

Wireless Data Logger



Accurate
Light Weight

Durable
Compact

Handy
Reliable



**Measure and Record
Temperature , Humidity , Voltage and Pulse.
Transfer Data via Wireless Communication to
Your Computer for Data Management.**

Application Examples

- Temperature management in freezer and refrigerated transportation and storage
 - Recording temperature data of rotors and moving parts on production lines
 - For outside use, such as agriculture, civil engineering, and concrete production
- Recording temperature and humidity in multi-humidity environments such as brewing and agricultural cultivation
- Measuring and recording conditions of instrumentation such as flow meters, wattmeters, and analyzer instruments
 - Recording event signals (ON/OFF) for door openings and closings, air-conditioning units cycles, etc.

Collect, Manage and Monitor Your Valuable Data via Wireless Communication.

Measurement and Recording



Collect Data via Wireless Communication



Easy Computer Processing



Wireless Data Communication Function

Our RTR-51,52,53 and RVR-52A data logger units utilize the RTR-57C to collect recorded temperature data from the units via our exclusive short-wave wireless technology. The RTR-57C also allows you to wirelessly control recording settings and start recording, as well as other functions of the data loggers. Moreover, the data loggers can wirelessly transmit measurements in the wide range of -30°C to 80°C from distances of up to 100 meters if unobstructed and direct.

Note :

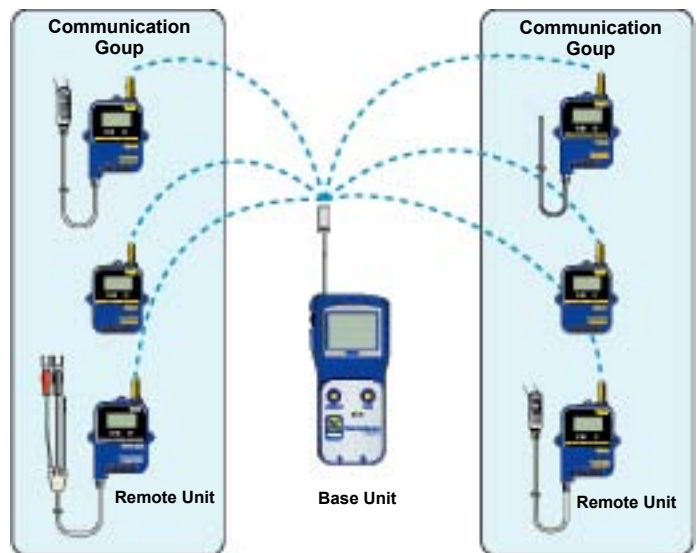
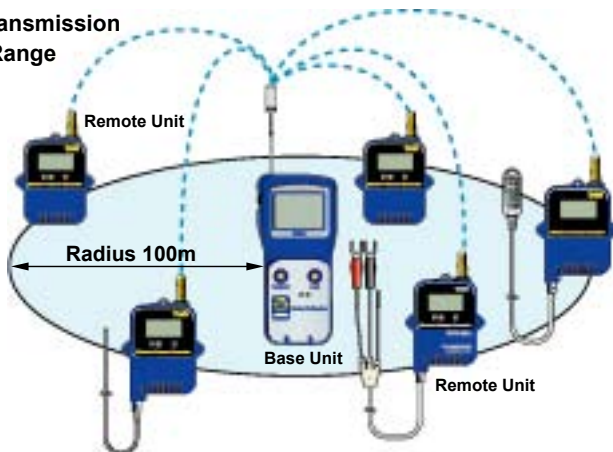
If collecting data via wireless communication, it is necessary to set up via computer the RTR-51,52, 53 and RVR-52A as Remote Units and the RTR-57C as the Base Unit. The data recorded by the Remote Units can be downloaded via optical communication by placing it on the RTR-57C communication port.

Register up to 3840 Units on 1 RTR-57C

RTR-57C is designed to manage any combination of RTR-51,52,53 and RVR-52A units in groups.

One RTR-57C unit can be set up to manage up to 60 groups, with each group containing up to 64 units. If being set up via computer each RTR-57C can be set to handle 15 groups with each group containing 250 units.

Transmission Range



Compact, Durable, Water Resistant

The lightweight yet durable water resistant construction allows you to use this unit under the harshest of conditions. It can be reliably used in high condensation areas, refrigerated and frozen environments as well as underground.

Note :

IP-67 rating is for full immersion. IP-64 rating is for continuous spray. Fully submerged operation is not recommended on a continuous basis.

Large Data Capacity: up to 16,000 Readings

With one unit you can record up to 16,000 readings. If set at a one hour recording interval that gives you 666 days or almost two years of readings. One RTR-53 can record up to 8,000 readings x 2 channels of measurement data. If an RVR-52A unit is set to record event data, it can record up to 8,000 events.

Wireless Communication Possible in Range of -30 To 80°C

Because wireless communication for all RTR-51,52,53 and RVR-52A units can be made within the wide range of -30 to 80°C, it is possible to use the units to manage temperature in below freezing conditions such as frozen transportation and storage.

Wide Selection of Recording Intervals / Two Recording Methods

The RTR-51,52,53 and RVR-52A give you 15 recording intervals (1 second to 1 hour) to choose from. Each unit allows you two choices of recording method:

- One Time Method: When 16,000 readings have been reached, recording stops.
- Endless Method: When 16,000 readings have been reached, it automatically overwrites oldest data.

Monitoring Function

Our RTR-51,52,53 and RVR-52A units allow you to wirelessly monitor current temperature readings of one group of units, with the readings being sequentially displayed on the handheld RTR-57C unit.

Monitoring intervals can be set on the RTR-57C from 1 to 60 minutes with up to 64 units in one group.

The high-speed communication allows you to collect 64 units worth of data in just 20 seconds. Moreover, the downloaded data is sequentially displayed on the handheld unit for 2 seconds. At the same time, if the set temperature has been exceeded a warning will be displayed and an alarm sounded.



Note:

If monitoring is carried out on a regular basis the battery life of the RTR-51, 52, 53 and RVR-52A units will be shortened. For example, if the monitoring interval is set at 1 minute the battery life will be about 4 months.

Remote Control Command

Remote Control Command is possible to set up your computer to enable the control of downloading via wireless communication between an RTR-57C unit connected to your computer and any RTR-51,52,53 and RVR-52A unit(s) within communication range. To use this function you will need to input a special command protocol into your computer's software system. For more details about the set up and use of this function please contact your nearest authorized T & D sales representative.

About 6 Months of Continuous Use with Lithium Battery / About 2.5 years with our Large Capacity Battery Pack

Using our specially designed low energy consumption circuit this unit can run on one lithium battery for up to six months of continued use. In addition, by using our specially designed optional large capacity battery pack, the unit can be used continuously for up to two and a half years. No need to worry about where you place it, as the battery will allow you to measure and record over long periods of time whether the unit is in transit or in a distant place.



With Large Capacity Battery attached

Note:

Battery life will depend on the recording environment, recording interval, communication frequency, and ambient temperature. The above battery life test was carried out using brand new batteries and in no way do we guarantee a battery's life.

Removing the battery and not replacing it will result in a loss of all recorded data.

Thermo Recorder

Temperature / Humidity Recorder



RTR-51 / 51L



RTR-52 / 52L



RTR-53 / 53L

Temperature Recording Range: -60°C to 155°C

The RTR-51, with internal sensor, can measure and record temperatures from -40 to 80°C and the RTR-52, with external sensor, is able to measure and record in a range of -60 to 155°C.

The RTR-51 is IEC rated for a water resistance of IP-67, which is full immersion. The RTR-52 is IEC rated at IP-64 which is continuous spray. It is not recommended to operate either unit fully submerged on a continuous basis.

Note:

The main unit is designed for use in environments with an ambient temperature of between -40 to 80°C, but in an environment with a temperature of below -30°C communication will not be possible.

Humidity Recording Range: 10 to 95%RH

The RTR-53 with its standard temperature/humidity sensor is able to simultaneously measure and record temperature within a range of 0 to 55°C and humidity within a range of 10 to 95%RH.

The sensor for the RTR-53 has been specially designed to withstand certain amounts of condensation.

The RTR-53 has an IEC water resistance rating of IP-64.

Note:

The main unit is designed for use in environments with an ambient temperature between -40 to 80°C and is water resistant.

Voltage Recorder

Voltage / Pulse Recorder

Voltage Measurement Range: 0 to 6.5V

RVR-52A can measure and record input voltage from 0 to 6.5V. You can choose to record the voltage measurement as the instantaneous value for the each recording interval span or as the average value for each recording interval span. The average value for recording intervals under 15 seconds will be calculated as the average of the measurements from every 1 second. The average for intervals over 20 seconds will be calculated as the average of the measurements from every 2 seconds.

Pulse Measurement: 30 Counts per Second

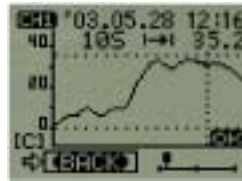
RVR-52A can measure up to 30 counts (30Hz) per second when the input voltage range is between 0-30V and the pulse width is 15 msec. or greater. When measuring pulse, the largest number of counts for one recording interval is 32,000 counts. You can select from rising signal (Lo-Hi) or falling signal (Hi-Lo) and count when one or the other occurs.

Event Time Recording

RVR-52A can record the time of any event; a rising (Lo to Hi) or falling (Hi to Lo) waveform that occurs for more than 1 second at an input voltage range of between 0-30V.



RVR-52A / 52AL



User Friendly Operation Dial

Our easy to hold operation dial makes menu selection and operation a snap. By simply moving the dial up and down you can scan the menu and easily make a selection by pressing in on the dial.

Serial Interface to PC

The RTR-57C connects to a PC through a standard serial interface. Simply plug the RTR-57C into any serial port on your computer.

Data Capacity: 256,000 Readings

The data capacity for the RTR-57C is 256,000 readings. That is a large enough capacity to collect data from 16 units of RTR-51,52,53 or RVR-52A at full capacity (16,000 readings). Moreover, it can collect and manage up to 250 separate data recording sessions.

Over 100 Hours on 2 Alkaline Batteries Energy Saving Auto Power Off Function

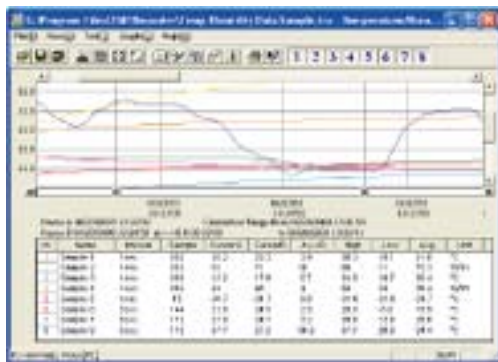
The RTR-57C takes advantage of our exclusive circuitry design to bring over 100 operating hours worth of power on only 2 AAA alkaline batteries. Energy efficiency is further enhanced with our Auto Power Off Function that turns off the main unit when not in use.

T&D Recorder for Windows

Easy-to-use Windows software allows you to control all aspects of set up, recording and downloading as well as printing, creating text files, tables and colorful graphs of the recorded data.

Up to 8 Channels of Data in One Graph

Up to eight channels of temperature and humidity data can be simultaneously viewed in one Temp / Humidity Graph and up to eight channels of voltage, pulse, temperature and humidity data can be viewed in one Multi-scale Graph. Moreover, you can easily hide and view channels, make changes to graph colors and zoom-in and -out on data with the click of a mouse. Color printing of the graph, as you see it on display, is also possible.



Remote Unit Registration

In order to carry out wireless communication, it is first necessary to connect the RTR-57C unit to your computer and register it as the Base Unit. Next you must register RTR-51, 52, 53 and RVR-52A units as Remote Units. To register Remote Units, you first create Groups and then register the Remotes to the designated Group. By registering Remotes into Groups, it not only makes management easy, but allows, via the Base unit, to make setting changes and recording start settings by Group. It is also possible to create files of the Remote Unit Registration Info, which can be read by other RTR-57C units.

Easy-to-Read LCD Graph Display

The RTR-57C gives you a high quality graph display of collected data. Each graph displays the data for one channel and can be easily scrolled across by using the handy operation dial or the buttons on the front of the main unit. This function gives you the data you want in an easy-to-understand format.

Monitor Measurements while Downloading

By making upper and lower limit settings on the RTR-57C you can monitor the recorded data as it is collected for irregularities and the results will be displayed. If any RTR-51,52,53 or RVR-52A unit has already been set with its own upper and / or lower limit, those values will take precedence over the values set in the RTR-57C.

Manage Recording Settings No Computer Necessary

Besides controlling the collection of data, the RTR-57C can manage various recording settings such as: Recording Mode, Recording Interval, Programmed Recording Settings and Immediate Record. This enables the user to easily control various recording settings for a variety of models on-site without the need for a computer.

Software Included with RTR-57C

Display Data in Table Form

The data in the graph can be viewed in table form with the High in red, the Low in blue and the Average in pink. You can print all of the data in the list or select and print only those pages you desire.

Data Table Window

Time	Temp	Humd	Volt	Pulse	Temp	Humd	Volt	Pulse
01:00:00	22.5	65	1.2	10	22.5	65	1.2	10
01:00:01	22.5	65	1.2	10	22.5	65	1.2	10
01:00:02	22.5	65	1.2	10	22.5	65	1.2	10
01:00:03	22.5	65	1.2	10	22.5	65	1.2	10
01:00:04	22.5	65	1.2	10	22.5	65	1.2	10
01:00:05	22.5	65	1.2	10	22.5	65	1.2	10
01:00:06	22.5	65	1.2	10	22.5	65	1.2	10
01:00:07	22.5	65	1.2	10	22.5	65	1.2	10
01:00:08	22.5	65	1.2	10	22.5	65	1.2	10
01:00:09	22.5	65	1.2	10	22.5	65	1.2	10
01:00:10	22.5	65	1.2	10	22.5	65	1.2	10
01:00:11	22.5	65	1.2	10	22.5	65	1.2	10
01:00:12	22.5	65	1.2	10	22.5	65	1.2	10
01:00:13	22.5	65	1.2	10	22.5	65	1.2	10
01:00:14	22.5	65	1.2	10	22.5	65	1.2	10
01:00:15	22.5	65	1.2	10	22.5	65	1.2	10
01:00:16	22.5	65	1.2	10	22.5	65	1.2	10
01:00:17	22.5	65	1.2	10	22.5	65	1.2	10
01:00:18	22.5	65	1.2	10	22.5	65	1.2	10
01:00:19	22.5	65	1.2	10	22.5	65	1.2	10
01:00:20	22.5	65	1.2	10	22.5	65	1.2	10

Event Viewer

View event data recorded by RVR-52A in table form. You can further view info about the data in the viewer or print it out.

Data Collection

Upon downloading, a data collection report is displayed in an easy-to-view list. From there it is possible to change all downloaded data or selected data into graph form or into Text File Format to specify data file(s), while holding down the [Ctrl] button or the [Shift] button click on the files you wish to download in the collected data list.

Save as Text File Function

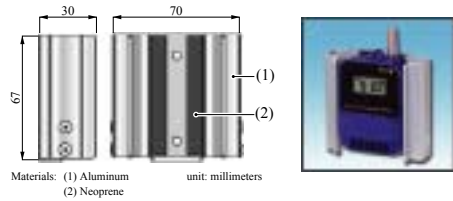
This function allows you to save data in Text File Format (CSV Format); in order to use the data with spreadsheet applications such as Excel and Lotus.

Options

Common Options

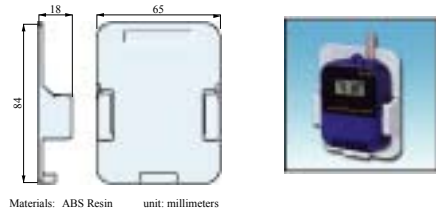
TR-05K1

Wall Attachment



TR-05K2

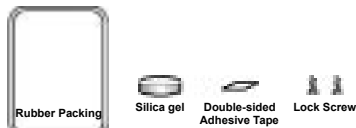
Wall Attachment



TR-00P1

Maintenance Set

Rubber packing x 1
Silica gel x 1
Double-sided Adhesive tape x 1
Lock screw x 2



TR-11P2

Replacement Battery Set

Lithium battery LS14250 x 1
Tube x 1
Maintenance Set x 1 set

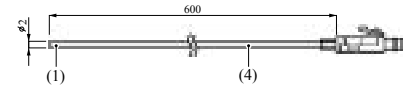


For RTR-52

TR-5106

Teflon-Shielded Sensor

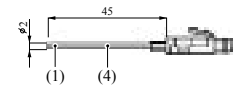
Cable Length: 0.6m
Thermal-Constant Time:
Approx. 15 Sec. (in air)
Approx. 2 Sec. (in agitated water)



TR-5101

Teflon-Shielded Sensor

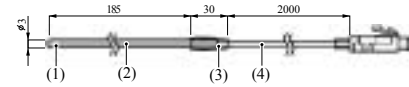
Cable Length: 45mm
Thermal-Constant Time:
Approx. 15 Sec. (in air)
Approx. 2 Sec. (in agitated water)



TR-5220

Stainless Protection Sensor

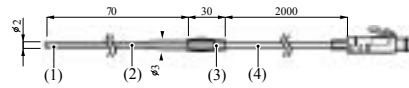
Cable Length: 2.0m
Thermal-Constant Time:
Approx. 36 Sec. (in air)
Approx. 7 Sec. (in agitated water)



TR-5320

Stainless Protection Sensor

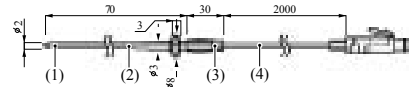
Cable Length: 2.0m
Thermal-Constant Time:
Approx. 12 Sec. (in air)
Approx. 2 Sec. (in agitated water)



TR-5420

Stainless Protection Sensor

Cable Length: 2.0m
Thermal-Constant Time:
Approx. 12 Sec. (in air)
Approx. 2 Sec. (in agitated water)



unit: millimeters

Materials: (1) Thermistor (2) Stainless pipe(SUS316) (3) Teflon Compaction Tube (4) Teflon Resin (FEP)-Shielded

Possible Measurement Range: -60 to +155°C Sensor Temperature Durability : -70 to +180°C

Water Resistance: Splash Proof (Sensor and Cable)

Measurement Accuracy: Average $\pm 0.3^\circ\text{C}$ (-20 to 80°C) Average $\pm 0.5^\circ\text{C}$ (-40 to -20°C / +80 to +110°C)
Average $\pm 1.0^\circ\text{C}$ (-60 to -40°C / 110 to 155°C)

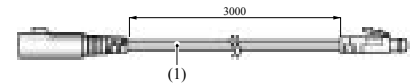
Note: Temperature sensors can not be used with RTR-53 units; the connector is different.

For RTR-52

TR-2C30

Sensor Extension Cable

Cable Length: 3.0m
Splash Resistant (IP64)



unit: millimeters

Materials: 1.Vinyl Coated Electrical Wire

Note:

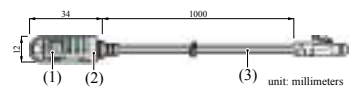
Only one cable per sensor. When using the extension cable there will be a +3.0°C at normal temperature and at -50°C a gap of +0.5°C may occur.

For RTR-53

TR-3310

Temp / Humidity Sensor

Possible Temperature Measurement Range: 0 to 55°C
Possible Humidity Measurement Range: 10 to 95%RH
Sensor Temperature Resistance: -10 to 60°C
Temp Measurement Accuracy: Average $\pm 0.3^\circ\text{C}$
Humidity Measurement Accuracy $\pm 5\%$ RH (At 25°C 50%RH)
Service Life: 1 year (under normal operational conditions)
Operational Conditions: Without dew condensation, water leakage or effect from corrosive gas or organic solvents.
Cable Length: 1m



unit: millimeters

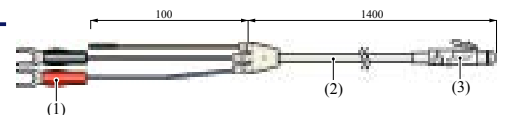
Materials:
(1) Temperature/Humidity Sensor
(2) Polypropylene Resin
(3) Vinyl Coated Electrical Wire

For RVR-52A

RPR-7101

Pulse Input Cable

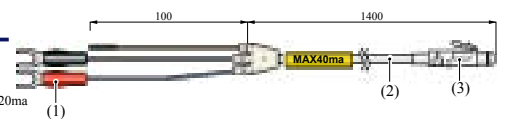
Cable Length: 1.5m



RVR-5203

4 - 20 mA Probe

Maximum Current: 40 mA
Internal Resistance: 100Ω
Output: 0.4V @ 4mA / 2V @ 20mA
Conversion Accuracy: 0.5%
Cable Length: 1.5m



unit: millimeters

Materials: (1) M3.5 Tongue Terminal (2) Vinyl Coated Electrical Wire (3) Connector

NOTE:

(*)1) 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.

(*)2) Operating temperature depends on the specifications for the data logger being used.

RTR-05B1

Large Capacity Battery Pack

Power: Lithium Battery x 1 (LS26500)
Battery Life: about 2 years and 6 months (*1)
(Monitoring at 1 minute interval = about 20 months)
Waterproof Capability: Splash proof
Operating Temperature: -40 to 80°C (*2)
Weight: about 75g (including lithium battery)
Kit Contents: Attachment hook x 1
Rubber Packing x 1 (for back of main unit)
Silica Gel Pack (drying agent) x 1
Double-sided Adhesive Tape x 1 (for fastening silica gel)
Screws x 2 (extras for fastening back of main unit)

Install by taking off the back cover and removing the battery.



Attachment hook

For RTR-57C

AC Adaptor

For AC Adaptor
Contact your local
Authorized TandD Sales Representative

Data Logger Specifications

RTR-51

Measurement Channel:	1 Temperature
Range:	-40 to +80 °C
Display :	Resolution: 0.1 °C
Accuracy:	Avg. ± 0.5 °C
Memory:	16000 Readings x 1 Channel
Water Resistance:	IP67 (Full Immersion)
Standard Sensor:	Internal

RTR-52

Measurement Channel:	1 Temperature
Range:	-60 to +155 °C
Display Resolution:	0.1 °C
Accuracy:	Avg. ± 0.3 °C (-20 to +80 °C)
Memory:	16000 Readings x 1 Channel
Water Resistance:	IP64 (Continuous Spray)
Standard Sensor:	TR-5106

RTR-53

Measurement Channel:	1 Temperature + 1 Humidity
Range:	0 to 55 °C, 0 to 95% RH
Display Resolution:	0.1 °C, 1% RH
Accuracy:	Avg. ± 0.3 °C, $\pm 5\%$ RH
Memory:	8000 Readings x 2 Channels
Water Resistance:	IP64 (Continuous Spray)
Standard Sensor:	TR-3310

RVR-52A

Measurement Channel:	1 Voltage or 1 Pulse or 1 Event Voltage
Range:	0 ~ +6.5 V DC
Voltage Display Resolution:	1 mV
Voltage Accuracy:	$\pm 0.5\% + 5\text{dgt.}$
Voltage Input Impedance:	Approx. 1 M Ω
Voltage Memory:	16000 Readings x 1 Channel
Pulse Range:	0 ~ 30 V DC
Pulse Detection Voltage:	Low below 0.6 V, Hi above 2.0 V
Pulse Response Time:	30 Hz / approx. 15 ms or more (over 2.5 V)
Pulse Response Polarity:	Low-to-Hi or Hi-to-Low transition
Pulse Number of Counts:	max. 32000 Counts
Pulse Input Impedance:	Pull Up Resistor Approx. 100 k Ω
Pulse Memory:	16000 Readings x 1 Channel
Event Range:	0 ~ 30 V DC
Event Display Resolution:	1 sec
Event Detection Voltage:	Low below 0.6 V, Hi above 2 V
Event Response Time:	1 sec
Event Response Polarity:	Low-to-Hi and Hi-to-Low
Event Input Impedance:	Pull Up Resistor Approx. 100 k Ω
Event Memory:	8000 Readings x 1 Channel
Sensor Excitation:	Programmable Pre-heat Time
Water Resistance:	IP64 (Continuous Spray)
Standard Sensor:	RPR-7101

Common Specifications

Recording Interval:	1,2,5,10,15,20,30 sec / 1,2,5,10,15,20,30,60 min
Recording Mode:	Endless or One-Time
LCD Display Items:	Current Readings, Recordings Settings, Battery Life Warning, Over Measurement Range Warning, Unit
Power:	Lithium Battery LS14250 or optional AC Adapter
Battery Life:	Approx. 6 months (Battery life depends on measurement environment, recording interval and battery performance)
Wireless Method:	900 MHz Transmission, Distance: Up to 100 m
Dimension:	H62 mm x W47 mm x D19 mm, antenna length 20 mm, with Large Capacity Battery Pack: D50 mm
Weight:	Approx. 56 g, with Large Capacity Battery Pack: approx. 109 g

Product Specifications for RTR-57C

Recording Capacity:	256,000 readings in up to 250 recording sessions from any of up to 3840 registered loggers.
Functions:	Downloading Data, Display Saved, Data Graphs, Display Highest and Lowest Temperature, Set Recording Start for Remote Data Loggers, Delete Stored Data, Monitor Current Temperature, Search for Remote Units
LCD Display:	Operation Menu, Graph Display, Low Battery Life Warning, Calendar and Clock, Contrast Adjustment, Backlight
Power:	Two AAA Alkaline Batteries - Can use rechargeable AAA Ni-Cd or Ni-MH 1.2V batteries, or AC Adaptor
Battery Life:	100 hrs under Continuous Operation, Auto Power Off Function (Turns unit off after 3 minutes of non-use)
Data Backup:	Approx. 1 year with switch off, Data erased if all battery power is lost
RF Transmission:	900 MHz, Up to 100 meters (May vary with conditions)
Interface:	Special Short Wave Radio Type: 2048bps (with data logger)
Modular Jack:	Standard RS-232 Serial connection
Optical Communication:	2400bps (with data logger)
Communication Time:	Data from RTR-57C to Computer: One Full Logger's Data ~ 25 sec. Data from RTR-51/52/53/RVR-52A to RTR-57C via wireless: One Full Data ~ 420sec.
Dimension:	H125 x W58 x D25.5mm (excluding protruding part) Antenna Length: 20mm ~ 105mm (fully extended)
Weight:	Approx. 125g (Including 2 AAA Alkaline batteries)
Operating Conditions:	Temperature : 0 to 50 °C Humidity: Less than 90%RH, non-condensing
Accessories Included:	Computer Communication Cable (Serial) x 1, Data Logger Communication Cable x 1, AAA Alkaline Batteries x 2, User's Manual and Warranty, Software CD (T&D Recorder for Windows)



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