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.
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

- **Antenna**
- **Power/volume knob**
- **Indicator light** It turns red in transmitting, and turns green in receiving. It blinks red when the battery capacity is low.
- **Speaker** sound output
- **Microphone**
- **Sound input**
- **PTT switch** Press it to transmit, release to receive
- **MONI key** In receiving mode, press MONI key to hear the signal or background noise on the current channel.

- **Mic/speaker jack/programming port**
- **Li-ion battery** For supplying power to radio
- **Used to connect headset or external programming cable, programmable via PC programming software**
Battery

Please use Relevis 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 dissemble the battery by yourself.

2. Charge the battery between temperature 0°C and 45°C. 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 jewely, 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.
Retevis

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: Trickling 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 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)

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)
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)

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.
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**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 can 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.

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**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.

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**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.
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, repeat the operation, you will hear “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, repeat the operation, you will hear “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.

<table>
<thead>
<tr>
<th>CTCSS</th>
<th>67.0</th>
<th>69.3</th>
<th>71.9</th>
<th>74.4</th>
<th>77.0</th>
<th>79.7</th>
<th>82.5</th>
<th>85.4</th>
<th>88.5</th>
<th>91.5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>94.8</td>
<td>97.4</td>
<td>100.0</td>
<td>103.5</td>
<td>107.2</td>
<td>110.9</td>
<td>114.8</td>
<td>118.8</td>
<td>123.0</td>
<td>127.3</td>
</tr>
<tr>
<td></td>
<td>131.8</td>
<td>136.5</td>
<td>141.3</td>
<td>146.2</td>
<td>151.4</td>
<td>156.7</td>
<td>162.2</td>
<td>167.9</td>
<td>173.8</td>
<td>179.9</td>
</tr>
<tr>
<td></td>
<td>186.2</td>
<td>192.8</td>
<td>203.5</td>
<td>210.7</td>
<td>218.1</td>
<td>225.7</td>
<td>233.6</td>
<td>241.8</td>
<td>250.3</td>
<td></td>
</tr>
</tbody>
</table>
Walkie talkie write frequency operation process

I. System Requirements


Hard Disk Space: At least 50MB of available space.
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 reading
- 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
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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 waitting 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
Trouble shooting guide

<table>
<thead>
<tr>
<th>Troubles</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Electrical Source</td>
<td>● The battery has been exhausted. Replace or recharge the battery.</td>
</tr>
<tr>
<td></td>
<td>● The battery is installed incorrectly. Remove it and install again.</td>
</tr>
<tr>
<td>The operating time becomes short, even the</td>
<td>● Replace the battery.</td>
</tr>
<tr>
<td>battery is fully charged.</td>
<td></td>
</tr>
<tr>
<td>Not able to communicate with the transceivers</td>
<td>● Confirm the QT/DQT is the same.</td>
</tr>
<tr>
<td>of the same group.</td>
<td>● The distance is outside of range.</td>
</tr>
<tr>
<td>The voice of another group can be heard.</td>
<td>● Change all QT/DQT of the group.</td>
</tr>
<tr>
<td>Other radios can not receive the TX signals</td>
<td>● Switch the volume knob to the highest level</td>
</tr>
<tr>
<td>or receive signals in a low volume.</td>
<td>● The microphone may be damaged, send it to the local dealer for check.</td>
</tr>
<tr>
<td>Noise is always heard.</td>
<td>● The distance is outside of range. Turn on the radio in nearer range and</td>
</tr>
<tr>
<td></td>
<td>try again.</td>
</tr>
</tbody>
</table>

Specifications

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: 50Ω
- 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
- Intermodulation: > 55dB
- Audio power: 1W
**Retevis**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio distortion</td>
<td>&lt; 5%</td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>5ppm</td>
</tr>
<tr>
<td>Current</td>
<td>80mA (when standby) 220mA (when working)</td>
</tr>
<tr>
<td>Audio response</td>
<td>+7~12.5dB</td>
</tr>
</tbody>
</table>

**Transmitter**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>VHF: 134.000-174.000MHz</td>
</tr>
<tr>
<td></td>
<td>or UHF: 400.000-480.000MHz</td>
</tr>
<tr>
<td>Output power</td>
<td>2.5W</td>
</tr>
<tr>
<td>Modulation mode</td>
<td>18KF-C 3E</td>
</tr>
<tr>
<td>Spurious radiation</td>
<td>&lt; 7.5uW</td>
</tr>
<tr>
<td>Modulation noise</td>
<td>&lt; 40dB</td>
</tr>
<tr>
<td>Modulation distortion</td>
<td>&lt; 5%</td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>5ppm</td>
</tr>
<tr>
<td>Maximum deviation</td>
<td>≤ ± 5 KHz</td>
</tr>
<tr>
<td>Current</td>
<td>≤ 2300mA</td>
</tr>
<tr>
<td>Audio response(300-3000Hz)</td>
<td>+6.5~14dB</td>
</tr>
<tr>
<td>Adjacent Ch. power</td>
<td>&gt; 65dB</td>
</tr>
<tr>
<td>Intermediation sensitivity</td>
<td>8~12mv</td>
</tr>
</tbody>
</table>

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

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**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.

<table>
<thead>
<tr>
<th>Customer's name:</th>
<th>Gender:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add and postal code:</td>
<td></td>
</tr>
<tr>
<td>Customer's Tel:</td>
<td></td>
</tr>
<tr>
<td>Model:</td>
<td></td>
</tr>
<tr>
<td>Serial number:</td>
<td></td>
</tr>
<tr>
<td>Purchasing date:</td>
<td></td>
</tr>
<tr>
<td>Invoice No.:</td>
<td></td>
</tr>
<tr>
<td>Dealer:</td>
<td>Stamp:</td>
</tr>
<tr>
<td>Add and postal code of the dealer:</td>
<td></td>
</tr>
<tr>
<td>Contact Tel:</td>
<td></td>
</tr>
<tr>
<td>Handling people:</td>
<td></td>
</tr>
</tbody>
</table>
Thank you for buying Relevi's 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 product's 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 Relevi's 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 neglect
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 Relevi's designated authorized service stations, shipping costs should be borne by the user.

Maintenance record

<table>
<thead>
<tr>
<th>Carry-in date</th>
<th>Completion date</th>
<th>Fault description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maintenance staff numbers

Maintenance personnel No.

Signature

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