

RTS®

UHF400-470MHz

RTS DV4478 Portable

ICASA
Approved

CE FC



INSTRUCTION MANUAL

Thank you for choosing the RTS DV- 4478! This high-quality two-way radio will deliver reliable, clear and efficient communication.

It is a multifunctional handheld two-way radio that combines Bluetooth programming technology.

We are confident that you will be satisfied with our product and the easy to operate functions. Whether it is used for business purposes such as communication at events, exhibitions, agriculture, hotels and hospitals or for personal use and leisure activities such as hunting, safari and 4x4 excursions, hiking and vacations, this radio boasts with convenient use for any purpose. For a comprehensive understanding of the DV-4478's various functions, uses and maintenance, please read the instruction manual before operating the radio.

NOTICE:

The radio must be operated within the permitted frequency range as per ICASA regulations.

WARNING & PRECAUTIONS

1. Refer servicing of the radio to qualified, RTS/ICASA registered technicians only.
2. Do not disassemble or modify the radio for any purpose.
3. Do not expose the radio to direct sunlight for extended periods of time or extremely hot conditions.
4. Do not place the radio on an unstable surface.
5. Keep the radio out of dust, moisture, and water.
6. Do not operate the radio or charge the battery pack near explosives.

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Packaging of The RTS DV-4478

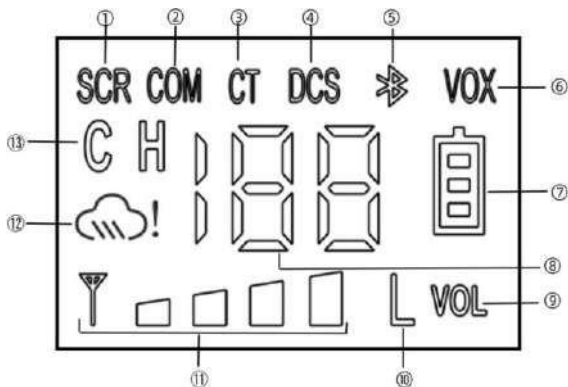
Name	Quantity
RTS DV-4478	1
Battery(DV4478/1 1000mAh, 3.7Wh)	1
Desktop Charger(DV4478/2,5V)	1
Belt Clip(BC-DV-4478/4)	1
Hand Strap	1
AC Adapter(DV-4478/3)	1
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Description



1	Earphone/ Programming Jack	2	Type-C Port
3	Antenna	4	Power/ Volume Knob
5	Screen	6	PTT Button
7	CH+/CH- Key; Side key 1/2	8	Battery Release Clip

LED Display



No.	Radio Status
Ⓒ	Scrambler
Ⓒ	Compander
Ⓒ	CTCSS
Ⓐ	CDCSS

Ⓒ	Bluetooth
⑥	VOX Indicator
Ⓒ	Battery Indicator
⑧	Channel Capacity
⑨	Volume
⑩	High/ Low Power
⑪	Receive Signal
⑫	NOAA Weather Indicator
⑬	Channel

Directions of Use & Assembly

Charging the Battery

Charging Methods:

① Pod Adaptor Charger

1. Insert the plug of the power adaptor into the power socket.
2. Insert the other end of the power adaptor into the jack on the back of the charger.
3. Insert the battery into the charger correctly.

The indicator light on the charger displays the charging status..

LED Indicator	Status
Red light flashing	Standby (No Load)
Red light on	Charging
Green light on	Charging Complete

② USB-C Charging.

The Type-C charging port on the side of the radio can be directly plugged into the 5V/1A charging cable for charging.







NOTICE:

Make sure the radio is turned off before charging and do not use the radio during charging.

Please use the charger supplied by RTS to charge the battery.

For the best battery performance, charge for at least 3 hours when charging for the first time.

Battery Indicator

Battery Icon	Battery Status
	High Power
	Middle Power
	Low Power
	Lack of Power

Assembling the Accessories

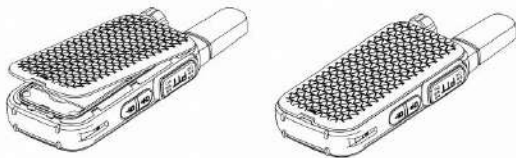
Inserting the Battery

Turning the back of the radio toward you, lift the back cover and align the positive and negative poles of the lithium-ion battery with the radio then press the battery into the radio.

Removing the Battery

Turning the back of the radio toward you, remove the battery clip by clicking the frame out of place. Open the

radio's back cover and lift the battery to remove it.



Reminder on battery back cover removal:

The RTS DV-4478 was designed with waterproof rubber seals to ensure the protection of the battery and meet the waterproof requirements of IP66.

Installing the Belt Clip

Align and slot the bottom of radio into the curved, wider part of the belt clip, until it clicks into place. Gently press the top, slimmer part of the clip in place.

Removing the Belt Clip

Gently pull on the top of the belt clip, so that it clicks out of place. Slide the radio up and completely remove the belt clip.



Please Note:

Before assembling or removing the battery, make sure that the radio is completely turned off by turning the Power/Volume Switch counterclockwise.

Assembling Audio/Programming Accessories

Accessories

1. Lift the audio accessory interface cover.
2. Align the audio jack(s) with the input and push it firmly until secure.



NOTICE:

Please check assembled accessories in order for the external headset or radio programming to work correctly.



Attaching The Hand Strap

For effortless portability, a hand strap can be attached to the back of the radio.

Basic Operation

Power Settings

Power On:

Turn the power/volume knob clockwise until you hear a “turn on the radio” instruction.

Power off:

Turn the power/ volume knob counterclockwise until you hear a click.

Volume Settings

After the radio’s power is switched on, turn the Power/ Volume knob clockwise to increase the volume and counterclockwise to decrease the volume.

Channel Settings

When the radio is switched on, press the **【CH+/CH-】** key on the side of the radio to select the channel and the voice prompt will announce the corresponding channel.

Transmitting and Receiving

Transmitting: After selecting the channel, push and hold

the **【PTT】** button. When the red light indicator is on, the radio is transmitting, speak into the microphone in a normal intonation.

Receiving: Transmission will cease after releasing the **【PTT】** button, there will be an end of transmitting tone. The radio is available for receiving. The green light indicator will light up when receiving.

NOTICE:

For the best quality transmission/ reception, keep the distance between the microphone and your mouth at 2.5 cm to 5 cm when transmitting.

Functions and Performance

Crack & Copy Frequency

Crack: The radio must be set to channel one. Press the **【PTT】** button to switch on the radio and utilize the ‘crack’ function. You can press the **【CH+/CH-】** key to select the channel you want to crack and store. After the transmitter broadcasts the signal, the radio emits a "beep" , and the green light will flash. This means the

‘crack’ function was successful. The radio will enter the next channel to crack it automatically. Pressing the **【PTT】** button again will exit the crack function. The green light will turn off and the channel will return to channel one automatically.

Wireless Copy Function:

Wireless copy transmitter: The radio must be set to channel two. Press the **【PTT】** button to switch on the radio and utilize the ‘copy transmit’ function. A red light turns on and the screen shows a full display. The transmit copy begins when releasing the **【PTT】** button. In order to exit the wireless copy transmitter function, the radio must be turned off manually.

Wireless copy receiver: The radio must be on channel three. Press the **【PTT】** button to switch on the radio and enter the copy receive mode. When the receive copy begins, the green light turns on and the screen shows a full display. When the copy is completed, the radio emits a “beep” and restarts automatically. The wireless copy was successful.

NOTICE:

The wireless copy function can only operate with two radios of the same model. Where the one is the wireless transmit state and the other one is in the wireless receive state.

Switching Between Languages

There are two ways to switch between English and Chinese.

The radio must be on channel fifteen. Hold the **【PTT】** button and the **【CH+】** key at the same time to turn on the radio.

You can select between English and Chinese voice prompts on the programming software.

Operation as follows: Parameter → Voice Prompt → select Chinese/ English/ Off

Monitor Function

Set any of the side keys to the monitor function by holding it in while adjusting it on the programming software.

Scan Function

Set any of the side keys to the scan function by holding it in while adjusting it on the programming software.

Bluetooth (Optional)

Set any of the side keys to the Bluetooth function by holding it in while adjusting it on the programming software. Program the radio's via Bluetooth.

The radio must be programmed within the frequency range as per ICASA regulations.

If you have turned off the Bluetooth on the radio, please contact RTS for instructions to turn it back on.

Please Note:

When the Bluetooth function is turned on, the Bluetooth icon will be displayed, and a red light will switch on. A green light will switch on after connecting through the cell phone APP. The green light flashes during communication and the light is off when communication ends.

High/Low Power Selection

Select high or low power on the programming software. The low power channel has the letter “L” on the screen. The high-power setting is not indicated on the screen.

“SQUELCH” LEVEL

The purpose of this function is to mute the loudspeaker when there is not a strong enough signal present ("SQUELCH" off) and to eliminate annoying noise levels. When the "SQUELCH" LEVEL is set correctly ("SQUELCH" on), you will only hear sound when the radio signal is strong, and unnecessary noise will therefore be eliminated. The levels can be set up via the cellphone app through software only.

TIME-OUT TIMER (TOT)

The purpose of this feature is to limit any user’s talk/transmission time, which can then also be harmful to the radio.

The built-in TIME-OUT TIMER (TOT) limits the broadcasting of the radio, and the user of the radio is alerted by a voice prompt that the radio is going into TOT mode. Set up via the cellphone app through software only.

SCAN

The scan function is used to scan between different channels. The radio cannot scan if there are not at least 2 channels configured for scanning. If the radio picks up a signal (voice) on the channel set to be scanned, stop the radio and listen to the signal (voice). Then, once the signal drops, the radio continues scanning. Set up via the cellphone app through software only.

VOX

By using VOX, you do not have to press the PTT key to talk. The radio broadcasts automatically every time

you speak into the microphone. The VOX function can only work with a HEADSET (headset) equipped with a

microphone. When using the VOX function, make sure that the volume of the function is set up correctly, in order for the device to recognize the sound levels. If the microphone is too sensitive, the device will start broadcasting when it detects the slightest background noise.

If the sensitivity is not set correctly, parts of your conversation will not be broadcasted. Set up via the cellphone app through software only.

ALARM FUNCTION

Set up via the cellphone app through software only.

BUSY CHANNEL LOCKOUT (BCL)

The function can be configured with software programming. The BCL function prevents the user from interfering with other users who use the same channel. While user no. 1 uses the radio, and user no. 2 also wants to talk on the same channel, the radio will emit an alarm

and prevent user 2 from transmitting.

User no. 2 will have to wait for user no.1 to finish talking first, before starting their own transmission. Set up via the cellphone app through software only.

CTCSS/DCS

Set up via the cellphone app through software only.

Technical Specification

General	
Frequency Range	UHF: 400~470Mhz; 446-446.2Mhz
Channel Capacity	16
Channel Spacing	W: 25kHz; N: 12.5kHz
Operational Voltage	DC 3.6V
Battery Capacity	1000mAh Li-ion, 3.7V

Operational Temperature	- 20 ~ + 60°C
Frequency Stability	± 2.5PPM
Output Power	High 2watts; Low 500mW
Antenna Impedance	50Ω
Standby Current	≤ 20mA
IP Rating	IP 66
Dimension (with Antenna)	135 × 55 × 20mm
Transmitter	
Carrier Frequency Tolerance	± 2.5PPM
Carrier Output Power	≤ 2W
Modulation Limiting	W: ≤ 5kHz; N: ≤ 2.5kHz
Modulation Characteristics	+ 1 ~ - 3dB(0.3 ~ 3kHz)
Audio Distortion	≤ 5%
Emission Current	≤ 1200mA
Adjacent Channel Power	≥ 70dB

Spurious RF omponents	$\leq - 36\text{dBm}$
Occupying Bandwidth	16kHz
Receiver	
Receive Sensitivity	$\leq 0.25\mu\text{V}$
Audio Power Output	$> 0.7\text{W}$
Audio Distortion	$\leq 5\%$
Audio Response	$+ 1 \sim - 3\text{dB}(0.3 \sim 3\text{kHz})$
Co-channel Rejection	$\geq - 8\text{dB}$
Adjacent Channel Selectivity	$\geq 70\text{dB}$
Intermodulation Immunity	$\geq 65\text{dB}$
Spurious Response Immunity	$\geq 70\text{dB}$
Blocking Characteristics	$\geq 84\text{dB}$

Troubleshooting Guide

Fault Description	Failure Cause Analysis	Troubleshooting
Boot Failure	The battery may not be installed properly.	Remove the battery and reinstall.
	The battery may be drained and in low power mode.	Charge or replace the battery.
	Poor contact due to dirty or damaged battery contacts.	Clean the battery contacts. If the problem still cannot be solved, please contact the designated RTS Dealer for maintenance.
Little, Intermittent, or No Sound when Receiving a Signal.	Battery voltage is too low.	Charge or replace the battery.
	Low volume.	Turn up the volume by turning the volume knob.

	Speakers are clogged or damaged.	Perform a simple exterior cleaning. If this does not resolve the problem, please contact the designated RTS Dealer for maintenance and inspection.
Unable to Talk to Members of the Group.	Different frequencies or signaling settings are used from other members of the group.	Set the same frequency and signaling as other members of the group.
	The distance between the user and the members of the group is too far.	Shorten the distance between the user and the group members.
The Presence of Noises or Talking on the Channel.	Interference from co-channel users.	Change to a new frequency or adjust the squelch level.

	Signaling is not set.	Set signaling for all users in the group to prevent co-channel interference.
The Noise Level is Loud.	The distance between the user and the members of the group is too far.	Shorten the distance between the user and the group members.
	The location is blocked by obstructions, barriers or in a dip.	Move to a location free from obstructions, barriers or dips, where it is open and flat, turn on the radio and try again.
	Affected by the external environment or electromagnetic interference.	Avoid devices that may cause interference.

Cleaning and Maintenance

Regularly use a clean and dry lint-free cloth or brush to wipe off any dust on the surface of the radio and the charging pod.

Before cleaning, switch off the radio and remove the battery. The radio can be cleaned with a neutral detergent and non-woven cloth. Please do not use harsh chemicals such as detergent, alcohol, or petroleum substances to avoid damage to its surface and casing. After cleaning, please ensure the product is completely dry before use.

1. Do not use hard objects to puncture or scratch this product;
2. Do not store this product in an environment containing substances that corrode electronic circuits;
3. When the accessory is not in use, please cover the accessory interface cover..

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