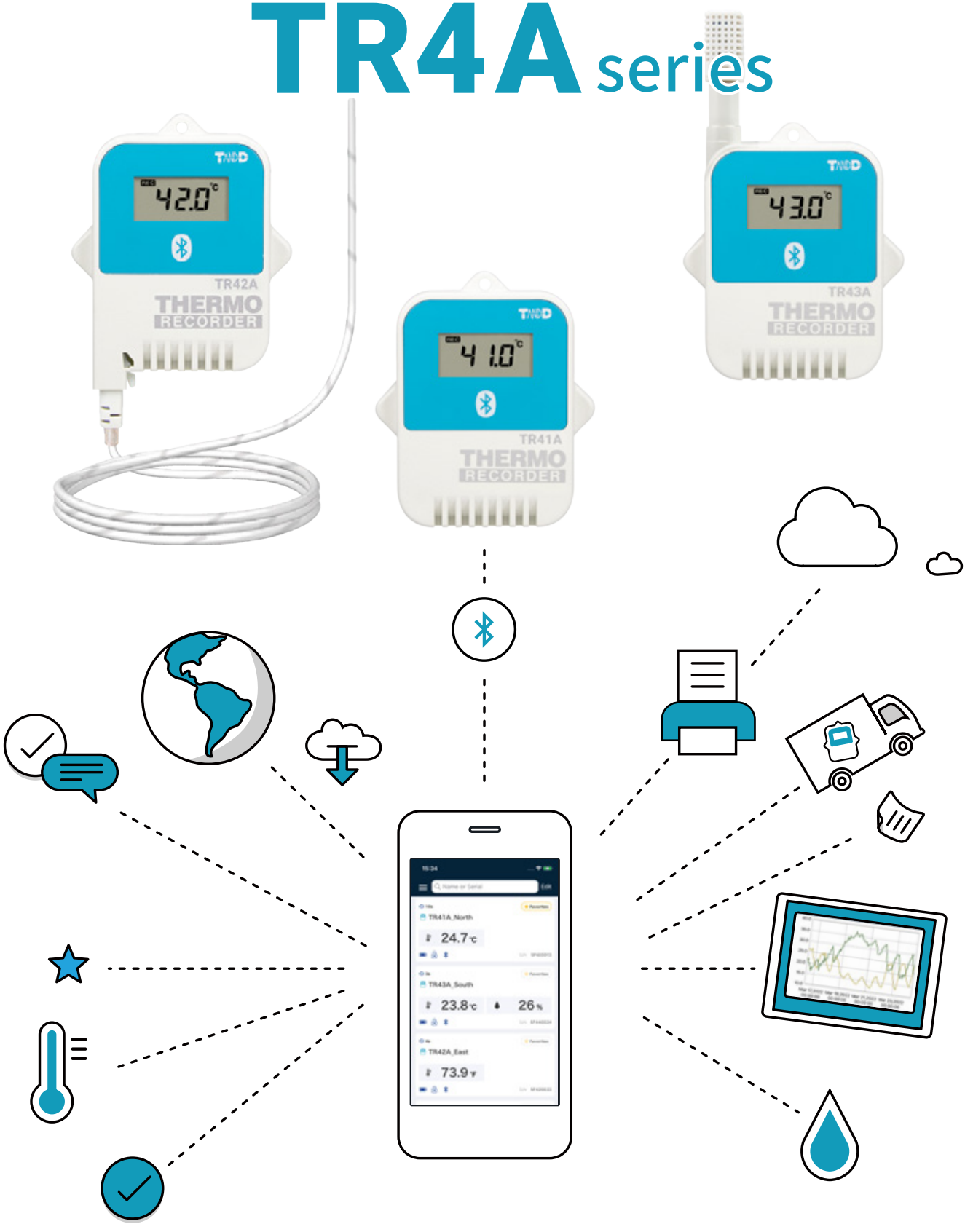
Easy Access to Your Data via Smartphone

# Bluetooth® Thermo Recorder

# TR4A series




T&D

# TR4A + Mobile Device = Quick Anywhere Anytime Access

## Easy Data Management via Bluetooth

### Easy Temperature/Humidity Measurement

The battery-powered TR4A series can be used for measurement at any site. Select a model according to your needs such as measurement items, range, and responsiveness.

### Easy Data Download with Smartphone

The T&D Thermo App automatically detects your logger via Bluetooth. Once connection is established, recorded data can be downloaded directly with graphic view and configuration using your mobile device.

### Store Data in the Cloud

Recorded data retrieved by the mobile device can be uploaded to the cloud storage (T&D Webstorage Service) for anytime, anywhere access from a smartphone, tablet, or PC.

### Data Report Generation

Using the mobile app T&D Thermo or TR4 Report, you can create a data report in PDF format, which can then be printed, shared, or emailed.

### Compact, Robust Design for Tough Environments

Their palm-sized compact design with robust body expands the possibilities of installation locations. Built-in sensor type for extra durability and water protection (IP67) also available.

### T&D's Free-of-Charge Cloud Service

**T&D WebStorage Service**
for Anywhere Anytime Access

**https://www.webstorage-service.com/**

## Apps and Software for Your Needs

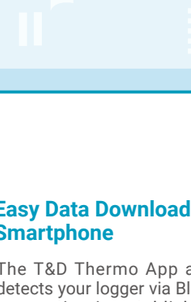
iOS / Android

### T&D Thermo

Allows for smartphones/ tablets to configure logger settings, collect and save data, display graphs, create reports, and upload to the cloud-based T&D WebStorage Service.

iOS / Android

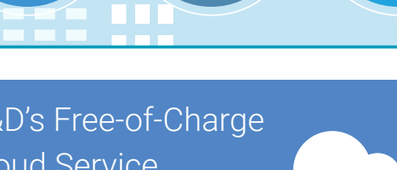
### TR4 Report




Specialized mobile app for generating PDF reports of recorded data for printing, emailing, saving and sharing.

Windows

### T&D Graph



Allows access to data stored in the T&D WebStorage Service for data analysis on a Windows PC. Multiple data files can be loaded, graphed, combined and saved.



# Line Up Bluetooth® Thermo Recorder

## TR41A

**Internal Sensor for Better Water Protection**

Temperature 1ch (Internal Sensor)
-40 to 80 °C
IP67 Immersion Proof

## TR42A

**External Sensor for Quick Response**

Temperature 1ch (External Sensor)
-60 to 155 °C
IP64 Splash proof (rated for use in daily life)
Optional Sensors Available

## TR43A

**Temperature / Humidity Measurement**

Temperature 1ch 0 to 55 °C
Humidity 1ch 10 to 95 %RH
IP64 : Splash proof (rated for use in daily life)
* Note that the temperature-humidity sensor is not water resistant.

## TR45

Thermocouple Pt100/Pt1000

**Both TC/PT Sensor Compatible Unit**

Temperature 1ch (Thermocouple/PT Sensor)
-199 to 1760 °C (depending on sensor type)
Sensors Not Included

TR4A Series Options

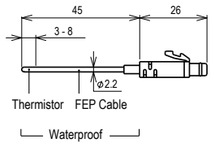
# Temperature Sensors for TR42A

Measurement Range: -60 to 155 ˚C
Accuracy: Avg. ±0.3 ˚C at -20 to 80 ˚C, Avg. ±0.5 ˚C at -40 to -20 ˚C, 80 to 110 ˚C, Avg. ±1.0 ˚C at -60 to -40 ˚C, 110 to 155 ˚C

Note: Can be extended by 3 meters with the Extension Cable TR-2C30.

## Fluoropolymer Coated Sensor

### TR-5101




[Unit: mm]



Response Time (90 %): Approx. 80 sec. (in air)
Waterproof Capacity: Cable is waterproof

### TR-5106



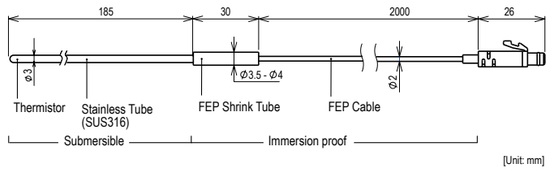

[Unit: mm]



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

## Stainless Protection Sensor

### TR-5220

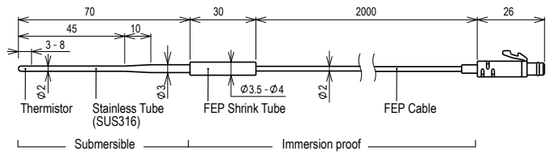



[Unit: mm]



Response Time (90 %): Approx. 150 sec. (in air)
Approx. 7 sec. (in agitated water)
Waterproof Capacity: Submersible (stainless protection tube) ,
Immersion proof (cable)

### TR-5320

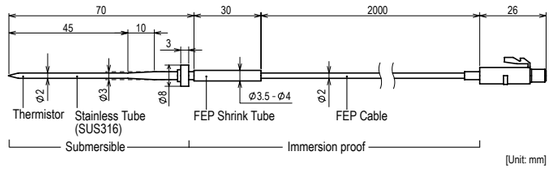



[Unit: mm]



Response Time (90 %): Approx. 90 sec. (in air)
Approx. 3 sec. (in agitated water)
Waterproof Capacity: Submersible (stainless protection tube),
Immersion proof (cable)

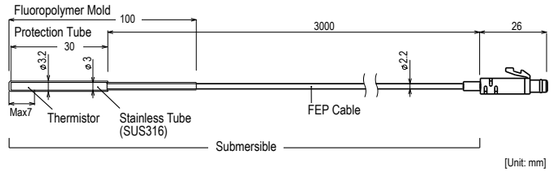
### TR-5420




[Unit: mm]

Response Time (90 %): Approx. 90 sec. (in air)
Approx. 3 sec. (in agitated water)
Waterproof Capacity: Submersible (stainless protection tube),
Immersion proof (cable)

### TR-5530 Underwater Sensor

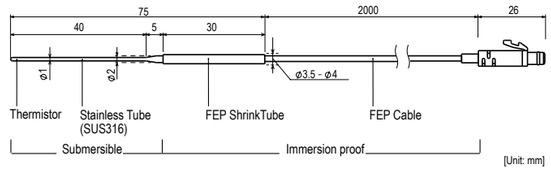



[Unit: mm]



Response Time (90 %): Approx. 150 sec. (in air)
Approx. 15 sec. (in agitated water)
Waterproof Capacity: Submersible (stainless protection tube),
Immersion proof (cable)

### TR-5620 High Sensitivity Ultra-thin Sensor



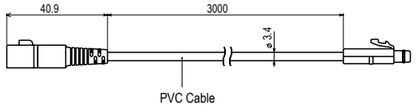

[Unit: mm]



Response Time (90 %): Approx. 50 sec. (in air)
Approx. 1 sec. (in agitated water)
Waterproof Capacity: Submersible (stainless protection tube),
Immersion proof (cable)

## Extention Cable for Temperature Sensor

### TR-2C30




[Unit: mm]

Temperature Durability: -25 to 60 °C
Waterproof Capacity: Splash proof (rated for use in daily life)
Conditions for Use: Only one cable per sensor.

# Pt Sensors for TR45

Model Number

TR-8□□□ - □.□ - □□□□ - □□M
A B C D

**To order, create the model number by selecting A, B, C, and D (See below).**
A Sensor Type (3 digits)
B Protection Tube Diameter (2 digits)
C Protection Tube Length (2-4 digits)
D Cable Length (1-2 digits)

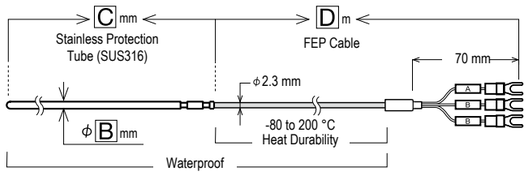
| | |
|---|---|
| Sensor Device | Pt100 |
| Electrical Current | 2 mA |
| Insulation Resitance | DC100 V over 100 MΩ (TR-8130 is over 10 MΩ at DC500 V) |
| Conductor | 3 wire type |
| Range of Error | ±(0.15 + 0.002 × t ) ˚C t = absolute value of measurement |
| Waterproof Capacity | TR-8200: Waterproof Others: Only stainless protection tube is water resistant. |

- Pt100 sensors are produced only upon order, therefore please allow approximately 1.5 months from time of order until shipping. The lead time varies depending on the specifications and quantity.
- The thermistor (temperature detection section) is mounted in the tip of the sensor.

## A Sensor Type (Select from 4 types)

### TR-8200 Waterproof Type

Measurement Range: -50 to 200 °C
Response Time (90 %) * : Approx. 13 sec. (In agitated water)

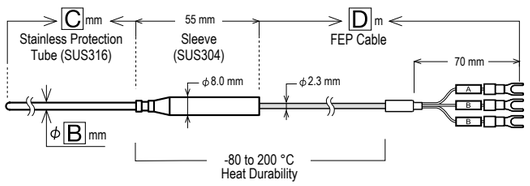



### TR-8210 Regular Type

Measurement Range: -200 to 300 °C
Response Time (90 %)* : Approx. 6 sec. (In agitated water)

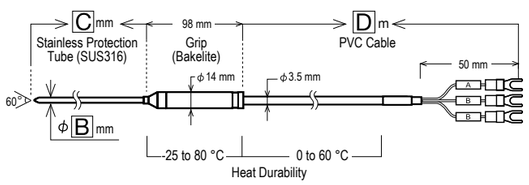
### TR-8220 Low to High Temp Type

Measurement Range: -200 to 500 °C
Response Time (90 %) * : Approx. 6 sec. (In agitated water)




### TR-8130 Handy Type

Measurement Range: -50 to 200 °C
Response Time (90 %) * : Approx. 6 sec. (In agitated water)




* Stated Response Time (90 %) is for sensors with a protection tube diameter of ϕ 3.2.
* Insulation Resistance of TR-8130 is over 10 MΩ at DC500 V.

## B Protection Tube Diameter

| | | A Sensor Type | | | |
|---|---|---|---|---|---|
| | | TR-8200 | TR-8210 | TR-8220 | TR-8130 |
| ϕ B mm | 2.0 | - | ○ | - | - |
| | 2.3 | - | ○ | - | - |
| | 3.0 | ○ | ○ | - | - |
| | 3.2 | ◎ | ◎ | ◎ | ◎ |
| | 4.8 | ○ | ○ | ○ | ○ |
| | 6.0 | ○ | ○ | - | - |
| | 6.4 | - | - | ○ | - |

◎ Recommended ○ Available - Not Available

## C Protection Tube Length

**TR-8220: 50 to 2000 millimeters**
**Others: 50 to 1000 millimeters**
Can be specified in 50 mm units.

## D Cable Length

**1 to 99 meters**
Can be specified in 1 m units.



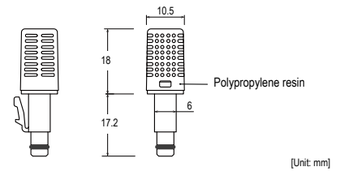


# Temperature-Humidity Sensors for TR43A

Measurement Range: Temperature 0 to 55 °C, Humidity 10 to 95 %RH
Conditions for Use: Do not expose to condensation, dampness, corrosive gases or organic solvents. Continued use may cause a decrease in the sensor's accuracy and sensitivity even under normal operational conditions.

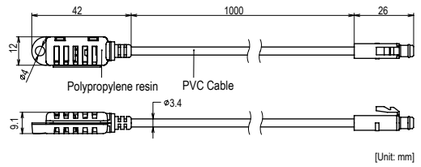
Note: These sensors do not support the use of an extension cable.

## THB3001




Accuracy: Temperature ± 0.5 °C,
Humidity ± 5 %RH at 25 °C, 50 %RH
Response Time (90 %): Approx. 11 min.

## TR-3310




Accuracy: Temperature Avg. ± 0.3 °C,
Humidity ± 5 %RH at 25 °C, 50 %RH
Response Time (90 %): Approx. 7 min.

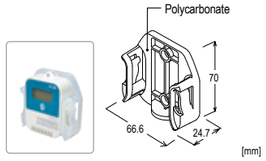
# Wall Attachments

Included Items: Lock Screws for fastening to wall, Double-Sided Adhesive Tape

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

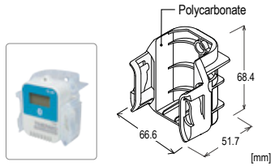
## TR-05K3

**for TR41A / 42A / 43A**




## TR-05K3L

**for TR41A / 42A / 43A, TR45**




Note: TR41A / 42A / 43A Can be used when attaching Large Capacity Battery Kit or External Power Adaptor Kit.

# Other Options

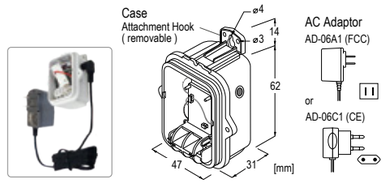
## TR-00P1

**Maintenance Set for TR41A / 42A / 43A**

Included Items:
Rubber Packing , Silica Gel,
Double-Sided Adhesive Tape,
Lock Screws

## RTR-500A2

**External Power Adaptor Kit for TR42A / 43A**



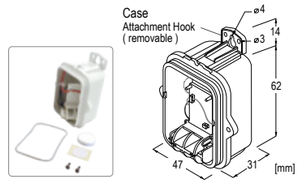

Voltage Input: DC6V
Backup Power: Ni-MH Battery (In case of power loss)
Back-up Time: About 4 days *
Charging Method: Trickle Charge
Operating Temperature: 0 to 60 °C
Waterproof Capacity: None
Weight: About 37 g (without AC Adaptor)
Included Items: AC Adaptor (AD-06A1 or AD-06C1), Case and Attachment Hook, Rubber Packing, Lock Screws, Rubber O-ring

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

Note: RTR-500A2 should not be used with the TR41A as it will cause the TR41A to display a higher than actual temperature reading of up to 3 °C.

## RTR-500B1

**Large Capacity Battery Kit for TR41A / 42A / 43A**




Power: Lithium Battery x 1 (LS26500) *1
Battery Life: About 4 years *2
Waterproof Capability: Splash proof
Operating Temperature: -40 to 80 °C *3
Weight: About 75 g (including Lithium Battery)
Included Items: Maintenance Set TR-00P1, Case and Attachment Hook

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

| Specification | TR41A | TR42A | TR43A | | TR45 | |
|---|---|---|---|---|---|---|
| Measurement Channels | Temperature 1ch | Temperature 1ch | Temperature 1ch, Humidity 1ch | | Temperature 1ch | |
| Sensor | Thermistor (Internal) | Thermistor | Thermistor | Polymer Resistance | Thermocouple:<br>Type K, J, T, S, R *1 *3<br>(Not provided) | Pt100, Pt1000<br>(3-wire, 4-wire*2) *3<br>(Available as option) |
| Measurement Units | °C, °F | °C, °F | °C, °F | %RH | °C, °F | °C, °F |
| Measurement Range | -40 to 80 °C | -60 to 155 °C | 0 to 55 °C | 10 to 95 %RH | Type K : -199 to 1370 °C<br>Type J : -199 to 1200 °C<br>Type T : -199 to 400 °C<br>Type S : -50 to 1760 °C<br>Type R : -50 to 1760 °C | -199 to 600 °C |
| Accuracy | Avg. ±0.5 °C | Avg. ±0.3 °C<br>at -20 to 80 °C<br><br>Avg. ±0.5 °C<br>at -40 to -20 °C, 80 to 110 °C<br><br>Avg. ±1.0 °C<br>at -60 to -40 °C, 110 to 155 °C | ±0.5 °C | ±5 %RH<br>at 25 °C, 50 %RH | **Thermocouple Measurement (Sensor inaccuracies not included)**<br>Type K, J, T :<br>±(0.5 °C + 0.3 % of reading)<br>at -100 °C or above<br>Type S, R :<br>±(1.5 °C + 0.3 % of reading)<br>at 100 °C or above<br>**Cold Junction Compensation**<br>±0.5 °C<br>*at 10 to 40 °C<br>±0.8 °C<br>*at -40 to 10 °C, 40 to 80 °C | ±(0.3 °C + 0.3 % of reading)<br>*at 10 to 40 °C<br><br>±(0.5 °C + 0.3 % of reading)<br>*at -40 to 10 °C, 40 to 80 °C |
| | | | | | Note: The temperature range shown above (*) represents the operating environment of the logger. | |
| Measurement Resolution | 0.1 °C | 0.1 °C | 0.1 °C | 1 %RH | Type K, J, T : 0.1 °C<br>Type S, R : Approx. 0.2 °C | 0.1 °C |
| Responsiveness | Response Time (90 %) :<br>Approx. 35 min. | Response Time (90 %) :<br>Approx. 80 sec.(in air)<br>Approx. 7 sec.<br>(in agitated water) | Response Time (90 %) : Approx. 11 min. | | - | - |
| Logging Capacity | 16,000 readings | 16,000 readings | 8,000 data sets<br>(One data set consists of readings for multiple channels.) | | 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 (alternating display for multiple channel devices), Recording Status, Battery Life Warning, etc. | | | | | |
| Communication Interfaces | Bluetooth 4.2 (Bluetooth Low Energy) | | | | Bluetooth 4.1 (Bluetooth Low Energy) | |
| Communication Time | Data Download Time (full logger) : Approx. 15 seconds | | | | Data Download Time (full logger) :<br>Approx. 30 seconds | |
| Power | Lithium Battery (LS14250) x 1 | | | | | |
| Battery Life *4 | Approx. 1.5 years *5 | | | | Approx. 1 year *5 | |
| Dimensions | H 62 mm x W 47 mm x D 19 mm<br>(excluding protrusions and sensor) | | | | H 62 mm x W 47 mm x D 26.5 mm<br>(excluding protrusions and sensor) | |
| Weight | Approx. 45 g | | | | Approx. 50 g | |
| Operating Environment | -40 to 80 °C<br>-30 to 80 °C during wireless communication | | | | Temperature : -40 to 80 °C<br>(-25 to 80 °C during wireless communication)<br>Humidity : 90 %RH or less (no condensation) | |
| Waterproof Capacity | IP67: Immersion proof | IP64: Splash proof (rated for use in daily life) *6 | | | None | |
| Included Items | - | Temperature Sensor<br>TR-5106 | Temp-Humidity Sensor<br>THB3001 | | Cable Clamp | |
| | Lithium Battery LS14250, Registration Code Label, Strap, User's Manual (Warranty Included) | | | | | |
| Software *7 | Mobile Applications (iOS, Android)<br>T&D Thermo, TR4 Report<br>PC Software (Windows)<br>T&D Graph | | | | Mobile Applications (iOS, Android)<br>T&D Thermo, ThermoREC, ThermoStorage, TR4 Report<br>PC Software (Windows)<br>T&D Graph | |

*1: We do not handle the sale of Thermocouple sensors.
*2: In the case of a 4-wire sensor, one wire will be left unused.
*3: Sensor connection is made via three M3.5 screw terminals with square washers.
*4: Battery life varies depending upon multiple factors including ambient temperature, recording interval, frequency of communication, and battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.
*5: Estimated battery life when recording data at an interval of more than 10 seconds and collecting data once a day.
*6: This is the waterproof capacity of the data logger with the sensor connected. Note that the temperature-humidity sensor is not water resistant.
*7: Free software download and information on OS compatibility is available on the Software page of our website at https://tandd.com/software/ .
The specifications listed above are subject to change without notice.

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