

# Compact Waterproof Data Logger

## TR-5*i* Series



Infrared Interface  
Easy-to-Read Display  
Durable Waterproof Loggers



# User Friendly Interface means: Power through Simplicity

The TR-5i Series is a family of data loggers designed to measure and record a variety of items: from temperature to pulse. The recorded data can then be easily collected with a compatible portable Data Collector or downloaded directly to a PC with a Communication Port.

Record → Collect → Analyze  
The TR-5i Series makes it easy as 1-2-3

## Data Loggers

### Measure / Record

- Temperature • Pt100 / Pt1000
- Thermocouple • Voltage • 4-20mA
- Pulse



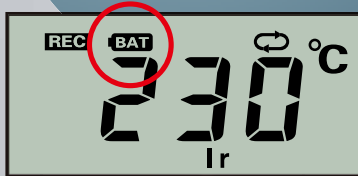
## Compact Design means Wider Application Possibilities

The compact size allows it to be placed almost anywhere. Also, its durable body with water-proof and dust proof capacity makes it possible to be used in harsh environments.



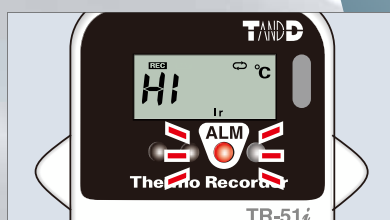
## Low Energy Consumption Design means Longer Battery Life

Over one year of continuous use possible. Battery replacement mark lets you know when it is time for a new battery.



## Warning LED on Unit

When a set limit has been exceeded the Warning LED will flash and a message will be displayed to give you the cause.



**Data Collection Devices**

**Collect and Download Data**

Via Infrared or Optical Communication



**On-site Data Collection**  
**On-the-spot Data Checking**

Data collection via IR communication makes it possible to collect recorded data without ever having to move or touch the logger. The collected data can then be checked there on the spot...no need for a PC.



**Simple!**  
**Quick!**

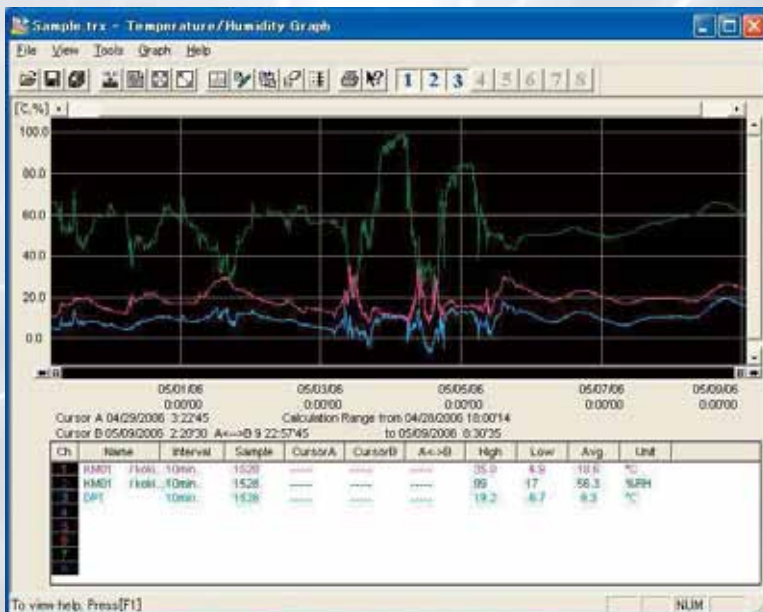
Recorded Data can be downloaded directly to a PC using a Communication Port: just connect and place logger on port. One unit of full data can be downloaded in just 25 seconds!



**Software**

**Manage Settings and Analyze Data**

This free of charge software is bundled with the Data Collection Device. Our user-friendly software makes all types of settings a snap: from setting up recording conditions and warning monitoring to carrying out adjustments and other functions. An easy to use graph program is also included for viewing, analyzing, and printing data.



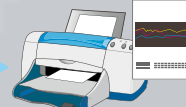
Graph View

Date/Time	RH1	RH2	DPT
05/04/2006 02:00:04	11.0	97	10.6
05/04/2006 02:10:04	11.1	98	10.7
05/04/2006 02:20:04	10.9	98	10.5
05/04/2006 02:30:04	11.1	99	10.9
05/04/2006 02:40:04	10.9	99	10.7
05/04/2006 02:50:04	11.1	99	10.9
05/04/2006 03:00:04	11.0	98	10.6
05/04/2006 04:10:04	10.7	98	10.3
05/04/2006 04:20:04	10.7	99	10.6
05/04/2006 04:30:04	10.4	98	10.0
05/04/2006 04:40:04	10.4	99	9.9

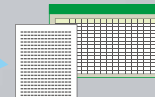
Table View

Print

Save



CSV Format



## Temperature - Thermocouple



TR-55i-TC

Measurement Range:

K: -199 to 1300 °C

J: -199 to 750 °C

T: -199 to 400 °C

S: -20 to 1700 °C

Input Module (TCM-3010) Included (Sensor not sold by T&D)

## Temperature - Pt100 / Pt1000



TR-55i-Pt

Measurement Range: -199 to 600 °C

Input Module (PTM-3010) Included (Sensor sold separately)

## Pulse Count



TR-55i-P

Measurement Range: Pulse count 0-61,439

Signal Input: Contact Input / Voltage Input

Input Frequency: 0 - 3.5 kHz

Input Cable (PIC-3150) Included

For use with Voltmeters, Flow Meters and Passage Counters



EN 12830 Compliance

TR-51i and TR-52i data loggers comply with EN12830, the European Standard regarding temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen and quick-frozen food.

### Portable Data Collector TR-57DCi

- ▶ Collect data on site; No PC necessary.
- ▶ Data can be downloaded via Infrared or Optical Communication.
- ▶ One logger at full storage capacity can be downloaded via IR communication in 55 seconds or via optical communication in about 24 seconds.
- ▶ The collected data can be immediately viewed on site and checked for warning occurrences.
- ▶ The Data Collector can store recorded data from up to 16 loggers at full capacity.



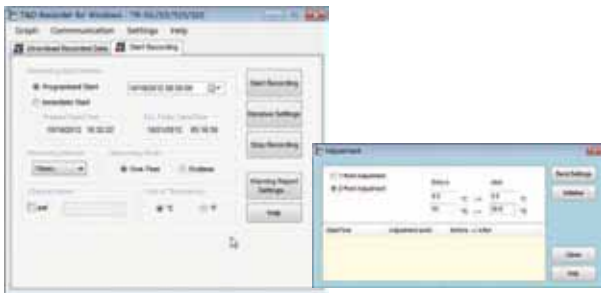
### Communication Port TR-50U2

- ▶ Use for downloading data directly to a PC
- ▶ Download data from a logger at full storage capacity in about 25 seconds.
- ▶ The unit operates via USB bus power so no need for more wires and plugs.
- ▶ Possible to specify a time period of data for downloading so you get only the data you want.



## Intuitive User Friendly Graph

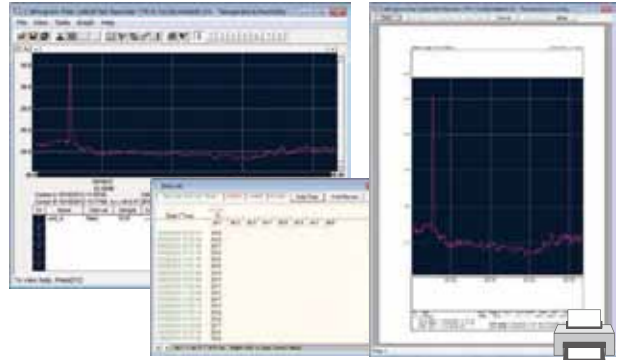
- The software makes it possible to make various detailed recording settings such as the interval at which you want recording to occur and the timing of recording start.



- By making upper and lower limit settings it is possible to monitor measurements for warnings and when one occurs the unit's LED will flash. It is also possible to find out the time of the warning.



- The included Graph application enables easy analysis of the recorded data.

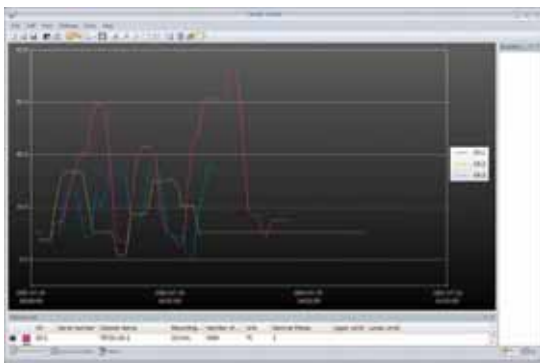


- It is possible to output data as text format file (CSV) for use with common spreadsheet software.



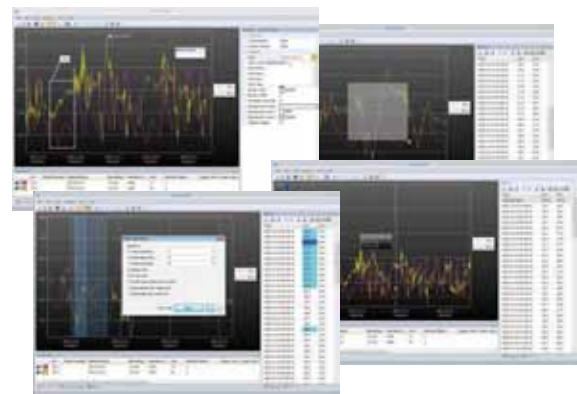
## Next Generation Graph Application: "T&D Graph (beta version)"

- All data can be viewed in one graph window, regardless of the data format or from what type of device the data came from.



- Compatible with recorded data of any format from all T&D loggers
- Even from multiple sets of data it is possible to open only the data you wish to view by specifying filters.

- Provides even more visual ways to display and analyze recorded data.



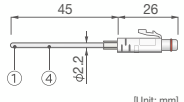
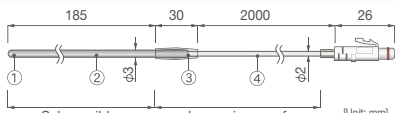
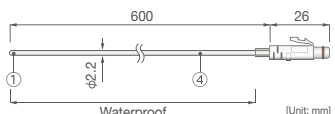
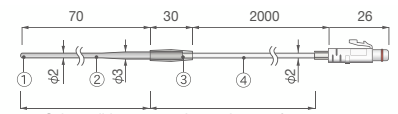
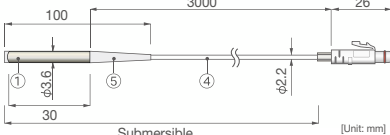
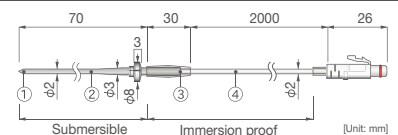
- Save memos, comments and figures with the graph.
- Search and filter recorded data to get only the data you need
- Merge multiple sets of data

For the latest information about compatible devices or update versions, please check our T&D Website.

TR-5i Series - Options

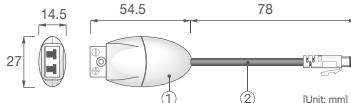
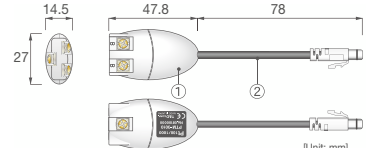
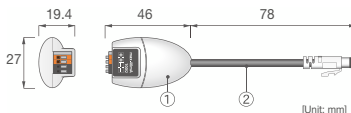
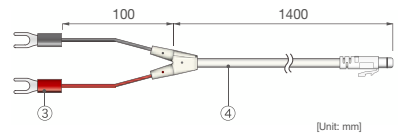
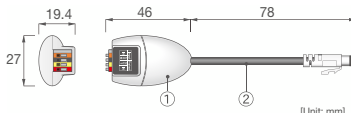
**Temperature Sensors for TR-52i**

Measurement Range: -60 to 155°C / Sensor Temperature Durability: -70 to 180°C  
 Accuracy: Avg. ± 0.3°C (-20 to 80°C), Avg. ± 0.5°C (-40 to -20°C / 80 to 110°C), Avg. ± 1.0°C (-60 to -40°C / 110 to 155°C)  
 Materials: ①Thermistor ②Stainless pipe (SUS316) ③Fluoropolymer Compaction Tube ④Fluoropolymer Coated Electrical Wire ⑤Fluoropolymer Mold

<p><b>Fluoropolymer Coated Sensor</b></p> <p><b>TR-5101</b></p> <p>Response Time (90%): Approx. 80 sec. (in air)</p>  <p>[Unit: mm]</p>	<p><b>Stainless Protection Sensor</b></p> <p><b>TR-5220</b></p> <p>Response Time (90%): Approx. 150 sec. (in air) Approx. 7 sec. (in agitated water)</p>  <p>[Unit: mm]</p>
<p><b>TR-5106</b></p> <p>Response Time (90%): Approx. 80 sec. (in air) Approx. 7 sec. (in agitated water)</p>  <p>[Unit: mm]</p>	<p><b>TR-5320</b></p> <p>Response Time (90%): Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)</p>  <p>[Unit: mm]</p>
<p><b>Underwater Sensor</b></p> <p><b>TR-5530</b></p> <p>Response Time (90%): Approx. 150 sec. (in air) Approx. 15 sec. (in agitated water)</p>  <p>[Unit: mm]</p>	<p><b>TR-5420</b></p> <p>Response Time (90%): Approx. 90 sec. (in air) Approx. 3 sec. (in agitated water)</p>  <p>[Unit: mm]</p>
<p><b>Temperature Sensor Extension Cable for TR-52i</b></p> <p><b>TR-2C30</b></p> <p>Cable Length: 3m                  Waterproof Capacity: Splash proof (rated for use in daily life)                  Temperature Durability: -25 to 60 °C</p> <p><b>Note:</b> 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.</p>	

**Input Modules for TR-55i**

Materials: ①Polycarbonate ②Vinyl Coated Electrical Wire ③M3.5 Crimp Terminal ④Vinyl Coated Electrical Wire  
 Note: Input Module is not water resistant.

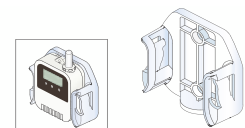
<p><b>Thermocouple Module (TR-55i-TC)</b></p> <p><b>TCM-3010</b></p> <p>Compatible Sensors: Thermocouple: Type K, J, T, S                  Sensor Connection: Miniature Thermocouple Connector                  Operating Environment: Temperature: -40 to 80°C                  Humidity: 90%RH or less (no condensation)</p>  <p>[Unit: mm]</p>	<p><b>Pt Module (TR-55i-Pt)</b></p> <p><b>PTM-3010</b></p> <p>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)</p>  <p>[Unit: mm]</p>	
<p><b>4-20mA Module (TR-55i-mA)</b></p> <p><b>AIM-3010</b></p> <p>Measurement Range: 0 to 20mA (Operational up to 40 mA)                  Accuracy: ± (0.5 mV + 0.3 % of reading) (for Input Module operating environment of 10 to 40°C)                  ±0.05 mA + 0.3 % of reading                  Operating Environment: Temperature: -40 to 80°C                  Humidity: 90%RH or less (no condensation)</p>  <p>[Unit: mm]</p>	<p><b>Pulse Input Cable (TR-55i-P)</b></p> <p><b>PIC-3150</b></p>  <p>[Unit: mm]</p> <p><b>Input Module Extension Cable</b></p> <p><b>TR-3C30</b></p> <p>Cable Length: 3m                  Waterproof Capacity: Splash proof (rated for use in daily life)                  Temperature Durability: -25 to 60 °C</p> <p><b>Note:</b> Up to 1 extension cables can be connected to one sensor.</p>	
<p><b>Voltage Module (TR-55i-V)</b></p> <p><b>VIM-3010</b></p> <p>Measurement Range: 0 to 22 V                  Accuracy: ± (0.5 mV + 0.3 % of reading) (for Input Module operating environment of 10 to 40°C)                  ±0.5 mV + 0.3 % of reading                  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)</p>  <p>[Unit: mm]</p>		

**Common for TR-51i / 52i / 55i**

**Wall Attachment**

**TR-05K3**

Accessories: Screws and Double-sided adhesive tape  
 Operational Environment Temp: -40 to 80°C  
 Materials: Polycarbonate  
 Note: Cracking may occur if polycarbonate is exposed to strong impact at temperatures of -30°C or lower.

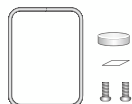


**Common for TR-51i / 52i / 55i**

**Maintenance Set**

**TR-00P1**

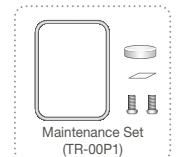
Package Contents:  
 Rubber packing (for underside of logger lid)  
 Silica gel (drying agent)  
 Double-sided tape (for affixing silica gel)  
 Screws (spare for back of data logger)



**Battery Set**

**TR-11P2**

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



**Pt100 Sensors for TR-55i-Pt**

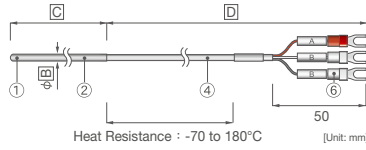
Sensor Element: Pt 100, Specified current: 2mA or below, Insulation resistance: DC500V 10MΩ or below, Conductor wire: 3-wire type, Measurement accuracy: ±(0.15-0.002×t) °C (t= temperature measurement absolute value), Water resistance: None (Stainless Protection part is waterproof)

Materials: ①Sensor (Pt100) ②Stainless Protection Sensor (SUS316) ③Sleeve (SUS304) ④Fluoropolymer Coated Electrical Wire ⑤Vinyl Coated Electrical Wire ⑥Crimp Terminal

**Optional Pt100 Sensors**

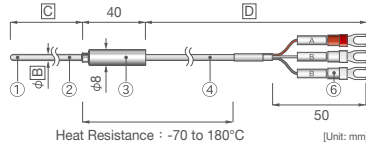
**TR-8100 Economical Type**

Temperature Measurement Range: -50 to 200°C  
Thermal Time Constant: Approx. 4.5 sec. (in agitated water)



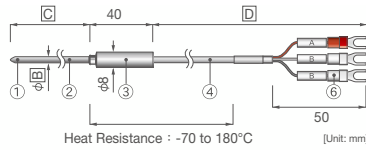
**TR-8110 Room Temperature Type**

Temperature Measurement Range: -50 to 350°C  
Thermal Time Constant: Approx. 2 sec. (in agitated water)



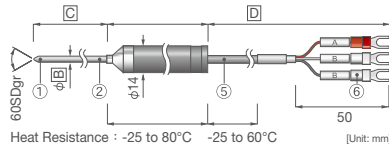
**TR-8120 Low to High Temperature Type**

Temperature Measurement Range: -200 to 600°C  
Thermal Time Constant: Approx. 2 sec. (in agitated water)



**TR-8130 Handy Type**

Temperature Measurement Range: -50 to 200°C  
Thermal Time Constant: Approx. 2.5 sec. (in agitated water)



**Note:** Stated thermal time constant is for sensors with a protection pipe diameter of φ 3.2.

**Sensor Configuration & Ordering**

Pt100 Sensors are produced only upon receipt of order; therefore please allow three weeks from the time of order until shipping.

When ordering Pt100 optional sensors, please determine the order number in the following manner: [A: Sensor Type] - [B: Protection Pipe Diameter] - [C: Protection Pipe Length] - [D: Cable].

**TR-81[A]-[B]-[C]-[D]M**

**A Sensor Type**  
00, 10, 20, or 30

**C Sensor Protection Pipe Length**

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

**D Sensor Cable Length**

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

**B Sensor Protection Pipe Diameter**  
Please select from below:

	TR-8100	TR-8110	TR-8120	TR-8130
2.0mm	×	○	×	×
2.3mm	○	○	×	×
3.0mm	○	○	×	×
3.2mm	◎	◎	◎	◎
4.8mm	○	○	○	○
6.0mm	○	○	×	×
6.4mm	×	×	○	×

◎: Recommended ○: Available ×: Not available

**EX1:**

TR-8100 with 2.3mm diameter x 50mm sheath with 1m of cable:  
Order Number: "TR-8100-2.3-50-1M"

**EX2:**

TR-8120 with 3.2mm diameter x 200mm sheath with 5m of cable:  
Order Number: "TR-8120-3.2-200-5M"



# TR-5i Series - Specifications

Specifications for TR-55i					
Unit Type	TR-55i-TC	TR-55i-Pt	TR-55i-V	TR-55i-mA	TR-55i-P
Measurement Channels	Temperature 1ch	Temperature 1ch	Voltage 1ch	4-20mA 1ch	Pulse Count 1ch
Sensor	Thermocouple: Type K, J, T, S	Pt100, Pt1000 (3-wire)	-	-	-
Measurement Units	°C, °F	°C, °F	V, mV	mA	P
Measurement Range	-199 to 1700 °C	-199 to 600 °C	0 to 22 V	0 to 20 mA (Operational up to 40 mA)	Input Signal: · Non-voltage Contact Input · Voltage Input (0 to 27 V)
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]	Detection Voltage Lo: 0.5 V or less Hi: 2.5V or more
	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	Chattering Filter: ON: 15 Hz or less OFF: 3.5 kHz or less  Maximum Count 61,439 / Recording Interval
Logging Capacity	16,000 readings				
Recording Interval	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.				
Recording Mode	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)				
LCD Display Items	Measurements, Recording Status, Battery Life Warning, etc.				
Communication Interfaces	Optical Communication (proprietary protocol) Infrared(IR) Communication (IrPHY 1.2 low power)				
Power (*2)	Lithium Battery: LS14250 x 1				
Battery Life (*3)	Approx. 14 months (10 months with IR Communication Enabled)	Approx. 24 months (14 months with IR Communication Enabled)	Approx. 16 months (11 months with IR Communication Enabled)	Approx. 16 months (11 months with IR Communication Enabled)	Approx. 16 to 24 months (11 to 18 months with IR Communication Enabled)
Dimensions	H 62 mm x W 47 mm x D 19 mm (excluding protrusions and Input Module)				
Weight	Approx. 55 g (including battery / excluding Input Module)				
Operating Environment	-40 to 80°C				
Waterproof Capacity (*4)	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), Strap, User's Manual (Warranty Included)				
Data Collection Devices	Communication Port: TR-50U2, TR-50U Data Collector: TR-57DCi				

\*1: "rdg" stands for reading.

\*2: The included lithium battery (LS14250) is not sold in stores. Please purchase the optional battery set (TR-11P2) for replacement.

\*3: 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. Battery life may be shortened further if the unit is used under inverter type fluorescent lighting.

\*4: This is the waterproof capacity of the data logger with the Input Module connected.

The specifications listed above are subject to change without notice.