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# Radtel RT-420 Multi-Band Two-Way Radio User Manual

Model: RT-420

## 1. INTRODUCTION

This manual provides detailed instructions for the operation and maintenance of your Radtel RT-420 Multi-Band Two-Way Radio. Please read this manual thoroughly before using the device to ensure proper function and to maximize your user experience. The RT-420 is a versatile communication device designed for various applications, including amateur radio, air band reception, and NOAA weather monitoring.

## 2. SAFETY INFORMATION

To prevent personal injury or property damage, observe the following safety precautions:

- Do not operate the radio in explosive atmospheres (e.g., flammable gases, dust particles, metallic powders).
- Do not transmit without an antenna attached.
- Keep the radio away from medical devices to avoid interference.
- Use only Radtel-approved batteries and chargers. Unauthorized accessories may cause damage or fire.
- Do not expose the radio to extreme temperatures, direct sunlight, or moisture. This device is not water resistant.
- Observe all local regulations regarding radio frequency usage.

## 3. PACKAGE CONTENTS

Please check the package contents upon unboxing. If any items are missing or damaged, contact your retailer.

- Radtel RT-420 Two-Way Radio
- Antenna
- Lithium-Ion Battery (1 included)
- Belt Clip

- Desktop Charger (may vary by region)
- User Manual

## 4. PRODUCT OVERVIEW

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The Radtel RT-420 features a compact design with a full keypad and an LCD color display for easy navigation and status monitoring.



Figure 4.1: Front view of the Radtel RT-420 radio, showing the display, keypad, and antenna.

#### 4.1 Key Features

- **Frequency Bands:** 144-148MHz (TX/RX), 420-450MHz (TX/RX), 136-174MHz (RX only), 200-260MHz (RX only), 350-400MHz (RX only), 400-520MHz (RX only), 108-136MHz AM (Air Band RX), 66-108MHz FM (FM Radio).
- **Channels:** 256 storage channels (128x2 groups).
- **NOAA Weather Channel:** Receive weather alerts.
- **VOX Function:** Voice-operated transmission.
- **Emergency Alarm:** For urgent situations.
- **Scrambling & DTMF:** Enhanced communication options.
- **Computer Programmable:** For advanced customization.

## 5. SETUP

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### 5.1 Battery Installation

1. Ensure the radio is powered off.
2. Align the battery pack with the grooves on the back of the radio.
3. Slide the battery pack upwards until it clicks into place.
4. To remove, press the battery release latch and slide the battery downwards.

### 5.2 Antenna Attachment

1. Screw the antenna clockwise into the connector on the top of the radio until it is finger-tight.
2. Do not overtighten.

### 5.3 Charging the Battery

Before initial use, fully charge the battery. The radio supports Type-C charging (optional feature), desktop chargers, six-unit chargers, and vehicle chargers.

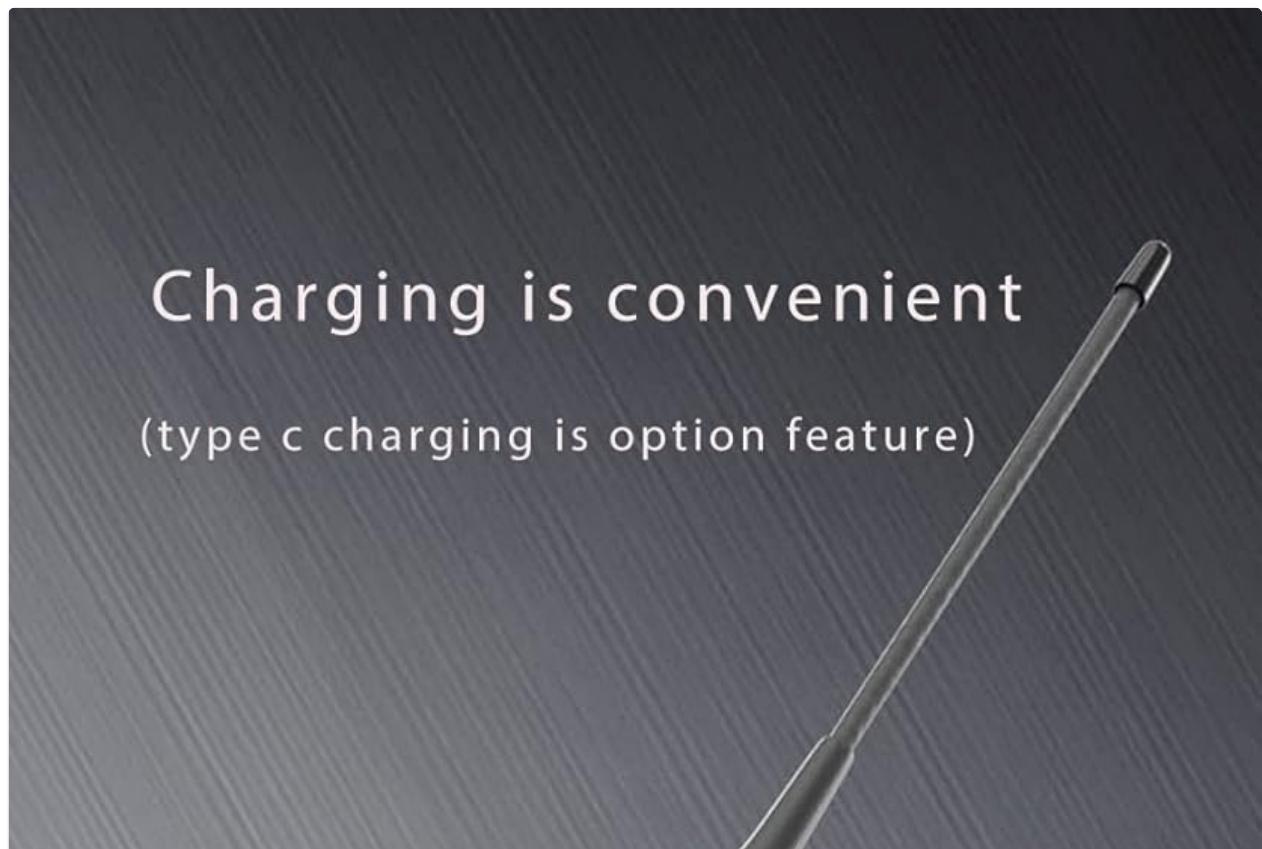




Figure 5.1: The Radtel RT-420 connected to a Type-C charging cable, illustrating the charging process.

1. Place the radio into the desktop charger or connect a Type-C cable to the radio's charging port.
2. Ensure the charger is connected to a power source.
3. The charging indicator will typically show red while charging and turn green when fully charged.

## 6. OPERATING INSTRUCTIONS

### 6.1 Power On/Off and Volume Control

- **Power On:** Rotate the power/volume knob clockwise until you hear a click.
- **Power Off:** Rotate the power/volume knob counter-clockwise until you hear a click.
- **Volume Adjustment:** Rotate the power/volume knob to increase (clockwise) or decrease (counter-clockwise) the audio level.

## 6.2 Frequency Bands and Modes

The RT-420 supports multiple receive and transmit bands:

- **VHF Transmit/Receive:** 144-148MHz
- **UHF Transmit/Receive:** 420-450MHz
- **VHF Receive Only:** 136-174MHz
- **Other Receive Only Bands:** 200-260MHz, 350-400MHz, 400-520MHz
- **Air Band Receive (AM):** 108-136MHz
- **FM Radio Receive:** 66-108MHz



Figure 6.1: The RT-420 displaying an Air Band frequency (128.200MHz), indicating its capability to receive aviation communications.

### 6.3 NOAA Weather Channel Reception

The RT-420 can receive NOAA weather channels to provide real-time weather warnings.



Support the reception  
of the NOAA weather  
channel, real-time  
weather warning and  
safe travel



Figure 6.2: The RT-420 displaying a NOAA weather channel, highlighting its utility for outdoor activities and safety.

1. Access the menu and navigate to the NOAA weather channel function.
2. Select the desired NOAA channel. The radio will monitor for weather alerts.

## 6.4 VOX (Voice Operated Transmit)

VOX allows hands-free operation by transmitting when it detects your voice.

1. Enter the menu and locate the VOX setting.
2. Enable VOX and adjust the sensitivity level (1-9) to suit your environment. A higher number means higher sensitivity.

## 6.5 Channel Programming and Storage

The RT-420 has 256 storage channels. You can program frequencies and settings into these channels.

- **Manual Programming:** In frequency mode, input the desired frequency, CTCSS/DCS codes, and other parameters. Then, save to a channel memory slot via the menu.
- **One-Key Copy Frequency:** This feature allows quick copying of a frequency from another radio. Refer to the specific menu option for this function.

## 6.6 CTCSS/DCS Tones

CTCSS (Continuous Tone-Coded Squelch System) and DCS (Digital Coded Squelch) tones are used to filter out unwanted signals and allow you to hear only transmissions from radios using the same tone.

1. Access the menu and find the CTCSS/DCS settings.
2. Select the desired tone for both transmit (TX) and receive (RX). The RT-420 supports 50 sets of CTCSS and 105 sets of DCS.

## 6.7 Scanning Methods

The radio offers three scanning methods: Time, Carrier, and Search.

1. **Time Scan:** Stops on a busy channel for a set time, then resumes scanning.
2. **Carrier Scan:** Stops on a busy channel and remains there until the signal disappears, then resumes scanning.
3. **Search Scan:** Scans for any activity and stops on the first active channel.

## 6.8 Scrambling and Voice Encryption

The RT-420 includes scrambling and voice encryption (frequency hopping) functions for private communications.

1. Navigate to the scrambling or encryption option in the menu.
2. Enable the function. Ensure all parties in communication have the same setting enabled.

## 6.9 DTMF Code Function

DTMF (Dual-Tone Multi-Frequency) codes can be used for various functions, such as remote control or selective calling.

1. Refer to the menu for DTMF settings and programming.
2. Input the desired DTMF sequence using the keypad.

## 6.10 Other Features

- **Automatic Backlight:** Configurable backlight settings for display visibility.
- **Power Saving Mode:** Extends battery life by reducing power consumption during standby.
- **Busy Channel Lockout:** Prevents transmission on an already occupied channel.
- **Low Battery Warning:** Alerts the user when the battery level is critically low.
- **Computer Programming:** Use dedicated software and a programming cable (sold separately) for advanced configuration and channel management.
- **Dual Frequency Point Waiting:** Allows monitoring of two frequencies simultaneously.

## 7. MAINTENANCE

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### 7.1 Cleaning

Regularly clean the radio to ensure optimal performance and longevity.

- Use a soft, damp cloth to wipe the radio's surface.
- Do not use harsh chemicals, solvents, or abrasive cleaners.
- Ensure the radio is powered off and dry before cleaning.

### 7.2 Battery Care

- Avoid overcharging or completely discharging the battery.
- Store the battery in a cool, dry place when not in use.
- If the radio will not be used for an extended period, remove the battery.

## 8. TROUBLESHOOTING

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If you encounter issues with your RT-420, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Radio does not power on.	Low or dead battery; improperly installed battery.	Charge the battery; ensure battery is correctly installed.
Cannot transmit or receive.	Incorrect frequency/channel; antenna not attached; low battery; CTCSS/DCS mismatch.	Verify frequency/channel settings; attach antenna; charge battery; check CTCSS/DCS settings.
Display shows unfamiliar language (e.g., Chinese).	Language setting changed inadvertently.	Access the menu, navigate to the language setting (often represented by a globe icon or text like 'LANG'), and select 'English'.
Poor audio quality or static.	Weak signal; antenna issue; interference.	Move to an area with better signal; check antenna connection; identify and move away from interference sources.

Problem	Possible Cause	Solution
Cannot program channels.	Incorrect mode (e.g., in channel mode instead of frequency mode); programming steps not followed correctly.	Ensure you are in frequency mode for manual programming. Follow the detailed steps in section 6.5. Consider using computer programming for easier setup.

If the problem persists after trying these solutions, please contact Radtel customer support.

## 9. SPECIFICATIONS

Feature	Specification
Brand	radtel
Model	RT-420
Frequency Range (TX/RX)	144-148 MHz, 420-450 MHz
Frequency Range (RX Only)	136-174 MHz, 200-260 MHz, 350-400 MHz, 400-520 MHz, 108-136 MHz (AM Air Band), 66-108 MHz (FM Radio)
Number of Channels	256 (128x2 groups)
Voltage	3.7 Volts (DC)
Talking Range Maximum	5 Kilometers (under optimal conditions)
Water Resistance Level	Not Water Resistant
Included Components	Antenna, 1 Lithium Ion battery
Special Feature	Emergency Alarm, NOAA Weather, VOX, Scrambling, DTMF
Steps	2.5k, 5k, 6.25k, 10k, 12.5k, 20k, 25k, 50k

## 10. WARRANTY AND SUPPORT

Radtel products are designed and manufactured to high-quality standards. For warranty information, please refer to the warranty card included with your product or contact your point of purchase. For technical support or service inquiries, please visit the official Radtel website or contact their customer service department.

### Online Resources:

- Radtel Official Website: [Visit the Radtel Store on Amazon](#)