Wireless Data Logging System

RTR-500 Series

**Process and Manage your Important Data
Anytime from Anywhere**

T&D Corporation

CE

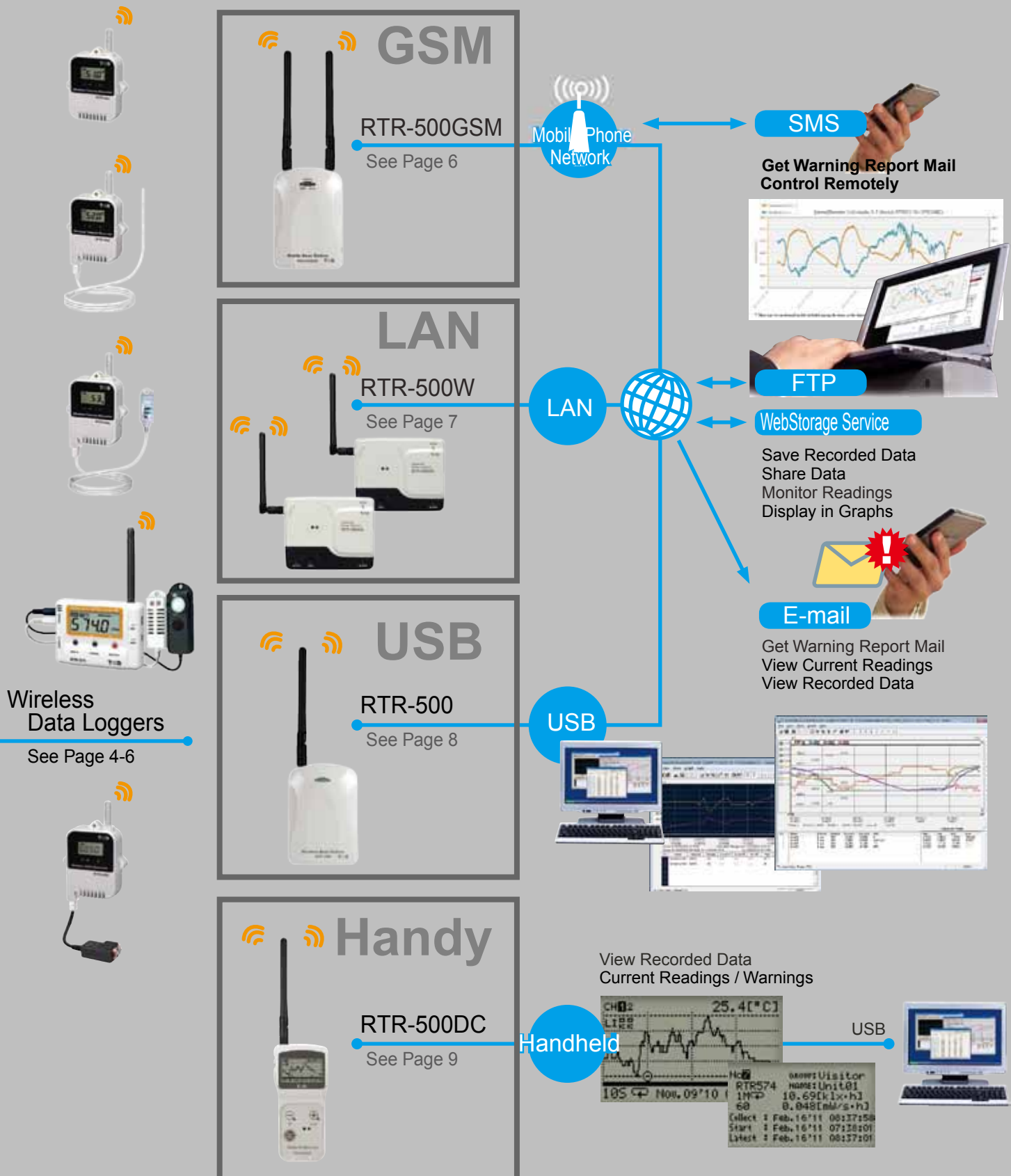**Still Collecting Data One by One?**
T&D Can Change that . . . Get All your Data Just by Opening the Internet!

What is a T&D Wireless Data Logging System?

Measure / Record

Collect / Send

Monitor / Manage

GSM

RTR-500GSM
See Page 6

Mobile Phone Network

SMS

Get Warning Report Mail
Control Remotely

LAN

RTR-500W
See Page 7

LAN

FTP

WebStorage Service

Save Recorded Data
Share Data
Monitor Readings
Display in Graphs

E-mail

Get Warning Report Mail
View Current Readings
View Recorded Data

USB

RTR-500
See Page 8

USB

Wireless
Data Loggers

See Page 4-6

Handy

RTR-500DC
See Page 9

Handheld

View Recorded Data
Current Readings / Warnings

USB

Remote Units and Base Units: What are they and what can they do?

Remote Units are Data Loggers that can measure and record data such as temperature and humidity. Base Units use wireless communication to collect the data recorded and saved in the Remote Units. Also, Base Units can be set up to periodically communicate with Remote Units to monitor for measurement abnormalities and other warnings. This collected data, as well as, current readings can be sent via FTP or E-mail to a specified location. Moreover, upon a warning occurrence warning reports can be sent via E-mail.

Select the Type of Data Logger and Base Station to Fit your Needs

Mobile Base Station RTR-500GSM with its built-in cellular phone communication capability is perfect for use in remote areas where a LAN connection is difficult or not available. The Network Base Station RTR-500W is designed as a Base Unit for use with a LAN connection and is perfect for use in places where no PC is available or as a quick addition to a network to create a measurement management system. The Wireless Base Station RTR-500 is an easy-to-use Base Unit for onsite use with a USB connection to a local computer. The handheld Wireless Data Collector RTR-500DC is a user-friendly wireless communication Data Collector designed for hand-held portability. The type of Data Logger can be selected to match your measurement items and range. And to further increase the possibilities, an array of optional sensors is also available.
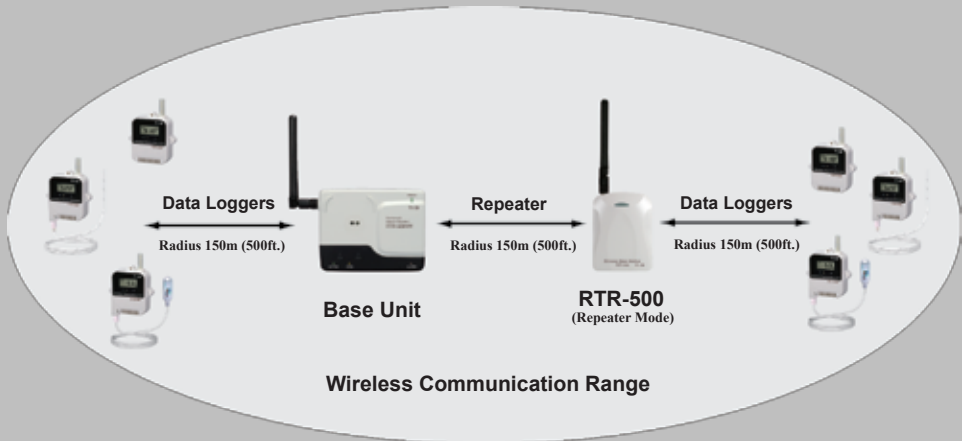
High Speed Wireless Communication and Data Downloading

The RTR-500 Series is designed for powerful and reliable wireless communication. The wireless communication range, if unobstructed and direct, is about 150 meters (500 ft). It takes only about two minutes to download data from one Remote Unit at full capacity. The Loggers have been designed to keep on working in even harsh conditions; that is why wireless communication is still possible in conditions from minus 30˚C to 80˚C.
* Note: This is the range of temperature in which wireless communication is possible and does not represent the measurement range of Remote Units, nor the range in which Remote Units or Base Units can be operated.

Easy Expansion of the Wireless Communication Range

It is possible to expand the wireless communication range by simply registering a Repeater (RTR-500) or a number of Repeaters to relay communication between a Base Unit and Remote Units.

Data Loggers — Radius 150m (500ft.)   Repeater — Radius 150m (500ft.)   Data Loggers — Radius 150m (500ft.)

Base Unit

RTR-500 (Repeater Mode)

Wireless Communication Range

One Base Unit for Total Management of Multiple Remote Units

With just one Base Unit it is possible to simultaneously manage a large number of Remote Units. Groups of Remote Units and Repeaters can be created and registered to a Base Unit to match your situation: by location, by item, by user and so on. Each Group is assigned a Wireless Communication Frequency Channel to avoid interference and poor transmission.

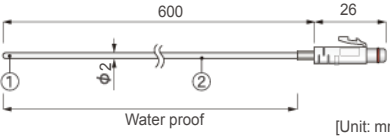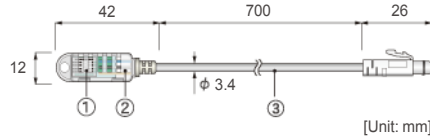| Base Unit Type	Remote Units	Groups	Repeaters
RTR-500GSM	Total of 20	4	5 Per Group
RTR-500NW / AW	Total of 100	10	10 Per Group
RTR-500	32 Per Group	20	30 Per Group
RTR-500DC	32 Per Group (16 if RTR-574)	7	15 Per Group

Dedicated Software Free of Charge

RTR-500 Series software is provided free of charge to our customers. This dedicated software makes settings a snap: from registration of Base Units, Remote Units and Repeaters to wireless and network communication settings.

Monitoring of Current Readings via a Web Browser (T&D WebStorage Service)

By sending the collected data to our online service "T&D WebStorage Service", it is possible to monitor current readings and/or warnings, as well as, share the data via a PC web browser. "T&D Webstorage Service" (http://www.webstorage-service.com/) is a free web-based storage service provided by T&D Corporation.

Data Loggers built to work and last in Harsh Environments

RTR-501 / 501L

Measurement Range:
-40 to 80℃

Water Resistance
IP67 (immersion proof)
Not for continued immersion.

Temperature Sensor

Internal Temperature Sensor

RTR-502 / 502L
External Temperature Sensor Included

Measurement Range:
-60 to 155℃

Water Resistance
IP64 (rated for use in daily life) when the sensor is connected. Not for continued immersion.

Temperature Sensor TR-5106

600   26

φ2

① ②

Water proof

[Unit: mm]

Water Resistance:
The fluoropolymer-coated section is waterproof. Other sections are immersion proof (IPX4)
Materials: ① Thermistor
② Fluoropolymer-coated Electrical Wire

RTR-503 / 503L
External Temperature / Humidity Sensor Included

Measurement Range:
Temperature : -0 to 55℃
Humidity: 10 to 95%RH

Water Resistance
IP64 (rated for use in daily life) when the sensor is connected. Not for continued immersion.

Temperature / Humidity TR-3310

42   700   26

12

① ②   φ 3.4   ③

[Unit: mm]

Water Resistance: None
Materials: ① Temp/Humidity Sensor ② Polypropylene Resin
③ Vinyl Chloride Coated Electrical Wire

RTR-501: Durable Waterproof and Dustproof Body

Internal Sensor provides Optimum Waterproof and Dustproof Capabilities. This is the perfect Data Logger for use in harsh environments: whether that may be indoor frozen or refrigerated storage or high humidity, high dust outdoor applications. And the compact lightweight design means it can be placed just about anywhere.

RTR-502: Variety of Optional Sensors for Wide Range Measurement

We offer a variety of optional sensors to meet your needs; from ones with stainless protection to those that can be used in water. For details see the Optional Sensor Leaflet.

RTR-503: For Humidity as well as Temperature

The RTR-503 uses a sensor that measures and records both temperature and humidity.
Note: The attached sensor is not waterproof.

Large Recording Capacity: 16,000 Readings

The maximum number of data readings that can be recorded in one Data Logger is 16,000. For RTR-503, that means 8,000 readings x 2 channels. 16,000 readings means you can record every one second and still log four and a half hours of data; or at a recording interval of 60 minutes you can keep logging for 666 days. By using the software the recording interval for a Remote Unit can be set to one of fifteen recording intervals (1 second to 60 minutes).

### Recording Mode (Endless / One Time)

Select the Recording Mode from Endless or One Time. When using Endless Mode, upon reaching the logging capacity the oldest data is overwritten and recording continues. When using One Time, upon reaching logging capacity recording automatically stops.

Low Energy Consumption Design means Longer Continuous Operation

The Data Loggers are outfitted with a Lithium Battery (LS14250). Under normal temperatures, if recorded data is downloaded once a day or if monitoring is carried out once every ten minutes, the estimated battery life will be about ten months. Model names which include "L" are designed with a large capacity battery pack. Under the same conditions, L-type models will continue for about four years without the need to change the battery.

Note: * Lithium batteries (CR2) sold in stores may also be used, but only in temperatures between -20C and 60C. If you are using a logger in an environment where temperatures may be lower than -20C or higher than 60C, we strongly suggest purchasing and using the "optional Battery Set" (TR-11P2.)
* Battery life varies depending upon the type of battery, the measuring environment, the frequency of communication, and the ambient temperature in which it is used. All estimates are based on operations carried out with a new battery and are in no way a guarantee of your actual battery life.
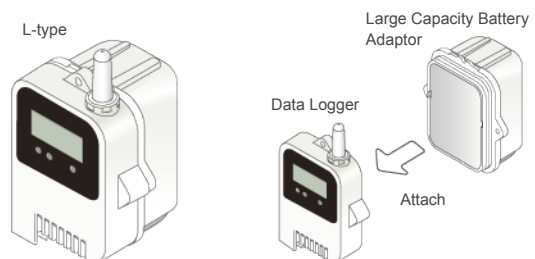
L-type

Large Capacity Battery Adaptor

Data Logger

Attach

Possible to Adjust Measurements

An adjustment function has been included to aid in the adjustment of measurements. This function can be set up using the "Adjustment Tools" application in the software supplied with the Base Unit.

RTR-505TC / 505Pt / 505V / 505mA / 505P

RTR-505-TC is a type of Data Logger supplied with the Input Module which supports the following types of thermocouple sensors: K, J, T, and S. It is possible to measure and record temperature in a range of -199 to 1700°C.

RTR-505-Pt is a Data Logger which supports Pt100 (3-wire / 4-wire) and Pt1000 (3-wire / 4-wire) sensors.

RTR-505-V is a Data Logger designed to measure and record voltage signals from various types of sensors and measuring devices. Two types of recording method (instantaneous or average) are available to be chosen from. It is equipped with a preheat function that transmits a preheat signal synchronized with the recording interval to turn sensors or other devices ON and OFF.

RTR-505-mA is a Data Logger designed to measure and record 4-20mA signals from various types of sensors and measuring devices. Two types of recording method (instantaneous or average) are available to be chosen from.

RTR-505-P is a Data Logger designed to record the changes in pulse count for contact signals (such as switches, relays, and thermostats) and Lo/Hi voltage signals that occur during a set recording interval. It is also capable of recording the total pulse count from the start of recording.

RTR-505-TC / RTR-505-TCL: Thermocouple
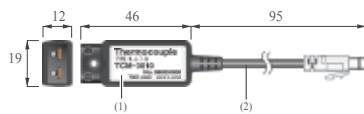
Measurement Range

K: -199 to 1300 °C
J: -199 to 750 °C
T: -199 to 400 °C
S: -20 to 1700 °C

Measuring Accuracy*

Cold Junction Compensation
Module temperature at 10 to 40°C: ±0.3°C, At other temp: ±0.5°C
Thermocouple Measurement
Type K, J, T : ±0.3°C + 0.3% of reading
Type S : ±1°C + 0.3% of reading

Note:*Sensor error is not included.

Input Module TCM-3010 (Included)

12   46   95
19

(1)Polyamide (black) Vinyl (2)Coated Electrical Wire   [Unit: mm]

RTR-505-Pt / RTR-505-PtL: Pt

Measurement Range

-199 to 650°C

Measuring Accuracy*

Module temperature at 10 to 40°C: ± 0.3°C + 0.3% of reading
At other temp: ±0.5°C + 0.3% of reading

Note:*Sensor error is not included.

Input Module PTM-3010 (Included)

12   40   95
23

40   95
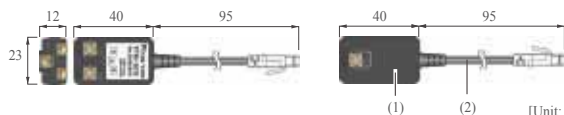
(1) Polyamide (black) (2)Vinyl Coated Electrical Wire   [Unit: mm]
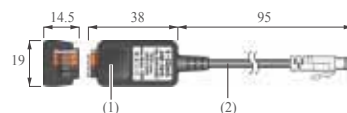
RTR-505-mA / RTR-505-mAL: 4-20mA

Measurement Range

0 to 20mA (Operational up to 40mA)

Measuring Accuracy*

Module temperature at 10 to 40°C: ± 0.05mA + 0.3% of reading
At other temp: ±0.1mA + 0.3% of reading

Note:*Sensor error is not included.

Input Module AIM-3010 (Included)

14.5   38   95
19

(1) Polyamide (black) (2)Vinyl Coated Electrical Wire   [Unit: mm]
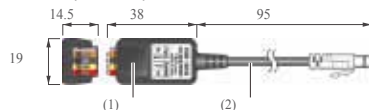
RTR-505-V / RTR-505-VL: Voltage

Measurement Range

0 to 22 V

Measuring Accuracy*

Module temperature at 10 to 40°C: ± 0.5mV + 0.3% of reading
At other temp: ±1mV + 0.5% of reading

Note:*Sensor error is not included.

Input Module VIM-3010 (Included)

14.5   38   95
19

(1)Polyamide (black) (2) Vinyl Coated Electrical Wire   [Unit: mm]

RTR-505-P / RTR-505-PL: Pulse

Recording Method

Logging Capacity : 16,000 readings
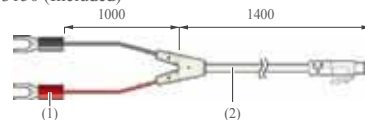Capable of counting up to 61,439 pulses per reading

Pulse Response

Max of 3,500 pulses per second

Input Range

Voltage Signals: 0 to 27V
Lo: 0.5V or less, Hi: 2.5V or more
Contact signals also recordable

Input Cable PIC-3150 (Included)

1000   1400

M3.5 Crimp Terminal   Vinyl Coated Electrical Wire   [Unit: mm]

RTR-574: One Logger records Illuminance, UV, Temperature and Humidity

RTR-574
External UV and Illuminance Sensor / Internal Temperature and Humidity Sensor
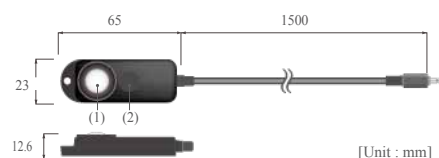
Measurement Range
Illuminance: 0 ~ 130,000 lx-h
UV Intensity: 0 ~ 30W/cm²-h
Temperature : -0 ~ 55°C
Humidity: 10 ~ 95%RH

Water Resistance
None

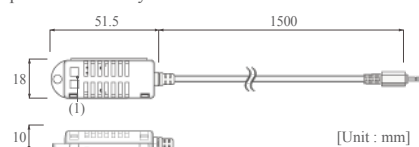Note: * Currently, this product is not compatible with RTR-500GSM

Illuminance UV Sensor ISA-3151

65   1500
23
12.6   [Unit : mm]
(1) (2)

Water Resistance: None
(1) Illuminance Sensor Area (2) Ultraviolet Sensor Area

Temperature Humidity Sensor THA-3151
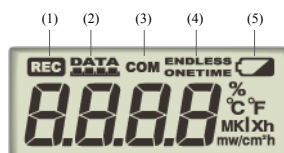
51.5   1500
18
(1)
10   [Unit : mm]

Water Resistance: None
(1) Temperature/Humidity Sensor Area

View Recording Status on Easy-to-Read Display

The large display allows you to easily check the RTR-574's recording status, battery status and remaining data capacity as well as all types of measurements.

```
(1)   (2)   (3)   (4)      (5)
REC DATA COM ENDLESS
              ONETIME
                        %
8.8.8.8   °C °F
           MKlXh
           mw/cm²h
```

(1) This mark comes ON when recording is in progress
(2) Scale shows the amount of stored data. A block is added for every 2000 readings.
(3) Communication status is shown here
(4) Current Recording Mode (ENDLESS or ONETIME) is shown here
(5) This mark shows when it is time to replace battery

View Cumulative Values

Besides measuring and recording Illuminance, UV, Temperature and Humidity, the RTR-574 calculates and displays the "Cumulative Illuminance" and "Cumulative Amount of UV Light" during a recording session.

    Cumulative Illuminance Display Range: 0 to 90,000,000 lxh
    Cumulative Amount of Ultraviolet Light Display Range: 0 to 62W/cm²-h

Note: * The cumulative values are for display only. They are not recorded.

Simple, Direct USB Connection

It is possible to connect an RTR-574 Unit directly to your computer with a USB cable. Data can be quickly and easily downloaded to your PC. If the computer has more than one USB port, it is possible to connect multiple RTR-574 Units to one computer at the same time.
Note: * This is not possible if your operating system is Windows XP.

Logging Capacity: 8,000 data sets

Up to 8,000 data sets can be stored in one logger. One data set consists of readings for all channels in that type of unit: Illuminance, UV intensity, Temperature, and Humidity.

Recording Mode (Endless / One Time)

Select the Recording Mode from Endless or One Time. When using Endless Mode, upon reaching the logging capacity the oldest data is overwritten and recording continues. When using One Time, upon reaching logging capacity recording automatically stops. When using RTR-500GSM, RTR-500NW or RTR-500AW as a Base Unit, only "Endless" can be selected.

Illuminance Measurable in Wide Range

The Illuminance measurement range is from 0 to 130,000 lx; which means it is possible to measure in both dim moonlight and the bright summer sun. And with recording and display possible at a resolution down to 0.01 lx, measurements can be taken in conditions of even less light.

Button Operation Possible

The buttons on the face of the RTR-574 Unit make it possible to change the LCD display pattern, start and stop recording, make or change recording interval settings, and turn power ON or OFF. To prevent unexpected errors in button operation, you can use the software supplied with the Base Unit to lock the button operation.

DISPLAY Button
The RTR-574 display can be changed as follows: Illuminance (lx, Klx) >> UV Intensity (mW/cm²) >> Temperature(, °F) >> Humidity (%) >> Cumulative Illuminance (lx-h, Klx-h,Mlx-h) >> Cumulative Amount of Ultraviolet Light (mW/cm²-h) >> Back to the Alternate Display. By pressing the Display Button it is possible to switch between continually viewing all items in a cycle or select only certain items for view.

INTERVAL Button
Use this button to check the current Recording Interval and make any necessary changes to it.

REC/STOP Button
Use this to start and stop recording.

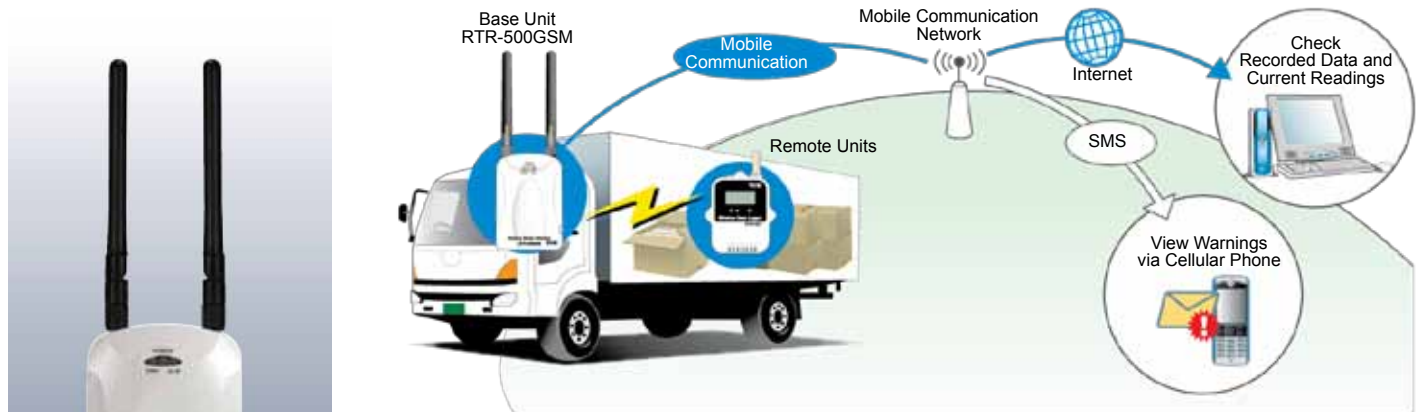### Up to Four Months of Operation on One Battery

Power is provided by one AA alkaline battery. If one RTR-574 at full logging capacity is downloaded once a day via wireless communication, the estimated battery life is about four months.

Note: * Battery life varies depending upon the type of battery, the measuring environment, the frequency of communication, and the ambient temperature in which it is used. Allestimates are based on operations carried out with a new battery and are in no way aguarantee of actual battery life.
    * There are no L-types models of RTR-574.

Possible to Adjust Measurements

An Adjustment Function has been included to aid in the adjustment of measurements. This Function can be set up with the "Adjustment Tools" application in the software supplied with the Base Unit.

Base Unit equipped with GSM Cellular Phone Network Capabilities

Base Unit
RTR-500GSM

Mobile Communication

Mobile Communication Network

Internet

Check Recorded Data and Current Readings

Remote Units

SMS

View Warnings via Cellular Phone

Application Examples

* Place in freight vehicle to record and monitor temperature and humidity during transport
* Monitor and record temperature and humidity in distant places where LAN connection is impossible

GSM Cellular Phone Communication Function

The RTR-500GSM operates using a SIM card from your cellular phone company or carrier. As long as the Base Unit is in communication range for cellular phone service it can be used to communicate with and manage Data Loggers that are within wireless communication range; perfect for during transport, in the mountains, on the sea or for any out of the way places where a LAN connection is impossible.

Warning Monitoring Function

When a measurement exceeds an upper or lower limit and has been judged by the RTR-500GSM to qualify as a warning, a warning report can be sent via E-mail or SMS (Short Message Service). Moreover, by connecting a siren or lamp to the external contact output connector when an important warning occurs, the people at the point of measurement can also quickly take any necessary action.

Siren
Lamp . .

Warning

Mobile Communication Network

Mobile Communication

SMS /

High Speed Wireless Communication and Data Downloading

The wireless communication range, if unobstructed and direct, is about 150 meters [500 ft]. Downloading recorded data from one full (16,000 readings) Remote Unit into the Base Unit takes only about two minutes. Placing a Repeater between the RTR-500GSM and Remote Units can easily expand the wireless communication range. When using Repeaters and downloading data, the same amount of time noted above is necessary for each Repeater.
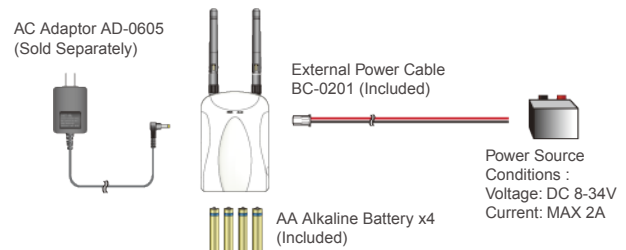
Control Operation via SMS Commands

Via SMS commands from a cell phone to the RTR-500GSM, it is possible to start and stop RTR-500GSM operation. It is also possible to request recorded data be downloaded to a set address.

Automatic Downloading of Recorded Data and Monitoring of Current Readings

Recorded Data and Current Readings can be automatically downloaded from Remote Unit(s) at a set interval and that data can then be sent by e-mail or FTP to a designated address.

Select a Power Source to meet your Application Needs

The user can select to run the unit on four AA alkaline batteries, or use the AC adaptor to connect to an AC outlet, or hook up to an external power source of their choice by connecting to the External Power Connector (DC 8 – 34V). Keeping batteries in the unit provides a backup source of power for when and if electrical power is cut from the AC or DC connection. If using batteries as the source of power, the estimated battery life is about 10 days.

AC Adaptor AD-0605
(Sold Separately)

External Power Cable
BC-0201 (Included)

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

AA Alkaline Battery x4
(Included)

Note: * If necessary, please purchase separately our optional AC adaptor AD-0605..
* When using an external power source, it is necessary to use a power source which meets the specifications of our External Power Cable BC-0201 supplied with the unit. We do not handle or sell external power sources; please purchase separately.
* Battery Life will vary depending on the measuring environment, the quality of the battery being used, the frequency of communication and other settings made in the unit.

About SIM Cards

To use the RTR-500GSM, you fi rst must purchase a SIM card from your cellular phone company or carrier and install it into the RTR-500GSM. After installing the card and making some necessary settings with the supplied software via PC, you are ready to connect to your cellular phone network.
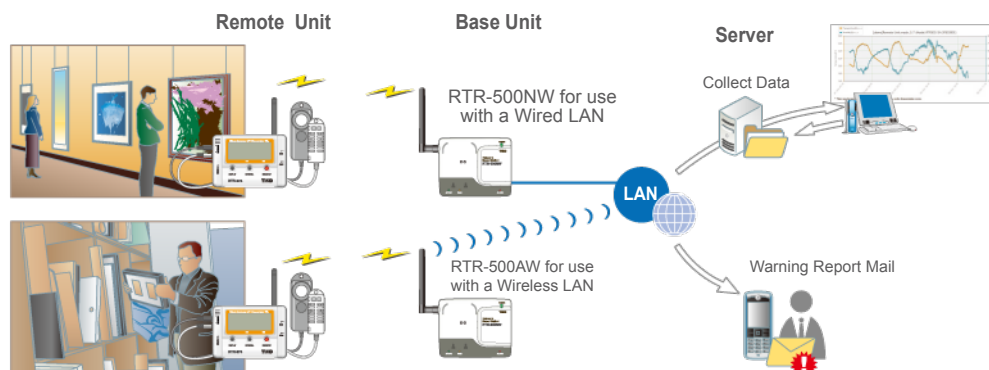
Note: The SIM card must adhere to the following conditions:
* Compatible with GSM (GSM 850 or GSM 1900).
* Able to use SMS (Short Message Service) and GPRS (General Packet Radio Service).
* The card has been activated.

Attach GPS Info to Current Readings (Optional)

Current Readings from Remote Unit(s) can be sent via e-mail or FTP; with a GPS receiver connected current location info can also be attached to the transmission. It is necessary to purchase the GPS receiver separately.

Note: T&D Corporation does not handle or sell GPS receivers. The following receiver has been proven to work with our system: BR-355 Cable GPS (GlobalSat Corporation). For all inquires and questions concerning sales of the product, please directly contact GlobalSat at (http://www.globalsat.com.tw/).

Base Unit for LAN Connection : Wired or Wireless

Remote Unit **Base Unit** **Server**

RTR-500NW for use with a Wired LAN

Collect Data

RTR-500AW for use with a Wireless LAN
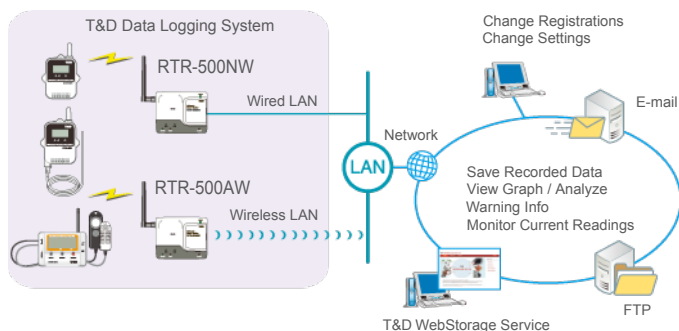
LAN

Warning Report Mail

Application Examples

* For centralized monitoring and management of temperature and humidity in refrigerated cases across supermarkets or other chain stores
* For monitoring systems of pharmacy storage facilities
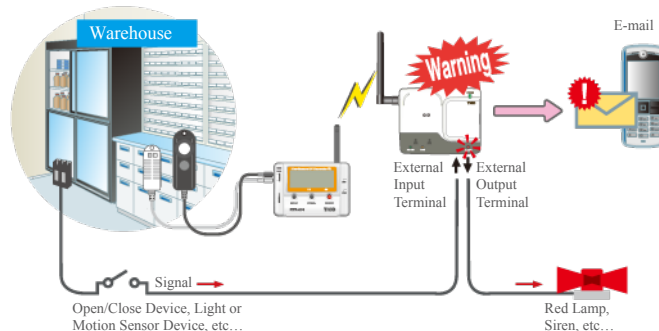* For degradation prevention systems in art museums and other archival and exhibit forums

Automatically Download and Send Data

At the set interval, the RTR-500W will communicate via wireless communication to collect recorded data or current readings from Remote Units and send the received data via FTP, e-mail to a set address or send it to our "T&D WebStorage Service".

T&D Data Logging System

RTR-500NW

Wired LAN

RTR-500AW

Wireless LAN

Network

LAN

Change Registrations
Change Settings

E-mail

Save Recorded Data
View Graph / Analyze
Warning Info
Monitor Current Readings

FTP

T&D WebStorage Service

Register Remote Units and Change Settings via the Network

After having made initial settings you wish to add a new Remote Unit or change the registration info of a Remote Unit, it can be done easily by sending the settings info to the RTR-500W over the network. There is no need to retrieve the RTR-500W from its location to make these changes.

RTR-501/502/503

Optical Communication

PC into which software has been installed

Network

RTR-500

USB Connection

Target Base Unit

Note: * If you wish to add an RTR-501/502/503 Remote Unit via the network it is necessary to have an RTR-500 unit to which you can connect to the PC.

Base Unit

RTR-500GSM

or

RTR-500

Repeater
RTR-500

Remote Units

Group1

Group2

An Array of Warning Monitoring Functions

If and when a measurement exceeds the set Upper or Lower Limit or if an abnormality occurs in the Remote Unit the RTR-500W will go into "Warning" mode whereby the ALARM LED and the external contact output will be switched ON. In addition, a warning report e-mail can be sent.

Warehouse

Warning

E-mail

External Input Terminal   External Output Terminal

Signal

Open/Close Device, Light or Motion Sensor Device, etc…

Red Lamp, Siren, etc…

ALARM LED Lamp
The ALARM LED lamp on the RTR-500NW/500AW will come on.

Warning Report Mail
A Warning Report mail will be sent to the specified e-mail address(es).

External Contact Output (Warning Output)
In conjunction with the ALARM LED the external contact output will switch to ON. It is possible to create an effective warning system by connection a siren, light or other easily understandable warning device to the external output terminal.
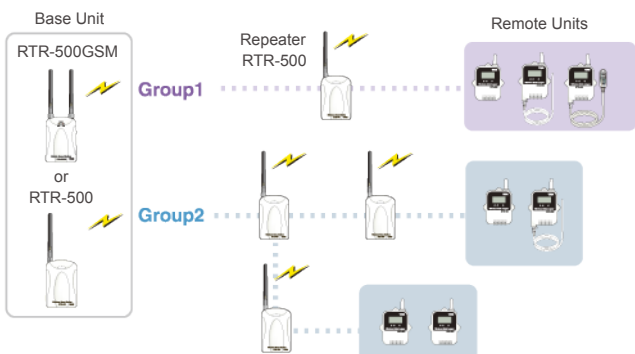
External Contact Input
By connecting a surveillance system sensor such as a motion sensor, light sensor, or open/close sensor to the external input terminal it is possible to detect an external electronic signal (ON /OFF). When an ON signal is detected a warning report mail can be sent.

External Input Terminal

External Output Terminal
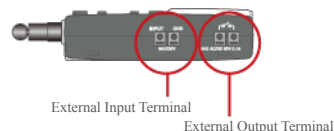
Simultaneous Management of Multiple Remote Units

When registering Remote Units and Repeaters to a Base Unit, it is helpful to organize and register them in Groups depending on location, purpose or other criteria. And assigning a Wireless Communication Frequency Channel for each Group helps avoid interference and poor transmission.

Up to 10 groups can be registered to one RTR-500W Base Unit. Each RTR-500NW or RTR-500AW can simultaneously manage up to 100 Remote Units

Can be set up to perform as a Base Station or a Repeater

Plant

Office

Download Recorded Data / Save /
Current Readings /
Graph Display

E-mail

Recorded Data
Current Readings
Warning Mail

FTP

Recorded Data
Current Readings

USB Connection

Base Unit

Remote Units

Repeater
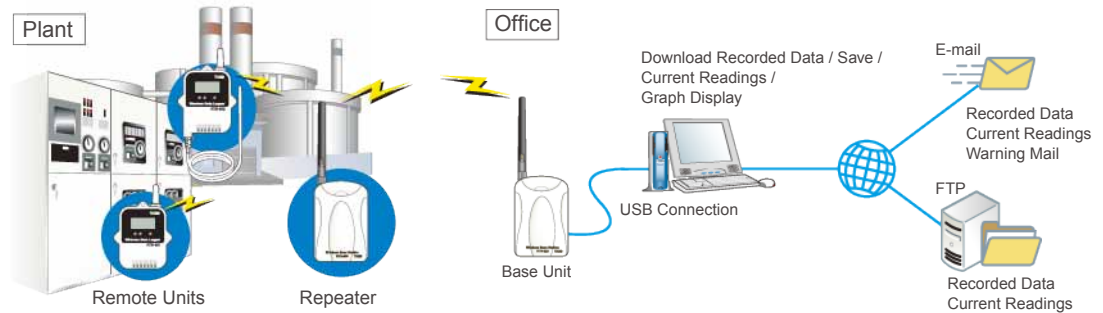
Application Examples

* **For Recording and Monitoring Temperature and Humidity in Factories and Buildings**
* **For Temperature and Humidity Management in Blood and Pharmaceutical Storage at Hospitals**
* **For Temperature Management of Refrigerated and Frozen Goods at Supermarkets and Convenience Stores**

As a Base Unit

The RTR-500 can be registered as a Base Unit so that it can download recorded data from Remote Units via wireless communication and then by connecting it to a PC with a USB cable, the data can be easily downloaded to your computer. Easy-USB connection means this type of Base Unit is perfect for on-site use. Downloading recorded data from one full (16,000 readings) Remote Unit into the Base Unit takes only about 2 minutes.

Base Unit
RTR-500

Initial Settings
Function Settings
Download Data

USB Cable (US-15C)
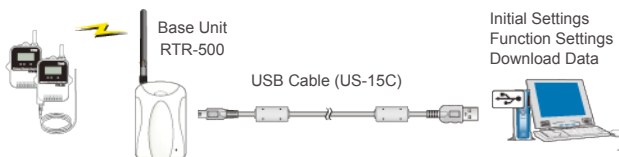
Transmitting Data via a Network

Recorded Data and Current Readings can be automatically downloaded from Remote Unit(s) at a set interval and that data can then be sent by e-mail or FTP to a designated address.

Sending Warning Report Mails

By setting the Warning Monitoring Function to "ON", if the set upper or lower limits have been exceeded and that occurrence has been judged by the RTR-500 to qualify as a warning, a Warning Report Mail containing warning details can be sent to up to four specifi ed addresses.

Simultaneous Management of Multiple Remote Units

Up to 20 groups can be registered to an RTR-500 Base Unit. Up to 32 Remote units can be registered to each Group. With just one RTR-500 it is possible to simultaneously manage up to 640 Remote Units.

Monitoring Current Readings

It is possible to monitor and view current readings for groups of Remote Units registered to a RTR-500 Base Unit on Computer Display.

Monitoring Graph Window
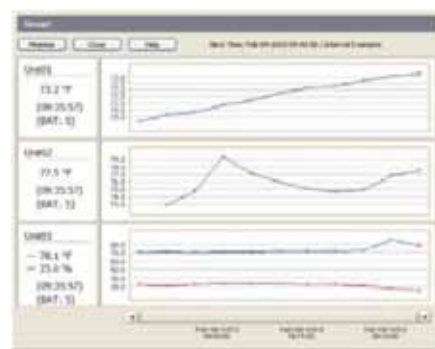
As a Repeater

By registering an RTR-500 as a Repeater and placing it between a Base Station and a Remote or another Repeater, it can be used to expand the wireless communication range. When using as a Repeater, it is necessary to use two AA alkaline batteries or purchase the optional AC adaptor (AD-0638) as a power source. When the Repeater is used about five minutes a day, battery life expectancy is about six months. The wireless communication range, if unobstructed and direct, is about 150 meters [500 ft]. When downloading recorded data, it is necessary to add 2 minutes (when at full data) for every repeater in the route.

Note: * When downloading recorded data from a full remote unit it is necessary to add 2 minutes for every repeater in the communication route.
  * Battery Life will vary depending on the measuring environment, the quality of the battery being used, the frequency of communication and other settings made in the unit.

"T&D WebStorage Service" an online service provided by T&D Corporation

WebStorage Service

Wouldn't it great if it were possible to share recorded data via the Internet; making it possible to process and manage the data from distant places or allow a number of people in different places to view the same data simultaneously? T&D WebStorage Service makes that dream a reality! RTR-500GSM, RTR-500 and RTR-500W are all compatible with our revolutionary WebStorage Service. By having your data sent to our WebStorage Service it can then be accessed via an Internet browser from anywhere, anytime, and by any number of people.

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

Carrier

Sender

Receiver

By sending measurement records for items in transit to our WebStorage Service all concerned parties can keep track of important data in an easy-to-read graph.
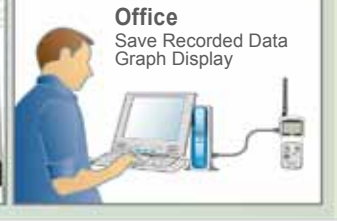
Collect and Check Data on the Spot

Gallery 1
Download Recorded Data

Gallery 2
Download Recorded Data

Office
Save Recorded Data
Graph Display

Application Examples

* For downloading recorded data and monitoring current readings for moving or rotating Remote Units on production lines
* For downloading recorded data and monitoring current readings for Remote Units in cargo compartments using a Base Unit in the truck cabin
* For gathering recorded data via wireless communication from long distance or in places where handling of data loggers is difficult or impossible
* For gathering recorded data about conditions of fine art and important documents in exhibition halls and storage rooms

Ready for Use Without Troublesome Preparation

The RTR-500DC is a user-friendly wireless communication Data Collector designed for hand-held portability. The RTR-500DC does not need troublesome preparation such as creating a network environment or carrying out wiring. All you need is a PC and accessories to use an RTR-500DC.

Easy One-Hand Operation

The handy Operation Dial makes the operation of the RTR-500DC simple; moving the dial up and down displays the various menu selections which can be easily selected by pressing in on the dial. Easy-to-read LCD and simple menu structure enables a quick intuitive operation on site.

On-site Graph Display

The data collected to the RTR-500DC can be immediately viewed in graph form on the spot without the need for a computer. A graph is displayed for each channel of data. It is possible to view, for example, four channels of data measured and recorded by the RTR-574 by pressing the Operation Dial to switch the channel for viewing.

Press and hold the Operation Dial to change the channel on display

CH1: Illuminance Graph   CH3: Temperature Graph
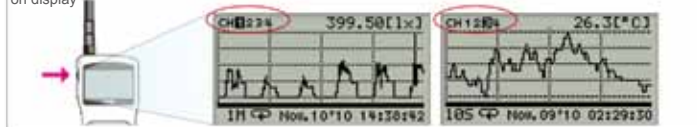
A simple yet functional graph of the RTR-500DC enables you to check the judgement result weather the set Upper/Lower Limit has been exceeded or not, check the highest and lowest readings, as well as zoom in and out.

Monitor for Warning and Current Readings

Using the monitoring function, the RTR-500DC carries out wireless communication at a set interval with the registered Data Loggers (Remote Units) to monitor Current Readings and Remote Unit Status. The RTR-500DC also monitors for warnings in Data Loggers for which the Upper / Lower Limit settings have been made via the supplied software.
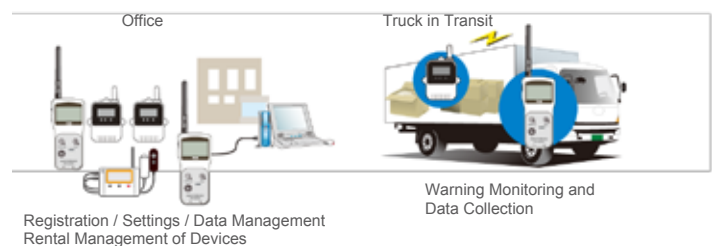

WNG: Warning
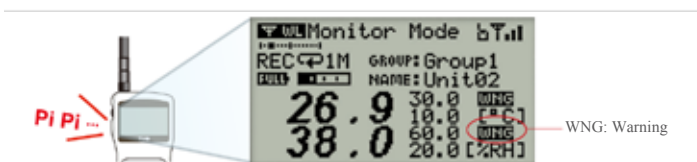
Manage Remote Units in Groups with One RTR-500DC Unit

An RTR-500DC can manage a large number of Remote Units. When registering multiple Remote Units, they can be divided into Groups by location or measurement item, each of which can then be assigned a communication frequency channel. The maximum number of Groups which can be registered in one RTR-500DC Unit is 7 (seven). Within each group the maximum number of Remote Units which can be registered is 32 (If using RTR-574 the max is 16).

Operate Same Remote Units via Multiple RTR-500DC Units

Multiple RTR-500DC Units can be used to communicate with one Remote Unit. It is possible, for example, to use one RTR-500DC Unit to monitor the Current Readings and another to collect data, or to have a number of workers carry one each. It is easy to prepare the number of RTR-500DC necessary for the job. After having registered a Remote Unit its registration info can then be sent to multiple RTR-500DC (Base Units), either by using the software "RTR-500DC for Windows" and copying the Base Unit registration info into a multiple number of Base Units, or by using the "Visitor Entry" function by having the Base Unit read the Remote Unit info directly without using the software.

Ex: For monitoring warnings and downloading recorded data from a remote Unit registered as a "Visitor" in the cargo compartment of a truck.

Office   Truck in Transit

Warning Monitoring and Data Collection

Registration / Settings / Data Management
Rental Management of Devices

Note: The "Visitor Entry" function enables any RTR-500DC unit to accept "visitors" or Remote Units which have been previously registered to another RTR-500DC; allowing any RTR-500DC unit to directly communicate with the accepted Remote Unit without the need for registration via a PC. Note that this function can only be used with Remote Units that have already been registered.

Various Power Supplies and Energy Saving Function

Power is provided by two AAA alkaline batteries. It is also possible to supply power to the RTR-500DC Unit from AAA Ni-MH batteries, USB bus power, or AC adaptor (optional). The energy saving function will automatically turn off the Unit to save battery power if the Unit is not used for about three minutes.

LCD Backlight Display for Reading in the Dark

The RTR-500DC has a LCD backlight display to help you read data even in the dark. If the Unit is not used for more than five seconds, the LCD backlight will automatically turn OFF to save battery power. Once operation is re-started, it will automatically turn back ON. When the Unit is connected to an AC adaptor, the backlight remains ON.

Software Included with Base Unit

Free of Charge! Software, Updates and Info available on our WebSite!

RTR-500GSM for Windows

This Software is made up of three applications:
RTR-500GSM Settings Utility
Temperature / Humidity Graph
Adjustment Tools

RTR-500 for Windows

This Software is made up of five applications:
RTR-500 Settings Utility
RTR-500 for Windows
Temperature / Humidity Graph
Multi-Scale Graph
Adjustment Tools

Now Available in Spanish!

RTR-500W for Windows

This Software is made up of five applications:
RTR-500W Settings Utility
Temperature / Humidity Graph
Multi-Scale Graph
Data Download Tool
Adjustment Tools

RTR-500DC for Windows

This Software is made up of six applications:
RTR-500DC Settings Utility
RTR-500DC Manager
Temperature / Humidity Graph
Multi-Scale Graph
Data Download Tool
Adjustment Tools

"Settings Utility" Program makes Settings a Snap!

The Settings Utility application is used to take care of all Base Unit settings and registration of Remote Units and Repeaters. After having registered and placed the Remote Units and Repeaters in the field, it is possible to run communication tests to check signal strength between the various units to ensure stable communication.

Easy-to-Understand Operation Guide

The Operation Guide that is part of the software uses easy to understand terms to help lead you through all the necessary steps and setting procedures. If during setup you get confused or have trouble, just simply open the Operation Guide in the same on-screen window and make settings while consulting the Guide.

Difficult Cellular Phone Network Settings made Easy

When using the RTR-500GSM, we have included an "Initial Settings Wizard" which guides you through what otherwise would be the difficult process of setting up the unit for GSM network communication; just put in the SIM Card and turn on the Wizard.

Intuitive User-Friendly Graph Tools (Temperature / Humidity Graph and Multi-Scale Graph)

With either program you can view up to eight channels of data in one graph.The Graph programs intuitive operation allows the User to easily hide or view channels, zoom in and out on data, switch back and forth from °C to °F, and view data in table form.

Temperature / Humidity Graph
(Recorded data from RTR-501/502/503)
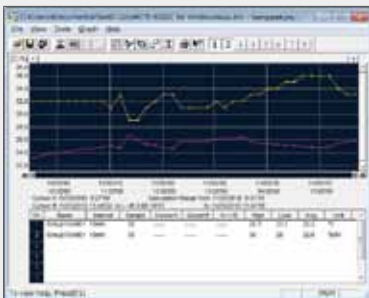
Multi-scale Graph
(Recorded data from RTR-574)

Enlarged View

Data List Display

trz./ trx. /.iur Type Data   Print   Save

CSV Format
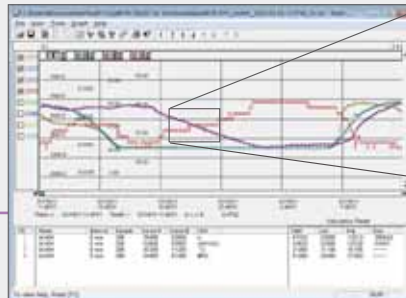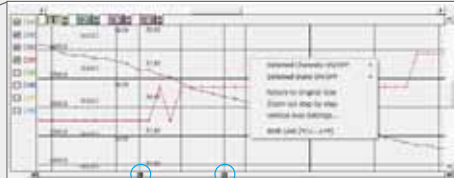
View in Table Form

Graph data can be easily viewed as a data list. The highest and lowest values are shown in easily distinguishable colors.

From Graph Editing to Data Analysis

It is possible to hide, re-order and delete channels, edit recording start times, and make changes to colors used for the graph scale lines, data lines and background. Also move the A and B cursor at the bottom of the graph to view data readings for those points and the calculated difference between the points.By saving graph data as CSV Format Text File data, that data can then be uploaded into common spreadsheet software for data analysis.

Remote Unit Adjustment Settings

When using multiple measuring devices, this function allows the user to correct for inaccuracies found in measured values when compared to a standard measurement (the value measured by the standard device). Measurements can be adjusted and recorded based on a standard measurement. The RTR-500 Series Software allows for adjustment settings to be made to Remote Unit measurements by simply selecting the adjustment method from either "1 Point Adjustment" or "2 Point Adjustment" and entering the values for "Before Adjustment" and "After Adjustment".

Wireless Data Logging System RTR-500 Series
Product Specifications

Mobile Base Station RTR-500GSM

UNIT

Compatible Devices	Remote Units: RTR-501/502/503/505, RTR-501L/502L/503L/505L Repeater: RTR-500

Features and Functions	1. Auto-downloading of Recorded Data (E-mail or FTP),
	2. Automatic Sending of Current Readings (E-mail or FTP),
	3. Warning Monitoring (SMS, E-mail or Contacts)
	4. SMS Remote Control
	  - Stop and Start Functions 1, 2, 3, above
	  - Request Immediate Download of Data to Set Address

Types of Warning Monitoring	Remote Unit Measurement Warnings, Remote Unit Wireless Communication Error Warnings, Remote Unit Battery Level Warnings, Remote Unit Sensor Abnormality Warnings, Base Unit External Power Loss Warnings (only when batteries are installed), Base Unit Battery Level Warnings / Base Unit External Contact Input Warnings
Power	AA Alkaline Batteries x 4 External Power (DC8 - 34V) AC Adaptor (AD-0605 / AD-0607)
Current Consumption	At most 2A (5V, with GSM in operation)
Communication Interfaces	USB (with PC) Optical Communication (with Remote Unit)
LED Display	POWER: Green / ERR: Orange / ALM: Red
Battery Life	10 days* of continued use if monitoring is carried out every 10 minutes (when not using GPS).
Dimensions	H 96 mm x W 65 mm x D 39 mm (Excluding protrusions) Antenna Length : 109mm
Weight	About. 220 g (including batteries)
Operating Environment	Temperature: 10 to 55 ℃ (-10 to 55℃ when external power connected) Humidity: 20 to 80%RH (No condensation)
Other	Not waterproof, moistureproof, or dustproof. The SIM card must adhere to the following conditions: 1. Compatible with GSM. 2. Able to use SMS (Short Message Service) and GPRS (General Packet Radio Service). 3. The card has been activated.

* Battery life varies depending upon the frequency of communication, the measuring environment, and the quality of the batteries being used.

Short Range Radio Communication

RF Power	FCC model 7mW CE model 5mW
Radio Standard Specifications	FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz) ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz)
Transmission Range	About 150meters (500ft) if direct and unobstructed.

Communication Time	When downloading 1 Remote Unit at full logging capacity:
	  About 2 min.
	  *The same amount of time will be necessary for each added Repeater.

Cellular Phone Communication

Band	GSM850/GSM 1900 (PTCRB Certified) GPRS (General Packet Radio Service) GSM900/GSM1800 GPRS(General Packet Radio Service)
Data Transfer Protocol	
Auto-Downloading of Recorded Data / Auto-Sending of Current Readings	FTP (PASV mode also supported) SMTP (SMTP-AUTH, POP-before SMTP) * SMTP-AUTH supports LOGIN only
Warning Monitoring Function	SMS / SMTP (SMTP-AUTH, POP-before SMTP) * SMTP-AUTH supports LOGIN only

Contacts (Warning Output / Input)

Output Terminal Open Drain Output	Voltage when OFF: DC less than 30V Current when ON: less than 0.1A Resistance when ON: 15Ω
Input Terminal	Internal Pull-up: 3V 100kΩ Maximum Input Voltage: 30V

Wireless Base Station RTR-500

UNIT

UNIT	As a Base Unit	As a Repeater

Compatible Devices	Remote Units:
	  RTR-501/502/503/505, RTR-501L/502L/503L
	  RTR-505L, RTR-574
	Repeater: RTR-500
		Base Unit:
		RTR-500GSM
		RTR-500
		RTR-500NW/500AW
		RTR-500DC

Features and Functions	When connected to a PC with "RTR-500 for Windows" running:
	  1. Auto-downloading of Recorded Data (E-mail or FTP),
	  2. Automatic Sending of Current Readings (E-mail or FTP),
	  3. Warning Monitoring (E-mail)
		-

Types of Warning Monitoring	Remote Unit Measurement Warnings, Cumulative Illuminance/Amount of UV Light Warnings (RTR-574), Remote Unit Wireless Communication Error Warnings, Remote Unit Battery Level Warnings, Remote Unit Sensor Abnormality Warnings	-
Power	USB bus power	AA alkaline batteries x 2 AC adaptor (AD-0638 / AD-0638-C)
Operating Voltage	2.5V to 7.0V	
Current Consumption	Approx. 50mA (Wireless Communication)	
Communication Interfaces	USB (with PC) Optical Communication (with Compatible Remote Units other than RTR-574)	
LED Display	Blinking: During Wireless Communication or PC Communication Lamp ON: Connected PC via USB	
Battery Life	-	About 6 months *
Dimensions	H 96mm x W 65mm x D 25mm (excluding protrusions) Antenna Length : 109mm	
Weight	Approx. 71g (Batteries not included)	
Operating Environment	Temperature: -10 to 60°C (-30 to 60°C when external power connected) Humidity: 20 to 80%RH (No condensation)	
Other	Not waterproof, moistureproof, or dustproof	

* When used for wireless communication five minutes a day. Battery life varies depending upon the measuring environment, the communication frequency, and the quality of the battery being used.

Short Range Radio Communication

RF Power	FCC model 7mW CE model 5mW
Radio Standard Specifications	FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz) ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz)
Transmission Range	About 150meters (500ft) if direct and unobstructed.

Communication Time	When downloading one Remote Unit at full logging capacity:
	  About 2 min. (Remote Units excluding RTR-574)
	  About 4 min. (RTR-574)
	  *The same amount of time will be necessary for each added Repeater.

Network Communication

Data Transfer Protocol

When connected to a PC as a Base Unit with "RTR-500 for Windows" running:

Auto-Downloading of Recorded Data / Auto-Sending of Current Readings	FTP (PASV mode also supported) SMTP (SMTP-AUTH, POP-before SMTP) * SMTP-AUTH supports PLAIN, LOGIN and MD5
Warning Monitoring Function	SMTP (SMTP-AUTH, POP-before SMTP) * SMTP-AUTH supports PLAIN, LOGIN and MD5

GPS Communication (RTR-500GSM Option)

GPS Interface	Connector: Mini DIN 6 Pin Female Communication Standard: ANSI / EIA/TIA-232-E Geographic Coordinate System:WSG84 Power Supply: 5V MAX 100mA
Other	Attach geographical positioning info to Current Readings

Software Operating Environment

For installation, it is necessary to have Administrator (Computer Administrator) rights.

Software Names and Compatible Devices	RTR-500GSM for Windows (RTR-500GSM) RTR-500W for Windows (RTR-500NW, RTR-500AW) RTR-500 for Windows (RTR-500) RTR-500DC for Windows (RTR-500DC)	Compatible OS (US)	Microsoft®Windows®7 32/64bit English Microsoft®Windows Vista®32bit English Microsoft Windows®XP 32bit(SP2 or above) English
PC / CPU	A Stable Windows Operating Environment	Compatible OS (EU)	Microsoft®Windows®7 32/64bit English, Spanish, French, German, Italian Microsoft®Windows Vista®32bit English, Spanish, French, German, Italian Microsoft Windows®XP 32bit (SP2 or above) English, Spanish, French, German, Italian
Memory	A Stable Windows Operating Environment		
Hard Disk	More than 30 MB of free space (Data will need more space)		
Monitor	SVGA (800 x 600) more than 256 colors		

Wireless Data Logging System RTR-500 Series
Product Specifications

Network Base Station RTR-500W

UNIT

Compatible Devices	Remote Units: RTR-501/502/503/505, RTR-501L/502L/503L/505L, RTR-574 Repeater: RTR-500
Features and Functions	1. Auto-downloading of Recorded Data (E-mail /FTP) 2. Automatic Sending of Current Readings (E-mail / FTP) 3. Warning Monitoring (E-mail / Contacts)
Types of Warning Monitoring	Remote Unit Measurement Warnings, Cumulative Illuminance/Amount of UV Light Warnings (RTR-574), Remote Unit Wireless Communication Error Warnings, Remote Unit Battery Level Warnings, Remote Unit Sensor Error Warnings, and Base Unit External Contact Input Warnings
Power	AC Adaptor (AD-0638 / AD-0638-C)
Current Consumption	RTR-500NW: Approx. 300mA RTR-500AW: Approx. 400mA
Communication Interfaces	USB (with PC) Optical Communication (with Compatible Remote Units other than RTR-574) Wired LAN (RTR-500NW) / Wireless LAN (RTR-500AW)
LED Display	POWER, ACTIVE, DIAG, and ALARM
Dimensions	H83mm x W102mm x D28mm (excluding protrusions) Antenna Length: 87.3mm
Weight	RTR-500NW: About 130g RTR-500AW: About 120g (including antenna for each)
Operating Environment	Temperature: -10 to 60˚C Humidity: 20 to 80%RH (no condensation)
Other	Not waterproof, moistureproof, or dustproof

Short Range Radio Communication

RF Power	FCC model 7mW / CE model 5mW
Radio Standard Specifications	FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz) ETSI EN 300 220(Frequency Range: 869.7 to 870MHz)
Communication Range	About 150meters (500ft) if direct and unobstructed.

Communication Time	When downloading one Remote Unit at full logging capacity:
	  About 2 min. (Remote Units excluding RTR-574)
	  About 4 min. (RTR-574)
	  *The same amount of time will be necessary for each added Repeater.

LAN Communication

Wired LAN (RTR-500NW)	RJ45 Connector 100Base-TX / 10Base-T AutoMDI / MDI-X
Wireless LAN (RTR-500AW)	Internal wireless LAN antenna IEEE 802.11b/g WEP, WPA/WPA2 (PSK)
Data Transfer Protocol	
Auto-Downloading of Recorded Data / Auto-Sending of Current Readings	FTP (PASV mode also supported) SMTP (SMTP-AUTH, POP-before SMTP) *SMTP-AUTH supports LOGIN only
Warning Monitoring Function	SMTP (SMTP-AUTH, POP-before SMTP) *SMTP-AUTH supports LOGIN only

Contacts (Warning Output / Input)

Output Terminal	Voltage when OFF: AC/DC 50V or less Current when ON: 0.1A or less Resistance when ON: 35Ω
Input Terminal	Internal Pull-up: 3V 100kΩ Maximum Input Voltage: 30V

Wireless Data Collector RTR-500DC

UNIT

Compatible Devices	Remote Units: RTR-501/502/503/505, RTR-501L/502L/503L/505L, RTR-574 Repeater: RTR-500

Logging Capacity	When downloading units at full logging capacity:
	  15 units of RTR-501 / 502 / 505
	  15 units of RTR-503
	  7 units of RTR-574
	When downloading units at non-full storage capacity, it can store and manage up to 250 downloading sessions.
	  * Varies depending upon the device type, number of channels, type of recorded data.

Internal Clock Accuracy	At± 30 seconds/month and 25°C
LCD Display	FSTN 1.9 inch, 128 x 64 dot, semi-transmissive, monochrome, amber colored LED backlight
Functions: Wireless Communiction	Downloading and Saving Recorded Data, Monitoring Current Readings and Remote Unit Status (Warning Monitoring), Starting and Stopping Remote Unit Recording, Checking Signal Strength for Communication with Remote Unit
Functions: Non-Wireless Communication	Downloading and Saving Recorded Data Starting and Stopping Remote Unit Recording
Functions: RTR-500DC Operations	Changing Unit of Temperature, LCD Backlight, LCD Contrast, Checking Memory, Button Sound, Checking Battery Power, Auto Power Off Function (if the Unit is not used for three minutes)
Display Functions	Graph (Highest / Lowest Measurement, Upper / Lower Limit Settings) Data Details (Downloading Date/Time, Recording Start Date/Time, Recording Stop Date/Time, Last Recording Date/Time)
Types of Warning Monitoring	Upper Limit / Lower Limit Exceeded Upper Limit / Lower Limit Exceeded for Cumulative Illuminance and Cumulative Amount of UV Light (RTR-574)
Power	AAA Alkaline Battery x 2 * AAA Ni-MH batteries, AC adaptor (option AD-0638 / AD-0638-C), or USB bus power may also be used.

Battery Life	Expected battery life for 2 AAA alkaline batteries:
	Monitoring: 96 hours of continued use
	  For communication without Repeater(s) at 60 seconds interval
	Checking Signal Strength: 32 hours of continued use
	Downloading Data: 730 consecutive sessions
	  Via wireless communication (When downloading RTR-501 at full logging Capacity / without Repeaters(s) at 60 seconds interval
	  * Battery life varies depending upon the type of battery, the measuring environment, the frequency of communication, and the ambient temperature in which it is used.

Data Backup	About 1 month (Saved data will be erased if all battery power is lost.)
Communication Interfaces:	With PC: USB Communication: 38,400bps With Remote Unit: Wireless Communication Optical Communication: 2,400bps (Remote Units excluding RTR-574) Cable Communication: 19,200bps (RTR-574)
Communication Time (excluding Wireless	About 1 month (Saved data will be erased if all battery power is lost.) When downloading one Remote Unit at full logging capacity: - From RTR-500DC to PC USB Communication: 12 sec. (1Ch) / 24 seconds (4Ch) - From Remote Unit to RTR-500DC Optical Communication: about 170 seconds (Remote Units excluding RTR-574) Cable Communication: about 45 seconds (RTR-574)
Dimensions	H125mm x W58mm x D26.3mm (excluding protrusions) Antenna Length: 109mm
Weight	About 127g (including 2 AAA batteries)
Operating Environment	Temperature: 0 to 50°C / Humidity: 90%RH or less (no condensation)
Others	Not waterproof, moisture proof, or dust proof

Short Range Radio Communication

RF Power	FCC model 7mW / CE model 5mW
Radio Standard Specifications	FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz) ETSI EN 300 220(Frequency Range: 869.7 to 870MHz)
Communication Range	About 150meters (500ft) if direct and unobstructed.
Communication Time	When downloading one Remote Unit at full storage capacity: About 120 sec. (Remote Units excluding RTR-574) About 240 sec. (RTR-574) *The same amount of time will be necessary for each added Repeater.

Notes for Wireless Data Loggers

(*1) One data set consists of readings for all channels in that type of unit.
(*2) When using RTR-500GSM, RTR-500NW or RTR-500AW as a Base Unit, only "ENDLESS" can be selected. When using an RTR-500 or RTR-500DC as a Base Unit, possible to select from either "ENDLESS" or "ONETIME".
(*3) Battery life varies depending upon the type of battery, the battery performance, the measuring environment, and the frequency of communication.
(*4) The same amount of time will be necessary for each added Repeater.
(*5) When using RTR-500B1 it is necessary to purchase Lithium Battery (LS26500). For details, contact your local authorized distributor.
(*6) The stated water resistance rating is for when the sensor is connected to the unit. However, this does not include the sensor areas for the RTR-503/503L models. Not for continued immersion.
(*7) Compared to the value measured by the T&D standard sensor for calibration under our calibration light source.
(*8) Up to four digits are valid for the Current Readings and Cumulative Measurements.
(*9) If necessary, serial communication can be established by using our RTR-574 communication protocol to write a software program. In such a case, an optional serial communication cable (TR-07C) is needed. For details please contact the distributor from which you purchased the Unit.

Wireless Data Logging System RTR-500 Series
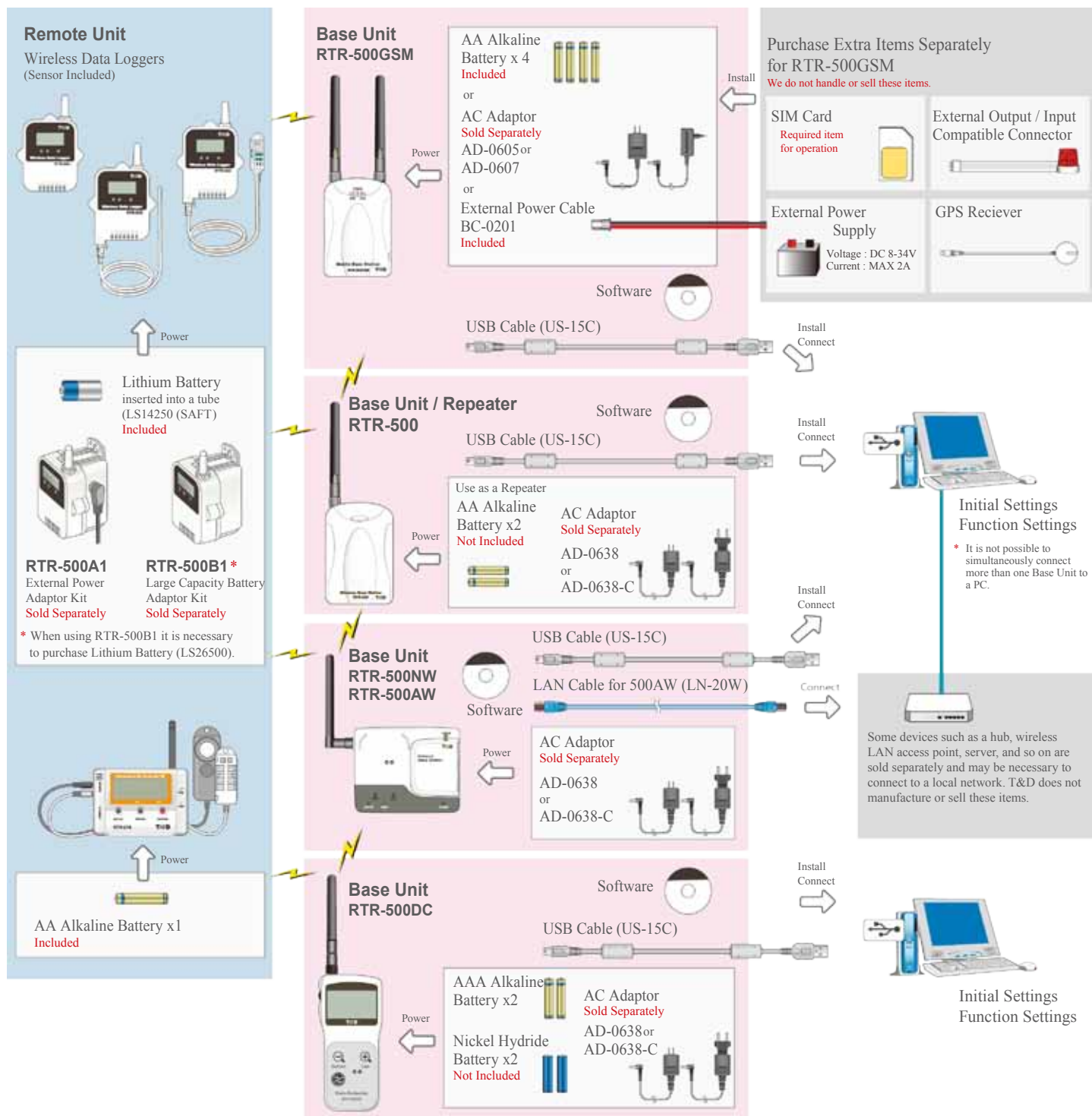# Product Specifications

Wireless Data Loggers

UNIT	RTR-501 / RTR-501L	RTR-502 / RTR-502L	RTR-503 / RTR-503L	
Measurement Items	Temperature	Temperature	Temperature	Humidity
Number of Channels	1 Ch	1 Ch	1 Ch	1 Ch
Unit of Measurement	℃ , ℉	℃ , ℉	℃ , ℉	%
Measurement Range	- 40 to 80℃	- 60 to 155℃	0 to 55℃	10 to 95%RH
Sensor	Internal Temp. Sensor	External Temp. Sensor (TR-5106)	External Temp. and Humidity Sensor (TR-3310)	
Thermal Time Constant	15 minutes L type: 25 minutes	Approx. 30 Sec. (in air) Approx. 4 Sec. (in agitated water)	-	
Sensor Response Time	-	-	About 7 min. (90% response)	
Measurement Accuracy	Avg. +/- 0.5℃	Avg. +/- 0.3℃ (-20 to 80℃) Avg. +/- 0.5℃ (- 40 to -20℃ / 80 to 110℃) Avg. +/- 1.0℃ (- 60 to -40℃ / 110 to 155℃)	Avg. +/- 0.3℃ (at 25℃ and 50%RH)	+/-5%RH (at 25℃ and 50%RH)
Measurement Display Resolution	0.1℃	0.1℃	0.1℃	1%RH
Logging Capacity	16,000 readings	16,000 readings	8,000 data sets(*1)	
Water Resistance	Immersion Proof	Splash Proof (*6)		

Unit	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 Items	Temperature (Type K, J, T, S)	Temperature (Pt100, Pt1000)	Voltage	4-20mA	Pulse
Number of Channels	1 Ch	1 Ch	1 Ch	1 Ch	1 Ch
Unit of Measurement	℃ , ℉	℃ , ℉	Vdc	mA	Pulse Count / Interval
Recording Intervals	Select from 15 choices: 1, 2, 5, 10, 15, 20 and 30 sec./ 1, 2, 5, 10, 15, 20, 30 and 60 min.				
Logging Capacity	16,000 readings				
Recording Modes (*2)	ENDLESS (Upon reaching logging capacity, the oldest data is overwritten and recording continues) ONETIME (Upon reaching logging capacity, recording will automatically stop)				
LCD Display Items	Current Readings, Recording Status, Battery Life Warning, Messages, Unit of Measurement				
Power	Lithium Battery (LS14250 (SAFT)) x 1 / L type: Large Capacity Battery Adaptor Kit (RTR-500B1) x 1 (*5) External Power Adaptor Kit (RTR-500A1) (sold separately)				
Battery Life (*3)	About 10 months / L type: About 4 years The stated battery life is for when it is used in an environment of 25℃ and recorded data is downloaded at a rate of once a day or "Monitoring Current Readings" occurs at a rate of once every 10 minutes.				
Communication Interfaces	Short Range Radio / Optical Communication				
Radio Standard Specifications	FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz) / ETSI EN 300 220(Frequency Range: 869.7 to 870MHz)				
Wireless Transmission Range	About 150meters (500ft) if unobstructed and direct				
Communication Time	When downloading one Remote Unit at full logging capacity: Wireless communication : about 2 min.(*4) / Optical communication : about 160 sec.				
Water Resistance	Splash Proof (*6)				
Dimensions	H62mm x W47mm x D19mm / L type: D46.5mm (with Large Capacity Battery Pack) (excluding protrusions / antenna length 24mm)				
Weight	About 56g (including 1 lithium battery) / L type: about 109g (with Large Capacity Battery Pack)				
Unit Temp. Resistance	Resistance -30 to 80 ℃ (Unit temp resistance and measurement range is -40 to 80 ℃ but wireless communication cannot occur in an environment of less than -30 ℃)				
Others	In order to download data via wireless communication, it is necessary to purchase a Base Unit: RTR-500GSM, RTR-500, RTR-500AW, RTR-500NW, or RTR-500DC				

UNIT	RTR-574			
Measurement Items	Illuminance	UV Intensity	Temperature	Humidity
Number of Channels	1 Ch	1 Ch	1 Ch	1 Ch
Unit of Measurement	lx, Klx	mW/cm^2	℃ , ℉	%
Measurement Range	0 to 130,000lx	0 to 30mW/cm^2	0 to 55℃	10 to 95%RH
Measurement Resolution	Minimum: 0.01 lx	Minimum: 0.001 mW/cm²	0.1℃	1%RH
Measuring Accuracy	10 to 100,000 lx: +/-5% (At 25℃, 50%RH)	0.1 to 30 mW/cm²: +/-5% (At 25℃, 50%RH) (*7)	Avg. +/-0.3℃	+/-5% (At 25℃, 50%RH)
Display Range of Cumulative Measurement	0 to 90,000,000 lx.h	0 to 62W/cm².h	-	-
Unit of Cumulative Measurement	Cumulative Illuminance lx.h, Klx.h, Mlx.h	Cumulative Amount of UV Light mW/cm².h, W/cm².h	-	-
LCD Refresh Interval	1 second (At a recording Interval of 1 second) / 2 seconds (At a recording interval of 2 seconds or more)			
Recording Intervals	Select from 15 choices: 1, 2, 5, 10, 15, 20 and 30 sec. / 1, 2, 5, 10, 15, 20, 30 and 60 min.			
Logging Capacity (*1)	8,000 data sets			
Recording Modes (*2)	ENDLESS (Overwrite oldest data when capacity is full) / ONETIME (Stop recording when capacity is full)			
LCD Displayed Items(*8)	Recording Status, Amount of Recorded Data, Communication Status, Recording Mode, Battery Life Warning, Unit of Measurement Current Readings (Illuminance / UV Intensity / Temperature / Humidity), Cumulative Measurements (Cumulative Illuminance and Cumulative Amount of UV Light),			
Communication Interfaces	Short Range Radio, USB, RS-232C (Serial) Communication (*9)			
Communication Time	When downloading one Remote Unit at full storage capacity: Wireless Communication = about 4 min. (*4) / USB Communication = about 45 sec.			
Radio Standard Specifications	FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz) / ETSI EN 300 220(Frequency Range: 869.7 to 870MHz)			
Wireless Transmission Range	About 150 meters (500 ft) if unobstructed and direct			
Power	AA Alkaline Battery (LR6) x 1			
Battery Life (*3)	About 4 months			
Dimensions	H55mm x W78 mm x D18 mm (excluding protrusions) / Antenna Length: 60mm			
Weight	About 66g (including AA Alkaline Battery / excluding sensors)			
Operating Environment	Temperature : -10 to 60 ℃ / Humidity : 90%RH or less (no condensation)			
Others	In order to download data via wireless communication, it is necessary to purchase a Base Unit: RTR-500, RTR-500AW, RTR-500NW, or RTR-500DC Not waterproof, moistureproof, or dustproof.			

System Setup

Remote Unit
Wireless Data Loggers
(Sensor Included)

Power

Lithium Battery
inserted into a tube
(LS14250 (SAFT))
Included

RTR-500A1
External Power
Adaptor Kit
Sold Separately

RTR-500B1 *
Large Capacity Battery
Adaptor Kit
Sold Separately

* When using RTR-500B1 it is necessary
to purchase Lithium Battery (LS26500).

Power

AA Alkaline Battery x1
Included

Base Unit
RTR-500GSM

AA Alkaline
Battery x 4
Included

or

AC Adaptor
Sold Separately
AD-0605 or
AD-0607

or

External Power Cable
BC-0201
Included

Power

Install

Software

USB Cable (US-15C)

Install
Connect

Purchase Extra Items Separately for RTR-500GSM
We do not handle or sell these items.

SIM Card
Required item
for operation

External Output / Input
Compatible Connector

External Power
Supply
Voltage : DC 8-34V
Current : MAX 2A

GPS Reciever

Base Unit / Repeater
RTR-500

Software

USB Cable (US-15C)

Use as a Repeater
AA Alkaline
Battery x2
Not Included

AC Adaptor
Sold Separately
AD-0638
or
AD-0638-C

Power

Install
Connect

Initial Settings
Function Settings

* It is not possible to
simultaneously connect
more than one Base Unit to
a PC.

Install
Connect

Base Unit
RTR-500NW
RTR-500AW

Software

USB Cable (US-15C)

LAN Cable for 500AW (LN-20W)

Connect

AC Adaptor
Sold Separately
AD-0638
or
AD-0638-C

Power

Some devices such as a hub, wireless
LAN access point, server, and so on are
sold separately and may be necessary to
connect to a local network. T&D does not
manufacture or sell these items.

Install
Connect

Base Unit
RTR-500DC

Software

USB Cable (US-15C)

AAA Alkaline
Battery x2

Nickel Hydride
Battery x2
Not Included

AC Adaptor
Sold Separately
AD-0638 or
AD-0638-C

Power

Install
Connect

Initial Settings
Function Settings

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