The TM Series offers excellent data management functions

- Collect up to 5000 data items with time-stamp, tag name and inspector name.
- Save 2 weeks continuous data logging with 1 minute interval, (up to 20000 data items, measuring interval is 1sec. to 24 hours.) Information on when, by whom and what is measured is saved along with the data.

The simplicity of the TX10 Series allows for ease of use.

- For K, E, J, and T type thermocouples
- Easy display switching between channels A and B

Ideal for temperature measurement, monitoring and management of temperature data records

Thermometers

TM10.20/TX10

Yokogawa M&C Corporation
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. Measures ambient temperature, and allows for continuous measurement inside a warehouse or during transportation.

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.

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

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

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.

Common Features

- Memory key
- Selection of registered tag name
- Input selection key
- Collector/Logging mode selector key
- User-friendly FUNC key
- Selection of operator name
- Record-keeping on measurement failure handling
- Setup keys
- Digital input terminal
- RS-232C I/O terminals

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.

Thermistor model

Effective for HACCP program implementation

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.

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.
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)

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.

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

Model 310 03 leak clamp tester

Digital illuminance meters (510 Series)

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.

### 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.
- **Data management through direct printing**
  - PC
  - Printer
  - RS-232C interface cables:
    - Model 910 11 (with 8-pin barrel and 9-pin D-sub connectors)
- **Tag name**
- **Date of measurement**

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

1. 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.

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.
### Operating temperature and humidity

-20°C to 50°C, 20 to 80% RH (no condensation)

### Resolution
- External thermistor: 0.1°C
- Built-in thermistor: 0.1°C
- Thermal emission (external probe): 1°C

### Accuracy
- External thermistor: ±0.1°C
- Built-in thermistor: ±0.0°C
- Thermal emission (external probe): ±1°C

### Measuring interval
- Collector mode: 1 second or longer
- Logging mode: 1 second to 24 hours

### Data capacity
- Collector mode: 20000 data items when used in logging mode only.
- Logging mode: 1 second to 24 hours when 1 channel is used. 2 seconds to 24 hours when 2 channels are used.

### Computing function
- Maximum, minimum, and average
- Scales the voltage input \( X \) according to the formula \( Y = AX + B \), where
  - \( A \) is defined from the thermo-collector software.
  - Upper- and lower-limit alarms

### Communication function
- Conforms to EIA RS-232C standard

### Display
- LCD with backlight

### Power requirements
- Two AA-size alkaline dry batteries (LR6)

### Battery life
- 3 months when operated in logging mode at 10-minute intervals;
- 1 month when operated in logging mode at 1-minute intervals;
- 2 weeks when operated in collector mode 8 hours a day.

### Registration of operator names
- A maximum of 10, each comprising up to 8 alphanumeric characters

### Measurements
- Measurement data obtained in collector mode and logging mode
- Measurement data obtained in collector mode and logging mode can coexist.

### Grip-proof construction
- Conforms to IP54 standards (dust-proof and drip-proof requirements of IEC529)

### Software
- Thermo-collector software
- System requirements
- Required space on the HDD: 10 MB or greater
- Software: Microsoft Excel 95, Microsoft Excel 97

### External dimensions
- Approx. 133(H) x 56(W) x 33(D) mm (excluding protrusions)
- Weight: Approx. 170 g (including batteries)

### Supplied accessories
- Software, two AA-size alkaline dry batteries (LR6), a waterproof cover, and an instruction manual
- Printer (970 10)
- 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)
TX10 Series of Digital Thermometers

TX10 Series offers thermocouple thermometers that support K, J, E and T type thermocouples. There are three models available: 1-channel single-function, 1-channel multi-function, and 2-channel multi-function models.

1-channel Single-function Model (TX10-01)

TC TYPE

Select the thermocouple type (K, J, E, and T) for the initial setting.
(The type K is factory-set at shipment)

Operation

Press and hold down the TC TYPE key while pressing the POWER key.
The TX10 enters the thermocouple type selection mode, and each press of the TC TYPE key switches between the thermocouple types.
Then accept the setting with the POWER key.
(Make sure that the characters in the display have changed.)

DATA HOLD

Press this key to hold the measured value.

Multi-function Models (TX10-02/-03)

Memory-in Function

Up to ten data items can be stored. When recalled, the stored data value is displayed with its memory number.

User calibration function

Calibration and adjustment can be made easily by operating the panel keys on instrument and a measurement-standard.

TC TYPE

Thermocouple type (K, J, E, and T) select key
(Operation is the same as TX10-01)

CH

Input channel select key

(TX10-03 only)

DATA HOLD

A held measured value, can be stored in the memory of an optional memory number, which is selected with the ▲, ▼ keys.

- Maximum and minimum record key
Stores the maximum and minimum values from the time the RECORD key is pressed.
- Data record key
Stores the held measured value in memory. (Up to ten)

Resolution select key

With each press, resolution alternates between 0.1°C and 1°C.
(Within the range of -200.0°C to 199.9°C)

Maximum and minimum values, and stored data read key

Every time this key is pressed, the maximum and minimum values, stored data, and the current measured data are displayed in sequence.

- Relative display select key
Displays measured values with reference to the value obtained immediately before this key was pressed (relative value). Each press of this key can select or release the relative display.
- Simplified correction mode key
Sets the correction value, and selects active/inactive of the simplified correction function.

▲, ▼ Data call-up key

Used to select a memory number when calling up stored data. Also used to adjust the correction value for simplified correction mode.

Light Weight: 180 g

(Shown above is the TX10-03. The TX10-02 has no CH key.)
### Can Be Used in Wide Variety of Applications

- Temperature management in a refrigerated warehouse
- Frozen food products quality control
- Perishable foods quality control
- Temperature management in production processes
- Product temperature measurement test
- Temperature checks in equipment maintenance
- Temperature management for research
  
### Resolution

<table>
<thead>
<tr>
<th>TX10-01</th>
<th>TX10-02</th>
<th>TX10-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX10-01</td>
<td>TX10-02</td>
<td>TX10-03</td>
</tr>
<tr>
<td>Number of input channels</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Measuring range (only the main unit)</td>
<td>K: -200°C to 1372°C (-328°F to 2501.6°F)</td>
<td>J: -200°C to 1000°C (-328°F to 1832°F)</td>
</tr>
<tr>
<td>Resolution</td>
<td>200.0°C to 199.9°C: 0.1°C</td>
<td>200.0°C to 199.9°C: 0.1°C or 1°C (when 1°C resolution is set)</td>
</tr>
<tr>
<td>Accuracy (only the main unit)</td>
<td>-200.0°C to -100.1°C: ±(0.1% of rdg + 1.0°C)</td>
<td>-100.0°C to 199.9°C: ±(0.1% of rdg + 0.7°C)</td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>±(0.015% of rdg + 0.06°C)/°C</td>
<td></td>
</tr>
<tr>
<td>Measurement interval</td>
<td>Approx. 1 sec.</td>
<td>Approx. 1 sec. (1 channel measurement)</td>
</tr>
<tr>
<td>Data storage</td>
<td>None</td>
<td>Capable of storing up to 10 measured data items</td>
</tr>
<tr>
<td>Simplified correction</td>
<td>None</td>
<td>Correction range: ±20°C of measured value</td>
</tr>
<tr>
<td>Other functions</td>
<td>Auto power-off, battery alarm</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>LCD</td>
<td></td>
</tr>
<tr>
<td>Operating temperature and humidity</td>
<td>0°C to 50°C, 20 to 80% RH (no condensation)</td>
<td></td>
</tr>
<tr>
<td>Power requirements</td>
<td>Two AA-size alkaline dry batteries (LR6)</td>
<td></td>
</tr>
<tr>
<td>Battery life</td>
<td>About 450 hours</td>
<td></td>
</tr>
<tr>
<td>Drip-proof construction</td>
<td>Conforms to IP54 (dust-proof and drip-proof requirements of IEC529)</td>
<td></td>
</tr>
<tr>
<td>External dimensions</td>
<td>Approx. 151(H) × 56(W) × 33(D) mm (excluding protrusions)</td>
<td>Weight: Approx. 180 g (including batteries)</td>
</tr>
<tr>
<td>Supplied accessories</td>
<td>Two AA-size alkaline dry batteries (LR6) and instruction manual</td>
<td></td>
</tr>
<tr>
<td>Optional accessories</td>
<td>Temperature probes (for K type thermocouple)</td>
<td>Ranged end probe (900 20, 900 21, 900 22)</td>
</tr>
<tr>
<td></td>
<td>Extension cable</td>
<td>5 m (2459 21) /10 m (2459 22)</td>
</tr>
</tbody>
</table>
Specifications of Accessories

Probes for TM10

<table>
<thead>
<tr>
<th>Model</th>
<th>Probe type</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Cold length</th>
</tr>
</thead>
<tbody>
<tr>
<td>900.20</td>
<td>rounded end</td>
<td>-20 to 20°C</td>
<td>±0.5°C</td>
<td>1.4 m</td>
</tr>
<tr>
<td>900.22</td>
<td>rounded end</td>
<td>-20 to 20°C</td>
<td>±0.3°C</td>
<td>0.4 m</td>
</tr>
<tr>
<td>900.24</td>
<td>needle</td>
<td>-20 to 20°C</td>
<td>±0.5°C</td>
<td>0.4 m</td>
</tr>
<tr>
<td>900.26</td>
<td>needle</td>
<td>-20 to 20°C</td>
<td>±0.2°C</td>
<td>1.4 m</td>
</tr>
</tbody>
</table>

Probes for TM20/TX10

<table>
<thead>
<tr>
<th>Model</th>
<th>Probe type</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Cold length</th>
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<tr>
<td>900.20</td>
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</tr>
<tr>
<td>900.24</td>
<td>needle</td>
<td>-20 to 20°C</td>
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<td>-20 to 20°C</td>
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<td>1.4 m</td>
</tr>
</tbody>
</table>

Optional Accessories for TM10

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard needle probe</td>
<td>900 10</td>
</tr>
<tr>
<td>High-speed needle probe</td>
<td>900 12</td>
</tr>
<tr>
<td>Surface probe</td>
<td>900 13</td>
</tr>
<tr>
<td>Rounded end probe (for liquid)</td>
<td>900 14</td>
</tr>
<tr>
<td>Soft case</td>
<td>900 15</td>
</tr>
</tbody>
</table>

Optional Accessories for TM10/TM20

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-contact probe</td>
<td>900 01</td>
</tr>
<tr>
<td>RS-232C cable for PC connection (9-pin)</td>
<td>910 10</td>
</tr>
<tr>
<td>Printer</td>
<td>910 11</td>
</tr>
<tr>
<td>AC adapter for printer (Europe)</td>
<td>940 06</td>
</tr>
<tr>
<td>AC adapter for printer (USA)</td>
<td>940 07</td>
</tr>
<tr>
<td>Thermal paper for printer (10 rolls)</td>
<td>970 06</td>
</tr>
<tr>
<td>RS-232C cable for printer connection</td>
<td>910 10</td>
</tr>
</tbody>
</table>

Optional Accessories for TM20/TX10

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-contact probe</td>
<td>900 01</td>
</tr>
<tr>
<td>Surface probe (900 12)</td>
<td>900 13</td>
</tr>
<tr>
<td>Roundend probe (for liquid)</td>
<td>900 14</td>
</tr>
<tr>
<td>Soft case</td>
<td>900 15</td>
</tr>
</tbody>
</table>

External Dimensions

<table>
<thead>
<tr>
<th>Non-contact probe (900 03)</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard needle probe (900 10)</td>
<td>Roundend probe (900 12)</td>
</tr>
<tr>
<td>Material: SUS316</td>
<td>Material: SUS316</td>
</tr>
<tr>
<td>Surface probe (900 12)</td>
<td>Material: SUS316</td>
</tr>
<tr>
<td>Soft case</td>
<td>Material: SUS316</td>
</tr>
</tbody>
</table>

NOTICE: Before using the product, read the instruction manual carefully to ensure proper and safe operation.