Wireless Data Logging System

RTR-500 Series
Remote Unit (Data Logger)

Measure / Record
- Temperature • Pt100 / Pt1000 • Thermocouple
- Humidity • Voltage • 4-20mA • Pulse
- Illuminance • UV • CO2

Base Unit

Data Collection
- Recorded Data Collection via Wireless Communication
- Warning Monitoring Function
- Monitoring Function

RTR-500DC
Portable Data Collector

RTR-500
Wireless Base Station

Viewing Graph on Site

USB Connection

Reading Data from a Graph and Spreadsheet

Monitoring for Warning and Current Readings on PC

Export
Versatile Next Generation Design for Today

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. 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.

- Measurement Upper/Lower Limit Exceeded
- Low Battery on the Remote Unit
- Sensor Connection Error on the Remote Unit
### Temperature

**RTR-501 / RTR-501L**  
Measurement Range: -40 to 80°C  
Water Resistance: IP67 (Immersion Proof)  
Temperature Sensor: Thermistor

**RTR-502 / RTR-502L**  
Measurement Range: -60 to 155°C  
Water Resistance: IP64 (splash proof / rated for use in daily life)  
Attached Sensor: Temperature Sensor (TR-5106)

### Temperature / Humidity

**RTR-503 / RTR-503L**  
Measurement Range: Temperature: 0 to 55°C  
Humidity: 10 to 95 %RH  
Attached Sensor: Temperature / Humidity Sensor (TR-3310)

### Voltage

**RTR-505-V / RTR-505-VL**  
Measurement Range: 0 to 22 V  
Attached Module: Input Module (VIM-3010)  
Measurement Resolution: Minimum of 0.1 mV  
Preheat Function

**RTR-505-mA / RTR-505-mAL**  
Measurement Range: 0 to 20 mA (Operational up to 40 mA)  
Attached Module: Input Module (AIM-3010)

### Pulse Count

**RTR-505-P / RTR-505-PL**  
Measurement Range: Pulse count 0 to 61,439  
Signal Input: Contact Input / Voltage Input  
Input Frequency: 0 to 3.5 kHz  
Attached Cable: Input Cable (PIC-3150)  
For use with Voltmeters, Flow Meters and Passage Counters

### Variety of Wireless Data Logger Selections to Meet Your Needs

- Products with this mark 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. (Excluding L Type)

- 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.
Meet Your Needs

**Temperature / Humidity**

- **RTR-507 / RTR-507L**
  - Measurement Range:
    - Temperature: –30 to 80°C
    - Humidity: 0 to 99 %RH
  - Attached Sensor: High Precision Temperature/Humidity Sensor (HHB-3101)

- **RTR-574 / RTR-574-H**
  - H-type comes with our high precision temp/humidity sensor.
  - Measurement Range:
    - Illuminance: 0 to 130,000 lx
    - UV Intensity: 0 to 30 mW/cm²
    - Temperature: 0 to 55°C (H: –30 to 80°C)
    - Humidity: 10 to 95 %RH (H: 0 to 99 %RH)
  - Display Range of Cumulative Measurement
    - Illuminance: 0 lx·h to 90 Mlx·h
    - UV Intensity: 0 mW·h to 62 W·cm²·h
  - Attached Sensor:
    - Illuminance UV Sensor ISA-3151
    - Temperature / Humidity Sensor THA-3151 (H: High Precision Temp/Humidity Sensor HHA-3151)

**Temperature - Pt100 / Pt1000**

- **RTR-505-Pt / RTR-505-PtL**
  - Measurement Range: –199 to 600°C
  - Attached Module:
    - Input Module (PTM-3010)
  - Sensor sold separately (For details about Pt sensors see the T&D Web Site)

**Temperature - Thermocouple**

- **RTR-505-TC / RTR-505-TCL**
  - Measurement Range:
    - K: –199 to 1370°C
    - J: –199 to 1200°C
    - T: –199 to 400°C
    - S: –50 to 1760°C
  - Attached Module: Input Module (TCM-3010)
  - (Please purchase sensor separately)

**Illuminance / UV Intensity / Temperature / Humidity**

- **RTR-574 / RTR-574-H**
  - H-type comes with our high precision temp/humidity sensor.
  - Measurement Range:
    - Illuminance: 0 to 130,000 lx
    - Temperature: 0 to 55°C (H: –30 to 80°C)
    - Humidity: 10 to 95 %RH (H: 0 to 99 %RH)
  - Display Range of Cumulative Measurement
    - Illuminance: 0 lx·h to 90 Mlx·h
    - UV Intensity: 0 mW·h to 62 W·cm²·h
  - Attached Sensor:
    - Illuminance UV Sensor ISA-3151
    - Temperature / Humidity Sensor THA-3151 (H: High Precision Temp/Humidity Sensor HHA-3151)

**CO2 / Temperature / Humidity**

- **RTR-576 / RTR-576-H**
  - H-type comes with our high precision temp/humidity sensor.
  - Measurement Range:
    - CO2 Concentration: 0 to 9,999 ppm
    - Temperature: 0 to 55°C (H: –30 to 80°C)
    - Humidity: 10 to 95 %RH (H: 0 to 99 %RH)
  - Attached Sensor:
    - CO2 Sensor: NDH type
    - Temperature / Humidity Sensor THA-3001 (H: High Precision Temperature/Humidity Sensor HHA-3151)
Mobile Base Station RTR-500MBS-A

RTR-500MBS-A
- Increased communication speeds and lower monthly costs
- All data loggers in the RTR-500 Series are supported

"Mobile" makes it possible to...
- Gather recorded data and monitor for warnings even in environments where network or PCs are not available.
- Check data from your smart phone or mobile device
- Get GPS location info

Number of Possible Registrations (One Base)
- Remote Units: Up to 20
- (For RTR-574 and RTR-576, registration of one unit will be counted as two units.)
- Repeaters: Up to 5 units per Group
- Number of Groups: Up to 4 Groups

Application Examples
- Monitoring and Recording Temperature, Humidity and Location of Goods while in Transport
- Monitoring and Recording Temperature and Humidity in Distant Places where LAN Connection is Impossible
- Monitoring and Recording Temperature and Humidity in Buildings or Environments where LAN Connections are not Possible or not Desirable.

Coverage to Areas where LAN Connection is Difficult

On-Site Warnings & Alert Notifications to Mobile Devices

Red Lamp Buzzer, etc...

Mobile Communication

SMS / E-mail
From the RTR-500DC it is possible via wireless communication to make recording interval settings, and collect and save data.

Includes a monitoring function whereby at a set interval the Collector communicates with data loggers and gathers current readings.

An alarm buzzer sounds when a warning occurs.

On the spot graphical viewing of recorded data.

**Application Examples**

- For Collecting Recorded Data and Monitoring Current Readings of Products while Moving on Production Lines
- For Collecting Recorded Data and Monitoring Current Readings of Packages in Cargo Compartments from a Truck’s Cabin
- For Collecting Recorded Data at Construction Sites and other Places where PCs are not Available

**Number of Possible Registrations (One Base)**

- Remote Units: Up to 32 units per Group
  (For RTR-505, RTR-574, and RTR-576, registration of one unit will be counted as two units.)
- Repeaters: Up to 15 units per Group
- Number of Groups: Up to 7 Groups

**On-Site Monitoring**

**Anywhere Data Access**
Remote Management via Network

Network Base Station - RTR-500NW (for wired LAN) / RTR-500AW (for wireless LAN - 802.11 b/g)

- The system is designed to allow for the automatic sending of recorded data to an e-mail or FTP server without the need for a PC.
- Current readings can be monitored via in-company LAN.
- Registering with our “T&D WebStorage Service” makes it possible to view current readings on a PC or mobile device.
- The warning monitoring function with notification via e-mail or external contact ensures that important warnings are never missed by those nearby or far away.
- Being able to make and change settings via a network provides increased flexibility.

Number of Possible Registrations (One Base)
Remote Units: Up to 100
(For RTR-574 and RTR-576, registration of one unit will be counted as two units.)
Repeaters: Up to 10 units per Group
Number of Groups: Up to 10 Groups

Application Examples
- For Monitoring Temperature in Refrigerators and Freezers
- For Monitoring and Recording or Temperature, Humidity and Instrumentation Signals in Factories, Warehouses and other Building Facilities
- For Managing Temperature and Humidity in Server Rooms
Wireless Base Station - RTR-500

- This system allows for the automatic collection of recorded data by simply connecting to a PC via USB.
- It is possible to check current readings and warning occurrences on the PC monitor or by e-mail.
- By using the supplied software, recorded data can easily be sent to an e-mail or FTP server.
- All Base Units can be set up to act as Repeaters.

Number of Possible Registrations (One Base)

Remote Units: Up to 32 units per Group
(For RTR-574 and RTR-576, registration of one unit will be counted as two units.)
Repeaters: Up to 30 units per Group
Number of Groups: Up to 20 Groups

Application Examples

- For Temperature and Humidity Management in Blood and Pharmaceutical Storage
- For Temperature Management of Refrigerated and Frozen Goods at Supermarkets and Convenience Stores
- For Preservation and Prevention of Deterioration of Exhibits in Museums and other Exhibit Forums
Never Miss Warning Notification System

Variety of Warning Notifications provides Reliable Oversight

<table>
<thead>
<tr>
<th>Types of Warning Reports</th>
<th>Network</th>
<th>E-mail</th>
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<tbody>
<tr>
<td>Communication Errors</td>
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<tr>
<td>Warnings from Remote Units</td>
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<td></td>
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<tr>
<td>Warnings from Base Units</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Warnings from Remote Units</th>
<th>RTR-500MBS-A</th>
<th>RTR-500NW/RTR-500ANV</th>
<th>RTR-500D</th>
<th>RTR-500DC</th>
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</thead>
<tbody>
<tr>
<td>Upper Limit / Lower Limit Exceeded</td>
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<tr>
<td>Settings can be made in each Remote Unit for “Upper and/or Lower Limits” and well as for “Judgement Time”. This ensures that every instantaneous exceeding is not counted as a warning.</td>
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<tr>
<td>Sensor Error</td>
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<tr>
<td>This type of notification helps prevent loss of measurements due to sensor disconnection, malfunction or wire breakage.</td>
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<tr>
<td>Remote Unit Battery Level</td>
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<tr>
<td>This notifies the user that battery level is low before wireless communication can no longer be carried out.</td>
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<tr>
<td>Contact Input ON</td>
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<tr>
<td>It is possible to connect to an external device which has a warning output terminal to notify when a warning has occurred and the contact switches ON.</td>
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<tr>
<td>Recovery from Warning Status</td>
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<tr>
<td>This notifies the user when recovery from a warning has occurred; saving time and effort.</td>
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<tr>
<td>Communication Error Warnings</td>
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<tr>
<td>Wireless Communication Failures</td>
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<tr>
<td>This notifies the user that wireless communication has repeatedly failed.</td>
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</tbody>
</table>

Range of Notification Tools means "No Miss" Management

By E-mail / SMS

Note: SMS can only be used with RTR-500MBS-A.

With an External Alarm Device

On a PC

On a Data Collector
Monitor Measurement Readings from Any Location

Auto-Display of Current Readings at Set Interval

Via the Software

Measurement readings can be monitored using the dedicated software installed on the PC.

Note: Software is available for download from T&D Website.

On a Data Collector

It is possible to view Current Readings on the LCD screen of the data collector.

Via a Web Browser

Access Anytime Anywhere

T&D WebStorage Service

http://www.webstorage-service.com/

“T&D Web Storage” is a free web-based storage service provided by T&D Corporation. By sending downloaded recorded data to “T&D Web Storage”, it is possible to access your important data from anywhere in the world at any time you wish.

Registration is required to use T&D WebStorage Service.
Temperature Sensors for RTR-502 / 502L
Measurement Range: -60 to 155°C / Sensor Temperature Durability: -70 to 180°C
Accuracy (TR-5620 excluded): Avg. ±0.3˚C [-20 to 80˚C], Avg. ±0.5˚C [-40 to 20˚C / 80 to 110˚C], Avg. ±1.0˚C [-60 to -40˚C / 110 to 155˚C]
Materials: (1) Thermistor (2) Stainless pipe (SUS316) (3) Fluoropolymer Compaction Tube (4) Fluoropolymer Coated Electrical Wire (5) Fluoropolymer Mold

Fluoropolymer Coated Sensor
TR-5101
Response Time (90%): Approx. 80 sec. (in air)
TR-5106
Response Time (90%): Approx. 80 sec. (in air) Approx. 7 sec. (in agitated water)

Underwater Sensor
TR-5530
Response Time (90%): Approx. 150 sec. (in air) Approx. 15 sec. (in agitated water)

High Sensitivity Ultra-thin Sensor
TR-5620
Accuracy
Avg. ±0.5˚C [-20 to 60˚C]
Avg. ±1.0˚C [-60 to -20˚C / 60 to 80˚C]
Avg. ±2.0˚C [80 to 155˚C]
Response Time (90%): Approx. 7 min.
Temperature Durability: -10 to 60˚C

Stainless Protection Sensor
TR-5220
Response Time (90%): Approx. 150 sec. (in air) Approx. 7 sec. (in agitated water)
TR-5320
Response Time (90%): Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)
TR-5420
Response Time (90%): Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)

Temperature / Humidity Sensor for RTR-503 / 503L
TR-3310
Measurement Range: 10 to 95 %RH (at 25˚C, 50%RH) 9
Accuracy: Temperature: Avg. ±0.3˚C Humidity: ±5%RH Response Time (90%): Approx. 7 min.
Temperature Durability: -10 to 60˚C
* Do not expose to condensation, dampness, corrosive gases or organic solvents.
Materials: (1) Temp/Humidity Sensor (2) Polypropylene Resin (3) Vinyl Chloride Coated Electrical Wire

TR-3C30
Waterproof Capacity: Splash proof (rated for use in daily life)
Temperature Durability: -25 to 60˚C
Materials: (1) Vinyl Coated Electrical Wire
Note: Only one extension cable per sensor. Using an extension cable may lead to measurement errors of +0.3˚C at room temperature, and +0.5˚C at -50˚C.

High Precision Temperature / Humidity Sensor for RTR-507 / 507L
HHB-3101
Measurement Range: Temperature: 0 to 99 %RH
Measurement Resolution: Temperature: ±0.1˚C Humidity: ±0.1 %RH
Accuracy (Temperature): ±0.3˚C [0 to 50˚C]
±0.5˚C [at all other temperatures]
Accuracy (Humidity): ±2.5%RH [at 25˚C, 10 to 85 %RH]
±4%RH [at 25˚C, 0 to 10 %RH or 85 to 99 %RH]
At temperatures other than 25˚C and > 0˚C add ±0.1%RH per degree of difference from 25˚C.
Humidity Hysteresis: ±1.5%RH or lower *1
Response Time (90%): Approx. 7 min.
Temperature: Approx. 7 min.
Humidity: Approx. 20 sec.
Long Term Stability: ±1%RH/yr, ±0.1˚C/yr (under normal operational conditions) *2
Materials: (1) Temp/Humidity Sensor (2) Polycarbonate (3) Vinyl Chloride Coated Electrical Wire
*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: Do not expose to condensation, dampness, corrosive gases, or organic solvents or insecticides.

TR-3C30
Waterproof Capacity: Splash proof (rated for use in daily life)
Temperature Durability: -25 to 60˚C
Note: Only one extension cable per Temp/Humidity sensor.
Input Modules for RTR-505 / 505L

Materials:
- Polycarbonate
- Vinyl Coated Electrical Wire

Note: Input Module is not water resistant.

**Thermocouple Module (RTR-505-TC / 505-TCL)**

**TCM-3010**
- Compatible Sensors: Thermocouple: Type K, J, T, S
- Sensor Connection: Miniature Thermocouple Connector
- Operating Environment:
  - Temperature: -40 to 80°C
  - Humidity: 90%RH or less (no condensation)

**Vinyl Chloride Coated Electrical Wire**

**4-20mA Module (RTR-505-mA / 505-mAL)**

**AIM-3010**
- Measurement Range: 0 to 20mA (Operational up to 40 mA)
- Accuracy: ±0.05 mA + 0.3 % of reading (10 to 40 °C)
- Measurement Resolution: Minimum of 0.1mA
- Preheat Function: 3V to 20V, 100mA
- Operating Environment:
  - Temperature: -40 to 80°C
  - Humidity: 90%RH or less (no condensation)

**Voltage Module (RTR-505-V / 505-VL)**

**VIM-3010**
- Measurement Range: 0 to 22 V
- Accuracy: ±0.5 mV + 0.3 % of reading (10 to 40 °C)
- Measurement Resolution: Minimum of 0.1mV
- Preheat Function: 3V to 20V, 100mA
- Operating Environment:
  - Temperature: -40 to 80°C
  - Humidity: 90%RH or less (no condensation)

**Pt Module (RTR-505-Pt / 505-PtL)**

**PTM-3010**
- Compatible Sensors: Pt100 (3-wire), Pt1000 (3-wire)
- Sensor Connection: Screw Clamp Terminal Block: 3-Terminal Square Washer (3-M3.5)
- Operating Environment:
  - Temperature: -40 to 80°C
  - Humidity: 90%RH or less (no condensation)

**Pulse Input Cable (RTR-505-P / 505-PL)**

**PIC-3150**
- Measurement Range: 0 to 22 V
- Accuracy: ±0.5 mV + 0.3 % of reading (10 to 40 °C)
- Measurement Resolution: Minimum of 0.1mV
- Preheat Function: 3V to 20V, 100mA
- Operating Environment:
  - Temperature: -40 to 80°C
  - Humidity: 90%RH or less (no condensation)

**Input Module Extension Cable**

**TR-3C30**
- Waterproof Capacity: Splash proof (rated for use in daily life)
- Temperature Durability: -25 to 60°C

Pt100 Sensor for RTR-505-Pt / 505-PtL

**TR-81## - #. - #### - ### M**
- **A**: Sensor Type (2 digits)
- **B**: Protection Pipe Diameter (2 digits)
- **C**: Protection Pipe Length (2 - 4 digits)
- **D**: Cable Length (1 - 2 digits)

**Sensor Type**
- **TR-8120 (Economical Type)**
- **TR-8110 (Regular Type)**
- **TR-8120 (Low to High Temp Type)**
- **TR-8120 (Handy Type)**

**Sensor Protection Pipe Diameter**

- **TR-8100**
- **TR-8110**
- **TR-8120**
- **TR-8130**

**Sensor Protection Pipe Length**

The protection pipe is available in 50 millimeter units in lengths from 50mm to 2000mm.

**Sensor Cable Length**

The sensor cable is available in 1 meter units in lengths from 1 meter to 99 meters.

Note: Only one extension cable per input module.

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Sensors for RTR-574 / 576

Note: Do not expose to condensation, dampness, corrosive gases, or organic solvents (or insecticides for High Precision Temperature/Humidity Sensors).

### Temperature / Humidity Sensor

**THA-3001**
- **Measurement Range:**
  - Temperature: 0 to 55 °C
  - Humidity: 0 to 99 %RH
- **Measurement Resolution:**
  - Temperature: ±0.5 °C
  - Humidity: ±5%RH
- **Response Time (90%):** Approx. 7 min.
- **Materials:** Temp/Humidity Sensor: Polypropylene Resin

**THA-3151**
- **Measurement Range:**
  - Temperature: 0 to 55 °C
  - Humidity: 0 to 95 %RH
- **Measurement Resolution:**
  - Temperature: 0.1 °C
  - Humidity: 1 %RH
- **Response Time (90%):** Approx. 7 min.
- **Materials:** Temp/Humidity Sensor: Polypropylene Resin, Vinyl Chloride Coated Electrical Wire

### High Precision Temperature / Humidity Sensor

**HHA-3151**
- **Measurement Range:**
  - Temperature: -30 to 80 °C
  - Humidity: 0 to 99 %RH
- **Measurement Resolution:**
  - Temperature: 0.1 °C
  - Humidity: 0.1 %RH
- **Accuracy:**
  - Temperature: ±0.3 °C at 25 °C, ±0.5 °C at all other temperatures
  - Humidity: ±1.5 %RH or lower
- **Response Time (90%):** Approx. 7 min.
- **Long Term Stability:** ±0.1%RH/yr (under normal operational conditions)
- **Materials:** Temp/Humidity Sensor: Polycarbonate, Glass, Vinyl Coated Electrical Wire

### Illuminance / UV Sensor (RTR-574)

**ISA-3151**
- **Measurement Range:**
  - Illuminance: 0 lx to 130 klx
  - UV Intensity: 0 to 30 mW/cm²
- **Measurement Resolution:**
  - Illuminance: Minimum of 0.01 lx
  - UV Intensity: Minimum of 0.001 mW/cm²
- **Accuracy:**
  - Illuminance: ±5 % at 25°C, ±10% at 0°C to 50°C
  - UV Intensity: ±5% at 25°C, ±10% at 0°C to 50°C
- **Relative Spectral Response:**
  - Illuminance: Approximated to the CIE standard response function V (λ).
  - UV Intensity: 260 to 400 nm (UVA / UVB)
- **Operating Environment:**
  - Temperature: -10 to 60 °C
  - Humidity: ±90%RH or lower
- **Materials:** Polycarbonate, Glass, Vinyl Coated Electrical Wire

### Serial Communication Cable (RTR-574 / 576)

**TR-6C10**
- **For communication between RTR-500DC and RTR-574 / 576**
- **Cable Length:** 1000 mm

**TR-1C30**
- **Temperature Durability:** -25 to 60 °C
- **Cable Length:** 3000 mm

### AC Adaptors

**RTR-500NW / 500AW / 500 / 500DC, RTR-576**

**AD-06A1**
- **Cable Length:** 1.8 m
- **Input:** AC 100 - 240 V
- **Output:** DC 6 V 500 mA
- **Frequency:** 50 / 60 Hz
- **Plug Type:** A

**AD-06C1**
- **Cable Length:** 1.8 m
- **Input:** AC 100 - 240 V
- **Output:** DC 6 V 1.0 A
- **Frequency:** 50 / 60 Hz
- **Plug Type:** C

**RTR-500MSB-A**

**AD-05A3**
- **Cable Length:** 1.2 m
- **Input:** AC100 - 240 V
- **Output:** DC 5 V 2 A
- **Frequency:** 50 / 60 Hz
- **Plug Type:** A

**AD-05C1**
- **Cable Length:** 1.6 m
- **Input:** AC100 - 240 V
- **Output:** DC 5 V 2 A
- **Frequency:** 50 / 60 Hz
- **Plug Type:** C
Other Options for RTR-501 / 502 / 503 / 505 / 507

Maintenance Set

TR-00P1
Included:
- Rubber Packing (for the rear cover of the data logger)
- Silica Gel (drying agent)
- Double-Sided Adhesive Tape (to fix the silica gel)
- Lock Screw (extra screws to tighten the rear cover of the data logger)

External Power Adaptor Kit

RTR-500A2
Input Voltage: DC 6 V
Backup Power:
- Ni-MH Battery (in case of power loss)
Back-up Time: About 4 days
Charging Method: Trickle Charge
Operational Environment Temp: 0 to 60°C
Water Resistance: None
Weight: About 37g (without AC Adaptor)
Included:
- AC Adaptor (AD-06A1 or AD-06C1)
- Rubber Packing (small)
- Rubber Packing (for the rear cover of the data logger)
- Lock Screw (extra screws to tighten the rear cover of the data logger)

Battery Set

TR-11P2
Included:
- Lithium Battery (LS14250)
- Maintenance Set (TR-00P1)

Large Capacity Battery Kit

RTR-500B1
Power: Lithium Battery x 1 (LS26500) (*1)
Battery Life: About 4 years (*2)
Waterproof Capability: Splash proof
Operating Temperature: -40 to 80°C (*3)
Weight: About 75g (including Lithium Battery)
Included:
- Large Capacity Battery Adaptor
- Attachment hook
- Maintenance Set (TR-00P1)

*1: When using RTR-500B1 it is necessary to purchase Lithium Battery (LS26500). For details, contact your local authorized distributor.
*2: Battery Life varies depending on measuring environment, recording interval, transmission frequency, and ambient temperature. The battery life estimated here is calculated using a new battery under normal operating conditions and in no way should be understood as a guarantee of battery life.
*3: Operating temperature depends on the specifications for the data logger being used.

Wall Attachment for Data Logger

TR-05K3 (RTR-501 / 502 / 503 / 505 / 507)
Included:
- Lock Screw x 2
- Double-Sided Adhesive Tape x 1
Operational Environment Temp: -40 to 80°C
Materials: Polycarbonate

TR-05K3L (for -L Types)
Included:
- Lock Screw x 2
- Double-Sided Adhesive Tape x 1
Operational Environment Temp: -40 to 80°C
Materials: Polycarbonate

TR-07K2 (RTR-574)
Included:
- Lock Screw x 2
- Double-Sided Adhesive Tape x 1
Materials: Polycarbonate

AT-76K1 (RTR-576)
Included:
- Lock Screw x 2
- Double-Sided Adhesive Tape x 1
Materials: Aluminum

Note: Cracking may occur if polycarbonate is exposed to strong impact at temperatures of -30°C or lower.

Wall Attachment for Base Unit

TR-5GK1 (RTR-500MBS-A)
Included:
- O-Ring (rubber) x 1
- Lock Screw x 2
- Double-Sided Adhesive Tape x 1
Materials: Aluminum

AT-50K1 (RTR-500)
Included:
- O-Ring (rubber) x 1
- Lock Screw for fastening to wall x 2
- Double-Sided Adhesive Tape x 1
Materials: Aluminum

TR-5WK1 (RTR-500NW / 500AW)
Included:
- Lock Screw for fastening to wall x 2
- Double-Sided Adhesive Tape x 1
- Lock Screw for fastening the device x 1
Materials: Polycarbonate

Note: Cracking may occur if polycarbonate is exposed to strong impact at temperatures of -30°C or lower.
### Remote Units (Data Logger)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement Channels</strong></td>
<td><strong>Temperature 1ch (Internal)</strong></td>
<td><strong>Temperature 1ch (External)</strong></td>
<td><strong>Temperature 1ch, Humidity 1ch (Internal)</strong></td>
</tr>
<tr>
<td><strong>Sensor</strong></td>
<td>Thermistor</td>
<td>Thermistor</td>
<td>Thermistor</td>
</tr>
<tr>
<td><strong>Measurement Units</strong></td>
<td>°C, °F</td>
<td>°C, °F</td>
<td>°C, °F</td>
</tr>
<tr>
<td><strong>Measurement Range</strong></td>
<td>-40 to 80 °C</td>
<td>-60 to 155 °C</td>
<td>0 to 55 °C</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>Avg.±0.5 °C</td>
<td>Avg.±0.3 °C</td>
<td>±5 %RH</td>
</tr>
<tr>
<td><strong>Response Time (90%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Logging Capacity</strong></td>
<td>16,000 readings</td>
<td>8,000 data sets (One data set consists of readings for multiple channels)</td>
<td></td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>Lithium Battery: LS14250 (3)</td>
<td>L Type: Large Capacity Battery Adaptor Kit (RTR-500B1) (4)</td>
<td>External Power Adaptor Kit (RTR-500A2: sold separately) (5)</td>
</tr>
<tr>
<td><strong>Battery Life</strong></td>
<td>About 10 months</td>
<td>L Type: About 4 years</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>H 62 mm x W 47 mm x D 18 mm</td>
<td>L type: H 62 mm x W 47 mm x D 46.5 mm</td>
<td>(excluding protrusions and sensor)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 50 g</td>
<td>L Type: approx. 65 g</td>
<td></td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td>-40 to 80 °C (-30 to 80 °C during wireless communication)</td>
<td>-40 to 80 °C (-10 to 80 °C during wireless communication)</td>
<td></td>
</tr>
<tr>
<td><strong>Waterproof Capacity</strong></td>
<td>IP67: Immersion proof</td>
<td>IP64: Splash proof (rated for use in daily life) (9)</td>
<td>IP64: Splash proof (rated for use in daily life) (9)</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>Temperature Sensor (TR-5106)</td>
<td>Temperature / Humidity Sensor (TR-3310)</td>
<td>Temperature / Humidity Sensor (TR-3310)</td>
</tr>
<tr>
<td><strong>Compatible Base Units</strong></td>
<td>RTR-500, RTR-500NW / 500AW, RTR-500DC, RTR-500MBS-A, RTR-500GSM</td>
<td>RTR-500, RTR-500NW / 500AW, RTR-500DC, RTR-500MBS-A</td>
<td></td>
</tr>
</tbody>
</table>

---

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. *Endless* is available when using RTR-500B1 for Windows, RTR-500MBS for Windows or RTR-500GSM for Windows.

3. The included lithium battery (LS14250) is not sold in stores. Please purchase the optional battery set for low-temperature use (TR-11P) for replacement.

4. When using RTR-500B1 it is necessary to purchase Lithium Battery (LS14250). For details, contact your local authorized distributor.

5. RTR-500A2 should not be used with the RTR-501.

6. Battery life varies depending upon the ambient temperature in which it is used, the recording interval, the frequency of communication, and the 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.

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

8. This is the waterproof capacity of the data logger with the sensor connected. The specifications listed above are subject to change without notice.
### Remote Units (Data Logger)

#### Measurement Channels

<table>
<thead>
<tr>
<th>Measurement Channels</th>
<th>RTR-505-TC/505-TCL</th>
<th>RTR-505-PV/505-PVL</th>
<th>RTR-505-V/505-VL</th>
<th>RTR-505-mA/505-mAL</th>
<th>RTR-505-P/505-PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature 1ch</td>
<td>-199 to 1760 °C</td>
<td>-199 to 600 °C</td>
<td>0 to 22 V</td>
<td>0 to 20 mA</td>
<td>-</td>
</tr>
<tr>
<td>Voltage 1ch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-20 mA 1ch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pulse Count 1ch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Sensor

- Type K, J, T, S
- Pt100, Pt1000 (3-wire)

#### Measurement Units

- °C, °F
- V, mV
- mA
- P

### Accuracy

#### Thermocouple Measurement

- Type K, J, T: ± (0.3 °C + 0.3 % rdg)
- Type S: ± (0.5 °C + 0.3 % rdg)

#### Cold Junction Compensation

- ±0.3 °C [10 to 40 °C]
- ±0.5 °C [-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 kΩ pull up

#### Chattering Filter

- ON: 15 Hz or less
- OFF: 3.5 kHz or less

### Measurement Resolution

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Type K, J, T: 0.1 °C</th>
<th>Type S: Approx. 0.2 °C</th>
<th>Up to 400 mV: 0.1 mV</th>
<th>Up to 800 mV: 0.2 mV</th>
<th>Up to 2000 mV: 0.4 mV</th>
<th>Up to 3.2 V: 0.1 mV</th>
<th>Up to 6.5 V: 0.2 mV</th>
<th>Up to 9.999 V: 0.4 mV</th>
<th>Up to 22 V: 1.00 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>± (0.3 °C + 0.3 % rdg)</td>
<td>± (0.5 °C + 0.3 % rdg)</td>
<td>± (0.3 °C + 0.3 % rdg)</td>
<td>± (0.5 °C + 0.3 % rdg)</td>
<td>± (0.3 °C + 0.3 % rdg)</td>
<td>± (0.5 °C + 0.3 % rdg)</td>
<td>± (0.3 °C + 0.3 % rdg)</td>
<td>± (0.5 °C + 0.3 % rdg)</td>
<td>± (0.3 °C + 0.3 % rdg)</td>
</tr>
</tbody>
</table>
| *Note:* The above temperatures [°C] are for the operating environment of the Input Module.

### 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

- Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)

### Communication Interfaces

- Wireless Communication (Short Range Radio Communication)
  - FCC Part15 Section 247 / IC RSS-210 (Frequency Range: 902 to 928 MHz, RF Power: 7 mW)
  - ETSI EN 300 220 (Frequency Range: 869.7 to 870 MHz, RF Power: 5 mW)
- 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)
- External Power Adaptor Kit (RTR-500A2: sold separately)

### Battery Life

- About 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

### Weight

- Approx. 50 g
- L Type: approx. 65 g

### Waterproof Capacity

- IP64: Splash proof (rated for use in daily life)
- Note: Input Module is not water resistant.

### Compatible Base Units

- RTR-500, RTR-500NW/500AW, RTR-500DC
- RTR-500MBS-A, RTR-500GSM
- RTR-500, RTR-500NW/500AW, RTR-500DC, RTR-500MBS-A

### Accessories

- Input Module (TCM-3010)
- Input Module (PTM-3010)
- Input Module (VIM-3010)
- Input Module (AIM-3010)
- Input Module (PIC-3150)

- Lithium Battery (LS14250) or Large Capacity Battery Adaptor Kit (RTR-500B1), Strap (Not included with L type models), User's Manual (Warranty included)

### Specifications

- "rdg" stands for reading.
- Only "Endless" is available when using RTR-505W for Windows, RTR-500MSB for Windows or RTR-500GSM for Windows.
- The included lithium battery (LS14250) is not sold in stores. Please purchase the optional battery set for low-temperature use (TR-11P2) for replacement.
- When using RTR-500B1 it is necessary to purchase Lithium Battery (LS26500). For details, contact your local authorized distributor.
- 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.
- This is the waterproof capacity of the data logger with the Input Module connected.

The specifications listed above are subject to change without notice.
### Remote Units (Data Logger)

<table>
<thead>
<tr>
<th>RTR-574</th>
<th>HHA-3151</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature/Humidity Sensor (External)</strong></td>
<td><strong>(High-Precision Type)</strong></td>
</tr>
<tr>
<td>RTR-574</td>
<td>RTR-574-H</td>
</tr>
<tr>
<td><strong>Measurement Channels</strong></td>
<td><strong>Measurement Channels</strong></td>
</tr>
<tr>
<td>Temperature 1ch</td>
<td>Temperature 1ch</td>
</tr>
<tr>
<td>Humidity 1ch</td>
<td>Humidity 1ch</td>
</tr>
<tr>
<td><strong>Units of Measurement</strong></td>
<td><strong>Units of Measurement</strong></td>
</tr>
<tr>
<td>°C, °F</td>
<td>°C, °F</td>
</tr>
<tr>
<td>%RH</td>
<td>%RH</td>
</tr>
<tr>
<td><strong>Measurement Range</strong></td>
<td><strong>Measurement Range</strong></td>
</tr>
<tr>
<td>0 to 55 °C</td>
<td>0 to 55 °C</td>
</tr>
<tr>
<td>10 to 95 %RH</td>
<td>10 to 95 %RH</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td><strong>Accuracy</strong></td>
</tr>
<tr>
<td>±0.5 °C</td>
<td>±0.5 °C</td>
</tr>
<tr>
<td>±5 %RH</td>
<td>±5 %RH</td>
</tr>
<tr>
<td>[at 25 °C, 50 %RH]</td>
<td>[at 25 °C, 50 %RH]</td>
</tr>
<tr>
<td><strong>Measurement Resolution</strong></td>
<td><strong>Measurement Resolution</strong></td>
</tr>
<tr>
<td>0.1 °C</td>
<td>0.1 °C</td>
</tr>
<tr>
<td>1 %RH</td>
<td>0.1 %RH</td>
</tr>
<tr>
<td><strong>Responsiveness</strong></td>
<td><strong>Responsiveness</strong></td>
</tr>
<tr>
<td><strong>Illuminance/UV Sensor (External)</strong></td>
<td><strong>Illuminance/UV Sensor (External)</strong></td>
</tr>
<tr>
<td><strong>Units of Measurement</strong></td>
<td><strong>Units of Measurement</strong></td>
</tr>
<tr>
<td>Illuminance: lx, klx</td>
<td>Illuminance: lx, klx</td>
</tr>
<tr>
<td>UV Intensity: mW/cm²</td>
<td>UV Intensity: mW/cm²</td>
</tr>
<tr>
<td><strong>Measurement Range</strong></td>
<td><strong>Measurement Range</strong></td>
</tr>
<tr>
<td>Illuminance: 0 lx to 130 klx</td>
<td>Illuminance: 0 lx to 130 klx</td>
</tr>
<tr>
<td>UV Intensity: 0 to 30 mW/cm²</td>
<td>UV Intensity: 0 to 30 mW/cm²</td>
</tr>
<tr>
<td><strong>Units of Cumulative Measurement</strong></td>
<td><strong>Units of Cumulative Measurement</strong></td>
</tr>
<tr>
<td>Cumulative Illuminance: lxh, klxh, Mlxh</td>
<td>Cumulative Illuminance: lxh, klxh, Mlxh</td>
</tr>
<tr>
<td>Cumulative amount of UV Light: mW/cm²h, W/cm²h</td>
<td>Cumulative amount of UV Light: mW/cm²h, W/cm²h</td>
</tr>
<tr>
<td><strong>Display Range of Cumulative Measurement</strong></td>
<td><strong>Display Range of Cumulative Measurement</strong></td>
</tr>
<tr>
<td>Illuminance: 0 lxh to 90 Mlxh</td>
<td>Illuminance: 0 lxh to 90 Mlxh</td>
</tr>
<tr>
<td>UV Intensity: 0 mW to 62 W/cm²h</td>
<td>UV Intensity: 0 mW to 62 W/cm²h</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td><strong>Accuracy</strong></td>
</tr>
<tr>
<td>Illuminance: 10 lx to 100 klx: ±5 %</td>
<td>Illuminance: 10 lx to 100 klx: ±5 %</td>
</tr>
<tr>
<td>[at 25 °C, 50 %RH]</td>
<td>[at 25 °C, 50 %RH]</td>
</tr>
<tr>
<td>UV Intensity: 0.1 to 30 mW/cm²: ±5 %</td>
<td>UV Intensity: 0.1 to 30 mW/cm²: ±5 %</td>
</tr>
<tr>
<td>[at 25 °C, 50 %RH]</td>
<td>[at 25 °C, 50 %RH]</td>
</tr>
<tr>
<td><strong>Relative Spectral Response</strong></td>
<td><strong>Relative Spectral Response</strong></td>
</tr>
<tr>
<td>Illuminance: Approximated to the CIE standard response function V ((\lambda))</td>
<td>Illuminance: Approximated to the CIE standard response function V ((\lambda))</td>
</tr>
<tr>
<td>UV Intensity: 260 to 400 nm (UVA / UVB)</td>
<td>UV Intensity: 260 to 400 nm (UVA / UVB)</td>
</tr>
<tr>
<td><strong>Responsiveness</strong></td>
<td><strong>Responsiveness</strong></td>
</tr>
<tr>
<td><strong>Measurement Resolution</strong></td>
<td><strong>Measurement Resolution</strong></td>
</tr>
<tr>
<td>Illuminance: Minimum of 0.01 lx</td>
<td>Illuminance: Minimum of 0.01 lx</td>
</tr>
<tr>
<td>UV Intensity: Minimum of 0.001 mW/cm²</td>
<td>UV Intensity: Minimum of 0.001 mW/cm²</td>
</tr>
<tr>
<td><strong>Logging Capacity</strong></td>
<td><strong>Logging Capacity</strong></td>
</tr>
<tr>
<td>8,000 data sets (One data set consists of readings for all channels in that type of unit.)</td>
<td>8,000 data sets (One data set consists of readings for all channels in that type of unit.)</td>
</tr>
<tr>
<td><strong>Recording Interval</strong></td>
<td><strong>Recording Interval</strong></td>
</tr>
<tr>
<td>Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.</td>
<td>Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.</td>
</tr>
<tr>
<td><strong>Recording Mode</strong></td>
<td><strong>Recording Mode</strong></td>
</tr>
<tr>
<td>Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)</td>
<td>Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)</td>
</tr>
<tr>
<td><strong>Communication Interfaces</strong></td>
<td><strong>Communication Interfaces</strong></td>
</tr>
<tr>
<td>Wireless Communication (Short Range Radio Communication)</td>
<td>Wireless Communication (Short Range Radio Communication)</td>
</tr>
<tr>
<td>FCC Part 15 Section 247 / IC RSS-210 (Frequency Range: 902 to 928 MHz, RF Power: 7 mW)</td>
<td>FCC Part 15 Section 247 / IC RSS-210 (Frequency Range: 902 to 928 MHz, RF Power: 7 mW)</td>
</tr>
<tr>
<td>ETSI EN 300 220 (Frequency Range: 869.7 to 870 MHz, RF Power: 2 MHz)</td>
<td>ETSI EN 300 220 (Frequency Range: 869.7 to 870 MHz, RF Power: 2 MHz)</td>
</tr>
<tr>
<td>USB Communication</td>
<td>USB Communication</td>
</tr>
<tr>
<td>Serial Communication (RS-232C)</td>
<td>Serial Communication (RS-232C)</td>
</tr>
<tr>
<td><strong>Wireless Transmission Range</strong></td>
<td><strong>Wireless Transmission Range</strong></td>
</tr>
<tr>
<td>Approx. 150 meters (500 ft) if direct and unobstructed</td>
<td>Approx. 150 meters (500 ft) if direct and unobstructed</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td><strong>Power</strong></td>
</tr>
<tr>
<td>AA Alkaline Battery (LR6) x 1</td>
<td>AA Alkaline Battery (LR6)</td>
</tr>
<tr>
<td><strong>Battery Life (%)</strong></td>
<td><strong>Battery Life (%)</strong></td>
</tr>
<tr>
<td>Approx. 4 months</td>
<td>Approx. 4 months</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td><strong>Dimensions</strong></td>
</tr>
<tr>
<td>H 55 mm x W 78 mm x D 18 mm (excluding protrusions)</td>
<td>H 55 mm x W 78 mm x D 18 mm (excluding protrusions)</td>
</tr>
<tr>
<td>Antenna Length: 60 mm</td>
<td>Antenna Length: 60 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td>Approx. 45 g</td>
<td>Approx. 45 g</td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td><strong>Operating Environment</strong></td>
</tr>
<tr>
<td>Temperature: -10 to 60 °C</td>
<td>Temperature: -10 to 60 °C</td>
</tr>
<tr>
<td>Humidity: 90 %RH or less (no condensation)</td>
<td>Humidity: 90 %RH or less (no condensation)</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td><strong>Accessories</strong></td>
</tr>
<tr>
<td>AA Alkaline Battery (LR6), USB Communication Cable (US-15C), Illuminance / UV Sensor (ISA-3151), User’s Manual Set (Warranty Included)</td>
<td>AA Alkaline Battery (LR6), USB Communication Cable (US-15C), Illuminance / UV Sensor (ISA-3151), User’s Manual Set (Warranty Included)</td>
</tr>
</tbody>
</table>

---

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

*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 the ambient temperature in which it is used, the recording interval, the frequency of communication, and the 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.
## Remote Units (Data Logger)

<table>
<thead>
<tr>
<th>RTR-576</th>
<th>RTR-576-H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature/Humidity Sensor (External)</strong></td>
<td><strong>Temperature/Humidity Sensor (High-Precision Type)</strong></td>
</tr>
<tr>
<td>Thermistor</td>
<td>HHA-3151</td>
</tr>
<tr>
<td>Polymer Resistance</td>
<td>Platinum Resistance</td>
</tr>
<tr>
<td>Electrostatic Capacitance</td>
<td></td>
</tr>
</tbody>
</table>

### Measurement Channels
- Temperature 1ch
- Humidity 1ch

### Units of Measurement
- °C, °F
- %RH

### Measurement Range
- **Temperature**: 0 to 55 °C; -30 to 80 °C
- **Humidity**: 10 to 95 %RH

### Accuracy
- ±0.5 °C ±2.5 %RH

### Measurement Resolution
- 0.1 °C 1 %RH

### Responsiveness
- **Response Time (90%)**: Approx. 7 min.

### CO2 Sensor (Internal)
- **Measurement Channels**: CO2 Concentration 1ch
- **Units of Measurement**: ppm
- **Measurement Range**: 0 to 9,999 ppm
- **Accuracy**: ±( 50 ppm + 5 % of reading )

### Measurement Resolution
- Minimum of 1 ppm

### Response Time (90%)
- **Approx. 20 sec.**

### 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
- Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)

### LCD Display Items
- Measurements, Battery Level, etc.
- **Fixed or Alternating Display**

### Communication Interfaces
- **Wireless Communication**: (Short Range Radio Communication), FCC Part15 Section 247 / IC RSS-210 (Frequency Range: 902 to 928 MHz, RF Power: 7 mW)
- **USB Communication**: (RS-232C) (*5)

### Wireless Transmission Range
- Approx. 150 meters (500 ft) if direct and unobstructed

### External Alarm Terminal
- Output Terminal: Open Drain Output (Voltage when OFF: DC less than 30V / Current when ON: less than 0.1 A / Resistance when ON: about 15 Ω)

### Power
- **AC Adaptor**: (AD-06A1 or AD-06C1), AA Alkaline Battery (LR6) x 4

### Battery Life
- Approx. 2 days (batteries only without AC adaptor)

### Dimensions
- H 96 mm x W 66 mm x D 46 mm (excluding protrusions and sensor)
- **Antenna Length**: 60 mm

### Weight
- Approx. 125 g (including battery, excluding sensor)

### Operating Environment
- **Temperature**: 0 to 45 °C
- **Humidity**: 80 %RH or less (no condensation)

### Accessories
- AA Alkaline Battery (LR6) x 4, AC Adaptor (AD-06A1 or AD-06C1), USB Communication Cable (US-15C), User’s Manual Set (Warranty Included)

### Compatible Base Units
- RTR-500, RTR-500NW/500AW, RTR-500DC, RTR-500MBS-A

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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 the ambient temperature in which it is used, the recording interval, the frequency of communication, and the 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.
**Base Unit**

<table>
<thead>
<tr>
<th>RTR-500MBS-A</th>
<th>RTR-500NW / RTR-500AW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compatible Devices</strong></td>
<td></td>
</tr>
<tr>
<td>Remote Units: 20 units (*)</td>
<td>Remote Units: 100 units (*)</td>
</tr>
<tr>
<td>Repeaters: 5 units x 4 groups</td>
<td>Repeaters: 10 units x 10 groups</td>
</tr>
<tr>
<td><strong>Maximum Number of Registrations</strong></td>
<td></td>
</tr>
<tr>
<td>Remote Units:</td>
<td></td>
</tr>
<tr>
<td>Repeaters:</td>
<td></td>
</tr>
<tr>
<td><strong>Communication Interfaces</strong></td>
<td></td>
</tr>
<tr>
<td><strong>&lt;Mobile Data Communication&gt;</strong></td>
<td></td>
</tr>
<tr>
<td>US: WCDMA/HSDPA: 850 / 1900 MHz</td>
<td>US: WCDMA/HSDPA: 850 / 1900 MHz</td>
</tr>
<tr>
<td>EU: WCDMA/HSDPA: 900 / 2100 MHz</td>
<td>EU: WCDMA/HSDPA: 850 / 1900 MHz</td>
</tr>
<tr>
<td>GSM/GPRS: 850 / 900 / 1800 / 1900 MHz</td>
<td>GSM/GPRS: 900 / 1800 / 1900 MHz</td>
</tr>
<tr>
<td><strong>&lt;Between Base Unit(s) - (Repeaters) - Remote Unit(s)&gt;</strong></td>
<td></td>
</tr>
<tr>
<td>Wireless Communication (short range radio communication)</td>
<td>Wireless Communication (short range radio communication)</td>
</tr>
<tr>
<td>(Frequency Range: 802 to 928 MHz, RF Power: 7 mW)</td>
<td>(Frequency Range: 802 to 928 MHz, RF Power: 7 mW)</td>
</tr>
<tr>
<td>EU: ETSI EN 300 220</td>
<td>EU: ETSI EN 300 220</td>
</tr>
<tr>
<td>(Frequency Range: 869.7 to 870 MHz, RF Power: 5 mW)</td>
<td>(Frequency Range: 869.7 to 870 MHz, RF Power: 5 mW)</td>
</tr>
<tr>
<td>- Optical Communication (proprietary protocol)</td>
<td>- Optical Communication (proprietary protocol)</td>
</tr>
<tr>
<td>(With compatible Remote Units except RTR-574 and RTR-576)</td>
<td>(With compatible Remote Units except RTR-574 and RTR-576)</td>
</tr>
<tr>
<td><strong>&lt;Between Base Unit - PC&gt;</strong></td>
<td><strong>&lt;Between Base Unit - PC&gt;</strong></td>
</tr>
<tr>
<td>- USB Communication (Setup)</td>
<td>- USB Communication (Setup)</td>
</tr>
<tr>
<td><strong>Wireless Transmission Range</strong></td>
<td>Approx. 150 meters (500 ft) if direct and unobstructed</td>
</tr>
<tr>
<td><strong>External Alarm</strong></td>
<td>Approx. 150 meters (500 ft) if direct and unobstructed</td>
</tr>
<tr>
<td><strong>Input/Output Terminal</strong> (2)</td>
<td><strong>Output Terminal</strong></td>
</tr>
<tr>
<td>- &lt;Input Terminal: Contact Input&gt;</td>
<td>- Internal Pull-up: 3 V 100 kΩ</td>
</tr>
<tr>
<td></td>
<td>- Internal Pull-up: 3 V 100 kΩ</td>
</tr>
<tr>
<td></td>
<td>- Maximum Input Voltage: 30 V</td>
</tr>
<tr>
<td></td>
<td>- Maximum Input Voltage: 30 V</td>
</tr>
<tr>
<td>- Current when ON: 0.1 A or less</td>
<td>- Voltage when OFF: AC / DC 50 V or less</td>
</tr>
<tr>
<td>- Voltage when OFF: AC / DC 50 V or less</td>
<td>- Current when ON: 0.1 A or less</td>
</tr>
<tr>
<td>- Resistance when ON: 35Ω</td>
<td>- Resistance when ON: 35Ω</td>
</tr>
<tr>
<td><strong>Communications Protocol</strong></td>
<td></td>
</tr>
<tr>
<td>FTP, SMS (3)</td>
<td>SMTP (POP before SMTP, SMTP-AUTH &lt;LOGIN&gt;), SMTPS (SMTP over SSL), FTP, SMS (3)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td></td>
</tr>
<tr>
<td>AA Alkaline Battery (LR6) x 4</td>
<td>AC Adaptor (AD-06A1 or AD-06C1)</td>
</tr>
<tr>
<td>AC Adaptor (AD-05A3 or AD-05C1) (5V, 2A)</td>
<td>AC Adaptor (AD-05A3 or AD-05C1) (5V, 2A)</td>
</tr>
<tr>
<td></td>
<td>External Power Supply (DC 10-24V)</td>
</tr>
<tr>
<td><strong>Battery Life</strong> (4)</td>
<td></td>
</tr>
<tr>
<td>Expected battery life with only AA alkaline batteries:</td>
<td></td>
</tr>
<tr>
<td>Approx. 2 days under the following conditions (only one Remote Unit and no Repeaters, monitoring ON, data once a day, sending</td>
<td></td>
</tr>
<tr>
<td>current readings at a 10 minute interval)</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>H 96 mm x W 66 mm x D 38 mm (excluding antenna)</td>
<td>H 83 mm x W 102 mm x D 28 mm (excluding antenna)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Antenna Length (Cellular / Local): 109 mm</td>
<td>Antenna Length: 87.3 mm</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
</tr>
<tr>
<td>Approx. 130 g</td>
<td>Approx. 120 g</td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Temperature: 10 to 55 °C ( -10 to 55 °C with external power connected )</td>
<td>Temperature: -10 to 60 °C</td>
</tr>
<tr>
<td>Humidity: 90 %RH or less (no condensation)</td>
<td>Humidity: 90 %RH or less (no condensation)</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td></td>
</tr>
<tr>
<td>AA Alkaline Battery (LR6) x 4,</td>
<td></td>
</tr>
<tr>
<td>Antenna x 2 (Cellular/Local),</td>
<td></td>
</tr>
<tr>
<td>USB Communication Cable (US-15C),</td>
<td></td>
</tr>
<tr>
<td>External Power Cable (BC-0302), Software (CD-ROM), Introductory Manual Set (Warranty Included )</td>
<td></td>
</tr>
<tr>
<td><strong>GPS Interface</strong> (5)</td>
<td></td>
</tr>
<tr>
<td>Connector: SMA Male Plug</td>
<td>Antenna, USB Communication Cable (US-15C),</td>
</tr>
<tr>
<td>Power Supply: 2.5 to 2.7V</td>
<td>LAN Cable (LN-20W, only for RTR-500NW),</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SIM Card</strong> (6) (7)</td>
<td></td>
</tr>
<tr>
<td>Standard Size SIM Card ( WCDMA or GSM )</td>
<td>RTR-500AW: Wireless LAN</td>
</tr>
<tr>
<td></td>
<td>EU: ETSI EN 300 220</td>
</tr>
<tr>
<td></td>
<td>(Frequency Range: 869.7 to 870 MHz, RF Power: 5 mW)</td>
</tr>
<tr>
<td></td>
<td>- Optical Communication (proprietary protocol)</td>
</tr>
<tr>
<td></td>
<td>(With compatible Remote Units except RTR-574 and RTR-576)</td>
</tr>
<tr>
<td><strong>Software Compatible OS</strong> (7)</td>
<td></td>
</tr>
<tr>
<td>Microsoft Windows 8 32 / 64 bit (8)</td>
<td>Microsoft Windows 8 32 / 64 bit (8)</td>
</tr>
<tr>
<td>Microsoft Windows 7 32 / 64 bit</td>
<td>Microsoft Windows 7 32 / 64 bit</td>
</tr>
<tr>
<td>Windows Vista 32 bit (SP1 or later )</td>
<td>Microsoft Windows Vista 32 bit (SP1 or later)</td>
</tr>
<tr>
<td><strong>Display Languages</strong> (9)</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>RTR-500W for Windows (US)</td>
</tr>
<tr>
<td></td>
<td>English, Spanish, Portuguese</td>
</tr>
<tr>
<td></td>
<td>RTR-500W for Windows (EU)</td>
</tr>
<tr>
<td></td>
<td>English, Spanish, French, German, Italian</td>
</tr>
</tbody>
</table>

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1: For RTR-574 and RTR-576, registration of one unit will be counted as two units.  
2: In order to use the external alarm terminal, please prepare a compatible connector: JST PAP-04V-S.  
3: SIMS is required for some functions of the RTR-500MBS-A. If SIMS is necessary, make sure that the contract you have with your carrier includes this service.  
4: Battery life varies depending upon the number of warning reports sent, the ambient temperature in which it is used, the frequency of communication, and the 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.  
5: In order to use the GPS function (to attach geographical positioning info to current readings data), please purchase a compatible GPS antenna.  
6: Please prepare a contracted SIM card separately.  
7: For installation, it is necessary to have Administrator (Computer Administrator) rights.  
8: If you are using Windows 8, please note that our software is designed to be used in “Desktop” mode only.  
9: We recommend using an operating system in the same language as the display language. Operation in different languages is not guaranteed.  

The specifications listed above are subject to change without notice.
## RTR-500 Series - Specifications

<table>
<thead>
<tr>
<th>Base Unit / Repeater</th>
<th>RTR-500DC</th>
<th>RTR-500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Number of Registrations</strong></td>
<td>Remote Units: 32 units x 7 groups (1) Repeaters: 15 units x 7 groups</td>
<td>Remote Units: 32 units x 20 groups (2) Repeaters: 30 units x 20 groups</td>
</tr>
<tr>
<td><strong>Storage Capacity</strong></td>
<td>When downloading from units filled to logging capacity: 15 units of RTR-501 / 502 / 503 / 507 / 574 / 576 / 505-PI / 505-V / 505-mA / 505-P</td>
<td>When downloading from units of any type containing small amounts of data, it can store and manage up to 250 download sessions.</td>
</tr>
<tr>
<td><strong>Communication Interfaces</strong></td>
<td>- Wireless Communication (short range radio communication) US: FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928 MHz, RF Power: 7 mW) EU: ETSI EN 300 220 (Frequency Range: 869.7 to 870 MHz, RF Power: 5 mW) - Optical Communication (proprietary protocol) (With compatible Remote Units except RTR-574 and RTR-576) - Serial Communication (RS-232C) (With RTR-574 and RTR-576)</td>
<td>- Wireless Communication (short range radio communication) (Repeater) - Wireless Communication (short range radio communication) FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928 MHz, RF Power: 7 mW) ETSI EN 300 220 (Frequency Range: 869.7 to 870 MHz, RF Power: 5 mW) - Optical Communication (proprietary protocol) (With compatible Remote Units except RTR-574 and RTR-576) - Serial Communication (RS-232C) (With Base Unit - PC) - USB Communication - Serial Communication (RS-232C) (4)</td>
</tr>
<tr>
<td><strong>Wireless Transmission Range</strong></td>
<td>Approx. 150 meters (500 ft) if direct and unobstructed</td>
<td>Approx. 150 meters (500 ft) if direct and unobstructed</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>AAA Alkaline Battery (LR03) x 2</td>
<td>USB Bus Power, AA Alkaline Battery x 2, AC Adaptor (AD-06A1 or AD-06C1)</td>
</tr>
<tr>
<td><strong>Battery Life (7)</strong></td>
<td>Expected battery life with 2 AAA alkaline batteries: - Monitoring Current Readings and Remote Unit Status: 96 hours of continuous use (For communication without Repeaters at 60 second intervals) - Monitoring Radio Waves: 32 hours of continuous use - Downloading Data via Wireless Communication: 730 consecutive sessions (When downloading RTR-501 at full logging capacity, without Repeaters, with LCD backlight Off)</td>
<td>As a Repeater: Approx. 6 months (When downloading full data once a day with one Repeater)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>H 125 mm x W 58 mm x D 26.3 mm (excluding antenna)</td>
<td>H 96 mm x W 65 mm x D 25 mm (excluding antenna)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 105 g</td>
<td>Approx. 70 g</td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td>Temperature: 0 to 50 °C (50 to 60 °C with external power connected) Humidity: 90 %RH or less (no condensation)</td>
<td>Temperature: -10 to 60 °C (-30 to 60 °C with external power connected) Humidity: 90 %RH or less (no condensation)</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>AAA Alkaline Battery (LR03) x 2, USB Communication Cable (US-15C), Software (CD-ROM), Introductory Manual Set (Warranty Included)</td>
<td>Antenna, USB Communication Cable (US-15C), Software (CD-ROM), Memo Sticker, Introductory Manual Set (Warranty Included)</td>
</tr>
<tr>
<td><strong>Software Compatible OS (8)</strong></td>
<td>Microsoft Windows 8 32 / 64 bit (9) Microsoft Windows 7 32 / 64 bit Microsoft Windows Vista 32 bit (SP1 or later)</td>
<td>Microsoft Windows 8 32 / 64 bit (9) Microsoft Windows 7 32 / 64 bit Microsoft Windows Vista 32 bit (SP1 or later)</td>
</tr>
<tr>
<td><strong>Display Languages (10)</strong></td>
<td>RTR-500DC for Windows (US) English, Spanish, Portuguese RTR-500DC for Windows (EU) English, Spanish, French, German, Italian</td>
<td>RTR-500 for Windows (US) English, Spanish, Portuguese RTR-500 for Windows (EU) English, Spanish, French, German, Italian</td>
</tr>
</tbody>
</table>

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1: For RTR-500, RTR-574, and RTR-576, one unit will be counted as two units.  
2: For RTR-500, RTR-574, and RTR-576, one unit will be counted as two units.  
3: Optional communication cable TR-620C is required for serial communication with RTR-574 and RTR-576.  
4: Customers wishing to write their own software, please contact your local distributor for the serial communications protocol specifications. (Note: Optional serial communication cable TR-57C is also required.)  
5: For RTR-500, the protocol is implemented in the software.  
6: When using a USB connection, the RTR-500 requires neither batteries nor AC adaptor. Please prepare two AA batteries or an AC adaptor when using the RTR-500 as a Repeater.  
7: Battery life varies depending upon the ambient temperature in which it is used, the frequency of communication, and the 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.  
8: For installation, it is necessary to have Administrator (Computer Administrator) rights.  
9: If you are using Windows 8, please note that our software is designed to be used in "Desktop" mode only.  
10: We recommend using an operating system in the same language as the display language. Operation in different languages is not guaranteed. The specifications listed above are subject to change without notice.
Our new easy-to-use high performance software “T&D Graph” gives you all the power you need for effective management and analysis of recorded data. It can also be used in conjunction with T&D WebStorage Service.

Open Only the Data you Need

It is possible to specify search conditions to find and open only the data you want from all recorded data stored in a local folder or in the T&D WebStorage Service. The merging of multiple sets of data is also possible.

Analyze

Use the filtering feature to get only the data you want to view and work with. Pre-designed filtering templates are provided; or create your own.

Use the text and figure editing feature to create memos and comments within graphs.

Save / Output

Save

Print

CSV format data
Colors in the photos in this catalog may be different from real product colors. The specifications and designs of the products in this catalog are true as of May 2017.

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Caution regarding safety
For safe operation carefully read instructions before using the product.