



Improved data management with inclusion of information on **when**, **by whom** and **what** is measured

TM Series of Thermo-Collectors

TM10 for Food & HACCEP use
TM20 for Industrial use

TM10

Thermistor model

Effective for HACCP program implementation

TM10/TM20 Common Features

External probes (-30°C to 200°C) [-22°F to 392°F]

There are three types available: a needle probe for mid-point temperature, a rounded end probe for liquid temperature, and a surface probe for surface temperature.

Built-in sensor (-20°C to 50°C) [-4°F to 122°F]

Measures ambient temperature, and allows for continuous measurement inside a warehouse or during transportation.

Memory key

Each press of this key saves the measured data, along with 3 other monitoring items: the name of the object being measured, operator's name, and date and time of measurement.

Selection of registered tag name

Select from the list of up to 50 registered tag names (objects to be measured).

Input selection key

Collector/Logging mode selector key

Switches between the collector mode (saves measured data when necessary) and logging mode (saves measured data continuously).

- When used in the collector mode only, saves up to 5000 data items.*
- When used in the logging mode only, saves up to 20000 data items.*

Measuring interval: 1 second to 24 hours (Under simultaneous 2-channel measurement with the TM20, 2 seconds is the minimum.)

Start-of-measurement time: timer can be set.

* Under simultaneous 2-channel measurement, the TM20 saves 2 data items for one measurement.

User-friendly FUNC key

You can select setup items in the same way as you choose options from the built-in menu of a cellular phone.

Selection of operator name

With the (1) key, you can recall a list of up to 10 operator names and can also change any of these names.

Record-keeping on measurement failure handling

By pre-registering a list of up to 32 comments on how to handle particular measurement failures, you can keep records of how the measurement failure was dealt with by selecting the desired comment from the list using the (4) key.

(The TM10 supports this feature with TM10 Version 1.10 when used with application software version 1.30 or later.)

Setup keys

Register tag names, set alarm points, and define measuring conditions, such as the measuring interval for the logging mode. These setting tasks can also be carried out from a PC.

Digital input terminal

For connecting to an optional non-contact probe.

RS-232C I/O terminals

Used to exchange data with a PC or send data to a dedicated printer.



Full Size

Light Weight: 170 g

Drip-proof construction (TM10/TM20)

Conforming to IP54 standards, the TM10/TM20 can still function even if it becomes wet to some degree. In addition, the optional waterproof cover increases waterproofing and protects the instrument against possible dirt contamination.

IP 54

Drip-proof: Immune to any harmful effects from liquid splashes from any direction.

Dust-proof: Prevents dust from entering the instrument.

TM20

Universal dual inputs model

Simultaneous 2-channel measurement with thermocouple probes
You can select from types K, E, J, and T to change probes according to sensor type.



Thermocouple probes (-200°C to 1372°C) [-328°F to 2501.6°F]

- Type K : -200°C to 1372°C [-328°F to 2501.6°F]
 - Type E : -200°C to 700°C [-328°F to 1292°F]
 - Type J : -200°C to 1000°C [-328°F to 1832°F]
 - Type T : -200°C to 400°C [-328°F to 752°F]
- (Possible temperature ranges with the TM20)

Analog signal input

The TM20 can accept inputs from a sensor that outputs voltage signals ranging ± 100 mV or ± 1 V.
 * A U-shaped Miniature connector is required.


Full Size

Light Weight: 180 g

● Products that can be connected to the TM20

- Connecting the TM20 to various analog output sensors allows for data storage and management.
- The TM20 also has a scaling function that shows computed values on its display.



Model 900 01/U temperature and humidity probe



TM20-dedicated probe that connects via a U-shaped Miniature connector

Digital illuminance meters (510 Series)

Model 310 03 leak clamp tester

● Waterproof Cover and Soft Carrying Case

Waterproof cover
Model 930 11 (for TM10/TM20)



With the waterproof cover, you can keep the TM10 clean and increase its waterproofing qualities.

Soft Case
Model 930 10 (for TM10)
Model 930 12 (for TM10/TM20)



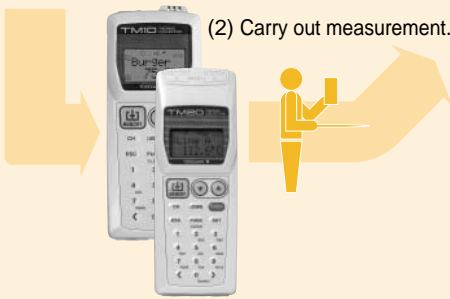
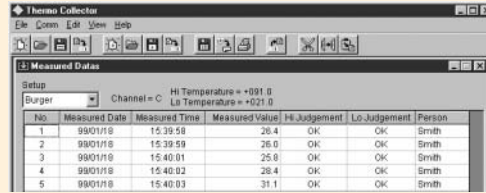
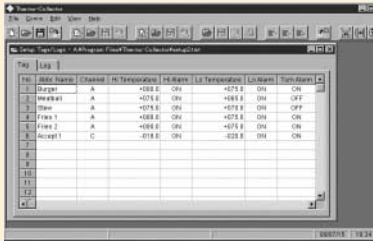
Can be attached to your belt.

Data management is made easy because the TM10/TM20 records data items that tell you **when, by whom, and what** along with the temperature data.

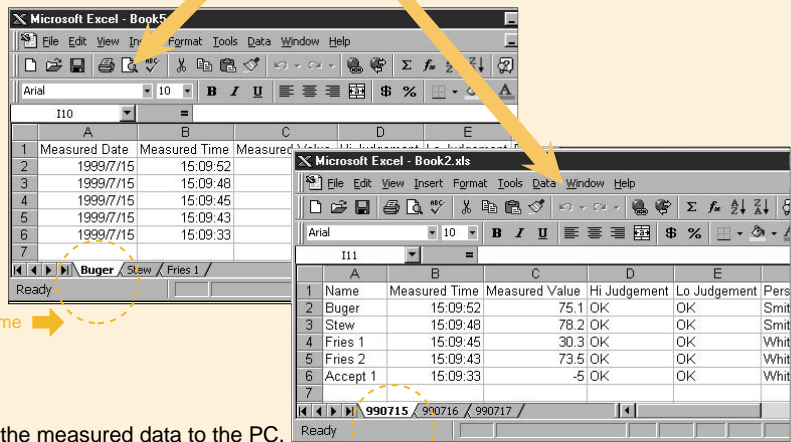
Easy data management using a PC (data management software included)

Setting measurement conditions from the PC.

(1) Download the measurement conditions to the TM10/TM20.



(2) Carry out measurement.

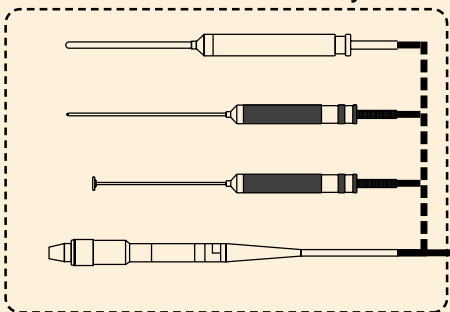


(3) Upload the measured data to the PC.

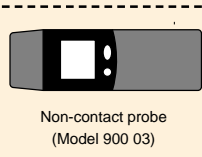
- Microsoft Excel spreadsheets are automatically generated for each object being measured (tag name) and each date of measurement. Data collected later can also be added to these spreadsheets. The TM10 supports this feature with TM10 Version 1.10 when used with application software version 1.30 or later.

Configuration of a system based on the TM10/TM20 Thermo-collector

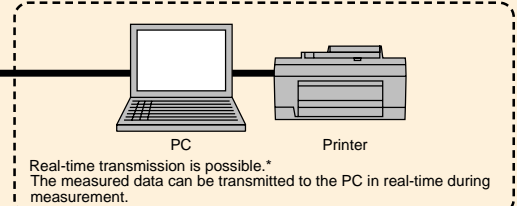
● Probes for contact thermometry



● Probes for non-contact thermometry



● Data management based on easy-to-use application software (The software is supplied together with the TM10/TM20.)

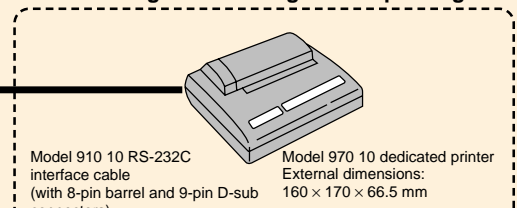


Real-time transmission is possible.*
The measured data can be transmitted to the PC in real-time during measurement.

* When performing real-time transmission, always use the non-contact probe.

RS-232C interface cables:
Model 910 11 (with 8-pin barrel and 9-pin D-sub connectors)

● Data management through direct printing



Model 910 10 RS-232C interface cable (with 8-pin barrel and 9-pin D-sub connectors)
Model 970 10 dedicated printer
External dimensions: 160 x 170 x 66.5 mm

Product name (Model)	TM10 Thermo-collector Thermistor model (540 51)	TM20 Thermo-collector Thermocouple model (540 11)																												
Number of measuring channels	1 (Selectable from 3 channels) One channel is provided for each of the external thermistor probe, built-in thermistor sensor, and external non-contact probe.	2 (when A and B channels are used for thermocouple or voltage input) 1 (when D channel is used with the non-contact probe)																												
Measuring range (only the main unit)	External thermistor -30°C to 200°C [-22°F to 392°F] Built-in thermistor -20°C to 50°C [-4°F to 122°F] Thermal emission (external probe) -20°C to 400°C [-4°F to 752°F]	Thermocouple Type K : -200°C to 1372°C [-328°F to 2501.6°F] Type J : -200°C to 1000°C [-328°F to 1832°F] Type E : -200°C to 700°C [-328°F to 1292°F] Type T : -200°C to 400°C [-328°F to 752°F] Thermal emission -20°C to 400°C [-4°F to 752°F] Voltage input ±100 mV, ±1 V																												
Resolution	External thermistor: 0.1°C Built-in thermistor: 0.1°C Thermal emission (external probe): 1°C	Thermocouple: 0.1°C Thermal emission: 1°C Voltage input: 0.1 mV or 0.001 V																												
Accuracy (only the main unit)	<table border="1"> <thead> <tr> <th colspan="2">External thermistor</th> <th colspan="2">Built-in thermistor</th> </tr> <tr> <th>Temperature range (T)</th> <th>Accuracy</th> <th>Temperature range (T)</th> <th>Accuracy</th> </tr> </thead> <tbody> <tr> <td>-30.0 to -19.9°C</td> <td>±1.0°C</td> <td>-20.0 to 0.0°C</td> <td>±1.0°C</td> </tr> <tr> <td>-20.0 to -0.0°C</td> <td>±0.4°C</td> <td>0.1 to 39.9°C</td> <td>±0.8°C</td> </tr> <tr> <td>0.1 to 99.9°C</td> <td>±0.3°C</td> <td>40.0 to 50.0°C</td> <td>±1.0°C</td> </tr> <tr> <td>100.0 to 149.9°C</td> <td>±0.4°C</td> <td></td> <td></td> </tr> <tr> <td>150.0 to 200.0°C</td> <td>±0.7°C</td> <td></td> <td></td> </tr> </tbody> </table> <p>* For the accuracy when using a non-contact probe (900 03), see the accuracy ratings of the probe.</p>	External thermistor		Built-in thermistor		Temperature range (T)	Accuracy	Temperature range (T)	Accuracy	-30.0 to -19.9°C	±1.0°C	-20.0 to 0.0°C	±1.0°C	-20.0 to -0.0°C	±0.4°C	0.1 to 39.9°C	±0.8°C	0.1 to 99.9°C	±0.3°C	40.0 to 50.0°C	±1.0°C	100.0 to 149.9°C	±0.4°C			150.0 to 200.0°C	±0.7°C			Thermocouple -200.0 to 100.1°C : ±(0.1% of rdg + 0.7°C) -100.0°C or above : ±(0.1% of rdg + 1.0°C) *Accuracy of reference junction compensation is included ±0.4°C when the temperature of the input terminal is in equilibrium. Thermal emission ±(1% of rdg + 1°C) or ±3°C, depending on the accuracy of the non-contact probe. Voltage input ±(0.1% of rdg + 0.2% of range)
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Measuring mode	Collector mode or Logging mode																													
Measuring interval	Collector mode: 1 second or longer Logging mode: 1 second to 24 hours	Collector mode: 0.5 seconds or longer when 1 channel is used. 1 second or longer when 2 channels are used. Logging mode: 1 second to 24 hours when 1 channel is used. 2 seconds to 24 hours when 2 channels are used.																												
Data capacity	5000 data items when used in collector mode only. 20000 data items when used in logging mode only. Measurement data obtained in collector mode and logging mode can coexist.	5000 data items when used in collector mode only. 20000 data items when used in logging mode only. Measurement data obtained in collector mode and logging mode can coexist. Under simultaneous 2-channel measurement, 2 data items are recorded at the same time.																												
Drip-proof construction	Conforms to IP54 standards (dust-proof and drip-proof requirements of IEC529)																													
Display	LCD with backlight																													
Operating temperature and humidity	-20°C to 50°C, 20 to 80% RH (no condensation)	0°C to 50°C, 20 to 80% RH (no condensation)																												
Power requirements	Two AA-size alkaline dry batteries (LR6)																													
Battery life	Approx. 3 months when operated in logging mode at 10-minute intervals; Approx. 1 month when operated in logging mode at 1-minute intervals; Approx. 2 weeks when operated in collector mode 8 hours a day.	Approx. 1.5 months when operated in logging mode at 10-minute intervals; Approx. 1 month when operated in logging mode at 1-minute intervals; Approx. 5 days when operated in collector mode 8 hours a day including 30 minutes of communication.																												
Registration of tag names	A maximum of 50, each comprising up to 8 alphanumeric characters																													
Registration of operator names	A maximum of 10, each comprising up to 8 alphanumeric characters																													
Registration of comments	A maximum of 32, each comprising up to 8 alphanumeric characters																													
Alarm function	Upper- and lower-limit alarms																													
Computing function	Maximum, minimum, and average	Maximum, minimum, and average Reading of difference between the 2 channels is possible.																												
Communication function	Conforms to EIA RS-232C standard.																													
Simplified correction function	None	Corrects the measured data from thermocouple input within the range of ±20.0°C.																												
Scaling function	None	Scales the voltage input x according to the formula "Ax + B," which is defined from the thermo-collector software.																												
Other functions	Chime, function lock, clock display, auto power-off, and battery alarm																													
Thermo-collector software system requirements	CPU: i486DX or higher OS: Windows 95/Windows 98/Windows NT 4.0 FDD: 3.5", 1.44 MB-formatted Required space on the HDD: 10 MB or greater	Recommended memory capacity: 16 MB or greater Serial I/O capability: A serial port conforming to RS-232C standard should be available. Software: Microsoft Excel 95, Microsoft Excel 97																												
Compliance with standards	EMC standards	EMI (interference signal): EN55011;1998, EN61326-1;1998+A1 (Class B, Group 1) EMS (immunity): EN50082-1;1997, EN61326;1998+A1																												
External dimensions	<p>Approx. 133(H) × 56(W) × 33(D) mm (excluding protrusions) Weight: Approx. 170 g (including batteries)</p>	<p>Approx. 151(H) × 56(W) × 33(D) mm (excluding protrusions) Weight: Approx. 180 g (including batteries)</p>																												
Supplied accessories	Software, two AA-size alkaline dry batteries (LR6), a waterproof cover, and an instruction manual																													
Optional accessories	Standard needle probe (900 10) High-speed needle probe (900 11) Surface probe (900 12) Rounded end probe (for liquid) (900 13) Soft case (930 10)	Temperature probes (for K type thermocouple): Rounded end probe (900 20, 900 21, 900 22) Needle probe (900 23, 900 24) Surface probe (900 30, 900 31, 900 32, 900 33) Bead TC (2459 07) Extension cable 5 m (2459 21) / 10 m (2459 22) Soft case (930 12)																												
	Non-contact probe (900 03) ●RS-232C cable for PC connection:9-pin (910 11) ●AC adapter for printer:Europe (940 06) / USA (940 07) ●Printer (970 10) ●RS-232C cable for printer connection (910 10) ●Thermal paper for printer (10 rolls) (970 80)●Waterproof cover (5 per package) (930 11)																													