Instruction
Manual

540 51

TM10 Thermo-Collector

This instruction manual describes how to operate the TM10 Thermo-Collector.

■ Intended Readers

This manual is primarily intended for two groups of readers: "operators" who actually measure temperatures with this TM10 Thermo-Collector and, "engineers" who are qualified to perform setup and data processing operations for this instrument.

■ Structure of the manual

This manual is organized into the following four parts:

● Information Required before Use

This part explains basic information, including the names and functions of each component of this instrument and how to input characters, etc. Read this part before using this instrument.

● Preparation for Measurement

This part explains "Thermo-Collector" software and how to perform setup. This part must be read before starting preparation for temperature measurement.

● Temperature Measurement

This part explains the major operations required to actually measure temperatures. Read this part before commencing temperature measurement.

● Utilizing the Measurement Data

This part explains the procedures for outputting the data measured with this instrument to a personal computer or printer. Read this part to use or analyze the data measured with this instrument.

■ Checking contents of the package

Perform a visual check on the TM10 Thermo-Collector to make sure it is not damaged.

In addition, make sure that the following items have been supplied. If any of the items are missing, please contact the dealer where this product was purchased.

Keep this box in case this product needs to be returned to Yokogawa M&C Corporation.

Item name	Quantity
TM10 Thermo-Collector	1
"Thermo-Collector" software installer FD	2
LR6 alkaline dry cell	2
Dust-proof seal (for sealing screw holes on the back of the main unit)	2
Instruction Manual (this document)	1

■ Precautions required for safe use

● About this manual

- Read this manual to gain a thorough understanding of this instrument before operating it.
- This manual only describes the functions of this product and is not intended to guarantee the applicability of this product to user's particular purpose.
- This manual shall not be reproduced or copied in part or in whole without permission from Yokogawa M&C Corporation.
- The contents of this manual may be subject to change without notice.
- Should the user find any errors, or unclear or missing sections in this document, contact the dealer where this product was purchased, or the marketing division of Yokogawa M&C Corporation.

● Disassembly or retrofit

Do not disassemble or retrofit this instrument. Only qualified Yokogawa M&C Corporation service personnel are authorized to disassemble and service the main unit.

● Precautions on handling

- Only parts and consumables specified by Yokogawa M&C Corporation should be used in this product.
- Do not store this instrument in a location where it will be subject to direct sunlight or high temperatures, otherwise it may be discolored or deformed.

● Notes on protection and safety of this product

- Follow the safety instructions of this manual when handling the main unit or accessories to be connected to the main unit. If the main unit or accessories are not handled as specified in this manual, Yokogawa M&C Corporation cannot guarantee the safety of this product.
- The "⚠ Warning" mark that appears on the back of the main unit indicates the precautions that must be observed when handling this instrument. Refer to this manual for information about how to operate this instrument.
- Throughout this manual the following safety conventions are used.

⚠ Warning

Used if the operator is at risk of being severely injured or killed.

⚠ Caution

Used if the operator is at risk of being injured or if the instrument may be damaged.

🖑 Note

Used to draw attention to important information about handling the instrument or useful information about the operations and functions of this instrument.

[TIP]

Contains information supplementary to the main text.

See Also

Provides a reference to related topics in this document.

■ Precautions for handling components

Always observe the following precautions to avoid operator injury and damage to the equipment.

● Probe

⚠ **Warning**

Do not point the tip of a needle-type standard probe or needle-type high-speed probe at another person. The tip of the needle is very sharp and can cause injury.

⚠ **Caution**

- **Do not touch the stylus (metal) of a probe which has just measured a hot object. A hot stylus can cause a burn.**
- **Do not use a worn or damaged probe. Such probes cannot measure temperatures correctly.**
- **Before removing the probe from the main unit, pull the probe away from the object to be measured.**
- **If a needle-type standard probe or needle-type high-speed probe is used, stick it into a measuring object half the dimension of the probe's stylus (metal). If it is stuck in too deeply, the operator may be burnt due to heat transfer to the probe grip. Also, the probe itself may be damaged.**
- **The probe grip and the cable connected to the main unit must be maintained at a temperature between -20°C and 50°C. They have a small heat resistance, unlike the stylus (metal) of the probe.**

● Battery

⚠ **Caution**

If this instrument will not be used for a long period, remove the battery from the main unit. Otherwise, the battery liquid may leak and damage the main unit or cause it to malfunction.

■ Exemptions

- Yokogawa M&C Corporation does not guarantee this product in any way, except as set forth in the terms and conditions of the certificate.
- Yokogawa M&C Corporation shall not be liable for any consequent or inconsequent damages to the customer or a third party arising from the use of this product due to any defect in materials or workmanship beyond the control of Yokogawa M&C Corporation.

■ About the conventions used in the figures in this document

For understanding, figures in this document may be highlighted or simplified, or may have portions omitted.

■ Care of the main unit

- If there is a need to clean the main unit, wipe the surfaces with a wrung wet cloth.
- Use a cloth dampened with diluted neutral detergent to remove tough stains. Only use neutral detergents. Do not use solvents or other detergents or chemicals. They may damage the main unit.
- Keep connectors, etc., dry. Otherwise, the main unit may be damaged.

■ Maintenance

If the main unit needs to be serviced, contact Yokogawa Engineering Service Corp. The address is given on the back cover of this manual.

◆ Trademark

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1 Features of This Product

This product is a handy-type thermometer that can measure a temperature and make a record of it. It has a "collector function" to record the measured temperatures and measurement conditions under the specified tag, and a "logging function" to automatically measure and record temperatures at given intervals.
This section outlines each function.

■ Collector function

The collector function is used when the measured temperature and measurement conditions are recorded under the specified "tag".

In the "tag", the tag name (i.e. "what"), date and time (i.e. "when"), operator name (i.e. "who"), and alarm (i.e. "judgment on the measured data") are recorded as the measurement conditions, in addition to the measured temperature.

```
                                                          Tag name ("what")
┌──────────────────────────────────────────────────┐
│                                                    │
│  [Burger]      HiAlarm=+80.0   LoAlarm=+60.0       │
│  - - - - - - - - - - - - - - - - - - - - - - - -   │  Measurement temperature
│   No.         Date          Temp.  Hi   Lo  Person │
│  00001   98/11/12/11:37:01   56.0  OK   NG  Smith  │  Operator name ("who")
│  00002   98/11/12/11:37:01   57.5  OK   NG  Smith  │
│  00003   98/11/12/11:37:02   58.5  OK   NG  Smith  │  Date and time ("when")
│  00004   98/11/12/11:37:03   59.8  OK   NG  Smith  │
│  00005   98/11/12/11:37:04   61.2  OK   OK  Smith  │  Alarm
│  00006   98/11/12/11:37:04   62.0  OK   OK  Smith  │  ("measured data judgment")
│  00007   98/11/12/11:37:05   62.0  OK   OK  Smith  │  NG = No Good
│  00008   98/11/12/11:37:06   70.0  OK   OK  Smith  │
│  00009   98/11/12/11:37:06   75.0  OK   OK  Smith  │
│  00010   98/11/12/11:37:07   81.0  NG   OK  Smith  │
│  00011   98/11/12/11:37:07   82.0  NG   OK  Smith  │
│                                                    │
└──────────────────────────────────────────────────┘
```

Printout of image from a recommended printer

It is possible to use maximum 50 tags, and in these 50 tags, a total of 5,000 pieces of temperature measurement data can be recorded. However, the more the data is saved with the logging function, the less number of measurements can be made with the collector function.

Set up the following tag items in advance to use the collector function.
   • Tag name
   • Input channel
   • Alarm
   • Operator name

See Also
For more information, refer to the "Preparation for Measurement" part.

■ Logging function

The logging function is used to automatically measure temperatures at given measurement intervals and to continue to record the result data. This function is useful when a temperature variation within a certain period of time (e.g. temperature variation in a refrigerator being transported) needs to be recorded.

With this logging function, the temperatures and date (year/month/day) and time will be recorded as a "log". Unlike the collector function, the logging function does not record the operator name and alarm (measured data judgment).

```
                                                            ──── Log name
  [Convey  ]     Interval=00:00:10  ────────────────── Measurement interval
  ------------------------------------------------------
    No.           Date            Temp.
  00001     00/00/00/00:00:00      -10.5  ──────────── Temperature
  00002     00/00/00/00:00:10      -10.5
  00003     00/00/00/00:00:20      -11.0  ──────────── Date and time
  00004     00/00/00/00:00:30      -12.0
  00005     00/00/00/00:00:40      -11.5
  00006     00/00/00/00:00:50      -11.0
  00007     00/00/00/00:01:00      -11.0
  00008     00/00/00/00:01:10      -10.7
  00009     00/00/00/00:01:20      -10.5
  00010     00/00/00/00:01:30      -11.0
  00011     00/00/00/00:01:40      -12.0
```

Printout of image from a recommended printer

It is possible to use maximum 10 logs, and in these 10 logs, a total of 20,000 pieces of data can be recorded. However, the more the data is saved with the collector function, the less number of measurements can be made with the logging function.

Set up the following items in advance to use the logging function.
- Log name
- Input channel
- Measurement interval
- Measurement period

See Also

For more information, refer to the "Preparation for Measurement" part.

2 Names and Functions of Each Part

Top face   Front face   Back face

Bottom face
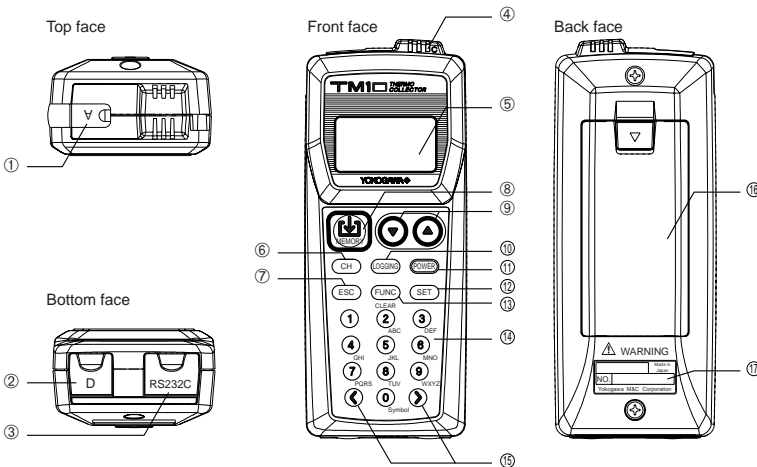
① **External probe connection jack (channel A)**

Used to connect a needle-type standard probe, a needle-type high-speed probe, or other probes.

② **Radiation temperature probe connection jack (channel D)**

Used to connect a radiation thermometer.

③ **RS-232C communication connection terminal**

Used to output data from this instrument to a personal computer or printer.

④ **Built-in sensor (channel C)**

Used to measure the external temperature.

⑤ **Display (LCD)**

Displays Thermo-Collector conditions, various setup information, measurement temperature, etc.

⑥ **[CH] key**

Used to switch the current input channel. Available input channels include channel A (for probes), channel C (for the built-in sensor), and channel D (for the radiation temperature probe).

⑦ **[ESC] key**

Used to cancel the previous operation and return to the previous screen.

⑧ **[Memory] key**

Used to commence a temperature measurement with either the collector function or the logging function.

⑨ **[▼] [▲] key**

Used to select an appropriate tag, log, or function.

⑩ **[LOGGING] key**

Used to switch between the collector and logging functions. Also used to modify alphanumeric characters from uppercase to lowercase.

⑪ **[POWER] key**

Used to turn the power supply on and off.

⑫ **[Set] key**

Used to make the setup contents valid for operation.

⑬ **[Func] key**

Used to set up the selected function.

Also used to delete the measurement data.

⑭ **[1],...,[9], and [0] keys**

Used to enter alphabets and numbers.

The [0] key is also used for switching the unit of temperature display. If, for example, this [0] key is pressed in the Home screen, the unit is switched to "°F". Another pressing of the same key will restore the unit to "°C".

⑮ **[<] and [>] keys**

Used to retrieve the logged tag data or log data, or to select the character input position.

⑯ **Battery compartment**

Accommodates two LR6 alkaline dry cells.

⑰ **Name plate**

3 Setting the Battery

Two LR6 alkaline dry cells are included with this instrument.

1. **Open the battery compartment cover at the back of the main unit.**

See Also
For information about the position of the battery compartment, refer to "2 Names and Functions of Each Part".

2. **Observing the correct polarity, install the two LR6 alkaline dry cells in the battery compartment.**

⚠ Caution

Observe the correct polarity when installing the batteries in the battery compartment. The main unit may be damaged if the batteries are installed incorrectly.

3. **Close the battery compartment cover.**

-End of procedure-

⚠ Caution

Remove old batteries from the compartment. Battery liquid leakage may cause the main unit to malfunction or may damage it. A "BatteryEmpty" message will appear on the LCD shortly before the battery life expires. When this message appears, replace the batteries.

4 Turn ON/OFF of the Power Supply

■ Turn the power supply to ON

Press the [POWER] key.
After the "TM10 Ver. 1.00", "Initial Test", and "Initial OK" messages have been displayed, the time display screen appears on the LCD.

```
INPUT              ◆        AUTO OFF
▮ A   19:13:15
        ▬ ▬ ▬ ▬ ▬
```
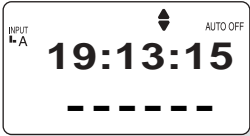
The power of the main unit is turned on.

■ Turn the power supply to OFF

Hold down the [POWER] key for about three seconds.
The power to the main unit will be shut down after a short beep has been sounded.

5 Screen (LCD) Displays
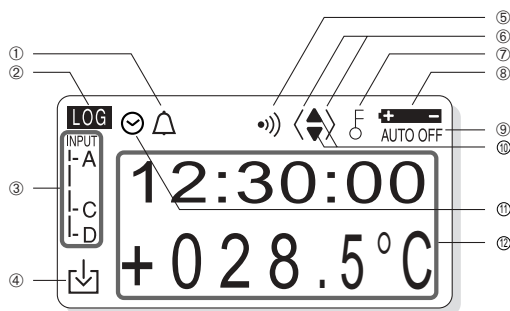
①   **Indicates that the chime function is being set.**

②   **Indicates whether the current mode is the collector mode or logging mode. If LOG is displayed, the current mode is the logging mode. If it is not displayed, the current mode is the collector mode.**

③   **Indicates the input channels currently used for measurement.**

④   **Indicates that the measurement data is being logged into the instrument.**

⑤   **Indicates that the alarm is set.**

⑥   **Indicates that either the [<] or [>] key can be used.**

⑦   **Indicates that either the key lock or FUNC lock is set. If the key lock function is on, all the keys are disabled. In the FUNC lock state, only the temperature measurement keys can be used.**

See Also

For information about canceling the lock state, refer to "5 Other Useful Functions" in the "Temperature Measurement" part.

⑧   **Indicates that the battery is almost used up. Replace the battery as soon as possible after this symbol is displayed.**

⑨   **Indicates that the instrument is set so that the power to the main unit will be automatically turned off if no operation is made in a predetermined period of time.**

⑩   **Indicates that either the [▲] or [▼] key can be used.**

⑪   **Indicates that the timer function is on and the instrument is in the wait state.**

⑫   **A tag name, log name, and temperature will be displayed.**

[TIP]

If this instrument is used in a location where the ambient temperature is low, the characters may be displayed slowly. Note that this does not indicate the main unit being at a malfunction.

6 How to Input Characters

This section explains the character input procedure. Alphabets and numbers can be entered.
The procedure used to input characters into Thermo-Collector is similar to the method used to enter characters in a cellular phone.

■ Entering characters

Use the ⓪ to ⑨ keys to enter characters. These keys are also used to enter alphabets.

For example, the ② key can be used to enter "A" to "C", and "2". To enter "C", press the ② key three times.

To enter "2", press the ② key four times.

Mode \ Key	Alphanumeric input mode
①	1
② ABC	→ A → B → C → 2 →
③ DEF	→ D → E → F → 3 →
④ GHI	→ G → H → I → 4 →
⑤ JKL	→ J → K → L → 5 →
⑥ MNO	→ M → N → O → 6 →
⑦ PQRS	→ P → Q → R → S → 7 →
⑧ TUV	→ T → U → V → 8 →
⑨ WXYZ	→ W → X → Y → Z → 9 →
⓪ Symbol	→ 0 → ! → # → $ → % → & → (→) → + → - → = →

■ Entering lowercase characters

1. **Enter a character to be made small.**

2. **Position the cursor on the character and press the [LOGGING] key.**
This character is made small.

- End of procedure

1 Overview of Preparation for Measurement

Before measuring temperatures, set the tag names, etc., on the main unit. There are two methods for making the settings. One is for the main unit and the other is for a personal computer. For efficiency, use a personal computer to set many items.

○ Setting up the main unit
- Setting the date and time
- Setting the name of the main unit

Setting up the main unit   Setting up the personal computer

○ Set up the following
- Collector function
  Tag name, input channel, alarm, and operator name
- Logging function
  Log name, input channel, measurement interval, and measurement period

○ Set up the following
- Collector function
  Tag name, input channel, alarm, and operator name
- Logging function
  Log name, input channel, measurement interval, and measurement period

○ Transmit the following data
- Setup data
- Operator name

○ Measure the temperature

⬭ : Setup to be performed in this part

2 Setting Up the Main Unit

2.1 Setting the date and time

Home screen

```
INPUT              ▲▼
┃
┃
┃L C   18:54:27
          25.9°C
```

[TIP]
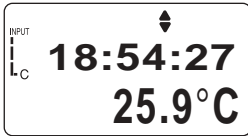
This screen which displays the current time is referred to as the "Home" screen. All the functions in the main unit are accessed from this screen.

1. **Press the [FUNC], [6], and [1] keys, in this order.**
The "Time setting" screen will appear on the LCD.

```
INPUT              ▲▼
┃
┃
┃L C   F61
        ClockSet
```

2. **Press the [SET] key.**
A screen for setting the date will appear on the LCD.

```
INPUT               〉
┃
┃
┃L C   Date
        98/11/11
```
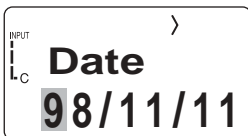
3. **Enter the date.**

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the "Information Required before Use" part.

4. **Press the [SET] key.**
A screen for setting the time will appear on the LCD.

```
INPUT               〉
┃
┃
┃L C   Time
        18:56:14
```

5. **Enter the time.**

6. **Press the [SET] key.**
The specified time is set.

```
INPUT              ▲▼
┃
┃
┃L C   F61
        ClockSet
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Preparation for
Measurement

2.2 Setting the name of the main unit

If more than one Thermo-Collector is used at a time, a unique name must be set for each.

[TIP]

Make this setting as necessary.

Home screen

```
INPUT          ↕
 I
 L C   18:54:27
           25.9°C
```
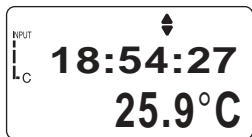
1. Press the [FUNC], [9], and [7] keys, in this order.
The "Name" screen appears on the LCD.

```
INPUT          ↕
 I
 L C   F97
       Name
```

2. Press the [SET] key.

```
INPUT          ⟨ ⟩
 I
 L C   DevName
       Name00
```

3. Enter the name of the instrument (Example: NO1).

```
INPUT          ⟨ ⟩
 I
 L C   DevName
       NO1
```

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

4. Press the [SET] key.
The instrument name is set.
The "Name" screen will be restored.

```
INPUT          ↕
 I
 L C   F97
       Name
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

3 Setting Up with the Main Unit

3.1 Setups required to use the collector function
(Setting the tag name, input channel, alarm, and operator name)

Before using the collector function, the following tag setups must be made.

■ Setup contents

● Tag name
Put a title for each tag.

● Input channel
Thermo-Collector has multiple input channels and probes for measuring temperatures of substances in a vapor, solid, or liquid phase. Since the probe to be used depends on the measuring object, it is necessary to set the available input channel on a tag in advance.

The following table shows the probe types and their corresponding input channels.

Probe type	Input channel
Standard needle probe	
High speed needle probe	
Surface probe	A
Rounded end probe	
Built-in sensor	C
Emission thermo probe	D

● Alarm
Set a limit temperature at which the alarm sounds.

• **ON/OFF of the upper-limit alarm and upper-limit temperature**
Make the following settings to sound an alarm when the temperature rises above a preset limit.
The upper-limit temperature cannot be set if the alarm function for the upper limit is set to OFF.

Setting the upper-limit alarm to ON and the upper-limit temperature to 70°C

Temperature

70°C

: Range in which the alarm sounds.

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• **ON/OFF of the lower-limit alarm and lower-limit temperature**

Make the following settings to sound an alarm if the temperature falls below a preset limit.
The lower-limit temperature cannot be set if the alarm function for the lower limit is set to OFF.

Setting the lower-limit alarm to ON and the lower-limit temperature to 50°C
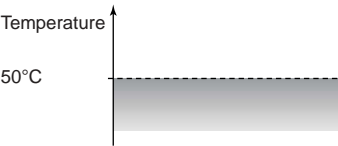
: Range in which the alarm sounds

• **Inverse alarm function ON/OFF**

The settings of the alarm function can be inverted.
Specifically, if this inverse alarm functions is set to ON, an alarm will sound if the temperature falls below the upper limit or if the temperature rises above the lower limit.

If "OFF"

| Upper-limit alarm | 70°C |
| Lower-limit alarm | 50°C |
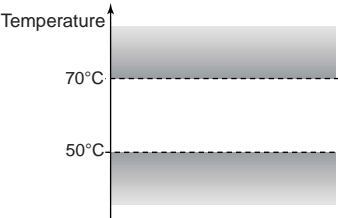
If "ON"

| Upper-limit alarm | 70°C |
| Lower-limit alarm | 50°C |

: Range in which the alarm sounds
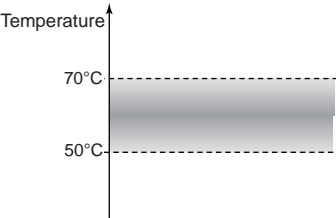
[TIP]

The alarm can also be set to turn off if the temperature exceeds the upper limit, or it can be set to turn on if the temperature falls between the upper and lower limits.

● **Operator name**

Set the name of the operator.

See Also

For information about setting the operator name, refer to "■ Registering the measurement operator name".

■ Creating a new tag

Create new tags for recording the measurement data.

Home screen

INPUT
I
I
Lc
18:54:27
25.9°C

1. **Press the [FUNC], [1], and [3] keys, in this order.**
The "Ins" screen will appear on the LCD.

INPUT
I A
F13
Tag Ins

2. **Press the [SET] key.**
A screen for selecting the tag name will appear.

INPUT
I A
Burger
0

[TIP]

If no tag has been created in the main unit, [NewTag] is displayed on the screen.

3. **Press the [▼] key repeatedly until [NewTag] is displayed on the screen.**

INPUT
I A
[NewTag]
0

4. **Use the [CH] key to select the input channel.**
The input channel of the [INPUT] gage changes.

INPUT
I
I
Lc
[NewTag]
0

5. **Press the [SET] key.**
A screen for entering a new tag name will appear.

INPUT
I
I
Lc
[NewTag]

[TIP]

If a new tag is created while [NewTag] is displayed, the created tag will be added to the end of the list. If the [SET] key is pressed while [NewTag] is not displayed, the created tag will be inserted immediately before the selected tag.

6. **Enter the tag name.**

INPUT
I
I
Lc
Convey
[NewTag]

[TIP]

A tag name can consist of a maximum of eight alphanumeric characters.

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

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7. Press the [SET] key.

A screen for confirming the entered contents will appear.

```
INPUT
L C    Insert?
       Yes1/No0
```
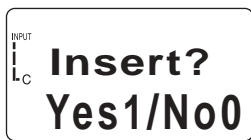
8. Press the [1] key.

A new tag will be created.

```
INPUT     ⬍
L C    Convey
             0
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

■ Setting the alarm function for each tag

The alarm function can be set according to different tag conditions, or the same alarm function can be set for all tags.

The following procedure is used to set the alarm function for different conditions.

See Also

To set the same alarm function for all tags, proceed to "■ Batch-setting the alarm function".

Home screen

```
INPUT      ⬍
L C    18:54:27
         25.9°C
```
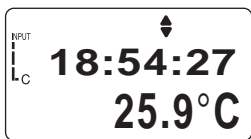
1. Press the [FUNC], [7], and [2] keys, in this order.

The "1File" screen will appear on the LCD.

```
INPUT      ⬍
L C    F72
       1File
```

2. Press the [SET] key.

A screen for selecting a tag name will appear.

```
INPUT      ▼
L C    Convey
             0
```

3. Press the [▼] key repeatedly until a tag name for which the alarm is to be set appears on the screen.

4. Press the [SET] key.

A screen for setting the alarm HIGH function ON/OFF will appear on the LCD.

```
INPUT      ⬍
L C    Hi Alarm
            ON
```

5. Use either the [▼] or [▲] key to set the upper-limit temperature alarm function ON/OFF.

6. If ON has been selected, press the [SET] key.

The "Hi Alarm" setting screen will appear on the screen.

If OFF has been selected in step 5, this screen will not appear. In this case proceed to step 8.

```
INPUT      ⬍〉
L C    Hi Alarm
       +000.0°C
```
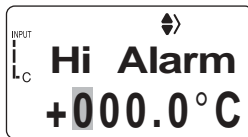
7. **Enter the upper-limit temperature.**

〈♠〉
INPUT
L C
Hi Alarm
+020.0°C

[TIP]

To set a negative value, press either the [▼] or [▲] key. The "+" symbol on the screen will change to a "-" symbol.

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

8. **Press the [SET] key.**

The specified upper-limit temperature is set and the screen to set the "Lo Alarm" function ON/OFF will appear on the screen.

♦
INPUT
L C
Lo Alarm
ON

9. **Use either the [▼] or [▲] key to set the lower-limit temperature alarm function ON/OFF.**

10. **If "ON" has been selected, press the [SET] key.**

The "Lo Alarm" setting screen will appear on the screen.
If "OFF" has been selected in step 9, this screen will not appear. In this case proceed to step 12.

♠〉
INPUT
L C
Lo Alarm
+000.0°C

11. **Enter the lower-limit temperature.**

〈♠〉
INPUT
L C
Lo Alarm
+020.0°C

[TIP]

To set a negative value, press either the [▼] or [▲] key. The "+" symbol on the screen will change to a "-" symbol.

12. **Press the [SET] key.**

The specified lower-limit temperature is set and the "Inverse alarm function" screen will appear on the screen.

♦
INPUT
L C
Turn
OFF

13. **Use either the [▼] or [▲] key to select whether the operation of the alarm function is to be inverted. If ON is selected, the alarm function will operate under the inverse conditions.**

14. **Press the [SET] key.**

The range in which the alarm sounds will be displayed.
Then, the screen for confirming the setting will appear.

♦
INPUT
L C
Change?
Yes1/No0
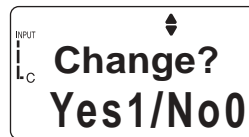
15. **Press the [1] key.**

The alarm function will be set for each tag.

Press the [ESC] key repeatedly to return to the Home screen.

**-End of procedure-**

■ Batch-setting the alarm function

The following procedure is used to set the same alarm function for all tags.

Home screen

```
INPUT        ▲
            ▼
L C  18:54:27
          25.9°C
```

1. **Press the [FUNC], [7], and [1] keys, in this order.**
The "All File" screen appears on the LCD.

```
INPUT        ▲
            ▼
L C  F71
     All  File
```

2. **Press the [SET] key.**
A screen for setting the alarm HIGH function ON/OFF will appear.

```
INPUT        ▲
            ▼
L C  Hi  Alarm
              ON
```

3. **Use either the [▼] or [▲] key to set the upper-limit temperature alarm function ON/OFF.**

4. **If ON has been selected, press the [SET] key.**
The "Hi Alarm" setting screen will appear on the screen.
If OFF has been selected in step 3, this screen will not appear. In this case proceed to step 6.

```
INPUT        ▲〉
            ▼
L C  Hi  Alarm
     +000.0°C
```

5. **Enter the upper-limit temperature.**

```
INPUT       〈▲
             ▼
L C  Hi  Alarm
     +020.0°C
```

[TIP]

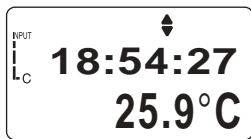To set a negative value, press either the [▼] or [▲] key. The "+" symbol on the screen will change to a "-" symbol.

See Also

For the method of entering a character or number, refer to "6 How to Input Characters" in the "Information Required before Use" part.

6. **Press the [SET] key.**
The specified upper-limit temperature is set and the screen of selecting ON/OFF of the "Lo Alarm" function will appear on the screen.

```
INPUT        ▲
            ▼
L C  Lo  Alarm
              ON
```

7. **Use either the [▼] or [▲] key to select ON/OFF of the lower-limit temperature alarm function.**

8. **When ON has been selected, press the [SET] key.**
The "Lo Alarm" setting screen will appear on the screen.

If OFF has been selected in step 7, this screen will not appear. In this case proceed to step 10.

```
INPUT        ▲〉
            ▼
L C  Lo  Alarm
     +000.0°C
```

9. **Enter the lower-limit temperature.**

INPUT
I
L C

Lo Alarm
+020.0°C

[TIP]

In order to set a negative value, press either the [▼] or [▲] key. The "+" symbol on the screen will change to a "-" symbol.

10.Press the [SET] key.

The specified lower-limit temperature is set and the "Turn" screen will appear on the screen.

INPUT
I
L C

Turn
OFF
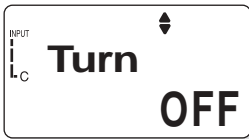
11.Use either the [▼] or [▲] key to select whether the operation of the alarm function is to be inverted. If ON is selected, the alarm function will operate under the inverse condition.

12. **Press the [SET] key.**

The range in which the alarm sounds will be displayed. Then, the screen for confirming the settings will appear.

INPUT
I
L C

Change?
Yes1/No0
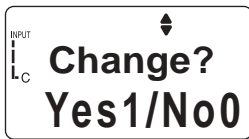
13.Press the [1] key.

The range in which the alarm function is active will be set for all tags as a batch.

Press the [ESC] key repeatedly to return to the Home screen.

[TIP]

If another alarm function is batch-set for all tags after one alarm function has been batch-set, only the latest one will be effective.

-End of procedure-

■ **Registering the measurement operator name**

Home screen

INPUT
I
L C

18:54:27
25.9°C
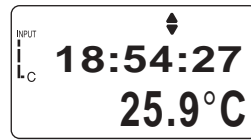
1. **Press the [FUNC], [8], and [3] keys, in this order.**

INPUT
I
L C

F83
Entry

2. **Press the [SET] key.**

A screen for registering an operator name will appear.

INPUT
I
L C

1
Smith

3. **Press the [▼] key repeatedly until a number assigned to the operator name to be registered appears on the screen.**

INPUT
I
L C

2

[TIP]

Each operator name is assigned a unique registration number. A maximum of ten operators can be registered in the main unit.

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

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4. **Press the [SET] key.**

5. **Enter the operator name with a maximum of eight characters.**
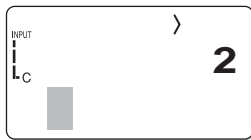
INPUT
⟩
2
L C

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

6. **Press the [SET] key.**
The screen for confirming the settings will appear.

INPUT
L C **Entry?**
Yes1/No0
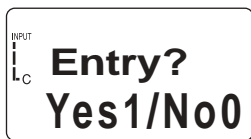
7. **Press the [1] key.**
The specified operator name has been set.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

3.2 Setups required to use the logging function (Setting the log name, input channel, measurement interval, and measurement period)

Before using the logging function, it is necessary to make logs settings.

■ Setup contents

●Log name

Put a title to each log. A log name can consist of a maximum of eight alphanumeric characters.

●Input channel

Thermo-Collector is provided with multiple input channels and probes for measuring temperatures of substances in a vapor, solid, or liquid phase. Since the probe to be used depends on the measuring object, it is necessary to set the available input channel on a tag in advance.

The following table shows the probe types and their corresponding input channels.

| Probe type	Input channel
Standard needle probe	
High speed needle probe	
Surface probe	A
Rounded end probe	
Built-in sensor	C
Emission thermo probe	D

●Measurement interval

Set an interval at which the temperature is periodically measured. The interval can be set to between 1 second to 24 hours.

●Measurement period

Set a period through which the temperature is measured continuously. The period can be set to between 1 second to 999 days.

Preparation for
Measurement

■ Operation procedure

Home screen

```
INPUT          ⬍
┇
L C   18:54:27
          25.9°C
```
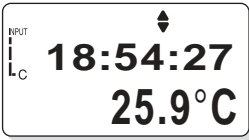
1. Press the [FUNC], [2], and [3] keys, in this order.
The "Ins" screen will appear on the LCD.

```
INPUT          ⬍
┇A
    F23
Log Ins
```

2. Press the [SET] key.
A screen for selecting the log name will appear.

```
INPUT          ▼
┇A
  Accept1
          0
```

[TIP]

If no log has been created in the main unit, [NewLog] is displayed on the screen.

3. Press the [▼] key repeatedly until [NewLog] appears on the screen.

```
INPUT          ▲
┇A
  [NewLog]
          0
```

4. Use the [CH] key to select the input channel.
The input channel of the [INPUT] gage changes.

```
INPUT          ▲
┇
L C  [NewLog]
          0
```

5. Press the [SET] key.
A screen for entering a new log name will appear.

```
INPUT          〉
┇
L C  ▮
  [NewLog]
```

[TIP]

If a new log is created while [NewLog] is displayed, the created log will be added to the end of the list. If the [SET] key is pressed while [NewLog] is not displayed, the created log will be inserted immediately before the selected log.

6. Enter the log name.

```
INPUT        〈 〉
┇
L C  Accept2▮
  [NewLog]
```

[TIP]

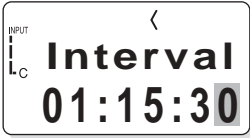A log name can consist of a maximum of eight alphanumeric characters.

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

7. **Press the [SET] key.**
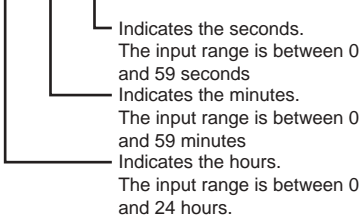A screen for setting the measurement interval will appear.

```
INPUT          〉
I
I C  Interval
     00:00:10
```

8. **Enter the hour, minute, and seconds.**

```
INPUT          〈
I
I C  Interval
     01:15:30
```

[TIP]

The definition and range of each input value is given below.

00:00:00

Indicates the seconds.
The input range is between 0 and 59 seconds
Indicates the minutes.
The input range is between 0 and 59 minutes
Indicates the hours.
The input range is between 0 and 24 hours.
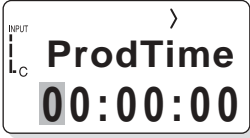
9. **Press the [SET] key.**
The specified measurement interval is set and the screen for setting the measurement period (select the number of days from the options, which also includes the number of hours, minutes, and seconds) will be displayed.

```
INPUT          〉
I
I C  ProdDay
            002
```

10. **Enter the number of days.**

11. **Press the [SET] key.**
The screen for setting the measurement period (select the number of hours, minutes and seconds from the options, which also includes the number of days) will be displayed.
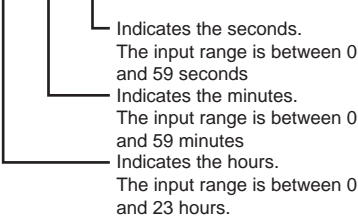
```
INPUT          〉
I
I C  ProdTime
     00:00:00
```

12. **Enter the number of hours, minutes, and seconds.**

```
INPUT          〈
I
I C  ProdTime
     01:30:00
```

[TIP]

The definition and range of each input value are given below.

00:00:00
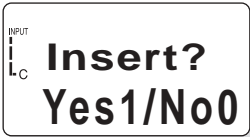
Indicates the seconds.
The input range is between 0 and 59 seconds
Indicates the minutes.
The input range is between 0 and 59 minutes
Indicates the hours.
The input range is between 0 and 23 hours.

13. **Press the [SET] key.**
The screen for confirming the settings will appear.

```
INPUT
I
I C  Insert?
     Yes1/No0
```

14. **Press the [1] key.**
The specified measurement period has been set.

```
INPUT          ↕
I
I C  Accept2
            0
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Preparation for
Measurement

4 Setting Up with the Personal Computer

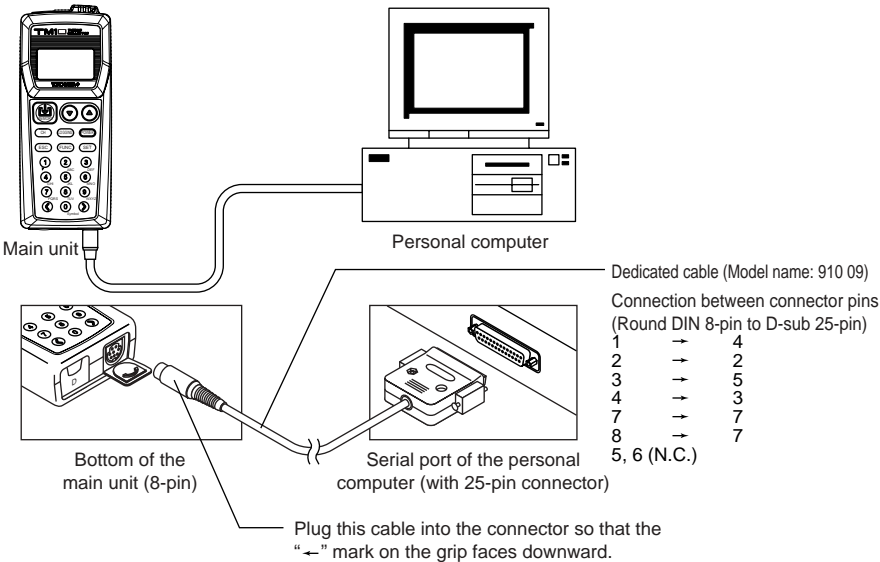## 4.1 Setting up the "Thermo-Collector" software

The setup operation required for the main unit can be performed on a personal computer. The "Thermo-Collector" software must be used to do this. This section explains the procedure used to set up the "Thermo-Collector" software on the personal computer.

Connecting the personal computer and the main unit

↓

Installing the "Thermo-Collector" software on the personal computer

↓

Confirming the communication environment (on the personal computer)

↓

Confirming the communication environment (on the main unit)

■ Connecting the personal computer and the main unit

Purchase an RS-232C cable (Model name: 910 09, round DIN 8-pin to D-sub 25-pin type). Follow the procedure below to connect the main unit to the personal computer.

1. Turn off the power to both the personal computer and main unit.

2. Connect the personal computer and the main unit as shown in the following diagram.

Main unit

Personal computer

Dedicated cable (Model name: 910 09)
Connection between connector pins
(Round DIN 8-pin to D-sub 25-pin)
1	→	4
2	→	2
3	→	5
4	→	3
7	→	7
8	→	7
5, 6 (N.C.)		

Bottom of the main unit (8-pin)

Serial port of the personal computer (with 25-pin connector)

Plug this cable into the connector so that the "←" mark on the grip faces downward.

[TIP]

If the personal computer has a 9-pin type serial port, a 25-pin to 9-pin conversion connector is required (RS-232C conversion adapter, D09-9F25F (Manufacturer: Sanwa Supplies Corp.) is recommended).

3. **First turn on the power to the main unit, then turn on the power to the personal computer.**

-End of procedure-

### ■ Installing the "Thermo-Collector" software

Install the "Thermo-Collector" software on the personal computer. The two floppy diskettes that come with the main unit are required for this installation.

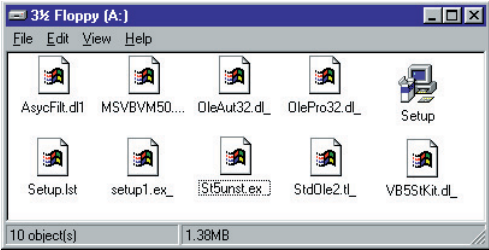**1.** **Place a floppy diskette (Setup Disk #1) in the floppy disk drive of the personal computer.**

2. **Double-click on the "My Computer" icon.**
The "My Computer" folder will be displayed.
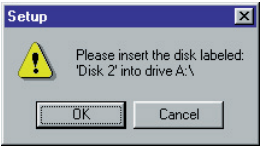

Preparation for Measurement
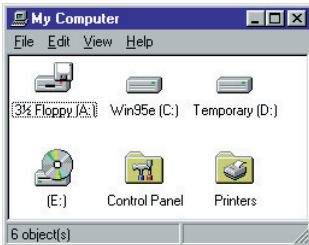
3. **Double-click on the floppy disk drive icon (A:drive in the case of a DOS/V machine).**

4. **Double-click on "Setup".**
The Setup is initiated and a screen prompting the insertion of the second floppy diskette (Setup Disk #2) will appear.

5. **After inserting the second floppy diskette (Setup Disk #2), click on the [OK] button.**
Precautions to be observed prior to installation will appear.
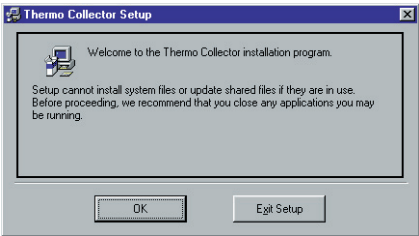
6. **Click on the [OK] button.**
The installer of the application program is initiated and the "Thermo Collector Setup" screen will be displayed.

[Start Setup] button

7. **Click on the [Start Setup] button.**

[TIP]
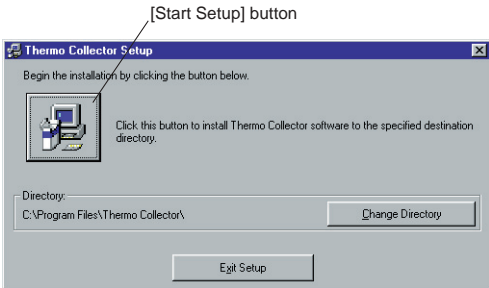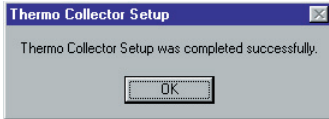
Do as follows to change the application install destination.

    1.Click on the [Change Directory] button.

    2.Select a installation destination folder.

    3.Click on the [OK] button.

After installation has been completed, the following confirmation window is displayed.

8. **Click on the [OK] button.**

-End of procedure-

■ Confirming the communication environment (on the personal computer)

Confirm the settings related to the communication environment on the personal computer.

1. **Select "Thermo-Collector" in the "Programs" accessed from the "Start" menu.**

2. **Select "Properties" from the "Comm" menu.**
The "Properties" window will be displayed.

3. **Confirm that the settings are exactly as shown in the above figure.**
If any of the settings are different, set them to the values given below.

Setup item	Setting value
CommPort	1
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	2

[TIP]

The communication port setting values vary, depending on the type of personal computer. For more information, refer to the manual supplied with your personal computer.
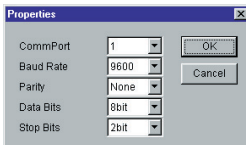
-End of procedure-

■ Confirming the communication environment (on the main unit)

Confirm the settings related to communication environment on the main unit. Confirm that the settings are exactly as shown in the following table.

If any of the settings are different, set them to the values given below.

Setup item	Setting value (Factory Settings)
Baud rate	9600
Parity	None
Data Length	8bit
Stop bits	2bit
Flow control	None

Home screen

```
INPUT    ↕
L C  18:54:27
        25.9°C
```
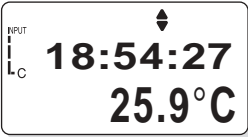
1. Press the [FUNC], [5], and [1] keys, in this order.

A screen for setting the communication environment will appear on the LCD.

```
INPUT    ↕
L C  F51
     Comm  Set
```

2. Press the [SET] key.

A screen for setting the baud rate will appear on the LCD. The displayed baud rate is 9600 bps, which is factory setting.

```
INPUT    ↕
L C  Baudrate
        9600
```

3. Press the [SET] key.

A screen for setting the parity will appear on the LCD. The displayed parity is None, which is factory setting.

```
INPUT    ↕
L C  Parity
        None
```

4. Press the [SET] key.

A screen for setting the data length will appear on the LCD. Confirm that the displayed data length is as shown in the following figure.

```
INPUT    ↕
L C  Data  Len
        8bit
```

5. Press the [SET] key.

A screen for setting the number of stop bits will appear on the LCD. The displayed number of stop bits is 2 bits, which is factory setting.

```
INPUT    ↕
L C  Stop  Bit
        2bit
```

6. Press the [SET] key.

A screen for setting the flow control method will appear on the LCD. The displayed flow control method is None, which is factory setting.

```
INPUT    ↕
L C  Flow
        None
```
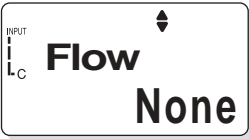
7. Press the [SET] key.

Returns to the communication environment setup screen.

```
INPUT    ↕
L C  F51
     Comm  Set
```

Press the [ESC] key repeatedly to return to the Home screen.
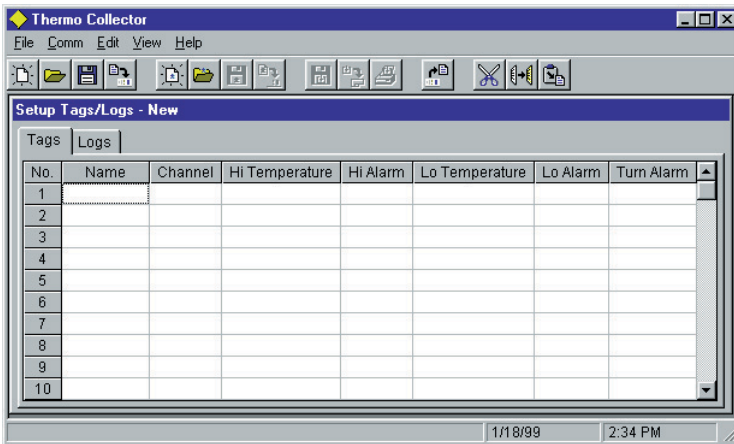
-End of procedure-

4.2 **Basic operation of Thermo-Collector software**

This section explains the basic operation of the supplied software.

■ **Initiating Thermo-Collector software**
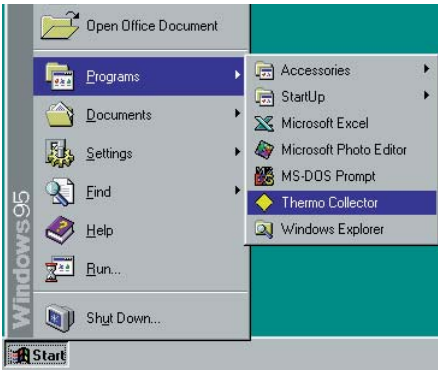
Select "Thermo-Collector" in the "Programs" accessed from the "Start" menu.
After the main screen of the software is displayed, the "Setup Tags/Logs - New" screen will be displayed.

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■ **Terminating Thermo-Collector software**

Select "Exit" from the "File" menu.

■ **Saving the setup data in a file**
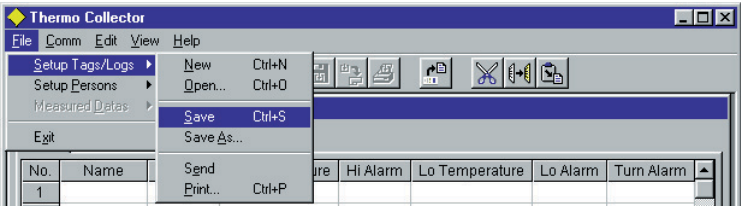
1. **Select "Save" in the "Setup Tags/Logs" menu accessed from the "File" menu.**
The "Save As" window will be displayed.
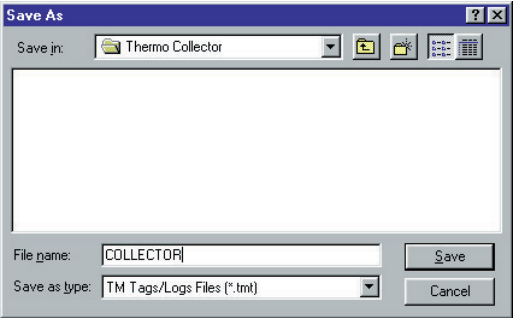
2. **Enter a file name in the "File name" field, then click on the [Save] button.**
The setup data will be saved.

-End of procedure-

■ Loading a file containing the setup data

1. **Select "Open" in the "Setup Tags/Logs" menu accessed from the "File" menu.**
The "Open" window will be displayed.
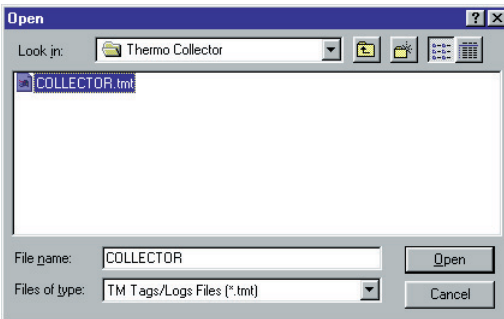
2. **Select a file to be loaded, then click on the [Open] button.**
The specified file containing the setup data will be loaded, and the tag and log setup data in the file will be displayed.

-End of procedure-

Preparation for
Measurement
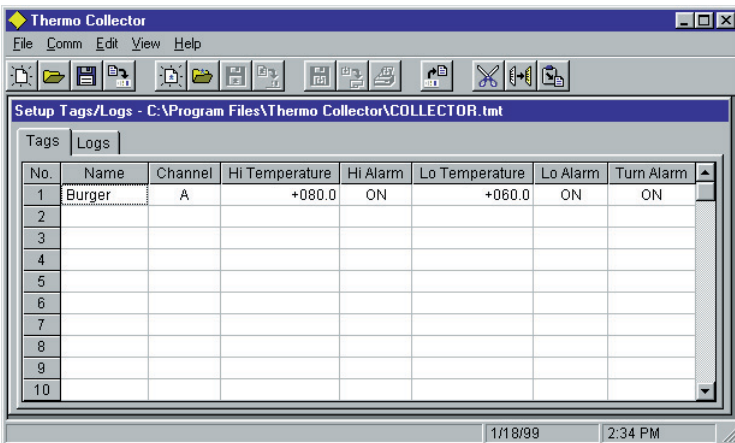
■ Saving the measurement operator name data

The operator data will be saved in a file different from that in which the tag and log data is stored.
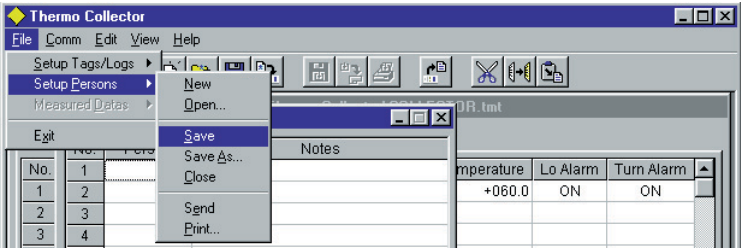
1. **Select "Save" in the "Setup Persons" menu accessed from the "File" menu.**
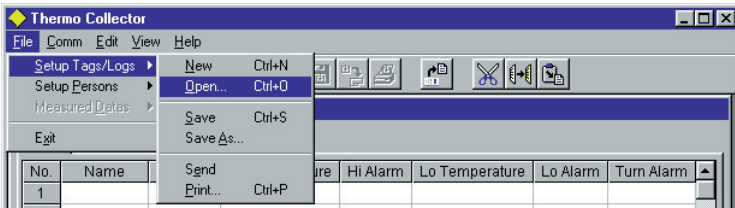   The "Save as" window will be displayed.
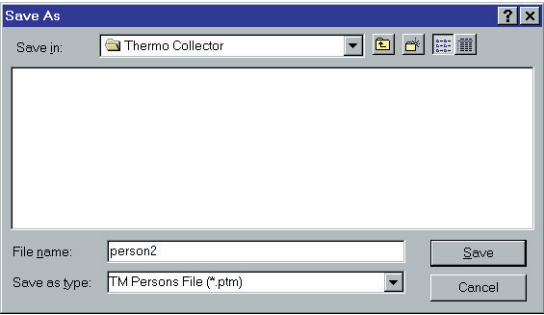
2. **Enter a file name in the "File name" field, then click on the [Save] button.**
   The measurement operator name data being set will be saved.

-End of procedure-

■ **Loading the measurement operator name file**
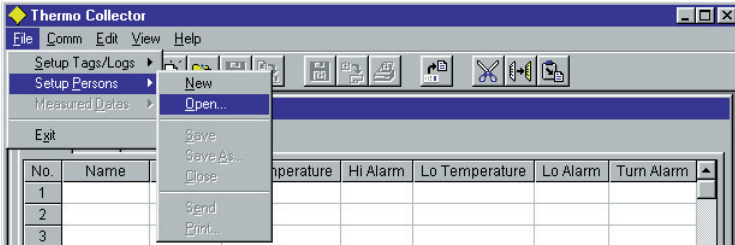
1. **Select "Open" in the "Setup Persons" menu accessed from the "File" menu.**
    The "Open" window will be displayed.
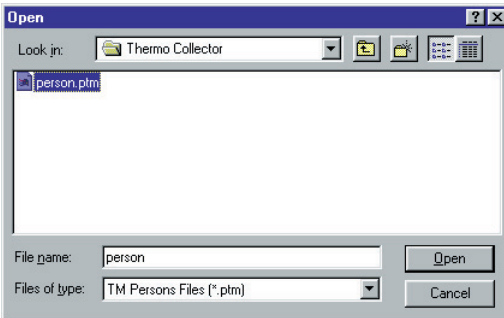
2. **Select a file to be loaded, then click on the [Open] button.**
    The measurement operator name file will be loaded, and a list of operator names will be displayed.
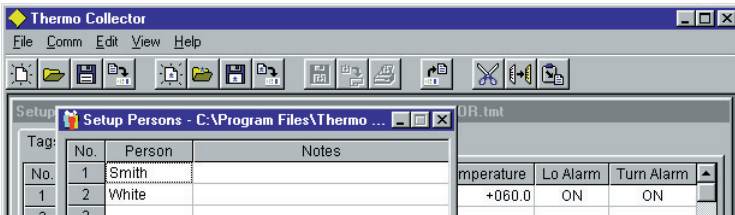
-End of procedure-

■ Other functions (Menu functions)

"Setup Tags/Logs" submenu

New
Creates a new setup file of tags and logs.

Open
Opens a file in which tags and logs have been stored.

Save
Overwrites a file in which tags and logs have been set.

Save As
Saves a file in which tags and logs have been set under a new file name.

Send
Transmits the tag and log setup data to the main unit.

Print
Outputs the tag and log setup data for the printer.

"Setup Persons" submenu

New
Creates a new file for setting up operator names.

Open
Opens a file in which operator names have been stored.

Save
Overwrites a file in which operator names have been set.

Save As
Saves a file in which operator names have been set under a new file name

Close
Closes the operator name setup screen.

Send
Transmits the operator name data file currently opened to the main unit.

Print
Outputs the operator name data for the printer.

"Measured Datas" submenu

Save As
Saves the measurement data in a text format.

Close
Closes the measurement data file.

Transfer
Transfers the measurement data file to Excel.

Print
Outputs the measurement data to the printer.

"Comm" menu
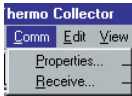
Properties
Set the conditions required to communicate with the personal computer. Below are the setup items
• Communication port
• Baud rate
• Parity
• Data bits
• Stop bits

Receive
Receives from the main unit the measured temperature data and other data set with the main unit.

"Edit" menu
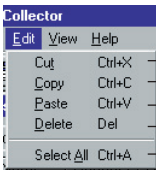
Cut
Moves the currently selected data to the pasteboard.

Copy
Copies the currently selected data to the pasteboard.

Paste
Copies the data recorded in the pasteboard to the selected location on the screen.

Delete
Deletes the currently selected data.

Select All
Sets all the data on the currently selected box to the selected condition.

[TIP]

Measurement data received from the main unit cannot be edited using the "Edit" menu functions.

"Display" menu

Tool Bar
Switches on and off the toolbar display (button icon allowing one-touch operation).

Status Bar
Switches on and off the status bar display (a region in which the date and time are displayed).

"Help" menu
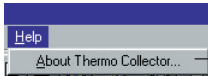
About Thermo Collector...
Displays the version information of the Thermo-Collector software.

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■ Other functions (Tool icons functions)

For efficiency, single-click on any of the tool icons to instantly execute the assigned function.

Creates a new setup file of tags and logs. This function is the same as "New" in the "Setup Tags/Logs" submenu of the "File" menu.

Loads a file of stored tags and logs. This function is the same as "Open" in the "Setup Tags/Logs" submenu of the "File" menu.

Saves the tag and log setup data file so it overwrites the existing file. This function is the same as "Save" in the "Setup Tags/Logs" submenu of the "File" menu.

Transmits the tag and log setup data currently selected to the main unit. This function is the same as "Send" in the "Setup Tags/Logs" submenu of the "File" menu.

Creates a new file for setting operator names. This function is the same as "New" in the "Setup Persons" submenu of the "File" menu.

Loads the operator name file that has been saved. This function is the same as "Open" in the "Setup Persons" submenu of the "File" menu.

Saves the operator name file so it overwrites the existing file. This function is the same as "Save" in the "Setup Persons" submenu of the "File" menu.

Transmits the operator name data currently displayed on the screen to the main unit. This function is the same as "Send" in the "Setup Persons" submenu of the "File" menu.

Saves the measured data in a text format file. This function is the same as "Save As" in the "Measured Datas" submenu of the "File" menu.

Transfers the measurement data which is going to the personal computer to Microsoft Excel. This function is the same as "Transfer" in the "Measured Datas" submenu of the "File" menu.

Outputs the measurement data received in association with the specified tag and log to the printer. This function is the same as "Print" in the "Measured Datas" submenu of the "Comm" menu.

Receives the data from the main unit. This function is the same as "Receive" in the "Comm" menu.

Moves the currently selected data to the pasteboard. This function is the same as "Cut" in the "Edit" menu.

Copies the currently selected data to the pasteboard. This function is the same as "Copy" in the "Edit" menu.

Copies the data recorded in the pasteboard to the currently selected location on the screen. This function is the same as "Paste" in the "Edit" menu.

4.3 Setups required to use the collector function (Setting the tag name, input channel, alarm, and operator name)

Make tag settings before using the collector function.

■ Setup contents

See Also

For information about each setup item, refer to "3.1 Setups required to use the collector function (Setting the tag name, input channel, alarm, and operator name)".

- **Tag name**
- **Input channel**
- **Alarm**
- **Operator name**

■ Setting tags

1. **Initiate the "Thermo-Collector" software.**

After the main screen of the "Thermo-Collector" software has been displayed, the "Setup Tags/Logs - New" screen will appear.
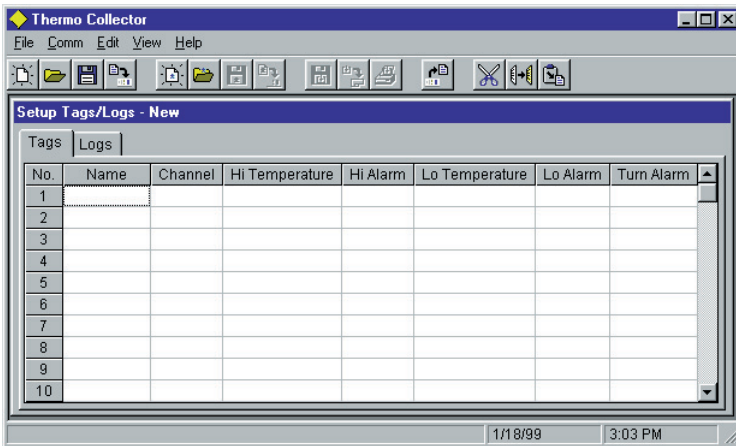
2. **Enter the tag name in the "Name" field with a maximum of eight alphanumeric characters (Example: Burger).**

[TIP]

A piece of setup data with an empty "Name" field cannot be transmitted to the main unit. Always enter a name for setup data to be transmitted.

3. **Double-click in the "Channel" column.**

The specified tag name is set and the pull-down menu will appear.
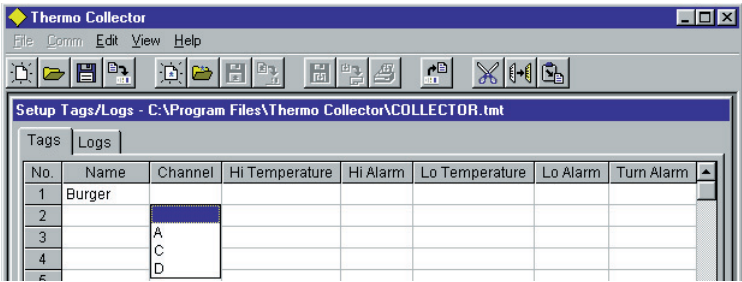
4. **Select either A, C, or D.**

The specified channel is set.

5. **Click in the "Hi Temperature" column**

The cursor moves to a cell for the "Hi Temperature".
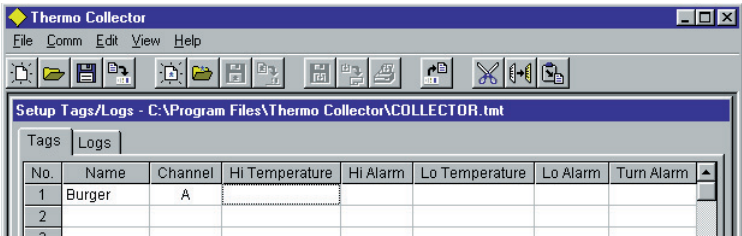
6. **Enter the "Hi Temperature" with numeric characters (-999.9 to +999.9; Example: +091.0).**

[TIP]

Enter a value that does not exceed "Hi temperature" of the probe used for actual measurement. The "Hi Temperature" that can be measured varies according to the probe used for measurement.

The specified upper-limit temperature has been set.

7. **Double-click in the "Hi Alarm" column.**
The pull-down menu will appear.
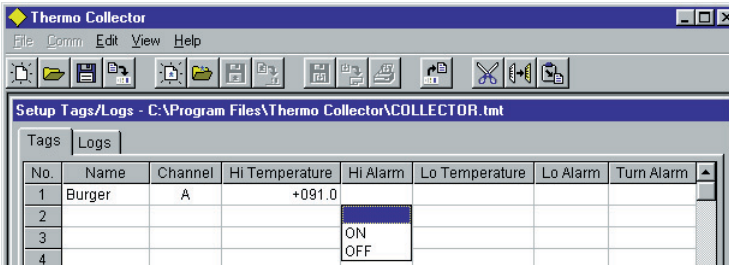
8. **Select either ON or OFF.**

9. **Click in the "Lo Temperature" column.**
The upper-limit alarm ON/OFF setting is made and the cursor moves to the "Lo Temperature" column.
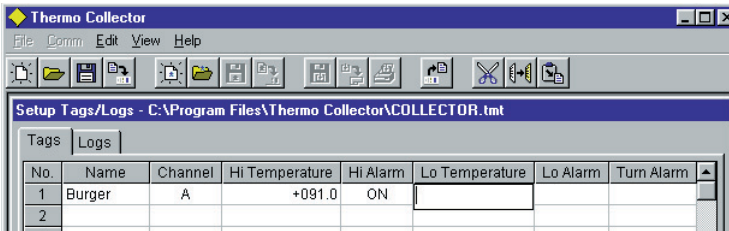
10. **Enter the "Lo Temperature" with numeric characters (-999.9 to +999.9; Example: +021.0).**

[TIP]

Enter a value that does not fall below the "Lo Temperature" of the probe used for the actual measurement. The "Lo Temperature" that can be measured varies according to the probe used for the measurement.

The specified lower-limit temperature has been set.

11. **Double-click in the "Lo Alarm" column.**
The pull-down menu will appear.
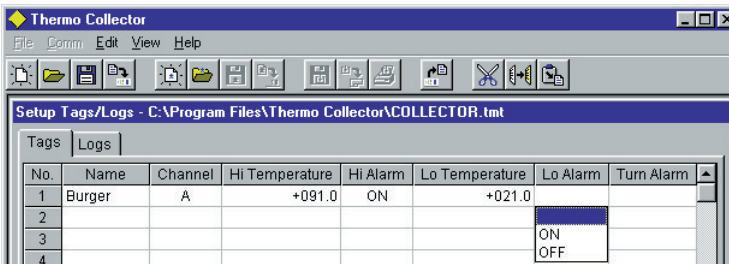
12. **Select either ON or OFF.**
The lower-limit alarm ON/OFF setting is made.

13. **Click in the "Turn Alarm" column.**
The pull-down menu will appear.
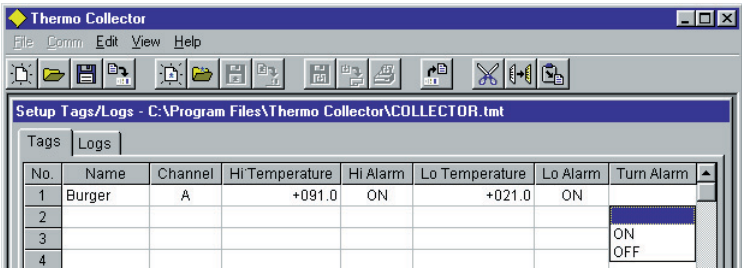
14. **Select either ON or OFF.**
The alarm condition is set.
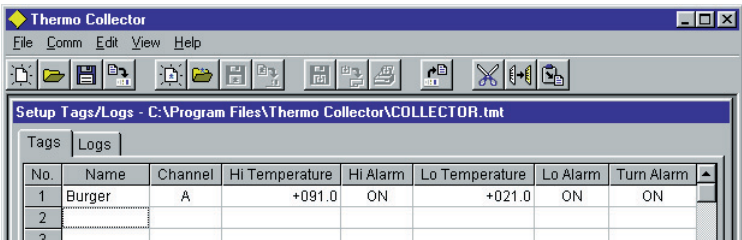
If multiple tags have to be set, select the "Name" field in the next line, then repeat steps 2 through 14.

Subsequently, set the operator name.

-End of procedure-

■ Setting the measurement operator name
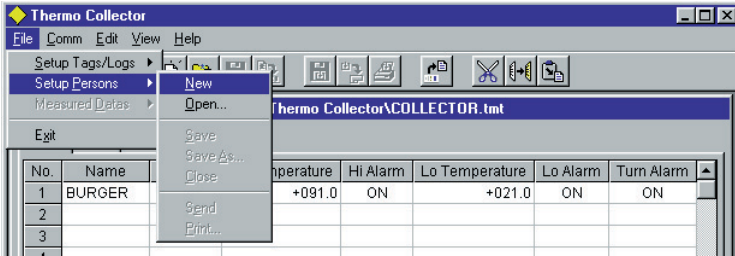
1. **Select "New" from the "Setup Persons" submenu of the "File" menu.**
A box for setting the Person name will appear.
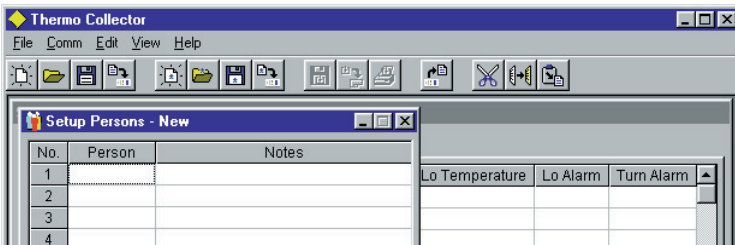
2. **In the "Person" field, enter the operator name with a maximum of eight alphanumeric characters (Example: Smith).**

3. **Click in the "Person" field on the next line.**
The Persons name is set.
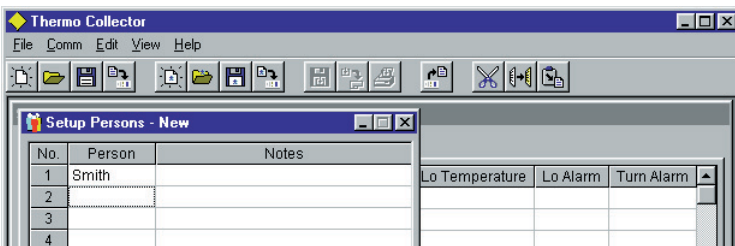
If multiple Person names have to be set, select the next line and repeat steps 1 through 3.

-End of procedure-

4.4 Setups required to use the logging function (Setting the log name, input channel, measurement interval, and measurement period)

Settings relating to the logging function must be made here.

■ Setup contents

See Also
For more information about each setup item, refer to "3.2 Setups required to use the logging function (Setting the log name, input channel, measurement interval, and measurement period)".

- **Log name**
- **Input channel**
- **Measurement interval**
- **Measurement period**

■ Operation procedure
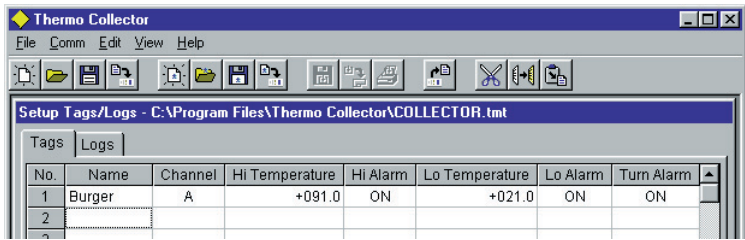
1. **Double-click on the "Logs" tab.**
The log file setup screen will appear.
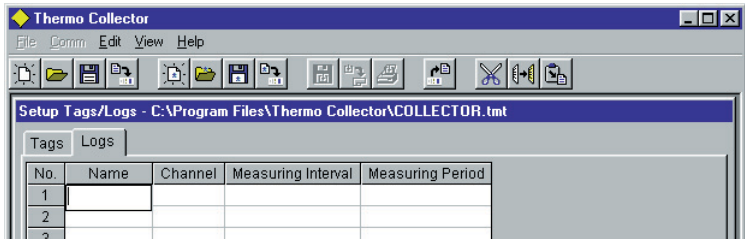
2. **In the "Name" field, enter the tag name using a maximum of eight alphanumeric characters (Example: Convey).**
The specified log name is set

[TIP]

A piece of setup data with an empty "Name" field cannot be transmitted to the main unit. Always enter a name for setup data to be transmitted.

3. **Double-click in the "Channel" column.**
The pull-down menu will appear.
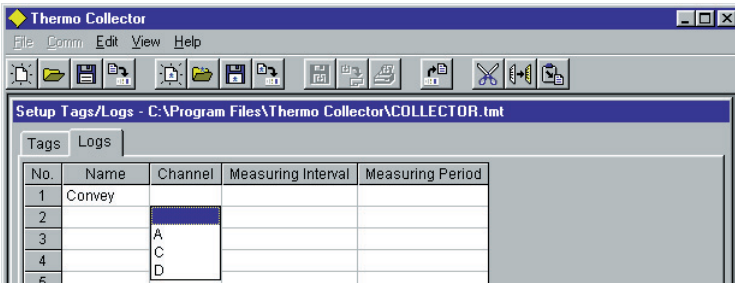
4. **Select either A, C, or D.**
The specified channel is set.

5. **Click in the "Measuring interval" column.**
The cursor moves to a cell for the measurement interval.
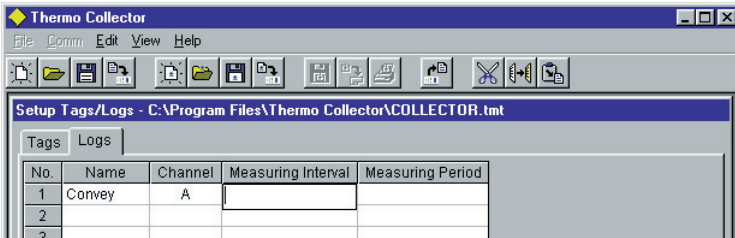
6. **Enter the measurement interval with numeric characters and colons ":" (Example: 00:10:00).**

[TIP]

Use numeric characters and colons to enter a measurement interval. The input range is: hh < 25, mm < 60, and ss < 60, where "hh" denotes hours, "mm" denotes minutes, and "ss" denotes seconds.
All the interval data must be eight characters or less (i.e. "hh:mm:ss". h, m, and s are optional numeric characters).

The specified measurement interval has been set.

Preparation for
Measurement

7. **Click in the "Measuring period" column.**

The cursor moves to a "Measuring period" field.
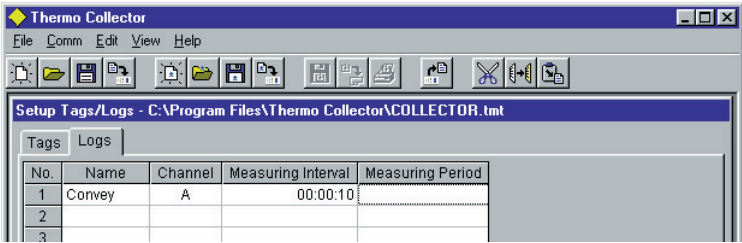
8. **Enter the measurement period with numeric characters, a backslash, and colons (Example: 003/20:30:00).**

[TIP]

Use numeric characters, a backslash, and colons to enter a measurement period. The input range is: ddd < 1000, hh < 24, mm < 60, and ss < 60, where "ddd" denotes the number of days, "hh" denotes hours, "mm" denotes minutes, and "ss" denotes seconds.

All the period data must be twelve characters or less (i.e. "ddd:hh:mm:ss". d, h, m, and s are optional numeric characters).

The specified measurement period has been set.

If multiple tags have to be set, select a "Name" cell from the next line, then repeat steps 2 through 8.

-End of procedure-

4.5 Transmitting the setup data to the main unit

If the setup operation for the personal computer has been completed, transmit the setup data of the tag, log, and operator name to the main unit.

Tag setup data and log setup data will be transmitted in a batch and as one file. The operator data will be transmitted separately.

⚠ NOTE

If the setup data is transmitted to the main unit, the setup data and measurement data that existed in the main unit before transmission will be deleted.

■ Preparation for transmission

1. **Confirm that the power to the personal computer and main unit is OFF.**

2. **Connect the personal computer and main unit with the supplied cable.**

See Also

For information about connecting the personal computer and main unit, refer to "■ Connecting the personal computer and main unit" in section 4.1.

3. **Turn on the power of the main unit.**

See Also

For information about turning on the power to the main unit, refer to "4 Turn ON/OFF of the Power Supply" in the "Information Required before Use" part.

4. **Turn on the power of the personal computer.**
Now it is ready for transmission.

-End of procedure-

Preparation for
Measurement

■ Transmitting the tag and log setup data to the personal computer

1. **Initiate Thermo-Collector software.**
After the main screen of Thermo-Collector software has been displayed, the "Setup Tags/Logs - New" screen will be displayed.
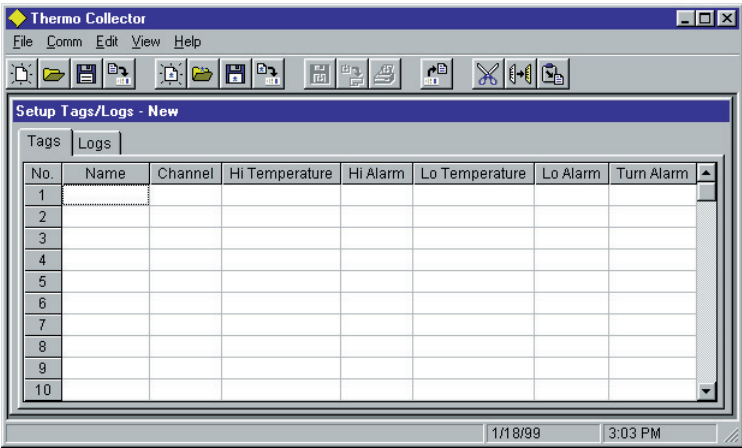
2. **Load a file in which the tag and log setup data is stored.**

See Also
For information about loading a file containing tag and log data, refer to "■ Loading a file containing the setup data" in section 4.2.
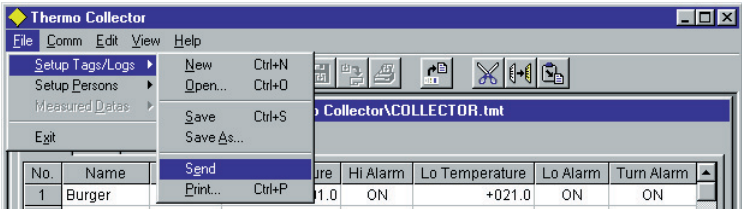
3. **Select "Send" in the "Setup Tags/Logs" submenu accessed from the "File" menu.**
The confirmation dialog box will appear.
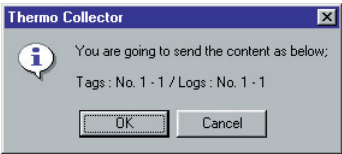
4. **Click on the [OK] button.**

A dialog box indicating the progress of data transmission will be displayed. At the same time, "Sending..." is displayed on the main unit.
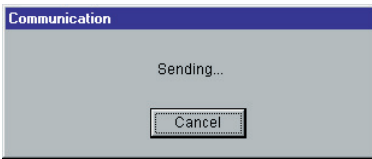
After the transmission of the tag and log setup data has been completed, the screen indicating the progress of data transmission and the screen displaying the "Comm..." message on the main unit will disappear.

-End of procedure-

■ Transmitting the measurement operator name data

1. **Load a file in which the operator name to be transmitted is stored.**
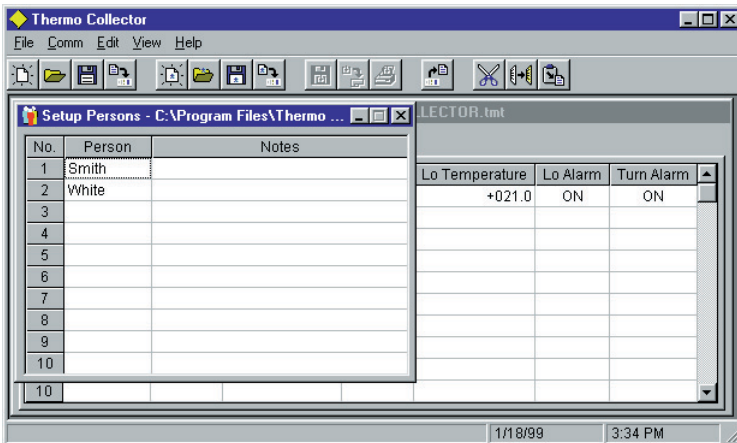
See Also

For information about loading a file containing operator names, refer to "■ Loading a file containing the setup data" in section 4.2.

2. **Select "Send" in the "Setup Persons" menu accessed from the "File" menu.**

A dialog box indicating the progress of transmission will be displayed.
At the same time, "Comm..." is displayed on the main unit.
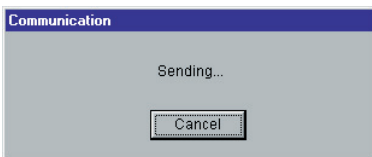
After the transmission of the operator data has been completed, the screen indicating the progress of data transmission and the screen displaying the "Comm..." message on the main unit will disappear.

-End of procedure-

Preparation for Measurement

5 Confirm, Modify, Clear, or Delete the Data with the Main Unit

5.1 Confirming the number of pieces of tag data

This section explains the procedure for confirming the number of pieces of tag data.

Home screen

INPUT
L C
18:54:27
25.9°C
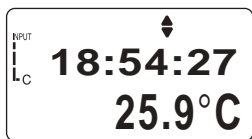
1. **Press the [FUNC], [1], and [1] keys, in this order.**
The "Curr tag" screen appears on the LCD.

INPUT
L C
F11
Curr Tag

2. **Press the [SET] key.**

INPUT
L C
Burger
12

3. **Press the [▼] key repeatedly until the tag to be confirmed is displayed on the screen.**
The tag name and the measurement data recorded in association with the tag will be displayed.

INPUT
L C
Beef
5

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.2 Modifying the tag name

This section explains the procedure for modifying the tag name.

Home screen

INPUT
L C
18:54:27
25.9°C
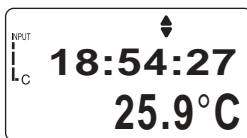
1. **Press the [FUNC], [1], and [2] keys, in this order.**
The "TagChnge" screen appears on the LCD.

INPUT
L C
F12
TagChnge
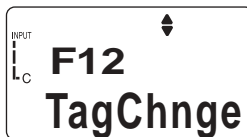
2. **Press the [SET] key.**

INPUT
L C
Burger
12

3. **Press the [▼] key repeatedly until the tag to be modified is displayed on the screen.**

INPUT
L A
Beef
5

4. **Use the [CH] key to select the input channel.**
The input channel of the [INPUT] gage is modified.

5. **Press the [SET] key.**

```
INPUT                    〉
I
I
L C   Beef
                         5
```

6. **Enter a new tag name to be modified.**

```
INPUT               〈 〉
I
I
L C   Pork
                         5
```

[TIP]

A tag name that has not been modified will be displayed. If it needs to be modified, overwrite it with a new tag name.

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

7. **Press the [SET] key.**
The confirmation dialog box will appear.

```
INPUT
I
I
L C   Change?
      Yes1/No0
```
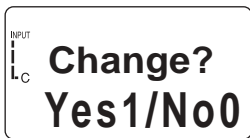
8. **Press the [1] key.**
The tag name after modification will be displayed.

```
INPUT                    ▲▼
I
I
L C   Pork
                         5
```

The tag name has been modified.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.3 Clearing the measurement data associated with the tag

This section explains the procedure used to clear the measurement data obtained with the collector function. However, the setup data (tag name) will not be cleared.

Home screen

```
INPUT                    ▲▼
I
I
L C   18:54:27
                   25.9°C
```
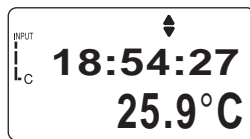
1. **Press the [FUNC], [4], and [1] keys, in this order.**
The "1TagFile" screen appears on the LCD.

```
INPUT                    ▲▼
I
I
L C   F41
      1TagFile
```

2. **Press the [SET] key.**

```
INPUT                    ▼
I
I
L C   Burger
                        12
```

3. **Press the [▼] key repeatedly until a tag with measurement data that is to be cleared is displayed on the screen.**

```
INPUT                    ▲▼
I
I
L C   Chicken
                        27
```

4. **Press the [SET] key.**
The confirmation dialog box will appear.

```
INPUT
I
I
L C   TagClr?
      Yes1/No0
```

5. **Press the [1] key.**

```
INPUT          ⬍
L C  Chicken
                    0
```

All the measurement data of the selected tag will be cleared.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.4 Deleting the tag

This section explains the procedure used to delete the tag from the main unit.

⚠ Note

Before deleting the tag, save the measurement data associated with the tag to a personal computer, etc.
Once the tag has been deleted, all the measurement data associated with the tag will be completely lost.

See Also

For information about the procedure used to save the measurement data, refer to "1 Receiving the Data on the Personal Computer" in the "Utilizing the Measurement Data" part.

Home screen

```
INPUT          ⬍
L C  18:54:27
              25.9°C
```
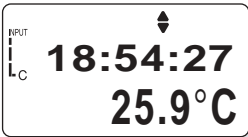
1. **Press the [FUNC], [1], and [4] keys, in this order.**
The "Tag Del" screen appears on the LCD.

```
INPUT          ⬍
L C  F14
        Tag Del
```

2. **Press the [SET] key.**

```
INPUT          ▼
L C  Burger
                  12
```

3. **Press the [▼] key repeatedly until the tag to be deleted is displayed on the screen.**

```
INPUT          ⬍
L C  Chicken
                    0
```

4. **Press the [SET] key.**
The confirmation dialog box will appear.

```
INPUT
L C  Delete?
     Yes1/No0
```
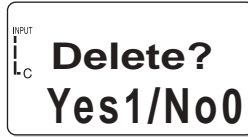
5. **Press the [1] key.**
The selected tag and its associated measurement data will be deleted.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.5 Confirming the log setup data

This section explains the procedure used to confirm the log setup data.

Home screen

INPUT
L C
18:54:27
25.9°C
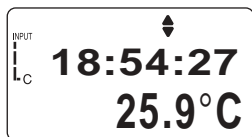
1. **Press the [FUNC], [2], and [1] keys, in this order.**
The "Curr Log" screen appears on the LCD.

INPUT
L C
F21
Curr Log

2. **Press the [SET] key.**

INPUT
L C
Convey
12

3. **Press the [▼] key repeatedly until the log to be confirmed is displayed on the screen.**

INPUT
L C
Accept
0

4. **Press the [SET] key.**
The current interval will be displayed.

INPUT
L C
Interval
00:00:10

5. **Press the [SET] key.**
The current period (the number of days selected from the options, including also the number of hours, minutes, and seconds) will be displayed.

INPUT
L C
ProdDay
2

6. **Press the [SET] key.**
The current period (the number of hours, minutes, and seconds from the options including also the number of days) will be displayed.

INPUT
L C
ProdTime
00:00:30
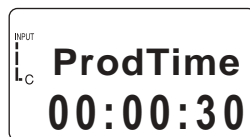
[TIP]

If the [SET] key is pressed, the screen used to confirm the interval set in step 4 is restored.

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.6 Modifying the log name and setup data (measurement interval and period)

This section explains the procedure used to modify the log name, measurement interval, and measurement period.

Home screen

INPUT
L C
18:54:27
25.9°C

Preparation for
Measurement
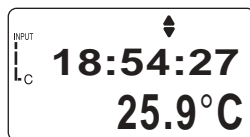
1. **Press the [FUNC], [2], and [2] keys, in this order.**
The "LogChnge" screen appears on the LCD.

```
INPUT
|
|  LC        F22
    LogChnge
```

2. **Press the [SET] key.**
A screen for selecting a log will be displayed.

```
INPUT
|
|  LC     Convey
              12
```

3. **Press the [▼] key repeatedly until the log to be modified is displayed on the screen.**

```
INPUT
|
|  A      Accept
               0
```

4. **Use the [CH] key to select the input channel.**
The input channel of the [INPUT] gage is modified.

5. **Press the [SET] key.**
A screen for modifying the log name will be displayed.

```
INPUT                  〉
|
|  LC     Accept
               0
```

6. **Enter a new log name to be modified.**

```
INPUT         〈 〉
|
|  LC     Carry
               0
```

[TIP]

• A log name can consist of a maximum of eight alphanumeric characters.
• A tag name that has not been modified is displayed on the screen. If it needs to be modified, overwrite it with a new tag name.

See Also

For information about entering a character or number, refer to "6 How to Input Characters" in the " Information Required before Use" part.

7. **Press the [SET] key.**
A screen for modifying the measurement interval will appear.

```
INPUT               〉
|
|  LC    Interval
     00:00:10
```

8. **Enter the hours, minutes, and seconds.**

```
INPUT            〈
|
|  LC    Interval
     00:00:30
```

[TIP]

The definition and range of each input value is given below.

00:00:00

Indicates the seconds.
The input range is between 0
and 59 seconds
Indicates the minutes.
The input range is between 0
and 59 minutes
Indicates the hours.
The input range is between 0
and 24 hours.

9. **Press the [SET] key.**

The measurement interval is modified and a screen for modifying the measurement period (the number of days from the options, which also includes the number of hours, minutes, and seconds) will be displayed.

```
INPUT          〉
|
L C   ProdDay
             000
```

10. **Enter the number of days.**

[TIP]

Between 0 and 999 days can be inputted.

11. **Press the [SET] key.**

A screen for modifying the measurement period (the number of hours, minutes, and seconds from the options, which also includes the number of days) will be displayed.

```
INPUT          〉
|
L C   ProdTime
      00:00:30
```

12. **Enter the number of hours, minutes, and seconds.**

```
INPUT          〈
|
L C   ProdTime
      00:00:45
```

[TIP]

The definition and range of each input value is given below.

00:00:00

Indicates the seconds.
The input range is between 0 and 59 seconds
Indicates the minutes.
The input range is between 0 and 59 minutes
Indicates the hours.
The input range is between 0 and 23 hours.

13. **Press the [SET] key.**

The confirmation dialog box will appear.

```
INPUT
|
L C   Change?
      Yes1/No0
```

14. **Press the [1] key.**

The measurement period has been set.

```
INPUT          ↕
|
L C   Carry
             0
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Preparation for
Measurement

5.7 Clearing the measurement data associated with the log

This section explains the procedure for clearing the measurement data obtained with the logging function. However, the setup data (log name, measurement interval, and measurement period) will not be cleared.

Home screen

```
INPUT      ⬍
L̢ 18:54:27
        25.9°C
```
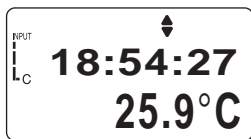
1. **Press the [FUNC], [4], and [2] keys, in this order.**
The "1LogFile" screen appears on the LCD.

```
INPUT      ⬍
L̢ F42
    1LogFile
```

2. **Press the [SET] key.**

```
INPUT      ▼
L̢ Convey
           12
```

3. **Press the [▼] key repeatedly until a log with measurement data that is to be cleared is displayed on the screen.**

```
INPUT      ⬍
L̢ Accept
            3
```

4. **Press the [SET] key.**
The confirmation dialog box will appear.

```
INPUT
L̢ LogClr?
  Yes1/No0
```

5. **Press the [1] key.**

```
INPUT      ⬍
L̢ Accept
            0
```

All the measurement data of the selected log will be cleared.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.8 Deleting the log

This section explains the procedure used to delete the log from the main unit.

⚠ Note

Before deleting the log, save the measurement data associated with the log to a personal computer, etc.
If the log has already been deleted, all the measurement data associated with the log will be completely lost.

See Also

For information about the procedure used to save the measurement data, refer to "1 Receiving the Data on the Personal Computer" in the "Utilizing the Measurement Data" part.

Home screen

```
INPUT      ⬍
L̢ 18:54:27
        25.9°C
```
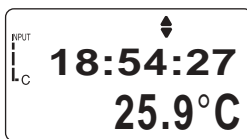
1. **Press the [FUNC], [2], and [4] keys, in this order.**
The "Log Del" screen appears on the LCD.

```
INPUT
L C        ↕
    F24
    Log Del
```

2. **Press the [SET] key.**

```
INPUT
L C        ▼
    Convey
            12
```

3. **Press the [▼] key repeatedly until the log to be deleted is displayed on the screen.**

```
INPUT
L C        ↕
    Accept
             0
```

4. **Press the [SET] key.**
The confirmation dialog box will appear.

```
INPUT
L C
    Delete?
    Yes1/No0
```
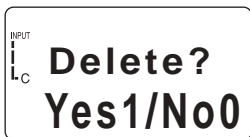
5. **Press the [1] key.**
The selected log and its associated measurement data will be deleted.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.9 Batch-clearing the measurement data associated with both the tag and log

This section explains the procedure used to clear all the measurement data associated with both the tag and log. However, note that the setup data will not be cleared.

Home screen

```
INPUT
L C        ↕
    18:54:27
      25.9°C
```
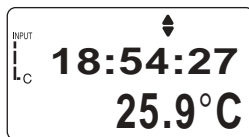
1. **Press the [FUNC], [4], and [4] keys, in this order.**
The "All File" screen appears on the LCD.

```
INPUT
L C        ↕
    F44
    All File
```

2. **Press the [SET] key.**

```
INPUT
L C
    DataClr?
    Yes1/No0
```
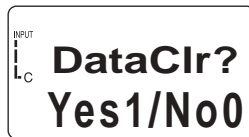
3. **Press the [1] key.**
All the measurement data recorded in the main unit will be cleared.
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Preparation for
Measurement

5.10 Initializing the main unit

This section explains the procedure used to initialize the main unit.

⚠ Note

Before initializing the main unit, it is recommended to save the setup data and measurement data in the main unit to a personal computer, etc.
When the main unit is initialized, all the setup data and measurement data recorded in the main unit will be lost. However, the instrument name, chime setup, and time setup data will not be erased.

See Also

For information about the procedure used to save the measurement data, refer to "1 Receiving the Data on the Personal Computer" in the "Utilizing the Measurement Data" part.

Home screen

```
INPUT          ↕
I
L C  18:54:27
          25.9°C
```
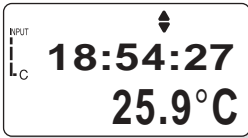
1. **Press the [FUNC], [0], and [1] keys, in this order.**
The "Initial" screen appears on the LCD.

```
INPUT          ↕
I
L C  F01
     Initial
```

2. **Press the [SET] key.**

```
INPUT
I
L C  Initial?
     Yes1/No0
```
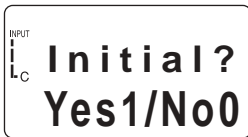
3. **Press the [1] key.**
The initialization process begins.

```
INPUT
I
L C  Initia··
     ▢ ▢ ▢ ▢
```

In two minutes, all the data set in the main unit will be erased and the "Initial" screen will be restored,
Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.11 Confirming the current operator name

This section explains the procedure used to confirm the operator name currently set.

Home screen

```
INPUT          ↕
I
L C  18:54:27
          25.9°C
```
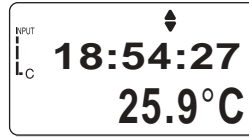
1. **Press the [FUNC], [8], and [1] keys, in this order.**
The "CurrData" screen appears on the LCD.

```
INPUT          ↕
I
L C  F81
     CurrData
```
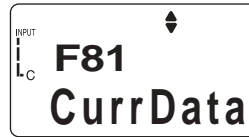
2. **Press the [SET] key.**
The operator name currently set will be displayed.

```
INPUT          ↕
I
L C            1
     Smith
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

5.12 Modifying the operator

This section explains the procedure used to switch the currently set operator.

Home screen

INPUT
L_C
18:54:27
25.9°C
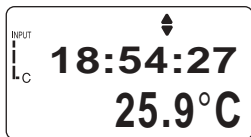
1. **Press the [FUNC], [8], and [2] keys, in this order.**
The "Change" screen appears on the LCD.

INPUT
L_C
F82
Change
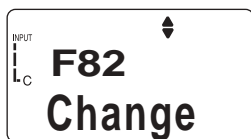
2. **Press the [SET] key.**
A screen for modifying the operator will be displayed.

INPUT
L_C
1
Smith

3. **Press the [▼] key repeatedly until the operator to be modified is displayed on the screen.**
Operator names assigned to numbers between 1 and 10 will be sequentially displayed.

INPUT
L_C
2
White

4. **Press the [SET] key.**
The operator set on the main unit will be changed.

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Preparation for
Measurement

1 Input Channel and Probe

When measuring temperatures with Thermo-Collector, it is necessary to use an appropriate input channel and probe. By combining these items in different ways, it is possible to measure the temperature of various objects. The temperature of air (gases), the surface and center of a solid, and various types of liquids can be measured.

For example, the "C" input channel (built-in sensor of the main unit) is used to measure the ambient air temperature. To measure the temperature at the center of a hamburger, connect a needle-type standard probe to the "A" measuring channel. To measure the surface temperature of a steel plate, connect a radiation temperature probe to the "D" input channel.

The following table shows the available probe types, their corresponding input channels, and the positions of connection jacks.

Probe (option) type	Input channel	Position of connection jack
Standard needle probe (Model name: 900 01)		
High speed needle probe (Model name: 900 11)	A	Left side of the top face (position marked "A" on the cover)
Surface probe (Model name: 900 12)		
Rounded end probe (Model name: 900 13)		
Built-in sensor	C	Built into the main unit
Emission thermo probe (Model name: 900 03)	D	Left side of the bottom face (position marked "D" on the cover)

⚠ Warning

Do not point the tip of a needle-type standard probe or needle-type high-speed probe towards somebody. The needle tip is very sharp and can cause injury.

⚠ Caution

• Handle the needle-type standard probe and needle-type high-speed probe carefully so that its stylus is only put into the intended measuring object.

• Do not use this instrument in a location where it may be splashed or dropped in water, otherwise it may malfunction.

Needle-type standard probe
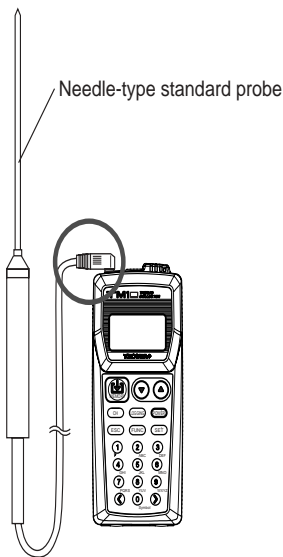
An example of the needle-type standard probe connected to input channel "A"

⚠ **Note**

Only connect a probe to input channel "A" if the power to the main unit is off or if the home screen is being displayed. If the probe is connected to the channel after a tag has been selected, this instrument may start having data logged into it the moment the connection is made.

Temperature
Measurement

Built-in sensor

Radiation temperature probe

530

POINTER MEASURE
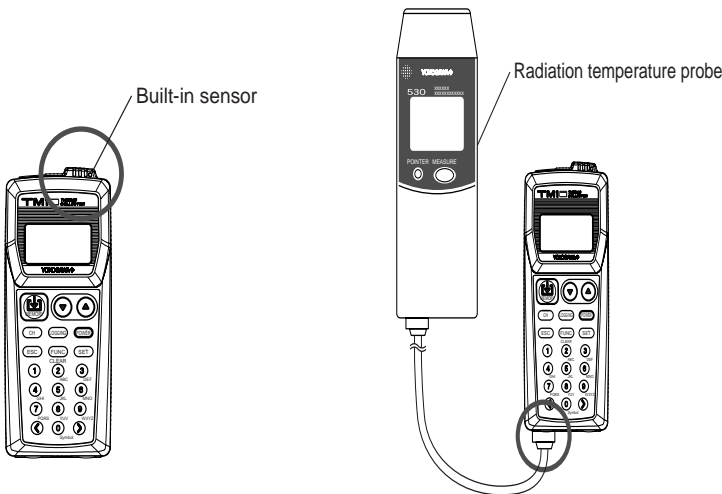
Position of input channel "C"   An example of the radiation temperature probe connected to input channel "D"

2 Measuring Temperatures with the Collector Function

This section explains the procedure for measuring temperatures with the collector function.

Home screen

```
INPUT
L A        ↕
        18:54:27
         25.9°C
```

[TIP]
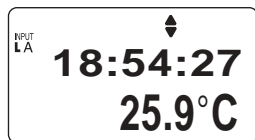
- This screen which indicates the current time is referred to as the "Home" screen. Each function in the main unit is accessed from this screen.

- The [0] key is also used for switching the unit of temperature display. If, for example, this [0] key is pressed in the Home screen, the unit is switched to "°F". Another pressing of the same key will restore the unit to "°C".

1. Press the [LOGGING] key when the **LOG** mark is displayed in the upper left corner of the screen.

The **LOG** mark is turned off and the collector mode is entered.

2. If the "A" or "D" input channel is to be used, connect the probe to the appropriate jack.

⚠ NOTE

Only connect a probe to input channel "A" if the Home screen is on. If the probe is connected to the channel after a tag has been selected, this instrument may start having data logged into it the moment the connection is made.

See Also

For information about connecting an input channel to a probe, refer to "1 Input Channel and Probe".

3. Press the [▼] key repeatedly until the tag to be selected is displayed on the screen.

The tag name currently set will be displayed.

```
INPUT        ⟨▼⟩
L C     Burger
              24°C
```

4. If the operator name needs to be modified, press the [1] numeric key. If not, proceed to step 7.

[TIP]

If the operator name is not modified at this point, the operator name assigned the registration number "1" will automatically be set. Therefore, the factory-setting operator name must be modified if an operator other than that which is assigned the registration number "1" performs the measurement task.

```
INPUT        ↕
L C              1
        S m i t h
```

A screen for modifying the operator name will be displayed.

5. Press the [▼] key repeatedly until the operator name to be selected is displayed on the screen.

```
INPUT        ↕
L C              2
        W h i t e
```

IM 54051-E

6. Press the [SET] key.

The confirmation screen will appear.

> INPUT
> I C
> **Change?**
> **Yes1/No0**
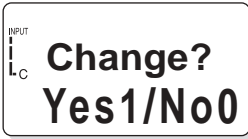
7. Press the [1] key.

The operator name is modified and the previous screen displaying the tag name is restored.

> INPUT ⟨▾⟩
> I C
> **Burger**
> **24°C**

8. Press the [MEMORY] key.

A ⏬ mark is displayed in the measurement screen, and the measurement is terminated as soon as the buzzer sounds. The measured value will be stored in memory together with the current time.

> INPUT ⟨▾⟩
> I C
> **Burger**
> ⏬ **24°C**

The ⏬ mark will be turned off after the measurement has been completed.

[TIP]

- If the [MEMORY] key is pressed when [NewTag] is being displayed, a new tag will automatically be created. New tags will automatically be assigned tag names such as TAG01 and TAG02.

- If the measurement continues with the selected tag, perform step 7 again after step 8 has been performed. With 50 tags, a total of 5,000 pieces of data can be recorded.

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Temperature
Measurement

3 Measuring Temperatures with the Logging Function

If a log has measured data remaining in it, it is not possible to record new measurement data additionally on the same log. To record new data in the log, it must be cleared beforehand.

[TIP]

The [0] key is also used for switching the unit of temperature display. If, for example, this [0] key is pressed in the Home screen, the unit is switched to "°F". Another pressing of the same key will restore the unit to "°C".

See Also

For information about clearing the measured data in a log, refer to "5.7 Clearing the measurement data associated with the log" in the "Preparation for Measurement" part.

Home screen

```
┌─────────────────────┐
│ INPUT        ▲      │
│              ▼      │
│ i   18:54:27        │
│ L C                 │
│          25.9°C     │
└─────────────────────┘
```
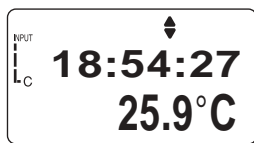
1. **Press the [LOGGING] key when the LOG mark is not displayed in the upper left corner of the screen.**
The **LOG** mark is turned on and the logging mode is entered.
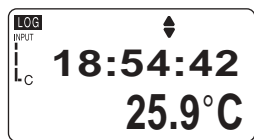
```
┌─────────────────────┐
│ LOG          ▲      │
│ INPUT        ▼      │
│ i   18:54:42        │
│ L C                 │
│          25.9°C     │
└─────────────────────┘
```

2. **If the "A" or "D" input channel is to be used, connect the probe to the appropriate jack.**

⚠ Note

Only connect a probe to input channel "A" if the Home screen is on. If the probe is connected to the channel after a tag has been selected, this instrument may start having data logged into it the moment the connection is made.

See Also

For information about connecting an input channel and a probe, refer to "1 Input Channel and Probe".

3. **Press the [▼] key repeatedly until the log to be selected is displayed on the screen.**
The log name currently set will be displayed.

```
┌─────────────────────┐
│ LOG          ▲      │
│ INPUT        ▼      │
│ i   Carry           │
│ L C                 │
│            24°C     │
└─────────────────────┘
```

4. **Press the [MEMORY] key.**
The interval at which the temperature measurement is performed will be displayed.

```
┌─────────────────────┐
│ LOG                 │
│ INPUT               │
│ i   Interval        │
│ L C                 │
│     00:00:10        │
└─────────────────────┘
```
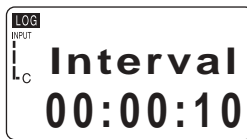
5. Press the [MEMORY] key again.

Measurement begins. During measurement the 🔽 mark is displayed in the lower left corner of the screen.

```
┌─────────────────────────┐
│ LOG                     │
│ INPUT                   │
│ ┊                       │
│ ┊L_C  00:00:07          │
│ ┊                       │
│         24°C            │
│ 🔽                      │
└─────────────────────────┘
```
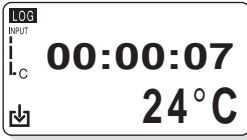
[TIP]

• During measurement the number of days or time elapsed can be confirmed with the [▲] key or [▼] key.

• If the [MEMORY] key is pressed when [NewTag] is being displayed, a new tag will automatically be created. New tags will automatically be assigned tag names such as TAG01 and TAG02.

• To stop the measurement, hold down the [ESC] key for about two seconds.

If the measurement has been completed, the previous screen displaying the log name will be restored.

```
┌─────────────────────────┐
│ LOG           ↕         │
│ INPUT                   │
│ ┊     Carry             │
│ ┊L_C                    │
│         24°C            │
│                         │
└─────────────────────────┘
```

Press the [ESC] key repeatedly to return to the Home screen.

-End of procedure-

Temperature
Measurement

4 Measuring Temperatures with the Radiation Temperature Probe

The measurement accuracy of the radiation temperature probe(Model name:900 03) is not reliable below the decimal point. Therefore, before making a temperature measurement with the radiation temperature probe, set this instrument so that it does not display a fraction of a temperature in the screen of the main unit. The radiation temperature probe, however, can be used with this instrument to measure temperatures without performing the following setups, but, if this is done, the accuracy of the decimal in the temperature measurement cannot be guaranteed.

■ Switching on/off the decimal portion of the temperature display

Home screen

```
INPUT        ▲▼
 ┃
 ┃ L C   18:54:27
           25.0°C
```
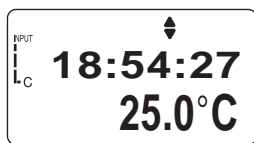
1. Press the [FUNC], [9], and [3] keys, in this order.
The "Digit" screen will appear on the LCD.

```
INPUT        ▲▼
 ┃
 ┃ L C   F93
         Digit
```

2. Press the [SET] key.
A screen for switching on/off the decimal portion of the temperature display will be displayed.

```
INPUT        ▲▼
 ┃
 ┃ L C   Digit
            0.1°C
```
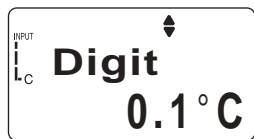
3. Press the [▼] key.
The decimal portion of the display will be turned off.

```
INPUT        ▲▼
 ┃
 ┃ L C   Digit
              1°C
```

[TIP]

Each time the [▼] key is pressed, the decimal portion of the temperature is toggled on/off.

4. Press the [SET] key.
The decimal portion of the temperature will no longer be displayed.

```
INPUT        ▲▼
 ┃
 ┃ L C   F93
         Digit
```

5. Press the [ESC] key three times.
The time display screen (i.e. Home screen) is restored.

```
INPUT        ▲▼
 ┃
 ┃ L C   18:54:57
            25°C
```
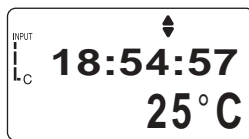
-End of procedure-

■ Measuring with the radiation temperature probe

⚠ Warning

Do not look into the laser beam which is emitted from the radiation temperature probe. The laser can cause eye damage and other injuries.

⚠ Note

Before using the radiation temperature probe, read the instruction manual supplied with the radiation temperature probe.

1. **Connect the "D" channel jack on the main unit and the radiation temperature probe.**

[TIP]

• Insert the connector plug so that the "←" mark on the cable grip faces upward.

• The "D" channel connection jack is located on the left side of the main unit bottom face.

Measuring in the collector mode

2. **Set the main unit to the collector mode, then select a tag and operator name for the measurement.**

See Also

For more information about the collector mode, refer to "2 Measuring Temperatures with the Collector Function".

3. **Turn the radiation temperature probe towards the measuring object, and press the [MEASURE] key.**
A laser beam will be emitted from the radiation temperature probe and onto the measuring object.

[TIP]

If the laser beam is not being emitted, press the [POINTER] key on the radiation temperature probe.

4. **While holding down the [MEASURE] key, press the [MEMORY] key on the main unit.**
The temperature being displayed on the radiation temperature probe screen will also be displayed on the screen of the main unit. When the buzzer sounds on the main unit, the measured value and current time will be stored in memory.

[TIP]

If the measurement continues with the selected tag, perform step 3 again after step 4 has been performed.

-End of procedure-

Temperature
Measurement

Measuring in the logging mode

2. **Set the main unit to the logging mode, then select a log for the measurement.**

   See Also
   For more information about the logging mode, refer to "3 Measuring Temperatures with the Logging Function".

3. **While holding down the [MEASURE] key, turn the radiation temperature probe towards the measuring object.**
   A laser beam will be emitted from the radiation temperature probe and onto the measuring object.

   [TIP]

   If the laser beam is not being emitted, press the [POINTER] key of the radiation temperature probe.

4. **Press the [MEMORY] key twice.**
   Measurement begins.

   [TIP]

   To stop the measurement, hold down the [ESC] key for about two seconds.

   After the specified measurement period elapses, the previous screen displaying the log name will be restored.

5. **Hold down the [MEASURE] key on the radiation temperature probe until the measurement has been completed.**

   -End of procedure-

5 Other Useful Functions

■ To instantly clear the measured data on the main unit

There is a function on the main unit to clear the recorded measurement data.

If the measured data recorded in the main unit is not required anymore or if it needs to be cleared instantly, use this function.

1. **Bring up the Home screen.**

2. **Press the [▼] key repeatedly until the tag to be deleted is displayed.**

3. **Use either the [<] or [>] key to select the measured data to be deleted.**

[TIP]

Press the [<] key once to bring the last piece of measured data recorded for the tag up on the screen.

The measured data is displayed.

4. **Press the [FUNC] key.**
The confirmation screen will appear.

5. **Press the [1] key.**
The measured data will be cleared.

[TIP]

If the [FUNC] key is pressed while the tag name display screen is active, all the data associated with the currently selected tag will be cleared (this function can also be applied to logs).

-End of procedure-

■ To start a measurement in the logging mode at a specified time (timer function)

The main unit has a function (timer function) to start logging measurement at a specified time. This is useful to, for example, start logging measurements after one hour.

[TIP]

If the selected log has measurement data remaining in it, this timer function cannot be used. If this is the case, either clear the measured data from the log or select another log.

See Also

For information about clearing the measured data in a log, refer to "5.7 Clearing the measurement data associated with the log" in the "Preparation for Measurement" part.

1. **Bring up the Home screen.**

2. **Press the [FUNC], [2], and [5] keys, in this order.**
The "Timer reserve" screen will appear.

3. **Press the [SET] key.**

4. **Press the [▼] key repeatedly until the log to record temperatures are displayed.**

5. **Press the [SET] key.**
The measurement interval set for the selected log will be displayed.

Temperature
Measurement

6. **Press the [SET] key.**

[TIP]

It is also possible to modify the measurement interval setting before pressing the [SET] key.

7. **Press the [SET] key.**

The measurement period (the number of days from the options which also include the number of hours, minutes, and seconds) will be displayed.

[TIP]

It is also possible to modify the number of days setting before pressing the [SET] key.

8. **Press the [SET] key.**

The measurement period (the number of hours, minutes, and seconds from the options which also includes the number of days) will be displayed.

[TIP]

It is also possible to modify the number of hours, minutes, and seconds settings before pressing the [SET] key.

9. **Set the date (year/month/day) and time when logging starts.**

10. **Press the [SET] key.**

The confirmation screen will appear.

11. **Press the [1] key.**

The ⊘ mark and "Stand by" will be displayed in the screen, and the instrument will enter the wait state. When the time set in step 9 is reached, the measurement will automatically begin.

[TIP]

To cancel the wait state, hold down the [ESC] key for about two seconds.

-End of procedure-

■ To quickly search for a tag or log

The main unit has a function to search for a tag or log using a number as the key.

This function is useful if there are many logs and tags set in the main unit and is faster than using the [▼] key.

1. **Bring up the Home screen.**

2. **Press the [▼] key.**

3. **Press the [POWER] key.**

4. **Enter a two-digit number.**

[TIP]

A two-digit number entered is displayed in the "No." field of Thermo-Collector screen. It is recommended to make a note of which tag or log corresponds to which number.

5. **Press the [SET] key.**
The tag (or log) that corresponds to the entered number will be displayed on the screen.

-End of procedure-

■ To record measured data if the tag or log has not been set

In addition to the function for creating a tag or log from the Function menu, the main unit has a useful way to create them during measurement.

This is very useful when, for example, the temperature of a steel plate needs to be measured, but a tag for that steel plate has not been set beforehand.

1. **Bring up the Home screen.**

2. **Press the [▼] key repeatedly until [NewTag] or [NewLog] appears on the screen.**
[NewTag] or [NewLog] will appear on the screen.

3. **Press the [MEMORY] key.**
The temperature will be measured.

[TIP]

Tags (or logs) will be temporally assigned a specific name using sequential numbers (Examples: Tag01, Tag02, Log01, Log02....). In this case, the measurement interval for the log is automatically set to 10 seconds, and the measurement period of the log is set to 2 days. However, these temporary tag names and log names can be modified later as required.

See Also

For information about modifying tag or log names, refer to "5 Confirm, Modify, Clear, or Delete the Data with the Main Unit" in the "Preparation for Measurement" part.

-End of procedure-

Temperature Measurement

■ To record the start time and finish time of an operation (only with the collector function)

The main unit has a function to record the start time and finish time of measurement operation.

This is useful when, for example, creating a daily report, since the start time and finish time can be included in Microsoft Excel files or printouts.

● Recording the start time

1. **Press the [▼] key repeatedly until the tag to record temperatures is displayed.**

2. **Press the [2] key.**
The confirmation screen will appear.

3. **Press the [1] key.**
The start time will be recorded.

-End of procedure-

● Recording the finish time

1. **Press the [3] key if selecting a tag.**
The confirmation screen will appear.

2. **Press the [1] key.**
The finish time will be recorded.

-End of procedure-

■ To restrict inputs from the panel keys (the key lock function)

The main unit has a function called the key lock function that disables all the panel keys for input.

This function is used if the main unit is used only for temperature measurement and a temperature record does not need to be retained, or when the main unit is used as a clock.

This function can be set by pressing the [FUNC], [9], and [5] keys in this order and in the Home screen.

While this function is active, the "Key" mark will be displayed in the upper right corner of the screen.

[TIP]

In order to cancel this function, hold down the [ESC] key for about two seconds.

■ To enable only the panel keys (yellow keys) requied for mesurement (FUNC lock function)

The main unit has a function called the FUNC lock function that enables only the panel keys required for measurement. The keys used with this function are given below :

• [MEMORY]
• [▼] and [▲]
• [CH]
• [LOGGING]
• [POWER]
• [ESC]
• [SET]
• [>], [<], [1], [2], [3], and [0] (only if the collector function is on)

This function can also be used when the setup information on the main unit is not to be modified due to an operation error.

This function can be set by pressing the [FUNC], [9], and [6] keys, in this order and in the Home screen.

When this function is active, the "Key" mark will be displayed in the upper right corner of the screen.

[TIP]

To cancel this function, hold down the [ESC] key for about two seconds.

■ To automatically turn off the power supply if no operation is performed in a specified period of time (Auto Power Off function)

The main unit has a function called Auto Power Off to automatically turn off the power if the main unit is not used in a given period of time (5, 10, 20, or 30 minutes).

This function is useful if you forget to tun off the power.

This function can be set by pressing the [FUNC], [9], and [4] keys, in this order and in the Home screen.

When this function is active, the "AUTO OFF" mark will be displayed in the upper right corner of the screen.

■ To determine how much more data can be recorded

The main unit has a function to display how much more measurement data can be recorded for the tag or log on the screen.

To activate this function, press the [FUNC], [3], and [1] keys, in this order and in the Home screen. Press the [SET] key to display the remaining memory capacity. If the [SET] key is pressed again, the number of measurement data pieces that can be used with the collector function, if selected, will be displayed. Furthermore, if the [SET] key is pressed another time, the number of measurement data pieces that can be used with the logging function, if selected, will be displayed.

■ To see the number of measured data pieces recorded on the tag or log

The main unit has a function to display the number of measured data pieces recorded on the tag or log.

To activate this function, press the [FUNC], [3], and [3] keys, in this order and in the Home screen.

Temperature Measurement

■ To see the average of the measured data

The main unit has a function to calculate the average of the measured data recorded on the tags or logs. This is useful when pieces of data have been collected and the average is required.

To activate this function, press the [FUNC], [3], and [2] keys, in this order and in the Home screen.

Also, to obtain the maximum and minimum values, press the [FUNC], [3], and [2] keys, in this order and in the Home screen.

■ To sound a chime at the specified time (the chime function)

The main unit has a function called the chime function to sound a chime at a time specified by the operator. This function is similar to an alarm clock.

The chime can be made to sound so as to signal the operator to start temperature measurement.

To activate this function, press the [FUNC], [6], and [2] keys, in this order and in the Home screen.

■ To view the screen in a dark place (the backlight function)

The main unit has a backlight function, which provides a light source so that the operator can view the screen in a dark place. To activate this function, press the [FUNC], [9], and [1] keys, in this order and in the Home screen.

The backlight will be turned off if no operation is performed on the main unit for about 10 seconds.

■ To turn off the electronically generated sound

The main unit has a function to turn off the key operation sound and the alarm. Use this function if the electronically generated sound is disturbing you.

To activate this function, press the [FUNC], [9], and [2] keys, in this order and in the Home screen.

1 Receiving the Data on the Personal Computer

This section explains the procedure used to receive data, such as measurement data with the main unit, on the personal computer. The following data items can be received:

- Measured data associated with tags and logs
- Tag and log setup data
- Operator name data

Received tag and log data can be transferred to Microsoft Excel95 or Microsoft Excel97 (hereinafter referred to as Excel) when the data is received on the personal computer.

■ Preparation before reception

1. **Make sure that the power to the personal computer and main unit is turned off.**

2. **Connect the personal computer and main unit with the supplied cable.**

See Also
For information about connecting the personal computer and main unit, refer to "■ Connecting the personal computer and the main unit" in section 4.1 of the "Preparation for Measurement" part.

3. **Turn on the power to the main unit.**

See Also
For information about turning on the main unit, refer to "■ Turn the power supply to ON" in section 4 of the "Information Required before Use" part.

4. **Turn on the power to the main unit.**
Now it is ready for reception.

-End of procedure-

■ Receiving the data

1. **Initiate Thermo-Collector software.**

The main screen of Thermo-Collector software eill be displayed.
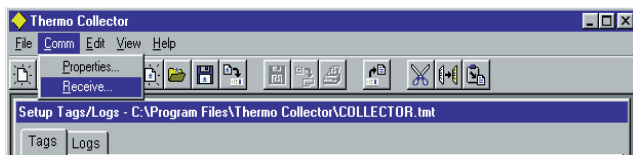
2. **Select "Receive" from the "Comm" menu.**

A screen for selecting the data to be received will be displayed.
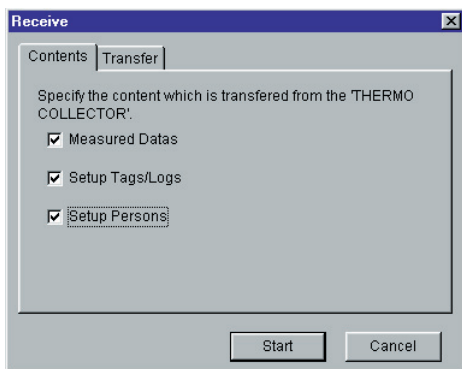
3. **Select the data to be received.**

[TIP]

The following data items can be received

• Measured Datas .... Measured data obtained with the main unit for tags and logs

• Setup Tags/Logs .... Tags and logs setup data recorded in the main unit

• Setup Persons .... Measurement operator data

4. **If the received data is to be transferred to Excel, double-click on the "Transfer" tab. If not, proceed to step 6.**
A screen for selecting to which Excel file and in which format the data is transferred will be displayed.

5. **When there is a need to transfer the received measurement data to Excel, select either "Transfer to the new file" or "Transfer to the specified file".**
If "Transfer to the specified file" is selected, click on the "Browse..." tab and select the Excel file to which the data is transferred. (It is also permitted to enter the specified file name.) Then, it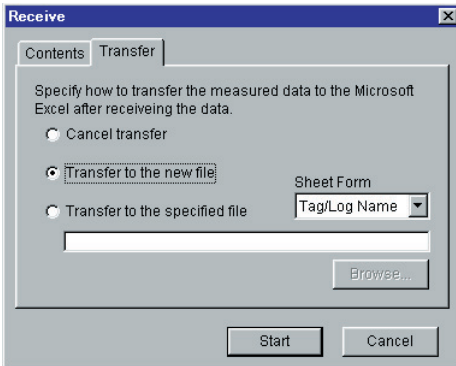 is allowed to select "Sheet Form" for designating the data format by which the measurement data is transferred to Excel.

6. **Click on the [Start] button.**
A screen showing the progress of data reception will be displayed. "Comm..." will also be displayed on the screen of the main unit.
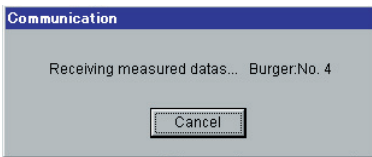
When data reception has been completed, the received data will be displayed on the personal computer as follows.
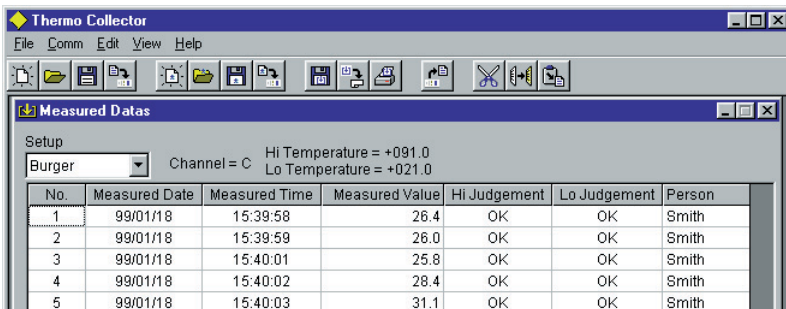
If "Transfer to Excel" is selected in step 5, Excel will automatically be initiated and the received data will be transferred to Excel.

- End of procedure

Utilizing
the Measurement Data

2 Outputting Directly from the Main Unit to the Printer

This section explains the procedure to directly output the data from the main unit to the printer (Model name: 970 10, optional).

2.1 Output preparation

Before starting output to the printer, confirm that the printer is connected to the main unit and the setup conditions of the printer.

■ Printer-main unit connection

A dedicated cable must be purchased (Model name: 910 10, round DIN 8-pin to D-sub 9-pin straight cable) to connect the printer and this instrument.

Follow the procedure below to connect the printer and main unit.

1. **Turn off the power to the printer.**
The power lamp will be turned off.

2. **Refer to the following figure to connect the printer to the main unit.**

Main unit

Printer

Power switch

On-line switch

Bottom of the main unit

Printer serial port (9-pin)

Round DIN 8-pin to D-sub 9-pin straight cable (optional)
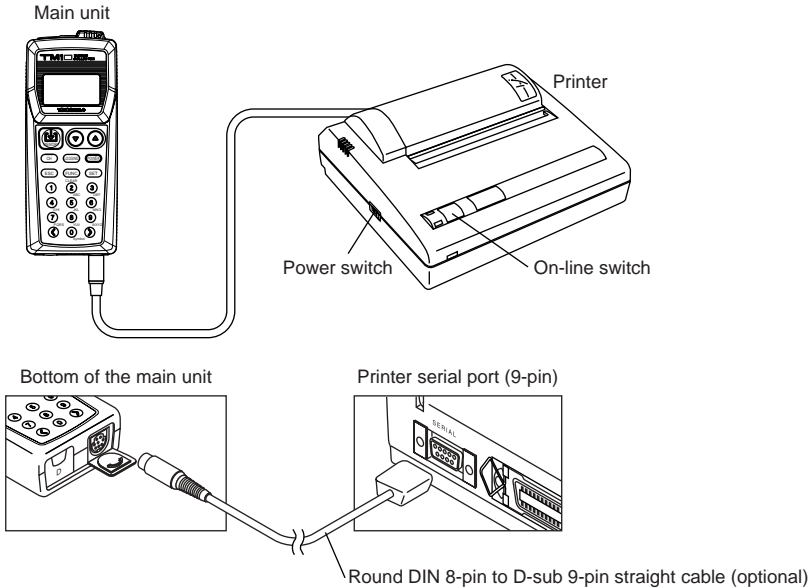
- End of procedure

■ Confirming the printer setup conditions

1. **While holding down the [On-line switch] on the printer, turn on the power to the printer.**
The printer setup conditions will be outputted to the printer.

2. **Make sure that the contents are identical to that shown in the following figure. If they are different, correct the setup conditions.**

See Also

For information about modifying the printer setup, refer to the operation manual supplied with the printer.

```
[DIP SW setting mode]

Dip SW-1
   1 (OFF)    : Input = Serial
   2 (ON)     : Printing Speed = High
   3 (ON)     : Auto Loading = ON
   4 (OFF)    : Auto LF = OFF
   5 (ON)     : Setting Command = Enable
   6 (OFF)    : Printing
   7 (ON)     :   Density
   8 (ON)     :   = 100%
Dip SW-2
   1 (OFF)    : Printing Columns = 80
   2 (ON)     : User Font Back-up = ON
   3 (ON)     : Character Select = Normal
   4 (ON)     : Zero = Normal
   5 (ON)     : International
   6 (ON)     :   Character
   7 (ON)     :   Set
   8 (ON)     :   = Japan
Dip SW-3
   1 (ON)     : Data Length = 8 bits
   2 (ON)     : Parity Setting = No
   3 (ON)     : Parity Condition = Odd
   4 (OFF)    : Busy Control = XON/XOFF
   5 (OFF)    : Baud
   6 (ON)     :   Rate
   7 (ON)     :   Select
   8 (ON)     :   = 9600 bps
```

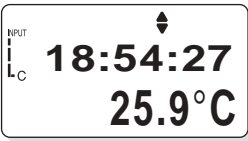**3.** **Turn off the power to the printer.**

- End of procedure

2.2 Outputting the measured data to the printer

[TIP]

Connect the main unit and the printer before turning on the power to the printer. If this is not done, the measured data cannot be outputted to the printer.

Home screen

```
INPUT                    ⬍
L C   18:54:27
           25.9°C
```

1. Press the [FUNC], [5] and [2] keys, in this order.
The "1File" screen appears on the LCD.

```
LOG
INPUT                  ⬍
L C   F52
      1File
```

2. Press the [SET] key.

```
LOG
INPUT                   ▼
L C   Burger
                  11
```

3. Press the [▼] key repeatedly until the tag or log to be outputted is displayed.
The tag name or log name and the number of pieces of measured data recorded in the tag or log will be displayed.

```
LOG
INPUT                  ⬍
L C   Convey
                  11
```

[TIP]

If the [▼] key is pressed repeatedly, "NewTag" will appear. Existing tags will be displayed before "NewTag" appears. Existing logs are displayed after "NewTag" appears.

4. Press the [SET] key.
The confirmation screen will appear.

```
LOG
INPUT
L C   Print?
      Yes1/No0
```

5. Press the [1] key.
Printout is performed.

[TIP]

To output all the data recorded on the main unit, press the [FUNC], [5], and [3] keys, in this order, and then press the [SET] and [1] keys.

Press the [ESC] key repeatedly to return to the Home screen.

- End of procedure

An output example from the printer

```
[Burger ]        HiAlarm=+80.0    LoAlarm=+60.0
-------------------------------------------------
 No.          Date          Temp.   Hi   Lo   Person
00001    98/11/12/11:36:50   Start             Smith
00002    98/11/12/11:37:01   56.0    OK   NG   Smith
00003    98/11/12/11:37:01   57.5    OK   NG   Smith
00004    98/11/12/11:37:02   58.5    OK   NG   Smith
00005    98/11/12/11:37:03   59.8    OK   NG   Smith
00006    98/11/12/11:37:04   61.2    OK   OK   Smith
00007    98/11/12/11:37:04   62.0    OK   OK   Smith
00008    98/11/12/11:37:05   62.0    OK   OK   Smith
00009    98/11/12/11:37:06   70.0    OK   OK   Smith
00010    98/11/12/11:37:06   75.0    OK   OK   Smith
00011    98/11/12/11:37:07   81.0    NG   OK   Smith
00012    98/11/12/11:37:07   82.0    NG   OK   Smith
00013    98/11/12/11:37:15   End               Smith
```

NG=No Good

Output example (tag)

```
[Convey  ]        Interval=00:00:10
-------------------------------------------------
 No.          Date          Temp.
00001    00/00/00/00:00:00   -10.5
00002    00/00/00/00:00:10   -10.5
00003    00/00/00/00:00:20   -11.0
00004    00/00/00/00:00:30   -12.0
00005    00/00/00/00:00:40   -11.5
00006    00/00/00/00:00:50   -11.0
00007    00/00/00/00:01:00   -11.0
00008    00/00/00/00:01:10   -10.7
00009    00/00/00/00:01:20   -10.5
00010    00/00/00/00:01:30   -11.0
00011    00/00/00/00:01:40   -12.0
```

Output example (log)

Utilizing the Measurement Data

■ Thermo-Collector specifications

●Features

Measuring range and measurement resolution

External probe input channel (A ch)
Measuring range: -20 to 200°C (-4 to 392°F) with a resolution of 0.1 or 1°C (0.1 or 1°F) (using only the dedicated probe)

Built-in sensor (C ch)
Measuring range: -20 to 50°C (-4 to 122°F) with a resolution of 0.1 or 1°C (0.1 or 1°F)

Emission thermo probe (model: 900 03)
Measuring range: -20 to 400°C (-4 to 752°F) with a resolution of 1°C (1°F)

Accuracy

Accuracy of the external probe input channel (A ch) of the main unit

Measuring range	Accuracy	
-20 ≤ °C ≤ 0 (-4 ≤ °F ≤ 32)	±0.4°C (±0.8°F)	where the ambient temperature is at 23°C ±5°C,
0 < °C < 100 (32 < °F < 212)	±0.3°C (±0.6°F)	(73.4°F ±9°F) the humidity is between 20 and
100 ≤ °C < 150 (212 ≤ °F < 302)	±0.4°C (±0.8°F)	80%RH, and the battery voltage is at 1.5V ±0.1V,
150 < °C ≤ 200 (302 < °F ≤ 392)	±0.7°C (±1.3°F)	and excludes the accuracy of the probe.

Accuracy of the built-in sensor (C ch)

Measuring range	Accuracy	
-20 ≤ °C ≤ 0 (-4 ≤ °F ≤ 32)	±1.0°C (±1.8°F)	where the ambient temperature is at 23°C ±5°C,
0 < °C < 40 (32 ≤ °F ≤ 104)	±0.8°C (±1.5°F)	(73.4°F ±9°F) the humidity is between 20 and 80%RH, and the battery voltage is at 1.5V ±0.1V,
40 ≤ °C ≤° 50 (104 ≤ °F ≤ 122)	±1.0°C (±1.8°F)	and using a thermistor as the sensor.

Accuracy (indication accuracy) of the radiation probe data input channel (D ch)
The indication accuracy for a radiation probe (model: 900 03) that can be connected to Thermo-Collector is ±1°C (±1°F), excluding errors involved in the radiation temperature probe itself (Refer to the radiation temperature probe specifications).

Characteristics

Effects from ambient temperature
A ch: Within ((±0.3°C/10°C) ±1 digit) (Within ((±0.6°F/18°F) ±1 digit)). For the accuracy of C ch, refer to the table (Accuracy of the built-in sensor (C ch)) as shown above.

Effects from battery voltage drop
While the battery voltage alarm is off: Within ±1 digit

Battery life
Approx. 2 weeks (while the collector function is on, for eight hours of measurement per day and 30 minutes of communication)
Approx. 1 month (while the logging function is on and measurement is at 1-minute intervals)
Approx. 3 months (while the logging function is on and measurement is at 10-minute intervals)

*The battery life depends on the battery quality and measurement environment. The maximum lives shown the above are those which measured with an LR6 alkaline dry cell under a room temperature.

●Functions

Measurement mode and interval

Collector mode
While the [LOG] sign is off, measurements will be saved in the internal memory if the [Memory] key is pressed under a condition where an optional tag is being displayed on the screen. A tag name must consist of maximum eight alphanumeric characters. The maximum number of tags is 50. The measurement interval should be 1 second or longer. A measurement operator name must consist of maximum eight alphanumeric characters. The maximum number of operators is 10.

Logging mode

While the [LOG] sign is on, measurements will be saved in the internal memory if the [Memory] key is pressed under a condition where an optional log is being displayed on the screen. A log name must consist of maximum eight alphanumeric characters. The maximum number of logs is 10. The measurement period depends on the remaining capacity of the internal memory. The measurement interval should be greater than 1 second and less than 24 hours.

Capacity of the internal memory

5000 pieces of data with the collector function solely. If using only the logging function, the maximum data capacity is 20000 pieces.
However, the measured data collected either with the collector function or with the logging function can co-exist in the internal memory.

Display

Semi-transmission type liquid crystal display (LCD)
8 characters x 2 lines dot matrix display section and icon display section

Display light

Two backlight LEDs for the display section. 10 seconds of duration from the moment when any key is operated (factory setting: OFF).

Clock function

Controls the date (internal data) and time (internal data and display). The accuracy is within 1 minute per month.

Alarm function

This function can be set to the upper-limit temperature and lower-limit temperature. In both cases, it can be set so either the alarm is turned on if the temperature falls within or outside the specified range.

Calculation function

Can obtain the maximum temperature (MAX), minimum temperature (MIN), and average (AVE).

Key operation sound function

Possible to set on or off of the buzzer sound when the keys are operated (factory setting: ON).

Auto Power Off function

Selectable from 5, 10, 20, and 30 minutes or infinite (factory setting: 10 minutes).

Low battery voltage alarm

A battery symbol turns on if the set LR6 alkaline dry cell almost expires.

Auto Operation Stop at a low battery voltage

When the set LR6 alkaline dry cell is almost used up, the system power will be automatically turned off after the "BatteryEmpty" message appears.
Do not leave the used battery being set in the main unit. This may cause operation errors or battery liquid leakage.

Back-up function

Used to back up the measurement data or clock function when the regular LR6 alkaline dry cell is not installed.
The back-up battery has a capacity to retain data for typically six years under the room temperature ($23 \pm 5°C$).
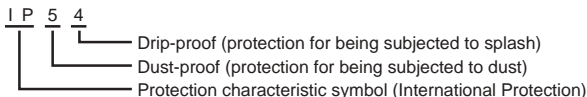
Key lock and FUNC lock

Disables the operation keys and function keys other than the Power key (factory setting: OFF).

Specification of the number of display digits

The user can specify whether the least significant digit of temperature display is the first decimal position (i.e. 0.1°C (0.1°F)) or first integer (i.e. 1°C (1°F)). (factory setting: 0.1°C (0.1°F))

Drip-proof

Protection class: IP54

IP 5 4
Drip-proof (protection for being subjected to splash)
Dust-proof (protection for being subjected to dust)
Protection characteristic symbol (International Protection)

Communication function

RS-232C communication function
- Electrical characteristics ..... Conforms to EIA RS-232C standard
- Baud rate .... 1200, 2400, 4800, 9600, 19200 [bps]
- Data length .... 7, 8 [bit]
- Parity .... Odd parity (odd), Even parity (even), or None (None)
- Stop bit .... 1, 2 [bit]
- Flow control .... Hardware handshake (RTS, CTS) or no flow control
  Connector .... Round DIN connector with 8 pins (requires a dedicated cable)

*The underline shows the factory settings.

Control lines

Pin No.	Signal line name
1	CTS (Clear to Send)
2	RXD (Received Data)
3	RTS (Request to Send)
4	TXD (Transmitted Data)
5, 6	(N.C.)
7	(SENS) *Note
8	SG (Signal Grounding)

Connector pin assignment
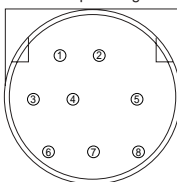
Note: Pin No.7 senses if the RS-232C Connector is plugged.
This is connected to No.8 pin of the dedicated cable.

Digital serial communication function (Note: this is not a USB port)
The digital serial I/O port (D ch) is capable of logging the radiation temperature probe data.

●External dimensions
Approx. 133 (H) x 56 (W) x 33 (D) mm (excluding the projecting sections)

●Weight
Approx. 170 g (including two standard LR6 alkaline dry cells)

●Battery (reccommeded)
LR6 alkaline dry cell, 1.5V x 2

●Operation and storage enviroment
Operation temperature/humidity range: -20 to 50°C (-4 to 122°F), 20 to 80%RH (without condensation)
Storage temperature/humidity range: -30 to 60°C (-22 to 140°F), 5 to 95%RH (without condensation)
The operation and storage environment must be free from organic solvent or corrosive gases.

●Accessories
Instruction manual (including the descriptions of the application software)	1 copy
LR6 alkaline dry cell	2 units
Application software (on 1.44 MByte floppy diskette)	2 diskettes
Dust-proof seal (for sealing the screw holes on the back face of the main unit)	2 pieces

●External probe (optional) specifications

Standard needle probe (Model: 900 10) *NOTE
Measuring range: -20 to 200°C (-4 to 392°F)

Range	Accuracy
-20≤ °C ≤0 (-4≤ °F ≤32)	±0.5°C (TYP) (±0.9°F (TYP))
0< °C <100 (32< °F <212)	±0.5°C (MAX) (±0.9°F (MAX))
100≤ °C < 150 (212≤ °F <302)	±1.0°C (TYP) (±1.8°F (TYP))
150< °C ≤200 (302< °F ≤392)	±2.0°C (TYP) (±3.6°F (TYP))

High speed needle probe (Model: 900 11) *NOTE
Measuring range: -20 to 200°C (-4 to 392°F)

Range	Accuracy
-20≤ °C ≤150 (-4≤ °F ≤302)	±1.5°C (TYP) (±2.7°F (TYP))
150< °C ≤200 (302< °F ≤392)	±2.5°C (TYP) (±4.5°F (TYP))

Surface probe (Model: 900 12) *NOTE
Measuring range: -20 to 200°C (-4 to 392°F)

Range	Accuracy
-20≤ °C ≤150 (-4≤ °F ≤302)	±1.5°C (TYP) (±2.7°F (TYP))
150< °C ≤200 (302< °F ≤392)	±2.5°C (TYP) (±4.5°F (TYP))

Rounded end probe (Model: 900 13) *NOTE
Measuring range: -20 to 200°C (-4 to 392°F)

Range	Accuracy
-20≤ °C ≤0 (-4≤ °F ≤32)	±0.5°C (TYP) (±0.9°F (TYP))
0< °C <100 (32< °F <212)	±0.5°C (MAX) (±0.9°F (MAX))
100≤ °C < 150 (212≤ °F <302)	±1.0°C (TYP) (±1.8°F (TYP))
150< °C ≤200 (302< °F ≤392)	±2.0°C (TYP) (±3.6°F (TYP))

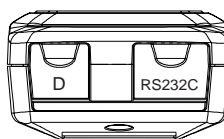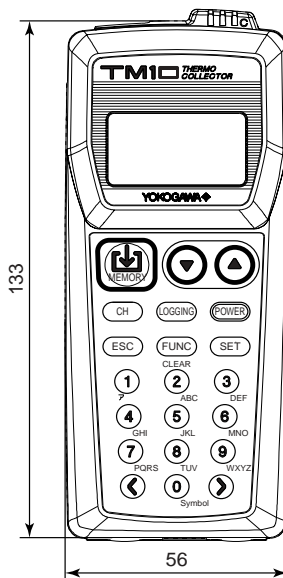Emission thermo probe (Model: 900 03)
Measuring range: -20 to 200°C (-4 to 392°F)
Accuracy   : Measurement temperature ±1%±1°C or ±3°C of the indication whichever is greater.

  *NOTE : The external probe assumes the condition where it is dipped in the liquid being mixed to a half
          dimension of the temperature measurement section.

●External view and dimensions

Unit: mm

33

133

29

56

TM10 THERMO COLLECTOR

YOKOGAWA◆

MEMORY

CH   LOGGING   POWER

ESC   FUNC   SET

CLEAR
1   2   3
     ABC   DEF
4   5   6
GHI   JKL   MNO
7   8   9
PQRS   TUV   WXYZ
⟨   0   ⟩
     Symbol

D   RS232C

■ Operation environment of Thermo-Collector software

CPU   : i486DX or higher
OS   : Windows95/Windows98/WindowsNT4.0
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 Excel95, Microsoft Excel97

■ Function keys quick reference

Menu No.	Menu	Submenu No.	Submenu	Description
1	Tag Set	1	Curr Tag	Confirming the tag
		2	TagChnge	Modifying the tag name
		3	Tag Ins	Inserting a tag
		4	Tag Del	Clearing the tag
2	Log Set	1	Curr Log	Confirming the log
		2	LogChnge	Modifying the log name
		3	Log Ins	Inserting a log
		4	Log Del	Clearing the log
		5	Reserve	Timer function
3	CurrData	1	Capacity	Confirming the remaining memory capacity
		2	Calc	Confirming the maximum/minimum/average data
		3	Measure	Confirming the number of tag data/log data pieces
4	Data Clr	1	1TagFile	Clearing the measured data associated with the tag
		2	1LogFile	Clearing the measured data associated with the log
		3	1TagData	Clearing one piece of measured data associated with the tag/log
		4	A11 File	Clearing all measurement data
5	Comm	1	Comm Set	Setting the communication environment
		2	1File	Outputting the tag/log data for the printer
		3	A11 File	Outputting all data for the printer
6	Clock	1	ClockSet	Setting the date and time
		2	ChimeSet	Setting the chime function to ON/OFF and the time at which it is turned on/off.
7	AlarmSet	1	All File	Batch-setting the alarm function for all tags
		2	1File	Setting the alarm function for the specified tags
8	Staff	1	CurrData	Confirming the currently selected operator
		2	Change	Modifying the operator
		3	Entry	Registering the operator name
9	Others	1	BkLight	Backlight ON/OFF
		2	KeySound	Key operation sound ON/OFF
		3	Digit	On/Off of the temperature fraction display
		4	APOff	Setting the Auto Power Off function
		5	KeyLock	Key lock ON/OFF
		6	FuncLock	FUNC lock ON/OFF
		7	Name	Setting the instrument name
0	Initial	1	Initial	Initializing the setup data and measured data

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