with scrambler, other radio only received the signal when its scrambler also turns on.



4 .Busy Channel Lock

You can turn on/off this function via software.

A: if the current channel does not have CTCSS/DCS, When there is signal, TX prohibited when you press PTT.

B: If the current channel does not have CTCSS/DCS, when there is signal which does not have CTCSS/DCS, TX prohibited when you press PTT.

C: If the current channels does not have CTCSS/DCS, when there is signal which have CTCSS/DCS, the radio will transmit when you press PTT.

5. Wide/Narrow Bandwidth Setting

The default is wide band. You can select the wide band (KHz) or narrow band(KHz) through the menu “Channel Spacing” of the “Channel Edit” in the software.

6 .VOX

Speak to the microphone in normal voice to transmit, no need to press PTT switch, turn VOX on/off though the software.

A: when VOX is on in your working channel.

Speak to the microphone directly, it will transmit automatically.

The radio stops transmitting when there is no voice, and waits for receiving.

B: when a headset with a microphone is used.

When VOX is on, you should VOX again for the radio to identify voice volume.

If the microphone is too sensitive, the noise around radio will start transmitting.

If the microphone is not sensitive, the radio can not collect your voice, Please Adjust VOX level well to guarantee smooth communications.

English/Chinese Voice Prompt

Voice prompt

The default setting is Chinese voice prompt, and you will know the working condition of the radio with voice prompt.

- 1) The voice prompt can be selected "Chinese/English/Tone/OFF" through the menu "Voice/Beep Tone" of the "Optional Features" in the software for. When choosing "OFF", voice prompt turns off.
- 2) **Channel annunciation:** You will get to know the working conditions of current channel which is being operated.
- 3) **Low battery alert:** The radio will alert you when the battery capacity reaches the minimum operating voltage.

Low battery prompt

The default setting is Chinese voice prompt. When transmitting or standby, if the battery capacity reaches the pre-determined low level, the indicator light blinks red, and a low battery alert tone will be heard.

The indicating tone can be "Please change the battery". When the low battery alert occurs, it can not transmit, please change or charge the battery.

Squelch function

The squelch level will determine the signal strength to open the speaker of the radio. If the squelch level is lower, the background noise of opening the radios speaker will be higher, and the corresponding communication range will be further, but the anti-interference

capacity will be weaker.

The default setting of squelch level is 5, you can adjust it through the menu "Squelch Level" of the "Optional Features" in the software for . Level 0 to 9 can be selected. 0 is the lowest level.

Time out timer (TOT)

The purpose of TOT is to prevent any radio from talking in one channel for a long time, and to prevent the transceiver from being damaged because of continuous transmission. If the transmitting time exceeds the TOT pre-set time, the radio will sound "Du". Release

CTCSS/DCS

CTCSS and DCS is the sub-audio signaling, to prevent the radio from receiving unwanted signal in the same channel.

When the CTCSS/DCS is set, then within the communication range, you can only receive signals from the same channel with the same CTCSS/DCS setting. When the CTCSS/DCS is not set, you will get all the signal from the same channel within the communication range. You can set the CTCSS/DCS through the menu "QT/DQT ENC" or "QT/DQT DEC" of the "Channel Setting" in the software.

Power protection function

When the radio is in normal use or maintenance, the transmission will be prohibited if the working voltage is beyond the normal supplying voltage. Lower than 3V or higher than 5V, the transmission will be prohibition. The radio cannot power on when it is higher than 5V.

- 4).Power off, rotate to channel 4, at the same time, press PTT and H/L to power on, "DU" will be heard, VOX S level=7, repeate the operaton, you will heat "DU, DU", VOX will be off.
- 5).Power off, rotate to channel 5, at the same time, press PTT and H/L to power on, "DU" will be heard, VOX S level=9, repeate the operaton, you will heat "DU, DU", VOX will be off.

CTCSS/DCS

CTCSS and DCS is the sub-audio signaling, to prevent the radio from receiving unwanted signal in the same channel.

When the CTCSS/DCS is set, then within the communication range, you can only receive signals from the same channel with the same CTCSS/DCS setting. When the CTCSS/DCS is not set, you will get all the signal from the same channel within the communication range. You can set the CTCSS/DCS through the menu "QT/DQT ENC" or "QT/DQT DEC" of the "Channel information" in the software.

CTCSS

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	162.2	167.9	173.8	179.9
186.2	192.8	203.5	210.7	218.1	225.7	233.6	241.8	250.3	

DCS

D023N	D025N	D026N	D031N	D032N	D043N	D047N	D051N	D054N	D065N
D071N	D072N	D073N	D074N	D114N	D115N	D116N	D125N	D131N	D132N
D134N	D143N	D152N	D155N	D156N	D162N	D165N	D172N	D174N	D205N
D223N	D226N	D243N	D244N	D245N	D251N	D261N	D263N	D265N	D271N
D306N	D311N	D315N	D331N	D343N	D346N	D351N	D364N	D365N	D371N
D411N	D412N	D413N	D423N	D431N	D432N	D445N	D464N	D465N	D466N
D503N	D506N	D516N	D532N	D546N	D565N	D606N	D612N	D624N	D627N
D631N	D632N	D654N	D662N	D664N	D703N	D712N	D723N	D731N	D732N
D734N	D743N	D754N							

D023I	D025I	D026I	D031I	D032I	D043I	D047I	D051I	D054I	D065I
D071I	D072I	D073I	D074I	D114I	D115I	D116I	D125I	D131I	D132I
D134I	D143I	D152I	D155I	D156I	D162I	D165I	D172I	D174I	D205I
D223I	D226I	D243I	D244I	D245I	D251I	D261I	D263I	D265I	D271I
D306I	D311I	D315I	D331I	D343I	D346I	D351I	D364I	D365I	D371I
D411I	D412I	D413I	D423I	D431I	D432I	D445I	D464I	D465I	D466I
D503I	D506I	D516I	D532I	D546I	D565I	D606I	D612I	D624I	D627I
D631I	D632I	D654I	D662I	D664I	D703I	D712I	D723I	D731I	D732I
D734I	D743I	D754I							

Walkie talkie write frequency operation process

I.System Requirements

Operating System :Windows98, Windows Me, Windows XP, Windows Vista, Windows7, Windows8

Hard Disk Space: At least 50MB of available .

The minimum memory: 64M

II.Install the write frequency line driver

1.Find the write line drive which your system corresponded to

2.Click to install, successfully installation is ok

III.Write frequency software installation

Programming cable readying

- USB Programming cable - need to install the driver before they write frequency
- Serial port Programming cable†does not need to install the†driver'it can directly write

Computer terminal preparations

- Open the computer, run the computer operating system.
 - Install the write frequency software which has been downloaded well or Install it From the programming software CD
3. installed, and open the write frequency software programming interface

Walkie Talkie end preparations

- USB(or serial)Programming cable connect the computer end
- The USB Programming cable pin is connected with one end of the walkie talkie programming interface
- Ensure the walkie talkie under the condition of power, open it.

IV. Write frequency software operating process

1. Find the software settings, open communication port, to ensure the communication port Option and computer connection port consistent (inconsistent will not read frequency) to solve the related problem
2. In the menu to find reading frequency and click in the window that appears can reading frequency
3. This process needs waiting for a while, after the completion of reading the progress bar shows the walkie talkie channels and frequencies that have been read into the current software
4. Modify the walkie talkie channel and frequency data, and other functional parameter data
5. Find the write frequency in the menu ,click the appeared window to confirm , complete the progress bare
6. if multiple walkie talkie needs the same frequency, frequency steps can be repeated to write

V:Related problem solving

When reading or writing frequency of walkie talkie long time no response or a communica-

tion error?

- check the write frequency line to find if it is damaged
- check wether the write frequency line with computer serial port or walkie talkie interface is bad or loose
- Check to find whether the walkie talkie battery is low or out of power , if this ,please replace the battery or charging the battery
- Check whether the programming software is match with the current model
- Please check whether the write frequency software port settings are assigned to the computer USB port
- Please check whether the power is switched on the walkie talkie
- Whether to choose the corresponding drive system and the correct installation

When writing the frequency is completed, found two walkie talkie cannot normal call or receive

- Make sure whether the two walkie-talkie are in the same channel
 - Determine the same channel at the receiving end CTCSS, CDS and the transmitter is not the same
3. make sure whether the two walkie talkie' volume is too low, if it is too low ,Turn on the volume
 4. Please check whether the two walkie-talkies are open, or at low/no power status
 5. Check wether The walkie-talkie installed antenna
 6. check and confirm wether the communication distance is too far

More Optional Accessories of Retevis



Speaker microphone



6 in 1 programming cable kit



Acoustic Tube headset



Antenna



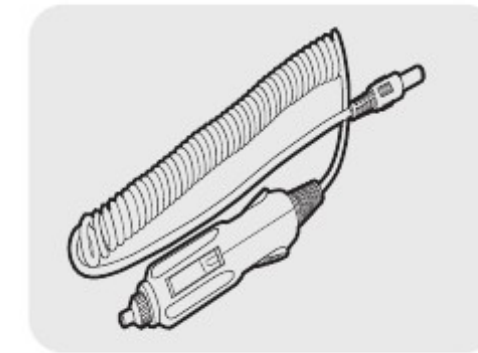
Throat mic



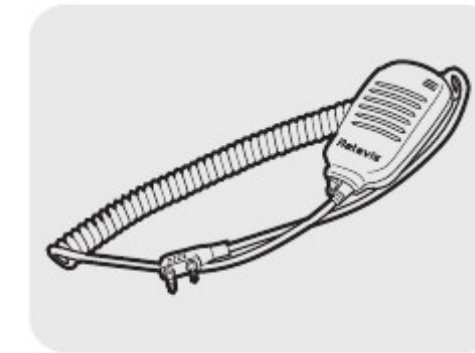
Programming cable

For more information, please visit our website: www.retevis.com

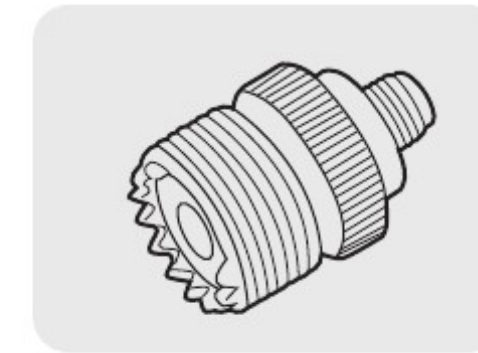
Optional Accessories



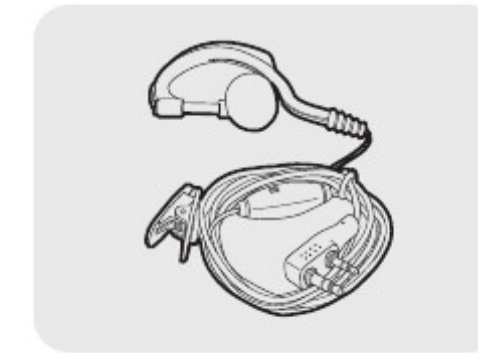
Vehicle Charger



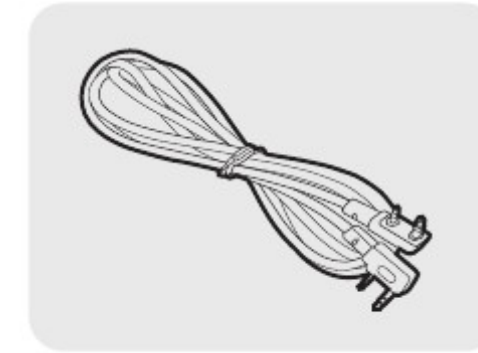
Speaker



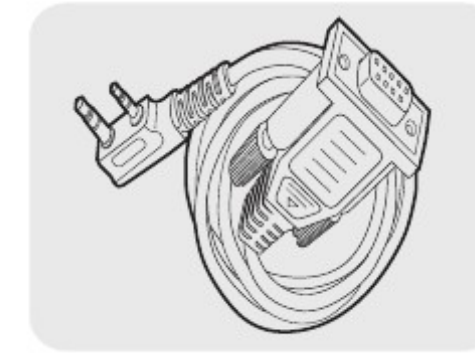
Antenna Adapter



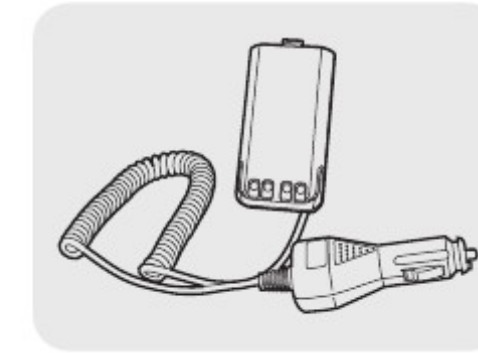
Earphone



Clone Cable



Program Cable



Eliminator



Software CD

<i>Troubles</i>	<i>Solution</i>
No Electrical Source	<ul style="list-style-type: none"> • The battery has been exhausted. Replace or recharge the battery. • The battery is installed incorrectly. Remove it and install again.
The operating time becomes short, even the battery is fully charged.	<ul style="list-style-type: none"> • Replace the battery.
Not able to communicate with the transceivers of the same group.	<ul style="list-style-type: none"> • Confirm the QT/DQT is the same. • The distance is outside of range.
The voice of another group can be heard.	<ul style="list-style-type: none"> • Change all QT/DQT of the group.
Other radios can not receive the TX signals or receive signals in a low volume.	<ul style="list-style-type: none"> • Switch the volume knob to the highest level • The microphone may be damaged, send it to the local dealer for check.
Noise is always heard.	<ul style="list-style-type: none"> • The distance is outside of range. Turn on the radio in nearer range and try again.

General

Model Number	RT21
Frequency Range	VHF: 134.000-174.000MHz or UHF: 400.000-480.000MHz
Channel Number	16
Working Voltage	DC 8V
Working Temperature	-10℃ ~+50℃
Antenna	High gain antenna
Antenna Impedence	50 Ω
Working Mode	Simplex

Receiver

Frequency range	VHF:134.000-174.000MHz or UHF:400.000-480.000MHz
Sensitivity	≤ 0.2uV
Occupied Bandwidth	≤ 16KHz
Selectivity	≥ 65dB
Intermediation	≥ 55dB
Audio power	1W

Retevis

Audio distortion	≤ 5%
Frequency Stability	5ppm
Current	80mA(when standby) 220mA(when working)
Audio response	+7~-12.5dB

Transmitter

Frequency range	VHF:134.000-174.000MHz or UHF:400.000-480.000MHz
Output power	2.5W
Modulation mode	16KF ◊ 3E
Spurious radiation	≤ 7.5uW
Modulation noise	<-40dB
Modulation distortion	<5%
Frequency Stability	5ppm
Maximum deviation	≤ ± 5KHz
Current	≤ 2300mA
Audio response(300-3000Hz)	+6.5~-14dB
Adjacent Ch. power	≥ 65dB
Intermediation sensitivity	8~12mv

Note: Specifications will be revised without notice due to technical improvement. Thank you.

Retevis

Warranty card

Note:

1. This warranty card is only applicable to two-way radio of the above-listed model and serial number.
2. The warranty card is an important document for the end-user to enjoy warranty service, please keep it well.
3. The warranty card shall be filled and chopped by the dealer, or it is invalid.

Customer's name: _____ Gender: _____

Add and postal code: _____

Customer's Tel: _____

Model: _____

Serial number: _____

Purchasing date: _____

Invoice No.: _____

Dealer: _____ Stamp: _____

Add and postal code of the dealer: _____

Contact Tel: _____

Handling people: _____

Thank you for buying Retevis two-way radios, we will do our best to provide you with a stable, clear and efficient wireless communication services. In order for you to enjoy a better quality warranty service, please focus on the following information:

The products warranty period begins from the purchasing date, if product failure under normal use within warranty period occurs, according to the contents of this warranty, (the radio is guaranteed for 12 months, accessories 6 months), please carry the warranty card originals and purchase invoice to Retevis designated authorized warranty repair station for warranty service.

The following situations occur during warranty period will be implemented in paid service:

- (1) Failure to produce the warranty card
- (2) The card has altered traces or inconsistent with the product
- (3) Defect or damage caused by abnormal or non-normal use
- (4) Defect or damage caused by misuse, accident, water or negligence
- (5) Defect or damage caused by improper testing, operation, maintenance, installation, disassembly or adjustment
- (6) Defect or damage caused by unauthorized repair or disassembly
- (7) Defect or damage caused by force majeure
- (8) Wear and tear under normal use

When you are in need of repair, please send the radio, warranty card and purchase invoice together by post or take directly to Retevis designated authorized service stations, shipping costs should be borne by the user.

Maintenance record

Carry-in date			
Completion date			
Fault description			
Maintenance staff numbers			
Maintenance personnel No.			
Signature			

This warranty card to be kept by the user, no replenishment if lost