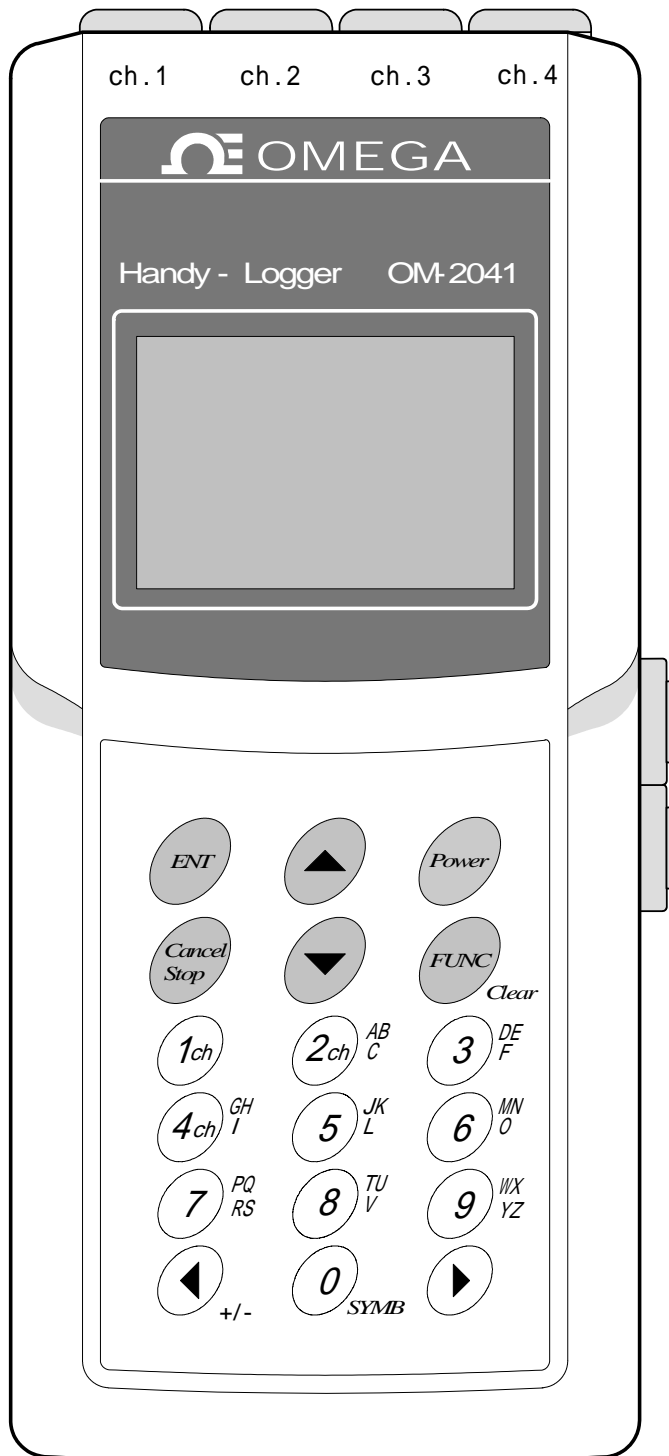


Portable Handheld Data Logger

# Handy Logger OM-2041

## Instruction Manual

**Setup**

## ■ Introduction

Thank you for your purchasing of this handy logger model OM-2041.

Read this instruction manual thoroughly previous to the use and operate this unit safely by understanding the proper operating procedures and safety precautions.

Keep this manual at hand for future reference.

### □ Items to check previous to the use

- Check the package contents carefully as unpacking this product.  
Contact your local sales representative or sales office if any package contents are missing.
- No batteries have been mounted in this product before shipment from the factory.  
Mount the batteries (alkaline AA batteries (4 pcs.)) attached to the product according to the section of this manual; Mounting and replacement of the batteries.

Name	Q'ty
OM-2041 main unit	1
Alkaline AA battery	4
Mounting holder	1
Holder screw	2
Holder washer	2
Instruction manual - Setup (this manual)	1
Instruction manual - Operation	1
Battery replacement adaptor (DC adaptor)	1

### □ About this instruction manual



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## ■ Safety precautions

- Cautions stated in this manual indicate important contents about operational safety. Therefore, read the contents carefully and follow the instructions strictly.
- In this instruction manual, the following warning labels are provided to indicate probable dangers and to ensure operational safety.

 <b>WARNING</b>	This denotes dangers which COULD result in <u>death</u> or <u>serious personal injury</u> , if not avoided.
 <b>CAUTION</b>	This denotes dangers which COULD result in <u>minor personal injury</u> and/or <u>product or property damage</u> , if not avoided.

### [Safety precautions]

 <b>WARNING</b>
<ul style="list-style-type: none"> <li>● Do not use this unit for medical applications, such as body temperature measurement of a person or an animal.</li> <li>● Do not touch the sensor immediately after the high temperature or low temperature part has been measured. Otherwise, burn damage may occur.</li> <li>● Do not measure any object which is charged with electricity not to cause an electrical shock.</li> <li>● Do not use this unit for measurement other than the specified.</li> </ul>

 <b>CAUTION</b>
<ul style="list-style-type: none"> <li>● Do not use any battery or power supply unit other than the specified one. Otherwise, fluid leak or explosion may occur, and malfunction or personal injury may result.</li> <li>● Do not measure temperature beyond the specified measurement range not to cause the unit to malfunction or to be damaged.</li> <li>● Never attempt to disassemble or modify this unit.</li> <li>● Use always the parts specified by OMEGA ENGINEERING, INC. on the replacement of any parts or expendables.</li> <li>● Do not put any foreign object in the sensor insertion port, external power supply port, or communication port. Otherwise, an electrical shock, a fire, or other damage to the unit may occur.</li> <li>● Do not operate or store this unit in a place where it is exposed to the direct sunlight or the temperature is high. Additionally, do not leave this unit in a place where the high temperature continues for an extended period of time, such as inside of a car. Otherwise, the discoloration or the deformation may occur on the unit.</li> <li>● If the battery cover is removed with the main unit getting damp, the water may enter the unit. Before replacing the batteries, dry the main unit completely.</li> </ul>

- In addition to the main unit, on the handling of any accessories to be connected to the main unit, follow always the safety precautions stated in this manual.  
 OMEGA ENGINEERING, INC. shall not be held responsible for any defect arising from negligence of such cautions and instructions.
- Any relevant measures for safety such as sufficient tolerance and failsafe means shall be taken into consideration when using this unit for an application that may seriously affect the human life or property.

## ■ Handling precautions

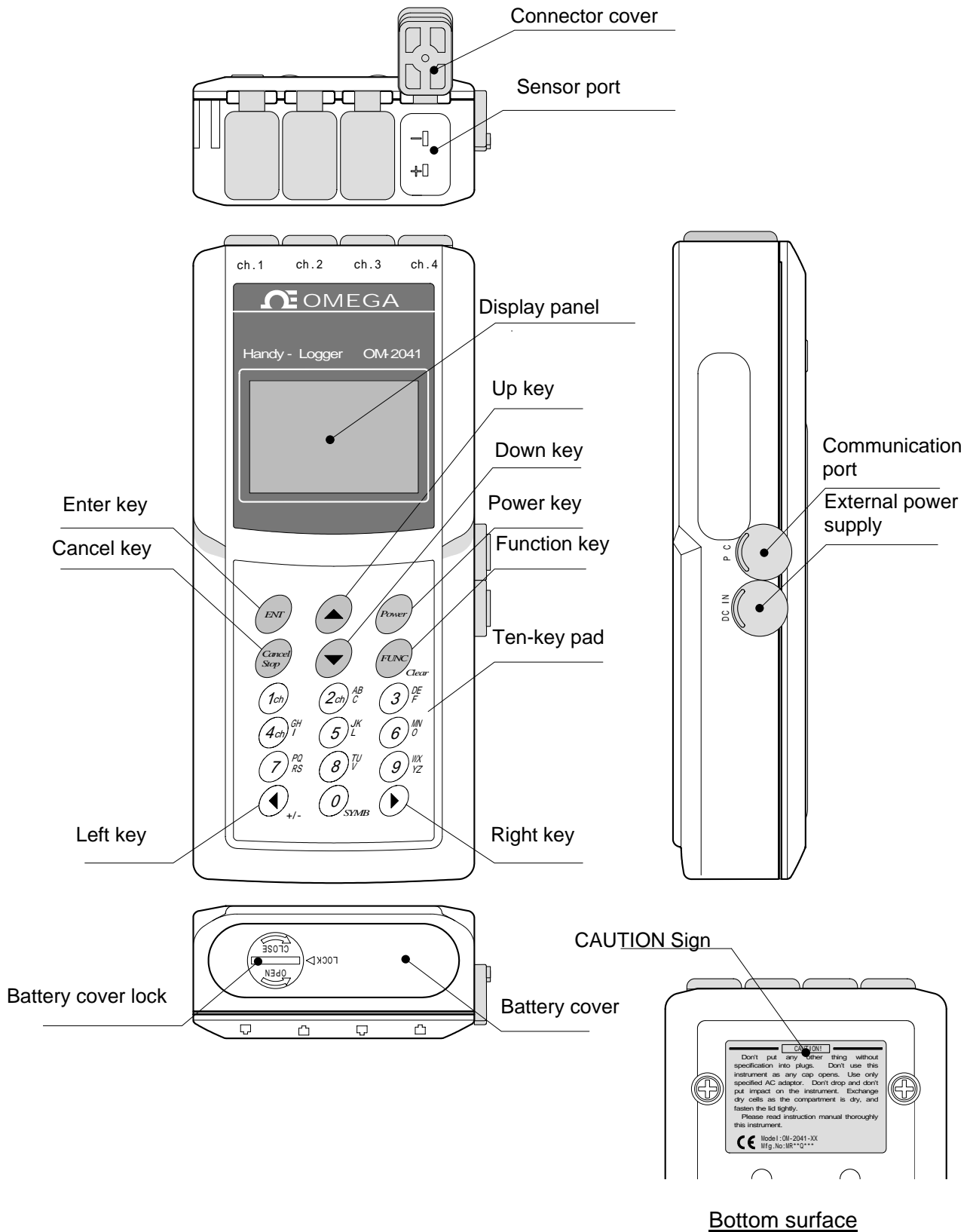
- Connect “special connector” or “thermocouple miniature connector” applicable to “ASTM E1684-96 Standard Specification for Miniature Thermocouple Connectors” to the connector port.  
Otherwise, malfunction may occur.
- Do not put any foreign object inside the connector port. Otherwise, malfunction may occur.
- Lock the battery cover firmly after the replacement of the batteries.  
If the packing of the battery case is not in place or if any dust is caught in, the leakage of water may occur.
- Store it with the batteries removed if this unit is not used for a long period.  
Otherwise, the leakage of battery fluid may occur and cause the main unit to malfunction.
- If a battery is swallowed, serious personal injury may be caused.  
Put and keep batteries carefully in a safe place where a child cannot get access to them.
- Observe strictly the cautions stated on the batteries to handle correctly them.
- Replace all of four AA batteries with new ones immediately if the low battery alarm occurs (see section 1. Starting up).
- The service life of the battery may vary depending on the service conditions or the brand of the battery.
- Do not press the display panel or keypad strongly. Otherwise, the display panel or keypad may break.
- Do not drop the unit or apply any strong impact to it as it is a precise instrument.
- Do not operate this unit under the water.
- Keep this unit away from any equipment producing the strong static electricity or electromagnetic wave, such as television set, microwave oven, or radio receiver as much as possible.  
Otherwise, malfunction or trouble may occur.
- Keep this unit away from any equipment producing the strong high frequency or surge as much as possible. Otherwise, malfunction or trouble may occur.
- Wipe it off lightly with a cloth, which is wrung out with neutral detergent, to clean this unit.  
Do not use any solvent, such as benzene, paint thinner, or alcohol, or bleach at any case.
- This unit has a washable structure (protection grade IP64).  
However, if the unit is left with the water splashed for a long time, the water may enter the unit.  
Wipe off the unit with a dry cloth rag as soon as possible after washing.
- Mount the connector covers, the plug-covers, and battery cover firmly whenever washing.
- Remove the dirt or water content sticking to the sensor or main unit completely, and store them safely after the measurement.
- Do not operate or store the main unit in a place where the temperature becomes  $-20^{\circ}\text{C}$  or less or  $55^{\circ}\text{C}$  or more, or the relative humidity becomes 90% or more.
- Do not operate or store the unit in an environment where there are direct sunlight, or fine particle dust, or high temperature and humidity, or any corrosive ingredient.
- Contact your nearest sales representative or sales office for any after-sale service such as repair.
- Do not stick the sensor protector to a hard substance. Otherwise, the sensor protector may be broken or bent. Do not bend the protector intentionally. Never use the bent sensor.
- Do not stretch the sensor cable strongly.  
Otherwise, the breakage of wiring and malfunction may occur.

- Do not use a sensor with any deterioration or damage.  
Otherwise, the temperature may not be measured correctly.
- Insert the measurement part of the probe into a substance by 50% of its length when using a needle-type one.  
The excessive insertion may cause burn damage and the probe to be damaged by the heated-up grip
- Use always the probe grip and the connection cable within the specified temperature range.  
The heat resistance of such part is low in comparison with the measurement part of the probe (metallic portion).
- The sheath thermocouple wire is intended for the fixed wiring.  
Avoid the winding, the twist, the stretch, friction and vibration for the wire repeatedly not to cause the wiring or the insulator to be damaged or to be deteriorated.

# Contents

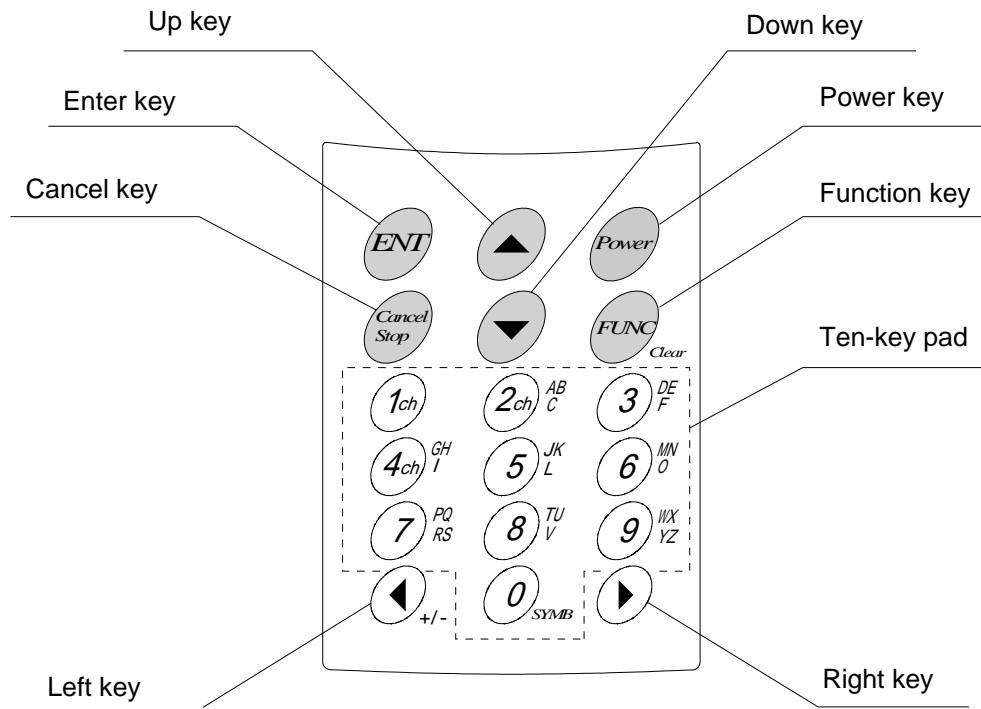
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## ■ Part names







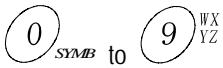




## ■ Key names and functions

[Key names]











[Key functions]

Key	Function
	Setting and registration of the data and movement to the next screen Start of the recording operation
	Cancellation of each item and return to the previous screen Stop of the recording operation
	Up movement of the cursor Backward movement of the recorded data in the successive order as checking data
	Down movement of the cursor Forward movement of the recorded data in the successive order as checking data
	Turning(ON or OFF) of the power or display
	Display of the main menu Clearance of the character at the cursor position as inputting characters
	Input of a numeric value or character Change of the display mode (1, 2, 4)
	Left movement of the cursor Change of the display channel in the 1&2-channel display mode Change to "-" input as inputting numeric values
	Right movement of the cursor Change of the display channel in the 1&2-channel display mode












### [How to input numeric values]

Input character	Input method
"0" to "9"	Move the cursor to a position to be input by  or  key, and input a numeric value using  to  key. The cursor is moved to the right after a numeric value is input.
"-" (minus)	Move the cursor to the left end of the input line by  key, and then further press  key to display "-". Hereupon, as pressing  key repeatedly, the display is alternately switched between "-" and " " (blank). , press  key to move the cursor to the right to set "-" or " " (blank).

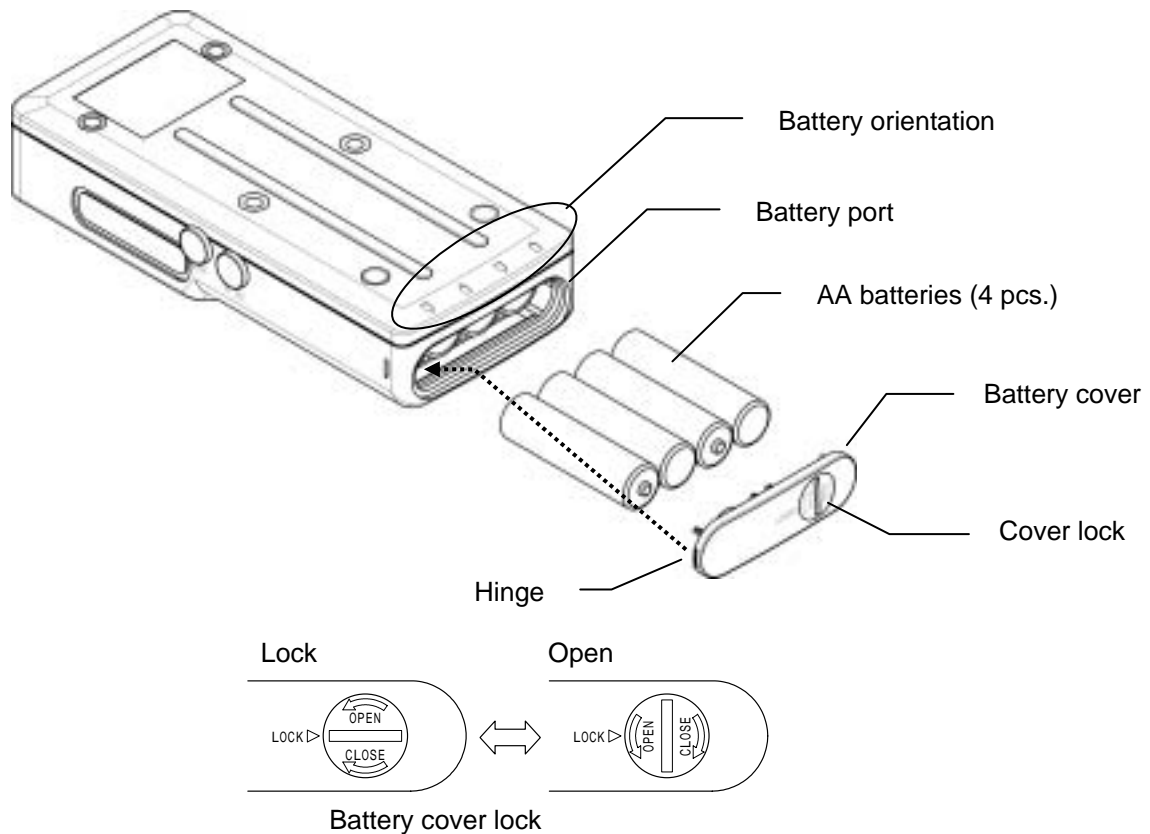
### [How to input alphanumeric characters]

The character is changed by the times of pressing ten-key.

Times of pressing the key	1 time	2 times	3 times	4 times	5 times	6 times	7 times	8 times	9 times	10 times
	1									
	A	B	C	2	a	b	c	2		
	D	E	F	3	d	e	f	3		
	G	H	I	4	g	h	i	4		
	J	K	L	5	j	k	l	5		
	M	N	O	6	m	n	o	6		
	P	Q	R	S	7	p	q	r	s	7
	T		V	8	t	u	v	8		
	W	X	Y	Z	9	w	x	y	z	9
	0	%	!	(	)	0	+	-	*	/

## ■ Mounting and replacement of the batteries

This unit is designed to be operated with four AA batteries.



### [Mounting the batteries]

- ① Switch off this unit.
- ② Turn the battery cover lock counterclockwise to put it in the open situation by a coin.
- ③ Remove the battery cover to open the battery insertion port.
- ④ The marking to show the battery orientation is provided at the lower portion on the bottom surface of this unit. Insert four AA batteries properly according to this indication.
- ⑤ Hang the hinge of the battery cover on the hinge support of this unit to mount the battery cover.
- ⑥ Turn the battery cover lock clockwise to lock it by a coin.

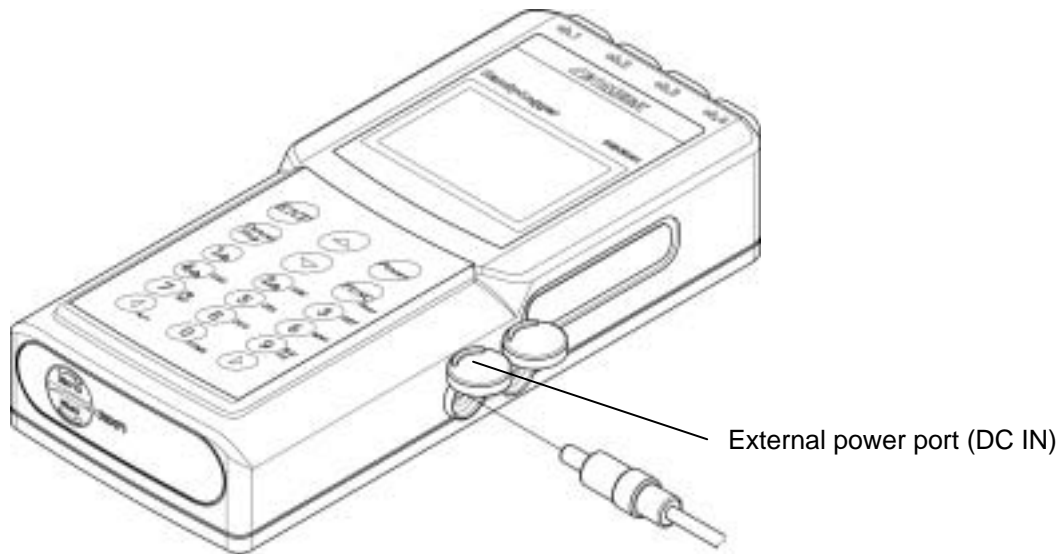
If the external power supply (AC adaptor) is not connected, the unit starts immediately after replacing the batteries.

### CAUTION

- Do not use any battery other than the specified one. Otherwise, the unit may malfunction.
- If the battery cover is not closed completely, the water may enter or the cover may be opened when a small shock is applied to the unit. Close the battery cover firmly to avoid such troubles. Otherwise, the unit may malfunction.
- Replace all of four batteries by new ones.

## ■ AC adaptor

The AC power can be supplied to this unit as connecting the accessory AC adaptor.



### [Connecting the AC adaptor]

- ① Switch off this unit.
- ② Open the cover of the port, on which is marked with “DC IN”. (See the above Figure.)
- ③ Insert the plug of the AC adaptor into the port completely until it is in contact with the far side.
- ④ Insert the AC adaptor into an AC outlet.

Additionally, if the AC adaptor and batteries (AA batteries) are set at the same time, the power supply from the AC adaptor takes the precedence over the batteries.

### CAUTION

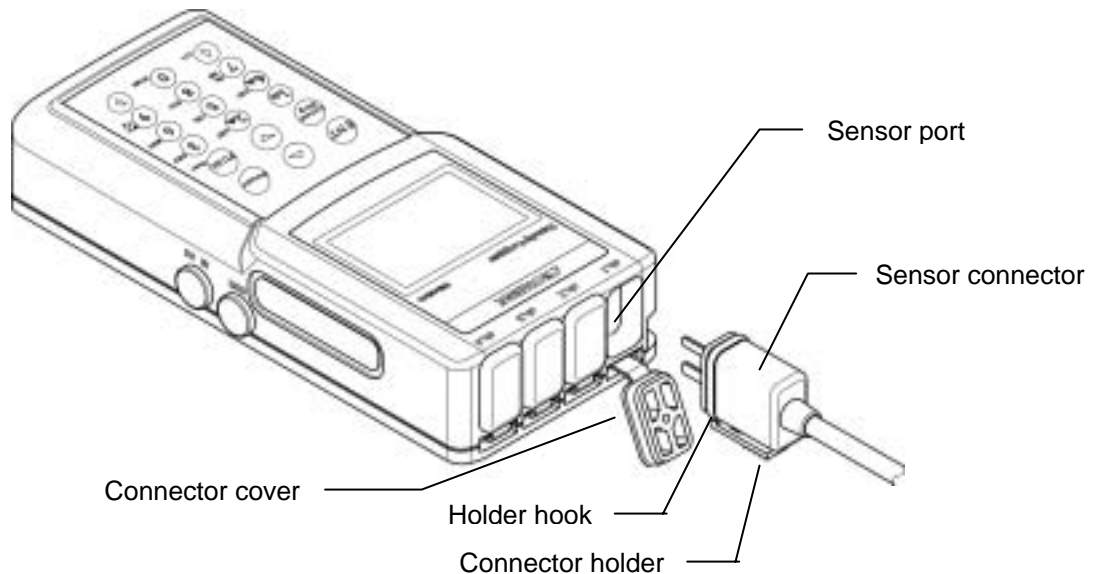
- Use only the AC adaptor supplied with this unit.  
Do not use any AC adaptor other than the specified one. Otherwise, the unit may malfunction.
- Do not insert the AC adaptor into the communication port. Otherwise, the unit may malfunction.
- Insert the plug of the AC adaptor into the port of this unit firmly until it is in contact with the far side.
- Hold the plug firmly and pull it out as disconnecting the AC adaptor.  
If the lead cable is pulled to disconnect the AC adaptor, the unit may malfunction.
- The drip-proof performance cannot be maintained as using the AC adaptor.
- Close the cover firmly if the AC adaptor is not used.  
Otherwise, the drip-proof performance may damage and the unit may malfunction.

### [Batteries]

This unit can also be operated only with the AC adaptor. However, the batteries (four AA batteries) should be mounted as power supply to backup data even if the AC adaptor is disconnected.

## ■ Connecting the sensor

The following signal inputs are acceptable for this unit. These are the specified sensor with the special drip-proof connector, current/voltage input adaptor, or the sensor with the miniature male thermocouple connectors.



### Special sensor

#### [Connecting the sensor]

- ① Switch off this unit.
- ② Open the connector cover of a desired channel to insert the sensor.
- ③ Put the sensor connector in the sensor port as facing the connector holder toward the bottom surface of the unit.
- ④ Insert the sensor connector until the holder hook of the connector is locked with the main unit.

#### CAUTION

- Check the connector orientation carefully.  
If the connector is inserted forcibly in the incorrect direction, the unit and/or sensor may be damaged and may malfunction.
- Pay attention carefully enough not to peel off the connector packing when inserting the connector.  
If the connector packing is peeled off, the drip-proof performance cannot be maintained and the unit may malfunction.
- Connect or disconnect with the sensor carefully enough not to break any sensor lead.  
Otherwise, wiring trouble may occur and the unit may malfunction.

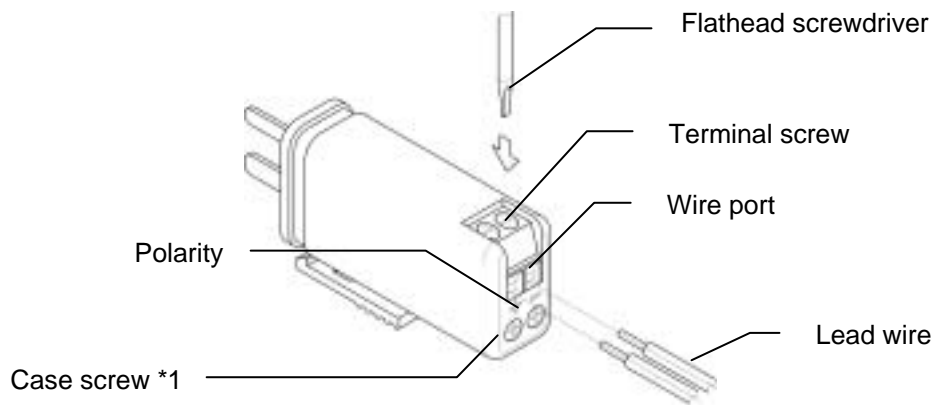
#### [Disconnecting the sensor]

- ① Switch off this unit.
- ② Hold the connector holder of the sensor and pull it out straight with the connector hook disengaged.

#### CAUTION

- Do not pull the lead cable when disconnecting the sensor. Otherwise, wiring trouble may occur and the unit may malfunction.
- Close always the connector covers of the channels not in use. Otherwise, the drip-proof performance may not to be maintained and the unit may malfunction.

## Current/Voltage input adaptor



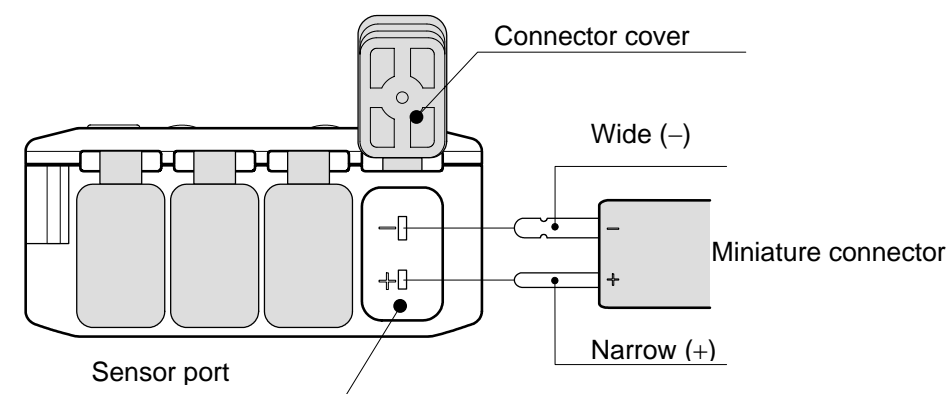
### [Mounting and wiring]

- ① Switch off the unit.
- ② Mount the current/voltage adaptor on this unit. (See the section, Special sensor.)
- ③ Loosen the terminal screw of the current/voltage adaptor to open the wire port.
- ④ Insert the lead wire into the wire port.
- ⑤ Tighten the terminal screw of the current/voltage adaptor and close the wire port.

### CAUTION

- The drip-proof performance cannot be maintained while using the current/voltage adaptor.
- The following shows the lead wires, which is suitable for the current/voltage adaptor.
  - Solid wire: 0.14 to 1.5mm<sup>2</sup>
  - Stranded wire: 0.14 to 1mm<sup>2</sup>/AWG26 to16
- Never loosen the case screw (phillips screw) (\*1).

## Sensor with thermocouple connector



### [Connection with the sensor]

- ① Switch off this unit.
- ② Open the connector cover of a channel to insert the sensor.
- ③ Put the sensor connector in the sensor port while referring to the polarity (see the Fig.) marked on the connector port of this unit.
- ④ Insert the connector firmly until it is in contact with the far side.

### CAUTION

- Check the connector orientation carefully.  
If the connector is inserted forcibly in the incorrect direction, the unit and/or sensor may be damaged and may malfunction.
- Connect or disconnect with the sensor carefully enough not to break any sensor lead.  
Otherwise, wiring trouble may occur and the unit may malfunction.

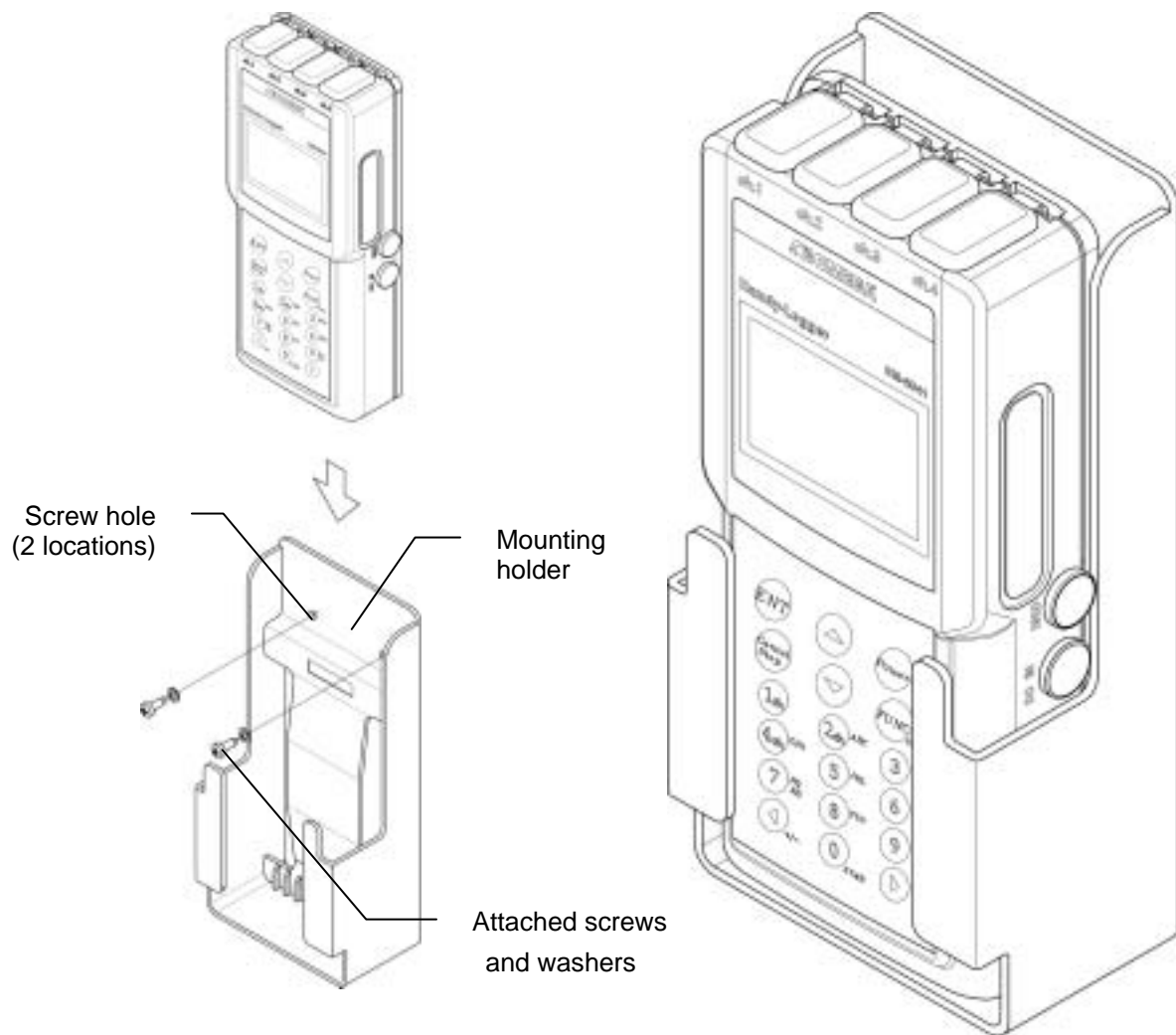
### [Disconnection with the sensor]

- ① Switch off this unit.
- ② Hold the sensor connector and pull it out straight.

### CAUTION

- A general thermocouple connector on the market is available for the unit.  
However, note that the thermocouple connector different from the specified sensor is not applicable to the drip-proof structure.
- Do not hold the lead wire and pull it out when disconnecting the sensor.  
Otherwise, wiring trouble may occur.
- Close always the connector covers of the channels not in use. Otherwise, the drip-proof performance may not to be maintained and the unit may malfunction.

## ■ Mounting holder



### [Installing the mounting holder]

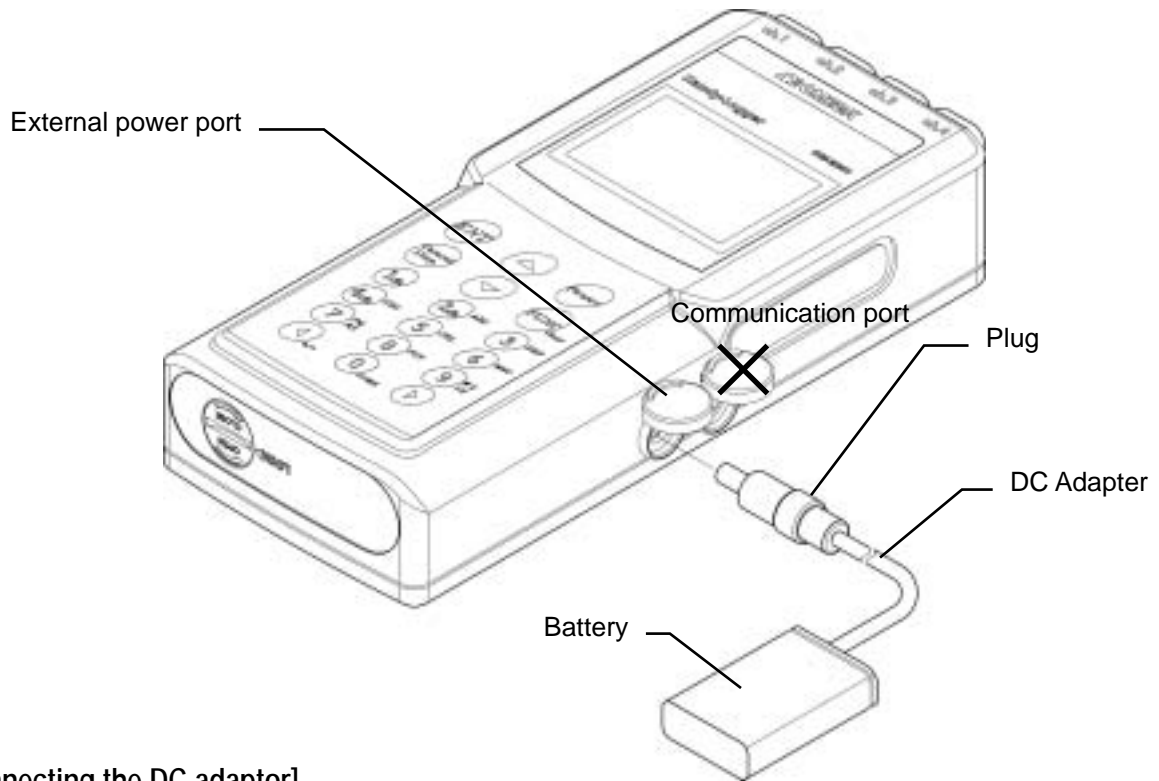
- ① Fix the mounting holder at a desired position firmly using the attached screws and washers.
- ② Insert this unit from the top of the holder.

### CAUTION

- The mounting holder installation conditions must conform to the storage conditions of this unit.
- Install the mounting holder vertically.
- Do not insert this unit reversely in the vertical or back and forth direction.

## ■ Battery replacement adaptor

The accessory DC adaptor can be used for continuous logging as replacing batteries. This unit automatically operates on the back-up mode when the remaining battery level falls below the designed voltage. In this case the batteries should be replaced immediately.



### [Connecting the DC adaptor]

- ① Connect the specified battery (006P/9V – 1604 or 6LR61, 6F22) to the snap.
- ② Open the cover of the port, on which is marked with “DC IN”. (See the above Figure.)
- ③ Insert the plug of the DC adaptor to the port completely until it is contact with the far side.  
The DC power supply is displayed with “External power icon” on the LCD.
- ④ Replace the batteries according to the section “Mounting and replacement of the batteries”.
- ⑤ Disconnect the DC adaptor finally.

### CAUTION

- Do not use any battery other than the specified one. Otherwise, the unit may malfunction.
- Do not insert the DC adaptor to the communication port. Otherwise, the unit may malfunction.
- Inset the plug of the DC adaptor into the port of this unit firmly until it is in contact with the far side.
- Hold the plug firmly and pull it out as disconnecting the DC adaptor. If the lead cable is pulled to disconnect the DC adaptor, the unit may malfunction. Do not insert the DC adaptor to the communication port. Otherwise, the unit may malfunction.
- Close the cover firmly when the DC adaptor is not in use. Otherwise, the drip-proof performance may damage and the unit may malfunction.



## ■ Connecting to your Personal Computer (USB)

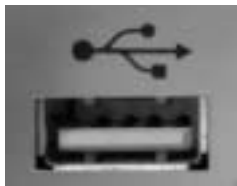
When this unit is connected to your PC (personal computer) with the special USB cable, the recorded data can be read and saved into a file on the PC. The setting of recording can be written from the PC too. Also, the special USB cable (supplied with the optional software) is naturally required to communication the date with the PC.

### 1 Connecting the special cable to this unit

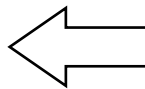
[PC side] Connect the A connector of the USB cable to the USB port.

#### CAUTION

- Hold the plug of the cable and pull it out when disconnecting the cable connector.
- If the lead cable is pulled to disconnect the connector, the unit may malfunction.

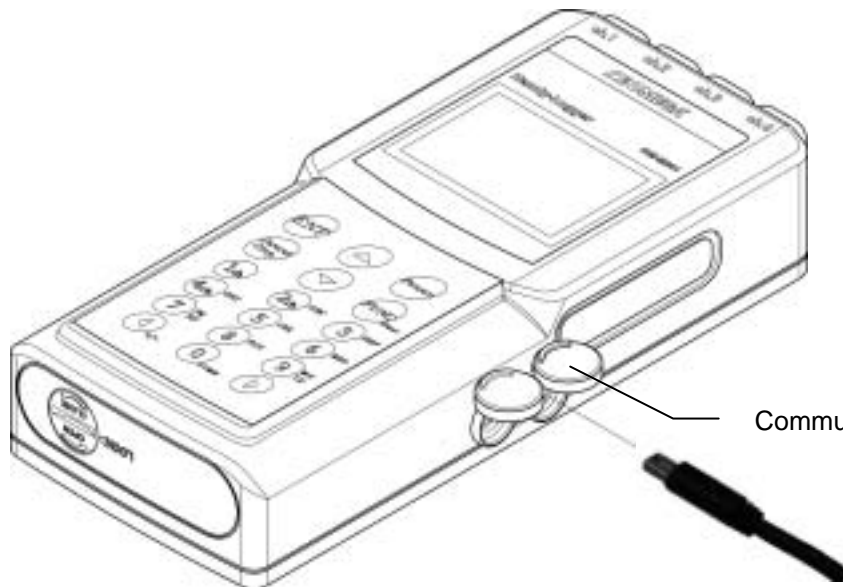


USB port



A connector

[Logger side] Connect the mini B connector of the USB cable to the communication port.



Mini B connector

Communication port

Open the cover of the communication port with the “PC” marking and insert the plug of the USB cable firmly into the communication port until it is in contact with the far side. Also, use the special cable supplied with the optional software.

#### CAUTION

- Hold the plug and pull it out when disconnecting the cable connector.  
If the lead cable is pulled to disconnect the connector, the unit may malfunction.
- Use the special cable (supplied with the software) only.
- Close the cover firmly if the cable is not used.  
Otherwise, the drip-proof performance may be damaged.

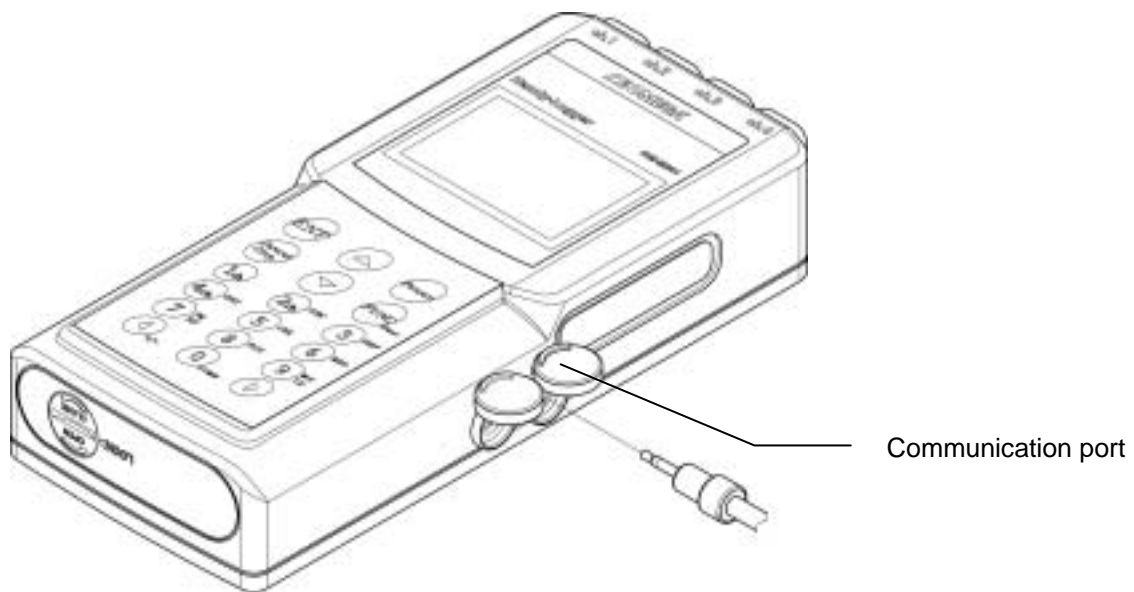
## ■ Connecting to your Personal Computer (RS-232C)

When this unit is connected to your PC (personal computer) with the special cable (RS-232C), the recorded data can be read and saved into a file on the PC. Also, the setting of recording can be written from the PC.

This unit must be connected to the PC with the special cable to communicate the data with the unit connected to the PC.

The special cable (supplied with the software) is absolutely required to communicate the data with the PC, on which the optional data read software is installed.

### 1 Connecting the special cable to this unit




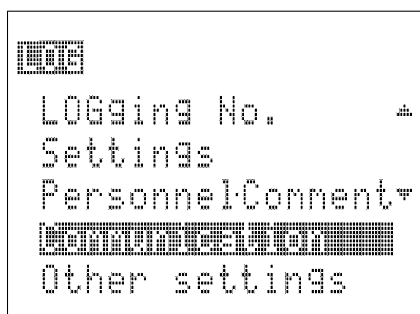
#### [Connecting the special cable]

- ① Switch off this unit.
- ② Open the cover of the port with the “PC” marking.
- ③ Insert the plug of the special cable firmly until it is in contact with the far side.
- ④ Switch on this unit.

#### CAUTION

- Use the special cable supplied with the software. If any connection cable other than the specified one is used, the unit may malfunction.
- Insert the plug of the special cable firmly into the communication port of the unit until it is in contact with the far side.  
Otherwise, incorrect communication may occur.
- The drip-proof performance cannot be maintained when the special cable is used.
- Hold the plug and pull it out when disconnecting the special cable.  
If the lead cable is pulled to disconnect the connection cable, the unit may malfunction.
- Close the cover firmly if the cable is not used.  
Otherwise, the drip-proof performance may be lost.

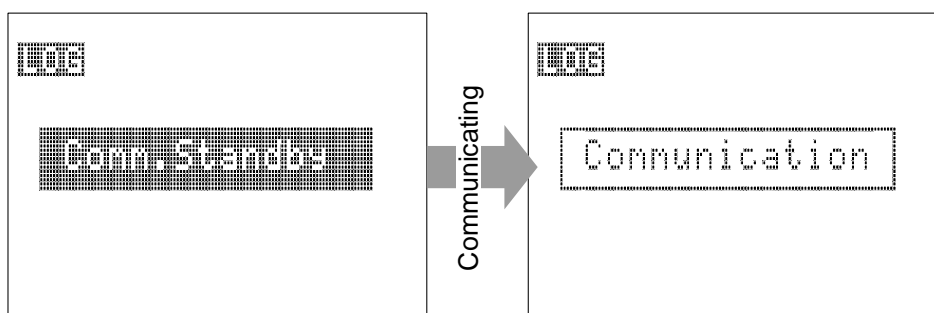
- 2 Display the home screen and press  key.



Select [Communication] by the [▲] or [▼] key.

- 3 Press  key.

(The screen is changed to the communication standby screen.)



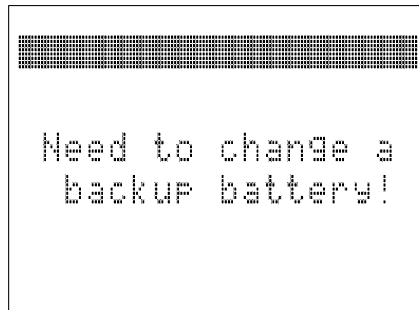
Perform the operation via the software. When the communication is started, the message, “Communication”, will appear on the communicating screen.

⇒ Press [CANCEL] key to return from the communication standby screen to the previous screen.

See the **instruction manual for software** for further information on software operation.

## ■ Backup Battery

A backup battery is built-into this unit in order to keep the data even if the power is not supplied from the battery and/or external power supply. If the remaining battery level becomes insufficient, the following message will appear.



Stop the operation and save the recorded data if this message screen appears.

Contact quickly your local sales representative or sales office to replace the built-in backup battery (charge).

### **CAUTION**

- If the batteries (four AA batteries) are replaced with this message indicated, the power is not supplied to this unit as soon as any battery is removed. In this case, therefore, the power should supply from the AC adaptor.

## ■ Recording modes

This unit provides two kinds of recording modes, log mode and tag mode. You can select a desired mode suitable for your application.

### ◆ Log mode

In this mode, data is recorded at constant intervals (Intervals) from the date and time to start recording to the one to end recording.

① Log settings (Interval, etc.) ② Personnel ③ Comment ④ Date and time to start/end recording
Recorded data 1 (CH1 to 4), with/without data mark Recorded data 2           · Recorded data 3           · · · · Recorded data n (CH1 to 4), with/without data mark
Log name

The following items shall be set before starting to record the data. Those are the preset items for each log (① Log setting), items selected as the situation of the unit (② Working person and ③ Remark), and items to be set for recording (④ Date and time to start/end recording).

Setting location	Setting item		Contents
① Log setting	Interval		Intervals to record the measured value
	Sensor type		Type of the sensor to be connected to each channel
	Input of "V"	Unit	Unit of indication as using the voltage/current input adaptor
		Minimum value of scale	Indication at the minimum(0V/0mA) by the voltage/current input adaptor
		Maximum value of scale	Indication at the maximum value (5V/20mA) by the voltage/current input adaptor
		Point position	Number of digits below the decimal point at the minimum and maximum of scale
	Alarm value for upper limit		Temperature designated as the upper limit
	Alarm value for lower limit		Temperature designated as the lower limit
	Accumulation base		Reference temperature to calculate the accumulation value
② Personnel	Working person		Name of working person to record data
③ /Comment	Comment		Comment to be attached to the recorded data
④ Recording time	Date and time to start		Data and time to started the recording
	Date and time to end		Data and time to complete the recording

## ◆ Tag mode

In this mode, data is recorded every time the key is operated (trigger is activated), and then recorded data is added to the data.


① Tag settings
Recorded data 1 (CH1 to 4), ② Personnel, ③ Comment, date and time of recording
Recorded data 2 (CH1 to 4), ② Personnel, ③ Comment, date and time of recording
.
.
.
Recorded data n (CH1 to 4), ② Personnel, ③ Comment, date and time of recording

The following items shall be set before starting to record the data. Those are the preset items for each tag (① Tag settings) and items selected as the situation of the unit (② Personnel and ③ Comment).

Setting location	Setting item		Contents
① Tag setting	Sensor type		Type of the sensor to be connected to each channel
	Input is "V"	Unit	Unit of indication as using the voltage/current input adaptor
		Minimum value of scale	Indication at the minimum value (0V/0mA) by the voltage/current input adaptor
		Maximum value of scale	Indication at the maximum value (5V/20mA) by the voltage/current input adaptor
		Period position	Number of digits below the decimal point at the minimum and maximum of scale
	Alarm value for upper limit		Temperature designated as the upper limit
	Alarm value for lower limit		Temperature designated as the lower limit
② Personnel	Working person		Name of working person to record data
③ /Comment	Comment		Comment to be attached to the recorded data

## ■ Change of the Recording Mode

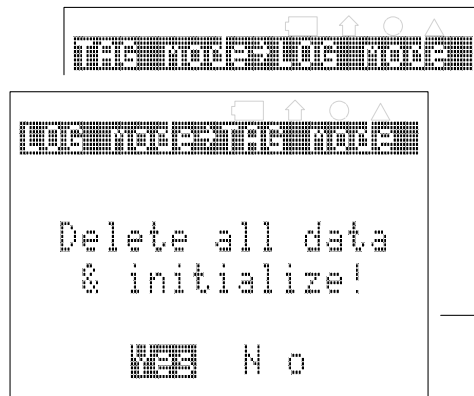
The recording mode is changed with the key operation while starting up.

- 1 Press  key to turn OFF the power.

Stop recording if the unit is currently recording the data.

- 2 Press  key with  key kept pressed.

(The screen is changed to the confirmation screen of the recording mode.)



Select [Yes] by the [<] or [>] key, and then press [ENT] key.

When [No] is selected, the operation is started up without changing of the mode. (Normal startup)

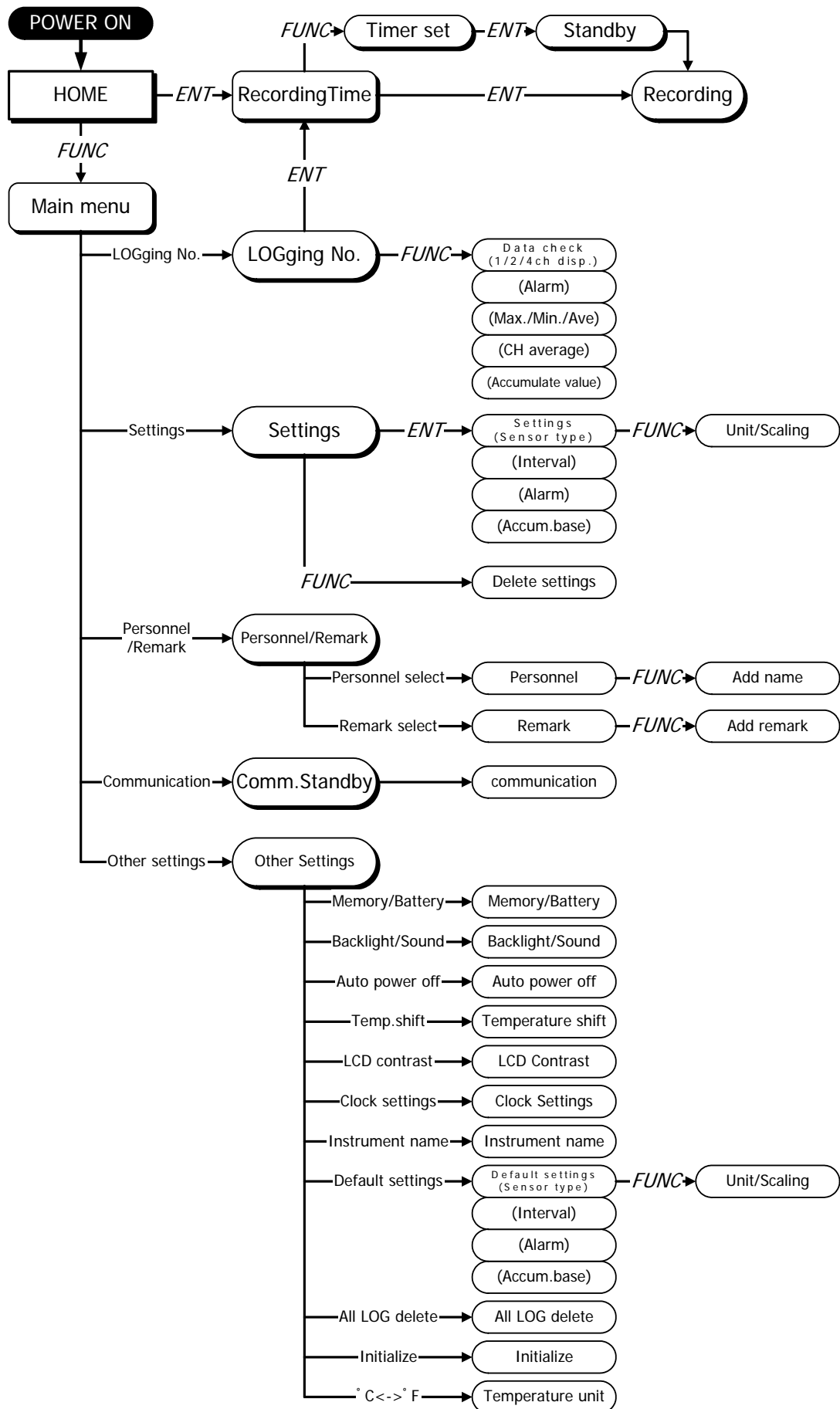
The operation is started up with the mode changed (log mode to tag mode or tag mode to log mode).  
 The home screen will appear.

### CAUTION

- When the mode is changed, the recorded data and the setting in the previous mode are cleared completely.

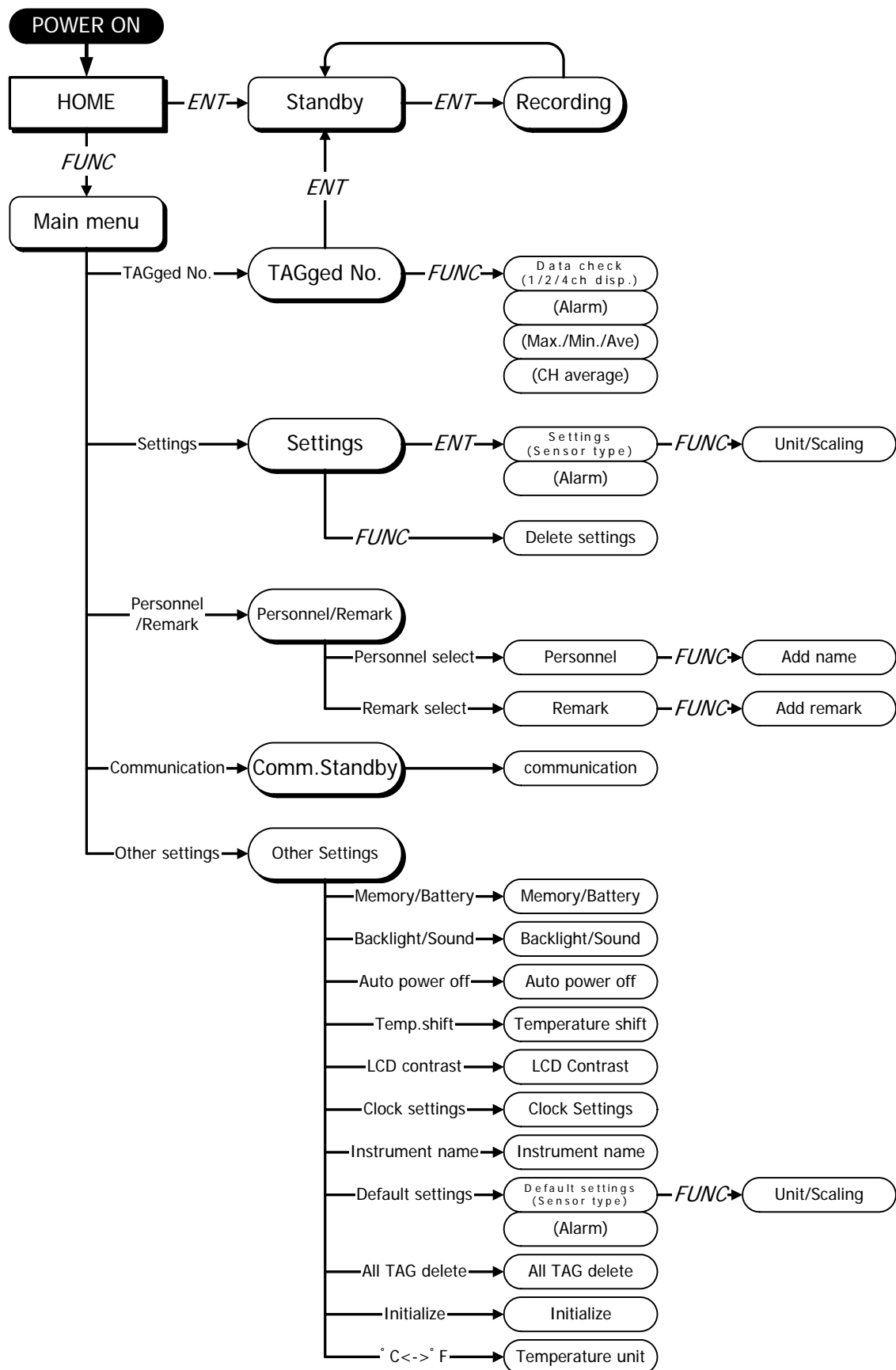
Therefore, please be sure to save the data before changing the mode.

## ■ Operation Flow (Log Mode)





## ■ Operation Flow (Tag Mode)



## ■ Starting up (Home Screen)

This section describes the home screen that appears when the power is turned ON and when the unit is started up.

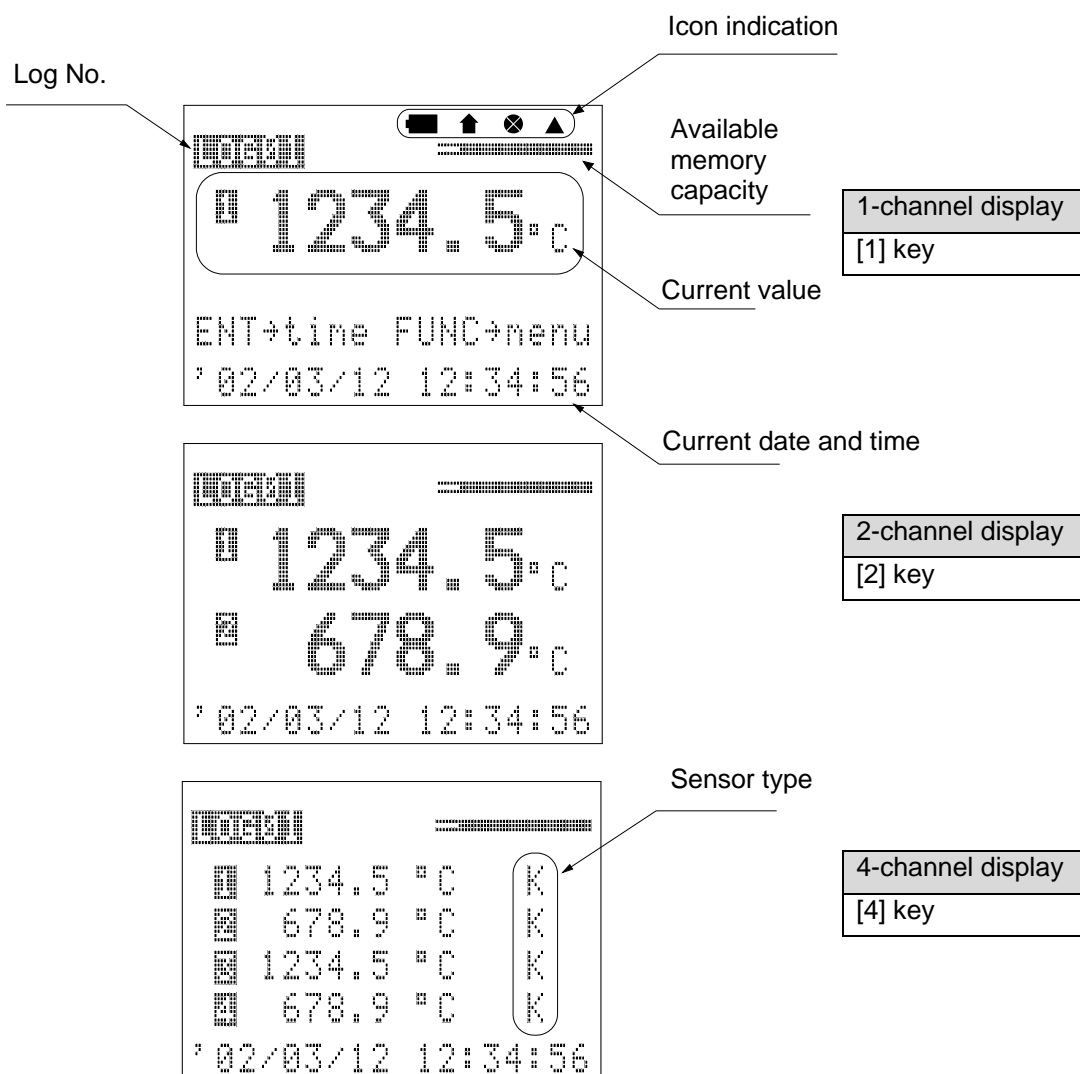
### 1 Press key to turn ON the power.

The home screen appears on the LCD panel.

On the home screen, the current value of each channel is updated at intervals of 1 sec. The currently selected log (tag) No. is shown at the upper left portion of the screen.

Additionally, the current date and time are shown at the lower portion of the screen.

The home screen provides three kinds of display modes depending on the channel number to display on it. This display mode can be changed by the one-touch operation.

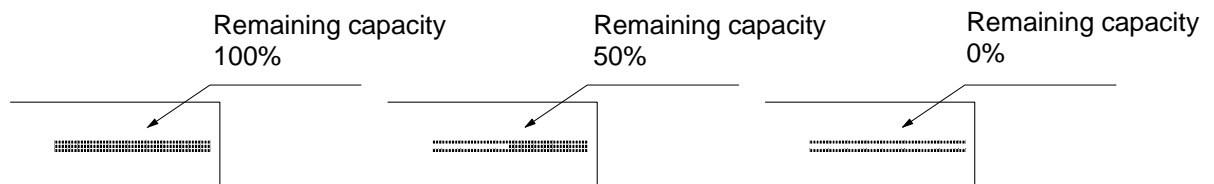


Change the display channel by the [<] or [>] key in the 1-channel and 2-channel display modes.

Key	1-channel display	2-channel display
>	CH1→CH2→CH3→CH4→CH1...	CH1/2→CH3/4→CH1/2...
<	CH1→CH4→CH3→CH2→CH1...	

## [Available memory]

The remaining capacity of the memory, into which the data is recorded, is indicated by the bar graph (50 steps). The number of data to be recorded to this unit may vary depending on the recording mode, that is, log mode or tag mode.



### ● Log mode

In the log mode, the data can be recorded until the total number of data recorded to 20 logs reaches 40000.

One number of data corresponds to the data volume used for one recording at one channel.

Therefore, the number of data to be recorded may vary depending on the number of channels to be used.

The available recording cycles is calculated from the following formula.

$$\text{Available recording cycles [cycles]} = \frac{\text{Free memory capacity [data]}}{\text{Number of channels in use [ch]}}$$

The available recording time is calculated from the following formula.

$$\text{Available recording time [time]} = \text{Number of remaining cycles [cycles]} \times \text{Recording interval [time]}$$

#### [Example]

If the free memory capacity is “1000”, all of four channels are used, and data is recorded at intervals of 5 min., the available recording time is 1250 min.

$$1000 \text{ (free memory capacity)} \div 4\text{ch (number of channels in use)} \times 5 \text{ min. (recording interval)} = 1250 \text{ [min]}$$

### ● Tag mode

In the tag mode, the data can be recorded until the total number of data recorded to 20 tags reaches 10000.

One number of data corresponds to the data volume used for one recording at one channel.

However, the number of data to be consumed may vary depending on the number of channels in use.

Number of channels in use	Calculation formula of remaining recording cycle
1	Available recording cycles = Free memory capacity [data] $\times 11 \div 11$
2	Available recording cycles = Free memory capacity [data] $\times 11 \div 14$
3	Available recording cycles = Free memory capacity [data] $\times 11 \div 17$
4	Available recording cycles = Free memory capacity [data] $\times 11 \div 20$

#### [Example]

If the free remainder of memory capacity is “1000” and the data is recorded using three channels, up to 647 data records can be recorded.

$$1000 \text{ (free memory capacity)} \times 11 \div 17 \text{ (coefficient)} = 647 \text{ [data]}$$

## [Sensor types]

The currently selected input type of each channel is indicated. In the unit, “K”, “T”, “E”, or “J” type thermocouple are available.

Additionally, when using the optional voltage/current adaptor (sold separately), it is also available for the DC voltage or DC current signals.

Symbol	K	T	E	J	V	—
Input type	“K” thermocouple	“T” thermocouple	“E” thermocouple	“J” thermocouple	Voltage/Current adaptor	No connection

## ● Voltage/Current signal input

In this unit, the DC voltage (0 to 5V) or DC current (0 to 20mA) signals can be measured as using the optional adaptor of voltage or current input.

When [V] is selected for the input, the unit and scale can be set.

Item	Setting range	Remarks	
Unit	Up to three characters	Alphanumeric characters	
Min. scale	-9999 to 9999	Voltage	Indication at 0V of the input
		Current	Indication equivalent to 0 mA of the input( calculated) Indication span of this unit ÷ output span of the input × (-4mA)
Max. scale	-9999 to 9999	Voltage	Indication at 5V of the input
		Current	Indication at 20mA of the input
Fraction part	0 to 3	Number of digits below decimal point 0:0, 1:0.0, 2:0.00, 3:0.000	

## CAUTION

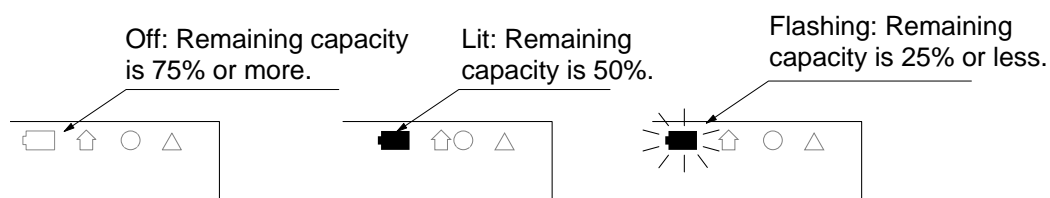
- If “—” (no connection) is set for all channels, the data cannot be recorded.

## [Icon indication]

Icons are indicated at the upper right portion of the screen to show various situations.

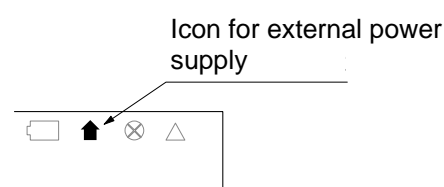
### ① Battery level

The remaining of battery capacity is always indicated by the battery icon. The remaining capacity is indicated in three steps. Replace the batteries with new ones before recording data for a long time if the remaining capacity becomes 25% or less (icon is flashing).



### ② External power supply

The icon for external power supply is indicated as using the AC adaptor.



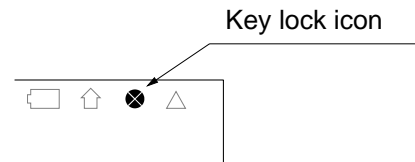
### ③ Key lock

When [CANCEL] key and [▼] key are pressed at the same time on the home screen, this unit enters the key lock state and the icon shown in the right figure is lit.

When the key lock function is activated, no function keys are accepted.

Therefore, only “recording” and “remaining capacity/ check of unit name” can be operated.

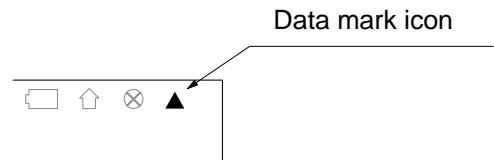
Press [CANCEL] key and [▼] key again at the same time to cancel the key lock.



### ④ Data mark

In the log mode, the mark is able to be put on the recorded data.


The data mark icon is lit when the mark is put on the recorded data or the marked data is shown on the data check screen.



## Check of remaining capacity/ unit name

When pressing the [▲] key while the home screen is being displayed, the battery level and instrument name can be checked.

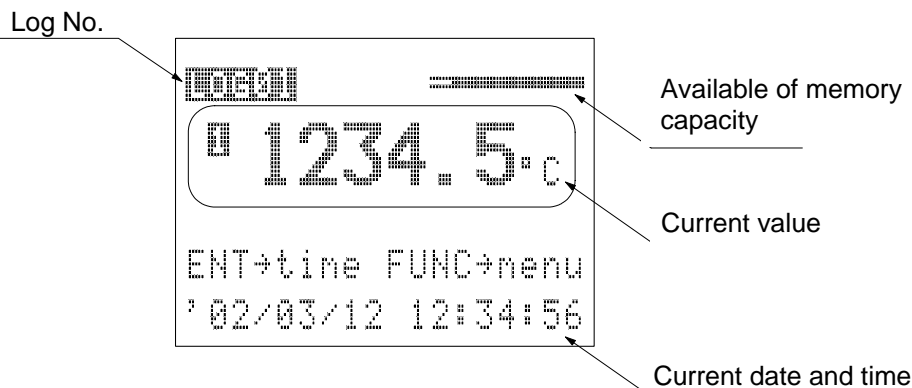
⇒ Press [CANCEL] key to return to the home screen.

2 Keep  key pressed for 3 sec. or longer to turn OFF the power.

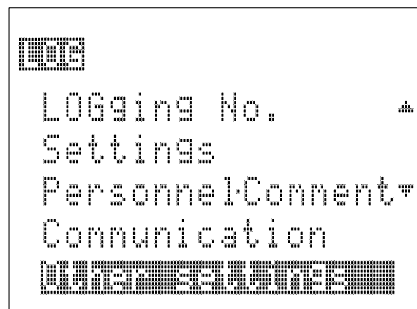
## ■ Various settings

The mode has to be changed to the “other settings” mode to change or initialize the settings.

### 1 Display the home screen.

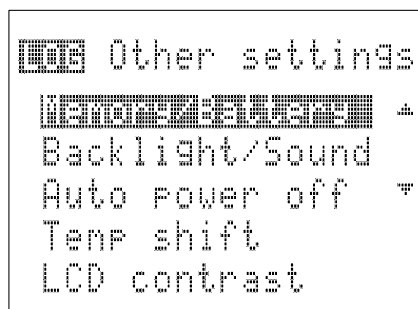


### 2 Press key. (The screen is changed to the main menu screen.)

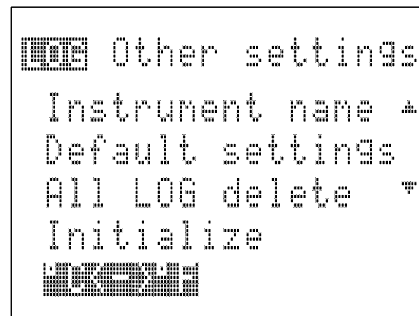
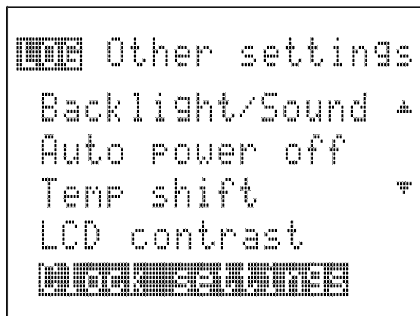


Select [Other settings] by the [▲] or [▼] key.

### 3 Press key. (The screen is changed to the screen of other settings.)



Select a setting item to set up by the [▲] or [▼] key. Various settings can be performed as pressing [ENT] key.




The following Table describes various setting items.

Item	Function
Memory/Battery	Available memory capacity, battery level and the instrument name are indicated
Backlight/Sound	ON/OFF settings of the LCD backlight , sound key , and alarm buzzer
Auto power off	Setting of waiting time for the auto power off
Temp. shift	Setting of offset for measured data
LCD contrast	Adjustment of the contrast of LCD panel
Clock settings	Setting of date and time
Instrument name	Setting of unit name (up to eight characters)
Default settings	The default settings of recording or the deletion
All LOG delete	Simultaneous deletion of all log settings and data
Initialize	Initialization of all settings to the factory default settings
°C<->°F	Change of temperature unit

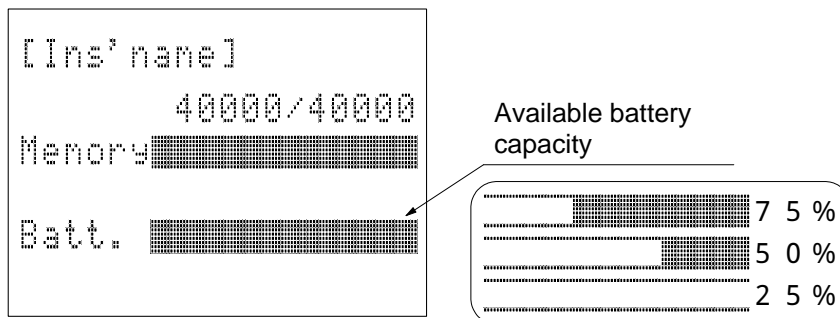
# 1. Checking the remaining memory/battery capacities

The remaining memory/battery capacities and the instrument name can be checked.

1-1 Display the home screen and press  key.

1-2 Select [Other settings] and press  key.

1-3 Select [Memory/Battery] and press  key.



## [Available memory capacity]

The number of data to be recorded into this unit may vary depending on the recording mode, that is, log mode or tag mode.

### ● Log mode

In the log mode, the data can be recorded until the total number of data recorded to 20 logs becomes 40000.

One number of data corresponds to the data volume used for one recording at one channel.

Therefore, the number of data to be recorded may vary depending on the number of channels to be used.

The available recording cycles is calculated from the following formula.

$$\text{Available recording cycles [cycles]} = \frac{\text{Free memory capacity [data]}}{\text{Number of channels in use [ch]}}$$

The available recording time is calculated from the following formula.

$$\text{Available recording time [time]} = \text{Number of remaining cycles [cycles]} \times \text{Recording interval [time]}$$

### [Example]

If the free memory capacity is “1000”, all of four channels are used, and data is recorded at intervals of 5 min., the available recording time is 1250 min.

$$1000 \text{ (free memory capacity)} \div 4 \text{ ch (number of channels in use)} \times 5 \text{ min. (recording interval)} = 1250 \text{ [min]}$$



## ● Tag mode

In the tag mode, the data can be recorded until the total number of data recorded to 20 tags becomes 10000.

One number of data corresponds to the data volume used for one recording at one channel.

However, the number of data to be consumed may vary depending on the number of channels in use.

Number of channels in use	Remaining recording cycle calculation formula
1	Available recording cycles = Free memory capacity [data] $\times 11 \div 11$
2	Available recording cycles = Free memory capacity [data] $\times 11 \div 14$
3	Available recording cycles = Free memory capacity [data] $\times 11 \div 17$
4	Available recording cycles = Free memory capacity [data] $\times 11 \div 20$

### [Example]

If the free remainder of memory capacity is “1000” and the data is recorded using three channels, up to 647 data records can be recorded.

$$1000 \text{ (free memory capacity)} \times 11 \div 17 \text{ (coefficient)} = 647 \text{ [data]}$$

## [Battery level]


The remaining of battery capacity is indicated in four steps. Replace the batteries with new ones before recording data if the remaining capacity becomes 25% or less.

## 2. ON/OFF settings of the backlight/sound

Log mode

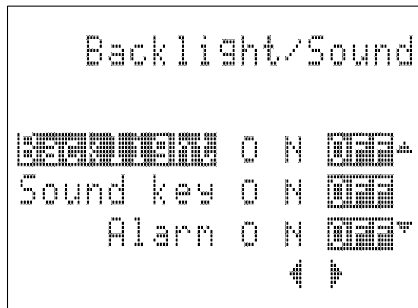
Tag mode

The ON/OFF of backlight, sound key and alarm buzzer can be set.

2-1 Display the home screen and press  key.

2-2 Select [Other settings] and press  key.

2-3 Select [Backlight/Sound] and press  key.




The ON/OFF of the backlight, key operation sound, and alarm buzzer can be set.

Select a setting item from various setting items by the [▲] or [▼] key and change the ON/OFF setting by the [<] or [>] key.

When the unit is operated by the batteries, it is recommended to set all items to “OFF” in order to extend the battery service life.

Item	ON	OFF
Backlight	Lighting up of the backlight as turning ON of the display	Non backlight
Key sound	A beep sound as pressing a key	Non beep sound
Alarm	Continuous alarm sound on the H or L alarm	Non alarm sound

⇒ Press [CANCEL] key to return to the previous screen.


2-4 Press  key to set the settings.

### 3. Setting of the auto- power -off

Log mode

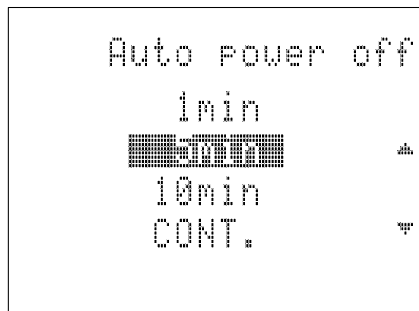
Tag mode

In this unit, a period of time for the auto- power- off can be set. The unit automatically turns OFF the power and display when this set time elapses from the last key operation.

3-1 Display the home screen and press  key.

3-2 Select [Other settings] and press  key.

3-3 Select [Auto power off] and press  key.



Select a period of time by the [▲] or [▼] key.


In addition to 1 min., 5 min., and 10 min. settings, the continuous operation mode is provided, in which the auto- power- off is not activated.

Keep the [POWER] key pressed for 3 sec. or longer to power OFF the unit regardless of any setting.

⇒ Press [CANCEL] key to return to the previous screen.

#### CAUTION

- The auto-power-off is not activated in the communication mode.


3-4 Press  key to set the settings.

## 4. Setting of offset values


Log mode

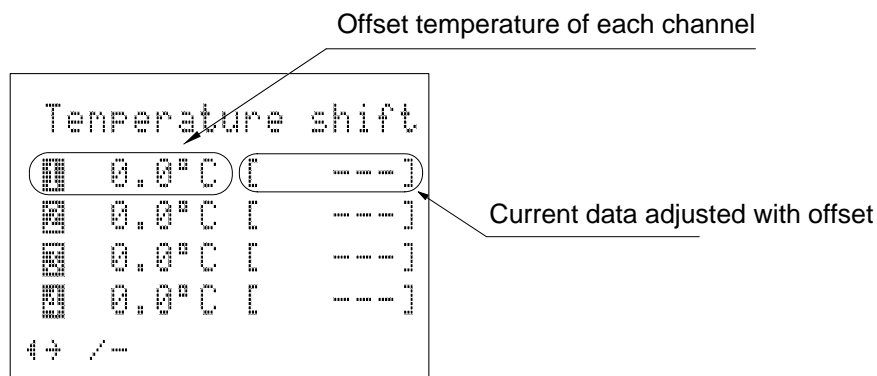
Tag mode

In this unit, an offset value can be set for shift adjustment of the actual measured data from each channel.

4-1 Display the home screen and press  key.

4-2 Select [Other settings] and press  key.

4-3 Select [Temperature shift] and press  key.




The measured data of each channel can be adjusted in steps of 0.1°C within a range of  $\pm 20^{\circ}\text{C}$ .

Select a desired channel by the [ $\blacktriangle$ ] or [ $\blacktriangledown$ ] key, and then input a numeric value by the ten-key pad or the [<] or [>] key.

The adjusted current data is shown in [ ] on the right.

⇒ Press [CANCEL] key to return to the previous screen.

4-4 Press  key to set the settings.

### CAUTION


- This offset affects the recording data or display data only when the input signal type is “K”, “T”, “E”, or “J”. However, the offset does not affect the data, which has already been recorded.

## 5. Adjustment of the contrast of LCD

Log mode

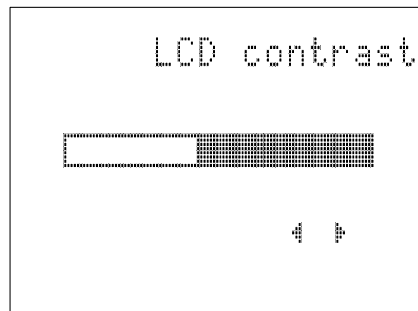
Tag mode

The display contrast of the LCD can be adjusted.

5-1 Display the home screen and press  key.

5-2 Select [Other settings] and press  key.

5-3 Select [LCD contrast] and press  key.




The screen contrast can be changed by the [<] or [>] key. Adjust the contrast in proper conditions.

⇒ Press [CANCEL] key to return to the previous screen.

### CAUTION

- If the contrast is set to a low level, the screen becomes difficult to read.


5-4 Press  key to set the settings.

Log mode

Tag mode

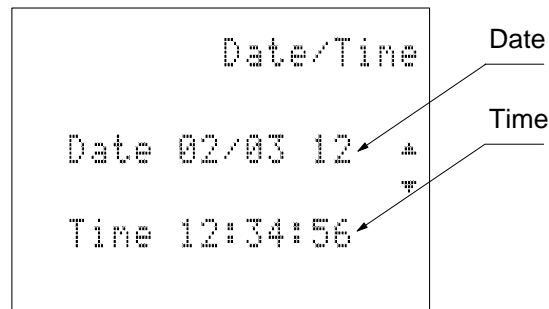
## 6. Setting of the date and time

The clock inside this unit is set.

6-1 Display the home screen and press  key.

6-2 Select [Other settings] and press  key.

6-3 Select [Clock settings] and press  key.



Select the date or time by the [▲] or [▼] key, and then input the date or time by the ten-key pad or the [<] or [>] key.

The date and time are set with 2-digit numeric value as shown in the following example.

### Input example)


Date: 02 / 03 / 12  
Lower 2-digit value of Christian year      Month      Day

Time: 12 : 34 : 56  
Time (24-hour system)      Minute      Second

⇒ Press [CANCEL] key to return to the previous screen.

### CAUTION

- If any invalid date and/or time are input, they are corrected automatically. Therefore, press [ENT] key after checking the date and time to input.


6-4 Press  key to set the settings.

## 7. Setting of an instrument name

Log mode

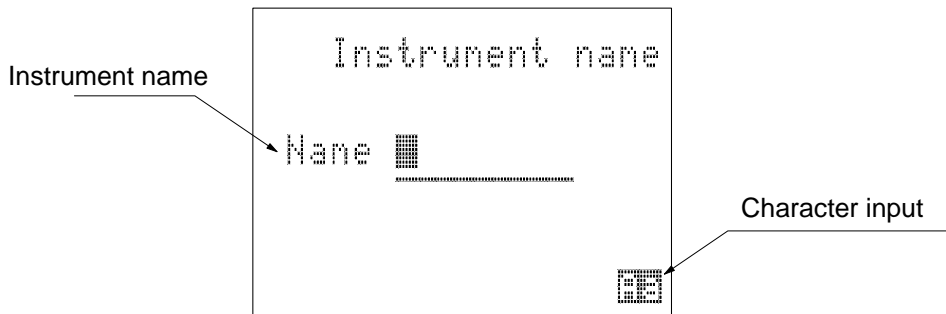
Tag mode

An instrument name can be set. The name up to eight characters can be input.

7-1 Display the home screen and press  key.

7-2 Select [Other settings] and press  key.


7-3 Select [Instrument name] and press  key.



Input an instrument name by the ten-key pad or the [<] or [>] key.

The name up to eight characters can be input.

⇒ Press [CANCEL] key to return to the previous screen.

7-4 Press  key to set the settings.


## 8. Default settings of recording

Log mode

Tag mode

The default settings are set. The default settings are convenient for the settings of recording which is different from the initial settings (factory default settings) and may be used frequently, for example the input types.

This setting is made in the same manner as described for **section 5, Setting for the recording**.

8-1 Display the home screen and press  key.

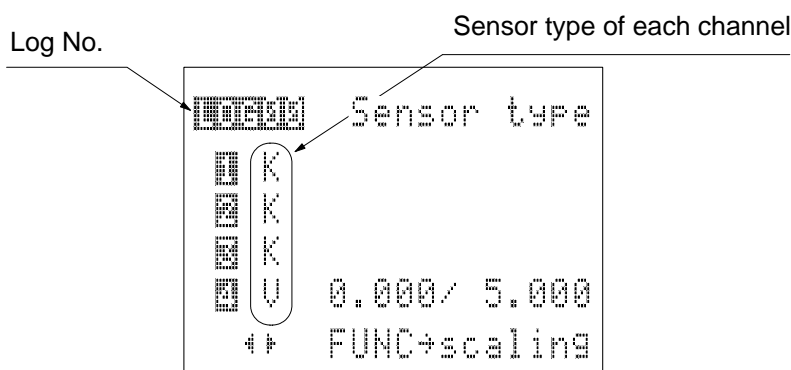
8-2 Select [Other settings] and press  key.

8-3 Select [Default settings] and press  key.

(The screen is changed to the setting screen of sensor type)

Log mode

Tag mode



In this unit, the “K”, “T”, “E”, or “J” type thermocouple are available.

Additionally, when using the optional voltage input adaptor or current input adaptor (sold separately), it is available for DC voltage (0 to 5V) or DC current (0 to 20 mA) signals.

Move the cursor to a channel to set by the [▲] or [▼] key, and change the input type by the [<] or [>] key.

Symbol	K	T	E	J	V	—
Input type	“K” thermocouple	“T” thermocouple	“E” thermocouple	“J” thermocouple	Voltage/Current adaptor	No connection

⇒ Press [CANCEL] key to return to the previous screen.

### CAUTION

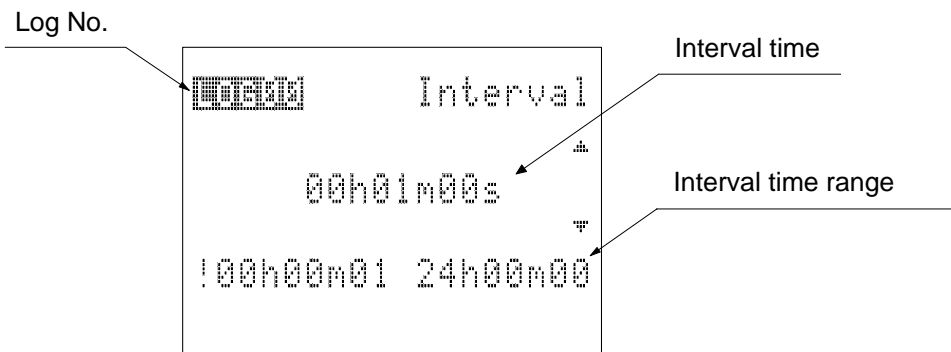
- When the input signal type is set to “V”, the unit and scale can be set.
- If “—” (no connection) is set for all channels, the data cannot be recorded.



## 8-4 Press key to set the settings.

(The screen is changed to the setting screen of interval.)

Log mode



Input a numeric value by the [<] or [>] key, or the ten-key pad.

The step of the interval setting is set to 1 sec. when the interval is from 1 sec. to 30 sec. and to 1 min. when it is from 1 min. to 24 hrs.

⇒ Press [CANCEL] key to return to the previous screen.

### CAUTION

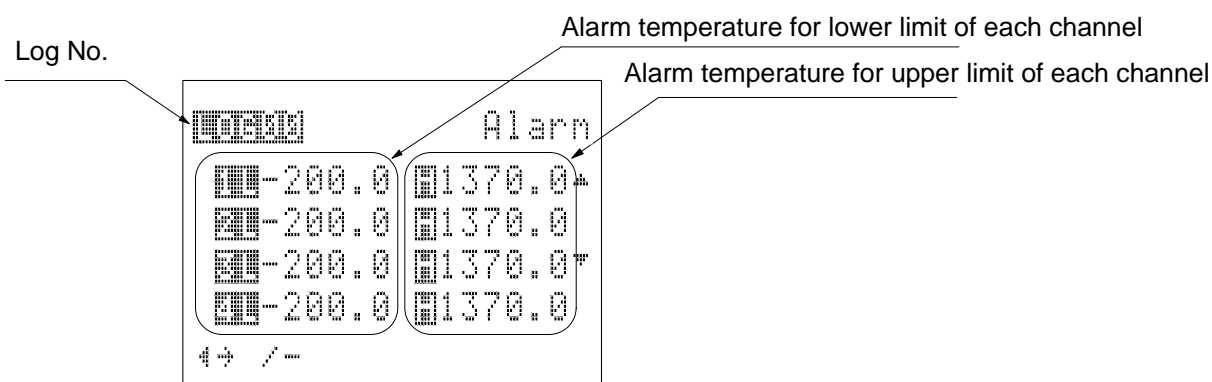
- If any interval beyond setting range is input, this interval is not set even though [ENT] key is pressed, and then it is automatically corrected to an acceptable setting value. Therefore, press [ENT] key after checking or correcting the value to input.
- This setting is not provided in the tag mode.

## 8-5 Press key to set the settings.

(The screen is changed to the setting screen of alarm temperature for upper and lower limit.)

Log mode

Tag mode



Each one of alarm temperature for upper and lower limit can be set for each channel. The alarm is given if the recorded data becomes higher than the alarm temperature for upper limit (H alarm) or lower than the alarm temperature for lower limit (L alarm). The alarm sound can also be given during recording data.

Move the cursor to a channel and the upper / lower limit by the [▲] or [▼] key. Then, set an alarm temperature by the [<] or [>] key, or the ten-key pad.

The settable temperature may vary depending on the input type.

Input type	Alarm setting range
K	-200.0 to 1370.0°C
T	-200.0 to 400.0°C
E	-200.0 to 700.0°C
J	-200.0 to 700.0°C

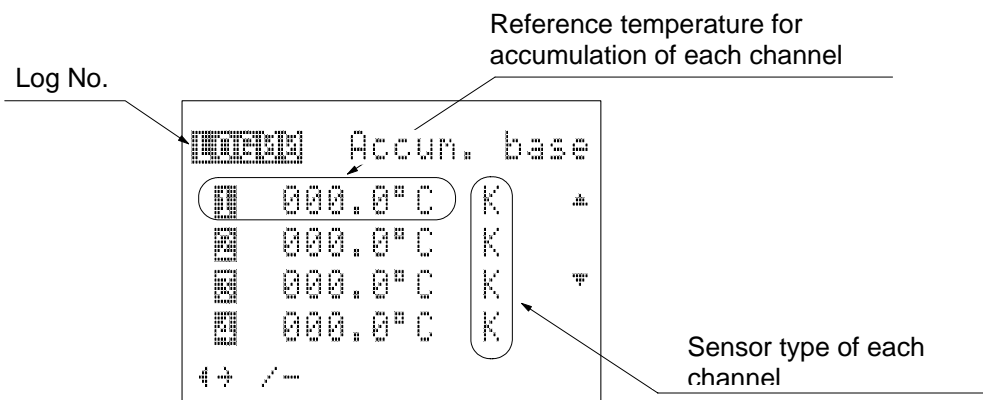
⇒ Press [CANCEL] key to return to the previous screen.

### CAUTION

- The setting is not available if the input signal type is “V”. The setting is not available for a channel, which has not been selected.

## 8-6 Press key to set the settings.

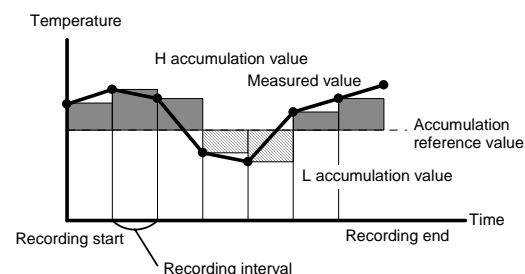
(The screen is changed to the setting screen of reference temperature for accumulation.)



The successive accumulation value (unit: °Ch) of the difference between the recorded temperature and reference temperature for accumulation is displayed. (For details, see the Fig. on the right.)

However, note that the value recorded last is not included.

There are two kinds of accumulation values, H accumulation that accumulates the difference higher than the reference temperature for accumulation and L accumulation that accumulates the difference lower than the reference temperature for accumulation.



Move the cursor to a channel and reference temperature for accumulation by the [ $\blacktriangle$ ] or [ $\blacktriangledown$ ] key. Then, set the reference temperature by the [<] or [>] key, or the ten-key pad.

The settable temperature may vary depending on the input type.

Input type	setting range of reference temperature for accumulation
K	-200.0 to 1370.0°C
T	-200.0 to 400.0°C
E	-200.0 to 700.0°C
J	-200.0 to 700.0°C

⇒ To return to the previous screen, press [CANCEL] key.

### CAUTION

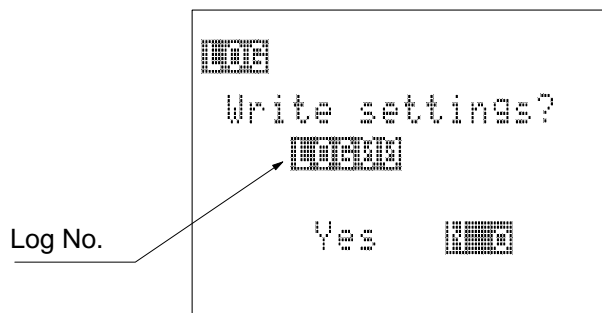
- The setting is not available if the input signal type is "V". The setting is available for a channel, which has not been selected.
- This setting is not provided in the tag mode.

8-7 Press **ENT** key to set the settings.

(The screen is changed to the confirmation screen of all default settings.)

Log mode

Tag mode



Select [Yes] by the [<] or [>] key on the conformation screen of writing.

### CAUTION

- The confirmation screen of writing cannot be returned to the previous screen even though [CANCEL] key is pressed.

8-8 Press **ENT** key to register each setting as the default.

(The screen is returned to the home screen.)

### CAUTION

- Move the cursor to [No] by the [<] or [>] key and press [ENT] key. The screen is then returned to the screen of log (tag) selection without changing of settings.

## Setting of the unit/scale

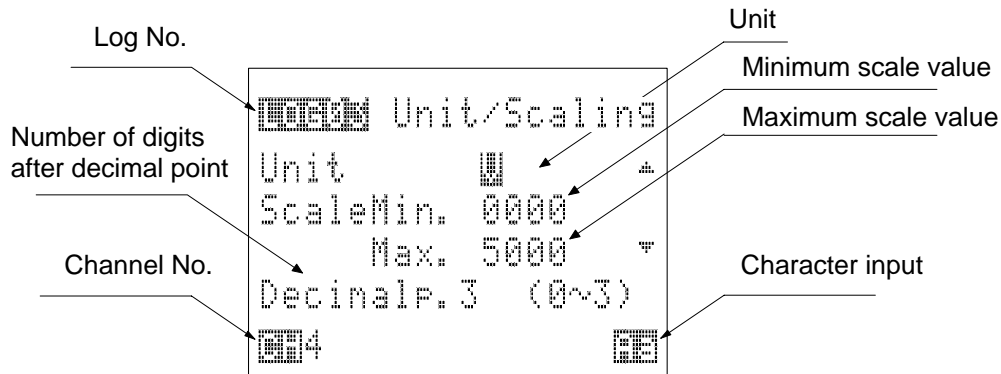
When the input type is set at “V”, the unit and scale can be set.

- ① Select [V] for the input type and press  key.

(The screen is changed to the screen of scale/unit setting.)

Log mode

Tag mode



Move the cursor to a setting item by the [ $\uparrow$ ] or [ $\downarrow$ ] key and input the unit (up to three characters), maximum scale value, minimum scale value, and the number of digits after the decimal point.

Input a numeric value or character by the ten-key pad or the [<] or [>] key.

Item	Setting range	Remarks	
Unit	Up to three characters	Alphanumeric characters (Character input: Aa)	
Min. scale	-9999 to 9999	Voltage	Indication at 0V of the input
		Current	Indication equivalent to of 0 mA of the input (calculated) Indication span of this unit $\div$ output span of the input $\times (-4\text{mA})$
Max. scale	-9999 to 9999	Voltage	Indication at 5V of the input
		Current	Indication at 20mA of the input
Fraction part	0 to 3	Number of digits below decimal point 0:0, 1:0.0, 2:0.00, 3:0.000	


### [Scaling]

For example, when connecting a unit having an external output of 4 to 20 mA using an indication scale of 0.0 to 100.0 %rh., make the settings as shown in the Table on the right.

An input of 4 to 20mA is shown as “0.0 to 100.0%rh”.

$\Rightarrow$  Press [CANCEL] key to return to the previous screen.

Item	Set value	Remarks
Unit	“%rh”	
Scale Min.	“-25”	$(100-0) \div (20-4) \times (-4) = -25$
Scale Max.	“100”	Indication at 20mA of the input
Decimal point	“1”	1 digit below the decimal point

- ② Press  key to set the settings.

### CAUTION

- Even though the default setting is changed as having logs (tags) with the recording setting or recorded data, the changed setting can not be accepted.


Save all logs (tags) and delete them at first to make the changed default setting acceptable.

## 9. Deletion of all logs (tags)

Log mode

Tag mode

All of log data with recorded data are deleted.

9-1 Display the home screen and press  key.


9-2 Select [Other settings] and press  key.

9-3 Select [All LOG delete] and press  key.



Move the cursor to [Yes] by the [<] or [>] key on the confirmation screen of deletion.

⇒ Press [CANCEL] key to return to the previous screen.

9-4 Press  key to delete all logs.

### CAUTION

- When this operation is run, all of recorded setting and data are deleted completely. Before running this operation, read the data and save it into a file.
- When [No] is selected on the confirmation screen of deletion and [ENT] key is pressed, the screen is returned to the screen of other settings without change of settings.

## 10. Initialization of the settings


Log mode

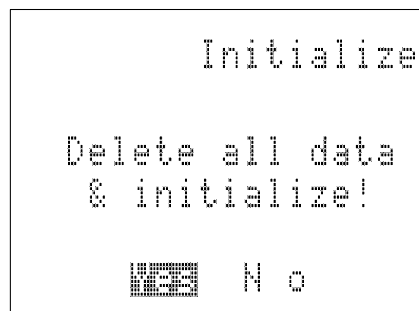
Tag mode

The recorded setting and data are deleted completely and all settings are initialized to the default settings made before shipment from the factory.

10-1 Display the home screen and press  key.


10-2 Select [Other settings] and press  key.

10-3 Select [Initialize] and press  key.



Move the cursor to [Yes] by the [<] or [>] key on the confirmation screen of initialization.

⇒ Press [CANCEL] key to return to the previous screen.

10-4 Press  key to initialize the settings.

### CAUTION

- When this operation is run, all of recorded setting and data are deleted completely. Before running this operation, read the data and save it into a file.
- When [No] is selected on the confirmation screen of deletion and [ENT] key is pressed, the screen is returned to the screen of other settings without change of settings.

## 11. Switching the temperature unit between "°C" and "°F"


Log mode

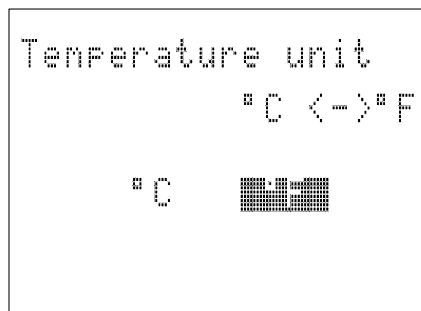
Tag mode

The temperature unit is changed.

11-1 Display the home screen and press  key.

11-2 Select [Other settings] and press  key.

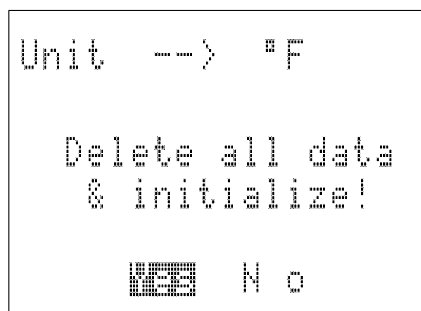
11-3 Select [°C <-> °F] and press  key.



Switch the temperature unit by the [<] or [>] key on the screen of switching temperature unit.

⇒ Press [CANCEL] key to return to the previous screen.

11-4 Press  key to switch the unit.



### CAUTION

- When this operation is run, all of recorded setting and data are deleted completely. Before running this operation, read the data and save it into a file.
- When [No] is selected on the deletion confirmation screen and [ENT] key is pressed, the screen is returned to the other settings screen without changing of set values.



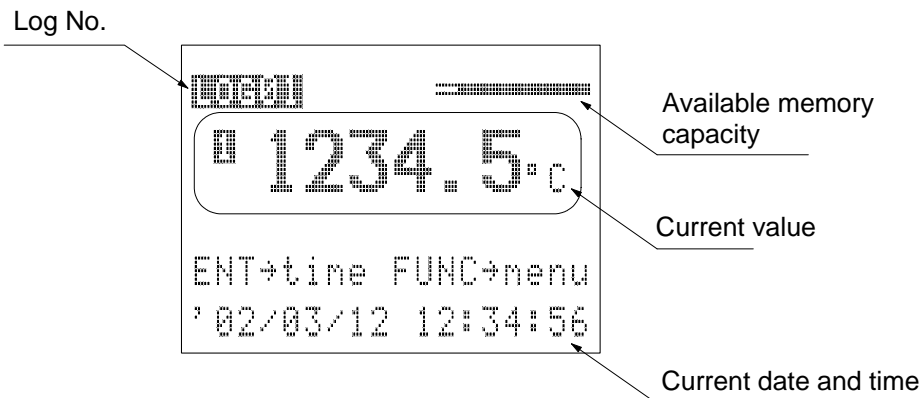
## ■ Registration of personnel and comment

The name of working person and the remark can be recorded together with the data. They can be selected from registered 20 working persons and 20 comments.

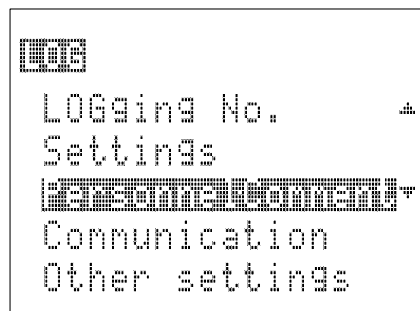
When selecting [Personnel/comment], the same person name and comment are put on the recorded data until the person name or comment is selected next time.

Please refer to “■Recording of personnel and comment” (p.41) of an “Operation Manual” to select a personnel name and the comment.

### 1 Display the home screen.

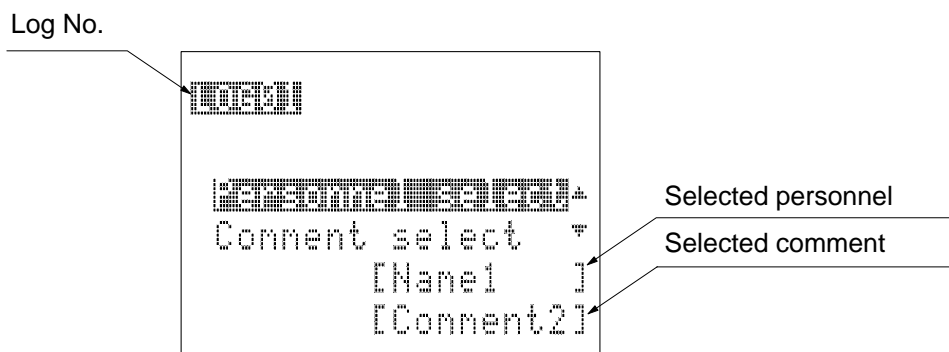


### 2 Press key. (The screen is changed to the main menu screen.)



Select [Personnel/Remark] by the [▲] or [▼] key.


### 3 Press key. (The screen is changed to the selection screen of personnel/remark.)



On this screen, a working person and comment can be set (selected or added).

# 1. Registration of personnel

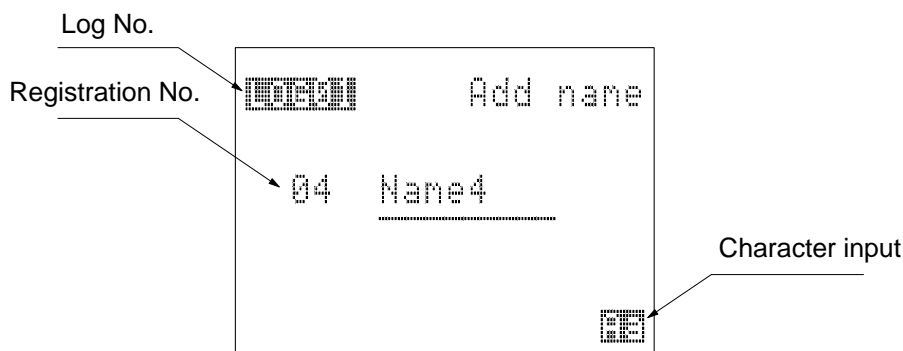
Working personnel up to 20 persons can be registered.

1-1 Display the home screen and press  key.

1-2 Select [Personnel/Comment] and press  key.

1-3 Select [Personnel select] and press  key.

1-4 Select each name of personnel to register and press  key.



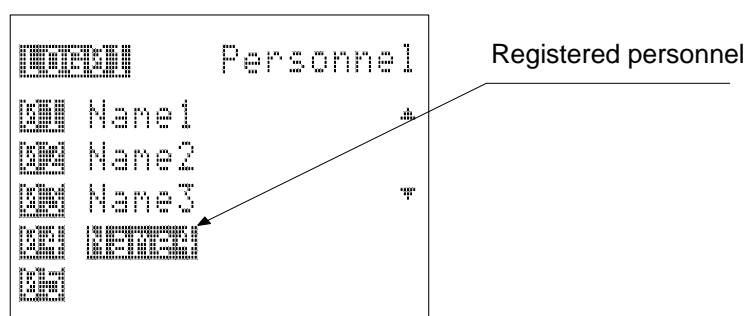
Input characters by the ten-key pad, or the [<] or [>] key.

Up to 8 alphanumeric characters can be used.

⇒ Press [CANCEL] key to return to the previous screen.

1-5 Press  key to register each name of personnel.

(The screen is changed to the selection screen of personnel.)




## CAUTION

- At this time, the name of working person is only registered without select. Select the name of personnel in the same manner as described for selection of personnel.

## 2. Registration of a comment

Remarks up to 20 sorts can be registered.

2-1 Display the home screen and press  key.

2-2 Select [Personnel/Comment] and press  key.

2-3 Select [Comment select] and press  key.


2-4 Select a comment to register and press  key.



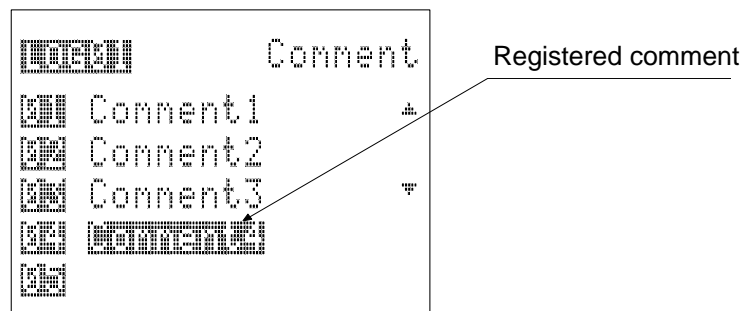
Input characters by the ten-key pad, or the [<] or [>] key.

Up to 8 alphanumeric characters can be used.

⇒ Press [CANCEL] key to return to the previous screen.

2-5 Press  key to register a comment.

(The screen is changed to the selection screen of comment.)



### CAUTION

- At this time, the comment is only registered without selection. Select the comment in the same manner as described for selection of comments.

## ■ Troubleshooting

Trouble	Cause	Corrective action
The screen is not displayed.	The batteries are not put correctly.	Put the batteries correctly. For details, see ■ Mounting and replacing the batteries.
	The batteries run out.	Replace the batteries with new ones. For details, see ■ Mounting and replacing the batteries.
	The AC adaptor is disconnected.	Connect the AC adaptor correctly. For details, see ■ Using the AC adaptor.
The display of recorded value is "—". No numeric values are shown.	The sensor is disconnected.	Insert the sensor connector correctly. For details, see ■ Connecting the sensor.
	The current/voltage input lines are disconnected.	Connect the input lines correctly. For details, see ■ Connecting the sensor.
	The unit is set to "—" (no connection).	Change the setting of input type. For details, see 5. Settings of the recording. (Operation manual).
	The over-range trouble occurs.	Check the excessive input or sensor type. For details, see 5. Settings of the recording. (Operation manual).
	The sensor is faulty.	Replace the sensor with a new one.
The temperature is measured in error.	The thermocouple type is different.	Set the thermocouple type correctly. For details, see 5. Settings of the recording. (Operation manual).
	The offset value is changed.	Change the offset value. For details, see various settings-4. Setting offset values.
	The sensor is faulty.	Replace the sensor with a new one.
The indication value fluctuates largely.	The strong static electricity, electromagnetic wave, or high-frequency may adversely affect the unit.	Do not put this unit or sensor close to an equipment producing the strong static electricity or electromagnetic wave.
	The sensor is faulty.	Replace the sensor with a new one.
The data cannot be recorded.	All settings are set at "—" (no connection).	Set the input type correctly. For details, see 5. Settings of the recording. (Operation manual).
	The remaining memory capacity is insufficient.	Save the recorded data and delete the recorded data.
The recorded data does not exist.	The recording mode is changed.	Save the recorded data certainly before changing the recording mode or recording setting.
	The recording setting is changed.	
Name of working person or remark cannot be displayed.	The Name of working person or remark is not registered or selected.	Register or select the working person or remark. For details, see 6. Recording personnel and comment (Operation Manual).

The communication cannot be operated.	The special cable is disconnected.	Connect the special cable correctly. For details, see ■Connecting to your personal computer.
	The data read software is not installed on the personal computer.	Install the data read software. For details, see the instruction manual for software.
	The communication settings are made incorrectly.	Check the input port. See the instruction manual for software.
The display goes out.	The auto power off is activated.	Make the auto power off inactive. For details, see ■Various settings-3, Setting the auto power off function.
The display is dark.	The LCD contrast is low.	Adjust the LCD contrast. For details, see ■Various settings-5, Adjusting the LCD contrast.
The message, "Need to change a backup battery !", is shown.	The backup battery runs out.	Contact your local sales representative or sales office.

Check the above items and take corrective actions. If any malfunction still occurs, stop operation of the unit, and then contact your local sales representative or sales office.

## ■ Specifications

Item	Specifications	
Sensor input	Thermocouple multi inputs ("K", "E", "J", "T") and V (voltage, current inputs). DC voltage (0 to 5V) is input with the input adaptor of DC voltage (optional unit). DC current (0 to 20mA) is input with the input adaptor of DC current (optional unit).	
Number of input points	4 channels (Input type and ON/OFF of each channel can be selected).	
Input connector	SM connector (applicable to ASTM E1684-96 Standard Specification for Miniature Thermocouple Connectors) and special drip-proof connector (used for optional sensor).	
Indication resolution	0.1°C	
Measurement temperature range	K thermocouple/−200 to 1370°C, −300 to 2450°F E thermocouple/−200 to 700°C, −300 to 1250°F J thermocouple/−200 to 700°C, −300 to 1250°F T thermocouple/−200 to 400°C, −300 to 700°F	
Accuracy	[Thermocouple] $\pm (0.1\% \text{ of read value} + 0.3^\circ\text{C})$ (The measurement temperature range of $-100^\circ\text{C}$ or more.) $\pm (0.1\% \text{ of read value} + 0.6^\circ\text{C})$ (The measurement temperature range of lower than $-100^\circ\text{C}$ .) [Voltage input] $\pm (0.1\% \text{ of read value} + 0.2\% \text{ of range})$ Accuracy is specified under reference operating conditions (at an ambient temperature of $23^\circ\text{C} \pm 3^\circ\text{C}$ ).	
Compensation accuracy of reference temperature	This compensation accuracy is added for thermocouples, "K", "E", "J", or "T". $\pm 0.4^\circ\text{C}$ (at an ambient temperature of 15 to $35^\circ\text{C}$ .) $\pm 0.7^\circ\text{C}$ (at an ambient temperature of $-10$ to $15^\circ\text{C}$ or 35 to $50^\circ\text{C}$ .) Accuracy is specified under an ambient temperature variation of $2^\circ\text{C}$ or less.	
Temperature coefficient	$\pm 0.01\%/^\circ\text{C}$ of measuring range (specified with an ambient temperature variation of $2^\circ\text{C}$ or less).	
Allowable signal source resistance	100Ω or less (burnout detectable).	
Input resistance	1MΩ or less at DC voltage	
Withstanding voltage between channels	AC400V	
Scanning speed	1 sec. (4-ch)	
Recording interval	1 sec. to 30 sec. (can be set in steps of 1 sec.) 1 min. to 24 hrs. (can be set in steps of 1 min.)	
Number of recorded data	Sum of 20 log data 4ch : 10000 data on each ch. 3ch only: 13333 data on each ch. 2ch only: 20000 data on each ch. 1ch only: 40000 data.	Sum of 20 tag data 4ch : 5500 data on each ch. 3ch only: 6470 data on each ch. 2ch only: 7855 data on each ch. 1ch only: 10000 data.
Display	Semi-transparent type LCD with backlight. Dot matrix, 128 x 64 dots. (Display area, 41 x 29 mm)	
Operation keys	18 keys including ten-key pad	
Communication function	RS-232C compatible/Bi-directional communication, start-stop synchronous system	
Power supply	AA battery (LR6) x 4 pcs. or special AC adaptor	
Service life of battery	500 hrs. Or longer (when alkaline batteries (LR6) are used.) This service life is specified assuming that the recording interval is 1 min. at an ambient temperature of $25^\circ\text{C}$ , backlight is turned off, and no keys are operated.	

Backup power supply	5 years or longer (with no power supplied.) On the condition that, the unit is left at an ambient temperature of 25°C.
Outside dimensions	70 (W) x 159 (H) x 33 (D) mm, No projections are included.
Weight	Approximately 300g (including batteries)
Case material	Nylon ABS (Antibacterial)
Operating environment	-10 to 50°C, 10 to 80% RH (No condensation allowed.)
Storage environment	-20 to 55°C, 0 to 90% RH (No condensation allowed.)
Water-proof performance	IP64 (Sensor with special drip-proof specification is used.)
EMC standard	CE: EN61326+A1+A2/ClassB, $\pm 5^{\circ}\text{C}$ As operated by batteries (the unit is left at an ambient temperature of 25°C.)

## ■ Accessories

Name	Q'ty
Alkaline AA battery	4
Mounting holder	1
Fixing screw of mounting holder	2
Fixing washer of mounting holder	2
Instruction manual – Setup (this manual)	1
Instruction manual – Operation	1
Battery replacement adaptor (DC adaptor)	1

## ■ Optional units (sold separately)

AC adaptor	OM-AC	INPUT:100-240V ~ 50/60Hz 0.5A OUTPUT:DC9V 2A 18W
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Data read Software	OM-SPN-C2 (RS-232C) or OM-SPN-USB (USB)	Applicable personal computer model :IBM PC/AT compatibles Applicable OS:Windows98, Me, WindowsNT4.0, Windows2000, and WindowsXP Functions: Read/Write/Save of recording setting (CSV format only) Read of recorded data (special format only)/save (special format and CSV format only) Calculation of data (maximum, minimum, average, accumulation, etc.) Unit setting read/write, etc. Accessories:Communication cable x 1 pc. Instruction manual x 1 pc.
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Special input adaptor	OM-9407	Adaptor for current input (DC current: 0 to 20mA)
	OM-9408	Adaptor for voltage input (DC voltage: 0 to 5V)