More Optional Accessories of Retevis

Optional Accessories

Trouble shooting guide

Specifications

www.retevis.com
More Optional Accessories of Retevis

Speaker microphone  Finger PTT Headset  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
Welcome to use Retevis two-way radio

Main Functions

- Monitor
- Battery save/low battery alarm
- Lone worker
- End-tone elimination
- Battery Indicator
- Side key programmable
- Talk around
- 32 channels
- Digital/analog double modes
- Read and write by computer
- TX High/low power selection
- Time out timer
- Chinese and English audio prompt
- Busy channel lockout
- Online update
- QT (analog mode)
- DQT (digital mode)

- Wide band/narrow band selection
- Encryption
- Single call/group call
- IP 67 waterproof
- VOX
- Zone Selectable
- Compatible MOTOTRBO
- Series Tier I and II
- Ultra Power: 10W
- Squelch
Contents

01 Using tips & Unpacking and checking equipments
03 Charging the battery
04 Battery type
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Using tips
Unpacking and checking equipments.
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 published.
- Turn off the radio before entering flammable or explosive areas.
- Do not use radio whose antenna is damaged, touching of damaged antenna will cause heat injury.
- Do not attempt to disassemble this radio; the maintenance work should be done by technical expert only.
- To avoid troubles caused by electromagnetic interference of 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 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 equipments

Carefully unpack the radio. We recommend you check the items listed in the following table before discarding the package. If any item is missing or has been damaged during shipment, please contact us immediately.

Supplied accessories:

- Antenna (1)
- Li-ion battery (1)
- Belt Clip (1)
- Charger (1)
- Charger Adapter (1)
- Verification (1)
- User’s Manual (1)

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

- Insert the AC adaptor plug in the AC power output socket
- Insert the battery or radio with battery vertically in a charger.
- Make sure the battery and charger terminal is in good contact, when the charging indicator light turns red, it starts charging.

Note:
- Before inserting the battery, it is abnormal if the charging indicator blinks
- To change the battery for charging, please wait until the indicator is stable
- 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.

Charging precautions:
The battery is not fully charged in factory, please charge before using it. Charge and discharge the battery for 2-3 times, the battery capacity will reach the best condition. When the battery capacity is low, please charge or change the battery.

Applicable battery types
Please use the battery supplied by factory, it might cause the explosion or harm to human body.

Notice:
- Do not short-circuit the battery terminal or drop the battery in the fire. Do not disassemble the battery by yourself.
- Charge the battery between temperature 0°C and 45°C. The battery cannot be fully charged beyond this temperature range.
- Do not unplug the power or battery when it is charged. The operating time becomes short even the battery is fully charged, the battery is exhausted, please replace the battery.
- Please do not charge when the battery of the radio is wet. Please dry it with a cloth before charging to avoid any danger.

Warning
When the conductive metals such as jewellery, 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 from a short circuit and generates much heat. Do deal with any battery carefully, especially when put it into pocket, wallet or other metallic containers.
Assemble/disassemble accessories

Assemble/disassemble battery
To install the battery into the battery positioning hole of radio bottom, the press the battery, make the button completely to lock battery. To remove the battery, please turn off the radio, and then push up the battery button of radio top, finally take off the battery.
Assemble/disassemble antenna
Assemble: Hold the end of antenna and rotate the antenna clockwise to the antenna hole until it's tight
Disassemble: Rotate the antenna anticlockwise from the antenna hole.

Earpiece jack/Programming cable jack
Open the earpiece cover, insert the earpiece into the earpiece jack.
User can use the software to program the radio by this jack, too.

Assemble/disassemble the belt clip
Assemble the belt clip
1. Remove the battery from the radio
2. Align the clamping slot of the belt clip to the mounting slot on the back of the battery, press the belt clip until it's tight.
Disassemble the belt clip
1. Remove the battery from the radio
2. Pull out the belt clip
Get familiar with this two way radio

Antenna

Channel knob

Power/Volume knob
Rotate the Power knob clockwise to turn on the radio. Rotate the Power knob anticlockwise to turn off the radio. Rotate the Volume knob to adjust the volume.

Microphone

Indicator light
Indicator light turns red when radio is transmitting
Indicator light turns green when radio is receiving

Speaker

Notice: In an emergency, users can press Programming side key 1 or 2 to activate the emergency call. Before using this radio, user should program the radio by matched software supplied by dealer.
Programmable side key function
User can set side key P1 and P2 as the programmable function key as following functions: Monitor (Analog) Permanent Monitor (Analog) Encryption On/Off(Digital) Zone Selection
BER Test (Digital) High/low Power Repeater/Talk around.

Monitor
Once user activates programmable side key as “Monitor”, radio will make a squelch. This function is used to check if the current channel is occupied before communication. Monitor can release CTCSS/DCS temporarily. Also this function is used to receive the weak signal.

Release side key to exit function

Permanent Monitor (Analog only)
Once user activates programmable function key as “Permanent Monitor”, radio will monitor the chosen channel whether there someone is talking at the same channel. If not radio will make rustle.

Encryption
Digital only.
Only set the same encryption type of TX and RX can user communication with each other.

Zone Selection
Once user activates programmable function key as “Zone Selection”, user can press this side key to select different zones programmed by software. Enter Zone2 when radio make the sound “Di” exit Zone2 when radio make the sound “DiDi”.

www.retevis.com
 BER Test (Digital)
User can activate programmable function key as "BER Test" to transmit the inspection code, inspection code is used to test radios which can decode by inspection code.

High/low Power
User can activate programmable function key as "High/low Power" to switch to high or low power.

Repeater/Talk around
User can activate programmable function key as "Repeater/Talk around" to switch to Repeater or Talk around.
Talk around: Two way radio's TX frequency and RX frequency become the same, TX signaling and RX signaling become the same.

Setting
QT/DQT
1) If user set the QT/DQT on one channel, user is able to ignore other calls on the same channel.
2) When users set QT/DQT on one channel, only receive the same QT/DQT can radio open the squelch. In the same way, only other people set QT/DQT the same as yours can they receive your call.
3) This radio has 50 groups of analog QT/DQT, 105 groups of digital QT/DQT available.

Battery save
In a period of time if user do not have any operation and not receiving data or measured effective carrier wave, radio will enter battery save mode, receiving circuit and DSP enter a low power state in cycle, which prolongs the use time of radio. Every time the radio is transmitting, according to the battery save mode settings, will send some pre carrier wave or voice head, in order to ensure that the sleep mode of the radio can be normally received. We call this time "Battery save mode delay time", which can be programmed by the programming software, ranging from 1s to 600s, the default value is 50s. Users can choose whether to open the battery save mode.

Low battery alarm
When the voltage is lower than 5.8V, the radio is always in a low battery state, the red light flashes every 2 seconds, and the radio makes the "low power" alarm, remind the end user to charge or replace the battery in time.
Communication setting

Analog communication
Right click Zone1 to add the analog channel (Open software→Zone setting→Zone1)
Enter the channel setting
Set TX Frequency and TX Frequency
Set TX Enc QT/DQT and RX Dec QT/DQT
Set RX squelch mode

Set the TX power
Set the TX authority
Right click Zone1 to add the digital channel (Open software→Zone setting→Zone1)
Enter the channel setting, to set the Colour Code, only the same Colour Code can call on digital channel
Set TX Frequency and TX Frequency
Set the RX Group Lists (Correspond to TX Contacts)
Set the TX Contacts (Use can set the Call Type: Individual Call/Group Call/All Call)
Set the Tx Authority: Impollte
Set the In Call Criteria: Allow TX

Contacts
Contacts only support digital mode
Write click 【Digital Contacts】，and set the Call Type
Edit the corresponding ID
TX radio is able to select call the corresponding contacts

RX Group Lists
RX Group Lists only support digital mode
Select the contacts from RX Group Lists for group call(For the communication with TX radio)

Encryption
Select encryption type : Enhanced Mode0 /Enhanced Mode1
Set the Key No. and corresponding Key Value
Enter 【Zone1】，select digital channel, enter 【RX Setting】，click the Encryption
Select one encryption key
Only the same encryption key can communicate
## Frequency Table

### Technical Specifications

### Troubleshooting Guide

### Warranty Card

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### CTCSS Standard Frequency Table

<table>
<thead>
<tr>
<th>CTCSS</th>
<th>1–67.0</th>
<th>14–103.5</th>
<th>27–159.8</th>
<th>40–199.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2–69.3</td>
<td>15–107.2</td>
<td>28–162.2</td>
<td>41–203.5</td>
<td></td>
</tr>
<tr>
<td>3–71.9</td>
<td>16–110.9</td>
<td>29–165.5</td>
<td>42–206.5</td>
<td></td>
</tr>
<tr>
<td>4–74.4</td>
<td>17–114.8</td>
<td>30–167.9</td>
<td>43–210.7</td>
<td></td>
</tr>
<tr>
<td>6–79.7</td>
<td>19–123.0</td>
<td>32–173.8</td>
<td>45–225.7</td>
<td></td>
</tr>
<tr>
<td>7–82.5</td>
<td>20–127.3</td>
<td>33–177.3</td>
<td>46–229.1</td>
<td></td>
</tr>
<tr>
<td>8–85.4</td>
<td>21–131.8</td>
<td>34–179.9</td>
<td>47–233.6</td>
<td></td>
</tr>
<tr>
<td>9–88.5</td>
<td>22–136.5</td>
<td>35–183.5</td>
<td>48–241.8</td>
<td></td>
</tr>
<tr>
<td>10–91.5</td>
<td>23–141.5</td>
<td>36–186.2</td>
<td>49–250.3</td>
<td></td>
</tr>
<tr>
<td>11–94.8</td>
<td>24–146.5</td>
<td>37–189.9</td>
<td>50–245.1</td>
<td></td>
</tr>
<tr>
<td>12–97.4</td>
<td>25–151.4</td>
<td>38–192.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13–100.0</td>
<td>26–156.7</td>
<td>39–196.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### DCS standard group number

<table>
<thead>
<tr>
<th>DCS</th>
<th>023</th>
<th>071</th>
<th>143</th>
<th>266</th>
<th>355</th>
<th>452</th>
<th>532</th>
<th>664</th>
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<tr>
<td></td>
<td>025</td>
<td>072</td>
<td>145</td>
<td>271</td>
<td>364</td>
<td>454</td>
<td>546</td>
<td>703</td>
</tr>
<tr>
<td></td>
<td>026</td>
<td>073</td>
<td>152</td>
<td>274</td>
<td>365</td>
<td>455</td>
<td>565</td>
<td>712</td>
</tr>
<tr>
<td></td>
<td>031</td>
<td>074</td>
<td>155</td>
<td>306</td>
<td>374</td>
<td>462</td>
<td>606</td>
<td>723</td>
</tr>
<tr>
<td></td>
<td>032</td>
<td>114</td>
<td>156</td>
<td>311</td>
<td>411</td>
<td>464</td>
<td>612</td>
<td>731</td>
</tr>
<tr>
<td></td>
<td>036</td>
<td>115</td>
<td>162</td>
<td>315</td>
<td>412</td>
<td>465</td>
<td>624</td>
<td>732</td>
</tr>
<tr>
<td></td>
<td>041</td>
<td>116</td>
<td>165</td>
<td>325</td>
<td>413</td>
<td>466</td>
<td>627</td>
<td>734</td>
</tr>
<tr>
<td></td>
<td>047</td>
<td>122</td>
<td>172</td>
<td>331</td>
<td>423</td>
<td>503</td>
<td>631</td>
<td>743</td>
</tr>
<tr>
<td></td>
<td>051</td>
<td>125</td>
<td>174</td>
<td>332</td>
<td>431</td>
<td>506</td>
<td>632</td>
<td>754</td>
</tr>
<tr>
<td></td>
<td>053</td>
<td>131</td>
<td>205</td>
<td>343</td>
<td>432</td>
<td>516</td>
<td>645</td>
<td></td>
</tr>
<tr>
<td></td>
<td>054</td>
<td>132</td>
<td>212</td>
<td>346</td>
<td>445</td>
<td>523</td>
<td>654</td>
<td></td>
</tr>
<tr>
<td></td>
<td>065</td>
<td>134</td>
<td>223</td>
<td>351</td>
<td>446</td>
<td>526</td>
<td>662</td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

#### General

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>136–174MHz or 400–470MHz</td>
</tr>
<tr>
<td>More frequency available</td>
<td>450–520MHz, 220–260MHz, 245–245.8875MHz</td>
</tr>
<tr>
<td>Channel NO</td>
<td>32</td>
</tr>
<tr>
<td>Working voltage</td>
<td>7.2V</td>
</tr>
<tr>
<td>Working temperature</td>
<td>–30°C to +60°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>–40°C to +80°C</td>
</tr>
<tr>
<td>Continuous working time</td>
<td>Analog: 15 hours; Digital: 25 hours</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>2200mAh</td>
</tr>
</tbody>
</table>
## Receiver

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>136–174 or 400–470MHz</td>
</tr>
<tr>
<td>Channel spacing</td>
<td>12.5KHz/25KHz</td>
</tr>
<tr>
<td>Frequency stability</td>
<td>+/- 1.0 ppm</td>
</tr>
<tr>
<td>Analog sensitivity</td>
<td>0.35 μV/–116dB m(20dB SINAD)</td>
</tr>
<tr>
<td></td>
<td>0.22 μV/–120dB m(Typical)</td>
</tr>
<tr>
<td>Digital sensitivity</td>
<td>0.3 μV/–117.4dB m(BER5%)</td>
</tr>
<tr>
<td></td>
<td>0.7 μV/–110dB m(BER1%)</td>
</tr>
<tr>
<td>Spurious response</td>
<td>TIA603C: 65dB</td>
</tr>
<tr>
<td></td>
<td>ETSI: 65dB</td>
</tr>
<tr>
<td>Adjacent channel selectivity</td>
<td>TIA603C: <a href="mailto:60dB@12.5KHz">60dB@12.5KHz</a></td>
</tr>
<tr>
<td></td>
<td>ETSI: <a href="mailto:60dB@12.5KHz">60dB@12.5KHz</a></td>
</tr>
<tr>
<td>Spurious response suppression</td>
<td>TIA603C: 70dB</td>
</tr>
<tr>
<td></td>
<td>ETSI: 70dB</td>
</tr>
<tr>
<td>Receiving spurious emissions</td>
<td>&lt; –57dBm@1GHz, &gt; –47dBm@</td>
</tr>
<tr>
<td>Blocking</td>
<td>84dB</td>
</tr>
<tr>
<td>Rated audio power</td>
<td>1W</td>
</tr>
<tr>
<td>Audio response</td>
<td>+1dB~3dB</td>
</tr>
<tr>
<td>Rated audio distortion</td>
<td>≦3%</td>
</tr>
</tbody>
</table>

## Transmitter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>136–174 or 400–470MHz</td>
</tr>
<tr>
<td>Channel spacing</td>
<td>12.5KHz/25KHz</td>
</tr>
<tr>
<td>Frequency stability</td>
<td>+/- 1.5 ppm</td>
</tr>
<tr>
<td>TX power</td>
<td>Low: 1W High: 10W</td>
</tr>
<tr>
<td>FM noise</td>
<td>–<a href="mailto:40dB@12.5KHz">40dB@12.5KHz</a></td>
</tr>
<tr>
<td>Spurious emission</td>
<td>≦–36dBm@1GHz, &gt;–30dBm@</td>
</tr>
<tr>
<td>Adjacent channel selectivity</td>
<td>≦<a href="mailto:60dB@12.5KHz">60dB@12.5KHz</a></td>
</tr>
<tr>
<td>FM modulation mode</td>
<td>12.5KHz: 11F0F3E</td>
</tr>
<tr>
<td>4FSK digital modulation mode</td>
<td>12.5KHz(data only)7K60FX</td>
</tr>
<tr>
<td></td>
<td>12.5KHz(data+voice)7K60FX</td>
</tr>
<tr>
<td>Modulation limit</td>
<td><a href="mailto:2.5kHz@12.5KHz">2.5kHz@12.5KHz</a></td>
</tr>
<tr>
<td>Audio response</td>
<td>+1dB~3dB</td>
</tr>
<tr>
<td>Rated audio distortion</td>
<td>≦3%</td>
</tr>
<tr>
<td>Digital protocol</td>
<td>ETSI: ST02361–1,–1,–3</td>
</tr>
<tr>
<td>Vocoder type</td>
<td>AMBE+2TM</td>
</tr>
</tbody>
</table>

**Note:** Specifications will be revised without notice due to technical improvement. Thank you!
## 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 battery is fully charged.</td>
<td>• Replace the battery.</td>
</tr>
<tr>
<td>Not able to communicate with the transceivers of the same group.</td>
<td>• Confirm the QT/DQT is the same.</td>
</tr>
<tr>
<td></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 or receive signals in a low</td>
<td>• Switch the volume knob to the highest level</td>
</tr>
<tr>
<td>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 try again.</td>
</tr>
</tbody>
</table>
Radio end preparations
1. USB (or serial) Programming cable connect the computer end
2. The USB Programming cable pin is connected with one end of the walkie talkie programming interface
3. 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 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 radio channels and frequencies that have been read into the current software
4. Modify the radio 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 bar
6. If multiple radio needs the same frequency, frequency steps can be repeated to write

V: Related problem solving
When reading or writing frequency of radio long time no response or a communication error?
1. check the write frequency line to find if it is damaged

2. check whether the write frequency line with computer serial port or radio interface is bad or loose
3. Check to find whether the radio battery is low or out of power, if this, please replace the battery or charging the battery
4. Check whether the programming software is match with the current model
5. Please check whether the write frequency software port settings are assigned to the computer USB port
6. Please check whether the power is switched on the radio
7. Whether to choose the corresponding drive system and the correct installation
When writing the frequency is completed, found two radio cannot normal call or receive
1. Make sure whether the two walkie-talkie are in the same channel
2. Determine the same channel at the receiving end CTCSS, CDS and the transmitter is not the same
3. Make sure whether the two radio * volume is too low, if it is too low, turn on the volume
4. Please check whether the two walkie-talkie are open, or at low/no power status
5. Check whether The walkie-talkie installed antenna
6. Check and confirm whether the communication distance is too far
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: