USER GUIDE

RTR502B

T&D

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Wireless Thermo Recorder
RTR501B / 502B / 503B / 507B
User's Manual

Thank you for purchasing our product.
To ensure safe and proper operation, please read this guide thoroughly before use.

Overview

The RTR501B, RTR502B, RTR503B and RTR507B are wireless data loggers designed to measure and record temperature and humidity. Recorded data is then automatically collected by the Base Unit via wireless communication and downloaded for archive and analysis.

RTR501B / 502B / 503B / 507B require a Base Unit to carry out wireless communication.
(Compatible Base Units: RTR500BC, RTR500BW, RTR500BM)
For the operation and configuration of the Base Unit, refer to the instruction manual attached to the Base Unit or the RTR500B Series Help available on T&D Website.

Wireless Thermo Recorder RTR501B / 502B / 503B / 507B is referred to as the "(data) logger" or "device" in this manual.

T&D Corporation

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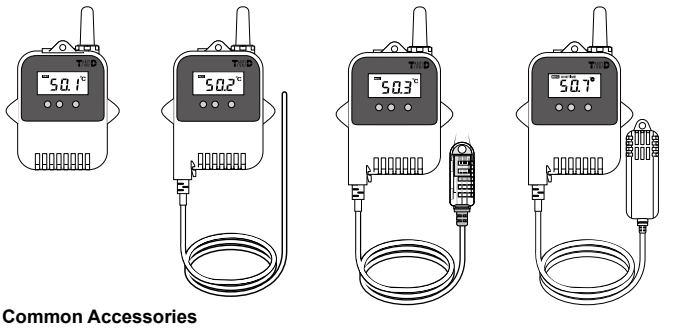
Package Contents

RTR501B
Internal Temp Sensor

RTR502B
Temp Sensor TR-5106 (Included)

RTR503B
Temp-Humidity Sensor TR-3310 (Included)

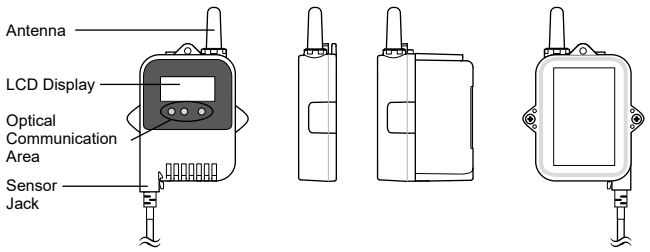
RTR507B
High Precision Temp-Humidity Sensor SHB -3101 (Included)



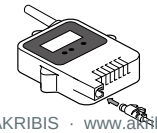
Common Accessories

- Lithium Battery LS14250 (or Large Capacity Battery Kit RTR-500B1 for L type model)
- Strap (Not included with L type model)
- Manual Set (Warranty Included)

Part Names



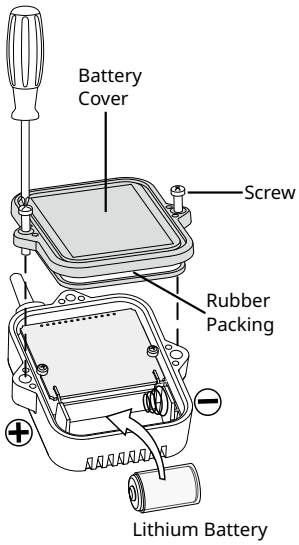
<Front> <Side> <Side> (L type) <Back>



Make sure that the sensor is completely inserted until you hear a "click" sound.

Battery Installation

Install the battery as shown below. Recording will start automatically with the default or previous settings.



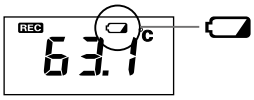
Default Settings

Recording Mode	Endless
Recording Interval	10 minutes
Recording Start Method	Immediate Start

- Make sure to use the proper type and size screwdriver. (Phillips head #1 screwdriver is recommended.)
- Insert the supplied battery with the tube attached. When using a CR2 lithium battery, the tube is not necessary.
- Before closing the cover, check the rubber packing for dust or scratches, as they can reduce the water resistance of the rubber.
- Be sure to completely close the cover. Make sure not to over tighten the screws.
- Appropriate Tightening Torque: 20N·cm to 30N·cm (2Kgf·cm to 3Kgf·cm)

Battery Replacement

When it is time for the battery to be replaced, a battery warning mark will appear. Please change the battery as soon as possible if this mark appears.



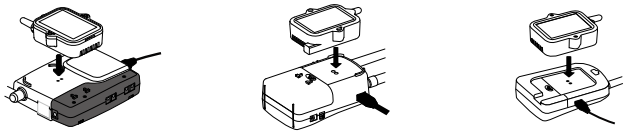
If you continue to use the logger without changing the battery, the current temperature and [bAtt] will be displayed alternately and wireless communication will stop. (Recording will continue.)

- If the battery is further left unchanged, the display will automatically shut off and all previously recorded data will be lost.
- Although the logger continues to work for a period after the battery has been removed, leaving the device without a battery until the LCD display goes blank will cause all recorded data to be lost.
- After the battery installation, the battery warning mark may not disappear from the logger's LCD for 10 to 60 minutes. This is due to the characteristic of the lithium battery and is not a malfunction of the logger or the battery.

Remote Unit Registration and Settings

Via Software and Optical Communication

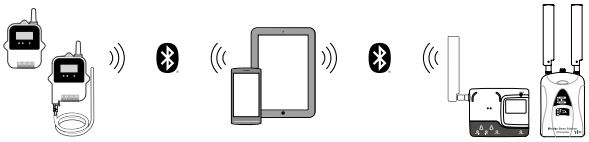
Connect the Base Unit to a PC with a USB cable, and place the data logger face down to align the communication areas as shown below.



RTR500BW RTR500BM RTR500BC

Via Mobile App and Bluetooth® Communication

When the Base Unit is a RTR500BW or RTR500BM, it is possible to make Base Unit and Remote Unit settings from nearby mobile devices using Bluetooth.



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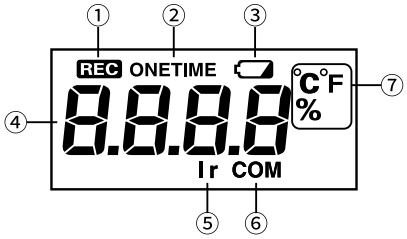
How to Read the LCD Display

When being used in very hot or cold environments the display may become difficult to read. This is not a malfunction.



①	[REC] Mark	Shows the recording status. ON: Recording in progress BLINKING: Waiting for programmed start OFF: Recording stopped
②	[ONETIME] Mark	Shows the recording mode. ON: One Time OFF: Endless
③	Battery Warning Mark	Indicates it is time for the battery to be replaced.
④	Measurement / Message Area	Measurements (alternating display for multiple channel devices) or operational messages are shown here.
		When Recording Mode has been set to "One Time" and the logger reaches its logging capacity, recording will automatically stop and in the LCD the measurement and the word [FULL] will alternately appear.
		The measurement and the word [SEnd] will alternately appear when data is being sent via wireless communication to the Base Unit. Recording will continue during wireless transmission.
⑤	[Ir] Mark	Indicates that the logger (Remote Unit) has not been registered to the Base Unit or the wireless communication is stopped (inactive radio).
⑥	[COM] Mark	Indicates that the device is in Bluetooth communication.
⑦	Unit of Measurement	Shows the unit of measurement.

Product Specifications (US Model)

Model	RTR501B / 501BL	RTR502B / 502BL	RTR503B / 503BL		RTR507B / 507BL	
Measurement Channels	Temperature 1ch	Temperature 1ch	Temperature 1ch, Humidity 1ch		Temperature 1ch, Humidity 1ch	
Sensor	Thermistor (Internal)	Thermistor	Thermistor	Polymer Resistance	Thermistor	Polymer Resistance
Measurement Range	-40 to 80℃	-60 to 155℃	0 to 55℃	10 to 95%RH	-25 to 70℃	0 to 99 %RH (*1)
Accuracy	Avg. ±0.5℃	Avg. ± 0.3℃ at -20 to 80℃ Avg. ±0.5℃ at -40 to -20℃, 80 to 110℃ Avg. ± 1.0℃ at -60 to -40℃, 110 to 155℃	Avg. ± 0.3℃	±5 %RH at 25℃, to 0%RH	±0.3℃ at 10 to 40℃ ±0.5℃ Others	±2.5 %RH at 15 to 35℃, 30 to 80%RH
Measurement Resolution	0.1℃	0.1℃	0.1℃	1 %RH	0.1℃	0.1 %RH
Responsiveness	Response Time (90%): Approx. 35 min. Approx. 47 min. (L Type)	Response Time (90%): Approx. 80 sec. (in air) Approx. 7 sec. (in agitated water)	Response Time (90%): Approx. 7 min.		Response Time (90%): Approx. 7 min.	
Logging Capacity	16,000 readings	16,000 readings	8,000 data sets (One data set consists of readings for multiple channels)		8,000 data sets (One data set consists of readings for multiple channels)	
Recording Interval	1, 2, 5, 10, 15, 20, 30 sec. 1, 2, 5, 10, 15, 20, 30, 60 min. (Total of 15 choices)					
Recording Mode (*2)	Endless: Overwrite the oldest data when capacity is full One Time: Stop recording when capacity is full					
Communication Interfaces	Short Range Wireless Communication Frequency Range: 902 to 928 MHz RF Power: 7 mW Transmission Range: Approx. 150 meters (500 ft) if direct and unobstructed Bluetooth 4.2 (Bluetooth Low Energy) (*3) Optical Communication					
Power	Lithium Battery LS14250 x 1 L Type: Large Capacity Battery Adaptor Kit (RTR-500B1) (*4) AC Adaptor used with External Power Adaptor Kit RTR-500A2 (*5)					
Battery Life (*6)	Approx. 10 months, L Type: About 4 years					
Dimensions	H 62 mm x W 47mm x D 19 mm, L Type: H 62 mm x W 47 mm x D 46.5 mm (excluding protrusions and sensor) Antenna length: 24 mm					
Weight	Approx. 50 g, L Type: Approx. 65 g					
Operating Environment	-40 to 80℃ -30 to 80℃ during wireless communication					
Waterproof Capacity	IP67 (immersion proof)	IP64 (splash proof / rated for use in daily life) (*7)				
Compatible Base Units	RTR500BW, RTR500BM, RTR500BC Other devices (*8)					

*1: When continually used in environments with temperatures above 60℃, accuracy of humidity measurements will decrease over time. Also, humidity cannot be measured at temperatures below -20℃.
*2: Only "Endless" is available when using the RTR500BW, RTR500BM, RTR-500NW/AW or RTR-500MBS-A as a Base Unit.
*3: Bluetooth is available when using the RTR500BW or RTR500BM as a Base Unit and making device settings in the mobile app (T&D 500B Utility).
*4: When using RTR-500B1 it is necessary to purchase Lithium Battery (LS26500). For details, contact your local authorized distributor.
*5: RTR-500A2 should not be used with the RTR501B, as it will cause the RTR501B to display a higher than actual temperature reading of up to 3 °C.
*6: The listed battery life is based on the following usage conditions: Recording at 10 second (or longer) intervals, Current Readings Transmission every 10 minutes, and Recorded Data Transmission once a day. Battery life also varies depending on ambient temperature, radio environment, frequency of communication, etc.
*7: This is the waterproof capacity of the data logger with the sensor connected. Note that the temperature-humidity sensor is not water resistant.
*8: Also compatible with the following discontinued products: RTR-500DC, RTR-500, RTR-500NW/AW, RTR-500MBS-A
Please refer to "Compatibility Info for RTR500B and RTR-500 Series" (https://tandd.com/information/compatible-rtr500b-loggers.html)

The specifications listed above are subject to change without notice.