

Wireless Data Logger

RTR-500 Series Data Loggers Features and Specs

Measurement Items
Temp / Humidity / Illuminance / UV / CO2 /
Voltage / 4-20mA / Contact / Pulse Count

Data Collection
Wireless Communication with
Data Collectors

The RTR-500 Series includes data loggers designed to measure and record a wide variety of items as well as a range of base stations to enable wireless collection of recorded data.

Model	Measurement Items	Measurement Range	Notes
RTR-501 /501L	Temperature 1ch (internal sensor)	-40 to 80°C EN 12830 Compliant	Gradual Response Time Optimum Waterproof and Dustproof Capabilities
RTR-502 / 502L	Temperature 1ch	-60 to 155°C EN 12830 Compliant	External Sensor for Quicker Response Time / Splashproof Wide Selection of Optional Sensors
RTR-503 / 503L	Temperature / Humidity 1ch Each	0 to 55°C / 10 to 95%RH	Measure Temperature and Humidity
RTR-507 / 507L	Temperature / Humidity 1ch Each	30 to 80°C / 0 to 99%RH	Measure Temperature and Humidity (High Precision)
RTR-505-TC / 505-TCL	Temperature 1ch (Thermocouple)	-199 to 1700°C	For use with Thermocouple Sensor Types: K, J, T, S
RTR-505-Pt / 505-PtL	Temperature 1ch (Pt100, Pt1000)	-199 to 600°C	Supports 3-wire and 4-wire Sensors High Precision Measurement in Wide Tem- perature Range
RTR-505-V / 505-VL	Voltage 1ch	DC 0 to 22V Min Resolution: 0.1mA	Preheat Function / Scale Conversion
RTR-505-mA / 505-mAL	4-20mA 1ch	0 to 20 mA	Operational up to 40 mA / Scale Conversion
RTR-505-P / 505-PL	Pulse Count 1ch	Pulse Count: 0 to 61439 Input Signal: Contact Input / Voltage Input	

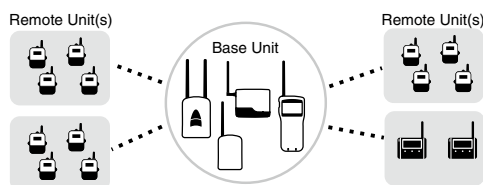
L-type models (model names which include "L") are designed with a large capacity battery pack. Battery life of the L type is four times longer than that of the normal type.

The RTR-501 and RTR-502 data loggers comply with EN12830, the European Standard regarding Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream.

Model	Measurement Items	Measurement Range for Normal Type	Measurement Range for H Type	Notes
RTR-574 / 574-H	Illuminance UV Intensity Temperature Humidity 1ch each	0 to 130,000 lx 0 to 30 mW/cm ² 0 to 55°C 10 to 95%RH	0 to 130,000 lx 0 to 30 mW/cm ² -30 to 80°C / 0 to 99%RH	While recording possible to view cumulative illuminance and cumulative UV Possible to detect changes in il- luminance even under moonlight
RTR-576 / 576-H	CO2 Concentration Temperature Humidity 1ch each	0 to 9,999 ppm 0 to 55°C 10 to 95%RH	0 to 9,999 ppm -30 to 80°C 0 to 99%RH	For measuring CO2 concentra- tion in living environments. Auto Calibration Function

Collect Data via Wireless Communication with a Base Unit

Data loggers in our RTR-500 Series only function as Remote Units and need to be used with one of our collection devices (Base Unit).



The collected data can then be transmitted to a PC by a variety of methods such as USB, E-mail, or FTP. Moreover, various functions, such as the monitoring of current readings and warning notification, make it a powerful data management system.

* Select a Base Unit according to the type and scale of the measuring environment.

Measure and Record Temperature and Humidity in a Wider Range with Greater Accuracy (RTR-574/576)

The supplied sensor for the H model provides higher accuracy to $\pm 2.5\%RH$.

Measurement Range for temperature is -30 to 80°C and 0 to 99 %RH for humidity.

RTR-501 / 502 / 503 / 507 Specifications

	RTR-501 / 501L	RTR-502 / 502L	RTR-503 / 503L		RTR-507 / 507L	
Measurement Channels	Temperature 1ch (Internal)	Temperature 1ch (External)	Temperature 1ch, Humidity 1ch (External)		Temperature 1ch, Humidity 1ch (External)	
Sensor	Thermistor	Thermistor	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Units	°C, °F	°C, °F	°C, °F	%RH	°C, °F	%RH
Measurement Range	-40 to 80°C	-60 to 155°C	0 to 55 °C	10 to 95 %RH	-30 to 80 °C	0 to 99 %RH
Accuracy	Avg.±0.5 °C	Avg.±0.3°C at -20 to 80 °C Avg.±0.5°C at -40 to -20°C 80 to 110°C Avg.±1.0 °C at -60 to -40 °C 110 to 155 °C	Avg.±0.3 °C	±5 %RH at 25 °C, 50%RH	±0.3°C at 0 to 50°C ±0.5°C all other temperatures	±2.5 %RH at 25 °C, 10 to 85 %RH ±4.0 %RH at 25 °C, 0 to 10 %, 85 to 99 %RH For temperatures other than 25°C and between 0°C and 80°C, add ±0.1 %RH per degree difference from 25. Humidity Hysteresis: ±1.5%RH or lower (*1)
Measurement Resolution	0.1°C	0.1°C	0.1°C		0.1 °C	0.1 %RH
Responsiveness	Thermal Time Constant: Approx. 15 min. Approx. 25 min. (L Type) Response Time (90%): Approx. 35 min. Approx. 47 min. (L Type)	Thermal Time Constant: Approx. 30 sec. (in air) Approx. 4 sec. (in agitated water) 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.	Response Time (90%): Approx. 20 sec.
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	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.					
Recording Mode (*2)	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)					
LCD Display Items	Measurements (alternating display for multiple channel devices), Battery Life Warning, etc.					
Communication Interfaces	Wireless Communication (Short Range Radio Communication) US: FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz, RF Power: 7mW) EU: ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz, RF Power: 5mW) Optical Communication (proprietary protocol)					
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed					
Power	Lithium Battery: LS14250 x 1 L Type: Large Capacity Battery Adaptor Kit (RTR-500B1) (*3) External Power Adaptor Kit (RTR-500A2: sold separately) (*4)					
Battery Life (*5)	Approx. 10 months L Type: About 4 years					
Dimensions	H 62 mm x W 47 mm x D 19 mm L type: H 62 mm x W 47 mm x D 46.5 mm Antenna length: 24 mm					
Weight	Approx. 50 g L Type: approx. 65 g					
Operating Environment	-40 to 80°C -30 to 80°C during wireless communication				-40 to 80°C -10 to 80°C during wireless communication (*6)	
Waterproof Capacity	IP67: Immersion proof	IP64: Splash proof (rated for use in daily life) (*7)	IP64: Splash proof (rated for use in daily life) (*7) Note: Sensor is not water resistant.		IP64: Splash proof (rated for use in daily life) (*7) Note: Sensor is not water resistant.	
Waterproof Capacity	-	Temperature Sensor TR-5106	Temperature-Humidity Sensor TR-3310		Temperature-Humidity Sensor HHB-3101	
Compatible Base Units	RTR-500, RTR-500NW/500AW, RTR-500DC, RTR-500MBS-A					

*1: When used in environments where temperature and humidity are over the values of 50°C 75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to normal measurement capability.

*2: Only "Endless" is available when using RTR-500W for Windows or RTR-500MBS for Windows.

*3: When using RTR-500B1 it is necessary to purchase Lithium Battery (LS26500). For details, contact your local authorized distributor.

*4: RTR-500A2 should not be used with the RTR-501, as it will cause the RTR-501 to display a higher than actual temperature reading of up to 3°C.

*5: Battery life varies depending upon multiple factors including ambient temperature, recording interval, frequency of communication, and battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

*6: When wireless communication is performed in an environment below -10°C, measurement may fail or may not be accurate.

*7: This is the waterproof capacity of the data logger with the sensor connected.

The specifications listed above are subject to change without notice.

RTR-505 Specifications

	RTR-505-TC/ 505-TCL	RTR-505-Pt/ 505-PtL	RTR-505-V / 505-VL	RTR-505-mA/ 505-mAL	RTR-505-P/ 505-PL
Measurement Channels	Temperature 1ch	Temperature 1ch	Voltage 1ch	4-20mA 1ch	Pulse Count 1ch
Sensor	Thermocouple: Type K, J, T, S	Pt100, Pt1000 3-wire, 4-wire (*1)	-	-	-
Measurement Units	°C, °F	°C, °F	V, mV	mA	P
Measurement Range	-199 to 1700°C	-199 to 600°C	0 to 22 V	0 to 20 mA Operational up to 40 mA	
Accuracy (*2)	Thermocouple Measurement: Type K, J, T ±(0.3 °C + 0.3% rdg) Type S ±(1°C + 0.3 % rdg) Cold Junction Compensation: ±0.3 °C at 10 to 40°C ±0.5 °C at -40 to 10°C / 40 to 80°C	±(0.3 °C + 0.3 % rdg) at 10 to 40 °C ±(0.5 °C + 0.3 % rdg) at -40 to 10 °C 40 to 80 °C	±(0.5 mV + 0.3 % rdg) at 10 to 40 °C ±(1 mV + 0.5 % rdg) at -40 to 10 °C 40 to 80 °C	±(0.05 mA + 0.3 % rdg) at 10 to 40 °C ±(0.1mA + 0.3 % rdg) at -40 to 10 °C 40 to 80 °C	Input Signal: Non-voltage Contact Input Voltage Input (0 to 27 V) Detection Voltage: Lo 0.5 V or less Hi 2.5 V or more Input Impedance: Approx.100 KΩpull up Chattering Filter: ON 15 Hz or less OFF 3.5 kHz or less
Measurement Resolution	Type K, J, T : 0.1°C Type S : approx. 0.2°C	0.1°C	Up to 400 mV : 0.1 mV Up to 800 mV : 0.2 mV Up to 999 mV : 0.4 mV Up to 3.2 V : 1 mV Up to 6.5 V : 2 mV Up to 9.999 V : 4 mV Up to 22 V : 10 mV	0.01 mA	Maximum Count: 61,439/Recording Interval
Logging Capacity	16,000 readings				
Recording Interval	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.				
Recording Mode (*3)	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)				
LCD Display Items	Measurements, Battery Life Warning, etc.				
Communication Interfaces	Wireless Communication (Short Range Radio Communication) US: FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz, RF Power: 7mW) EU; ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz, RF Power: 5mW) Optical Communication (proprietary protocol)				
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed				
Power	Lithium Battery: LS14250 x 1 L Type: Large Capacity Battery Adaptor Kit (RTR-500B1) (*4) External Power Adaptor Kit (RTR-500A2: sold separately)				
Battery Life (*5)	Approx. 10 months L Type: About 4 years				
Dimensions	H 62 mm x W 47 mm x D 19 mm L type: H 62 mm x W 47 mm x D 46.5 mm Antenna length: 24 mm				
Weight	Approx. 50 g L Type: approx. 65 g				
Operating Environment	-40 to 80°C -30 to 80°C during wireless communication				
Waterproof Capacity (*6)	IP64: Splash proof (rated for use in daily life) Note: Input Module is not water resistant.				
Accessories	Input Module TCM-3010	Input Module PTM-3010	Input Module VIM-3010	Input Module AIM-3010	Input Cable PIC-3150
Compatible Base Units	RTR-500, RTR-500NW/500AW, RTR-500MBS-A, RTR-500DC				

*1: In the case of a 4-wire sensor, one wire will be left unused.

*2: "rdg" stands for reading.

*3: Only "Endless" is available when using RTR-500W for Windows or RTR-500MBS for Windows.

*4: When using RTR-500B1 it is necessary to purchase Lithium Battery (LS26500). For details, contact your local authorized distributor.

*5: Battery life varies depending upon multiple factors including ambient temperature, recording interval, frequency of communication, and battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

*6: This is the waterproof capacity of the data logger with the Input Module connected.

The specifications listed above are subject to change without notice.

RTR-574 / 574-H Specifications

	RTR-574		RTR-574-H	
Temperature-Humidity Sensor (External)				
Sensor	THA-3151		HHA-3151 High-Precision Type	
	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Channels	Temperature 1ch	Humidity 1ch	Temperature 1ch	Humidity 1ch
Measurement Units	°C, °F	%RH	°C, °F	%RH
Measurement Range	0 to 55 °C	10 to 95 %RH	-30 to 80 °C	0 to 99 %RH
Accuracy	±0.5°C	±5 %RH at 25°C, 50%RH	±0.3°C at 0 to 50°C ±0.5°C Others	±2.5 %RH at 25°C, 10 to 85%RH ±4.0 %RH at 25°C, 0 to 10%RH, 85 to 99 %RH For temperatures other than 25°C and between 0 °C and 80°C, add ±0.1%RH per degree dif- ference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*2)
Measurement Resolution	0.1 °C	1 %RH	0.1 °C	0.1 %RH
Responsiveness	Response Time (90%): Approx. 7 min.		Response Time (90%): Approx. 7 min.	Response Time (90%): Approx. 20 sec.
Illuminance-UV Sensor (External)				
Sensor	ISA-3151			
Measurement Channels	Illuminance UV Intensity	1ch 1ch		
Measurement Units	Illuminance UV Intensity	lx, klx mW/cm ²		
Measurement Range	Illuminance UV Intensity	0 lx to 130 klx 0 to 30 mW/cm ²		
Units of Cumulative Measurement	Cumulative Illuminance Cumulative amount of UV Light	lxh, klxh, Mlxh mW/cm ² h, W/cm ² h		
Display Range of Cumulative Measurement	Illuminance UV Intensity	0 lxh to 90 Mlxh 0 mW to 62 W/cm ² h		
Accuracy	Illuminance 10 lx to 100 klx UV Intensity 0.1 to 30 mW/cm ²	±5 % at 25°C, 50 %RH ±5% at 25°C, 50 %RH (*2)		
Relative Spectral Response	Illuminance UV Intensity	Approximated to the CIE standard response function V (λ) 260 to 400 nm (UVA / UVB)		
Measurement Resolution	Illuminance UV Intensity	Minimum of 0.01 lx Minimum of 0.001 mW/cm ²		
Responsiveness	Response Time (90%): 3 sec. (at recording interval of 1 sec.) 6 sec. (at other intervals)			
Logging Capacity	8,000 data sets (One data set consists of readings for all channels in that type of unit.)			
Recording Interval	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.			
Recording Mode (*3)	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)			
LCD Display Items	Measurements, Battery Life Warning, etc. - Measurements: Illuminance / UV Intensity / Temperature / Humidity / Cumulative Illuminance / Cumulative amount of UV Light - Display Pattern: Alternating or Fixed display - Display Digits: Up to 4 digits			
Communication Interfaces	Wireless Communication (Short Range Radio Communication) US: FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz, RF Power: 7mW) EU: ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz, RF Power: 5mW) USB Communication Serial Communication (RS-232C) (*4)			
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed			
Power	AA Alkaline Battery (LR6) x 1			
Battery Life (*5)	Approx. 4 months			
Dimensions	H 55 mm x W 78 mm x D 18 mm Antenna Length: 60 mm			
Weight	Approx. 45 g			
Operating Environment	Temperature: -10 to 60°C Humidity: 90 %RH or less (no condensation)			
Accessories	AA Alkaline Battery (LR6), USB Mini-B Cable (US-15C), Illuminance-UV Sensor (ISA-3151), Temperature-Humidity Sensor (THA-3151 or HHA-3151), Manual (Warranty Included)			
Compatible Base Units	RTR-500, RTR-500NW/500AW, RTR-500DC, RTR-500MBS-A			

*1: Compared to the value measured by the T&D standard sensor for calibration under our calibration light source.

*2: When used in environments where temperature and humidity are over the values of 50°C 75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to normal measurement capability.

*3: Only "Endless" is available when using RTR-500W for Windows or RTR-500MBS for Windows.

*4: For communication with the Data Collector RTR-500DC (Note: Optional serial communication cable TR-6C10 is required.)

*5: Battery life varies depending upon multiple factors including ambient temperature, recording interval, frequency of communication, and battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

The specifications listed above are subject to change without notice.

RTR-576 / 576-H Specifications

	RTR-576		RTR-576-H	
	Temperature-Humidity Sensor (External)			
	THA-3001		HHA-3151 High-Precision Type	
Sensor	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Channels	Temperature 1ch	Humidity 1ch	Temperature 1ch	Humidity 1ch
Measurement Units	°C, °F	%RH	°C, °F	%RH
Measurement Range (*1)	0 to 55 °C	10 to 95 %RH	-30 to 80 °C	0 to 99 %RH
Accuracy	±0.5 °C	±5 %RH at 25°C, 50%RH	±0.3°C at 0 to 50°C ±0.5°C Others	±2.5 %RH at 25°C 10 to 85 %RH ±4.0 %RH at 25°C 0 to 10 %RH or 85 to 99 %RH For temperatures other than 25°C and between 0°C and 80°C, add ±0.1 %RH per degree difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*2)
Measurement Resolution	0.1 °C	1 %RH	0.1 °C	0.1 %RH
Responsiveness	Response Time (90%): Approx. 7 min.		Response Time (90%): Approx. 7 min.	Response Time (90%): Approx. 20 min
	CO2 Sensor (Internal)			
Sensor	NDIR			
Measurement Channels	CO2 Concentration 1ch			
Measurement Units	ppm			
Measurement Range	0 to 9,999 ppm			
Accuracy	±(50 ppm + 5 % of reading) at 5,000 ppm or less (*1)			
Measurement Resolution	Minimum of 1 ppm			
Responsiveness	Response Time (90%): Approx. 1 min.			
Logging Capacity	8,000 data sets (One data set consists of readings for all channels in that type of unit.)			
Recording Interval	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.			
Recording Mode (*4)	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)			
LCD Display Items	Measurements, Battery Level, etc. Measurements: CO2 concentration, Temperature or Humidity (fixed or alternating display)			
Communication Interfaces	Wireless Communication (Short Range Radio Communication) US: FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz, RF Power: 7mW) EU: ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz, RF Power: 5mW) USB Communication Serial Communication (RS-232C) (*5)			
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed			
External Alarm Terminal (*6)	Output Terminal: Open Drain Output (Voltage when OFF: DC less than 30V / Current when ON: less than 0.1A / Resistance when ON: about 15Ω)			
Power	AC Adaptor (AD-06A1 or AD-06C1), AA Alkaline Battery (LR6) x 4			
Battery Life (*7)	Approx. 2 days (batteries only without AC adaptor)			
Dimensions	H 96 mm x W 66 mm x D 46 mm Antenna Length: 60 mm			
Weight	Approx. 125 g			
Operating Environment	Temperature: 0 to 45°C Humidity: 90 %RH or less (no condensation)			
Accessories	AA Alkaline Battery (LR6) x 4, AC Adaptor (AD-06A1 or AD-06C1), USB Mini-B Cable (US-15C), Temperature-Humidity Sensor (THA-3001 or HHA-3151), Manual (Warranty Included)			
Compatible Base Units	RTR-500, RTR-500NW/500AW, RTR-500MBS-A, RTR-500DC			

*1: Make sure to use the data logger within the operating environment as listed in the specifications.

*2: When used in environments where temperature and humidity are over the values of 50 °C 75%, 60 °C 50%, 70 °C 35%, and 80 °C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to normal measurement capability.

*3: Stated value is the measurement accuracy of the CO2 sensor when Auto Calibration is operating properly. A change in atmospheric pressure directly influences the reading of CO2, which can cause measurement errors; a decrease in pressure by 10hPa results in a relative decrease in CO2 by 1.6%. In such a case, we recommend carrying out the "Atmospheric Pressure Correction" function found in the software supplied with the Base Unit.

*4: Only "Endless" is available when using RTR-500W for Windows or RTR-500MBS for Windows.

*5: For communication with the Data Collector RTR-500DC (Note: Optional serial communication cable TR-6C10 is required.)

*6: In order to use the external alarm terminal, please prepare a compatible connector: JST PAP-04V-S.

*7: Battery life varies depending upon multiple factors including ambient temperature, recording interval, frequency of communication, and battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

The specifications listed above are subject to change without notice.