

# Wireless Data Logging System

## RTR-500 Series



TANDD

CE

### Remote Unit (Data Logger)

#### Measure / Record

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



### Wireless Communication

### 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

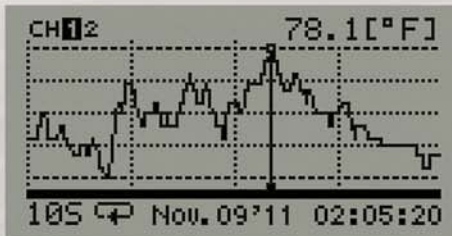


USB Connection

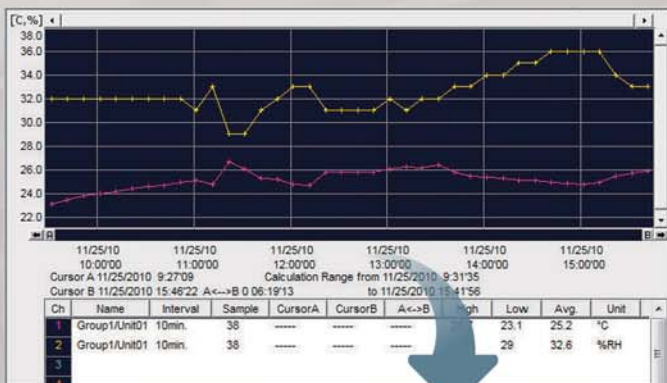


USB Connection

### Viewing Graph on Site



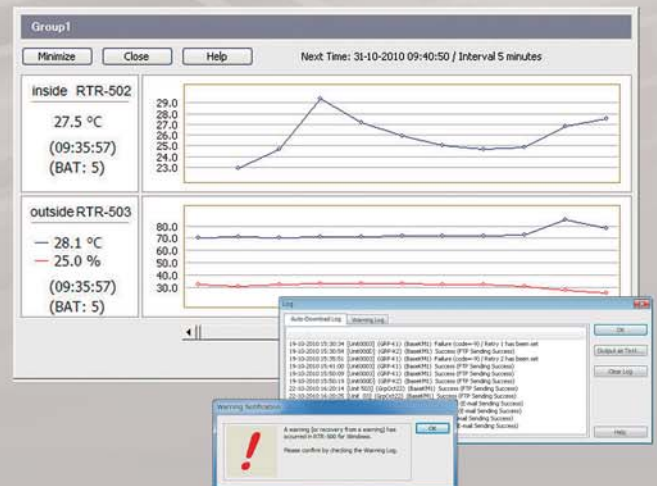
### Reading Data from a Graph and Spreadsheet



Export



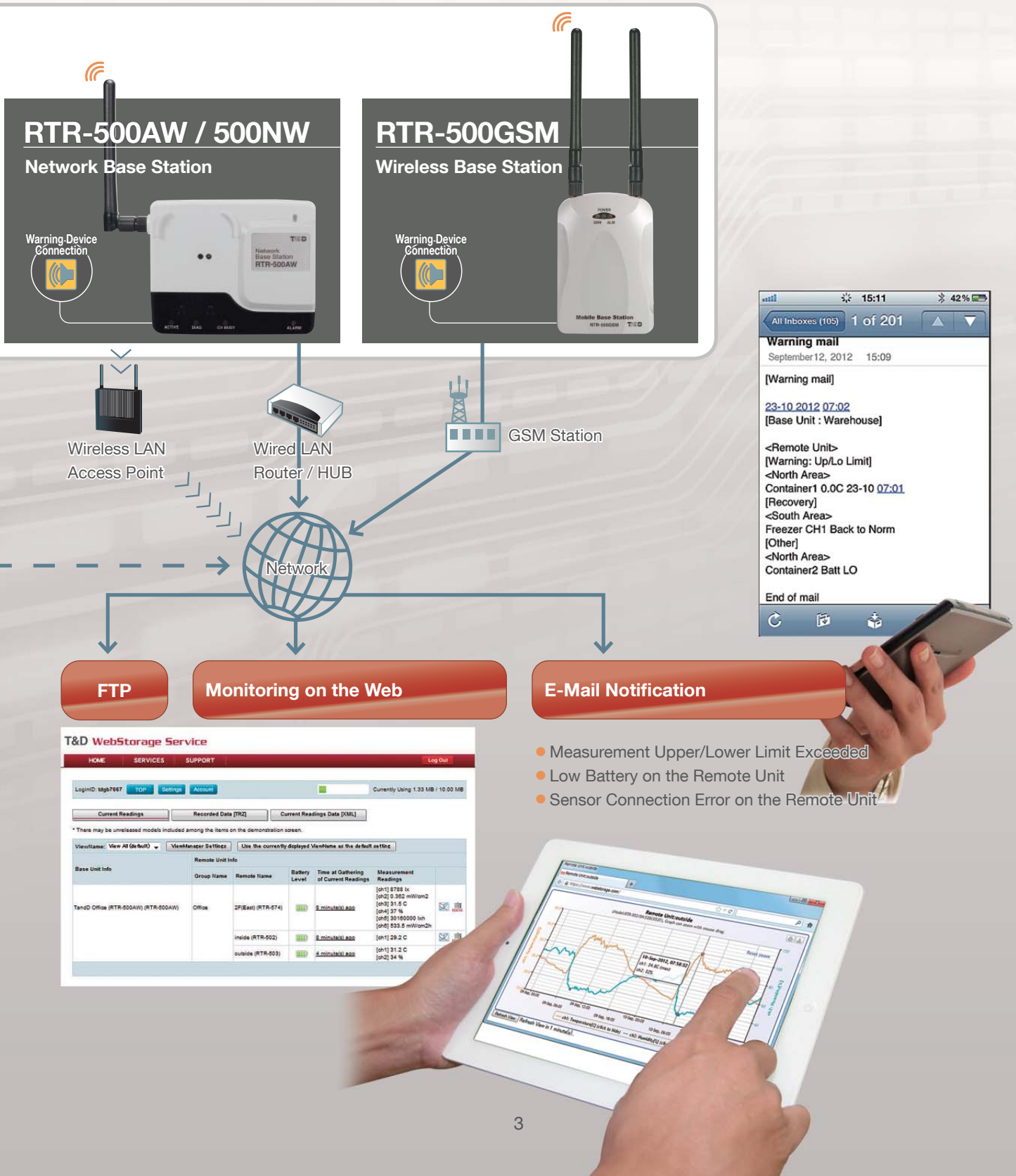
### Monitoring for Warning and Current Readings on PC



# 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.



# Variety of Wireless Data Logger Selections to

## Temperature



## Temperature / Humidity



### 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)

### RTR-503 / RTR-503L

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

## Voltage



## 4-20mA



## Pulse Count



### 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

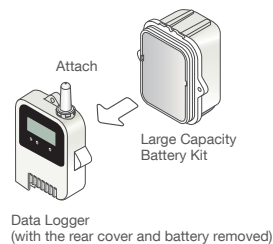
Measurement Range:  
0 to 20 mA (Operational up to 40 mA)  
Attached Module: Input Module (AIM-3010)

### 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



- 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 High Precision Wide Range



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)

## 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 1300°C  
 J: -199 to 750°C  
 T: -199 to 400°C  
 S: -20 to 1700 °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  
 UV Intensity: 0 to 30 mW/cm<sup>2</sup>  
 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 lxh to 90 Mixh  
 UV Intensity: 0 mW to 62 W/cm<sup>2</sup>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: NDIR type  
 Temperature / Humidity Sensor THA-3001 (H: High Precision Temperature/Humidity Sensor HHA-3151)

# Base Unit equipped with GSM Cellular Phone Network Capabilities

## Mobile Base Station - RTR-500GSM

- ▶ GSM communication makes it possible to gather recorded data and monitor for warnings even in environments where PCs or LAN connections aren't possible.
- ▶ Warning Monitoring Function
- ▶ Connect a GPS receiver to get location position info.
- ▶ Select a power source to meet your situation: batteries, AC adaptor or external power source.

Number of Possible Registrations (One Base)  
Remote Units: Up to 20  
Repeaters: Up to 5 units per Group  
Number of Groups : Up to 4 Groups



T&D Web Storage Compatible (see p.11)

### Application Examples

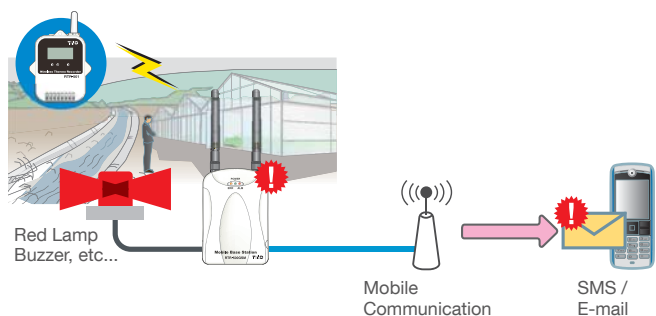
- Monitoring and Recording Temperature, Humidity and Location of Goods while in Transport
- Monitoring and Recording Temperature and Humidity in Distant Places where LAN Connection is Impossible
- Monitoring and Recording in Building and Environmental Temperature and Humidity in Situations where LAN Connections are not Possible or not Desirable

**Note:** At present, data loggers which are compatible with RTR-500GSM are as follows: RTR-501, RTR-502, RTR-503, RTR-505-Pt, and RTR-505-TC. (including L types)

#### GSM Cellular Phone Communication Function



#### Warning Monitoring Function



# Easy Data Collection, Easy Graph Display, No Computer Necessary

## Portable Data Collector - RTR-500DC

- ▶ 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.

Number of Possible Registrations (One Base)  
 Remote Units: Up to 32 units per Group  
 (For RTR-505 / 574 / 576 up to 16 units per Group)  
 Repeaters: Up to 15 units per Group  
 Number of Groups : Up to 7 Groups



### 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

Monitor On Site



Check Data at Office



## 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.

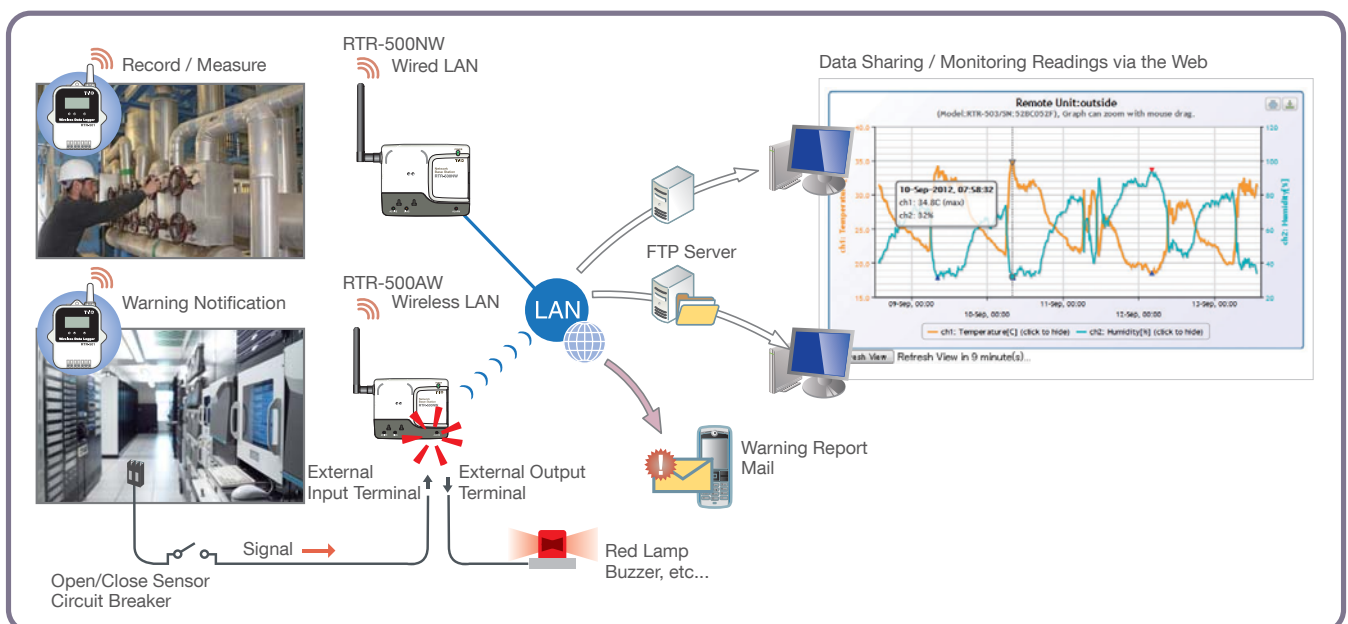
Number of Possible Registrations (One Base)  
 Remote Units: Up to 100  
 Repeaters: Up to 10 units per Group  
 Number of Groups : Up to 10 Groups



T&D Web Storage Compatible (see p.11)

### Application Examples

- For Monitoring Temperature in Refrigerators and Freezers
- For Monitoring and Recording of 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.

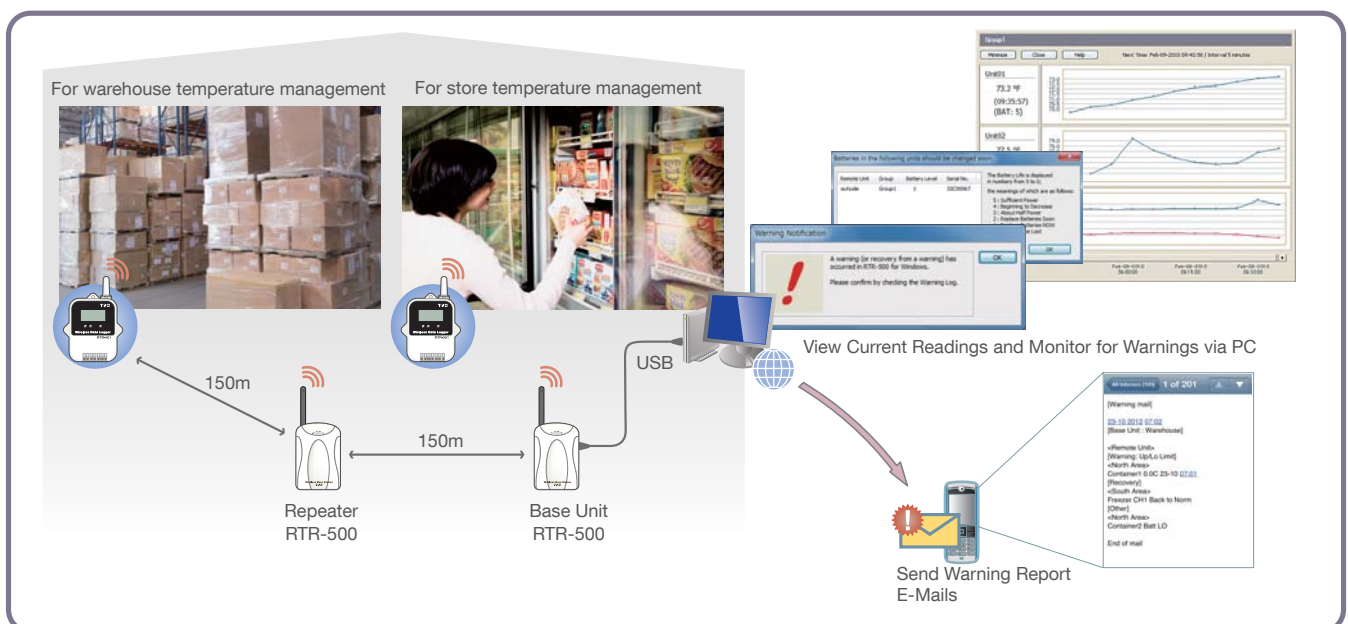


T&D Web Storage Compatible (see p.11)

Number of Possible Registrations (One Base)  
 Remote Units: Up to 32 units per Group  
 Repeaters: Up to 30 units per Group  
 Number of Groups : Up to 20 Groups

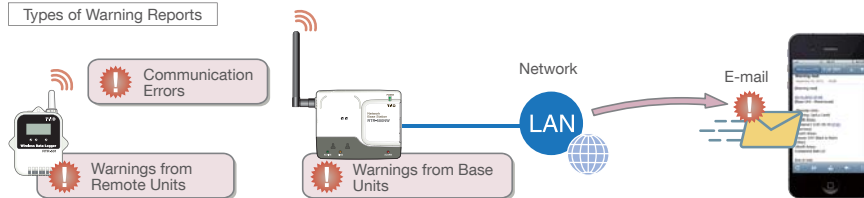
### Application Examples

- 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



Warnings from Remote Units	RTR-500NW RTR-500AW	RTR-500	RTR-500DC	RTR-500GSM
<b>Upper Limit / Lower Limit Exceeded</b> 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.				
<b>Sensor Error</b> This type of notification helps prevent loss of measurements due to sensor disconnection, malfunction or wire breakage.				
<b>Remote Unit Battery Level</b> This notifies the user that battery level is low before wireless communication can no longer be carried out.			-	
<b>Warnings from Base Units</b>				
<b>Contact Input ON</b> 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.		-	-	
<b>Recovery from Warning Status</b> This notifies the user when recovery from a warning has occurred; saving time and effort.			-	
<b>Communication Error Warnings</b>				
<b>Wireless Communication Failures</b> This notifies the user that wireless communication has repeatedly failed.			-	

## Range of Notification Tools means "No Miss" Management

### By E-mail / SMS

**Note:** SMS is supported by the RTR-500GSM only.

### With an External Alarm Device

### On a PC

### On a Data Collector

Beep Beep...

WL Monitor Mode bT,il  
 REC 41M GROUP: Group1  
 FULL NAME: Unit02  
 69.9 30.0 [°F]  
 38.0 10.0 [°C]  
 60.0 [°F]  
 20.0 [°C]

# Monitor Measurement Readings from Any Location

## Auto-Display of Current Readings at Set Interval

### Via the Software

The software interface displays a table of current readings for three units:

Base Unit Name	Device Name	Device Type	Battery Level	Time	Current Readings	Graph
RTR-500NW_529C Unit01	RTR-501	RTR-501	100%	2012-12-10 09:34	22.1 °C	[Graph Icon]
RTR-500NW_529C Unit02	RTR-502	RTR-502	100%	2012-12-10 09:34	22.1 °C	[Graph Icon]
RTR-500NW_529C Unit03	RTR-503	RTR-503	100%	2012-12-10 09:34	22.1 °C	[Graph Icon]

Below the table is a 'Graph Monitor' window showing a line graph of temperature over time. The graph shows three data series for different units, with the y-axis ranging from 22 to 24.5 and the x-axis showing dates from 2012-12-10 09:28 to 2012-12-10 09:36.

On the right, a 'Group1' window shows detailed readings for three units:

- Unit01: 73.2 °F (09:35:57) (BAT: 5)
- Unit02: 77.5 °F (09:35:57) (BAT: 5)
- Unit03: 78.1 °F (09:35:57) (BAT: 5)

Each unit has a corresponding line graph showing temperature fluctuations over time.

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

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

### On a Data Collector

The handheld data collector displays the following information on its LCD screen:

```

UL Monitor Mode bT.u
REC P1M GROUP: Group1
NAME: Unit02
69.9 30.0 WB
38.0 20.0 [°F]
                [WB]
                [%RH]
    
```

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

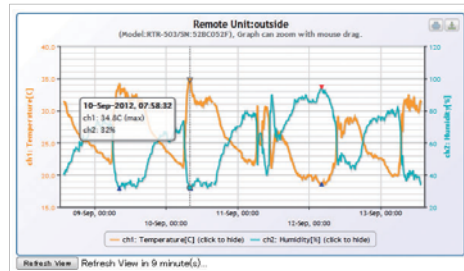
The web interface shows a table of remote unit information:

Base Unit Info	Remote Unit Info	Group Name	Remote Name	Battery Level	Time at Gathering	Measurement Readings
Fansco Office (RTR-500NW) (RTR-500NW)	Office	2F(East) (RTR-574)	2F(East) (RTR-574)	100%	3:00:00 PM	[Data]
	inside (RTR-502)			100%	3:00:00 PM	[Data]
	outside (RTR-503)			100%	3:00:00 PM	[Data]

Below the table is a graph titled 'Remote Unit:outside' showing Temperature (°C) and Humidity (%) over time from 09-Sep-00:00 to 13-Sep-00:00. The graph shows two data series: ch1: Temperature[°C] and ch2: Humidity[%].

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

T&D WebStorage Service 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 anyplace in the world at any time you wish.



Registration is required to use T&D WebStorage Service.

# RTR-500 Series - Options

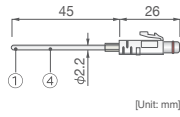
## Temperature Sensors for RTR-502 / 502L

Measurement Range: -60 to 155°C Sensor Temperature Durability: -70 to 180°C  
 Accuracy: Avg.  $\pm 0.3^\circ\text{C}$  [ -20 to 80°C ], Avg.  $\pm 0.5^\circ\text{C}$  [ -40 to -20°C / 80 to 110°C ], Avg.  $\pm 1.0^\circ\text{C}$  [ -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

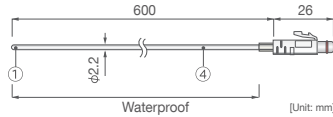
#### TR-5101

Response Time (90%):  
 Approx. 80 sec. (in air)



#### TR-5106

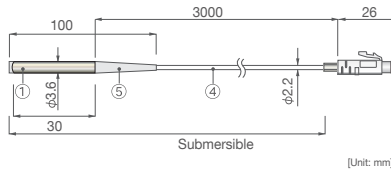
Response Time (90%):  
 Approx. 80 sec. (in air)  
 Approx. 7 sec. (in agitated water)



### Underwater Sensor

#### TR-5530

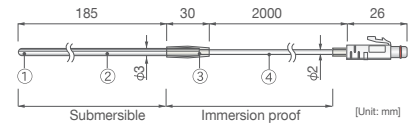
Response Time (90%):  
 Approx. 150 sec. (in air)  
 Approx. 15 sec. (in agitated water)



### Stainless Protection Sensor

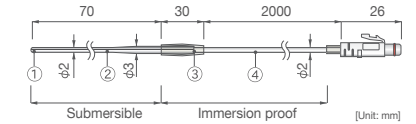
#### TR-5220

Response Time (90%):  
 Approx. 150 sec. (in air)  
 Approx. 7 sec. (in agitated water)



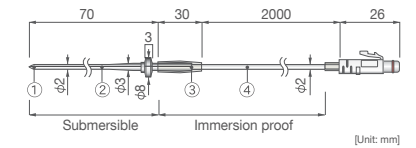
#### TR-5320

Response Time (90%):  
 Approx. 90 sec. (in air)  
 Approx. 3 sec. (in agitated water)



#### TR-5420

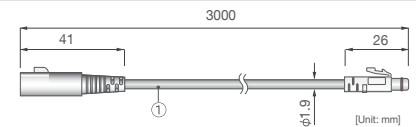
Response Time (90%):  
 Approx. 90 sec. (in air)  
 Approx. 3 sec. (in agitated water)



### Temperature Sensor Extension Cable for RTR-502 / 502L

#### TR-2C30

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



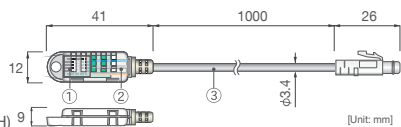
Materials: ① Vinyl Coated Electrical Wire

**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.

## Temperature / Humidity Sensor for RTR-503 / 503L

#### TR-3310

Measurement Range\*:  
 Temperature: 0 to 55°C  
 Humidity: 10 to 95 %RH  
 Accuracy:  
 Temperature: Avg.  $\pm 0.3^\circ\text{C}$   
 Humidity:  $\pm 5\% \text{RH}$  (at 25°C, 50%RH)  
 Response Time (90%): Approx. 7 min.  
 Temperature Durability: -10 to 60 °C



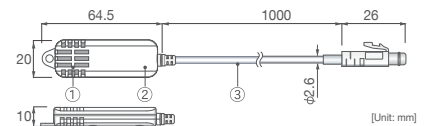
\* Do not expose to condensation, dampness, corrosive gases or organic solvents.

Materials: ① Temp/Humidity Sensor ② Polypropylene Resin ③ Vinyl Chloride Coated Electrical Wire

## High Precision Temperature / Humidity Sensor for RTR-507 / 507L

#### HHB-3101

Measurement Range:  
 Temperature: -30 to 80°C  
 Humidity: 0 to 99 %RH  
 Measurement Resolution:  
 Temperature: 0.1°C  
 Humidity: 0.1 %RH  
 Accuracy ( Temperature ):  
 $\pm 0.3^\circ\text{C}$  [ 0 to 50 °C ]  
 $\pm 0.5^\circ\text{C}$  [ at all other temperatures ]  
 Accuracy ( Humidity ):  
 $\pm 2.5\% \text{RH}$  [ at 25°C, 10 to 85 %RH ]  
 $\pm 4\% \text{RH}$  [ at 25°C, 0 to 10 %RH or 85 to 99 %RH ]  
 At temperatures other than 25°C and  $\geq 0^\circ\text{C}$  add  $\pm 0.1\% \text{RH}$  per degree of difference from 25.  
 Humidity Hysteresis:  $\pm 1.5\% \text{RH}$  or lower \*1  
 Response Time ( 90% ):  
 Temperature: Approx. 7 min.  
 Humidity: Approx. 20 sec.  
 Long Term Stability:  $\pm 1\% \text{RH/yr}$ ,  $\pm 0.1^\circ\text{C/yr}$  ( under normal operational conditions ) \*2



Materials: ① Temp/Humidity Sensor ② Polycarbonate ③ Vinyl Chloride Coated Electrical Wire

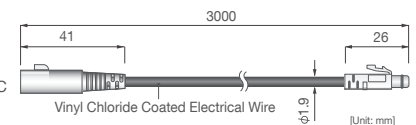
\*1: When used in environments where temperature and humidity are over the values of 50°C 75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than  $\pm 1.5\% \text{RH}$ . Under certain circumstances, it may take some time to return to normal measurement capability.

\*2: Do not expose to condensation, dampness, corrosive gases, or organic solvents or insecticide.

### Temp/Humidity Sensor Extension Cable for RTR-507 / 507L

#### 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**

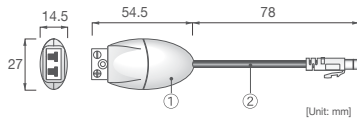
Materials: ①Polycarbonate ②Vinyl Coated Electrical Wire

**Note:** Input Module is not water resistant.

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

**TCM-3010**

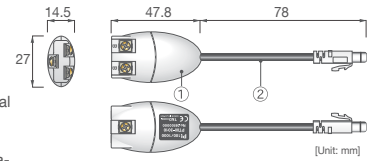
Compatible Sensors:  
 Thermocouple: Type K, J, T, S  
 Sensor Connection:  
 Miniature Thermocouple Connector  
 Operating Environment:  
 Temperature: -40 to 80°C  
 Humidity: 90%RH or less (no condensation)



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

**PTM-3010**

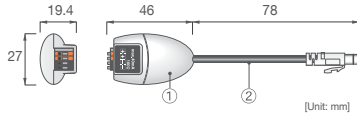
Compatible Sensors:  
 Pt100 (3-wire), Pt1000 (3-wire)  
 Sensor Connection:  
 Screw Clamp Terminal Block: 3-Terminal  
 Operating Environment:  
 Temperature: -40 to 80°C  
 Humidity: 90%RH or less (no condensation)



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

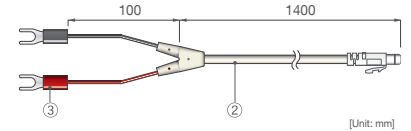
**AIM-3010**

Measurement Range:  
 0 to 20mA (Operational up to 40 mA)  
 Accuracy:  
 ±0.05 mA + 0.3 % of reading  
 (10 to 40 °C)  
 Operating Environment:  
 Temperature: -40 to 80°C  
 Humidity: 90%RH or less (no condensation)



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

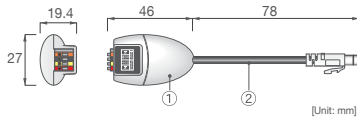
**PIC-3150**



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

**VIM-3010**

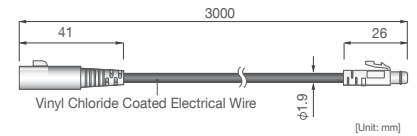
Measurement Range: 0 to 22 V  
 Accuracy:  
 ±0.5 mV + 0.3 % of reading  
 (10 to 40 °C)  
 Measurement Resolution:  
 Minimum of 0.1mV  
 Preheat Function: 3V to 20V, 100mA  
 Operating Environment:  
 Temperature: -40 to 80°C  
 Humidity: 90%RH or less (no condensation)



**Input Module Extension Cable**

**TR-3C30**

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



**Note:** Only one extension cable per input module.

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

For details about Pt100 Sensor, please visit the T&D Website.



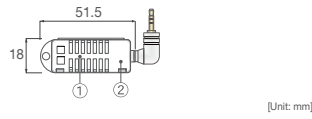
**Note:** Pt100 Sensor is produced only upon receipt of order; therefore please allow four weeks from the time of order until shipping.

**Sensors for RTR-574 / 576**

**Temperature / Humidity Sensor**

**THA-3001**

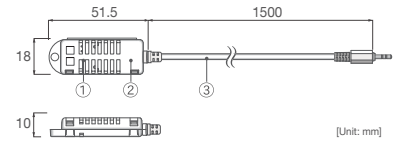
Measurement Range \*1:  
 Temperature: 0 to 45°C  
 Humidity: 10 to 95 %RH (no condensation)  
 Measurement Accuracy:  
 Temperature: ±0.5°C  
 Humidity: ±5%RH [ at 25°C and 50%RH ]  
 Response Time (90%): Approx. 7 min.  
 Materials: ①Temp/Humidity Sensor ②Polypropylene Resin



**Temperature / Humidity Sensor**

**THA-3151**

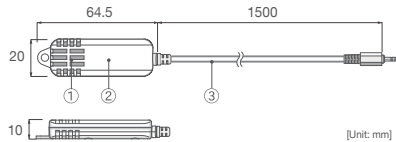
Measurement Range \*1:  
 Temperature: 0 to 55°C  
 Humidity: 10 to 95%RH (No condensation)  
 Measurement Resolution:  
 Temperature: 0.1°C  
 Humidity: 1 %RH  
 Accuracy:  
 Temperature: ±0.5°C  
 Humidity: ±5%RH [ at 25°C and 50%RH ]  
 Response Time (90%): Approx. 7 min.  
 Materials: ①Temp/Humidity Sensor ②Polypropylene Resin ③Vinyl Chloride Coated Electrical Wire



**High Precision Temperature/Humidity Sensor**

**HHA-3151**

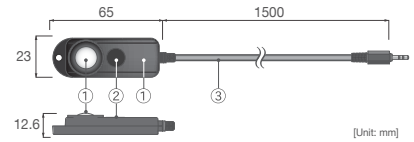
Measurement Range:  
 Temperature: -30 to 80°C  
 Humidity: 0 to 99 %RH  
 Measurement Resolution:  
 Temperature: 0.1°C  
 Humidity: 0.1 %RH  
 Accuracy (Temperature):  
 ±0.3 °C [ 0 to 50°C ]  
 ±0.5°C [ at all other temperatures ]  
 Accuracy (Humidity):  
 ±2.5%RH [ at 25°C , 10 to 85 %RH ]  
 ±4%RH [ 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.  
 Humidity Hysteresis: ±1.5 %RH or lower \*2  
 Response Time (90%):  
 Temperature: Approx. 7 min.  
 Humidity: Approx. 20 sec.  
 Long Term Stability: ±1%RH/yr, ±0.1°C/yr (under normal operational conditions) \*1  
 Materials: ① Temp/Humidity Sensor ② Polycarbonate ③ Vinyl Chloride Coated Electrical Wire



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

**ISA-3151**

Measurement Range:  
 Illuminance: 0 lx to 130 klx  
 UV Intensity: 0 to 30 mW/cm<sup>2</sup>  
 Measurement Resolution:  
 Illuminance: Minimum of 0.01 lx  
 UV Intensity: Minimum of 0.001 mW/cm<sup>2</sup>  
 Accuracy:  
 Illuminance: ±5 % [ 10 lx to 100 klx at 25°C, 50% RH ]  
 UV Intensity: ±5% [ 0.1 to 30 mW/cm<sup>2</sup> at 25°C, 50%RH ] \*3  
 Relative Spectral Response:  
 Illuminance: Approximated to the CIE standard response function V ( λ ).  
 UV Intensity: 260 to 400 nm (UVA / UVB)  
 Operating Environment : \*1  
 Temperature: -10 to 60°C  
 Humidity: ±90%RH or lower  
 Materials: ① Polycarbonate ② Glass ③ Vinyl Coated Electrical Wire

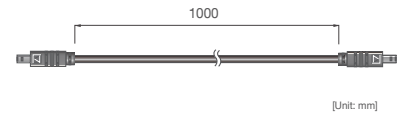


\*1: Do not expose to condensation, dampness, corrosive gases, or organic solvents (or insecticides for High Precision Temperature/Humidity Sensors).  
 \*2: When used in environments where temperature and humidity are over the values of 50°C75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to normal measurement capability.  
 \*3: Compared to the value measured by the T&D standard sensor for calibration under our calibration light source.

**Serial Communication Cable for RTR-574 / 576**

**TR-6C10**

For communication between RTR-500DC and RTR-574 / 576

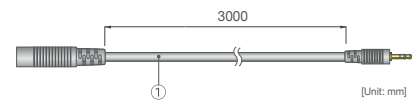


Note: Up to 3 extension cables can be connected to one sensor.

**Sensor Extension Cable for RTR-574 / 576**

**TR-1C30**

Temperature Durability: -25 to 60 °C

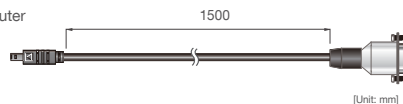


Materials: ① Vinyl Coated Electrical Wire

**Communication Cable (RTR-500 , RTR-500DC)**

**TR-07C (Serial Communication Cable)**

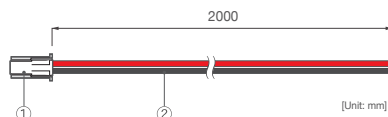
For Communication with the Computer



**External Power Cable (RTR-500GSM)**

**BC-0201**

Power Source Conditions:  
 Voltage: DC 8 - 34V  
 Current: MAX 2A



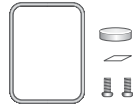
Materials: ① Connector: Housing/ XAP-02V-1, Contact/ SXA-01T-P0.6 ( J.S.T. Mfg. Co., Ltd. ) ② Cable: AWG#20, Red/ Plus (+), Black/ Minus (-)

**Other Options for RTR-501 / 502 / 503 / 505 / 507**

**Maintenance Set**

**TR-00P1**

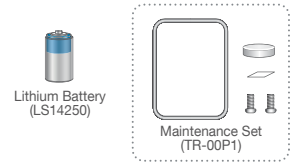
Kit Contents:  
 Rubber Packing (for the rear cover of the data logger)  
 Silica Gel (drying agent)  
 Double-sided Adhesive Tape (to fix the silica gel)  
 Lock Screw (extra screws to tighten the rear cover of the data logger)



**Battery Set**

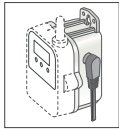
**TR-11P2**

Kit Contents:  
 Lithium Battery (LS14250)  
 Maintenance Set (TR-00P1)

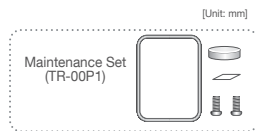
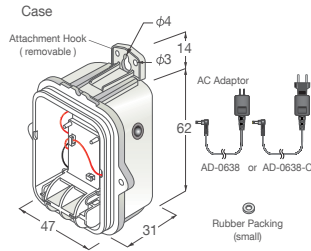


**External Power Adaptor Kit**

**RTR-500A1**



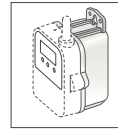
Input Voltage: DC 6 to 14V  
 Backup Power:  
 Ni-MH Battery (In case of power loss)  
 Back-up Time: About 4 days \*  
 Charging Method: Trickle Charge  
 Operational Environment Temp: 0 to 60°C  
 Water Resistance: None  
 Weight: About 37g (without AC Adaptor)  
 Kit Contents:  
 AC Adaptor (AD-0638 or AD-0638-C),  
 Rubber Packing (small) for AC Adaptor Jack  
 Case and Attachment Hook  
 Maintenance Set (TR-00P1)



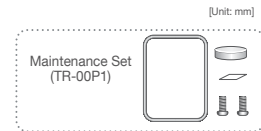
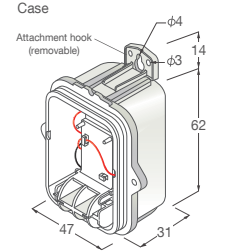
\* Varies depending on the amount of charge in the Ni-MH battery.

**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)  
 Kit Contents:  
 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.

**AC Adaptors for Base Units**

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

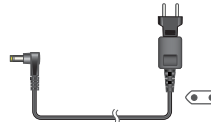
**AD-0638**

Cable Length: 1.8 m  
 Input: AC 100 - 240 V  
 Output: DC6 V 500 mA  
 Frequency: 50 / 60 Hz  
 Plug Type : A



**AD-0638-C**

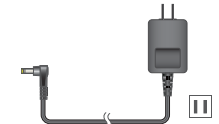
Cable Length: 1.8 m  
 Input: AC100 - 240 V  
 Output: DC6 V 500 mA  
 Frequency: 50 / 60 Hz  
 Plug Type: C



**RTR-500GSM**

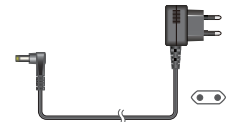
**AD-0605**

Cable Length: 1.8 m  
 Input: AC100 V (90 - 132 V)  
 Output: DC 5V 2 A  
 Frequency: 50 / 60 Hz  
 Plug Type : A



**AD-05C1**

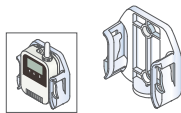
Cable Length: 1.6 m  
 Input: AC100 - 240V  
 Output: DC 5 V 2 A  
 Frequency: 50 / 60Hz  
 Plug Type: C



**Wall Attachment**

**TR-05K3 (RTR-501 / 502 / 503 / 505 / 507)**

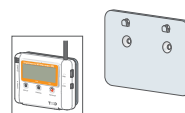
Accessories:  
 Lock Screw x 2,  
 Double-sided adhesive tape  
 x 1  
 Operational Environment  
 Temp:  
 -40 to 80°C



Materials: Polycarbonate

**TR-07K2 (RTR-574)**

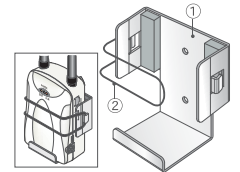
Accessories:  
 Lock Screw x2,  
 Double-sided adhesive tape  
 x 1



Materials: Polycarbonate

**TR-5GK1 (RTR-500GSM)**

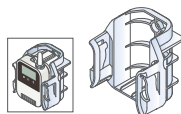
Contents:  
 Lock Screw x 2  
 Double-sided Adhesive tape x  
 1



Materials: ① Aluminum ② Rubber

**TR-05K3L (for -L Types)**

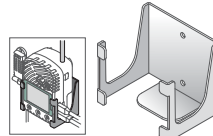
Accessories:  
 Lock Screw x 2,  
 Double-sided adhesive tape  
 x 1  
 Operational Environment  
 Temp:  
 -40 to 80°C



Materials: Polycarbonate

**AT-76K1 (RTR-576)**

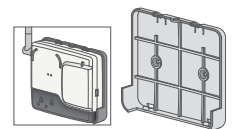
Accessories:  
 Lock Screw x 2,  
 Double-sided adhesive tape  
 x 1



Materials: Aluminum

**TR-5WK1 (RTR-500NW / 500AW)**

Accessories:  
 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.

# RTR-500 Series - Specifications

Remote Units (Data Logger)						
	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 [ -20 to 80 °C ] Avg.±0.5 °C [ -40 to -2 °C / 80 to 110 °C ] Avg.±1.0 °C [ -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 [ at all other temperatures ]	±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 ] At temperatures other than 25 °C and ≥ 0 °C, add ±0.1 %RH per degree of difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*1)
Measurement Resolution	0.1 °C	0.1 °C	0.1 °C	1 %RH	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		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.				Measurements (alternating display), Battery Life Warning, etc.	
Communication Interfaces	- 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 )					
Wireless Transmission Range	Approx. 150 meters ( 500 ft ) if direct and unobstructed					
Power	Lithium Battery: LS14250 (*3) x 1 L Type: Large Capacity Battery Adaptor Kit ( RTR-500B1 ) (*4) External Power Adaptor Kit ( RTR-500A1: sold separately )					
Battery Life (*5)	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 ( excluding protrusions and sensor ) Antenna length: 24 mm					
Weight	Approx. 56 g L Type: approx. 109 g ( including battery / excluding sensor )					
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.	
Accessories	-	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-500GSM				RTR-500, RTR-500NW / 500AW, RTR-500DC	

\*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-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-11P2 ) for replacement.

\*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 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.

\*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.



Remote Units (Data Logger)					
	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		Voltage 1ch	4-20 mA 1ch	Pulse Count 1ch
Sensor	Thermocouple: Type K, J, T, S		-	-	-
Measurement Units	°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)	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  Maximum Count: 61,439 / Recording Interval
Accuracy (*1)	Thermocouple Measurement ± ( 0.3 °C + 0.3 % rdg ) [ Type K, J, T ] ± ( 1 °C + 0.3 % rdg ) [ Type S ]  Cold Junction Compensation ±0.3 °C [ 10 to 40 °C ] ±0.5 °C [ -40 to 10 °C / 40 to 80 °C ]	± ( 0.3 °C + 0.3 % rdg ) [ 10 to 40 °C ] ± ( 0.5 °C + 0.3 % rdg ) [ -40 to 10 °C / 40 to 80 °C ]	± ( 0.5 mV + 0.3 % rdg ) [ 10 to 40 °C ] ± ( 1 mV + 0.5 % rdg ) [ -40 to 10 °C / 40 to 80 °C ]	± ( 0.05 mA + 0.3 % rdg ) [ 10 to 40 °C ] ± ( 0.1 mA + 0.3 % rdg ) [ -40 to 10 °C / 40 to 80 °C ]	
Note: The above temperatures [ _ _ °C ] are for the operating environment of the Input Module.					
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	
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 (*2)	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 ) 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 (*3) L Type: Large Capacity Battery Adaptor Kit ( RTR-500B1 ) (*4) External Power Adaptor Kit ( RTR-500A1: sold separately )				
Battery Life (*5)	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 ( excluding protrusions and Input Module ) Antenna length: 24 mm				
Weight	Approx. 56 g L Type: approx. 109 g ( including battery / excluding Input Module )				
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 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)				
Compatible Base Units	RTR-500, RTR-500NW/500AW, RTR-500DC, RTR-500GSM		RTR-500, RTR-500NW/500AW, RTR-500DC		

\*1: "rdg" stands for reading.  
 \*2: Only "Endless" is available when using RTR-500W 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-11P2 ) for replacement.  
 \*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 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.  
 \*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-500 Series - Specifications

Remote Units (Data Logger)				
	RTR-574		RTR-574-H	
Temperature/Humidity Sensor ( External )	THA-3151		HHA-3151 ( High-Precision Type )	
	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Channels	Temperature 1ch	Humidity 1ch	Temperature 1ch	Humidity 1ch
Units of Measurement	°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 [ 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 % or 85 to 99 %RH ] At temperatures other than 25 °C and ≥ 0 °C, add ±0.1 %RH per degree of difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*1)
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 )	ISA-3151			
Measurement Channels	Illuminance: 1ch UV Intensity: 1ch			
Units of Measurement	Illuminance: lx, klx UV Intensity: mW/cm2			
Measurement Range	Illuminance: 0 lx to 130 klx UV Intensity: 0 to 30 mW/cm2			
Units of Cumulative Measurement	Cumulative Illuminance: lxh, klxh, Mlxh Cumulative amount of UV Light: mW/cm2h, W/cm2h			
Display Range of Cumulative Measurement	Illuminance: 0 lxh to 90 Mlxh UV Intensity: 0 mW to 62 W/cm2h			
Accuracy	Illuminance: 10 lx to 100 klx: ±5 % [ at 25 °C, 50 %RH ] UV Intensity: 0.1 to 30 mW/cm2 : ±5 % [ at 25 °C, 50 %RH ] (*2)			
Relative Spectral Response	Illuminance: Approximated to the CIE standard response function V ( λ ) UV Intensity: 260 to 400 nm ( UVA / UVB )			
Measurement Resolution	Illuminance: Minimum of 0.01 lx UV Intensity: Minimum of 0.001 mW/cm2			
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 ) 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 ) - 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 ( excluding protrusions ) Antenna Length: 60 mm			
Weight	Approx. 68 g ( including battery, excluding sensor )			
Operating Environment	Temperature: -10 to 60 °C Humidity: 90 %RH or less ( no condensation )			
Accessories	Temperature / Humidity Sensor ( THA-3151 )		Temperature / Humidity Sensor ( HHA-3151 )	
Compatible Base Units	AA Alkaline Battery ( LR6 ), USB Communication Cable ( US-15C ), Illuminance / UV Sensor ( ISA-3151 ), User's Manual Set ( Warranty Included )			
	RTR-500C, RTR-500NW/500AW, RTR-500DC			

\*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-500GSM 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)				
	RTR-576		RTR-576-H	
Temperature/Humidity Sensor (External)	THA-3151		HHA-3151 (High-Precision Type)	
	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance
Measurement Channels	Temperature 1ch	Humidity 1ch	Temperature 1ch	Humidity 1ch
Units of Measurement	°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 [ at all other temperatures ]	±2.5 %RH [ at 25 °C, 10 to 85 %RH ] ±4.0 %RH [ at 25 °C, 0 to 10 % or 85 to 99 %RH ] At temperatures other than 25 °C and ≥ 0 °C, add ±0.1 %RH per degree of 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 sec.
CO2 Sensor (Internal)	NDIR			
Measurement Channels	CO2 Concentration 1ch			
Units of Measurement	ppm			
Measurement Range	0 to 9,999 ppm			
Accuracy	±( 50 ppm + 5 % of reading ) [ at 5,000 ppm or less ] (*3)			
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 ) 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 ) - 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 0.1 A / Resistance when ON: about 15 Ω )			
Power	AC Adaptor ( AD-0638 or AD-0638-C ), 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 ( excluding protrusions and sensor ) Antenna Length: 60 mm			
Weight	Approx. 220 g ( including battery, excluding sensor )			
Operating Environment	Temperature: 0 to 45 °C Humidity: 90 %RH or less ( no condensation )			
Accessories	Temperature / Humidity Sensor ( THA-3001 )		Temperature / Humidity Sensor ( HHA-3151 )	
	AA Alkaline Battery (LR6) x 4, AC Adaptor ( AD-0638 or AD-0638-C ), USB Communication Cable ( US-15C ), User's Manual Set ( Warranty Included )			
Compatible Base Units	RTR-500, RTR-500NW/500AW, 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% 75%, 60% 50%, 70% 35%, and 80% 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-500GSM 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.

## RTR-500 Series - Specifications

Base Unit		
	RTR-500GSM	RTR-500NW / RTR-500AW
Compatible Devices	Remote Units: RTR-501 / 502 / 503 / 505-TC / 505-Pt ( Including L Type ) Repeater: RTR-500	Remote Units: RTR-501 / 502 / 503 / 507 / 574 / 576 / 505-TC / 505-Pt / 505-V / 505-mA / 505-P ( Including L Type and H Type ) Repeater: RTR-500
Maximum Number of Registrations	Remote Units: 20 units Repeaters: 5 units x 4 groups	Remote Units: 100 units Repeaters: 10 units x 10 groups
Communication Interfaces	<Between Base Unit(s) - ( Repeaters ) - Remote Unit(s)> - 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 )  <Between Base Unit - PC> - USB Communication ( For Setup )	<Between Base Unit(s) - ( Repeaters ) - Remote Unit(s)> - 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 )  <Between Base Unit - PC> - RTR-500NW: Wired LAN RJ45 Connector 100 Base-TX / 10 Base-T AutoMDI / MDI-X - RTR-500AW: Wireless LAN Internal wireless LAN antenna, IEEE 802.11b / g WEP ( 64 bit / 128 bit ) / WPA-TKIP / WPA2 - AES - USB Communication ( For Setup )
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed	Approx. 150 meters (500 ft) if direct and unobstructed
External Alarm Input/Output Terminal (*1)	<Input Terminal> Internal Pull-up: 3 V 100 kΩ Maximum Input Voltage: 30 V  <Output Terminal> Voltage when OFF: DC 30 V or less Current when ON: 0.1 A or less Resistance when ON: 15 Ω	<Input Terminal> Internal Pull-up: 3 V 100 kΩ Maximum Input Voltage: 30 V  < Output Terminal > Voltage when OFF: AC / DC 50 V or less Current when ON: 0.1 A or less Resistance when ON: 35 Ω
Communications Protocol	SMTP (POP before SMTP, SMTP-AUTH <LOGIN>), FTP, SMS (*2)	SMTP ( POP before SMTP, SMTP-AUTH <LOGIN>), FTP, SNMP, DHCP, DNS
Power	AA Alkaline Battery ( LR6 ) x 4 AC Adaptor ( AD-0605 or AD-05C1 ) ( 5V, 2A ) External Power Supply ( DC8 - 34V )	AC Adaptor ( AD-0638 or AD-0638-C )
Battery Life (*3)	Expected battery life with only AA alkaline batteries: Approx. 10 days ( with warning report settings ON, without using GPS )	-
Dimensions	H 96 mm x W 66 mm x D 39 mm ( excluding antenna ) Antenna Length: 109 mm	H 83 mm x W 102 mm x D 28 mm ( excluding antenna ) Antenna Length: 87.3 mm
Weight	Approx. 220 g ( including batteries )	RTR-500NW: Approx. 130 g RTR-500AW: Approx. 120 g
Operating Environment	Temperature: 10 to 55 °C ( -10 to 55 °C with external power connected ) Humidity: 90 %RH or less ( no condensation )	Temperature: -10 to 60 °C Humidity: 90 %RH or less ( no condensation )
Accessories	AA Alkaline Battery ( LR6 ) x 4, Antenna x 2, USB Communication Cable ( US-15C ), External Power Cable ( BC-0201 ), Software ( CD-ROM ), Introductory Manual Set ( Warranty Included )	Antenna, USB Communication Cable ( US-15C ), LAN Cable ( LN-20W, only for RTR-500NW ), AC Adaptor ( AD-0638 or AD-0638-C ), Software ( CD-ROM ), Introductory Manual Set ( Warranty Included )
GPS Interface (*4)	Connector: Mini DIN 6 Pin Female Communication Standard: ANSI / EIA / TIA-232-E Geographic Coordinate System: WGS 84 Power Supply: 5 V MAX 100 mA	-
SIM Card (*2) (*5)	SIM card compatible with GSM ( Standard size ) US: GSM 850 MHz 1900 MHz EU: GSM 900 MHz 1800 MHz GPRS ( General Packet Radio Service ) enabled	-
Compatible OS (*6) (*7)	<for US> Microsoft Windows 8 32 / 64 bit English, Spanish Microsoft Windows 7 32 / 64 bit English, Spanish Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish <for EU> Microsoft Windows 8 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows 7 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish, French, German, Italian Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish, French, German, Italian	<for US> Microsoft Windows 8 32 / 64 bit English, Spanish Microsoft Windows 7 32 / 64 bit English, Spanish Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish <for EU> Microsoft Windows 8 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows 7 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish, French, German, Italian Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish, French, German, Italian

\*1: In order to use the external alarm terminal for RTR-500GSM, please prepare a compatible connector: JST PAP-04V-S.

\*2: SMS is required for some functions of the RTR-500GSM. If SMS is necessary, make sure that the contract you have with your carrier includes this service.

\*3: 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.

\*4: In order to use the GPS function (attach geographical positioning info to current readings data), please purchase a compatible GPS receiver: GlobalSat BR-355. For all inquiries and questions concerning sales of the product, please directly contact GlobalSat at (<http://www.globalsat.com.tw>).

\*5: Please prepare a contracted SIM card separately.

\*6: For installation, it is necessary to have Administrator ( Computer Administrator ) rights.

\*7: If you are using Windows 8, please note that our software is designed to be used in "Desktop" mode only.

The specifications listed above are subject to change without notice.



Base Unit / Repeater		
	RTR-500DC	RTR-500
Compatible Devices	Remote Units: RTR-501 / 502 / 503 / 507 / 574 / 576 / 505-TC / 505-Pt / 505-V / 505-mA / 505-P ( Including L Type and H Type )  Repeater: RTR-500	Remote Units: RTR-501 / 502 / 503 / 507 / 574 / 576 / 505-TC / 505-Pt / 505-V / 505-mA / 505-P ( Including L Type and H Type )  Repeater: RTR-500
Maximum Number of Registrations	Remote Units: 32 units x 7 groups ( 16 units x 7 groups for RTR-505 / 574 / 576 ) Repeaters: 15 units x 7 groups	Remote Units: 32 units x 20 groups Repeaters: 30 units x 20 groups
Storage Capacity	When downloading from units filled to logging capacity: - 15 units of RTR-501 / 502 / 503 / 505 / 507 - 7 units of RTR-574 - 10 units of RTR-576  When downloading from units of any type containing small amounts of data, it can store and manage up to 250 download sessions.	-
Communication Interfaces	<Between Base Unit(s) - ( Repeaters ) - Remote Unit(s)> - 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 ) ( With compatible Remote Units except RTR-574 and RTR-576 ) - Serial Communication ( RS-232C ) (*1) ( With RTR-574 and RTR-576 )  <Between Base Unit - PC> - USB Communication - Serial Communication ( RS-232C ) (*2)	<Between Base Unit(s) - ( Repeaters ) - Remote Unit(s)> - 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 870MHz, RF Power: 5 mW ) - Optical Communication ( proprietary protocol ) ( With compatible Remote Units except RTR-574 and RTR-576 )  <Between Base Unit - PC> - USB Communication - Serial Communication ( RS-232C ) (*2)
Wireless Transmission Range	Approx. 150 meters ( 500 ft ) if direct and unobstructed	Approx. 150 meters ( 500 ft ) if direct and unobstructed
Communications Protocol	-	SMTP ( POP before SMTP, SMTP-AUTH <LOGIN / PLAIN / CRAM-MD5> ), FTP (*3)
Power	AAA Alkaline Battery ( LR03 ) x 2 - AAA Ni-MH batteries, AC adaptor ( AD-0638 or AD-0638-C ), or USB bus power may also be used.	USB Bus Power, AA Alkaline Battery x 2, AC Adaptor ( AD-0638 or AD-0638-C ) (*4)
Battery Life (*5)	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 )	As a Repeater: Approx. 6 months ( When downloading full data once a day with one Repeater )
Dimensions	H 125 mm x W 58 mm x D 26.3 mm ( excluding antenna ) Antenna Length: 109 mm	H 96 mm x W 65 mm x D 25 mm ( excluding antenna ) Antenna Length: 109 mm
Weight	Approx. 127 g ( including batteries )	Approx. 71 g ( excluding batteries )
Operating Environment	Temperature: 0 to 50 °C Humidity: 90 %RH or less ( no condensation )	Temperature: -10 to 60 °C ( -30 to 60 °C with external power connected ) Humidity: 90 %RH or less ( no condensation )
Accessories	AAA Alkaline Battery ( LR03 ) x 2, USB Communication Cable ( US-15C ), Software ( CD-ROM ), Introductory Manual Set ( Warranty Included )	Antenna, USB Communication Cable ( US-15C ), Software ( CD-ROM ), Memo Sticker, Introductory Manual Set ( Warranty Included )
Compatible OS (*6) (*7)	<for US> Microsoft Windows 8 32 / 64 bit English, Spanish Microsoft Windows 7 32 / 64 bit English, Spanish Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish <for EU> Microsoft Windows 8 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows 7 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish, French, German, Italian Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish, French, German, Italian	<for US> Microsoft Windows 8 32 / 64 bit English, Spanish Microsoft Windows 7 32 / 64 bit English, Spanish Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish <for EU> Microsoft Windows 8 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows 7 32 / 64 bit English, Spanish, French, German, Italian Microsoft Windows Vista 32 bit ( SP1 or later ) English, Spanish, French, German, Italian Microsoft Windows XP 32 bit ( SP3 or later ) English, Spanish, French, German, Italian

\*1: Optional communication cable TR-6C10 is required for serial communication with RTR-574 and RTR-576.

\*2: Customers wishing to write their own software, please contact your local distributor for the serial communications protocol specifications. ( Note: Optional serial communication cable TR-07C is also required. )

\*3: For RTR-500, the protocol is implemented in the software.

\*4: 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.

\*5: 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.

\*6: For installation, it is necessary to have Administrator ( Computer Administrator ) rights.

\*7: If you are using Windows 8, please note that our software is designed to be used in "Desktop" mode only.

The specifications listed above are subject to change without notice.

## High Performance Analysis Tool: T&D Graph

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.

Open data directly from T&D WebStorage Service

Open only data that matches search conditions

Data is automatically merged and opened.

Device	Serial Number	Name	Time of first data s...	Time of last data sa...
RTR-501	3FB80009	Madn5.7	2012-04-01 12:00:57	2012-04-01 15:58:57
RTR-502	52BA04D7	inside	2012-05-02 20:54:03	2012-12-10 06:58:28
RTR-503	52BC052F	outside	2012-05-02 20:53:48	2012-12-10 06:59:24
RTR-501	3FB80002	Stylus1	2012-05-07 00:02:26	2012-05-07 07:57:26
RTR-574	32C0001D	Kamul1	2012-05-07 00:03:13	2012-05-07 07:58:13
RTR-503	3FB0000C	madn6.9	2012-05-07 00:01:33	2012-05-07 07:59:33
RTR-574	52C000B2	2F(East)	20	20
RTR-576	5FC40038	2F(West)	20	20

### 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.

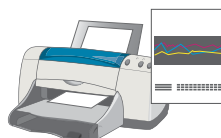
Use the text and figure editing feature to create memos and comments within graphs.

### Save / Output

Save



Print



CSV format data





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### Caution regarding safety

**For safe operation carefully read instructions before using the product.**

Distributor



**T&D Corporation**



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