Operation Panel

OPC-V07

[For SR Mini HG SYSTEM]

Operation Manual

RKC® RKC INSTRUMENT INC. IMS01Q01-E1

- Modbus is a registered trademark of Schneider Electric.
- Company names and product names used in this manual are the trademarks or registered trademarks of the respective companies.

Thank you for purchasing this RKC instrument. In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place this manual in a convenient location for easy reference.

SYMBOLS

WARNING : This mark indicates precautions that must be taken if there is danger of electric shock, fire, etc., which could result in loss of life or injury.

CAUTION : This mark indicates that if these precautions and operating procedures are not taken, damage to the instrument may result.

 : This mark indicates that all precautions should be taken for safe usage.

 : This mark indicates important information on installation, handling and operating procedures.

 : This mark indicates supplemental information on installation, handling and operating procedures.

 : This mark indicates where additional information may be located.

⚠ WARNING

- An external protection device must be installed if failure of this instrument could result in damage to the instrument, equipment or injury to personnel.
- All wiring must be completed before power is turned on to prevent electric shock, fire or damage to instrument and equipment.
- This instrument must be used in accordance with the specifications to prevent fire or damage to instrument and equipment.
- This instrument is not intended for use in locations subject to flammable or explosive gases.
- Do not touch high-voltage connections such as power supply terminals, etc. to avoid electric shock.
- RKC is not responsible if this instrument is repaired, modified or disassembled by other than factory-approved personnel. Malfunction can occur and warranty is void under these conditions.

CAUTION

- This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take adequate measures.
- This instrument is protected from electric shock by reinforced insulation. Provide reinforced insulation between the wire for the input signal and the wires for instrument power supply, source of power and loads.
- Be sure to provide an appropriate surge control circuit respectively for the following:
  - If input/output or signal lines within the building are longer than 30 meters.
  - If input/output or signal lines leave the building, regardless the length.
- This instrument is designed for installation in an enclosed instrumentation panel. All high-voltage connections such as power supply terminals must be enclosed in the instrumentation panel to avoid electric shock by operating personnel.
- All precautions described in this manual should be taken to avoid damage to the instrument or equipment.
- All wiring must be in accordance with local codes and regulations.
- All wiring must be completed before power is turned on to prevent electric shock, instrument failure, or incorrect action.
  The power must be turned off before repairing work for input break and output failure including replacement of sensor, contactor or SSR, and all wiring must be completed before power is turned on again.
- To prevent instrument damage or failure, protect the power line and the input/output lines from high currents with a protection device such as fuse, circuit breaker, etc.
- Prevent metal fragments or lead wire scraps from falling inside instrument case to avoid electric shock, fire or malfunction.
- Tighten each terminal screw to the specified torque found in the manual to avoid electric shock, fire or malfunction.
- For proper operation of this instrument, provide adequate ventilation for heat dispensation.
- Do not connect wires to unused terminals as this will interfere with proper operation of the instrument.
- Turn off the power supply before cleaning the instrument.
- Do not use a volatile solvent such as paint thinner to clean the instrument. Deformation or discoloration will occur. Use a soft, dry cloth to remove stains from the instrument.
- To avoid damage to instrument display, do not rub with an abrasive material or push front panel with a hard object.
- Do not connect modular connectors to telephone line.

NOTICE

- This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications.
- The figures, diagrams and numeric values used in this manual are only for purpose of illustration.
- RKC is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.
- RKC software is licensed for use with one computer and cannot be modified. This software may not be duplicated except for backup purposes.
- Periodic maintenance is required for safe and proper operation of this instrument. Some components have a limited service life, or characteristics that change over time.
- Every effort has been made to ensure accuracy of all information contained herein. RKC makes no warranty expressed or implied, with respect to the accuracy of the information. The information in this manual is subject to change without prior notice.
- No portion of this document may be reprinted, modified, copied, transmitted, digitized, stored, processed or retrieved through any mechanical, electronic, optical or other means without prior written approval from RKC.

CONTENTS

MEMO

1 OUTLINE

1.1 Features

This OPC-V07 is the operation panel of the SR Mini HG SYSTEM. Through connection with the control unit, various data monitoring and setting, operation and alarm monitoring, etc. can be carried out.

This manual describes the connection with the SR Mini HG SYSTEM control unit or the printer and screen operations of the OPC-V07.
For the mounting, power supply wiring, connection with PLC and battery replacement of OPC-V07, see the instruction manual of Hakko Electronics Co., Ltd.

URL: Home page: http://www.hakko-elec.co.jp/
Manual download: http://www.hakko-elec.co.jp/eng/download/index02.html

In addition, the Model code of the MONITOUCH V7 series of operation panels (made by Hakko Electronics Co., Ltd.) corresponding to our OPC-V07 operation panels is as listed below.

Mode code correspondence list

Model code of RKC operation panel	Model code of MONITOUCH (Hakko Electronics Co., Ltd.)	Specifications
OPC-V07-216∗N□1/□-□□□-□□□□□	V708SD	TFT color, 800 × 600 dots, 8.4 inches, 24 V DC
OPC-V07-313∗N□1/□-□□□-□□□□□	V710S	TFT color, 800 × 600 dots, 10.4 inches, 100 to 240 V AC
OPC-V07-316∗N□1/□-□□□-□□□□□	V710SD	TFT color, 800 × 600 dots, 10.4 inches, 24 V DC
OPC-V07-413∗N□1/□-□□□-□□□□□	V712S	TFT color, 800 × 600 dots, 12.1 inches, 100 to 240 V AC
OPC-V07-416∗N□1/□-□□□-□□□□□	V712SD	TFT color, 800 × 600 dots, 12.1 inches, 24 V DC

< Feature >

■ Easy operation using the transparent touch panel

By touching the transparent touch panel on the display of this operation panel OPC-V07, operations such as changing the settings and switching the displays can be performed. Operations can be easily carried out using the sensation of conducting a dialog with the display.

■ Dustproof, Splashproof

The front OPC-V07 has a dustproof, splashproof construction equivalent to **IP65** (IEC standards).
(Only the front section of the OPC-V07 mounted on the control panel.)

■ Data control by a CF card (Compact flash card)

Since an interface for the CF card is furnished as standard, set data (Job files) during operation can be stored in the CF card.

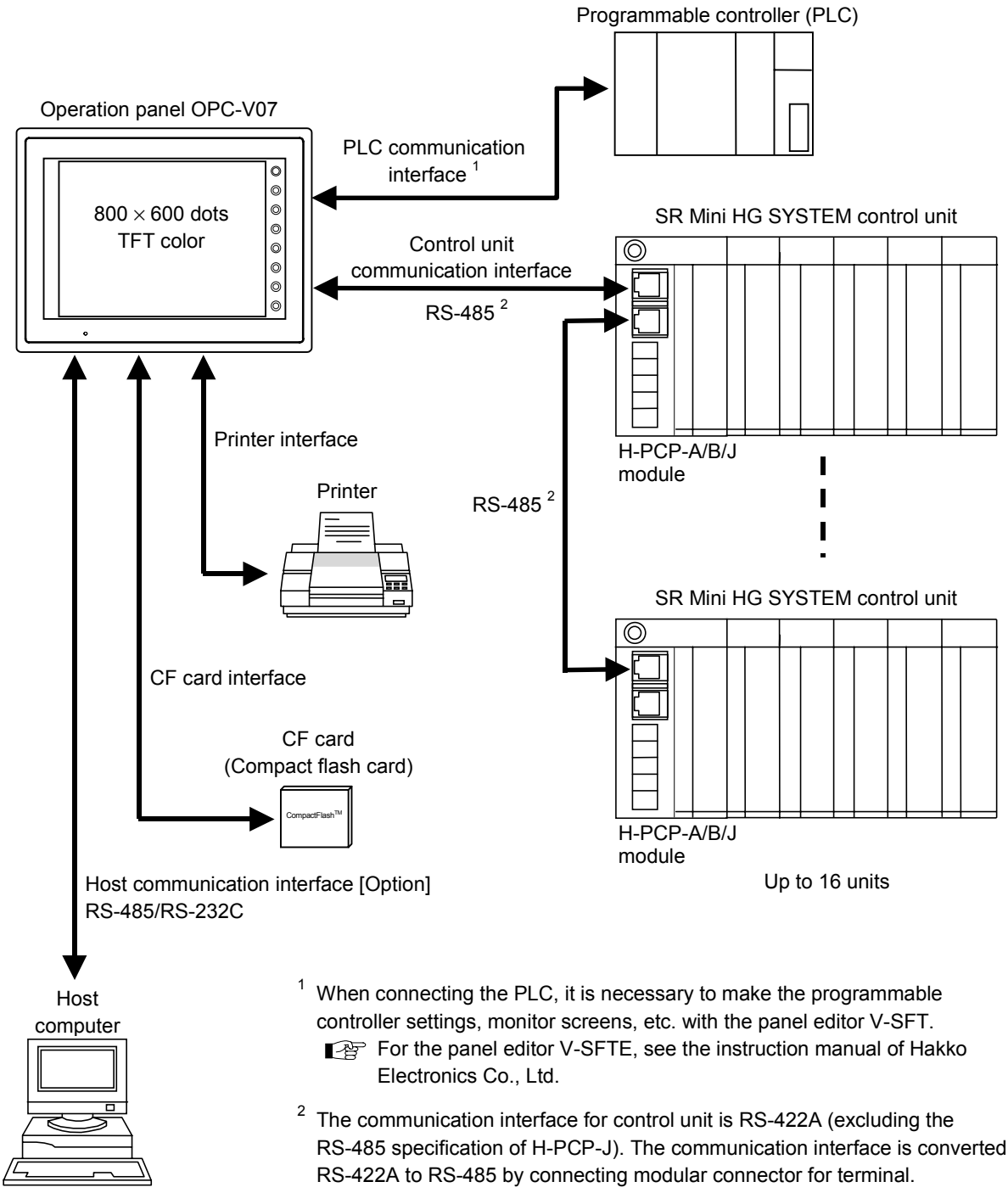
■ Interface

- Host communication interface (option)
  Choice is possible from RS-232C or RS-485.

- Printer interface (Centronics interface conformity)
  Usable printer type
  EPSON: Compatibles with ESC/P24-84 or later
  NEC: PC-PR201 series

- PLC (Programmable controller) communication interface
  When connecting a programmable controller (PLC), it is necessary to make the programmable controller settings, monitor screens, etc. with the panel editor V-SFT.
  ☞ For the panel editor V-SFT, please contact RKC sales office or the agent.

< System configuration >



1 When connecting the PLC, it is necessary to make the programmable controller settings, monitor screens, etc. with the panel editor V-SFT.
☞ For the panel editor V-SFTE, see the instruction manual of Hakko Electronics Co., Ltd.

2 The communication interface for control unit is RS-422A (excluding the RS-485 specification of H-PCP-J). The communication interface is converted RS-422A to RS-485 by connecting modular connector for terminal.

■ Usable SR Mini HG SYSTEM modules

The following Power supply/CPU modules and function modules can be used.

Function module	Type
Power supply/CPU module	H-PCP-A (DO 4 points type) H-PCP-B (DO 2 points type with DI function) H-PCP-J (PLC communication type) 📖 The H-PCP-J module can also be connected, but data items processed in it are only those common to the H-PCP-A/B module.
Temperature control module	H-TIO-A H-TIO-B H-TIO-C H-TIO-D H-TIO-E H-TIO-F H-TIO-G H-TIO-H H-TIO-J H-TIO-P H-TIO-R
Position proportioning control module	H-TIO-K
Temperature input module	H-TI-A H-TI-B H-TI-C
Cascade control module	H-CIO-A
Current transformer input module	H-CT-A
Digital input module	H-DI-A H-DI-B
Digital output module	H-DO-A H-DO-B H-DO-C
Analog input module	H-AI-A H-AI-B
Analog output module	H-AO-A H-AO-B

1.2 Checking the Products

Before using this product, check each of the following:
- Model code
- Check that all of the items delivered are complete.
- Check that there are no scratch or breakage in external appearance (case, front panel, terminal, etc).

If any of the products are missing, damaged, or if your manual is incomplete, please contact RKC sales office or the agent.

■ Model code

OPC - V07 - □ 1 □ * N □ 1 / □ - □□□ - □□□□□
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

(1) Display size
- 2: 8.4 inches (Display resolution: 800 × 600 dots)
- 3: 10.4 inches (Display resolution: 800 × 600 dots)
- 4: 12.1 inches (Display resolution: 800 × 600 dots)

(2) Display method
- 1: TFT color LCD

(3) Power supply voltage
- 4: 100 to 240 V AC
- 6: 24 V DC

(4) External storage function
- N: No function (However, CF card interface is standard equipment.)

(5) Host communication interface
- N: No host communication interface
- 1: Host communication interface RS-232C
- 5: Host communication interface RS-485

(6) Connected equipment
- 1: H-PCP-A/B/J module * (RKC communication protocol)

(7) Language
- J: Japanese
- E: English

(8) Printer type
- A: ESC/P (EPSON) monochrome
- B: ESC/P (EPSON) color
- C: PR201 (NEC) monochrome
- D: PR201 (NEC) color

(9) Host communication address
- NN: No host communication interface or default (Address 1)
- 01 to 31: Address 1 to 31

(10) Host communication speed
- N: No host communication interface or default (19200 bps)
- A: 4800 bps
- B: 9600 bps
- C: 19200 bps

(11) Host communication bit configuration
- N: No host communication interface or default (Non parity, Stop 1-bit)
- A: Non parity, Stop 1-bit
- B: Non parity, Stop 2-bit
- C: Odd parity, Stop 1-bit
- D: Odd parity, Stop 2-bit
- E: Even parity, Stop 1-bit
- F: Even parity, Stop 2-bit

(12) Host communication delay time
- NNN: No host communication interface or default (0 ms)
- 000 to 255: 0 to 255 ms

* The H-PCP-J module can also be connected, but data items processed in it are only those common to the H-PCP-A/B module.

■ Accessories

- Mounting brackets 4
- Operation panel OPC-V07 [For SR Mini HG SYSTEM]
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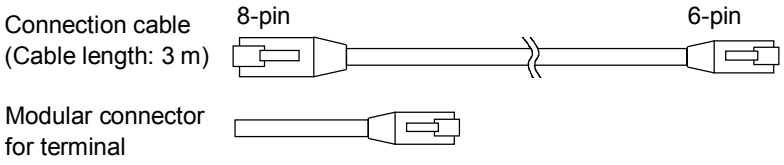
■ Peripheral equipment (Sold separately)

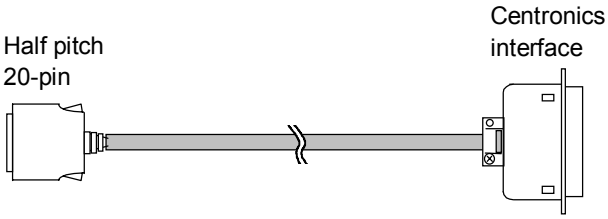
- Cable for control unit connection Type: V6-SR422

  Used for the connection of the OPC-V07 and the control unit (PCP module).
  With modular connector for terminal



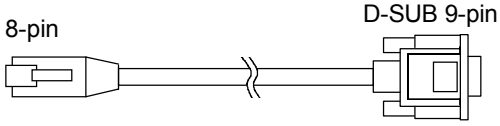
- Printer cable Type: V7-PT

  Used for the connection of the OPC-V07 (with printer interface) and the printer.
  Cable length: 2.5 m



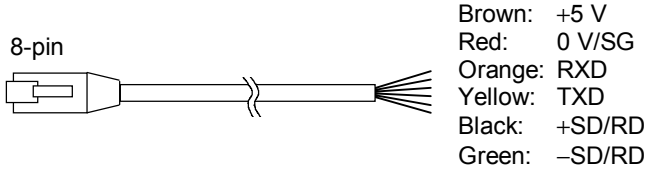
- Cable for host computer connection Type: V6-CP

  Used for the connection of the OPC-V07 (RS-232C interface) and the host computer.
  With conversion connector (Type: ADP 25-9) for D-SUB 25-pin
  Cable length: 3 m



- Cable for host computer connection Type: V6-TMP

  Used for the connection of the OPC-V07 (RS-485 interface) and the host computer.
  Cable length: 3 m



- Protection sheet Package of 5 sheets
  Type: 8 inches..... V708-GS, V708-GSN10 (Non-glare type)
  10 inches..... V710-GS, V710-GSN10 (Non-glare type)
  12 inches..... V712-GS, V712-GSN10 (Non-glare type)

  Protects the OPC-V07 surface.

- Lithium battery for replacement Type: V7-BT

  Retains the contents in the SRAM or calendar data.
  If the battery voltage has dropped, replace the battery.

2 PREPARATIONS

2.1 Connections

⚠ WARNING

To prevent electric shock or instrument failure, turn off the power before connecting or disconnecting the instrument and peripheral equipment.

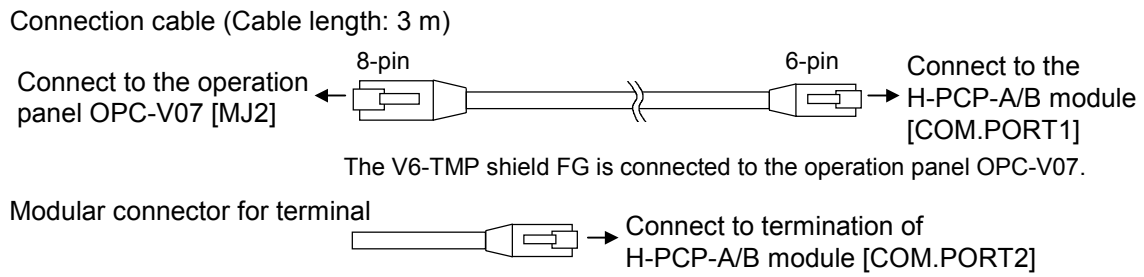
CAUTION

- Connect connectors correctly in the right position. If it is forcibly pushed in with pins in the wrong positions, the pins may be bent resulting in instrument failure.
- When connecting or disconnecting the connectors, do not force it too far to right and left or up and down, but move it on the straight. Otherwise, the connector pins may be bent, causing instrument failure.
- When disconnecting a connector, hold it by the connector itself. Disconnecting connectors by yanking on their cables can cause breakdowns.
- To prevent malfunction, never touch the contact section of a connector with bare hands or with hands soiled with oil or the like.
- To prevent malfunction, connect cable connectors securely, then firmly tighten the connector fastening screws.
- To prevent damage to cables, do not bend cables over with excessive force.
- If the instrument is easily affected by noise, use the ferrite core in the both ends of the communication cable (nearest the connector).

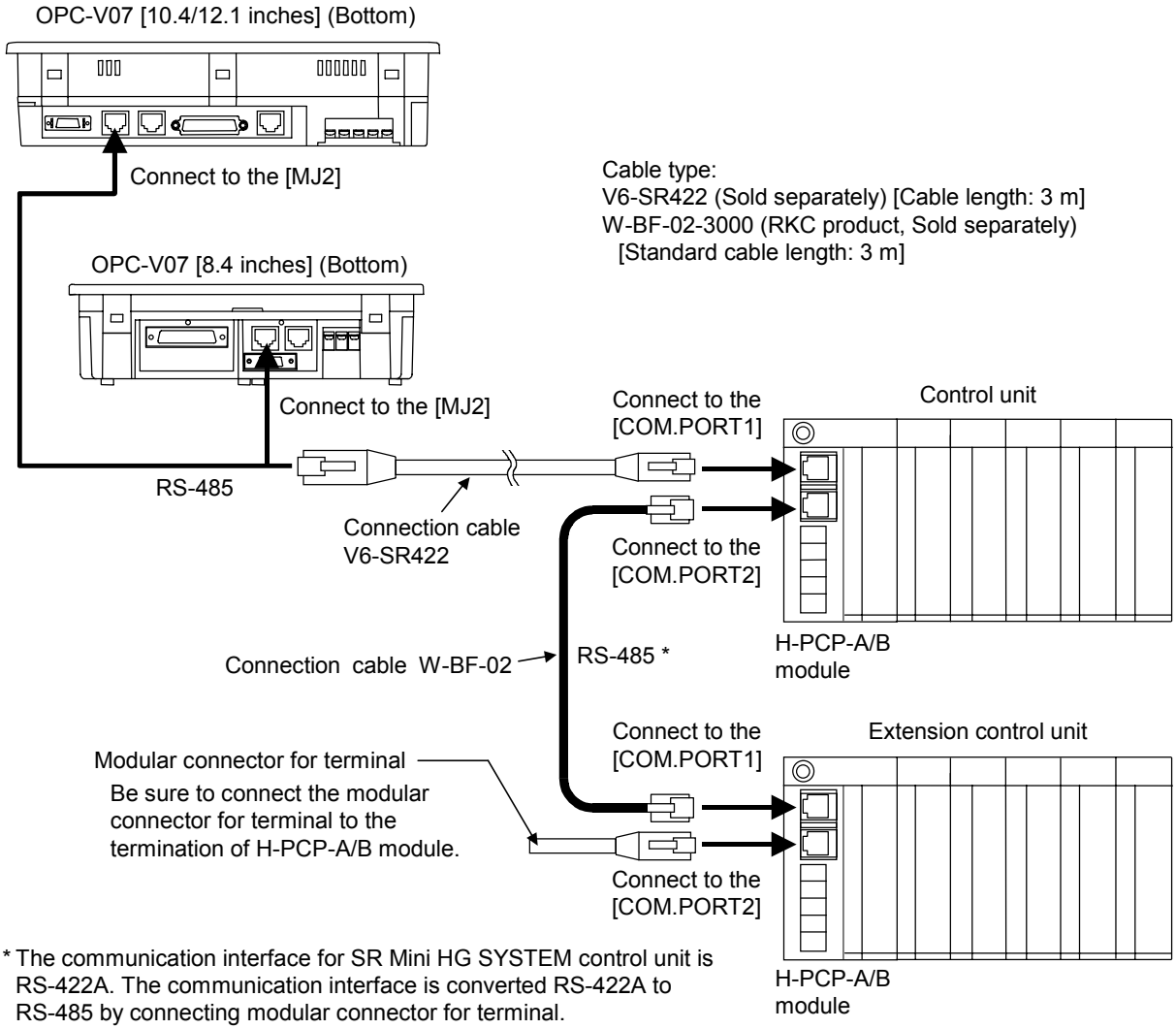
2.2.1 Connection to the H-PCP-A/B module (control unit)

Use connection cable V6-SR422 (Sold separately, Cable length: 3 m) to connect the operation panel OPC-V07 and the H-PCP-A/B module

- **Cable for control unit connection V6-SR422 (with modular connector for terminal)**

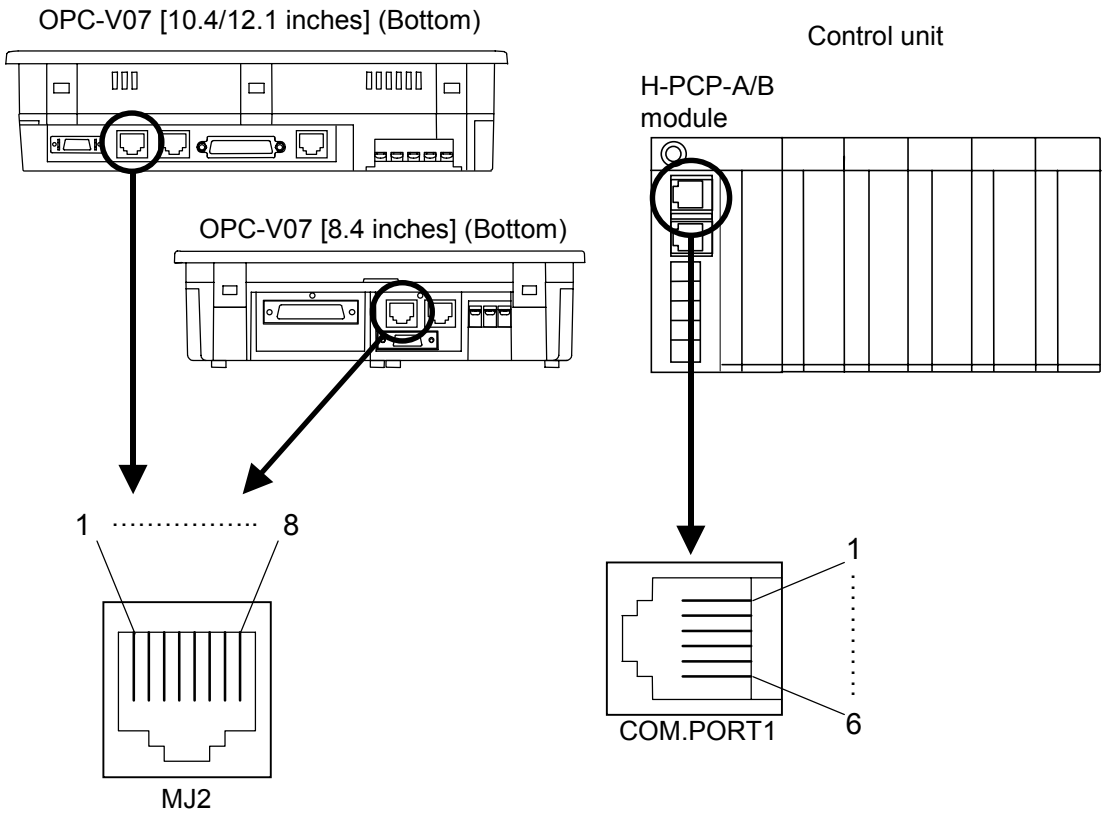


- **Connection method**



* The communication interface for SR Mini HG SYSTEM control unit is RS-422A. The communication interface is converted RS-422A to RS-485 by connecting modular connector for terminal.

- **Pin layout of connector**



- **Connector pin number and signal details**

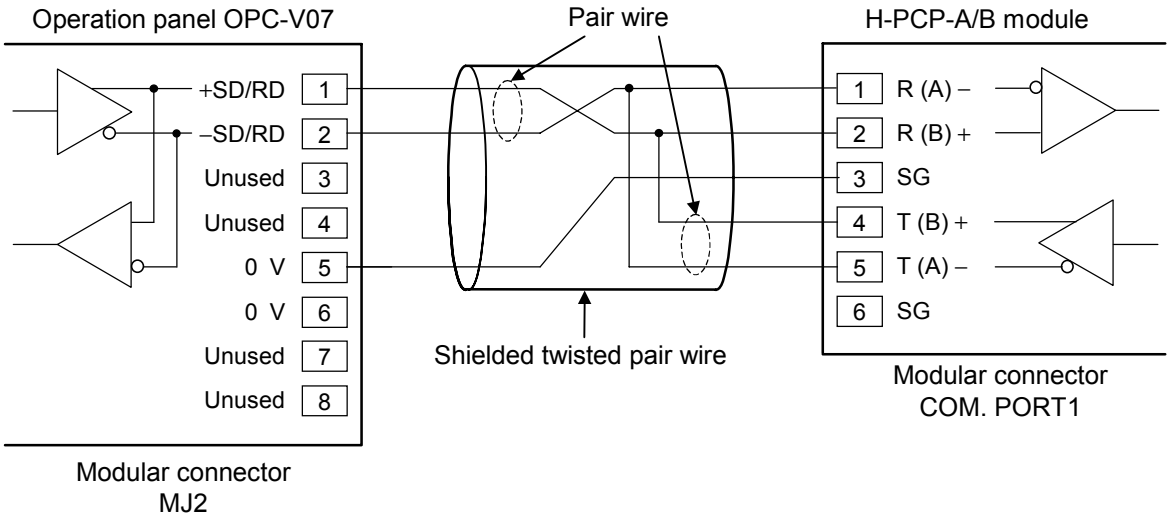
Operation panel OPC-V07 [MJ2]

Pin No.	Signal name	Symbol
1	RS-485 send/receive data	+SD/RD
2	RS-485 send/receive data	−SD/RD
3	Unused	—
4	Unused	—
5	GND	SG
6	GND	SG
7	Unused	—
8	Unused	—

Control unit [COM.PORT1]

Pin No.	Signal name	Symbol
1	RS-422A receive data	R (A) −
2	RS-422A receive data	R (B) +
3	Signal ground	SG
4	RS-422A send data	T (B) +
5	RS-422A send data	T (A) −
6	Signal ground	SG

- **Wiring contents**



Recommended modular connector
Modular connector for connect to operation panel OPC-V7:
TM10P-88P (Manufactured by HIROSE ELECTRIC CO., LTD.)
Modular connector for connect to H-PCP-A/B:
TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

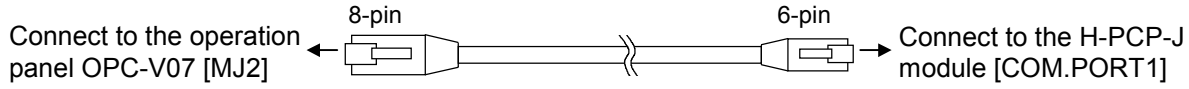
2.1.2 Connection to the H-PCP-J module (control unit)

■ When using COM. PORT1 of H-PCP-J

Use connection cable V6-SR422 (Sold separately, Cable length: 3 m) to connect the operation panel OPC-V07 and the H-PCP-J module.

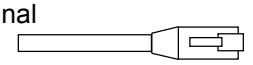
- **Cable for control unit connection V6-SR422 (with modular connector for terminal)**

Connection cable (Cable length: 3 m)



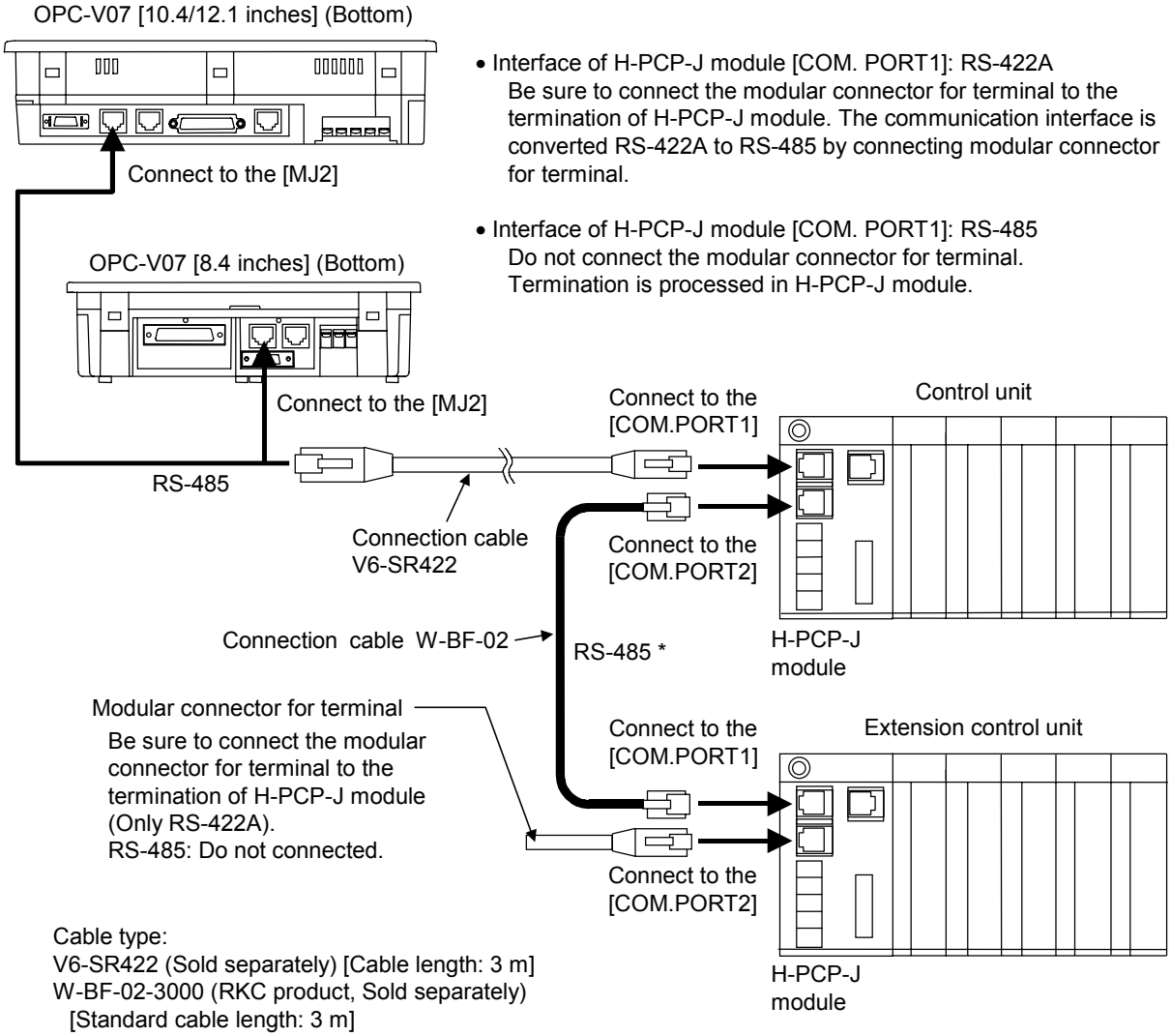
The V6-TMP shield FG is connected to the operation panel OPC-V07.

Modular connector for terminal



Connect to termination of H-PCP-J module [COM.PORT2]

- **Connection method**



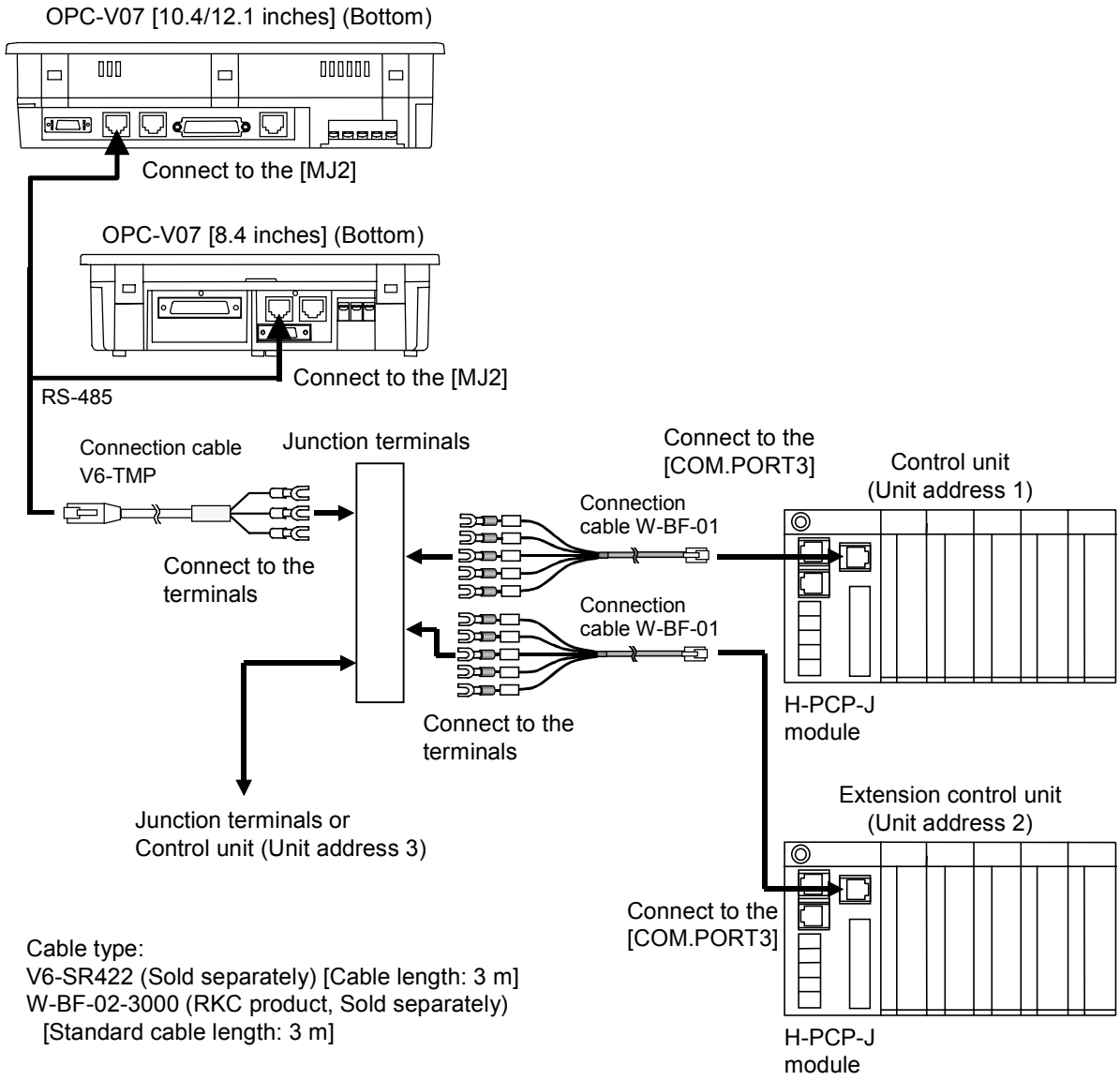
- Interface of H-PCP-J module [COM. PORT1]: RS-422A
  Be sure to connect the modular connector for terminal to the termination of H-PCP-J module. The communication interface is converted RS-422A to RS-485 by connecting modular connector for terminal.
- Interface of H-PCP-J module [COM. PORT1]: RS-485
  Do not connect the modular connector for terminal. Termination is processed in H-PCP-J module.

Cable type:
V6-SR422 (Sold separately) [Cable length: 3 m]
W-BF-02-3000 (RKC product, Sold separately)
[Standard cable length: 3 m]

■ When using COM. PORT3 of H-PCP-J

Use connection cable V6-TMP (Sold separately, Cable length: 3 m) to connect the operation panel OPC-V07 and the H-PCP-J module.

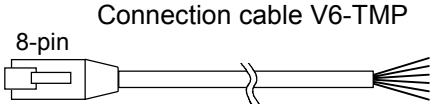
● Connection method



Cable type:
V6-SR422 (Sold separately) [Cable length: 3 m]
W-BF-02-3000 (RKC product, Sold separately)
[Standard cable length: 3 m]

Cautions for connection cable V6-TMP

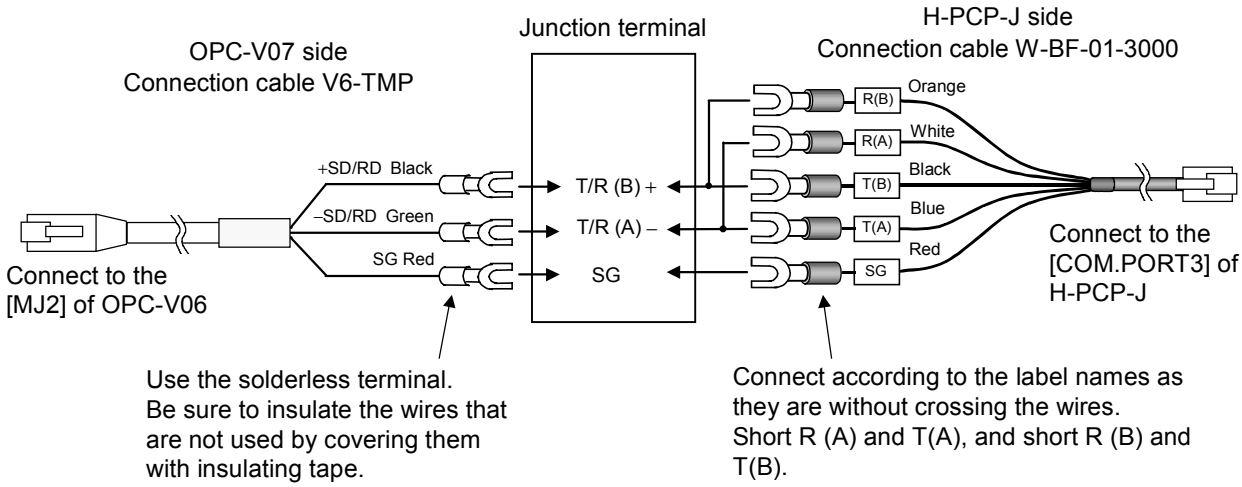
The V6-TMP has six electrical wires. Be sure to insulate the wires that are not used by covering them with insulating tape.



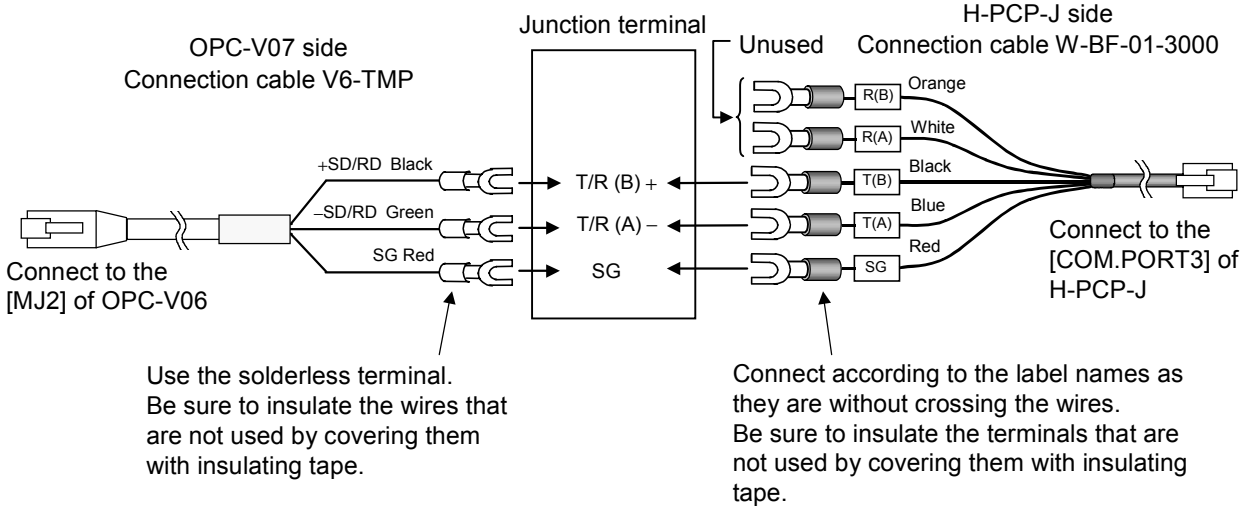
The V6-TMP shield FG is connected to the operation panel OPC-V07.

Brown:	+5 V
Red:	0 V/SG
Orange:	RXD
Yellow:	TXD
Black:	+SD/RD
Green:	–SD/RD

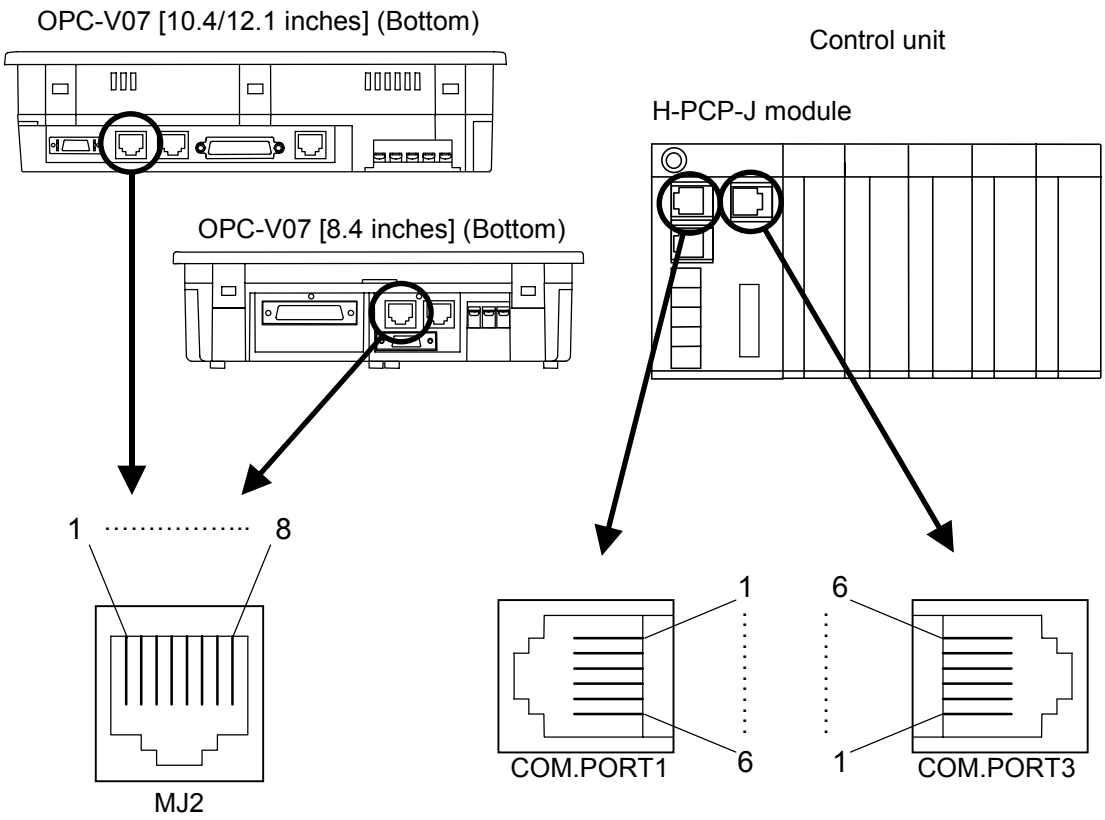
Interface of H-PCP-J module [COM. PORT3]: RS-422A



Interface of H-PCP-J module [COM. PORT3]: RS-485



- **Pin layout of connector**



- **Connector pin number and signal details**

Operation panel OPC-V07 [MJ2]
RS-485

Pin No.	Signal name	Symbol
1	RS-485 send/receive data	+SD/RD
2	RS-485 send/receive data	−SD/RD
3	Unused	—
4	Unused	—
5	GND	SG
6	GND	SG
7	Unused	—
8	Unused	—

Control unit [COM.PORT1/3]
RS-422A

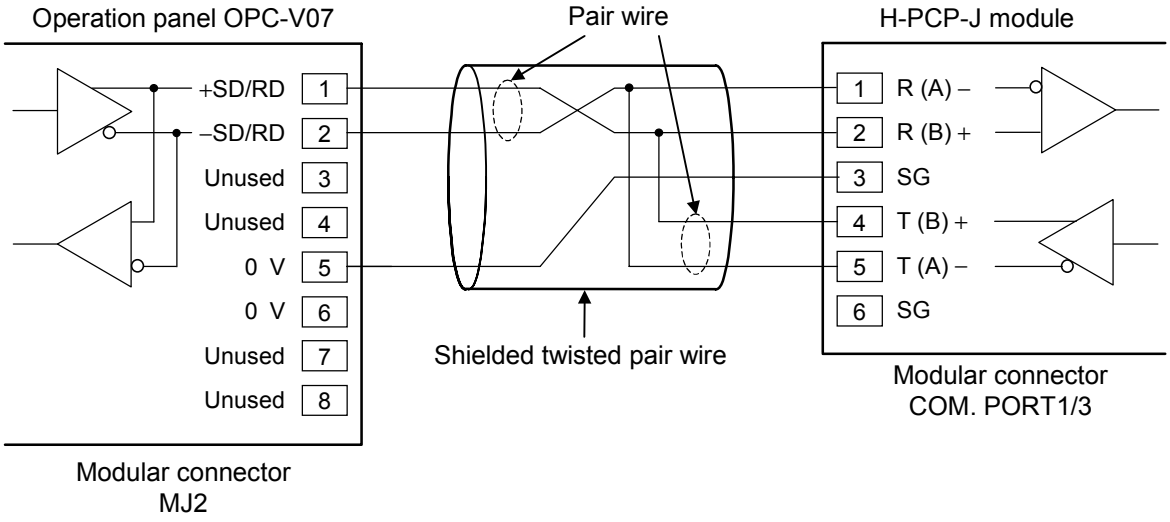
Pin No.	Signal name	Symbol
1	RS-422A receive data	R (A) −
2	RS-422A receive data	R (B) +
3	Signal ground	SG
4	RS-422A send data	T (B) +
5	RS-422A send data	T (A) −
6	Signal ground	SG

RS-485

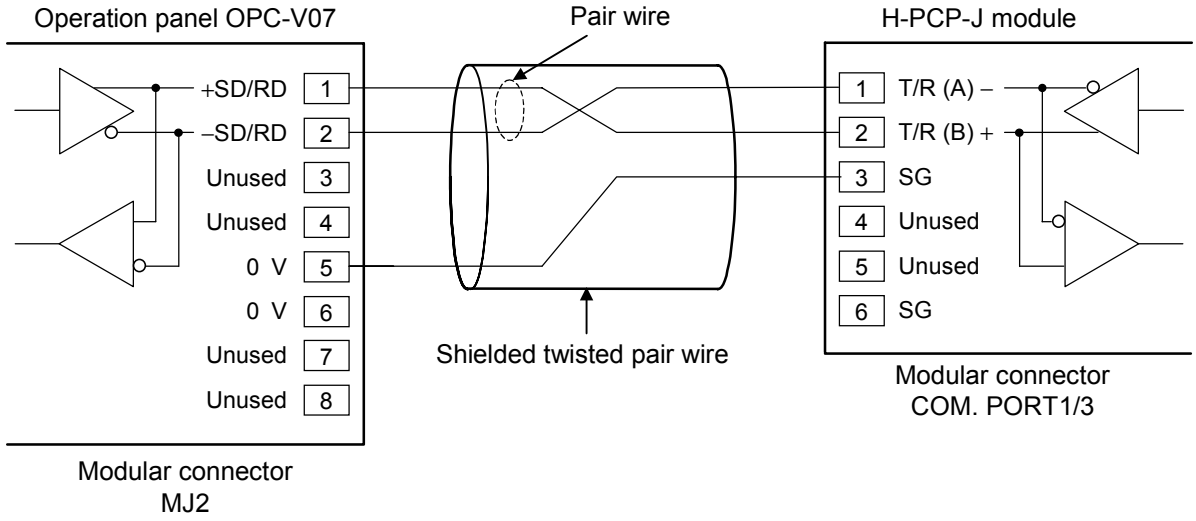
Pin No.	Signal name	Symbol
1	RS-485 send/receive data	T/R (A) −
2	RS-485 send/receive data	T/R (B) +
3	Signal ground	SG
4	Unused	—
5	Unused	—
6	Signal ground	SG

- **Wiring contents**

Interface of H-PCP-J module: RS-422A



Interface of H-PCP-J module: RS-485



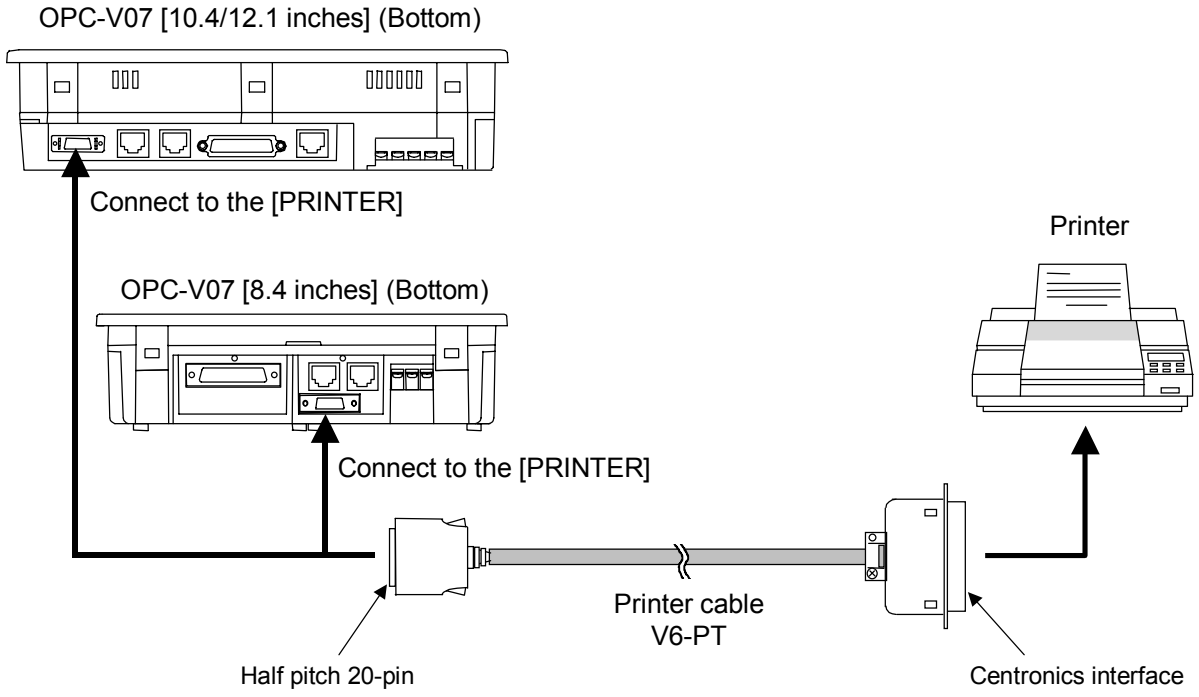
Recommended modular connector
Modular connector for connect to operation panel OPC-V07:
TM10P-88P (Manufactured by HIROSE ELECTRIC CO., LTD.)
Modular connector for connect to H-PCP-J:
TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

2.1.3 Connection to the Printer

By connecting a printer to the operation panel OPC-V07, you can print data sheets, make hard copies of screen.
Data sheets print is executed with “Printer” screen (P. 3-119). Eight types of data sheet (printing items) are registered.

Data sheet types: TIO monitor, TI monitor, AI monitor, TIO set value, TI set value, AI set value, Job file, Alarm history

Pressing the function switch [F6] on the front of the OPC-V07 makes a hard copy of the contents of the screen (except the “Main Menu” screen).



In connection of OPC-V07 and printer, recommend use of printer cable V7-PT (Sold separately, Cable length: 2.5 m).

Usable printer type

EPSON: Compatibles with ESC/P24-84 or later
NEC: PC-PR201 series

2.2 Control Unit Communication Setting

2.2.1 Data bit configuration and communication speed setting

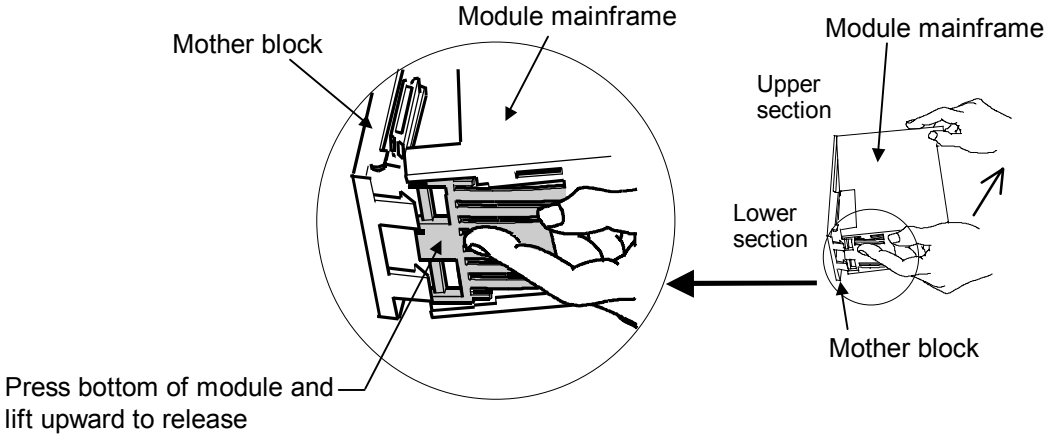
⚠ WARNING

- To prevent electric shock or instrument failure, always turn off the power before setting the switch.
- To prevent electric shock or instrument failure, never touch any section other than those instructed in this manual.

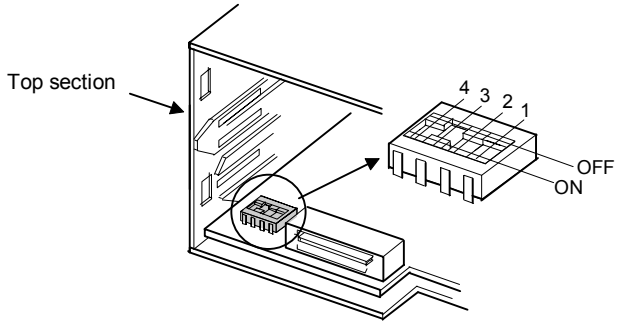
Communication parameter (data bit configuration and communication speed) of control unit is set with the dip switches located in the H-PCP-A/B/J module.

■ H-PCP-A/B module

1. To separate the module mainframe from the mother block, press the bottom on the module, lifting upward, to release connection.



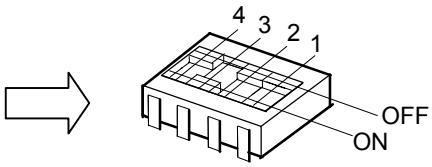
2. Data bit configuration and communication speed can be set with the dip switches located in the H-PCP-A/B module. Always make the same communication settings on the OPC-V07 and control unit.



Rear view of module mainframe with mother block removed

H-PCP-A/B module
dip switches setting

Factory set value of operation panel OPC-V07:
- Data 8-bit
- Non parity
- Stop 1-bit
- Communication speed 9600 bps



4	3	2	1
OFF	ON	OFF	OFF

1	2	Data configuration
OFF	OFF	Data 8-bit, Non parity
OFF	ON	Data 7-bit, Even parity
ON	OFF	Data 7-bit, Odd parity
ON	ON	Don't set this one

← Set the data 8-bit, non parity.

Factory set value: Data 8-bit, Non parity

Stop bit: 1 (Fixed)

3	4	Communication speed
OFF	OFF	2400 bps
OFF	ON	4800 bps
ON	OFF	9600 bps
ON	ON	19200 bps

← Set the 9600 bps.

Factory set value: 9600 bps

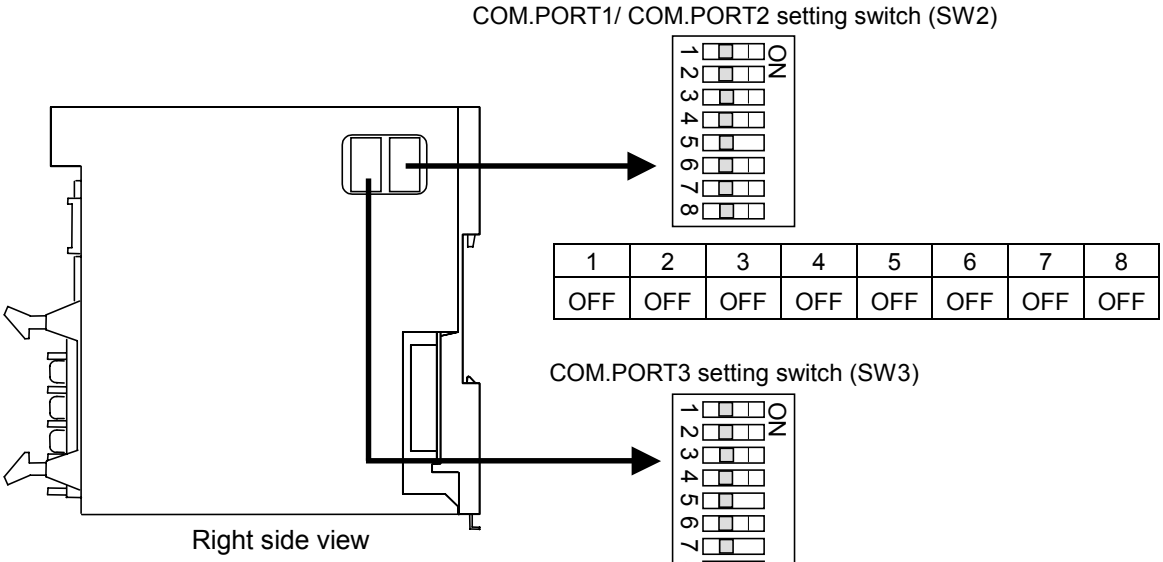
The parameter for communication between the OPC-V07 and control unit on the OPC-V07 side can be checked on the "Extension Prog. Info" (P. 2-18).

3. After communication setting is complete, place the module mainframe opening on top of the mother block tab and snap the lower part of module mainframe on to the mother block. A snapping sound will be heard when module mainframe is securely connected to mother block.

■ H-PCP-J module

Protocol, data bit configuration, communication speed and initialize method can be set with the dip switches (SW2/SW3) on the right side of the H-PCP-J module. Always make the same communication settings on the OPC-V07 and control unit.

Factory set value of operation panel OPC-V07:
Data 8-bit Non parity
Stop 1-bit Communication speed 9600 bps
RKC communication protocol



1	2	3	4	5	6	7	8
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

1	2	3	4	5	6	7	8
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

- **When connect the OPC-V07 to the H-PCP-J [COM.PORT1]**

Set communication parameter with COM.PORT1/COM.PORT2 setting switch (SW2).

SW2		Data bit configuration
1	2	
OFF	OFF	Data 8-bit, Non parity, Stop 1-bit
ON	OFF	Data 7-bit, Odd parity, Stop 1-bit
OFF	ON	Data 7-bit, Even parity, Stop 1-bit
ON	ON	Data 7-bit, Even parity, Stop 2-bit

← Set the data 8-bit, non parity, stop 1-bit.

Factory set value: Data 8-bit, Non parity, Stop 1-bit

Continued on the next page.

Continued from the previous page.

SW2		Communication speed
3	4	
OFF	OFF	9600 bps
ON	OFF	19200 bps
OFF	ON	38400 bps
ON	ON	Don't set this one

← Set the 9600 bps.

Factory set value: 9600 bps

SW2				Protocol
5	6	7	8	
OFF	OFF	OFF	OFF	RKC communication protocol
ON	OFF	OFF	OFF	Modbus protocol

← Set the RKC communication protocol.

Factory set value: RKC communication protocol

- **When connect the OPC-V07 to the H-PCP-J [COM.PORT3]**

Set communication parameter with COM.PORT3 setting switch (SW3)

SW3		Data bit configuration
1	2	
OFF	OFF	Data 8-bit, Non parity, Stop 1-bit
ON	OFF	Data 7-bit, Odd parity, Stop 1-bit
OFF	ON	Data 7-bit, Even parity, Stop 1-bit
ON	ON	Data 7-bit, Even parity, Stop 2-bit

← Set the data 8-bit, non parity, stop 1-bit.

Factory set value: Data 8-bit, Non parity, Stop 1-bit

SW3		Communication speed
3	4	
OFF	OFF	9600 bps
ON	OFF	19200 bps
OFF	ON	38400 bps
ON	ON	Don't set this one

← Set the 9600 bps.

Factory set value: 9600 bps

SW3	Protocol
5	
OFF	RKC communication protocol
ON	Modbus protocol

← Set the RKC communication protocol.

Factory set value: RKC communication protocol

Continued on the next page.

Continued from the previous page.

SW3 6	Initialize
OFF	Normal (It is initialized only in initialization execution)
ON	In power on, all module is initialized

← Set the normal.

Factory set value: Normal (It is initialized only in initialization execution)

SW3 7	Modbus mode selection
OFF	Modbus mode 1 (Data time interval judges time-out with 24-bit time or more.) This mode is based on Modbus RTU standard.
ON	Modbus mode 2 (Data time interval judges time-out with 24-bit time + 2 ms or more.) As time intervals between each data configuring one message become longer than the 24-bit time when sending a command message from the master, it is set when the slave does not make a response.

← Always do not change the COM.PORT3 setting switch (SW3) No. 7.

Factory set value: Modbus mode 1

The setting of Modbus mode selection is valid for the communication ports of COM.PORT1/COM.PORT2 and COM.PORT3. However, the setting of COM.PORT3 setting switch (SW3) No.7 is invalid for any communication ports which select protocols other than the Modbus protocol.

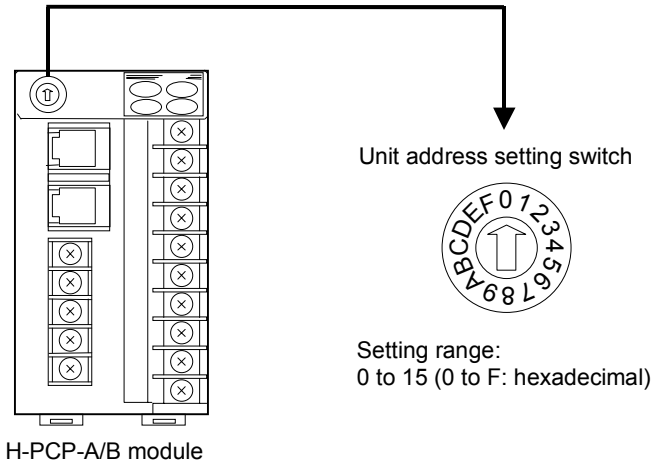
Always do not change the COM.PORT3 setting switch (SW3) No. 8.

The parameter for communication between the OPC-V07 and control unit on the OPC-V07 side can be checked on the “Extension Prog. Info” (P. 2-18).

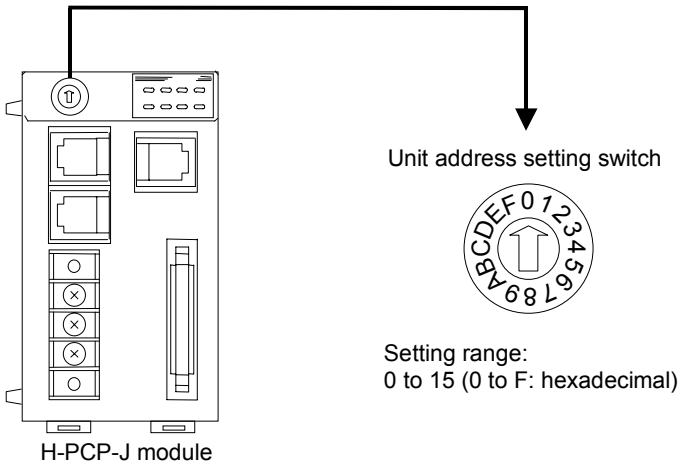
2.2.2 Unit address setting

When each control unit is multi-drop connected to OPC-V07, set the unit address of each control unit using the unit address setting switch at the front of the H-PCP-A/B/J module. For this setting, use a small blade screwdriver.

■ H-PCP-A/B module



■ H-PCP-J module



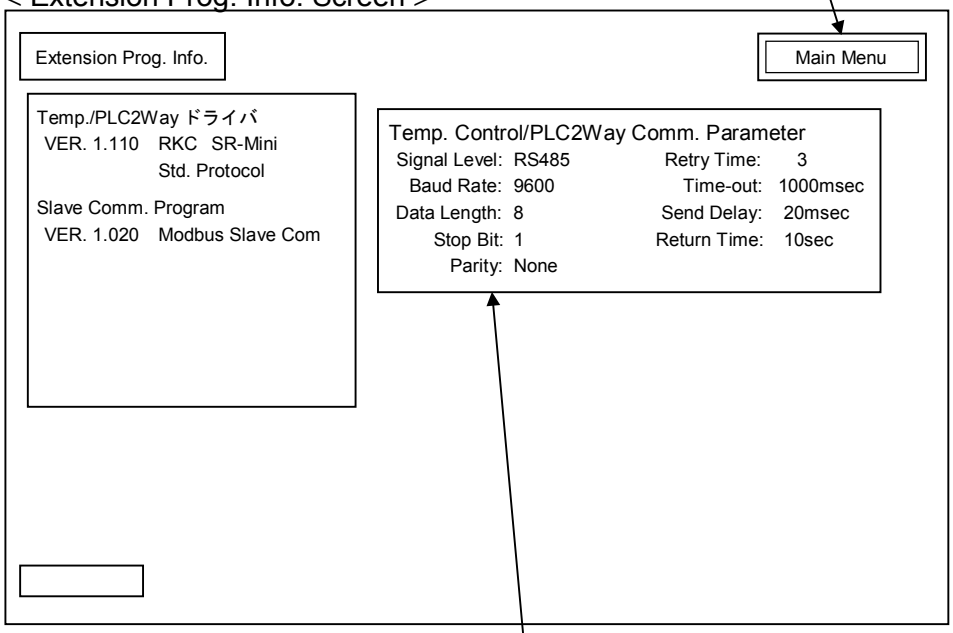
Set the unit address such that it is different to the other addresses on the same line. Otherwise, problems or malfunction may result.

2.2.3 Check the communication parameter of OPC-V07 side

The parameter for communication between the operation panel and control unit on the operation panel OPC-V07 side can be checked on the “Extension Prog. Info.” screen.

Main Menu
Touching this key change to the “Main Menu” screen.

< Extension Prog. Info. Screen >

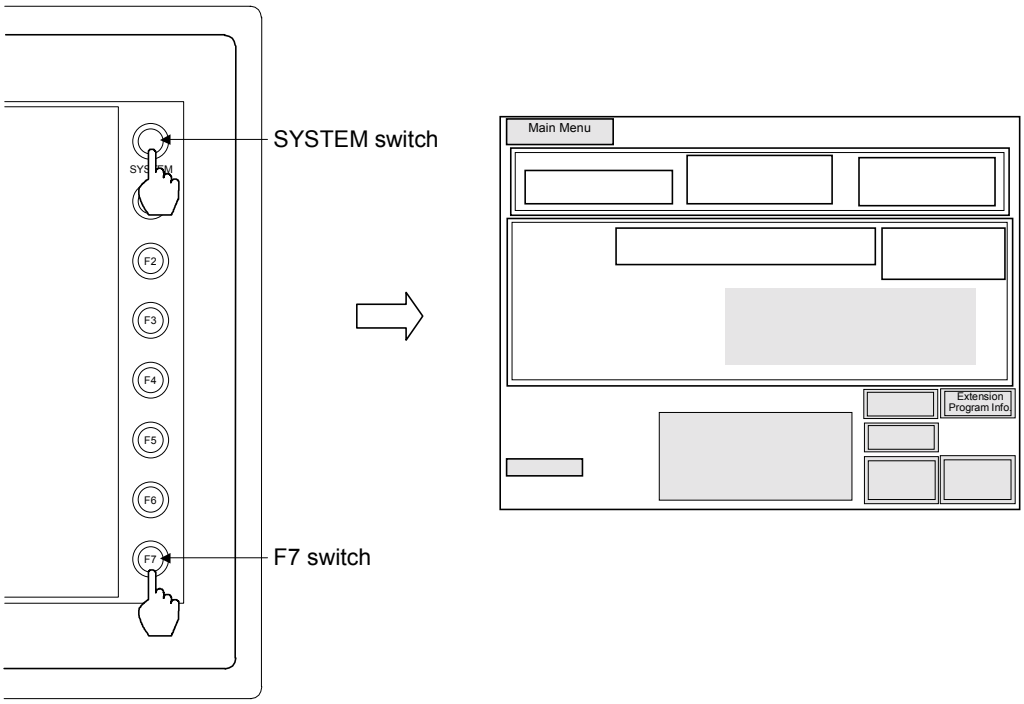


Temperature control/PLC2Way communication parameter
The parameter for communication between the operation panel OPC-V07 and control unit is displayed but cannot be set.

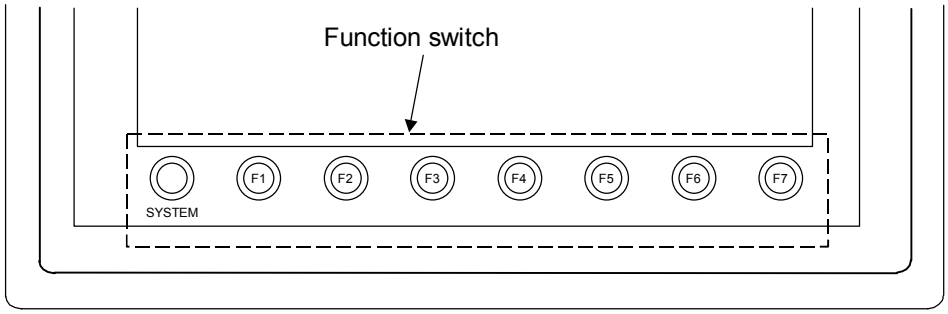
The panel editor V-SFT changes the parameter for communication on the operation panel OPC-V07 side. For the panel editor V-SFTE, see the instruction manual of Hakko Electronics Co., Ltd.

< Operation procedures >

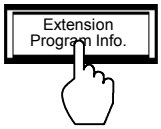
1. Press and hold the [SYSTEM] switch, and press the [F7] switch at the same time.
"Main Menu" screen is displayed. The "Main Menu" screen can be changed on any screen.



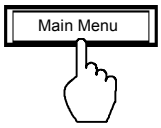
This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.



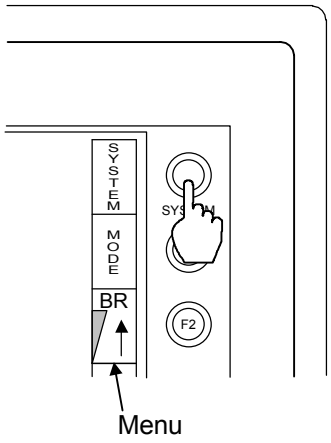
2. Touch the [Extension Program Info.] key. "Extension Prog. Info." screen is displayed.



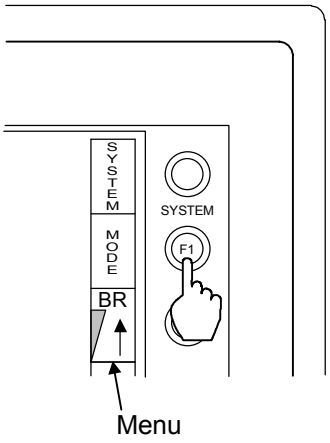
3. After the information is checked, touch the [Main Menu] key to call out the "Main Menu" screen.



4. Press the [SYSTEM] switch with the "Main Menu" screen being displayed. The menu is displayed at the side of the function switch.



5. Press the [F1] switch with the menu being displayed.
Pressing the [F1] switch displays the "Opening" screen after an error is checked and then displays the "Operation Menu" screen.

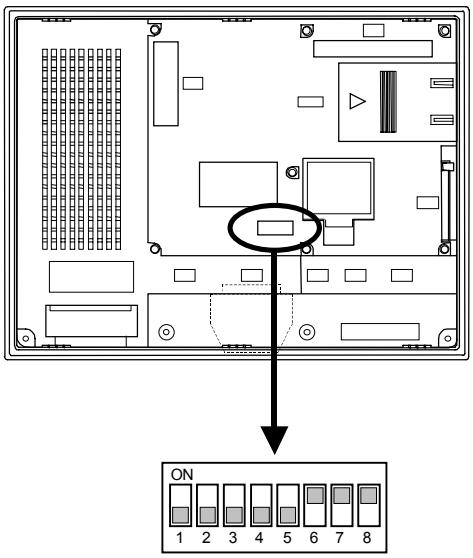


The menu disappears after a certain lapse of time.
If it disappears, press the [SYSTEM] switch again.

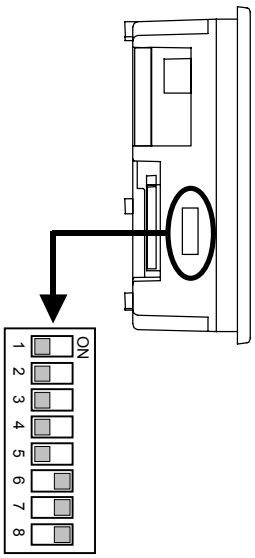
2.3 Termination Resistor (OPC-V07 side) Setting

Set the termination resistor with dip switches.
No.6: Connector for the host computer [MJ1]
No.7: Connector for the PLC [CN1]
No.8: Connector for the control unit [MJ2]

OPC-V07 [10.4/12.1 inches] (Rear)



OPC-V07 [8.4 inches] (Right side)



6	Termination resistor of connector for the host computer [MJ1]
OFF	If the OPC-V07 is other than a termination when connected to the MJ1 connector using host computer and RS-485.
ON	If the OPC-V07 is a termination when connected to the MJ1 connector using host computer and RS-485.

Factory set value: ON

Setting will be invalid when connecting host computer of RS-232C to OPC-V07.

7	RD termination resistor at pins 24 and 25 of connector for the PLC [CN1]
OFF	If the OPC-V07 is other than a termination when connected to the CN1 connector using PLC and RS-422A/485(2-wire type).
ON	If the OPC-V07 is a termination when connected to the CN1 connector using PLC and RS-422A/485(2 wire type).

Factory set value: ON

Setting will be invalid when connecting host computer of RS-232C to OPC-V07.

8	Termination resistor of connector for the control unit [MJ2]	
OFF	Don't change this one (OFF fixed).	
ON	If the OPC-V07 is a termination when connected to the MJ2 connector using control unit.	← Set the ON

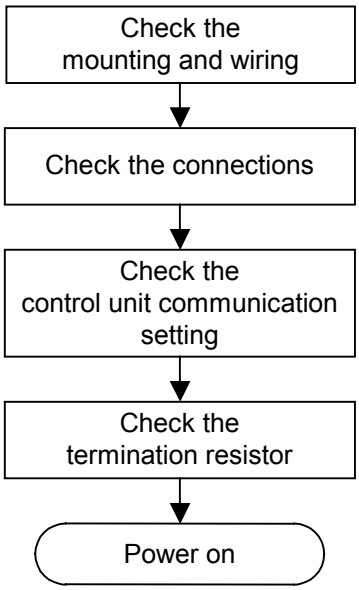
Factory set value: ON

Always do not change the switch No. 1 to 5 (OFF fixed).

2.4 Start-up Procedures

■ Check prior to power on

Check the following items before turning on the power to the operation panel OPC-V07.



Conforms the mounting and wiring.

☞ See the instruction manual of Hakko Electronics Co., Ltd.

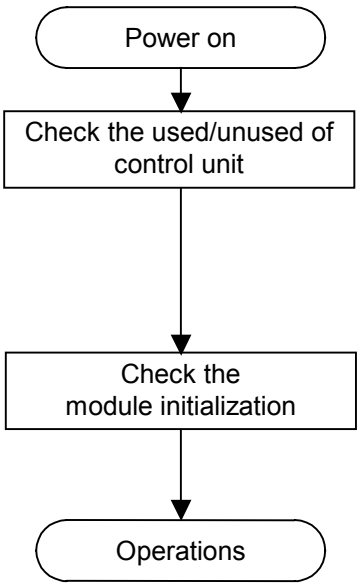
Connections conform to **2.1 Connections (P. 2-2)**.

Control unit communication setting conforms to **2.2 Control Unit Communication Setting (P. 2-12)**.

Termination resistor setting conforms to **2.3 Termination Resistor (OPC-V07 side) Setting (P. 2-21)**.

First, turn on the power for control unit, then for operation panel OPC-V07.

■ Check after power on



Check that the control units existing after power on are set to "Used."

☞ For details, see the **OPC-V Initial Settings ■ Unit Use/Unused, Unit name, Temperature input unit screen (P. 3-153)**.

When switching on the power for the first time after changing the control unit module composition, check that the control unit module initialization have been made.

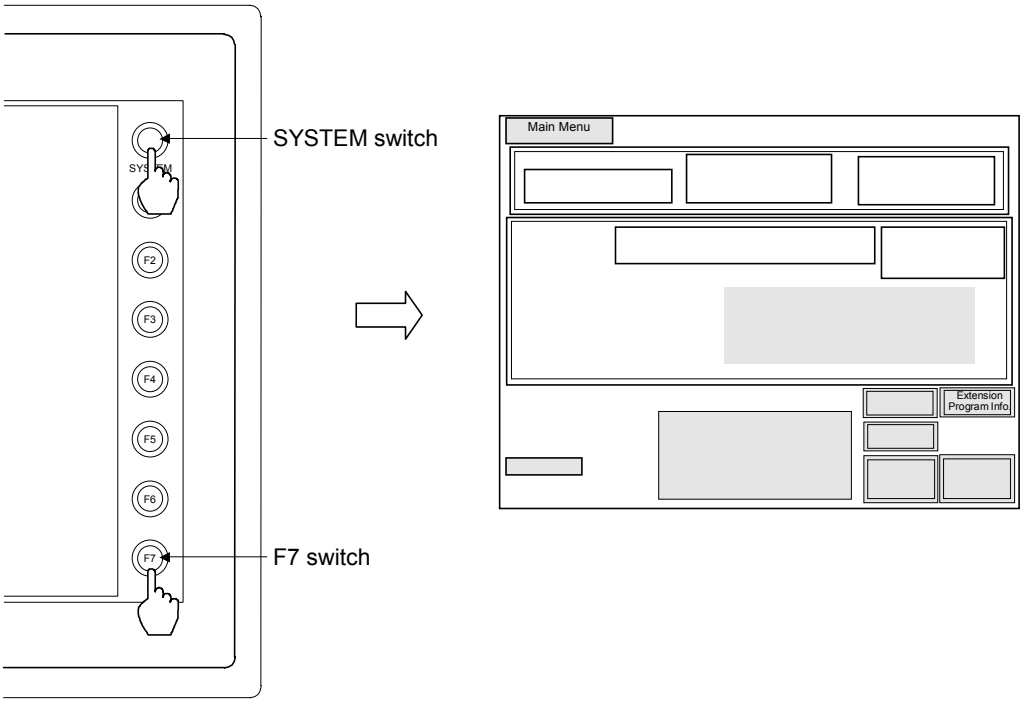
☞ For the module initialization, see the **■ Controller initial menu (P. 3-166)**.

2.5 Brightness Adjustment

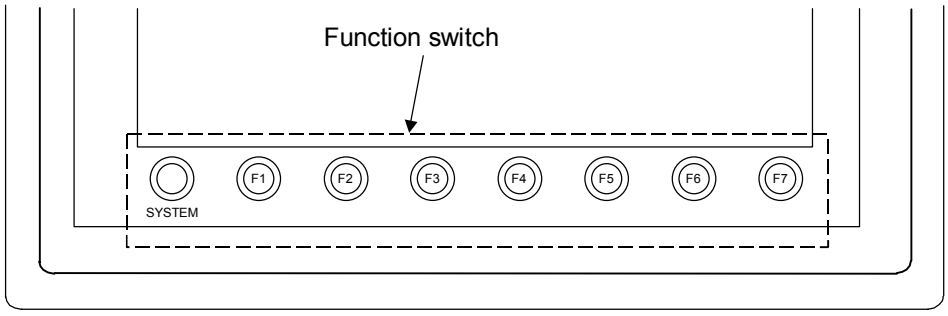
The brightness adjustment can be set with the function switches. Adjusts the screen brightness in three levels (Bright, Medium, Dark).

Operation procedures

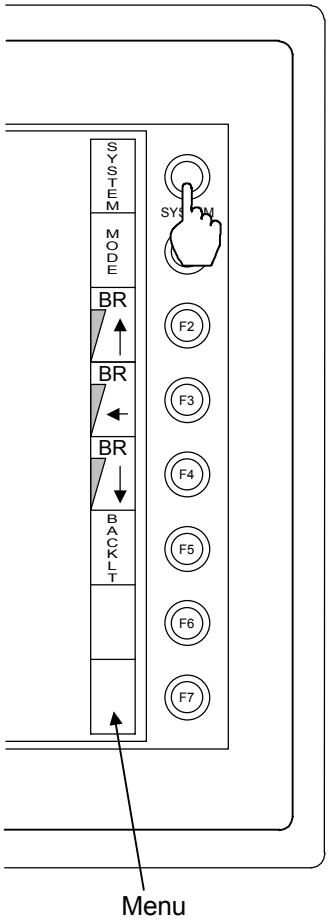
1. Press and hold the [SYSTEM] switch, and press the [F7] switch at the same time.
"Main Menu" screen is displayed. The "Main Menu" screen can be changed on any screen.



This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.



2. Press the [SYSTEM] switch with the "Main Menu" screen being displayed. The menu is displayed at the side of the function switch.



F1: Mode
Main menu mode ends.

F2: Brightness adjustment (Bright)
It brightens screen.

F3: Brightness adjustment (Medium)
It makes screen with middle brightness.

F4: Brightness adjustment (Dark)
It darkens screen.

F5 to F7: Invalidity (Ignored)

3. Press the [F2] to [F4] switches with the menu being displayed. The brightness adjustment can be set.

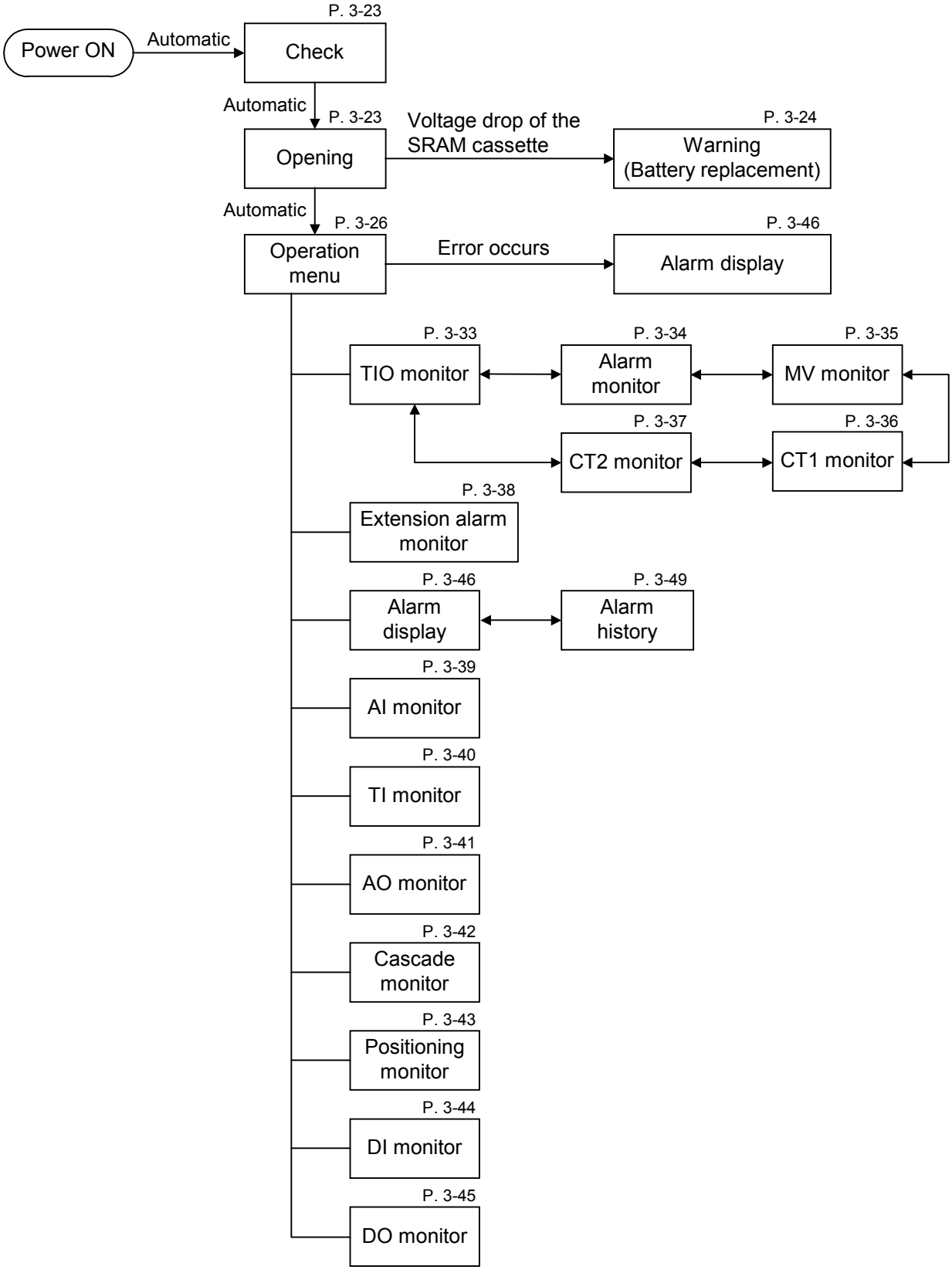
4. Press the [F1] switch with the menu being displayed.
Pressing the [F1] switch displays the "Opening" screen after an error is checked and then displays the "Operation Menu" screen.

SCREEN DESCRIPTIONS

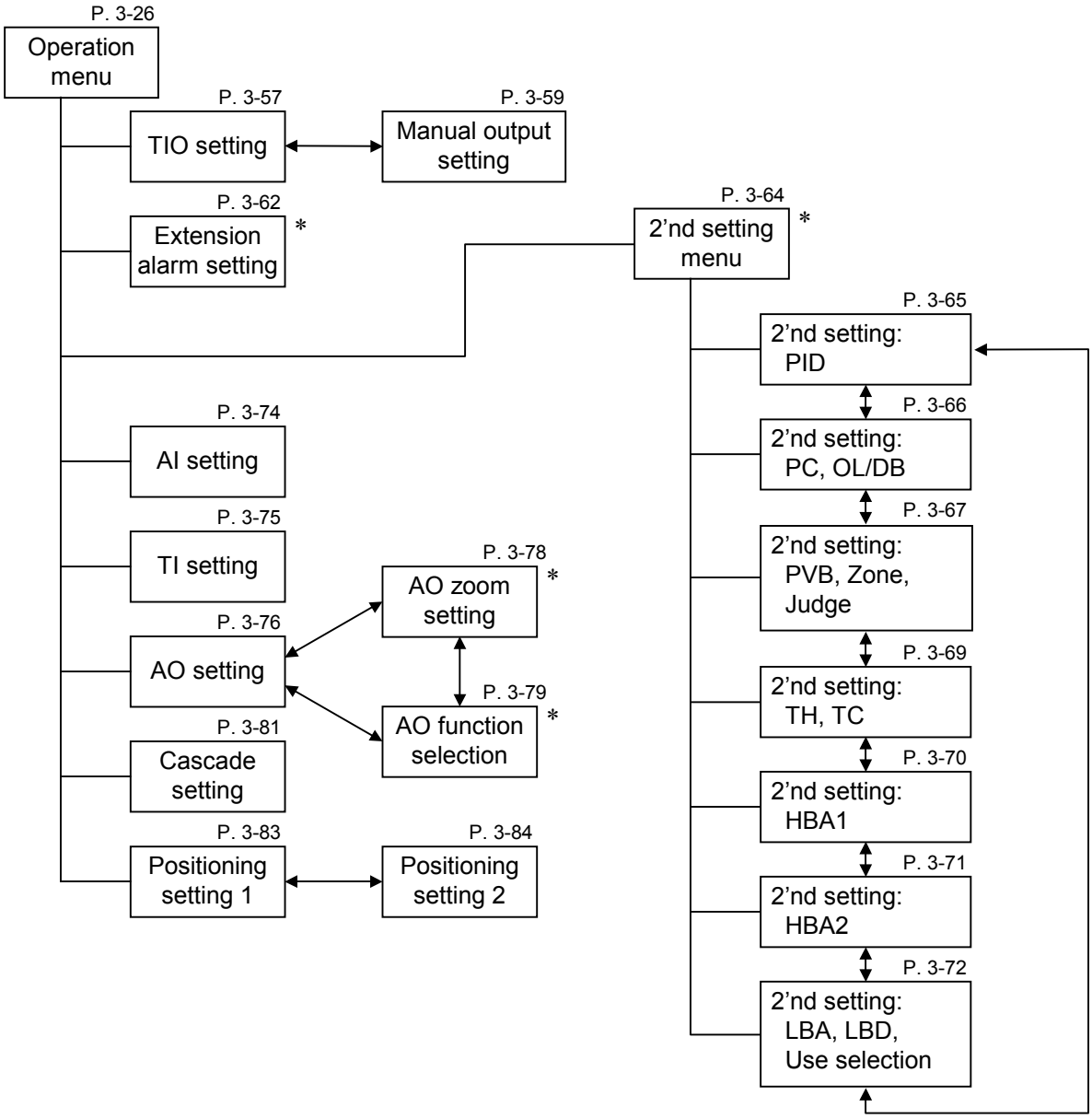
3

3.1 Screen Configuration

■ **Operation monitor**



■ Operation setting



* This screen is not displayed normally. Protection release is necessary to display each screen. Details see the following.

"Extension alarm setting" screen:

See the ■ **Releasing extension alarm setting calling up key protect (P. 3-61).**

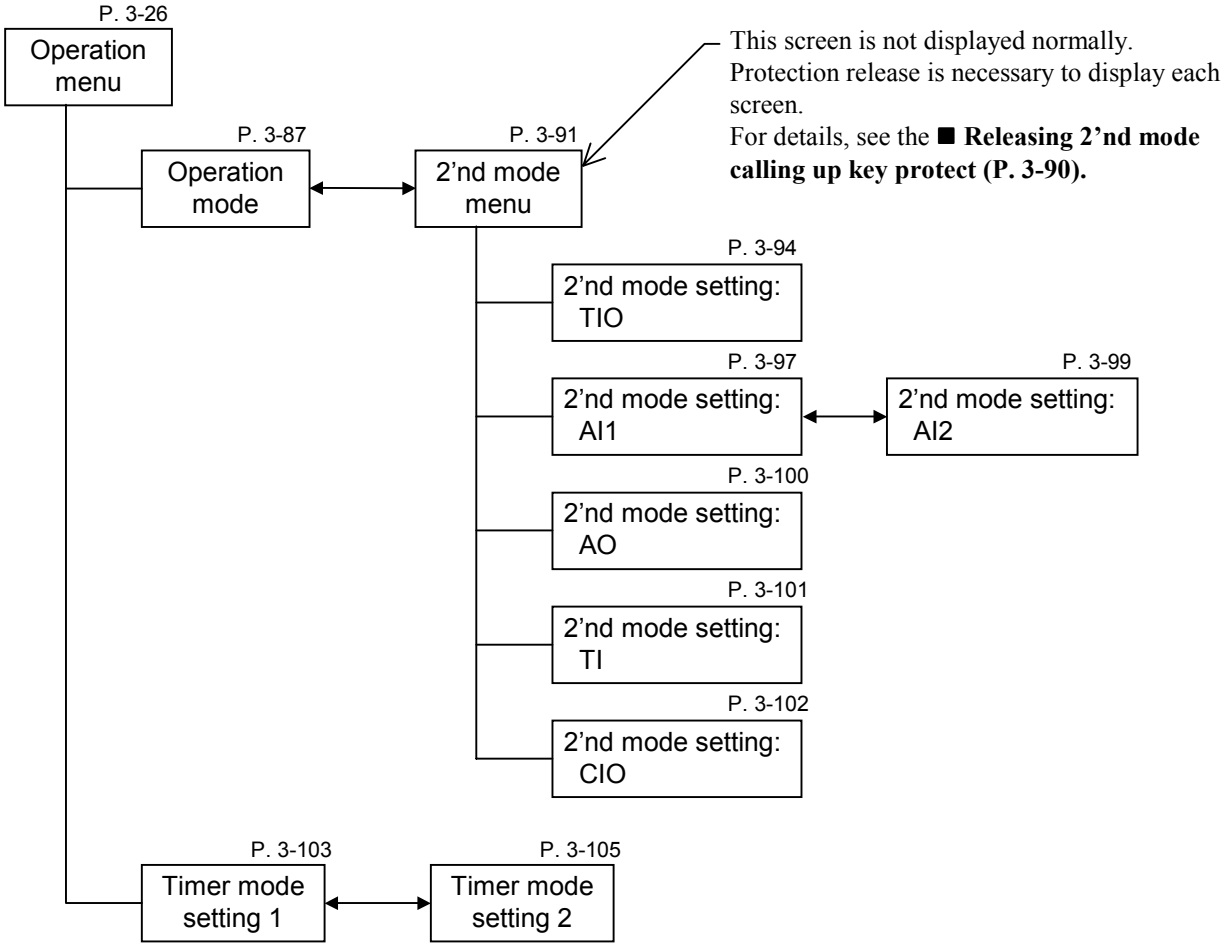
"2'nd setting Menu" screen:

See the ■ **Releasing 2'nd setting menu calling up key protect (P. 3-63).**

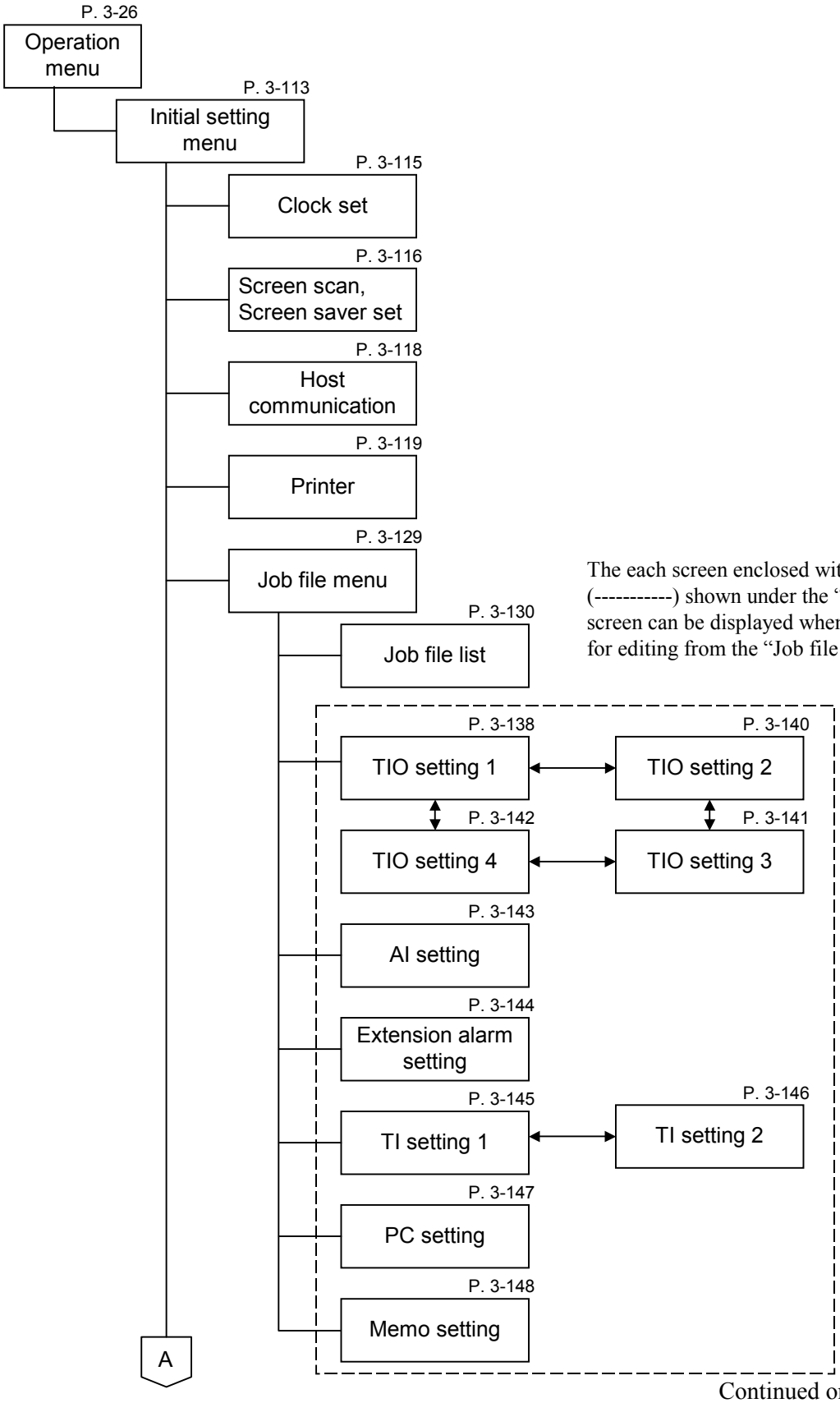
"AO zoom setting" screen, "AO function selection" screen:

See the ■ **Releasing AO zoom/AO function calling up key protect (P. 3-77).**

■ Operation mode, Timer mode



■ Initial setting



The each screen enclosed with the chain line (----------) shown under the "Job file menu" screen can be displayed when a file is specified for editing from the "Job file list" screen.

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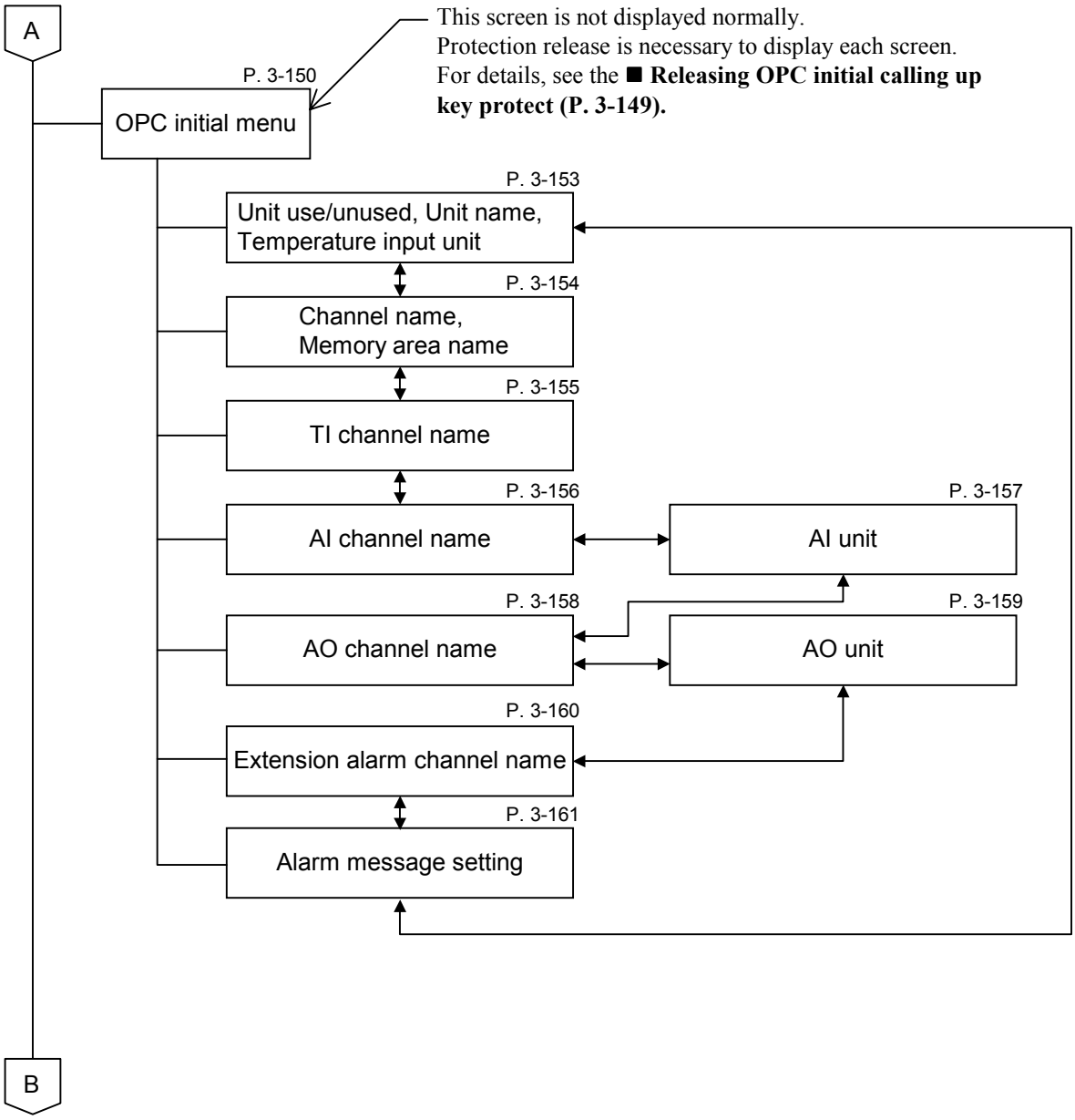

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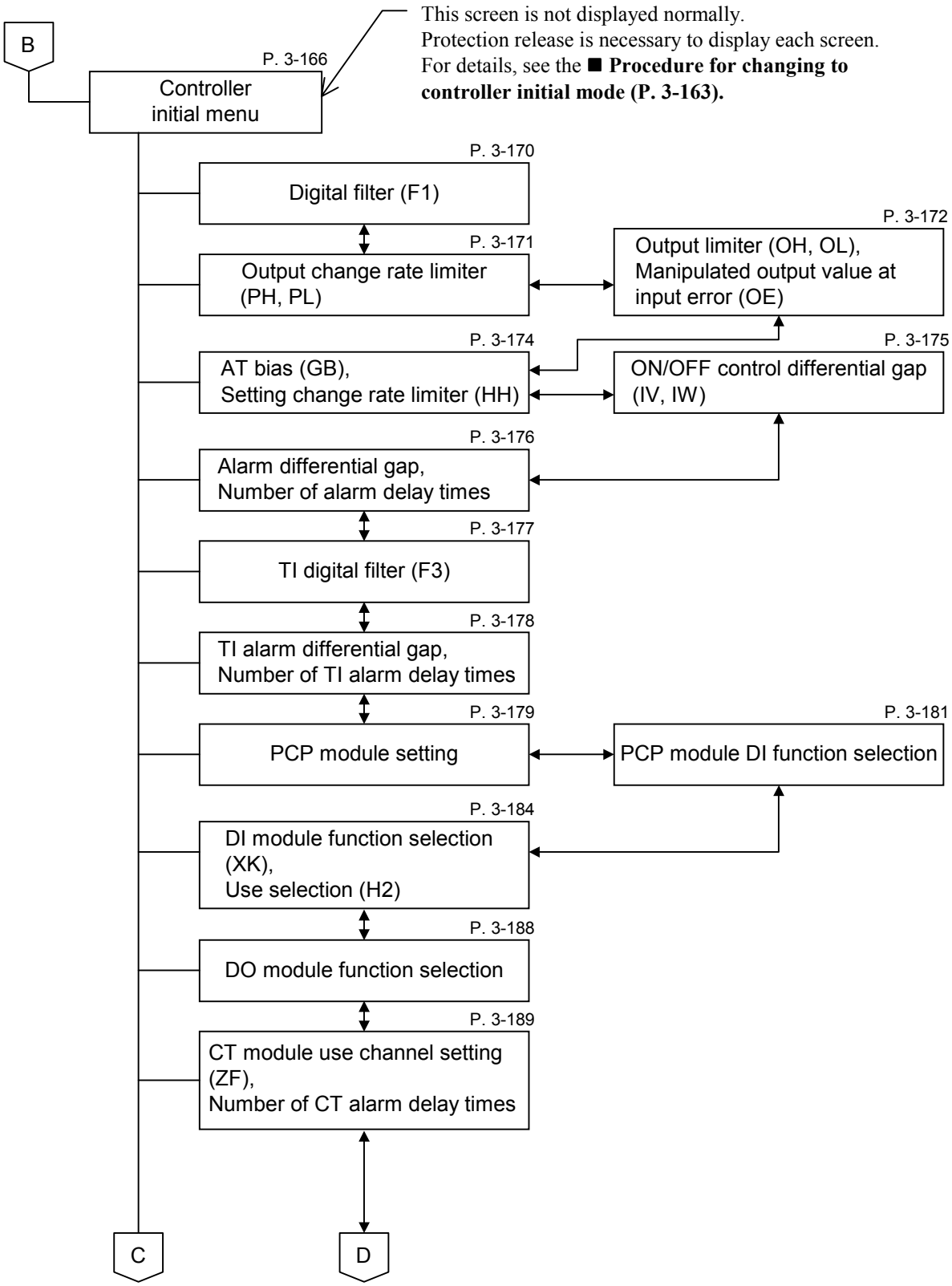

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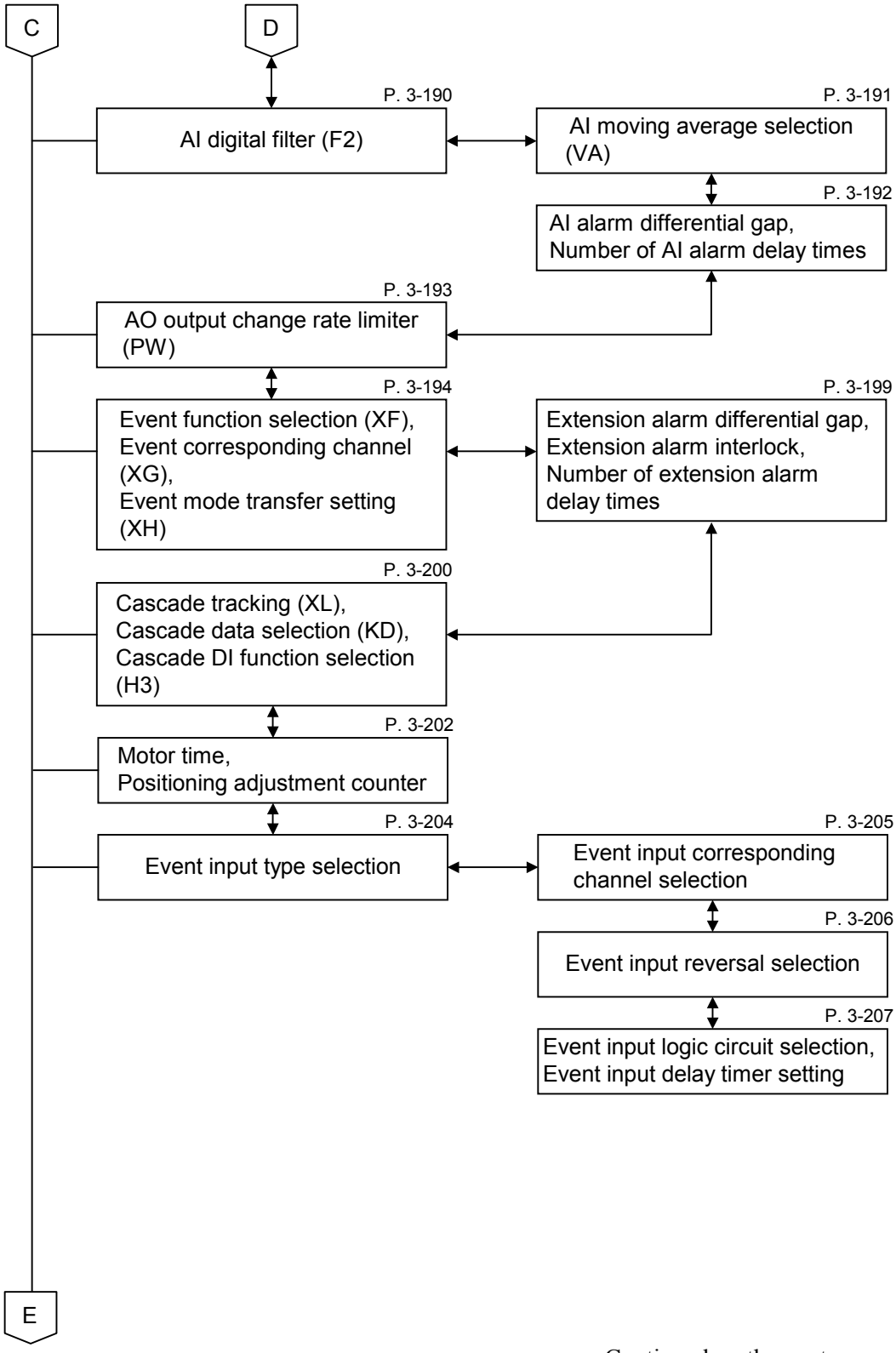

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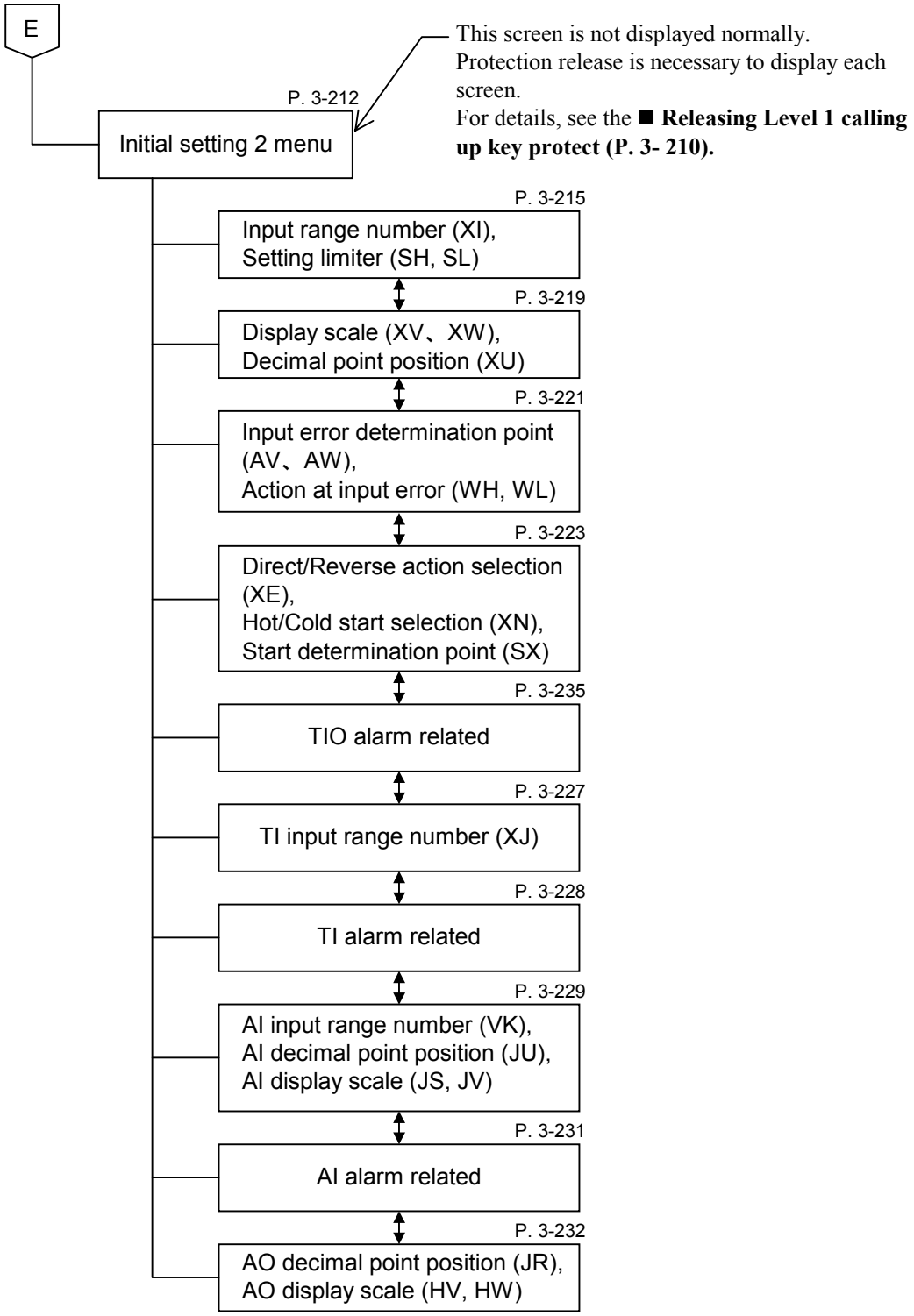
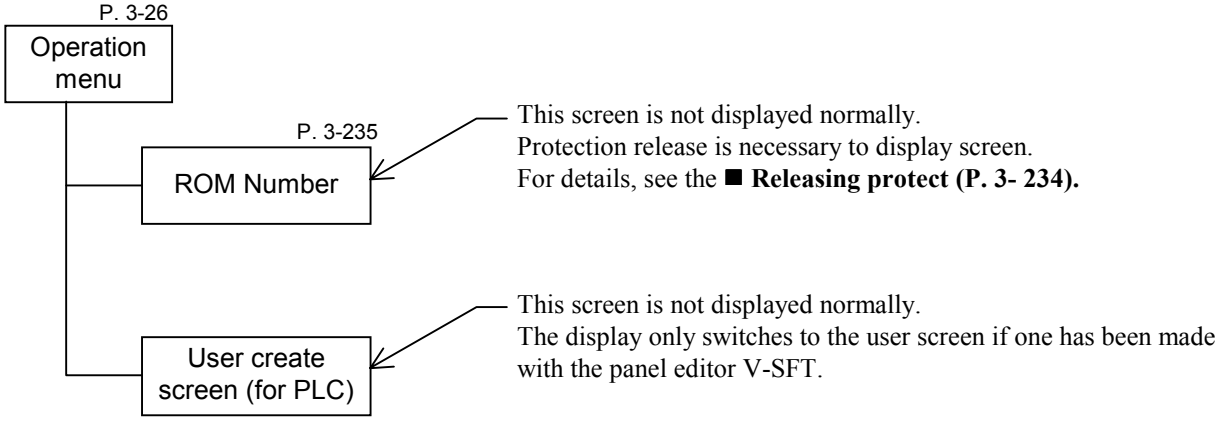


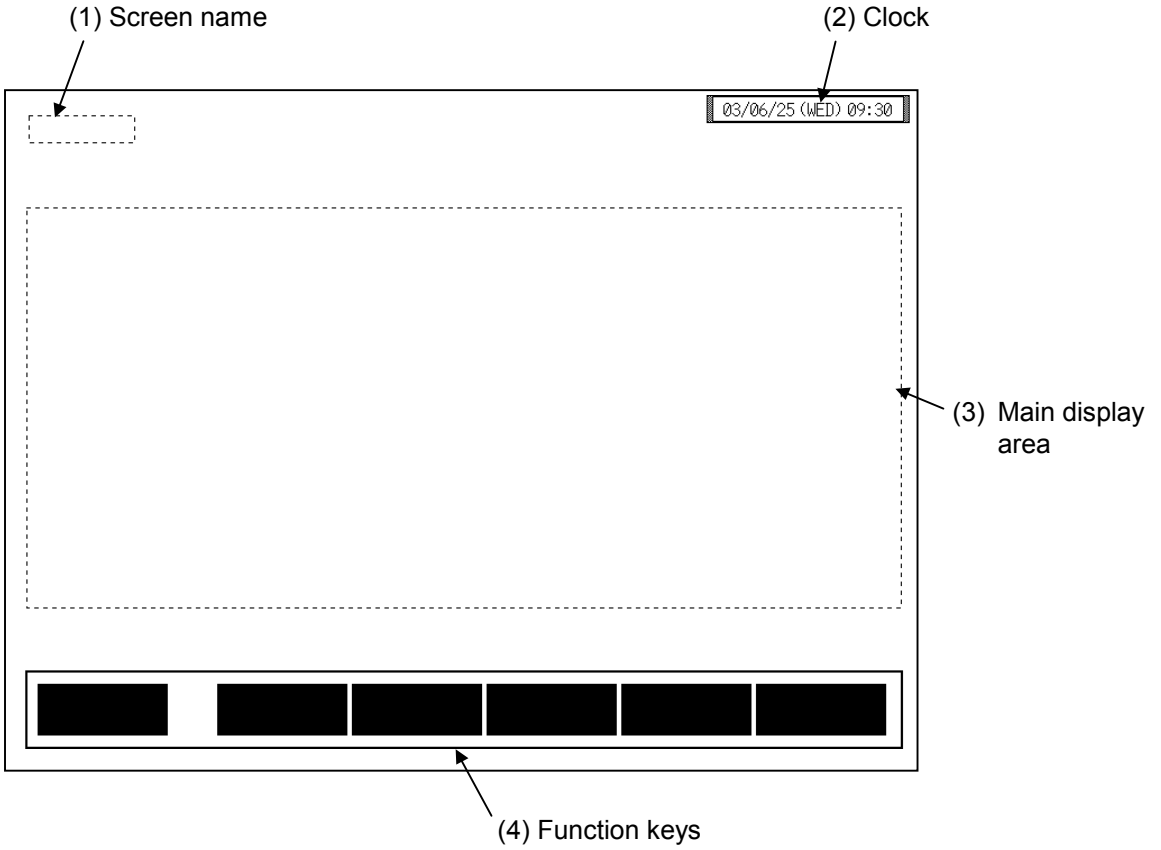
■ ROM version, User create screen (for PLC)



3.2 Basic Operations

3.2.1 Basic configuration of screen

The basic configuration of each screen is as shown below.



(1) Screen name: Displays the screen name.
There is the screen which is not displayed.

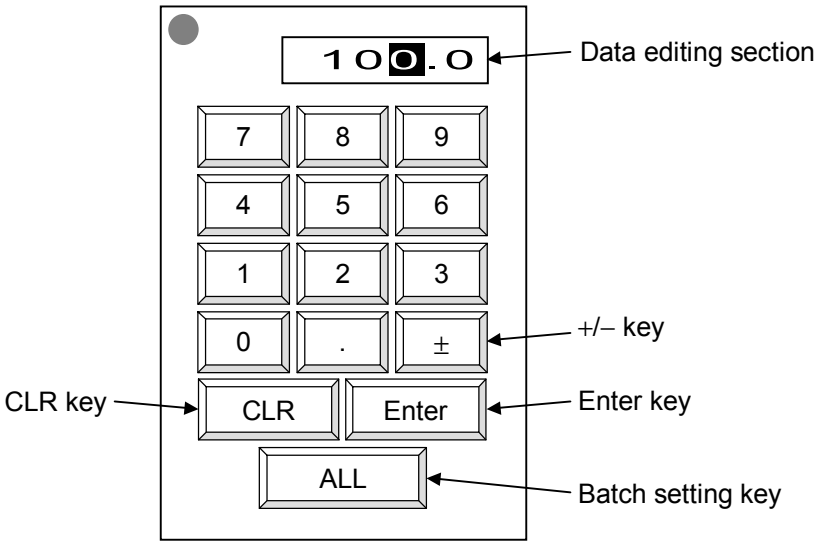
(2) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial settings menu "Clock set" screen (P. 5-115).

(3) Main display area:
Data is displayed for each screen. For setting screens, the data can be changed.

(4) Function key: These key changes are assigned to match the contents of the screen.
There is the screen which is not displayed.

3.2.2 Data settings

You directly touch the data setting or the part you want to change, the numeric keypad window appears on the screen.



Data editing section: Edits the data. The cursor shows where data is input. The number of characters that cab be edited in the data editing section depends on the number of characters that can be input for the data.

+/– key: The [+/–] key toggles the value between plus and minus. After inputting the number, set the + or – with this key before touching the [ENT] key.

ENT key: Enters the text displayed in the data editing section and closes the numeric keypad window.

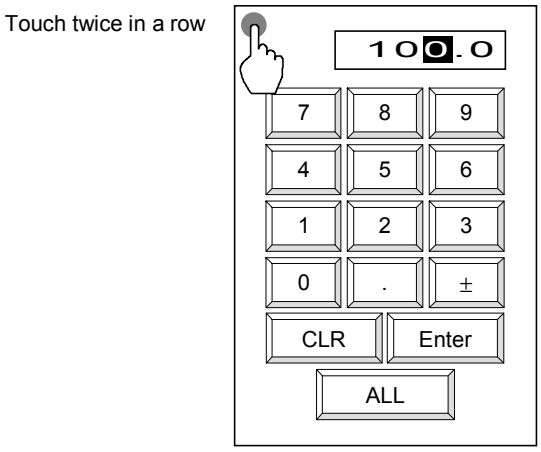
Batch setting key: The same items related to the same unit are simultaneously set to the same numeric values.

> The batch setting key may not be used depending on setting items.
> In addition, there are some setting items in which no batch setting key is displayed.

CLR key: Erases the input data. If you input the wrong number, touching this key.

■ Disappearing the numeric keypad window

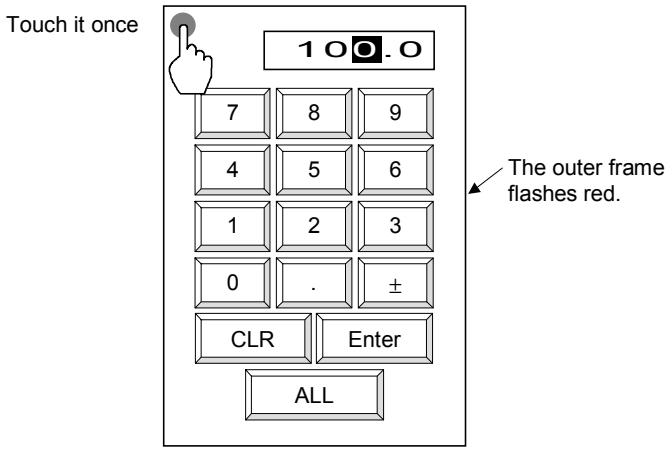
If you accidentally touch a setting part that you do not need to change and the numeric keypad window appears, either just press the [Enter] key without inputting a number or touch the top left section "●" of the numeric keypad window twice in a row to put out the numeric keypad window without changing the value.



■ Moving the numeric keypad window

This OPC-V07 is designed to display a numeric keypad window when you touch a data location to change a setting. The numeric keypad window is displayed so that it will not cover the data being changed, but if you need to check another data section that is hidden by the numeric keypad window, you can move the numeric keypad window with the following method.

1. Touch the top left section "●" of the numeric keypad window. The outer frame of the numeric keypad window flashes red.



2. When you touch the location to which you want to move the numeric keypad window, it moves there. The location you touched becomes the top left of the numeric keypad window.

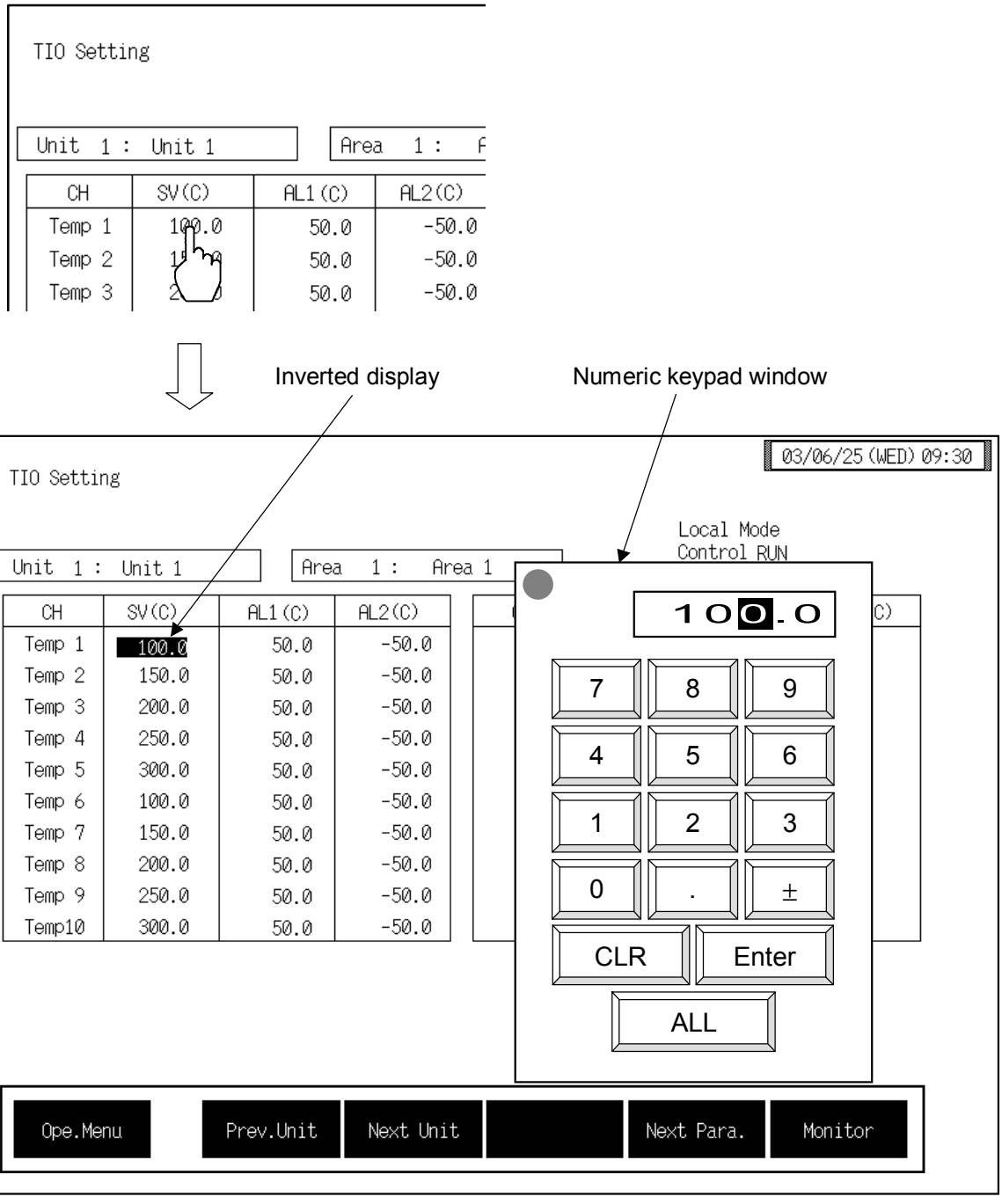
If you specify a position where the numeric keypad window would stick out beyond the edge of the screen, the numeric keypad window is displayed as close as it can go toward the specified position without sticking out beyond the edge of the screen.

■ Setting for each channel

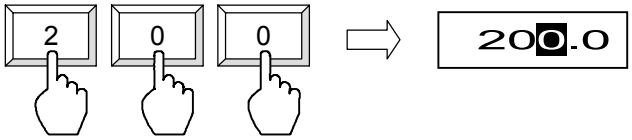
Example: When “Temp 1” set value (SV) is change from 100 °C to 200 °C.

1. Touch the [TIO Setting] key on the “Operation Menu” screen, to change to the “TIO Setting” screen.

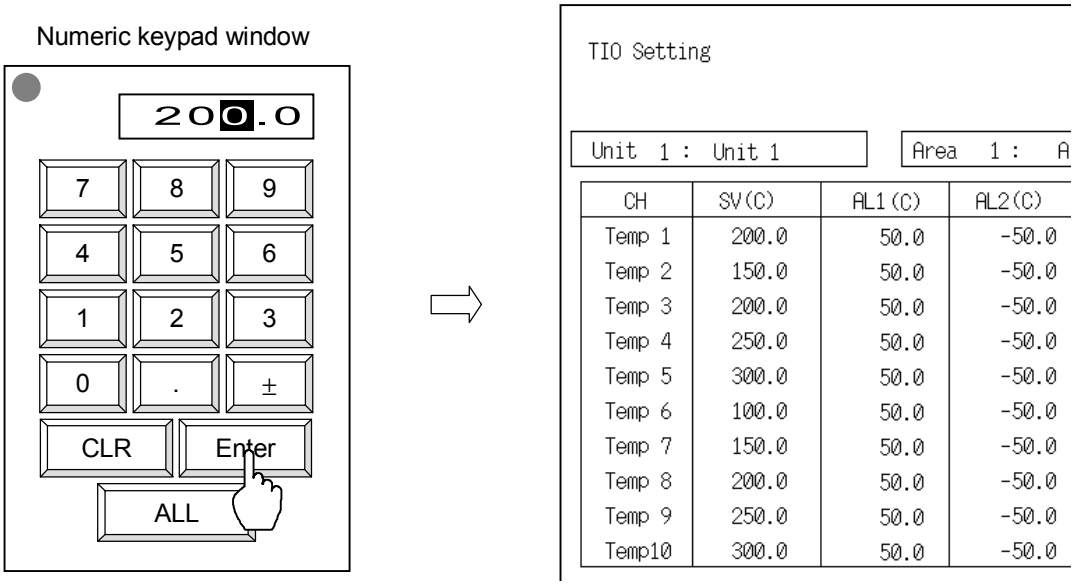
2. From the “TIO Setting” screen, directly touch the part you want to setting (Temp 1 SV). The numeric keypad window appears on the screen.



3. Touch the [2], [0], [0] key.



4. Touch the [Enter] key to enter the data. When the data is entered, the numeric keypad window disappears.



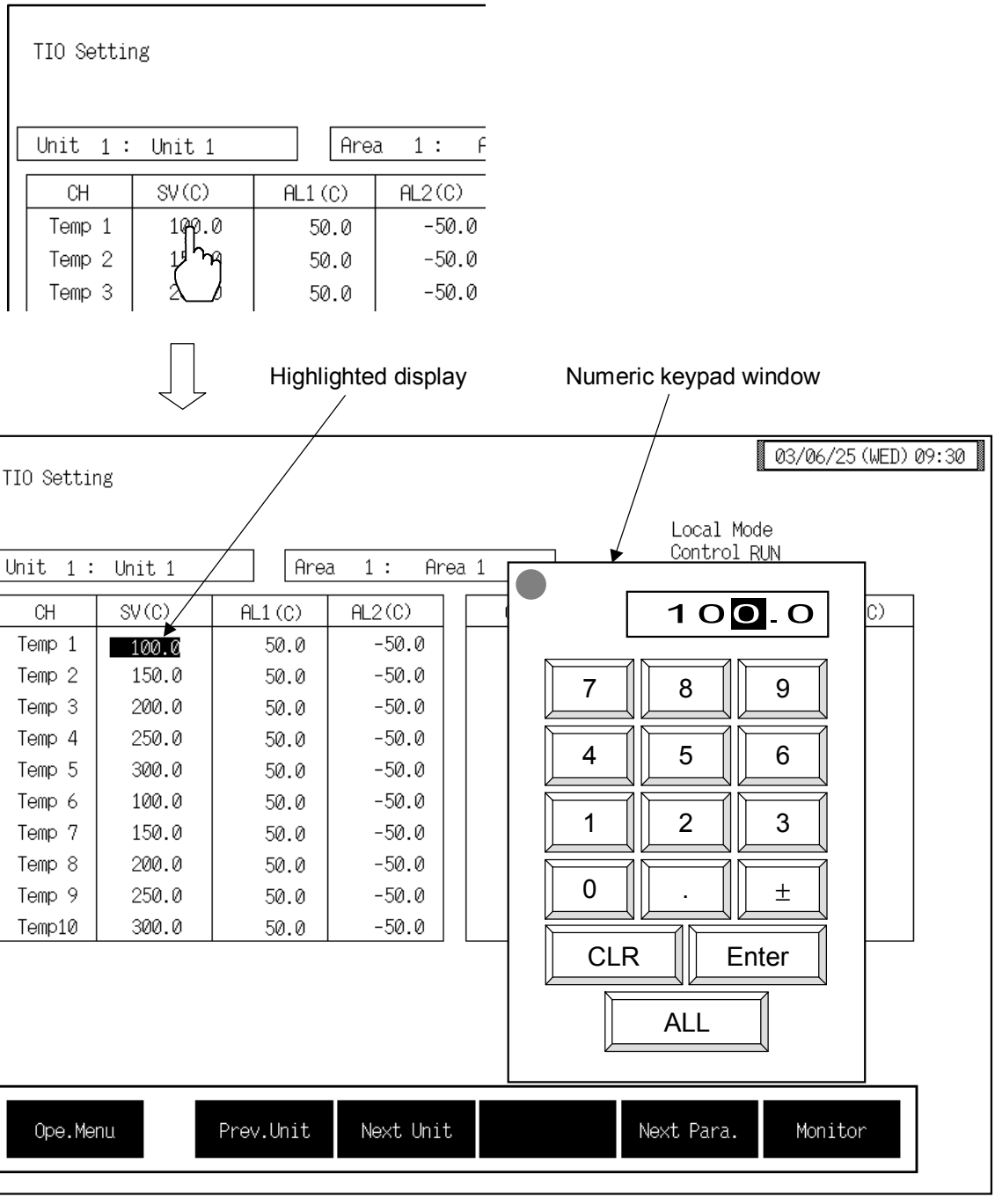
If you input a number outside the valid range, when you touch the [Enter] key, the numeric keypad window does disappear, but the value is not changed.

■ Setting for all channels (Batch setting)

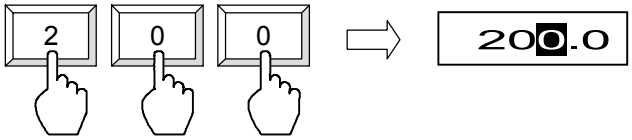
Example: When all set value (SV) is change to 200 °C.

1. Touch the [TIO Setting] key on the "Operation Menu" screen, to change to the "TIO Setting " screen.

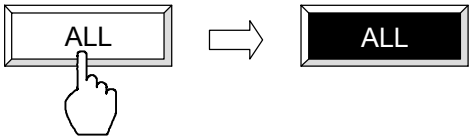
2. From the "TIO Setting" screen, directly touch the part you want to setting (anywhere within the SV). The numeric keypad window appears on the screen.



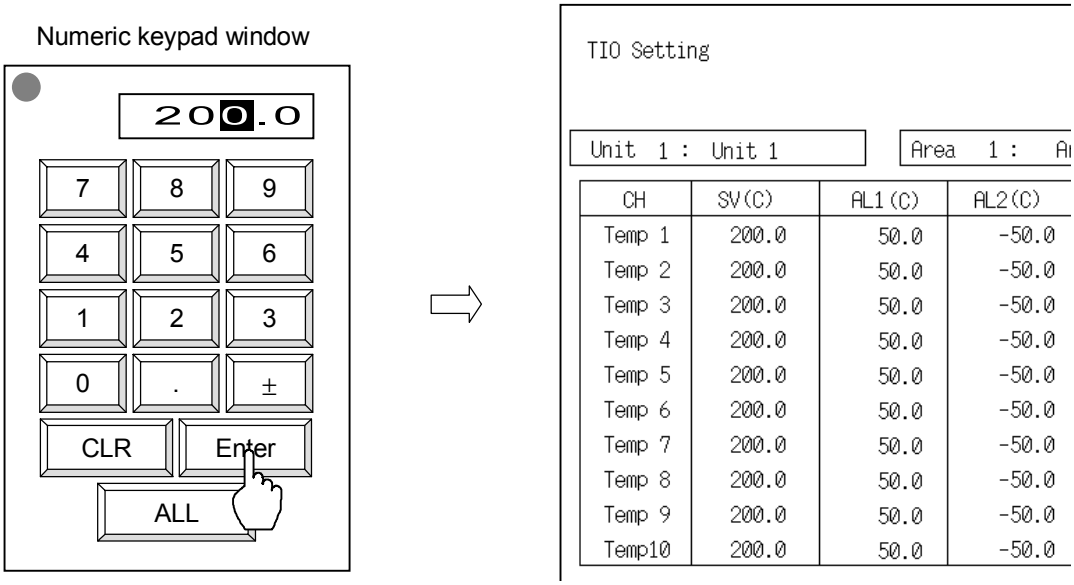
3. Touch the [2], [0], [0] key.



4. Touch the [ALL] key. Key becomes highlighted displayed.



5. Touch the [Enter] key to enter the data. When the data is entered, the numeric keypad window disappears. All the items of the same type as the set location are changed to the value (200 °C).



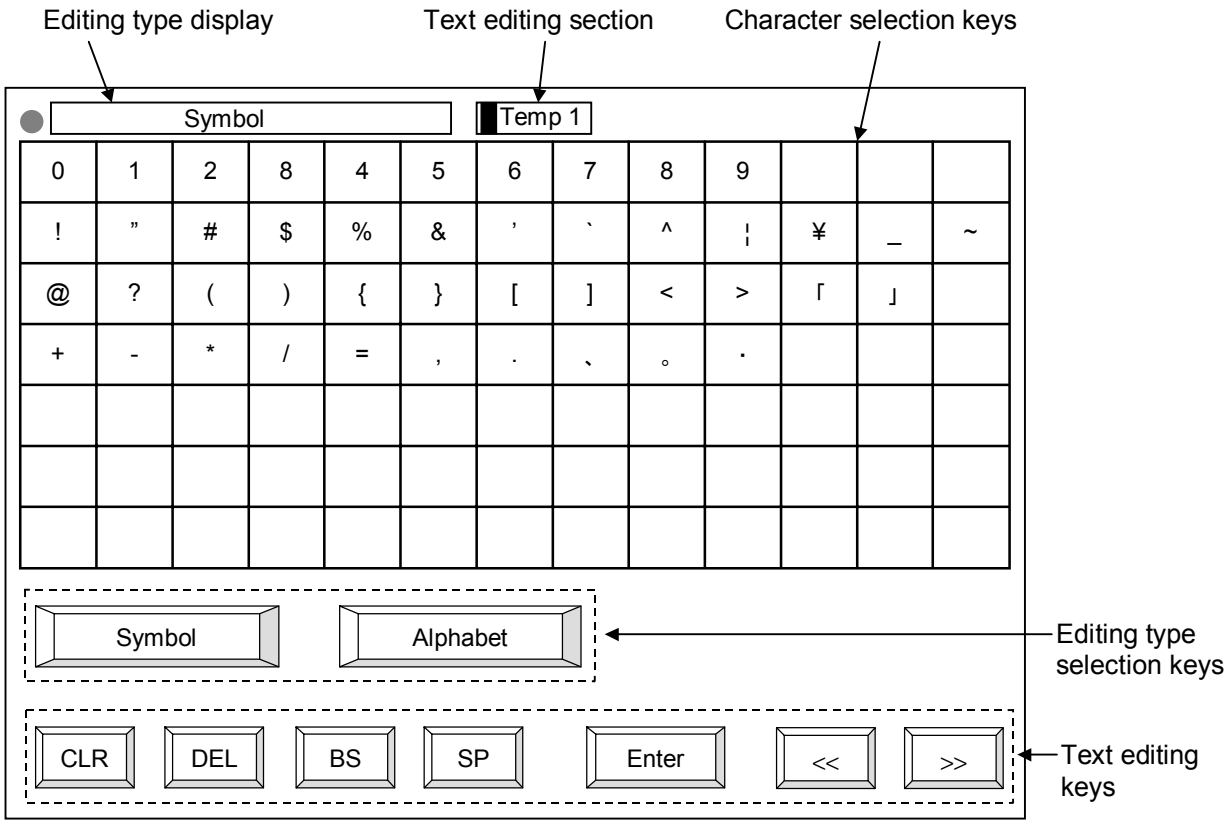
If you input a number outside the valid range, when you touch the [Enter] key, the numeric keypad window does disappear, but the value is not changed.

To stop batch setting, touch the [ALL] key. The highlighted display returns to normal.

3.2.3 Text editing

The text editing window is used for setting names and messages. On a screen for inputting a name or message, when you touch a section for text input, the text editing window appears.

<Text editing window>



The figure above is an example showing the text editing window for "Symbol" display.

Editing type display: Below is a list of the types of character editing selected with the editing type selection keys. This list shows what is displayed when the editing type selection key is pressed.

Symbols key: Symbol, numeral

Alphabet key: Alphabet

Text editing section: Creates and edits the name or message. The cursor shows where characters are input. The number of characters that can be edited in the text editing section depends on the number of characters that can be input for the name or message.

Character selection keys:

Select the characters required for making and editing the name or message. When you touch the character you want among those displayed, that character is displayed at the cursor in the text editing section. The characters already at the cursor are shifted to the rear. The contents displayed depend on the type of text editing selected with the text editing type selection key.

Text editing keys

CLR:	Clears all the characters displayed in the text editing section.
DEL:	Deletes the character at the cursor of the text editing section.
BS:	Deletes the character to the left of the cursor of the text editing section.
SP:	Inserts a 1-byte space at the cursor of the text editing section.
Enter:	Enters the text displayed in the text editing section and closes the text editing window.
←:	Moves the text editing section cursor to the left.
→:	Moves the text editing section cursor to the right.

Editing type selection keys

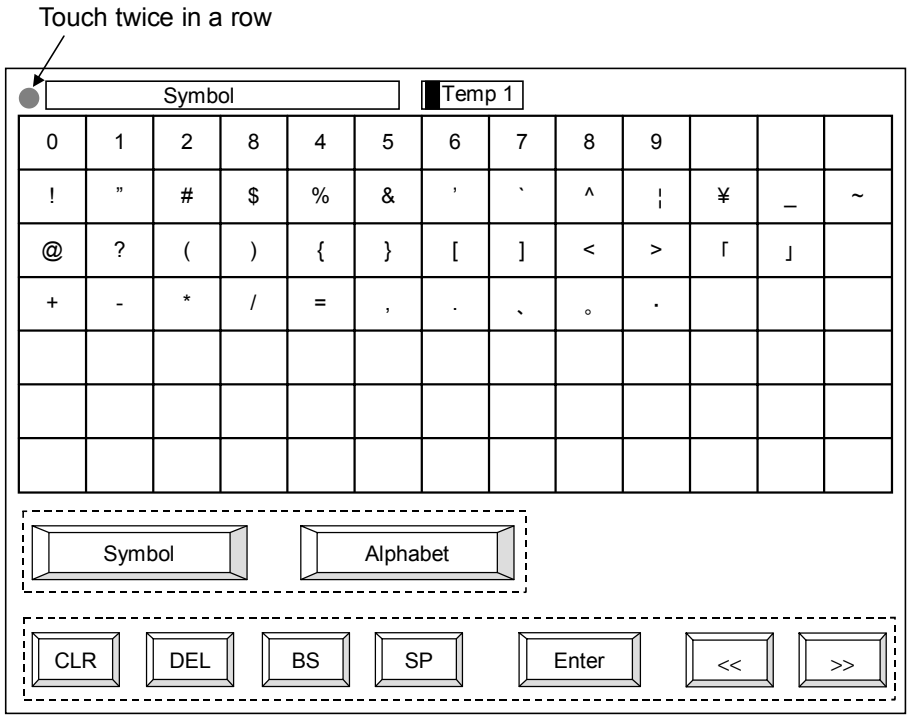
Switch the type of characters required for making and editing the name or message. These keys are used to change the editing type display and the character selection key display.

Symbols key: Symbol, numeral

Alphabet key: Alphabet

■ Disappearing the text editing window

To stop text editing midway, touch the section at the top left of the text editing window twice in a row. The text editing window disappears and the characters you were editing are thrown out.



The text editing window, in the same way as for the numeric keypad window, can be moved on the screen. However, since its display area is almost the same as that of the screen, it can be slightly moved.

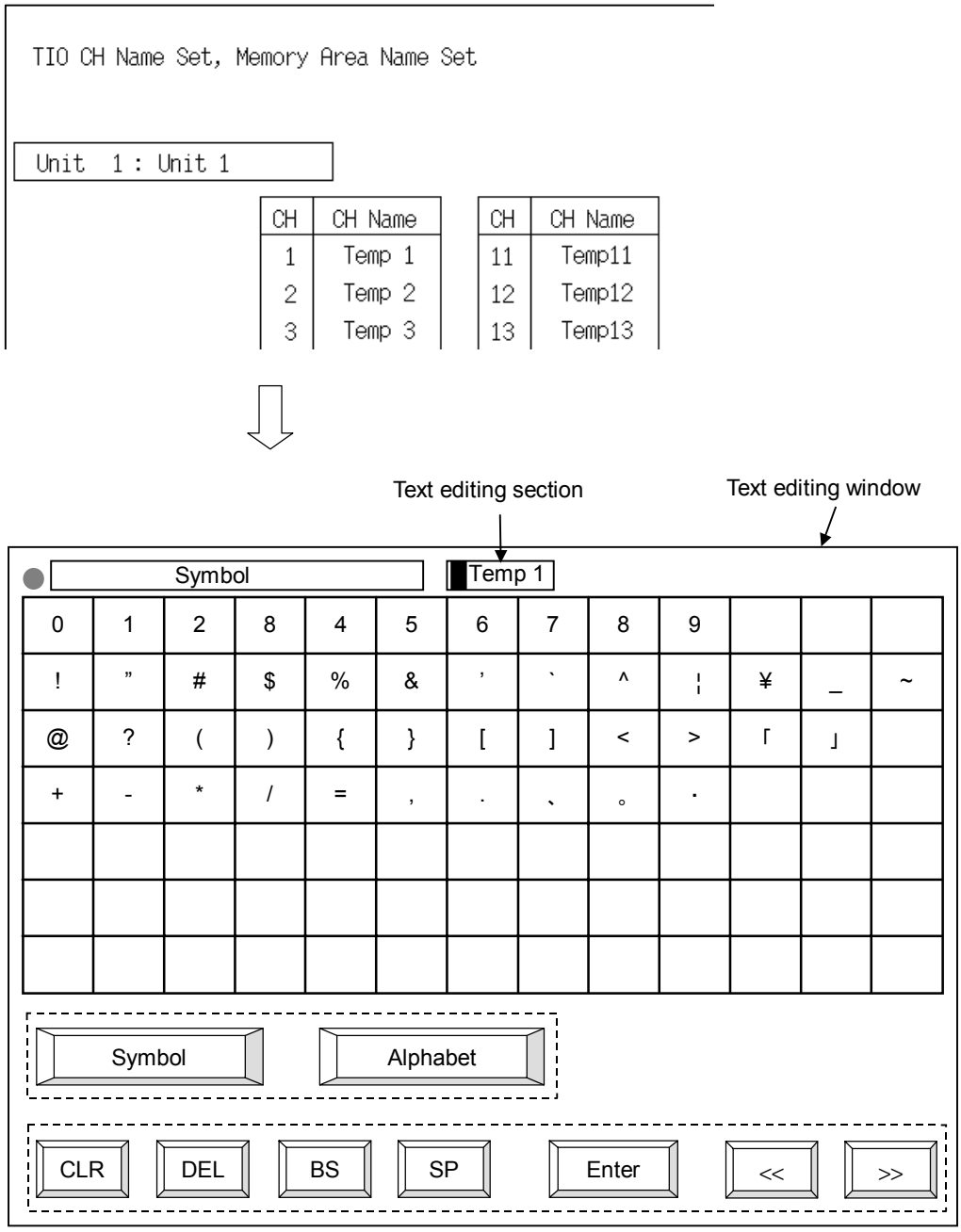
■ Text editing

Example: Setting the name for TIO CH 1 (Temperature control channel 1) to “Zone 1”

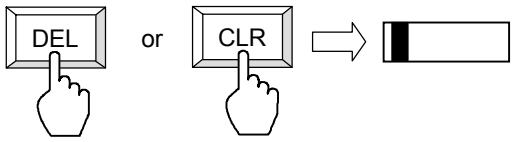
1. Switch to the OPC initial settings “TIO CH Name Set, Memory Area Name Set” screen.

☞ For the calling procedure of “TIO CH Name Set, Memory Area Name Set” screen, see the **3.9.16 OPC initial menu screen (P. 3-149)**.

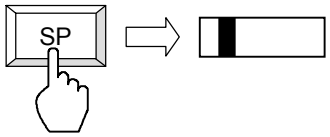
2. When you touch the section for setting the TIO CH 1 name, the text editing window appears.



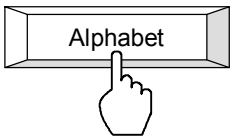
3. Touch the [DEL] key or the [CLR] key to erase the text now displayed in the text editing section.



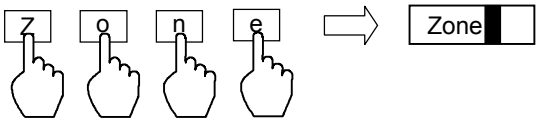
4. Touch the [SP] key to insert space.



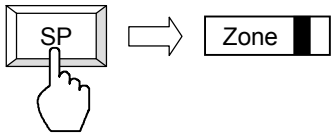
5. Touch the [Alphabet] key to change the editing type to "Alphabet."



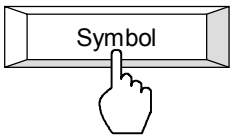
6. Touch the [Z], [o], [n], [e] keys to input "Zone"



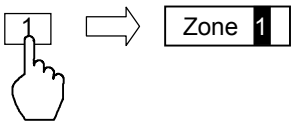
7. Touch the [SP] key to insert space.



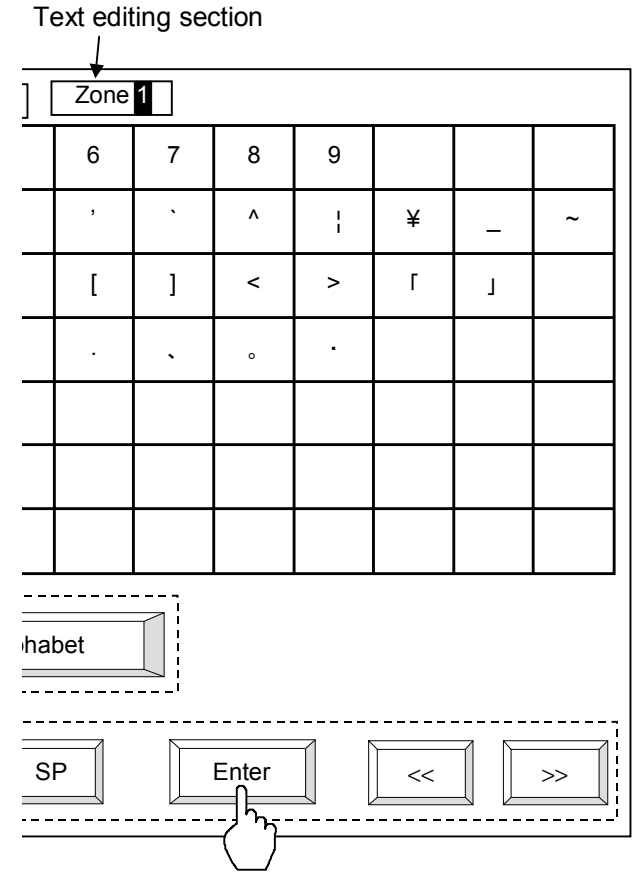
8. Touch the [Symbol] key to change to symbol input.

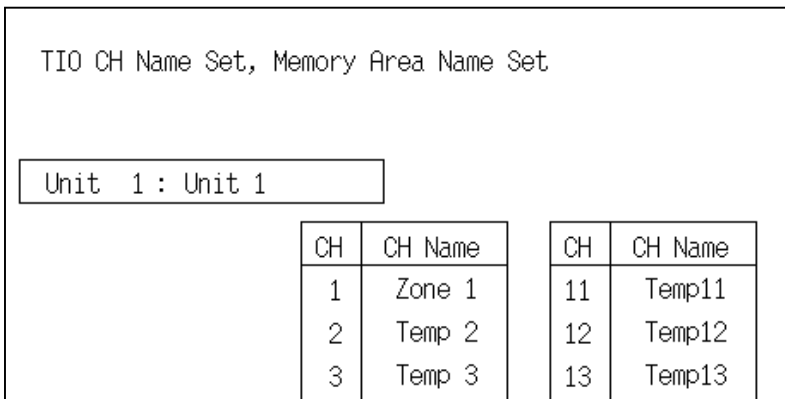


9. Touch the [1] key to input "1."



10. Touch the [Enter] key, after confirming "Zone 1" inputted correctly in the text editing section. When entered, the text editing window disappears and "Temp 1" is replaced with "Zone 1."

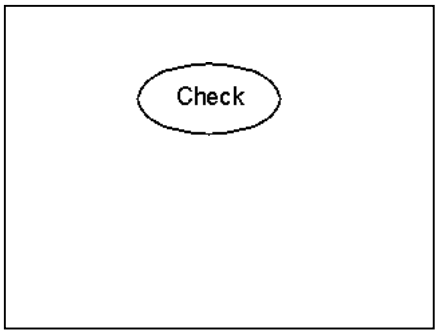




3.3 Start-up Screen

When the power is turned on, first this screen is displayed, and then it is automatically changed to the next screen (operation menu screen).

<Check screen>



Automatic →

<Opening screen>

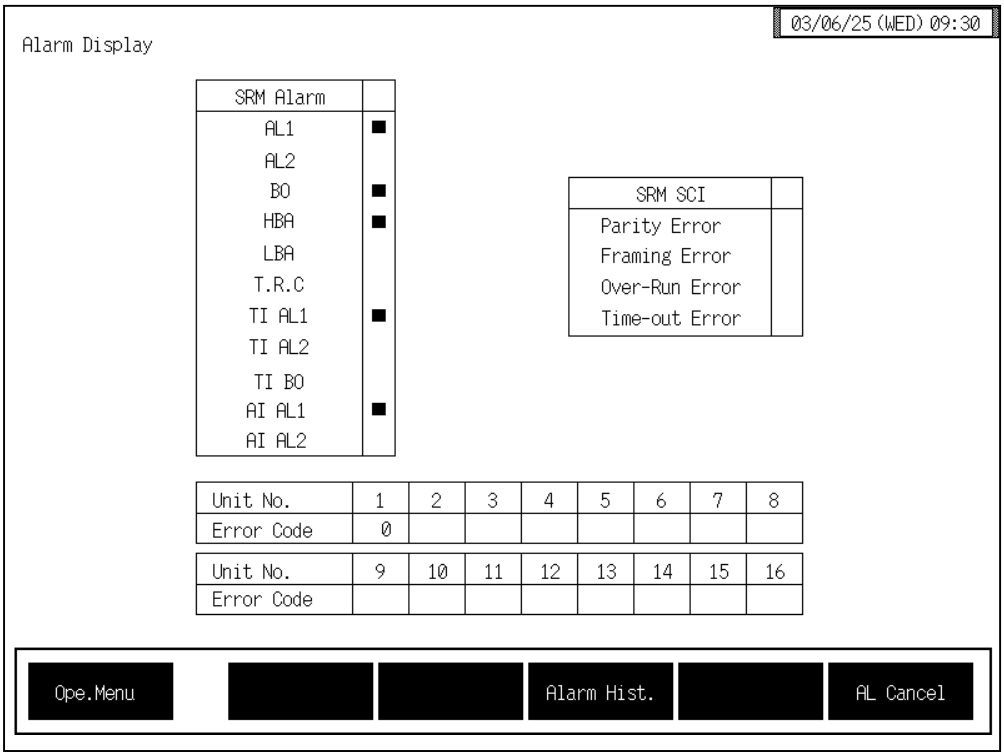
Automatic → To the operation menu screen

The operation panel OPC-V07 checks whether there is an error in the control unit configuration or hardware while the start-up screen is displayed. If there is the error, the relevant "Alarm display" screen is displayed.
In addition, check a voltage drop of the SRAM cassette battery. If the battery voltage decreases, the "Warning (battery replacement)" screen is displayed.

■ When an error occurs

If an error occurs when the power is turned on, the "Alarm Display" screen will be displayed.

<Alarm display screen>



☞ For the details of "Alarm display" screen, see the **3.5.11. Alarm display screen (P. 3-46)**.

■ When a voltage drop of the SRAM cassette battery

If the battery voltage for SRAM cassette has dropped when the power is turned on, the warning screen will be displayed. Power not supplied SRAM cassette, the data stored in the SRAM cassette may be lost.

Please perform battery exchange promptly.

Replace battery: V7BT

<Warning (battery replacement) screen>

Return key: Touching this key changes to the "Operation Menu" screen.
If change to the "Operation Menu" screen, no "Warning (battery replacement)" screen is displayed until the power is turned on again.

Data stored in the SRAM cassette:

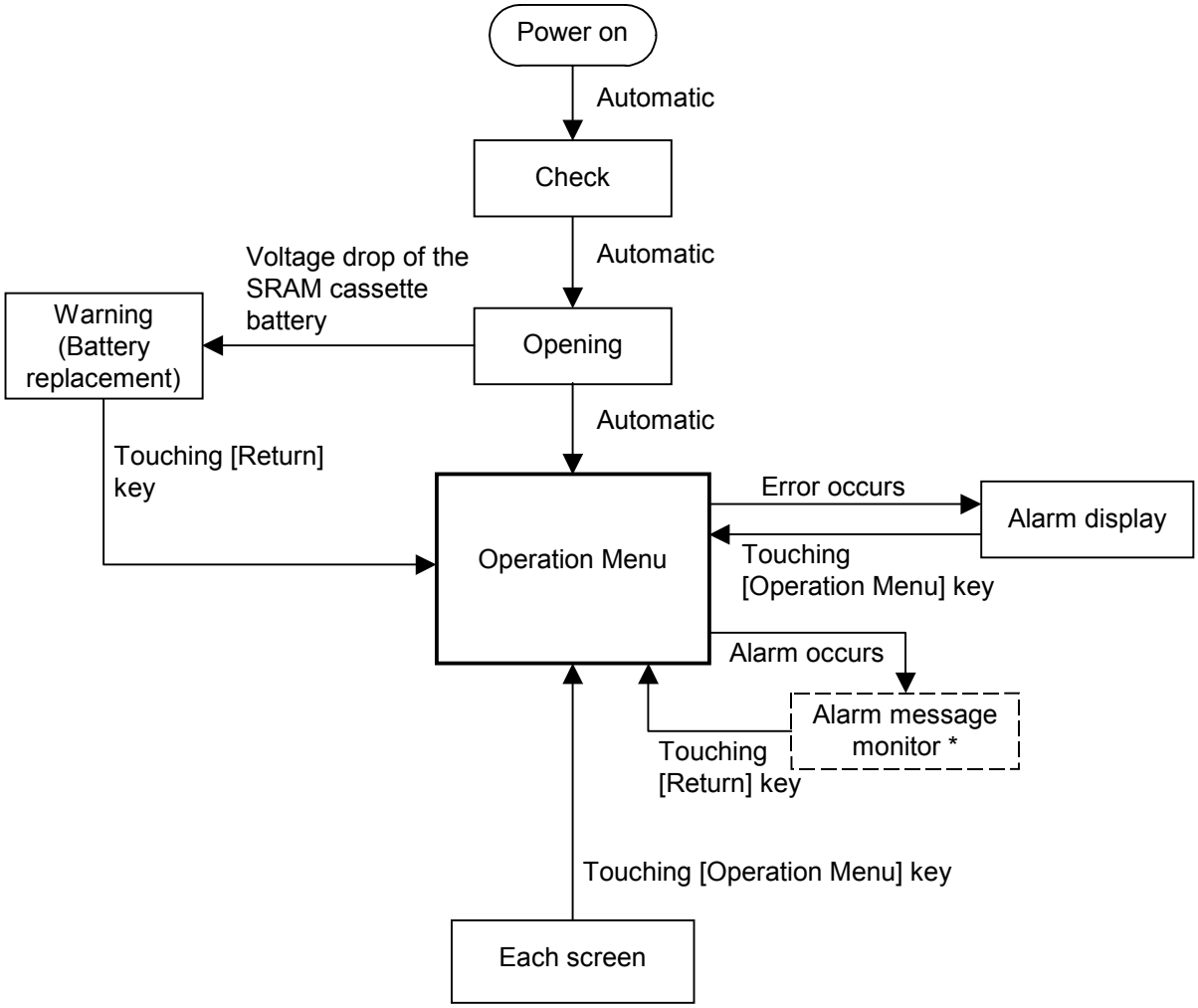
Alarm message	DI name
Unit name	DO name
TIO CH name	TIO Engineering unit
Memory area name	Screen saver setting
TI CH name	Computer/Local transfer
AI CH name	Alarm history endless
AI engineering unit	Screen scan setting
AO CH name	Screen scan time
AO engineering unit	Job file data 1 to 20
Extension alarm CH name	

☞ For the replace the battery, see the instruction manual of Hakko Electronics Co., Ltd.

3.4 Operation Menu Screen

The operation menu screen allows the selection of each of the "Operation Monitor," "Operation Setting," "Operation Mode," and "Initial Setting" screens.

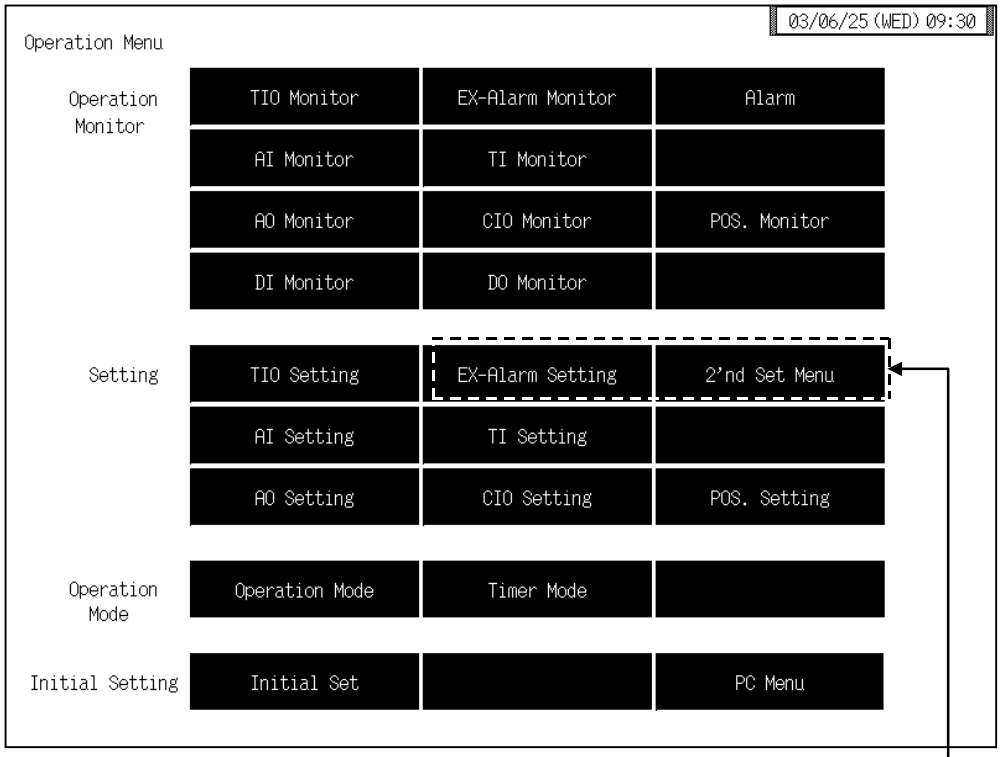
■ Calling procedure of the operation menu screen



* Displayed only when "Alarm message display on/off" on the "Alarm Message Set" screen is set to "1: Displayed." "0: Not displayed" is set as the factory set value.

☞ For the "Alarm message monitor" screen, see the ■ **Alarm message setting screen (P. 3-161)** of OPC initial.

■ Operation menu screen



[EX-Alarm Setting] key, [2'nd Set Menu] key

This screen is not displayed normally.
Protection release is necessary to display each screen.
For details, see the **■ Releasing extension alarm setting calling up key protect (P. 3-61)** or **■ Releasing 2'nd setting menu calling up key protect (P. 3-63).**

Screen select keys:

< Operation Monitor >

TIO Monitor: Touching this key changes to the "TIO Monitor" screen.

EX-Alarm Monitor:
Touching this key changes to the "Extend Alarm Monitor" screen.

Alarm: Touching this key changes to the "Alarm Display" screen.

AI Monitor: Touching this key changes to the "AI Monitor" screen.

TI Monitor: Touching this key changes to the "TI Monitor" screen.

AO Monitor: Touching this key changes to the "AO Monitor" screen. "Monitor" screen

CIO Monitor: Touching this key changes to the "Cascade Monitor" screen.

POS. Monitor: Touching this key changes to the "Position Monitor" screen.

DI Monitor: Touching this key changes to the "DI Monitor" screen.

DO Monitor: Touching this key changes to the "DO Monitor" screen.

< Setting >

TIO Setting: Touching this key changes to the "TIO Setting" screen.

EX-Alarm Setting:
Touching this key changes to the "Extend Alarm Setting" screen.
This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing extension alarm setting calling up key protect (P. 3-61)**

2'nd Set Menu: Touching this key changes to the "2'nd Set Menu" screen.
This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing 2'nd setting menu calling up key protect (P. 3-63).**

AI Setting: Touching this key changes to the "AI Setting" screen.

TI Setting: Touching this key changes to the "TI Setting" screen.

AO Setting: Touching this key changes to the "AO Setting" screen.

CIO Setting: Touching this key changes to the "Cascade Setting" screen.

POS. Setting: Touching this key changes to the "Position Setting 1" screen.

< Operation Mode >

Operation Mode: Touching this key changes to the "Operation Mode" screen.

Timer Mode: Touching this key changes to the "Timer Setting 1" screen.

< Initial Setting >

Initial Set: Touching this key changes to the "Initial Set Menu" screen.

PC Menu: Touching this key changes to the user creating screen.
The display only switches to the user screen if one has been made with the panel editor V-SFT.

The operation monitor and setting screens are only displayed if the required modules are mounted.

3.5 Operation Monitor Screen

Operation monitor screens are used to monitor the set value, measured value, control output value, alarm output, etc.
The table below shows the types of operation monitor screen and the items.

Screen name	Monitor item	Necessary module	Page
TIO monitor *	Temperature measured value Temperature set value Autotuning (AT) execution status Alarm (alarm 1/alarm 2) status	H-TIO-□、 H-CIO-A	3-33
Alarm monitor *	Alarm 1 status Alarm 2 status Burnout status Heater break alarm (HBA) status Control loop break alarm (LBA) status	H-TIO-□、 H-CIO-A	3-34
MV monitor *	Heat-side manipulated output value Cool-side manipulated output value	H-TIO-□、 H-CIO-A	3-35
CT1 monitor *	Current transformer (CT1) input measured value of the H-TIO-A/C/D module. Heater break alarm set value (HBA1) corresponding to current transformer (CT1) input of the H-TIO-A/C/D module.	H-TIO-A/C/D	3-36
CT2 monitor *	Current transformer (CT2) input measured value of the H-CT-A module. Heater break alarm set value (HBA2) corresponding to current transformer (CT2) input of the H-CT-A module.	H-CT-A	3-37
Extension alarm monitor *	Extension alarm status (Event DO status)	H-DO-C	3-38
Alarm display	Control unit alarm status Control unit communication error status Control unit error code	—	3-46
Alarm history	Contents of the alarm which occurred (alarm type, channel name, date, number of times)	—	3-49
AI monitor *	AI measured value and engineering unit AI alarm 1 status AI alarm 2 status	H-AI-A/B	3-39

* The screens are only displayed if the required modules are mounted.

Continued on the next page.

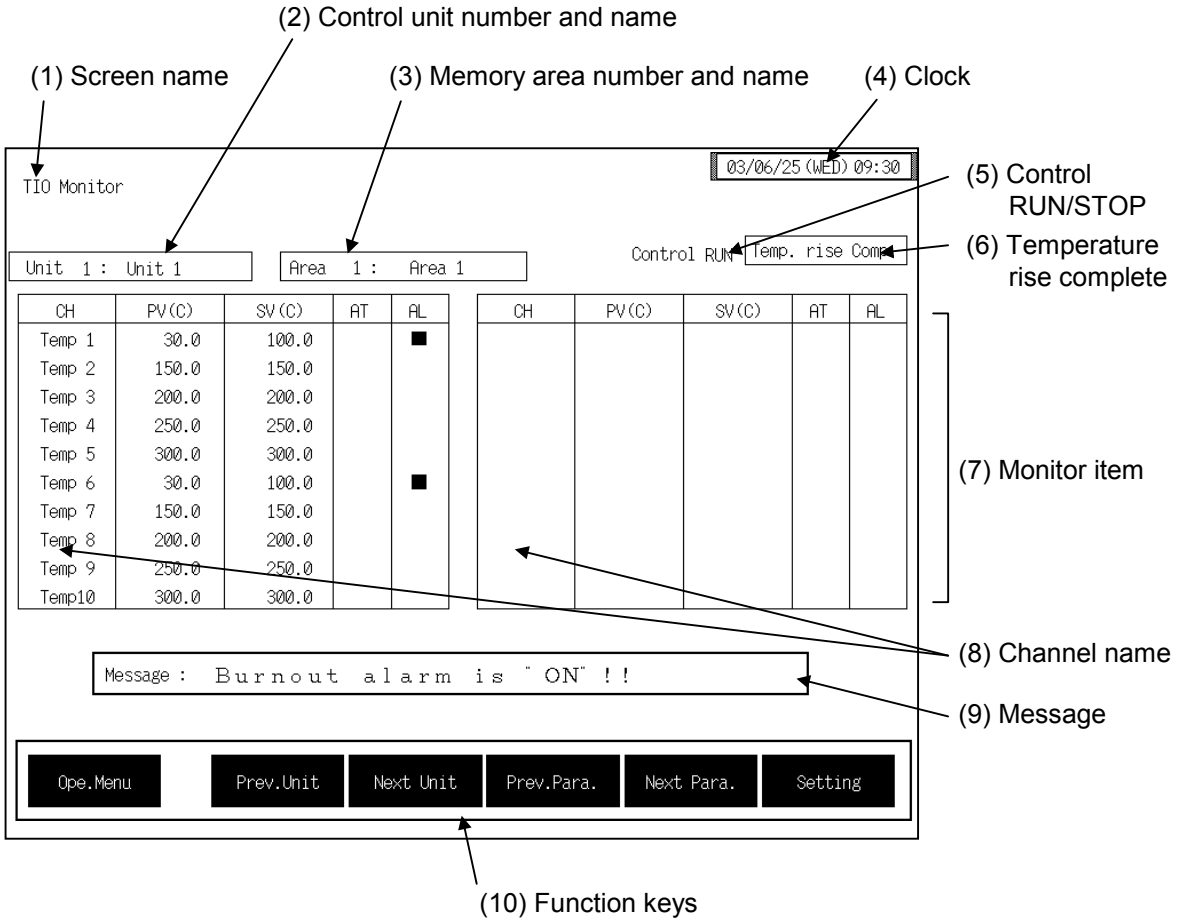
Continued from the previous page.

Screen name	Monitor item	Necessary module	Page
TI monitor *	TI measured value TI alarm 1 status TI alarm 2 status TI burnout status	H-TI-A/B/C	3-40
AO monitor *	AO output value and engineering unit AO output value of the manual mode.	H-AO-A/B	3-41
Cascade monitor *	Temperature measured value Temperature set value Cascade control ON/OFF state and cascade monitor value	H-CIO-A	3-42
Positioning monitor *	Temperature measured value Temperature set value Position monitor value	H-TIO-K	3-43
DI monitor *	Contact status of digital input.	H-DI-A	3-44
DO monitor *	Contact status of digital output.	H-DO-A/B	3-45
Alarm message monitor	Alarm message of the alarm which occurred.	—	3-51

* The screens are only displayed if the required modules are mounted.

3.5.1 Basic configuration of operation monitor screen

The basic configuration of each operation monitor screen is as shown below.
Example: TIO monitor screen



(1) Screen name: Displays the screen name.

(2) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

(3) Memory area number and name:
Displays the number and name for the memory area whose data is being displayed. The memory area number can be changed with the "Operation mode" screen (P. 3-87). In addition, the memory area name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).
However, this item is not displayed on the "Extend Alarm Monitor," "AI Monitor" and "AO Monitor" screens.

(4) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(5) Control RUN/STOP:

Displays the control state (Control RUN/STOP). The control mode can be changed with the "Operation mode" screen (P. 3-87).

(6) Temperature rise complete:

When the temperature rise is complete for a control unit, "Temp. rise Comp." is displayed in this column. The "Temp. rise Comp." Display goes off if you touch it.
However, this item is not displayed on the "Extend Alarm Monitor," "AI Monitor," "AO Monitor" and "Position Monitor" screens.

(7) Monitor item: Displays the item and data. Details of display varies depending on the each monitor screen. For the details of display, see the description of each operation monitor screen.

(8) Channel name: Displays the TIO channel name, TI channel name, AI channel name, AO channel name, EX-Alarm channel name, DI channel name and DO channel name. The channel name can be changed with the OPC initial.

(9) Message: The message is displayed at temperature rise completion or alarm occurrence.

Alarm message list

Item		Message (Factory set value)	Priority order
BO	Burnout	Burnout alarm is "ON"!!	1
HBA	Heater break alam	Heater break alarm is "ON"!!	2
AL1	Alarm 1	TIO alarm 1 is "ON"!!	3
AL2	Alarm 2	TIO alarm 2 is "ON"!!	4
AI_AL1	AI alarm 1	AI alarm 1 is "ON"!!	5
AI_AL2	AI alarm 2	AI alarm 2 is "ON"!!	6
LBA	Loop break alarm	Loop break alarm is "ON"!!	7
TI_BO	TI burnout	TI burnout is "ON"!!	8
TI_AL1	TI alarm 1	TI alarm 1 is "ON"!!	9
TI_AL2	TI alarm 2	TI alarm 2 is "ON"!!	10
T.R.C	Temp. rise comp.	All unit temp. rise comp.	11

The message of the burnout, heater break alarm, TIO alarm 1, TIO alarm 2, AI alarm 1, AI alarm 2, loop break alarm, TI burnout, TI alarm 1, TI alarm 2 is displayed if the relevant alarm occurs in any of the using channels. However, the message of temperature rise completion is displayed when temperature rises in all of the channels used are completed.

If more than one type of alarm occurs simultaneously, the message corresponding to the above item with higher priority is displayed. For example, if the burnout and alarm 1 occur simultaneously, the burnout alarm message is displayed.

The alarm message can be changed with the OPC initial "Alarm Message Set" screen (P. 3-161).

(10) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

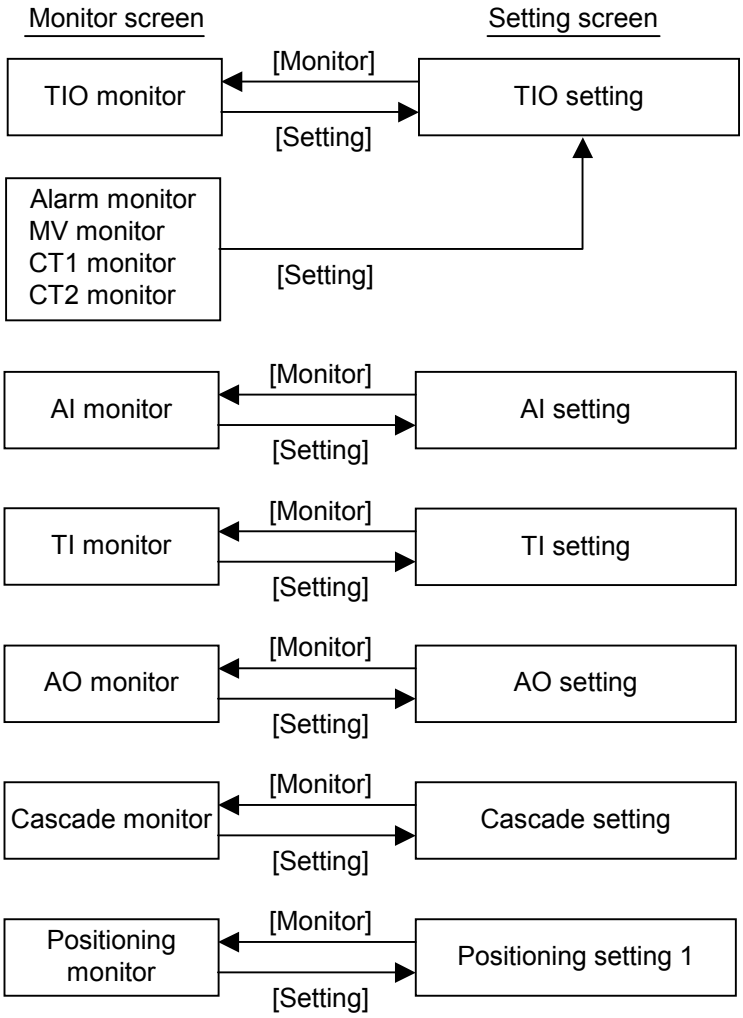
Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

Prev. Para.: Touching this key changes to the screen one before the one being displayed.

Next Para.: Touching this key changes to the screen one after the one being displayed.

Next CH: Touching this key changes to the screen for the channel (CH) after the current one.

Setting: Touching this key changes from the monitor screen to the setting screen.

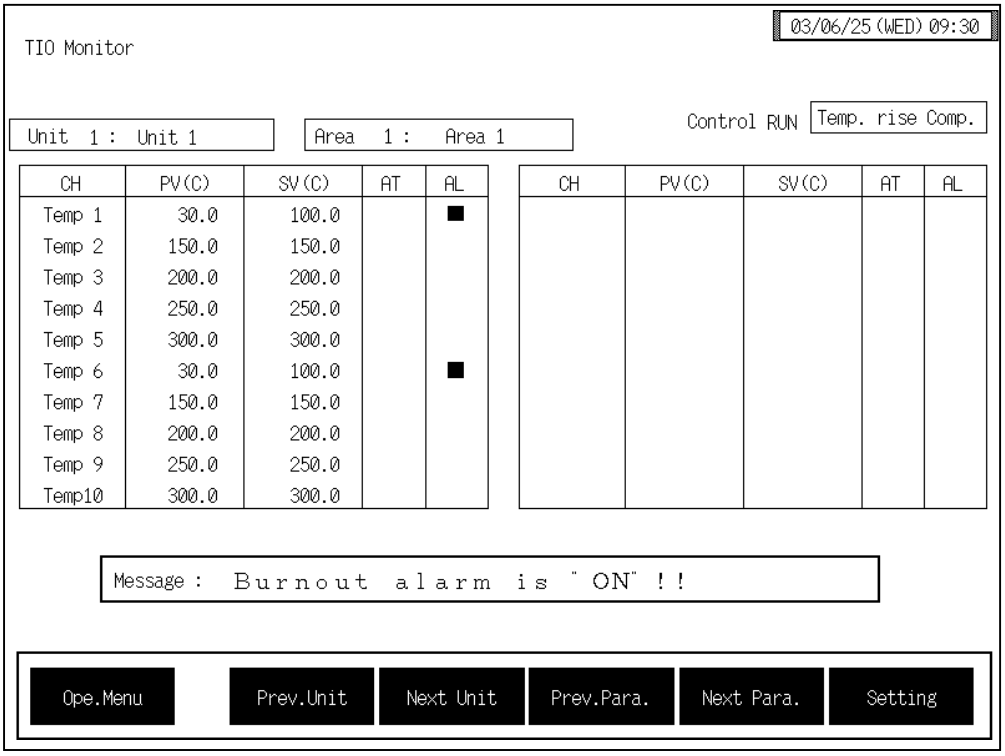


3.5.2 TIO monitor screen

There are "TIO Monitor, Alarm Monitor, MV Monitor, CT1 Monitor and CT2 Monitor" screens in the TIO monitor. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.

■ TIO monitor screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

PV (C): Displays the temperature measured value (PV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

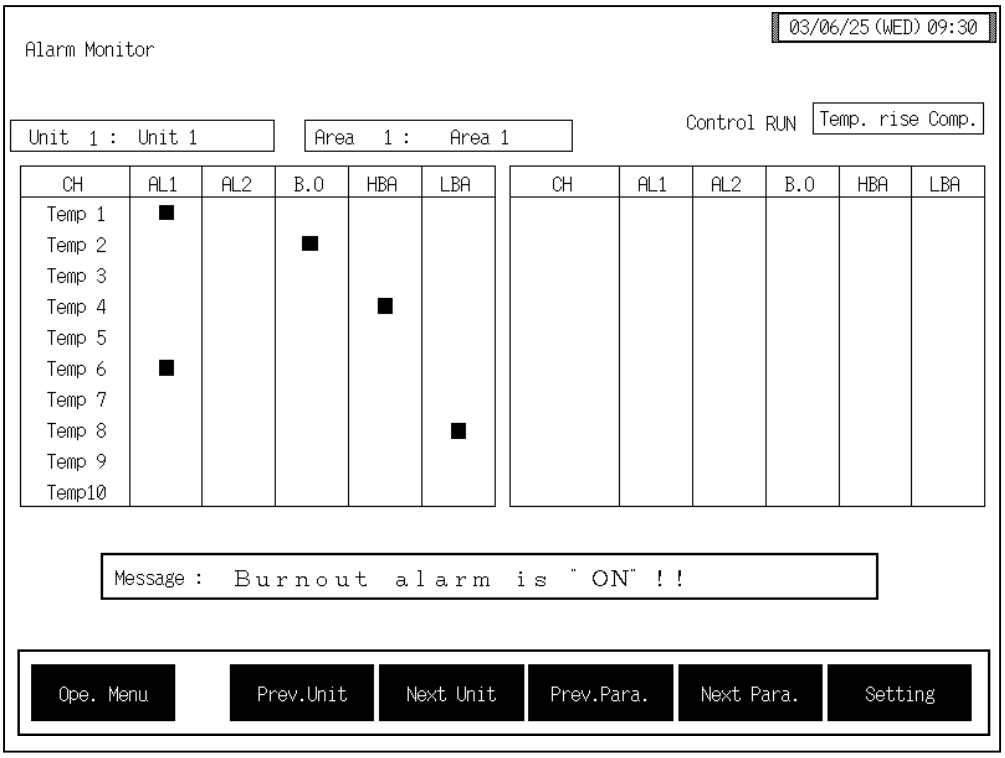
SV (C): Displays the temperature set value (SV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

AT: Displays the autotuning execution state.
Autotuning execution: Flashes the "■"

AL: Display the alarm status (alarm 1 or alarm 2).
Alarm occurrence: Flashes the "■"

📖 Touching the [Setting] key changes to the "TIO Setting" screen (P. 3-57).

■ Alarm monitor screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

AL1: Display the alarm 1 status.
Alarm occurrence: Flashes the "■"

AL2: Display the alarm 2 status.
Alarm occurrence: Flashes the "■"

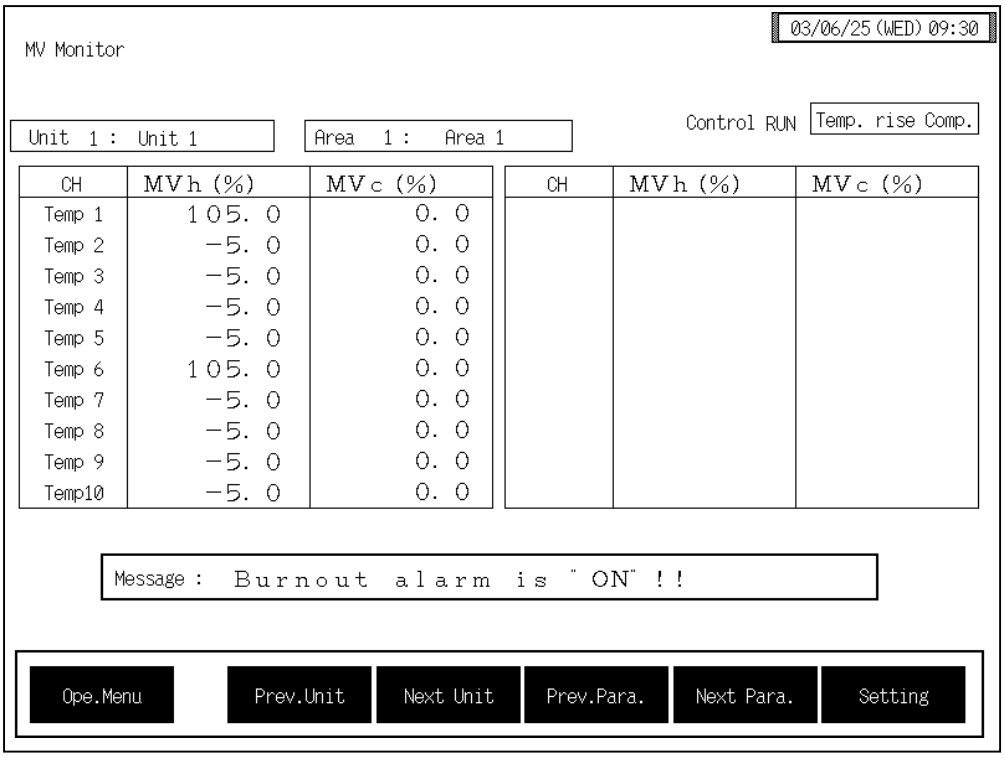
B.O: Display the burnout status.
Burnout occurrence: Flashes the "■"

HBA: Display the heater break alarm status.
Heater break alarm occurrence: Flashes the "■"

LBA: Display the control loop break alarm status.
Control loop break alarm occurrence: Flashes the "■"

Touching the [Setting] key changes to the "TIO Setting" screen (P. 3-57).

■ MV monitor screen



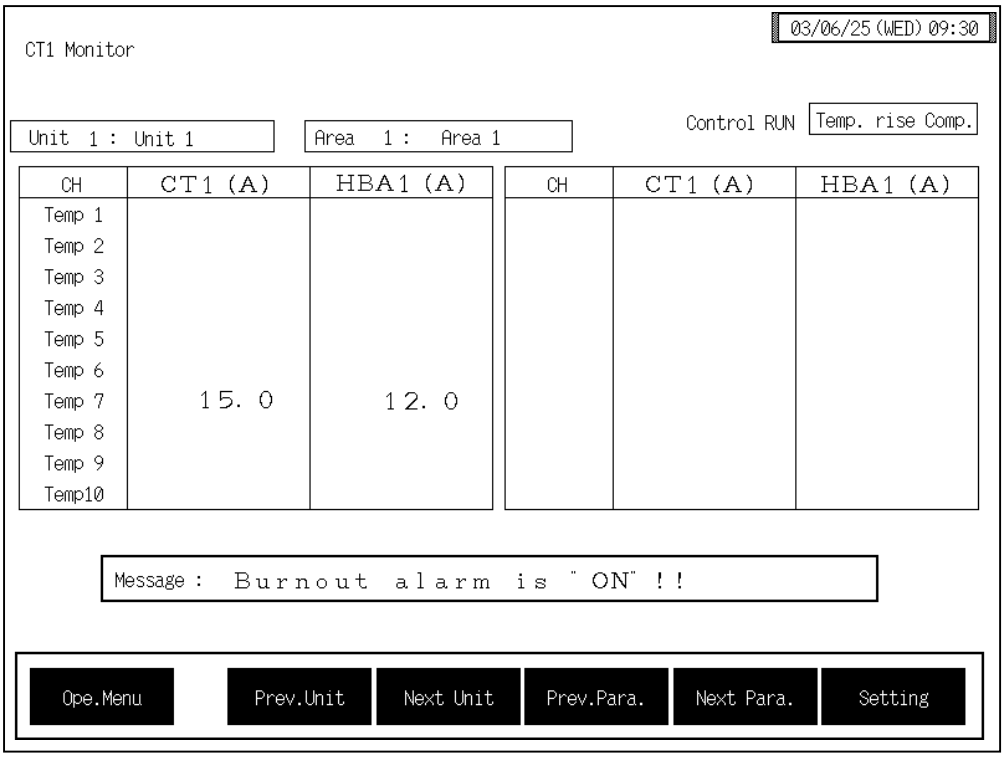
CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

MVh (%): Displays the heat-side manipulated output value.
Display range: −5.0 to +105.0 %

MVc (%): Displays the cool-side manipulated output value.
Display range: −5.0 to +105.0 %

Touching the [Setting] key changes to the "TIO Setting" screen (P. 3-57).

■ CT1 monitor screen



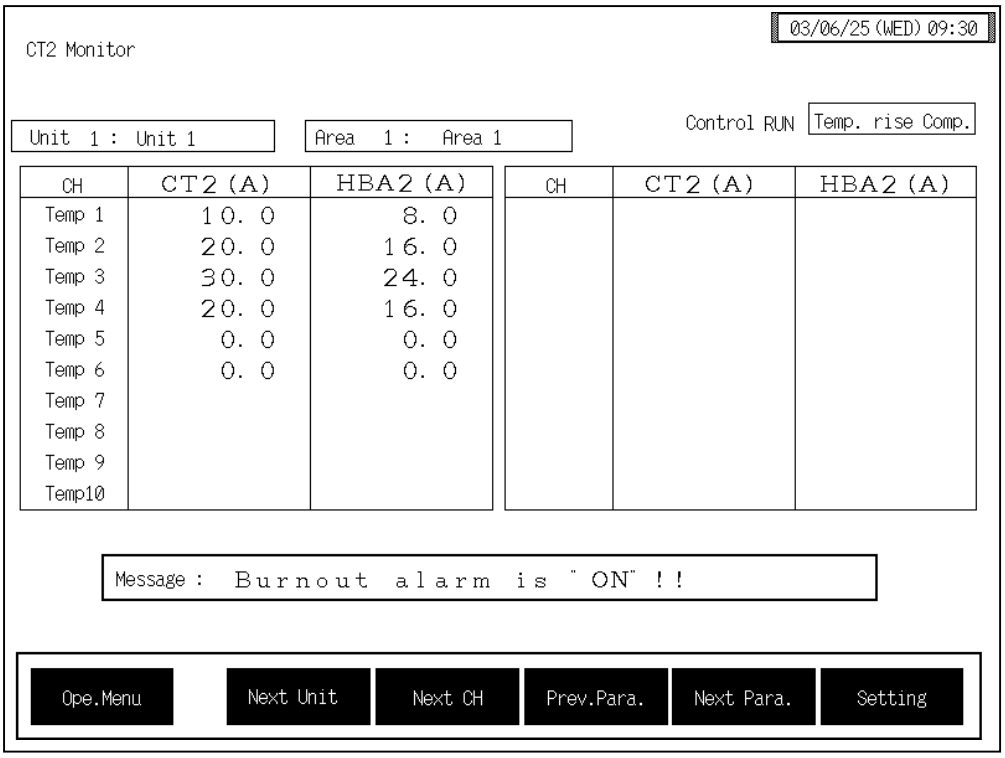
CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

CT1: Displays the current transformer (CT1) input measured value of the H-TIO-A/C/D module.
Display range: 0.0 to 100.0 A or 0.0 to 30.0 A

HBA1: Displays the heater break alarm set value 1 corresponding to current transformer (CT1) input of the H-TIO-A/C/D module.
Display range: 0.0 to 100.0 A or 0.0 to 30.0 A

Touching the [Setting] key changes to the "TIO Setting" screen (P. 3-57).

■ CT2 monitor screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

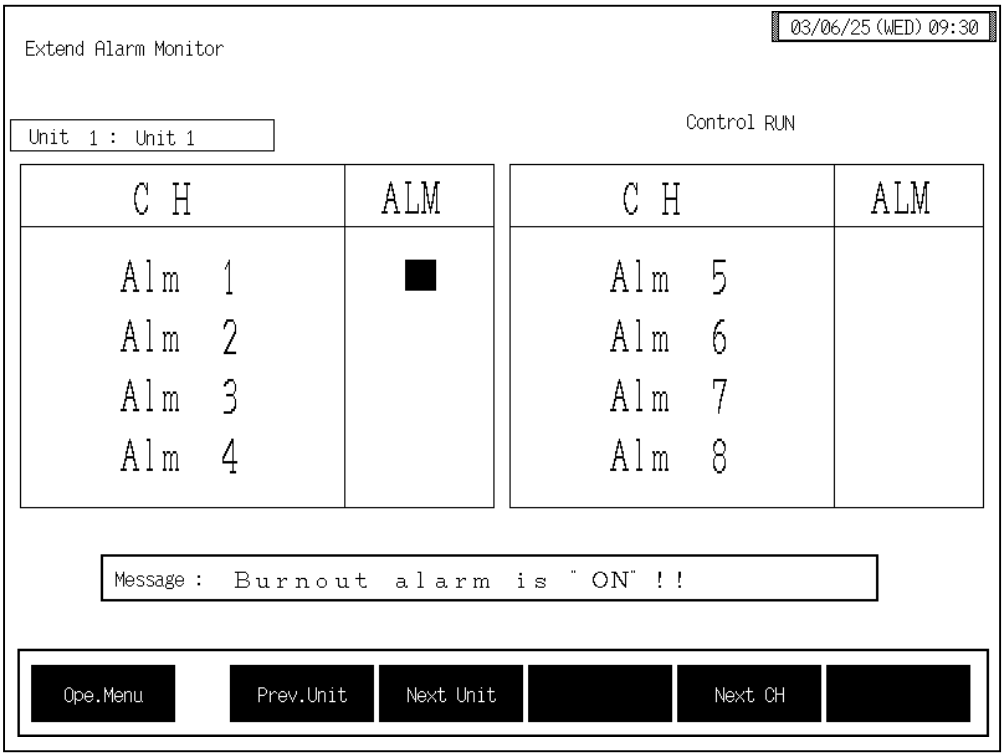
CT2: Displays the current transformer (CT2) input measured value of the H-CT-A module.
Display range: 0.0 to 100.0 A or 0.0 to 30.0 A

HBA2: Displays the heater break alarm set value 2 corresponding to current transformer (CT2) input of the H-CT-A module.
Display range: 0.0 to 100.0 A or 0.0 to 30.0 A

Touching the [Setting] key changes to the "TIO Setting" screen (P. 3-57).

3.5.3 Extension alarm monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.

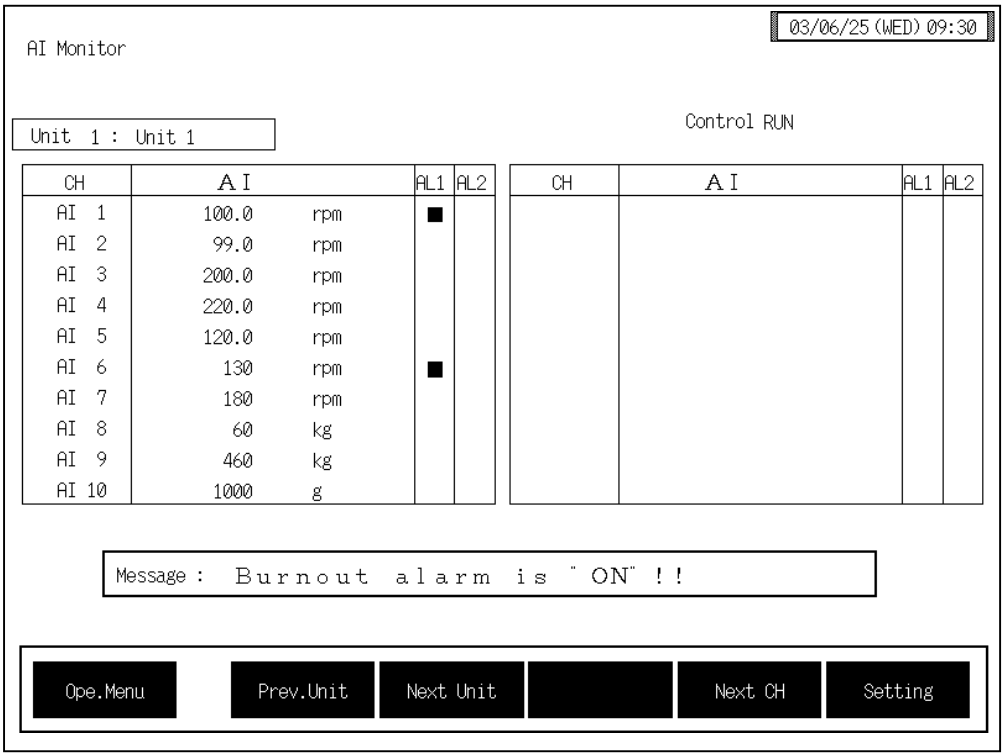


CH: Displays the extension alarm channel name.
The channel name can be changed with the OPC initial "EX-Alarm CH Name Set" screen (P. 3-160).

ALM: Display the extension alarm status (event DO status).
Alarm occurrence: Flashes the "■"

3.5.4 AI monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



CH: Displays the AI channel name.
The channel name can be changed with the OPC initial "AI CH Name Set" screen (P. 3-156).

AI: Displays the AI measured value (H-AI-□ module) and engineering unit.
Display range: Within display scale range
The engineering unit can be changed with the OPC initial "AI Unit Set" screen (P. 3-157).
The position of the decimal point differs depending on the AI decimal point position setting (P. 3-229).

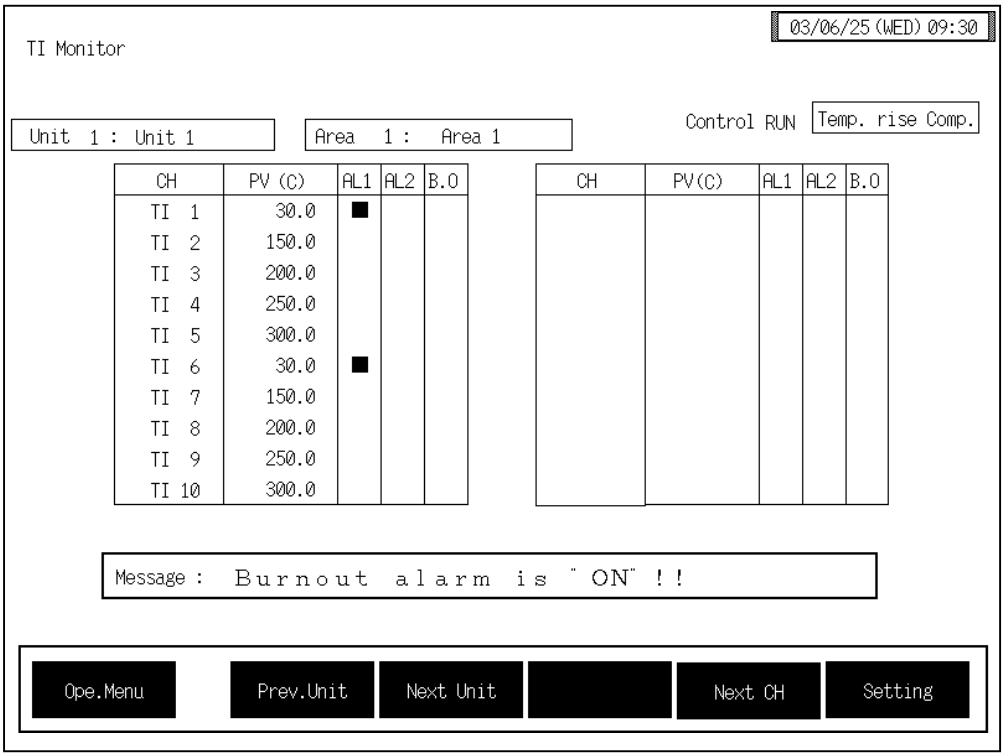
AL1: Display the AI alarm 1 status.
Alarm occurrence: Flashes the "■"

AL2: Display the AI alarm 2 status.
Alarm occurrence: Flashes the "■"

📖 Touching the [Setting] key changes to the "AI Setting" screen (P. 3-74).

3.5.5 TI monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

PV (C): Displays the TI measured value (H-TI-□ module).
Display range: Within input range
The position of the decimal point differs depending on the input range.

AL1: Display the TI alarm 1 status.
Alarm occurrence: Flashes the "■"

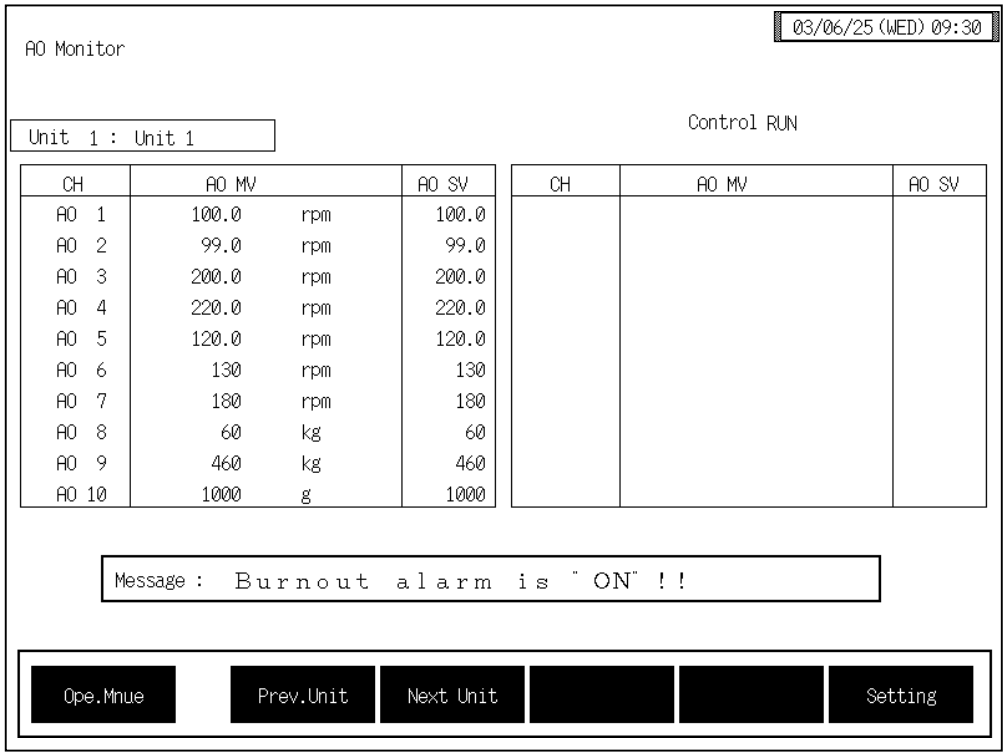
AL2: Display the TI alarm 2 status.
Alarm occurrence: Flashes the "■"

B.O: Display the TI burnout status.
TI burnout occurrence: Flashes the "■"

📖 Touching the [Setting] key changes to the "TI Setting" screen (P. 3-75).

3.5.6 AO monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



CH: Displays the AO channel name.
The channel name can be changed with the OPC initial "AO CH Name Set" screen (P. 3-158).

AO MV: Displays the AO output value (H-AO-□ module) and engineering unit.
Display range: Within display scale range
Effective only for manual mode.

The engineering unit can be changed with the OPC initial "AO Unit Set" screen (P. 3-159).

The position of the decimal point differs depending on the AO decimal point position setting (P. 3-232).

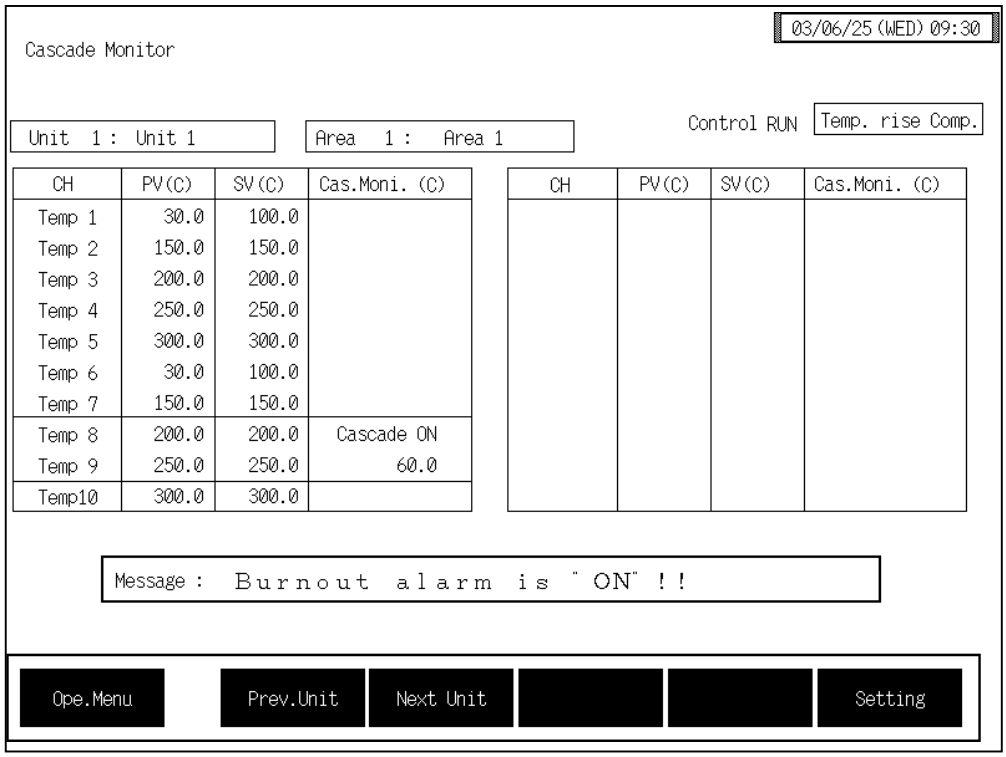
AO SV: Displays the AO output value in the manual mode.
Display range: Within display scale range

The position of the decimal point differs depending on the AO decimal point position setting (P. 3-232).

📖 Touching the [Setting] key changes to the "AO Setting" screen (P. 3-76).

3.5.7 Cascade monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

PV (C): Displays the temperature measured value (PV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

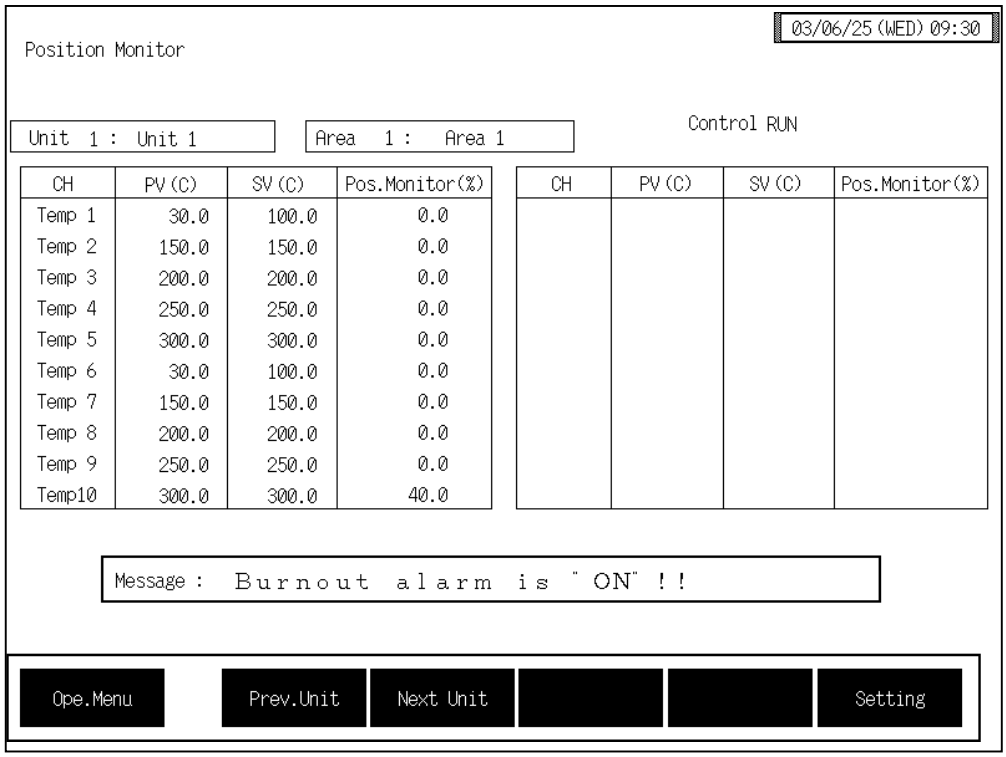
SV (C): Displays the temperature set value (SV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

Cas. Moni. (C): Displays the cascade control ON/OFF state and the cascade monitor value.
Display range: ± Input span
Only slave channel is valid.
The position of the decimal point differs depending on the input range.

📖 Touching the [Setting] key changes to the "Cascade Setting" screen (P. 3-81).

3.5.8 Positioning monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

PV (C): Displays the temperature measured value (PV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

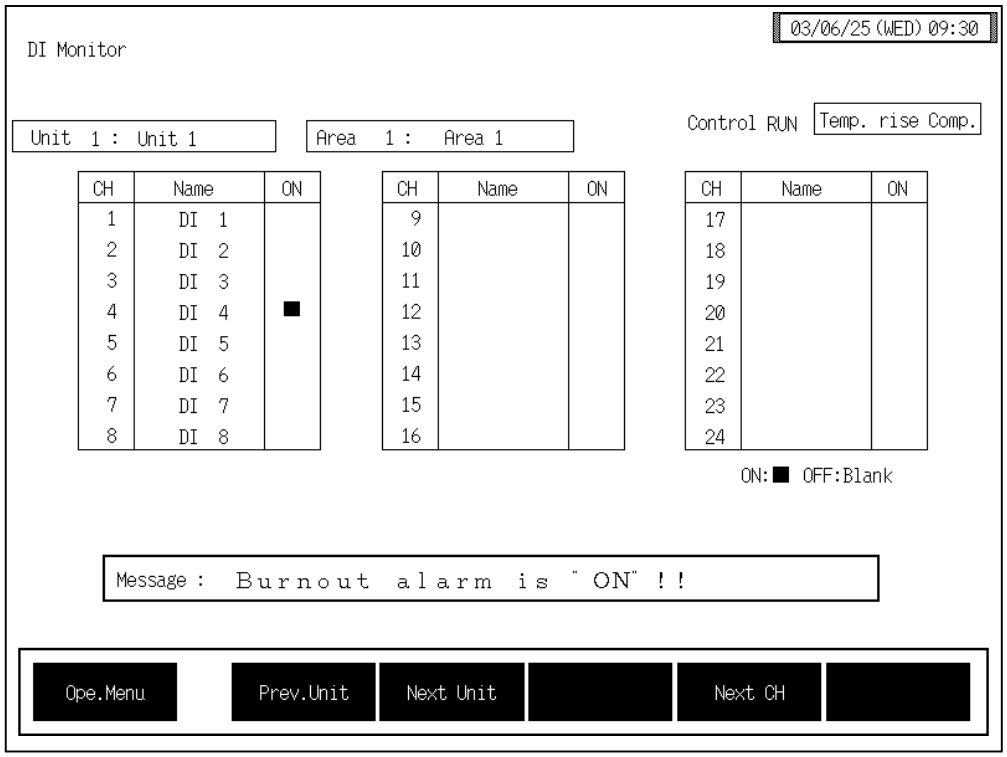
SV (C): Displays the temperature set value (SV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

Pos. Monitor (%): Displays the valve position of control motor.
Display range: –5.0 to +105.0 %

📖 Touching the [Setting] key changes to the "Position Setting 1" screen (P. 3-83).

3.5.9 DI monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



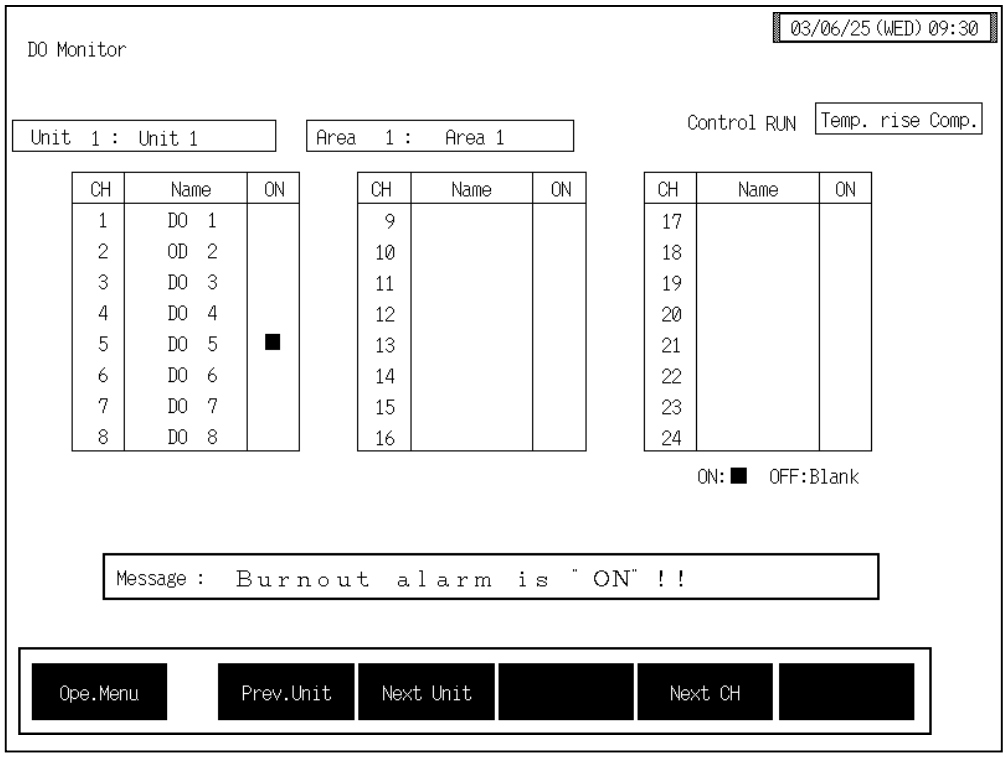
CH: Displays the DI channel number.

Name: Sets the DI channel name.
If you touch the section for which you wish to set the name in each name column, the text editing window appears, so input the name as explained in **3.2.3 Text editing (P. 3-18)**.
Setting range: 8 characters
Factory set value: DI 1 to 40

ON: Displays the contact status of digital input.
Contact ON (close): Display the "■"
Contact OFF (open): Not display (blank)

3.5.10 DO monitor screen

☞ For the function keys and other items, see the **3.5.1 Basic configuration of operation monitor screen (P. 3-30)**.



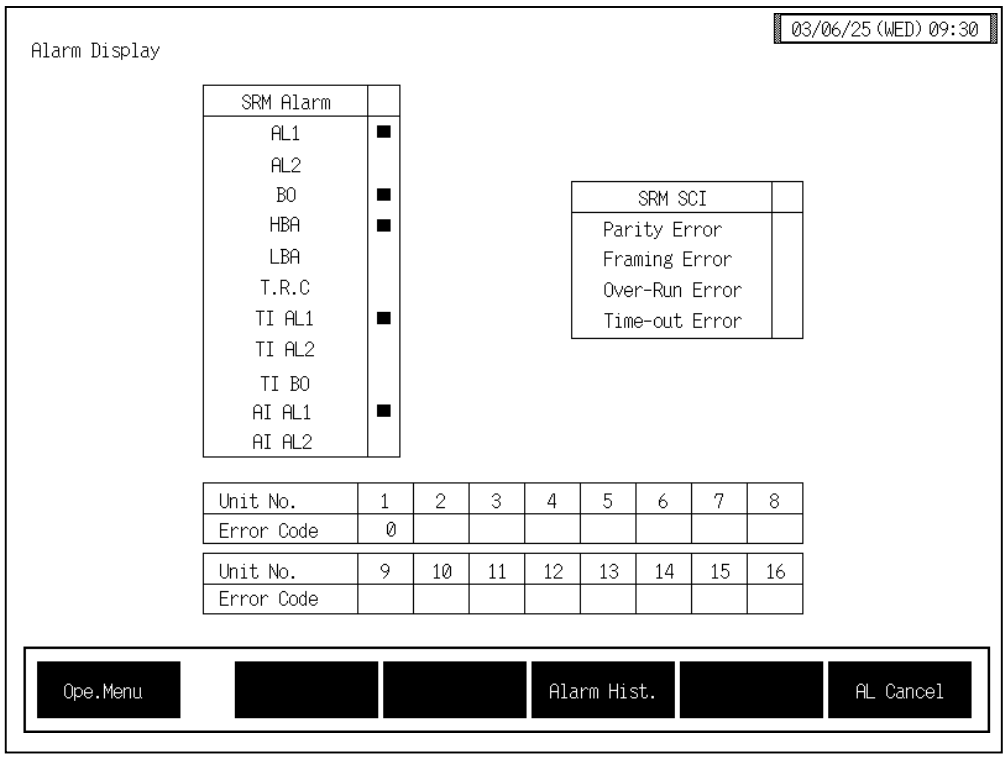
CH: Displays the DO channel number.

Name: Sets the DO channel name.
If you touch the section for which you wish to set the name in each name column, the text editing window appears, so input the name as explained in **3.2.3 Text editing (P. 3-18)**.
Setting range: 8 characters
Factory set value: DO 1 to 40

ON: Displays the contact status of digital output.
Contact ON (close): Display the "■"
Contact OFF (open): Not display (blank)

3.5.11 Alarm display screen

If an alarm occurs at power ON or during operation the alarm state can be changed on this “Alarm Display” screen. In addition, when error code or SRMini communication error occurs, any screen now on display is forcibly changed to this “Alarm Display” screen.



SRM Alarm: Displays the alarm status of control unit.

If an alarm occurs even in one channel from among temperature control channels used, ■ flashes.

AL1: Alarm 1 status
AL2: Alarm 2 status
BO: Burnout status
HBA: Heater break alarm status
LBA: Control loop break alarm status

After temperature rises in all of the temperature control channels used are completed, ■ flashes.

T.R.C: Temperature rise complete status

If an alarm occurs even in one channel from among TI channels used, ■ flashes.

TI AL1: TI alarm 1 status
TI AL2: TI alarm 2 status
TI BO: TI burnout status

If an alarm occurs even in one channel from among AI channels used, ■ flashes.

AI AL1: AI alarm 1 status
AI AL2: AI alarm 2 status

📖 Set the type of timer for any temperature control channel which does not use the timer function always to "0: Unused." If the timer function is activated when there is any temperature control channel (in a state where the timer function is liable to be used if not intended) satisfying all of the following conditions, burnout (BO) occurs.

- The temperature control operation mode is set to "0: unused."
- Noting is connected.
- The type of timer for setting the timer mode is set to any mode other than "0: Unused."

The cause is that the burnout was recognized to have occurred in disconnected channels, since simultaneously with timer activation the temperature control operation mode was forcibly changed to "1: Monitor."

☞ For the timer function, see the **3.8 Timer Mode Screen (P.3-103)**.

SRM SCI: Displays communication error status with control unit.
Alarm occurrence: Flashes the "■"

☞ For the error contents, see the ● **SRMini communication error (P. 3-48)**.

Unit No.: Displays the control unit number.

Error Cord: Displays the error occurrence status of control unit.
Display range: 1: Backup data error
2: RAM read/writ error
3: System configuration error
4: Internal communication error
5: A/D converter error
6: Adjustment data error

☞ For the error contents, see the ● **Control unit error (P. 3-48)**.

Function keys:

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Alarm Hist.: Touching this key changes to the "Alarm History" screen.

AL Cancel: Touching this key cancel the SRMini communication error. At this time, if the cause of the alarm has been eliminated, the alarm display goes out. In addition, the alarm interlock release data is transmitted to all connected control unit.

- **SRMini communication error**

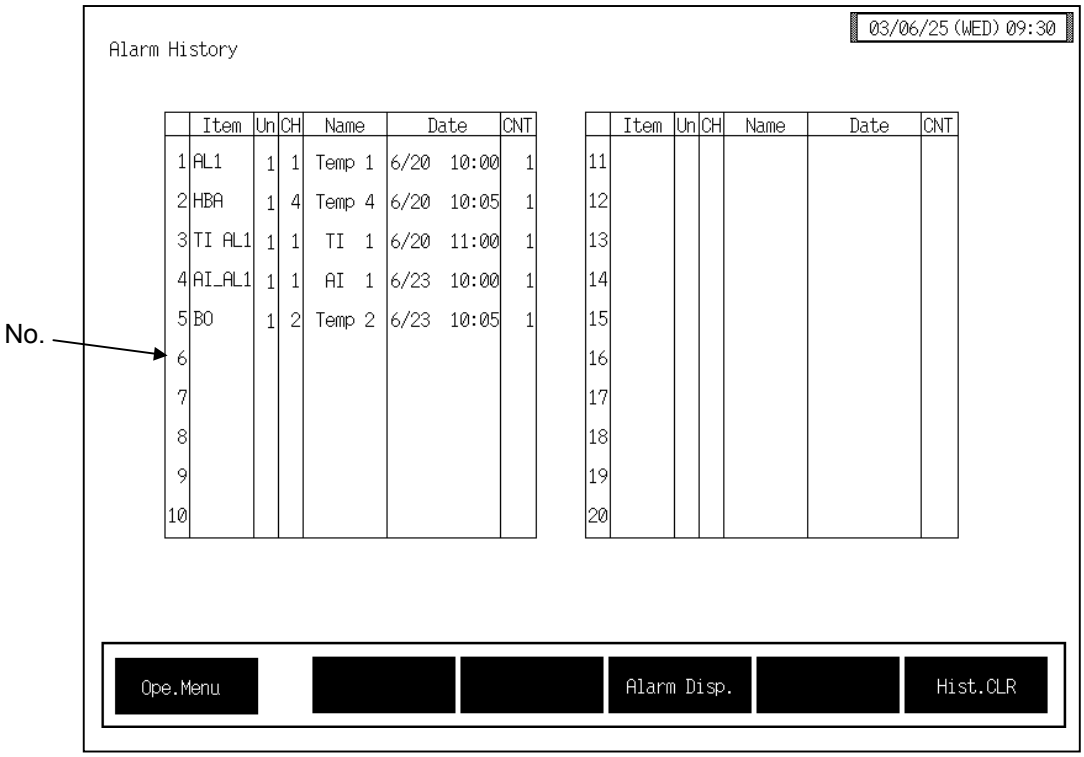
Error messages	Probable cause	Solution
Parity Error During communication, the data has been wrongly written	Too much noise or surge might be applied to the connecting cable with control unit.	Investigate the wiring condition of the connecting cable and whether there is a noise generating source nearby, then switch on the power again.
Framing Error During communication, the data has been wrongly written		
Over-Run Error Problem with the taking-in of the received data		
Time-out Error No response from the control unit	Power supply defect of control unit	Confirm the power supply to the control unit
	Wrong connection , no connection or disconnection of the communication cable	Confirm the connection method or condition and connect correctly
	Breakage, wrong wiring, or imperfect contact of the communication cable	Confirm the wiring or connector and repair or replace the wrong one
	Mismatch of the setting data of communication speed and data bit configuration with those of the control unit	Confirm the settings of control unit and set them correctly
	Wrong address setting	

- **Control unit error**

Error messages	Probable cause	Solution
1: Backup data error The control data has been destroyed or written wrongly	RAM, ROM or A/D converter is faulty	Replace the defective control unit (The module whose FAIL lamp is lit)
2: RAM read/write error Problem with the system RAM	RAM is faulty	
3: System configuration error The system composition has been changed	The module was not initialized after the module configuration was changed	Execute **Module initialization** or return the configuration to its original specifications
4: Internal communication error Abnormality in the internal communications	The module was removed while the power was on	Install the removed module as before
	The module is faulty	Replace the defective control unit (The module whose FAIL lamp is lit)
5: A/D converter error Problem with the A/D converter	A/D converter is faulty	Replace the defective control unit (The module whose FAIL lamp is lit)
	The excessive noise, surge or strong impact might be added to the control unit	
6: Adjustment data error The adjustment data has been written wrongly	The excessive noise, surge or strong impact might be added to the control unit	Replace the defective control unit (The module whose FAIL lamp is lit)

3.5.12 Alarm history screen

The alarm history screen is for recording the details of alarms so far raise. Up to 20 pieces of alarm data can be stored. In addition, if "Alarm History Endless On/Off" is set to "on" on the OPC initial "Alarm Message Set" screen (P. 3-161), it is possible to continue recording by renewing alarm data so far stored from older alarm data successively even if exceeding 20 pieces of alarm data.
This "Alarm History" screen can be called up from the "Alarm Display" screen.



No.: Displayed in the order of alarm occurrence. The older the date and time of alarm occurrence the smaller the number.

Item: Displays the alarm type.

- AL1: Alarm 1 status
- AL2: Alarm 2 status
- BO: Burnout status
- HBA: Heater break alarm status
- LBA: Control loop break alarm status
- TI AL1: TI alarm 1 status
- TI AL2: TI alarm 2 status
- TI BO: TI burnout status
- AI AL1: AI alarm 1 status
- AI AL2: AI alarm 2 status

📖 Alarms other than the above are not stored in the past alarm record.

Un: Displays the control unit number which alarm occurred.

CH: Displays the channel number which alarm occurred.

Name: Displays the channel name which alarm occurred.
Date: Displays the month, day, hour and minute which alarm occurred.

CNT: Displays the number of times the alarm occurred.

Function keys:

Ope. Menu: Touching this key changes to the “Operation Menu” screen.

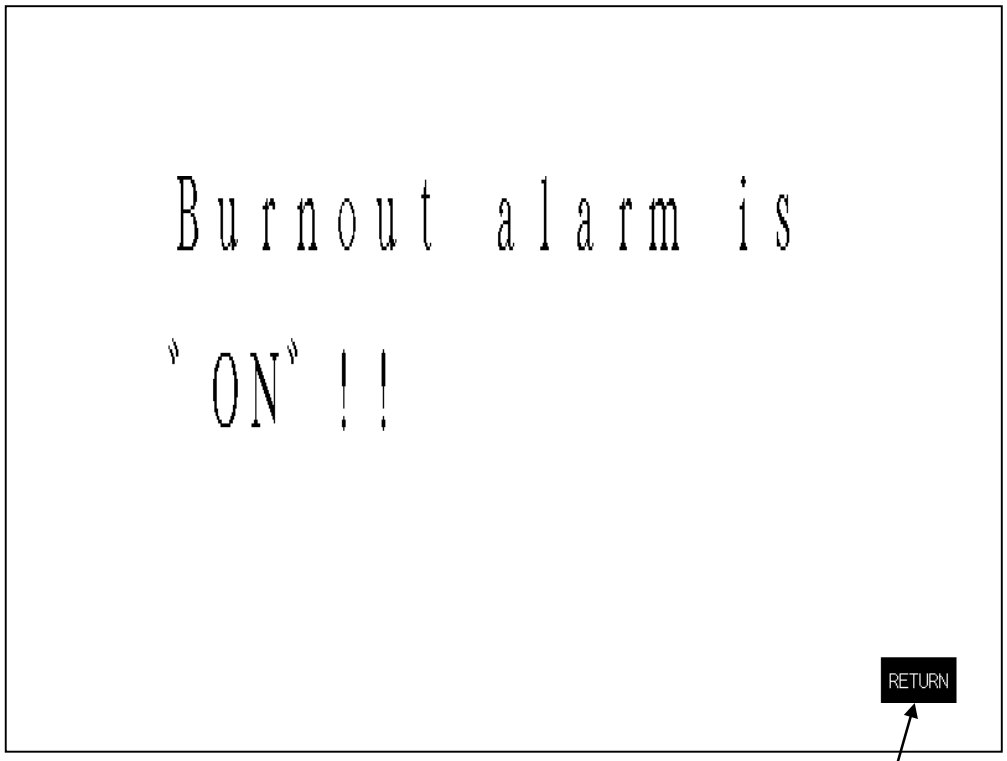
Alarm Disp.: Touching this key changes to the “Alarm Display” screen.

Hist. CLR: Touching this key clears the entire alarm history.

3.5.13 Alarm message monitor screen

The alarm message monitor screen is displayed when a temperature rise is completed or an alarm occurs. However, it is so set that this screen is not displayed when the operation panel is shipped from our factory.
"Display/Non-display" of the alarm message monitor screen is selected on the OPC initial "Alarm Message Set" screen (P. 3-161).

Example: Burnout occurrence



Return key
Touching this key returns the display to the screen it was showing before it changed to the "alarm message monitor" screen.

☞ For the contents of alarm message, see the OPC initial "Alarm Message Set" screen (P. 3-161).

3.6 Operation Setting Screen

Operation setting screens sets the temperature set value, alarm set value and control related.
The table below shows the types of operation setting screen and the items to be set with each screen.

Screen name	Monitor item	Necessary module	Page
TIO setting [1]	Temperature set value Alarm 1 set value Alarm 2 set value	H-TIO-□, H-CIO-A	3-57
Manual output setting [1]	Manual output value Auto/Manual transfer	H-TIO-□, H-CIO-A	3-59
Extension alarm setting [1, 2]	Event DO extension alarm set value	H-DO-C	3-62
2'nd setting menu [1, 2]	Change to each screen of 2'nd setting item.	H-TIO-□, H-CIO-A	3-64
2'nd setting: PID	Heat-side proportional band Integral time Derivative time	H-TIO-□, H-CIO-A	3-65
2'nd setting: PC, OL/DB	Cool-side proportional band Overlap/deadband	H-TIO-□, H-CIO-A	3-66
2'nd setting: PVB, Zone, Judge	PV bias Temperature rise completion range Temperature rise completion trigger Temperature rise completion soak time	H-TIO-□, H-CIO-A	3-67
2'nd setting: TH, TC	Heat-side proportioning cycle time Cool-side proportioning cycle time	H-TIO-□, H-CIO-A	3-69
2'nd setting: HBA1	Heater break alarm setting 1	H-TIO-A/C/D	3-70
2'nd setting: HBA2	Heater break alarm setting 2	H-CT-A	3-71
2'nd setting: LBA, LBD, Use selection	LBA time LBA deadband LBA usage selection	H-TIO-□ (except the H/J), H-CIO-A	3-72
AI setting [1]	AI alarm 1 setting AI alarm 2 setting	H-AI-A/B	3-74
TI setting [1]	TI alarm 1 setting TI alarm 2 setting TI_PV bias	H-TI-A/B/C	3-75
AO setting [1]	AO output set value	H-AO-A/B	3-76
AO zoom setting [1, 2]	AO zooming high limit AO zooming low limit	H-AO-A/B	3-78
AO function selection	AO function selection AO corresponding channel setting	H-AO-A/B	3-79

[1] The screens are only displayed if the required modules are mounted.

[2] This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the **■ Releasing extension alarm setting calling up key protect (P. 3-61), ■ Releasing 2'nd setting menu calling up key protect (P. 3-63)** and **■ Releasing AO zoom/AO function calling up key protect (P. 3-77).**

Continued on the next page.

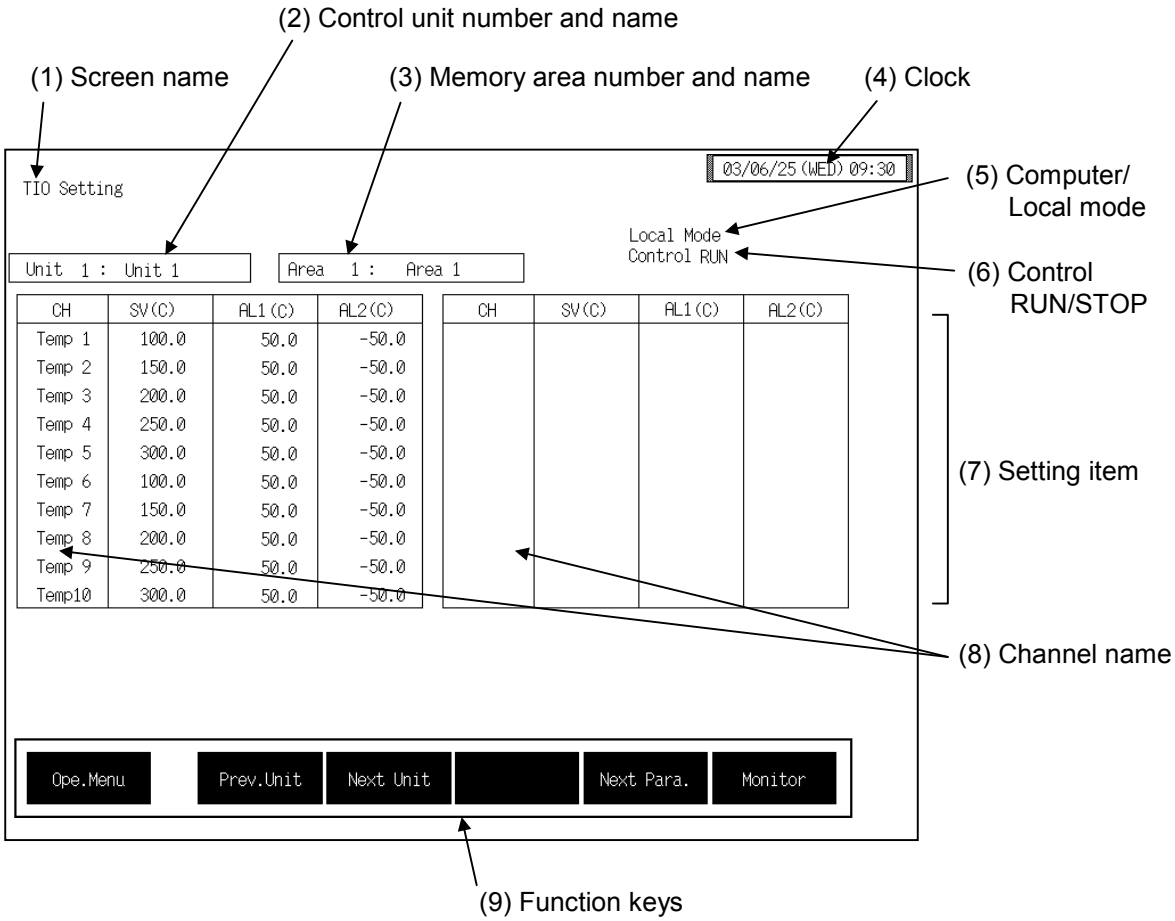
Continued from the previous page.

Screen name	Monitor item	Necessary module	Page
Cascade setting *	Cascade gain Cascade bias	H-CIO-A	3-81
Positioning setting 1 *	Positioning manual output value	H-TIO-K	3-83
Positioning setting 2 *	Positioning output neutral zone Integrated output limiter Auto/Manual transfer	H-TIO-K	3-84

* The screens are only displayed if the required modules are mounted.

3.6.1 Basic configuration of operation setting screen

The basic configuration of each operation setting screen is as shown below.
Example: TIO setting screen



(1) Screen name: Displays the screen name.

(2) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

(3) Memory area number and name:
Displays the number and name for the memory area whose data is being displayed. The memory area number can be changed with the "Operation mode" screen (P. 3-87). In addition, the memory area name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154). However, this item is not displayed on the "Extend Alarm Setting," "2'nd Setting: LBA, LBD, Mode," "AI Setting," "TI Setting," "AO Setting," "AO zoom Setting" and "AO Function Select" screens.

(4) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(5) Computer/Local mode:

Displays whether the current state is computer mode or local mode. The mode can be changed with the initial "Host Communication" screen (P. 3-118).

Computer: Computer mode
Local: Local mode

Cannot be set by the OPC-V07 when in the computer mode.

(6) Control RUN/STOP:

Displays the control state (Control RUN/STOP). The control mode can be changed with the "Operation mode" screen (P. 3-87).

(7) Setting item: Displays the item and data. Details of display varies depending on the each setting screen. For the details of setting, see the description of each operation setting screen.

(8) Channel name: Displays the TIO channel name, TI channel name, AI channel name, AO channel name, EX-Alarm channel name, DI channel name and DO channel name. However, AO channel numbers instead of AO channel names are displayed on the "AO zoom setting" and "AO function selection" screens.

(9) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

Prev. Para.: Touching this key changes to the screen one before the one being displayed.

Next Para.: Touching this key changes to the screen one after the one being displayed.

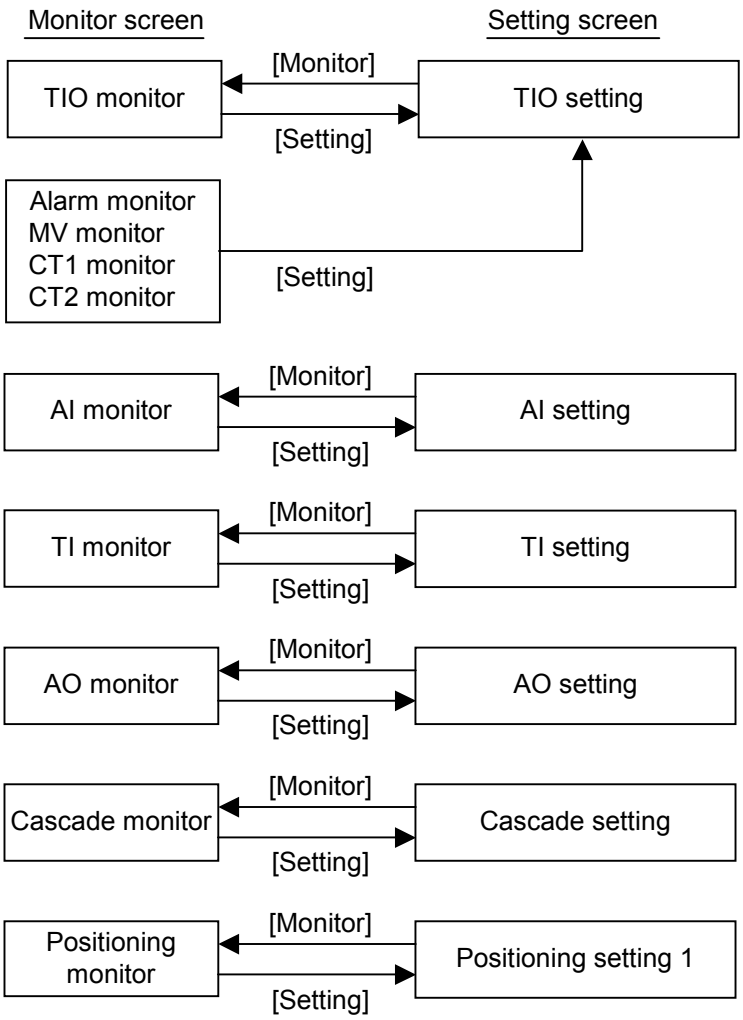
Next CH: Touching this key changes to the screen for the channel (CH) after the current one.

2'nd Menu: Touching this key changes to the "2'nd Setting Menu" screen.

Monitor: Touching this key changes from the setting screen to the monitor screen.

Continued on the next page.

Continued from the previous page.



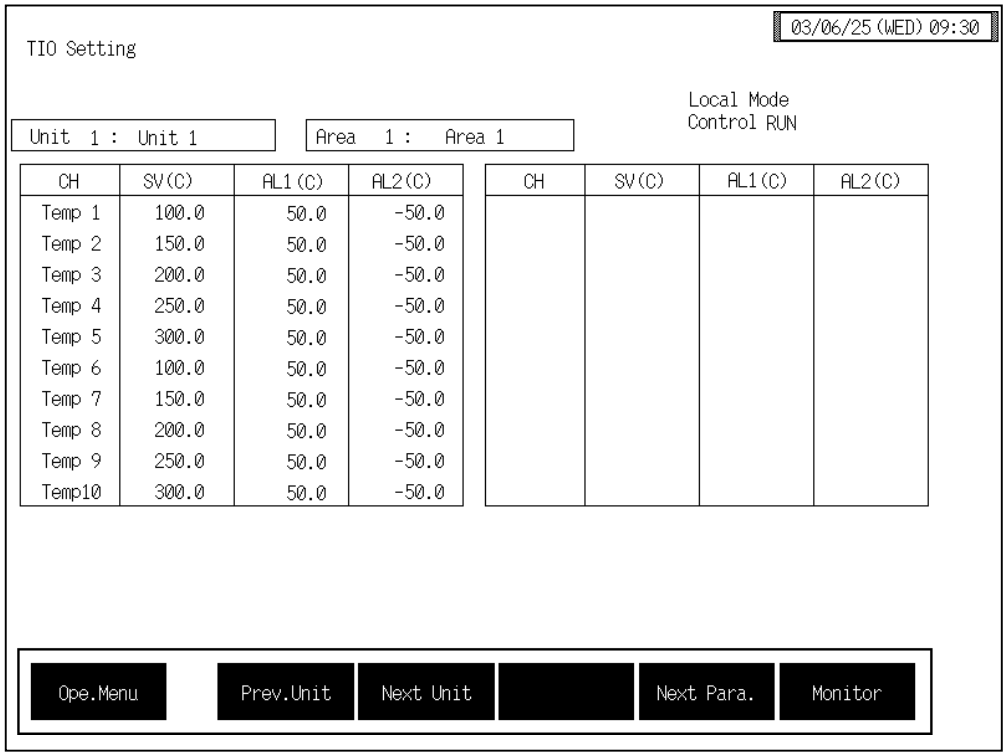
3.6.2 TIO setting screen

There are “TIO setting” and “Manual output setting” screens in the TIO setting. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.

■ TIO setting screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

SV (C): Sets the temperature set value (SV).
Setting range: TC/RTD input:
Within input range (Within setting limit)
Current/voltage input:
Within display scale (Within setting limit)
Factory set value: 0
The position of the decimal point differs depending on the input range.

AL1 (C): **Sets** the alarm 1 set value.
Setting range: TC/RTD input:
Within input range or span range.
Current/voltage input:
Within display scale range or span range.
Factory set value: See **Factory set value table of Alarm 1/Alarm 2 set value.**
The position of the decimal point differs depending on the input range.

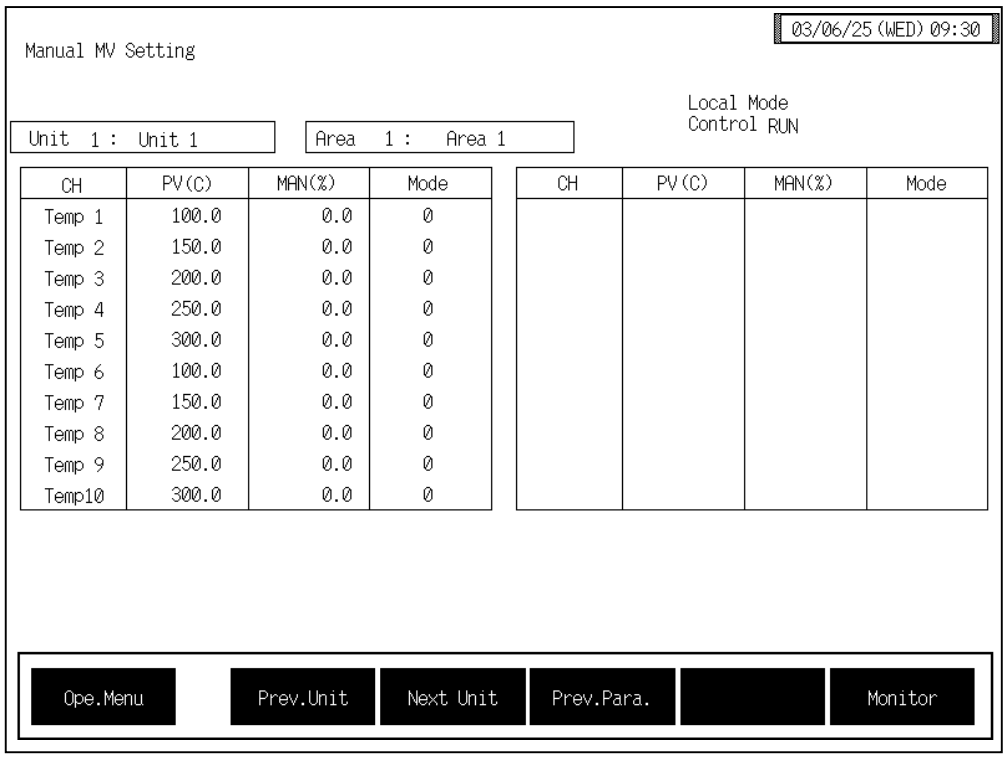
AL2 (C): **Sets** the alarm 2 set value.
Setting range: TC/RTD input:
Within input range or span range.
Current/voltage input:
Within display scale range or span range.
Factory set value: See **Factory set value table of Alarm 1/Alarm 2 set value.**
The position of the decimal point differs depending on the input range.

Factory set value table of Alarm 1/Alarm 2 set value

Input type	Alarm type	Alarm 1 set value	Alarm 2 set value
TC/RTD input	Process high alarm	Input range (high limit)	Input range (high limit)
	Process low alarm	Input range (low limit)	Input range (low limit)
	Deviation high alarm, Deviation high/low alarm, Band alarm	50 °C	50 °C
	Deviation low alarm	−50 °C	−50 °C
	No alarm function	Input range (high limit)	Input range (low limit)
Current/voltage input	Process high alarm	100.0 %	100.0 %
	Process low alarm	0.0 %	0.0 %
	Deviation high alarm, Deviation high/low alarm, Band alarm	50 %	50 %
	Deviation low alarm	−50 %	−50 %
	No alarm function	100.0 %	0.0 %

Touching the [Monitor] key changes to the “TIO Monitor” screen (P. 3-33).

■ Manual output setting screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

PV (C): Display the temperature measured value (PV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

MAN (%): Sets the manipulated output value (MV) in manual mode.
Setting range: −5.0 to +105.0 %
Factory set value: 0.0
This setting becomes invalid for ON/OFF control or heat/cool control.

H-TIO-C/D [Z-1017 specification]
Setting range: Cool-side: −105.0 to 0.0 %
Heat-side: 0.0 to +105.0 %

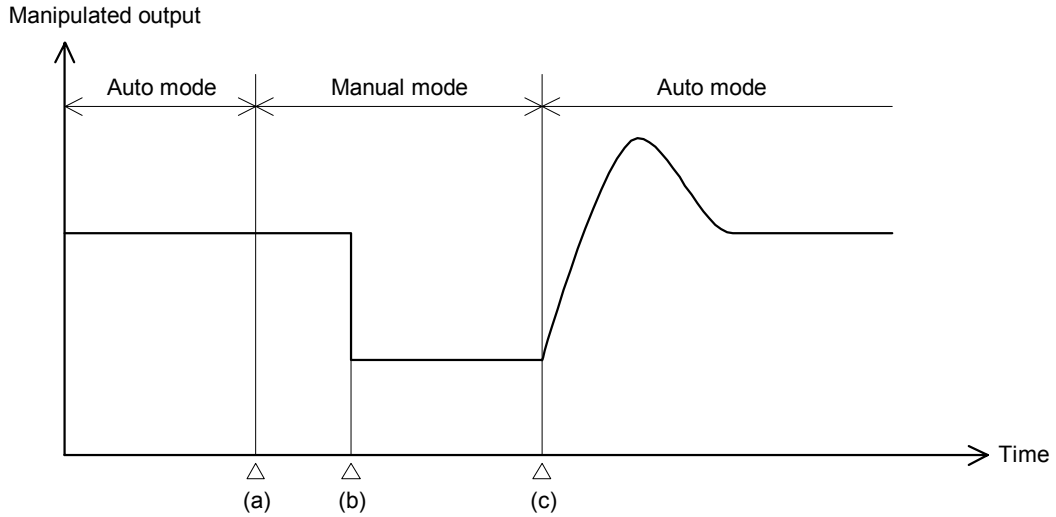
Mode: Sets whether to perform control with auto mode or manual mode.
Setting range: 0: Auto mode
1: Manual mode
Factory set value: 0
This setting becomes invalid for ON/OFF control or heat/cool control.

Touching the [Monitor] key changes to the "TIO Monitor" screen (P. 3-33).

<Balanceless/bumpless function>

This function is used to prevent overload caused by the manipulated output value (MV) suddenly changing when auto mode is transferred to manual mode and vice versa.

- Operation during transfer from auto mode to manual mode
  When the mode is transferred to manual mode the manipulated output value (MV) follows that in auto mode.
- Operation during transfer from manual mode to auto mode
  When manual mode is transferred to auto mode, the manipulated output changes to that calculated with respect to the set value.



(a) Transfer from auto mode to manual mode. However, when the mode is transferred to manual mode, the manipulated output follows that in auto mode.

(b) The manipulated output changed (manual mode function).

(c) Transfer from manual mode to auto mode. When the mode is transferred to auto mode, the manipulated output becomes that calculated with respect to the set value.

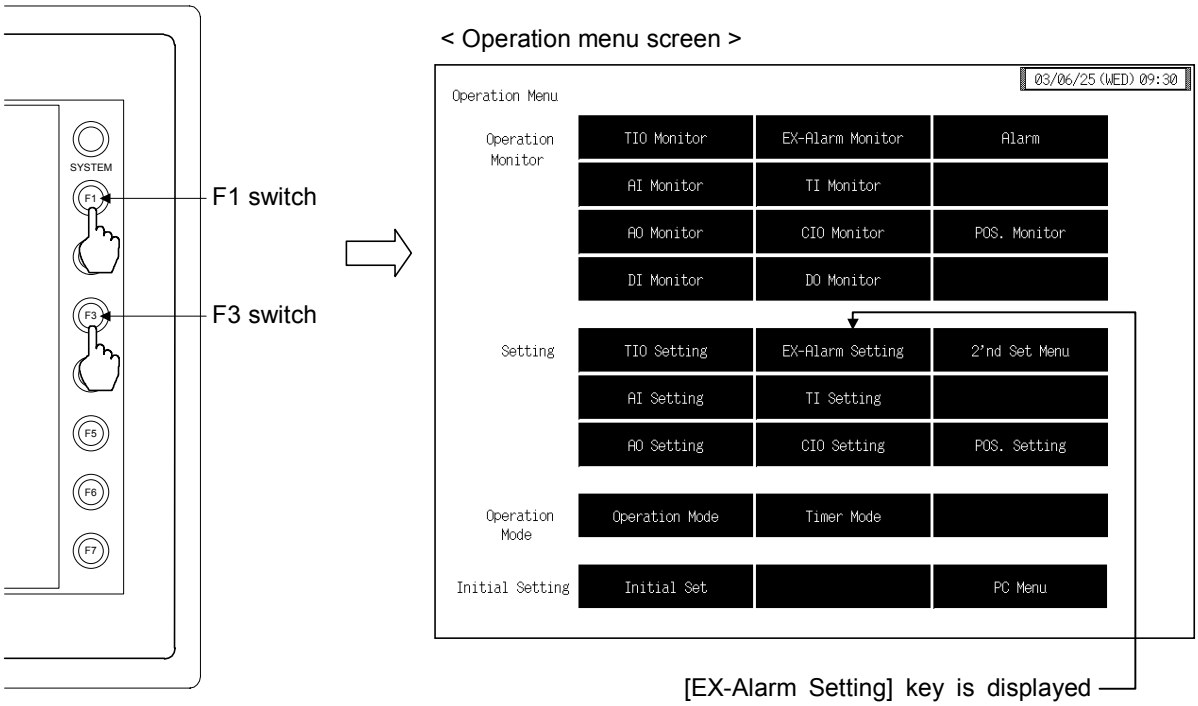
3.6.3 Extension alarm setting screen

The [EX-Alarm Setting] key for changing the display to the “Extend Alarm Setting” screen is protected, so you cannot change to this screen without removing the protection.

■ Releasing extension alarm setting calling up key protect

1. Call the "Operation Menu" screen.

2. Press and hold the [F1] switch, and press the [F3] switch at the same time.
[EX-Alarm Setting] key is displayed, and key operation becomes valid.



This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

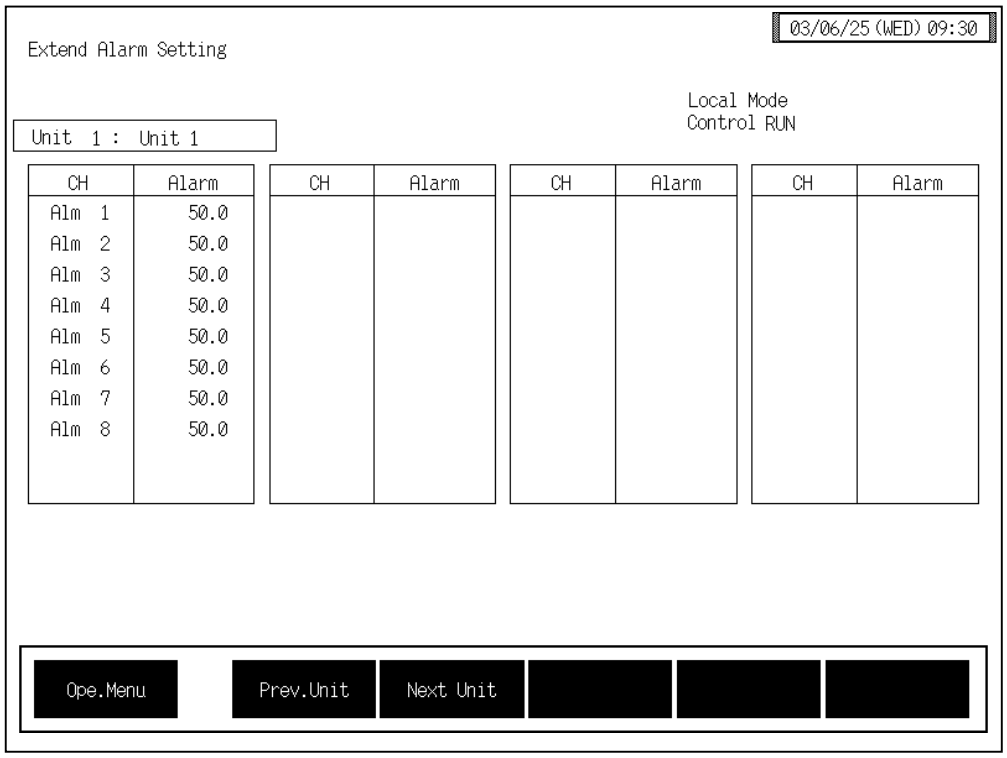
After the [EX-Alarm Setting] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the “Operation Menu” screen again to perform the protect release operation.

3. Touching the [EX-Alarm Setting] key displayed changes the “Extend Alarm Setting” screen.

■ Extension alarm setting screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



CH: Displays the extension alarm channel name.
The channel name can be changed with the OPC initial "EX-Alarm CH Name Set" screen (P. 3-160).

Alarm: Sets the event DO extension alarm set value.
Setting range: TC/RTD input: Within input range or span range
Current/voltage input: Within display scale or span range
Factory set value: 0
The position of the decimal point differs depending on the input range.

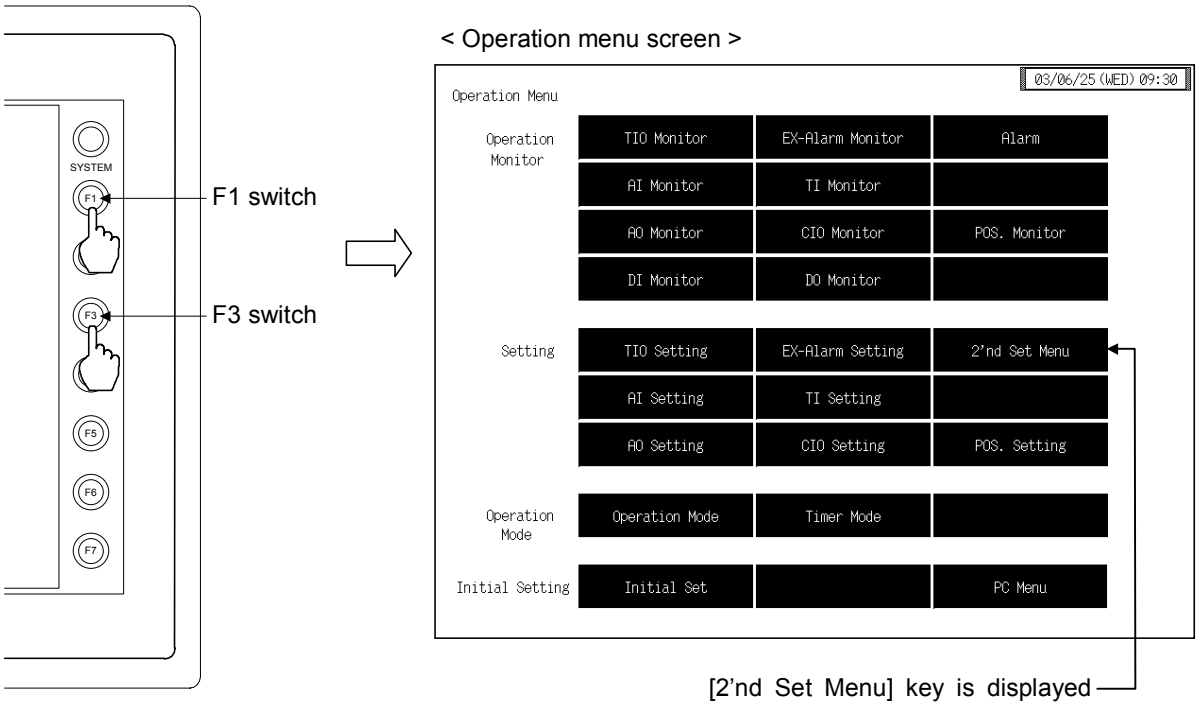
3.6.4 2’nd setting menu screen

The [2’nd Set Menu] key for changing the display to the “2’nd Set Menu” screen is protected, so you cannot change to this screen without removing the protection.

■ Releasing 2’nd setting menu calling up key protect

1. Call up the "Operation Menu" screen.

2. Press and hold the [F1] switch, and press the [F3] switch at the same time.
[2’nd Set Menu] key is displayed, and key operation becomes valid.



This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

After the [2’nd Set Menu] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the “Operation Menu” screen again to perform the protect release operation.

3. Touching the [2’nd Set Menu] key displayed changes the “2’nd Set Menu” screen.

■ 2’nd setting menu screen

The 2’nd setting menu screen is for selecting setting items relating to the temperature control.

Screen select keys:

Heating Prop. Band, Integral Time, Derivative Time:
Touching this key changes to the “2’nd Setting: P, I, D” screen.

Cooling Prop. Band, Overlap/Deadband:
Touching this key changes to the “2’nd Setting: PC, OL/DB” screen.

PV Bias, Temp. Wait Zone, Heat up Judge Select, Temp. Wait Time:
Touching this key changes to the “2’nd Setting: PVB, Zone, Judge” screen.

Heating Cycle, Cooling Cycle:
Touching this key changes to the “2’nd Setting: TH, TC” screen.

Heater Break Alarm 1:
Touching this key changes to the “2’nd Setting: HBA1” screen.

Heater Break Alarm 2:
Touching this key changes to the “2’nd Setting: HBA2” screen.

Control loop Break Alarm:
Touching this key changes to the “2’nd Setting: LBA, LBD, Mode” screen.

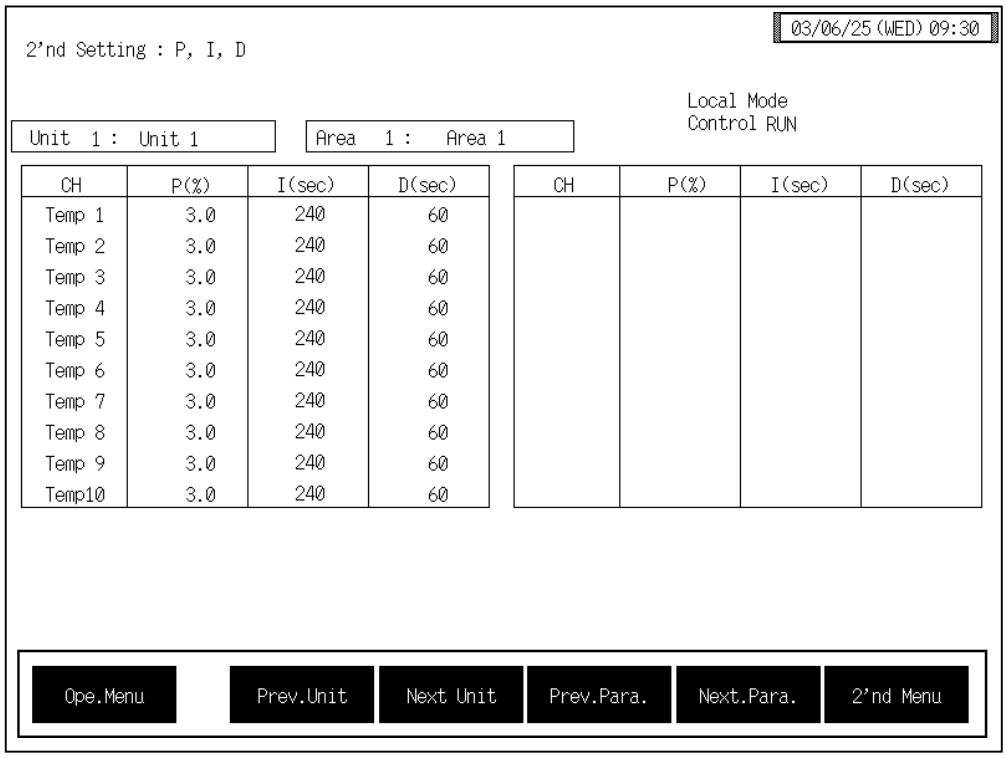
Operation Menu: Touching this key changes to the “Operation Menu” screen.

3.6.5 Each 2'nd setting screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.

■ 2'nd setting: PID screen



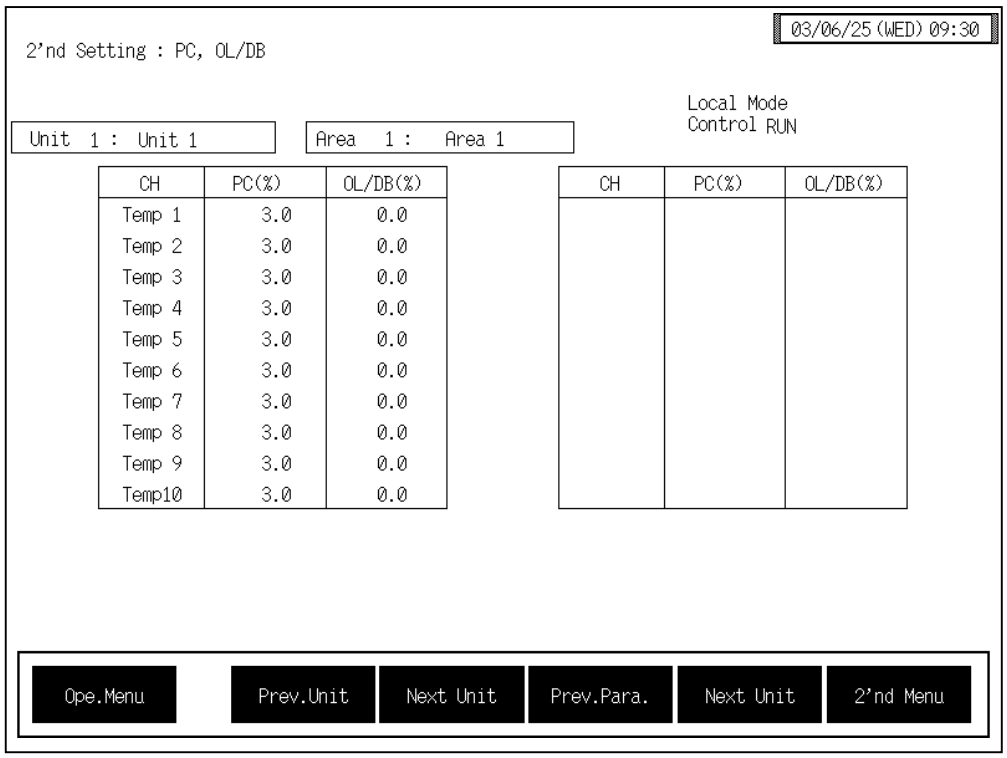
CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

P (%): Sets the heat-side proportional band for PI, PID or heat/cool PID control.
Setting range: 0.1 to 1000.0 % of span
Factory set value: 3.0

I (sec): Sets the integral time to eliminate the offset produced in proportional control.
Setting range: 1 to 3600 seconds
Factory set value: 240

D (sec): Sets the derivative time to prevent ripples by predicting output changes and thus to improve control stability.
Setting range: 0 to 3600 seconds (0: PI action)
Factory set value: 60

■ 2’nd setting: PC, OL/DB screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

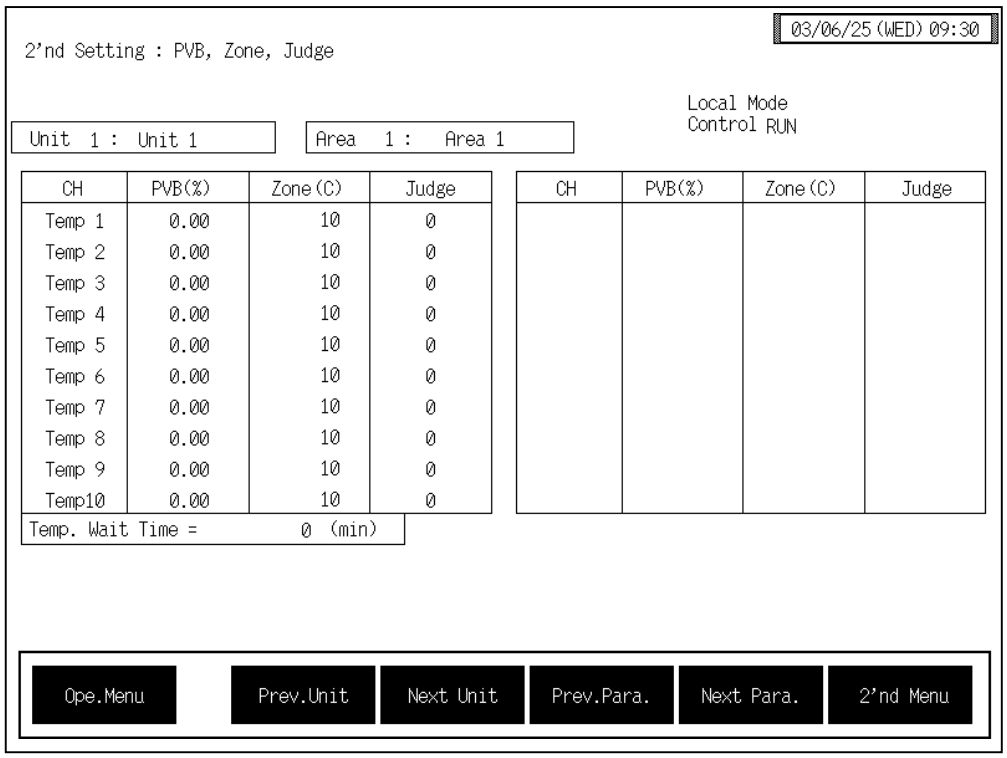
PC (%): Sets the cool-side proportional band for heat/cool PID control.
Setting range: 0.1 to 1000.0 % of span
Factory set value: 3.0

This setting becomes invalid for ON/OFF control, position proportioning control or heat control.

OL/DB (%): Sets the control deadband between heat-side and cool-side proportional bands in heat/cool PID control.
Setting range: −10.0 to +10.0 % of span (Overlapped by minus setting)
Factory set value: 0.0

This setting becomes invalid for ON/OFF control, position proportioning control or heat control.

■ 2’nd setting: PVB, Zone, Judge screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

PVB (%): Sets the bias added to the measured value for sensor correction.
Setting range: −5.00 to +5.00 % of span
Factory set value: 0.00

Zone (C): Sets the range to trigger temperature rise completion if the measured value enters this range.
Setting range: 1 to 10 °C (1 to 20 °F)
Factory set value: TC/RTD input: 10 °C (20 °F)
Current/voltage input: 10 % of display scale

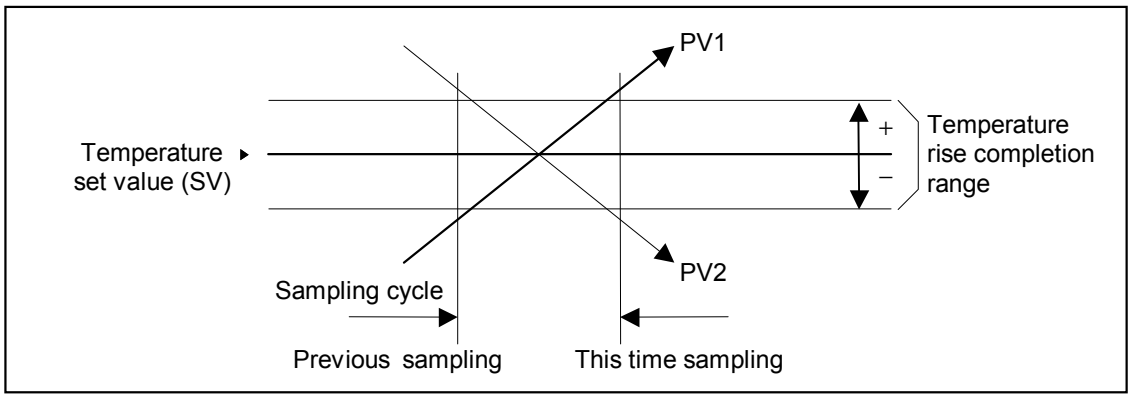
Judge: Sets determine whether the temperature rise has completed when the measured value enters the temperature rise completion triggering range.
Setting range: 0: Unused
1: Used
Factory set value: 0

Do not set “1: Used” in H-TIO-H/J module, because temperature rise completion is not judged. If the channel of each of the H-TIO-H/J modules is set “1: Used,” it does no reach the completion of temperature rise. As a result, the state of this completion which is judged by performing the *OR* operation of all the channels cannot be attained, thereby continuing the incompletion of temperature rise.

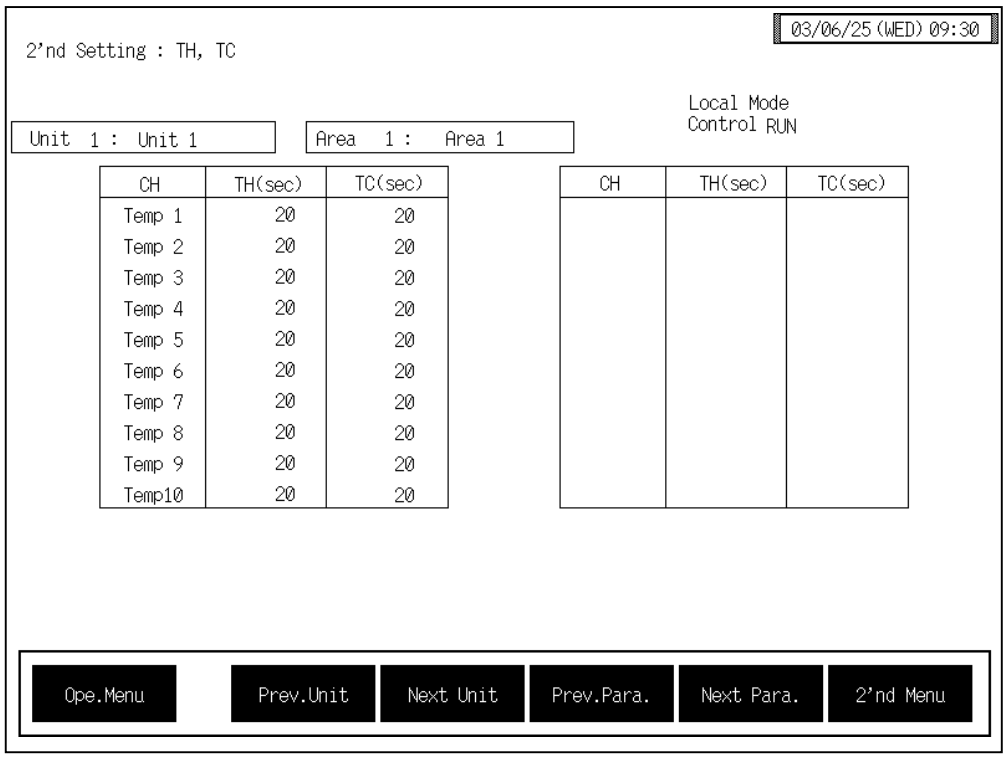
Temp. Wait Time: Sets the time until the temperature rise completes after all of the channels reach the temperature set value (or temperature rise completion range).
Setting range: 0 to 360 minutes
Factory set value: 0

<Temperature rise completion function>

During the sampling of temperature input, when the measured temperature value (PV) comes within the temperature rise completion range, the temperature rise completion will occur. Further in considering the case that where the temperature rise completion range has been set in a narrow range, etc., even if the measured temperature value (PV) passes through the temperature rise completion range in the time between the sampling periods (Previous sampling cycle - This time sampling cycle), it is also judged as the temperature rise completion. But it is only limited to the channel which is the object of the judgment.



■ 2’nd setting : TH, TC screen

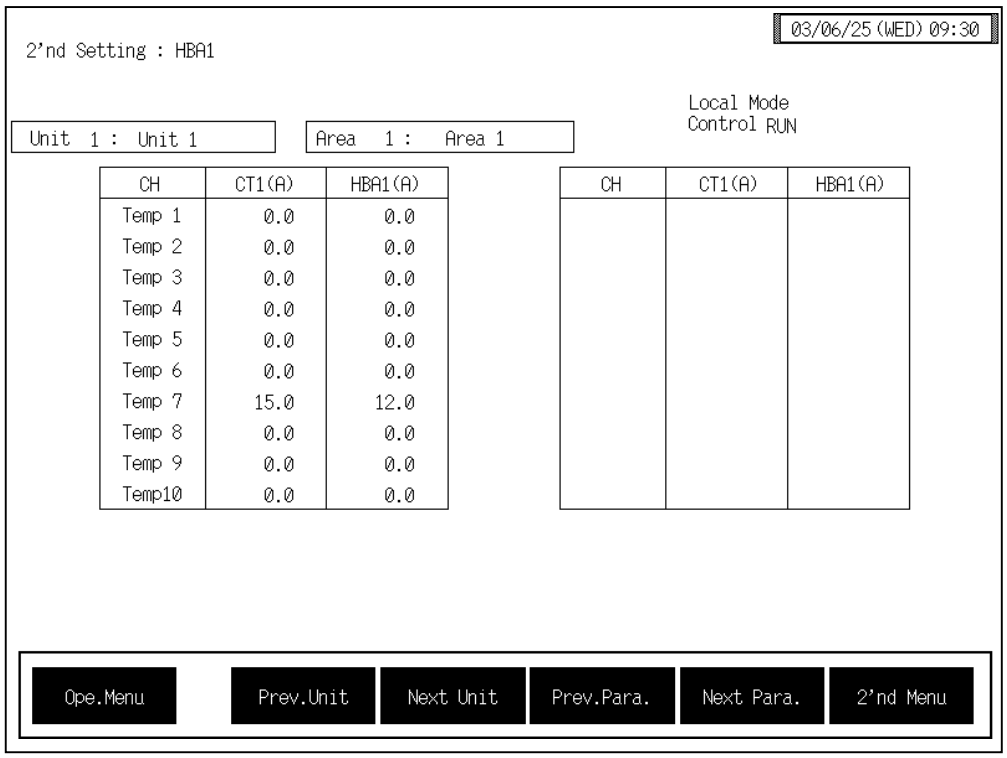


CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

TH (sec): Sets the heat-side proportioning cycle time on the heat control channel or heat/cool control channel.
Setting range: 1 to 100 seconds
Factory set value: Relay contact output: 20 seconds
Voltage pulse output: 2 seconds
Open collector output: 2 seconds
Triac output: 2 seconds
This setting becomes invalid for ON/OFF control or current/voltage output.
Position proportioning control are only for relay contact output.

TC (sec): Sets the cool-side proportioning cycle time on the heat/cool control channel.
Setting range: 1 to 100 seconds
Factory set value: Relay contact output: 20 seconds
Voltage pulse output: 2 seconds
Open collector output: 2 seconds
Triac output: 2 seconds
This setting becomes invalid for ON/OFF control, position proportioning control, heat control or current/voltage output.

■ 2’nd setting: HBA1 screen



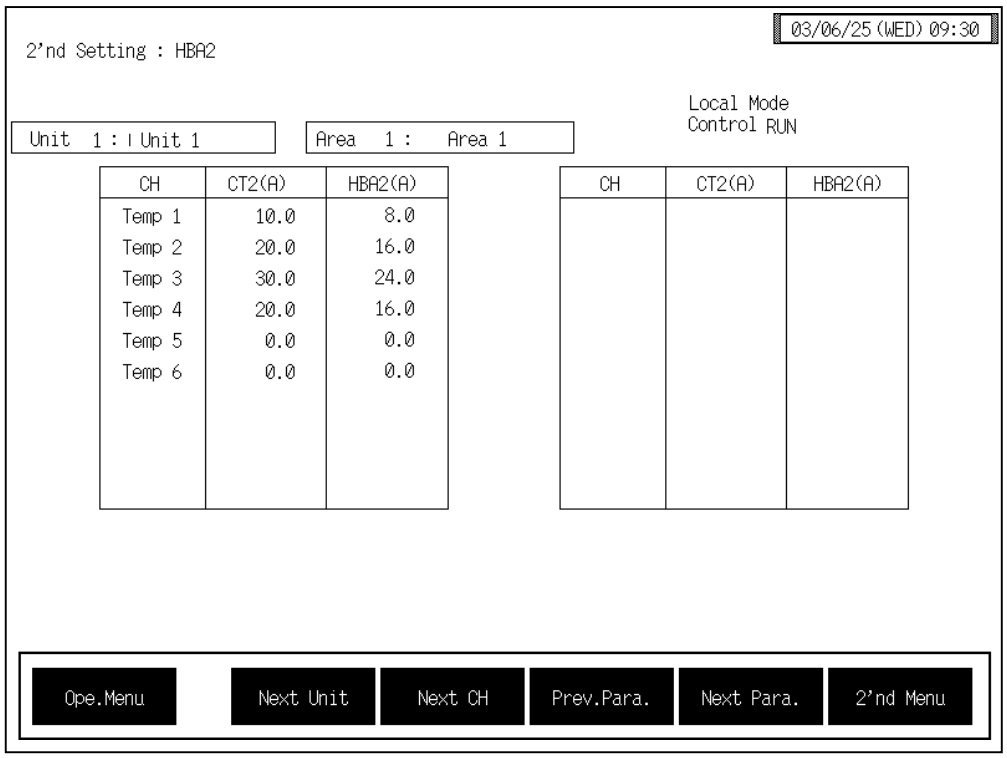
CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

CT1 (A): Displays current transformer (CT) input measured value of the H-TIO-A/C/D module.
Display range: 0.0 to 100.0 A or 0.0 to 30.0 A

HBA1 (A): Sets the heater break alarm (HBA) set value corresponding to current transformer (CT) input of the H-TIO-A/C/D.
Setting range: 0.0 to 100.0 A or 0.0～30.0 A
Factory set value: 0.0

Set the heater break alarm set value to approx. 85 % of the CT measured value. If voltage variations are large, set the heater break alarm set value to a slightly smaller value than desired. In addition, if two or more heaters are connected in parallel, set the heater break alarm set value to a slightly larger value than desired (but within the CT measured value).

■ 2’nd setting: HBA2 screen



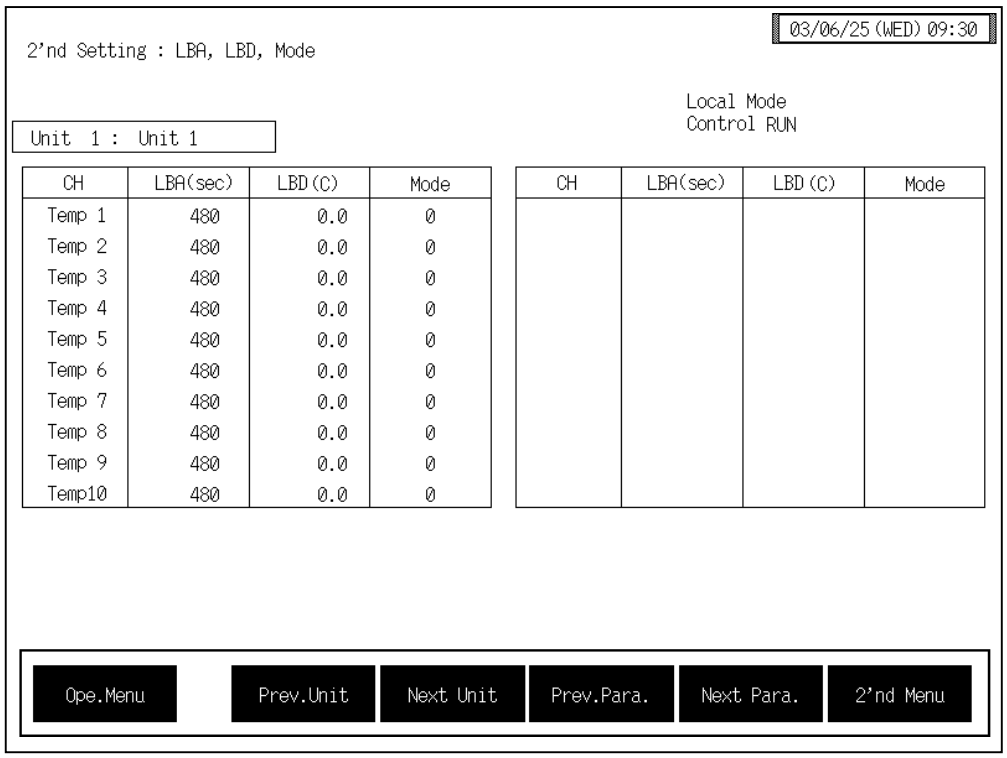
CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

CT2 (A): Displays current transformer (CT) input measured value of the H-TIO-A/C/D module.
Display range: 0.0 to 100.0 A or 0.0 to 30.0 A

HBA2 (A): Sets the heater break alarm (HBA) set value corresponding to current transformer (CT) input of the H-TIO-A/C/D.
Setting range: 0.0 to 100.0 A or 0.0～30.0 A
Factory set value: 0.0

Set the heater break alarm set value to approx. 85 % of the CT measured value. If voltage variations are large, set the heater break alarm set value to a slightly smaller value than desired. In addition, if two or more heaters are connected in parallel, set the heater break alarm set value to a slightly larger value than desired (but within the CT measured value).

■ 2’nd setting: LBA, LBD, Use selection screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

LBA (sec): Sets the measuring time of detection a control loop error by monitoring the variation of measured value.
Setting range: 1 to 7200 seconds
Factory set value-: 480

📖 If the LBA set times is shorter than anticipated or it does not watch the controlled object, the LBA may not turn ON or OFF. In this case, change the LBA set time depending on the situation.

📖 When autotuning is used, the LBA set time that is twice the integral time thus set is automatically set. No LBA set time changes even if the integrated value is changed.

LBD (C): Sets the region (deadband) in which a control loop break alarm is not output.
Setting range: Input span
Factory set value: 0
The position of the decimal point differs depending on the input range.

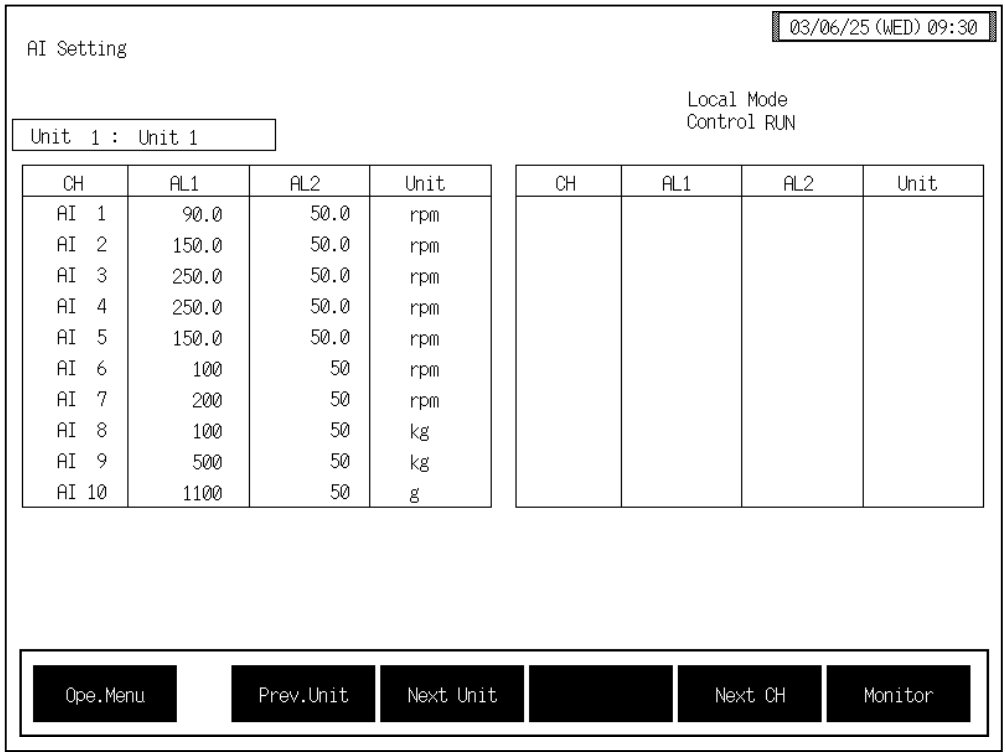
Mode: Sets the Use/Unused of the loop break alarm function.
Setting range: 0: Unused
1: Used
Factory set value: 0

- The loop break alarm function is activated only when the operation mode transfer switch is turned to “Normal” mode.
- This function is not activated during autotuning.
- The LBA function detects the occurrence of an error in the control loop, but cannot locate the error point. Therefore in this case, check each control system in order.

3.6.6 AI setting screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



CH: Displays the AI channel name.
The channel name can be changed with the OPC initial "AI CH Name Set" screen (P. 3-156).

AL1: Sets the AI alarm 1 set value.
Setting range: Within display scale range
Factory set value: Process high alarm: 100.0
Process low alarm: 0.0
No alarm function: 100.0
The position of the decimal point differs depending on the AI decimal point position setting (P. 3-229).

AL2: Sets the AI alarm 2 set value.
Setting range: Within display scale range
Factory set value: Process high alarm: 100.0
Process low alarm: 0.0
No alarm function: 100.0
The position of the decimal point differs depending on the AI decimal point position setting (P. 3-229).

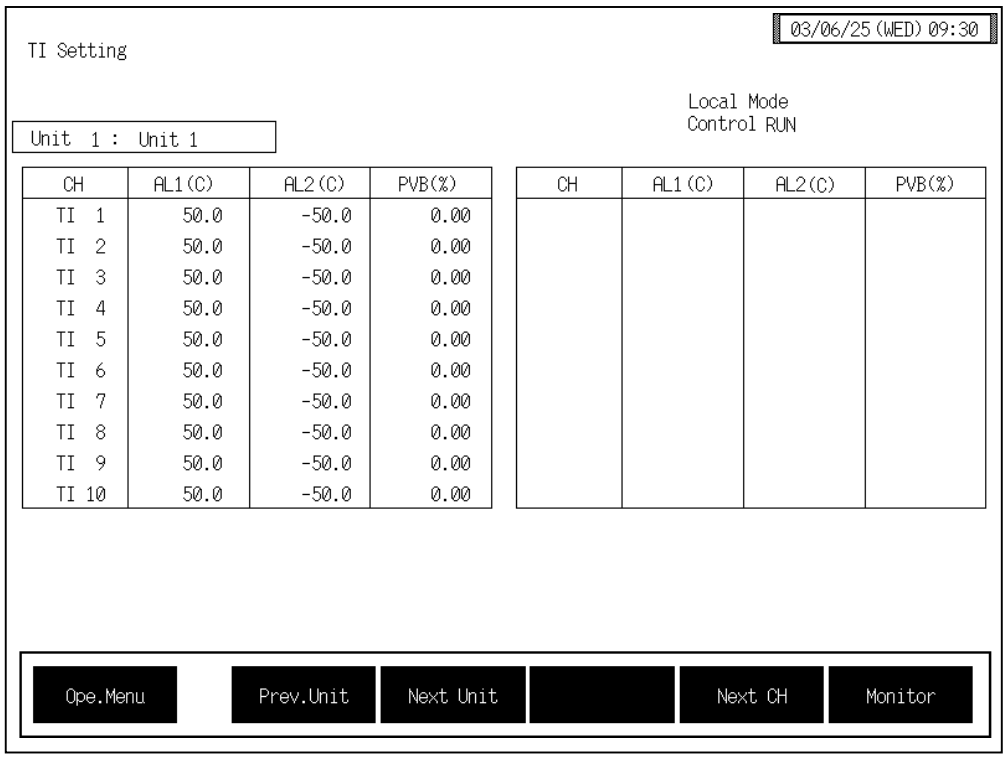
Unit: Displays the engineering unit.
The engineering unit can be changed with the OPC initial "AI Unit Set" screen (P. 3-157).

📖 Touching the [Monitor] key changes to the "AI Monitor" screen (P. 3-39).

3.6.7 TI setting screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

AL1 (C): Sets the TI alarm 1 set value.
Setting range: Within input range
Factory set value: Process high alarm: Input range (high limit)
Process low alarm: Input range (low limit)
No alarm function: Input range (high limit)
The position of the decimal point differs depending on the input range.

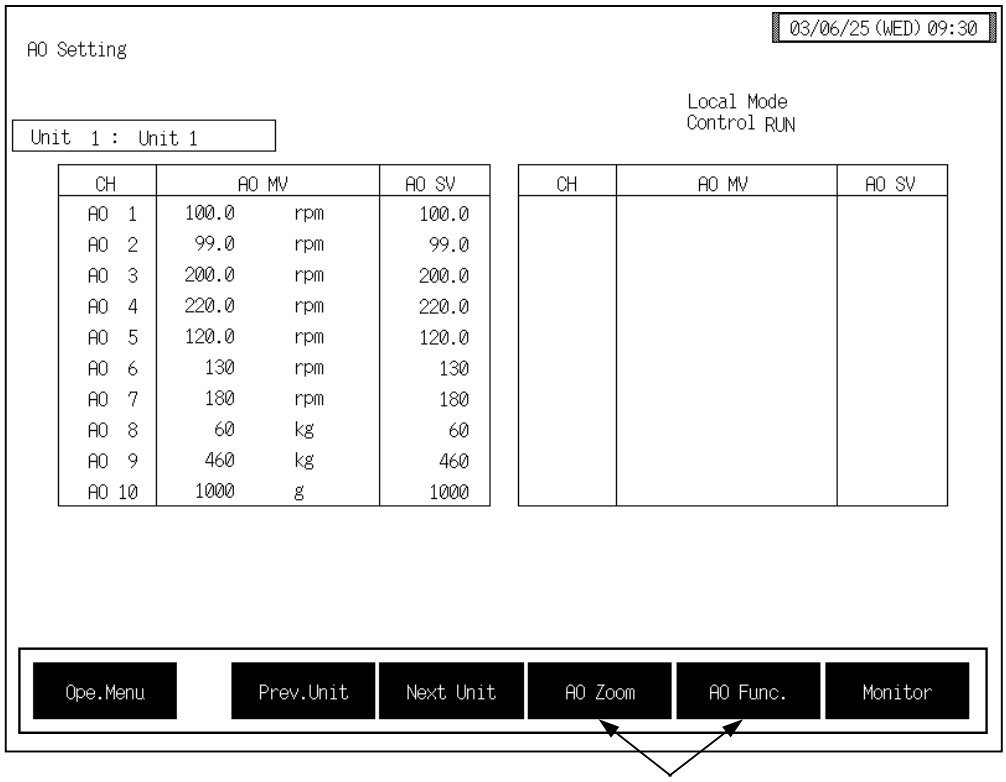
AL2 (C): Sets the TI alarm 2 set value.
Setting range: Within input range
Factory set value: Process high alarm: Input range (high limit)
Process low alarm: Input range (low limit)
No alarm function: Input range (high limit)
The position of the decimal point differs depending on the input range.

PVB (%): Sets the bias added to the TI measured value for sensor correction.
Setting range: −5.00 to +5.00 of span
Factory set value: 0.00

📖 Touching the [Monitor] key changes to the "TI Monitor" screen (P. 3-40).

3.6.8 AO setting screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



AO Zoom key, AO Function key
This screen is not displayed normally.
Protection release is necessary to display each key.
For details, see the ■ **Releasing AO zoom/AO function calling up key protect (P. 3-77).**

CH: Displays the AO channel name.
The channel name can be changed with the OPC initial "AO CH Name Set" screen (P. 3-158).

AO MV: Displays the AO output value (H-AO-A/B module) and engineering unit.
Display range: Within display scale range

Effective only for manual mode.
The engineering unit can be changed with the OPC initial "AO Unit Set" screen (P. 3-159).
The position of the decimal point differs depending on the AO decimal point position setting (P. 3-232).

AO SV: Sets the AO output value (H-AO-A/B module) in manual mode.
Setting range: Within display scale range
Factory set value: 0.0

The position of the decimal point differs depending on the AO decimal point position setting (P. 3-232).

📖 Touching the [Monitor] key changes to the "AO Monitor" screen (P. 3-41).

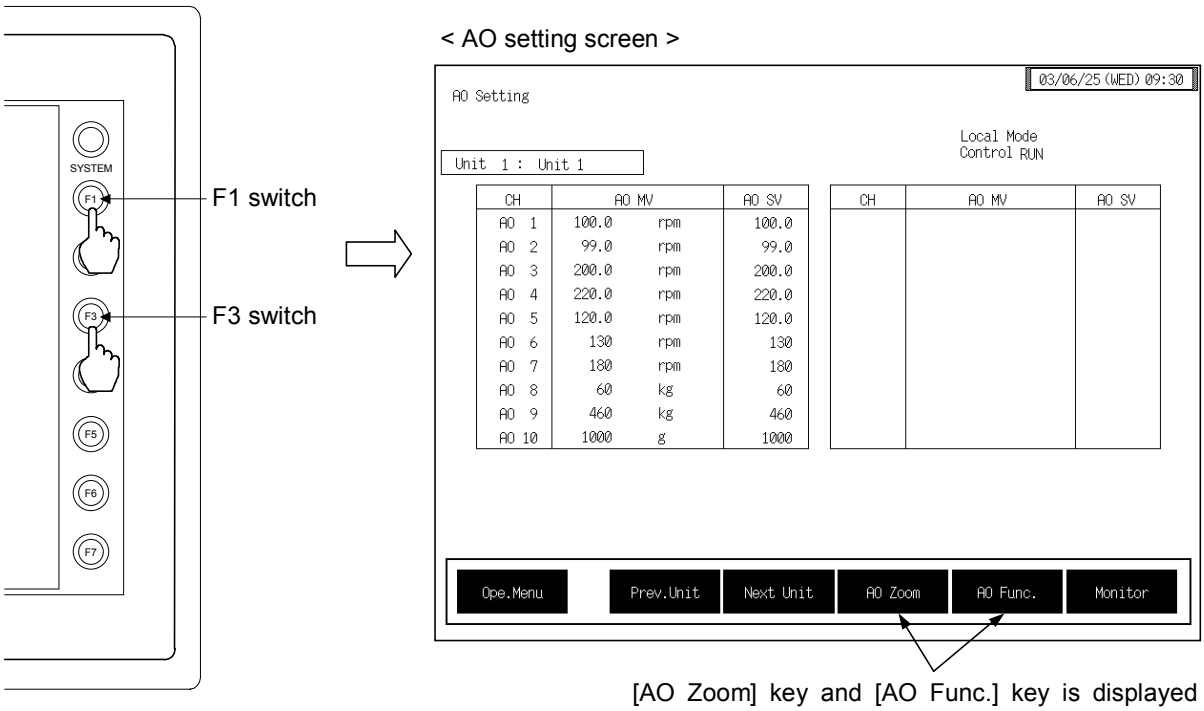
3.6.9 AO zoom setting screen, AO function selection screen

The [AO Zoom] and [AO Func.] keys for changing the display to the "AO Zoom Setting" or "AO Function Select" screens are protected, so you cannot change to these screen without removing the protection.

■ Releasing AO zoom/AO function calling up key protect

1. Touch the [AO Setting] key on the "Operation Menu" screen, to change to the "AO Setting" screen.

2. Press and hold the [F1] switch, and press the [F3] switch at the same time.
[AO Zoom] and [AO Func.] keys are displayed, and key operation becomes valid.



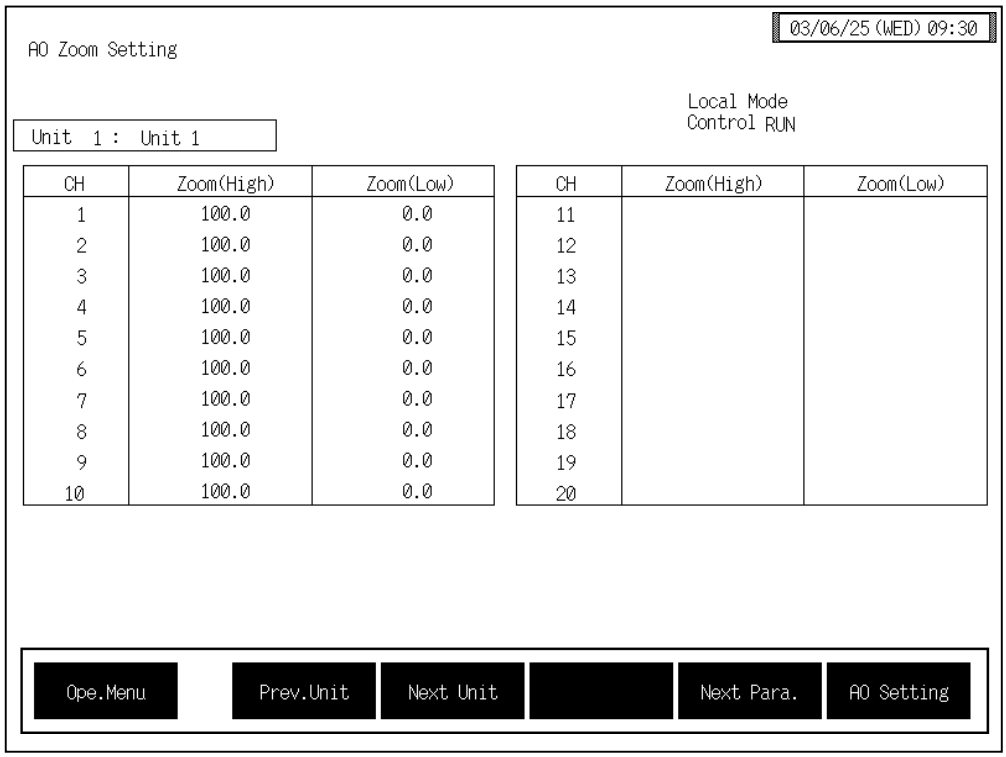
This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

After the [AO Zoom] key and [AO Func.] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the "AO Setting" screen again to perform the protect release operation.

3. Touching the [AO Zoom] key or [AO Func.] key displayed changes the "AO Zoom Setting" or "AO Function Select" screen.

■ AO zoom setting screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



CH: Displays the AO channel number.

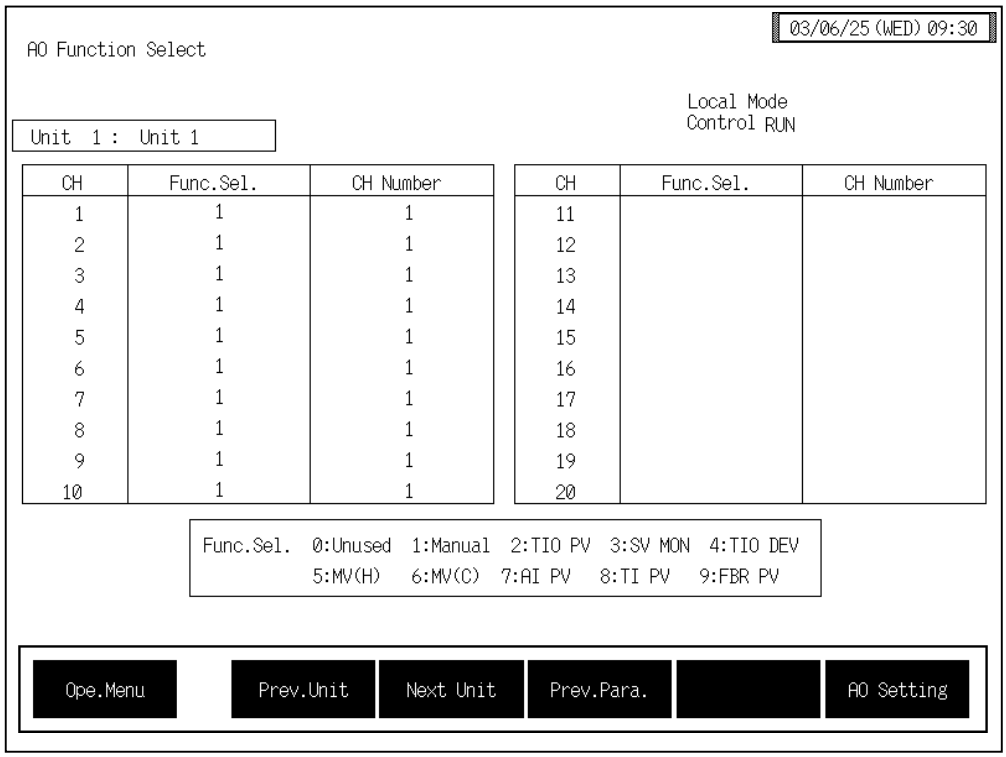
Zoom (High): Sets the AO range high limit as a percentage for the input span of the channel corresponding to AO.
Setting range: AO zoom low limit to 100.0 %
Setting will be valid in recorder output mode.
Factory set value: 100.0

Zoom (Low): Sets the AO range low limit as a percentage for the input span of the channel corresponding to AO.
Setting range: 0.0 % to AO zoom high limit
Setting will be valid in recorder output mode.
Factory set value: 0.0

📖 Touching the [AO Setting] key changes to the "AO Setting" screen (P. 3-76).

■ AO function selection screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



CH: Displays the AO channel number.

Func. Sel.: Select the data type to output from the H-AO-A/B module.

Setting range:
0: Unused
1: Manual mode (output data given by the AO output set value)
2: Temperature measured value (PV)
3: Set value monitor
4: Temperature deviation value (deviation between the temperature measured value and set value monitor)
5: Heat-side manipulated output value
6: Cool-side manipulated output value
7: AI measured value
8: TI measured value
9: Opening monitor
(2 to 9: Recorder output mode)

Factory set value: 1

CH Number: Sets the channel number of data to output from the H-AO-A/B.

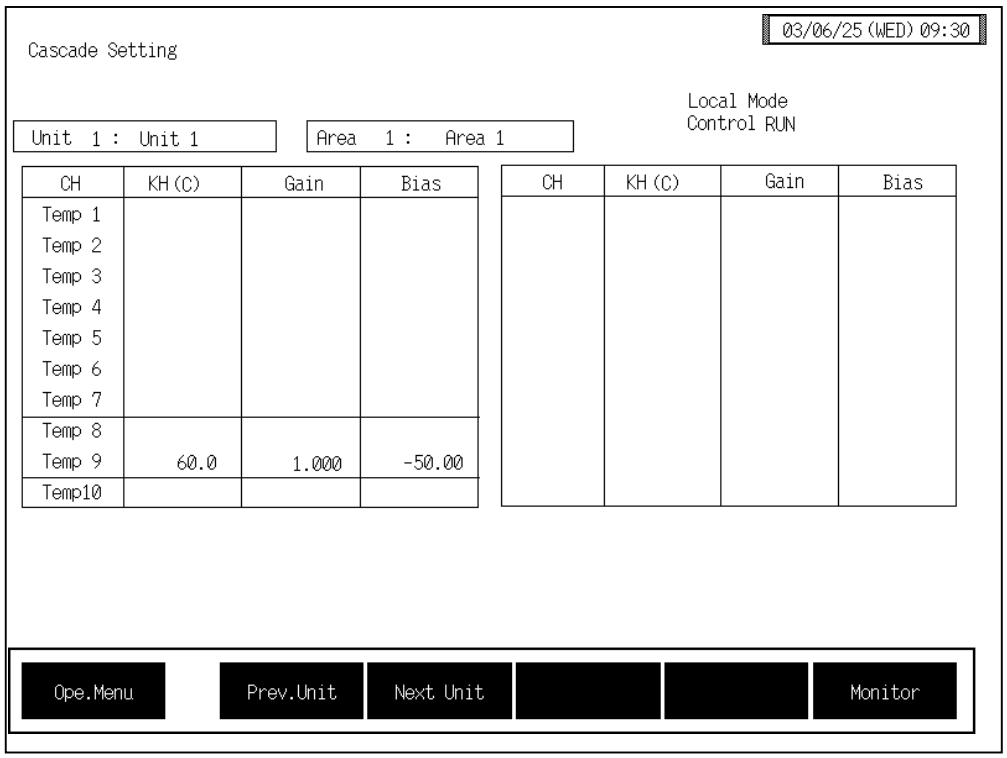
Setting range: TIO channel: 1 to 20
AI channel: 1 to 40
TI channel: 1 to 40

Factory set value: 1

Touching the [AO Setting] key changes to the “AO Setting” screen (P. 3-76).

3.6.10 Cascade setting screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

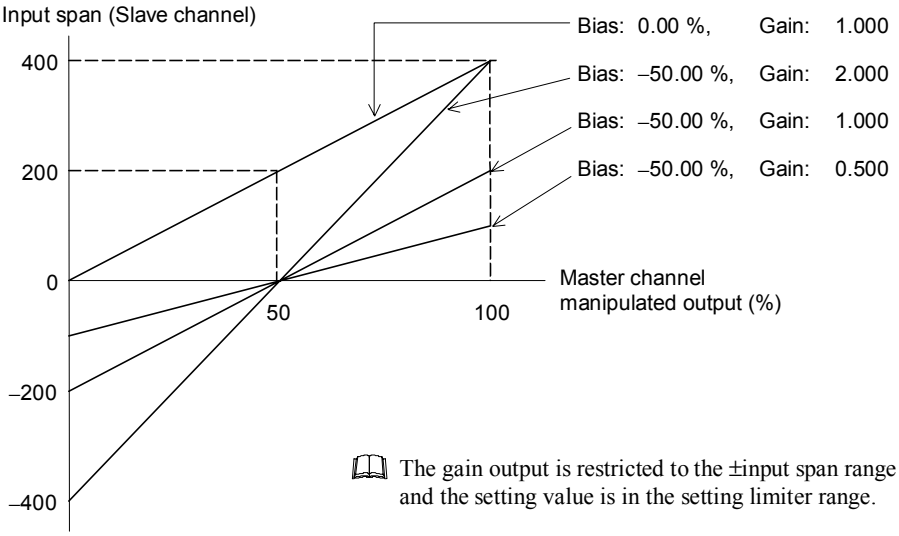
KH (C): Displays the cascade monitor value.
Display range: ±Input span
Only slave channel is valid.
The position of the decimal point differs depending on the input range.

Gain: Sets the conversion rate (gain) when the manipulated output (%) in the master channel is converted to the relevant cascade signal (°C).
Setting range: –9.999 to +10.000
Factory set value: 1.000
Only slave channel is valid.

Bias: Sets the cascade bias is applied to the input value on the slave side in the cascade control.
Setting range: –99.99 to +100.00 %
Factory set value: –50.00
Only slave channel is valid.

📖 Touching the [Monitor] key changes to the "Cascade Monitor" screen (P. 3-42).

Example: Cascade gain and cascade bias



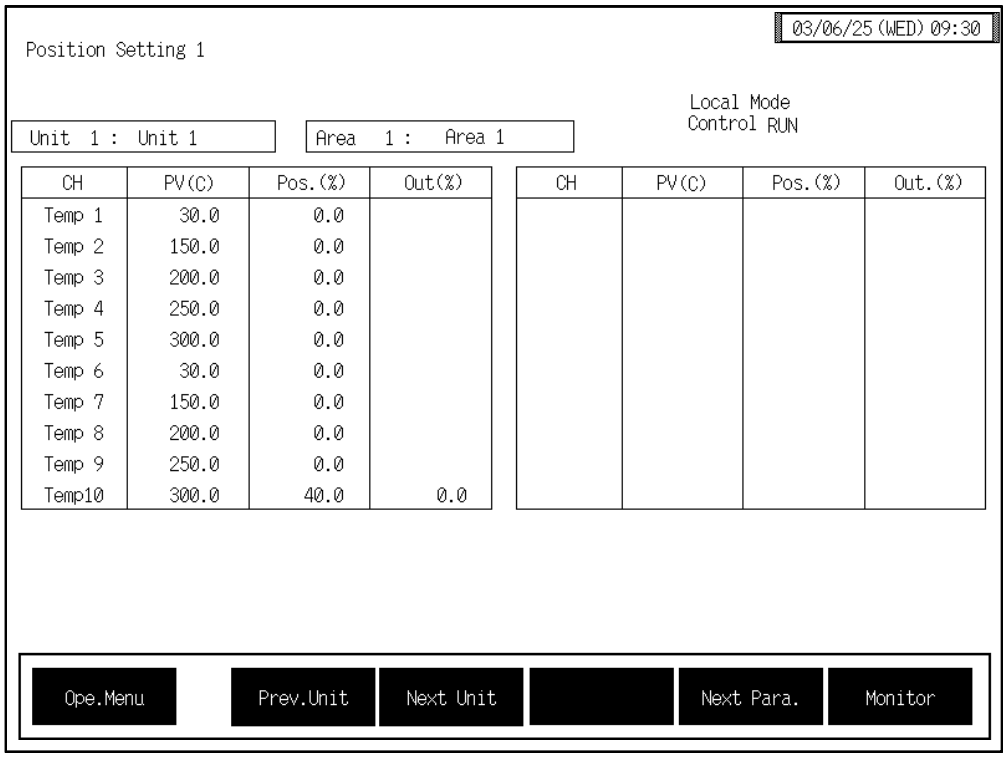
The gain output is restricted to the ±input span range and the setting value is in the setting limiter range.

3.6.11 Positioning setting screen

There are “Position Setting 1” and “Position Setting 2” screens in the position setting. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.6.1 Basic configuration of operation setting screen (P. 3-54)**.

■ Positioning setting 1 screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

PV (C): Displays the temperature measured value (PV).
Display range: TC/RTD input: Within input range
Current/voltage input: Within display scale
The position of the decimal point differs depending on the input range.

Pos. (%): Displays the positioning monitor value.
Display range: −5.0 to +105.0 %
For a temperature control channel other than for the TIO-K module, 0.0 is displayed.

Out (%): Sets the positioning output value in manual mode.
Setting range: −5.0 to +105.0 %
Factory set value: 0.0

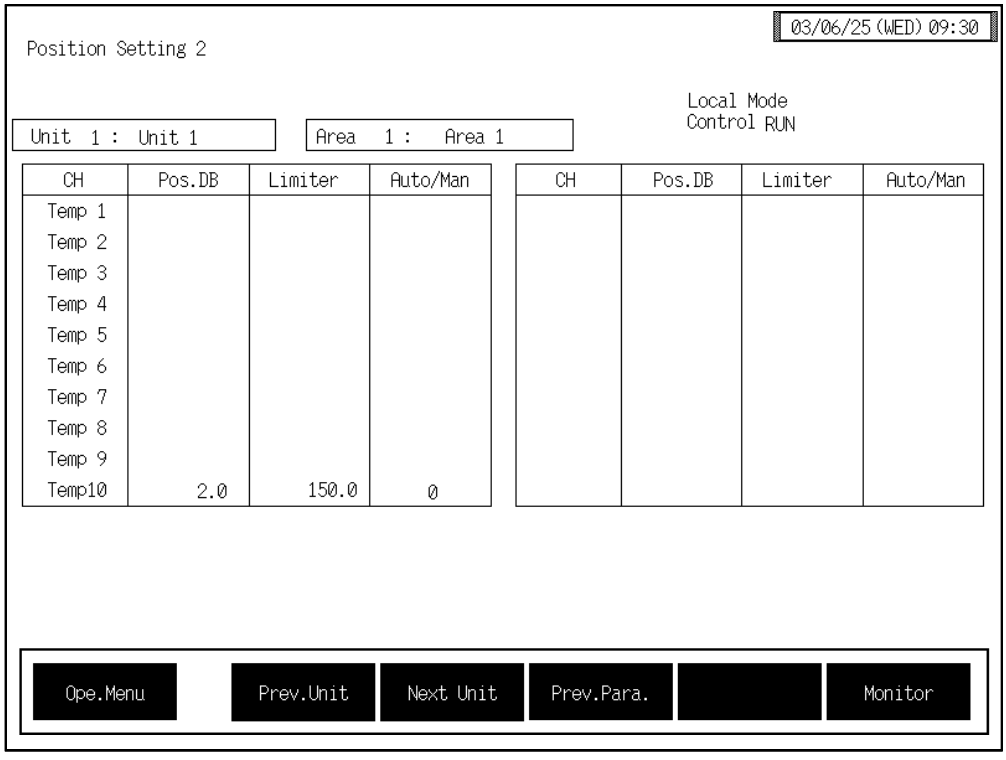
The positioning output value is output if any of the conditions below occurs.

- The system is switched from auto mode to manual mode.
- In manual mode, the positioning manual output value is changed.
- In manual mode, the power is switched on.
- In manual mode, the system is switched from control stop to control start.

If there is an error in the "positioning monitor" or "Motor Time Setting," normal output is not possible.

Touching the [Monitor] key changes to the "Position Monitor" screen (P. 3-43).

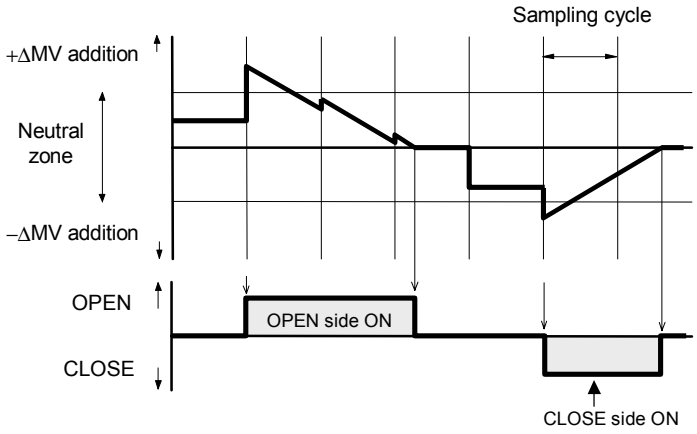
■ Positioning setting 2 screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Pos. DB: Sets the area where the output between open-side and close-side outputs is turned off.
Setting range: 0.1 to 10.0 % of motor time
Factory set value: 2.0

The neutral zone is an area where the output between open-side and close-side outputs is turned off. This zone is used to prevent the output signal from being frequently output to the control motor. The output addition value within the neutral zone is temporarily held and when it is out of the neutral zone, the output to the control motor starts.



The opening output is not turned on until the control computation result (ΔMV) becomes the neutral zone value or more.

Limiter: Sets the limit value (%) when the successive output on the open (close) side is accumulated. If the accumulated value reaches the integrated output limit, the open (close) side output is turned OFF. However, if the output on the opposite side is generated once, the accumulated value is reset.
Setting range: 100.0 to 200.0 % of motor time
Factory set value: 150.0

Auto/Man: Sets whether to perform position proportioning control with auto mode or manual mode.
Setting range: 0: Auto mode
1: Manual mode
Factory set value: 0

Touching the [Monitor] key changes to the "Position Monitor" screen (P. 3-43).

3.7 Operation Mode Screen

Operations mode screen switches or specifies the control-related, temperature control related, TI related, AI related, AO related operations mode (state).
The table below shows the types of operation mode screen and the items to be set with each screen.

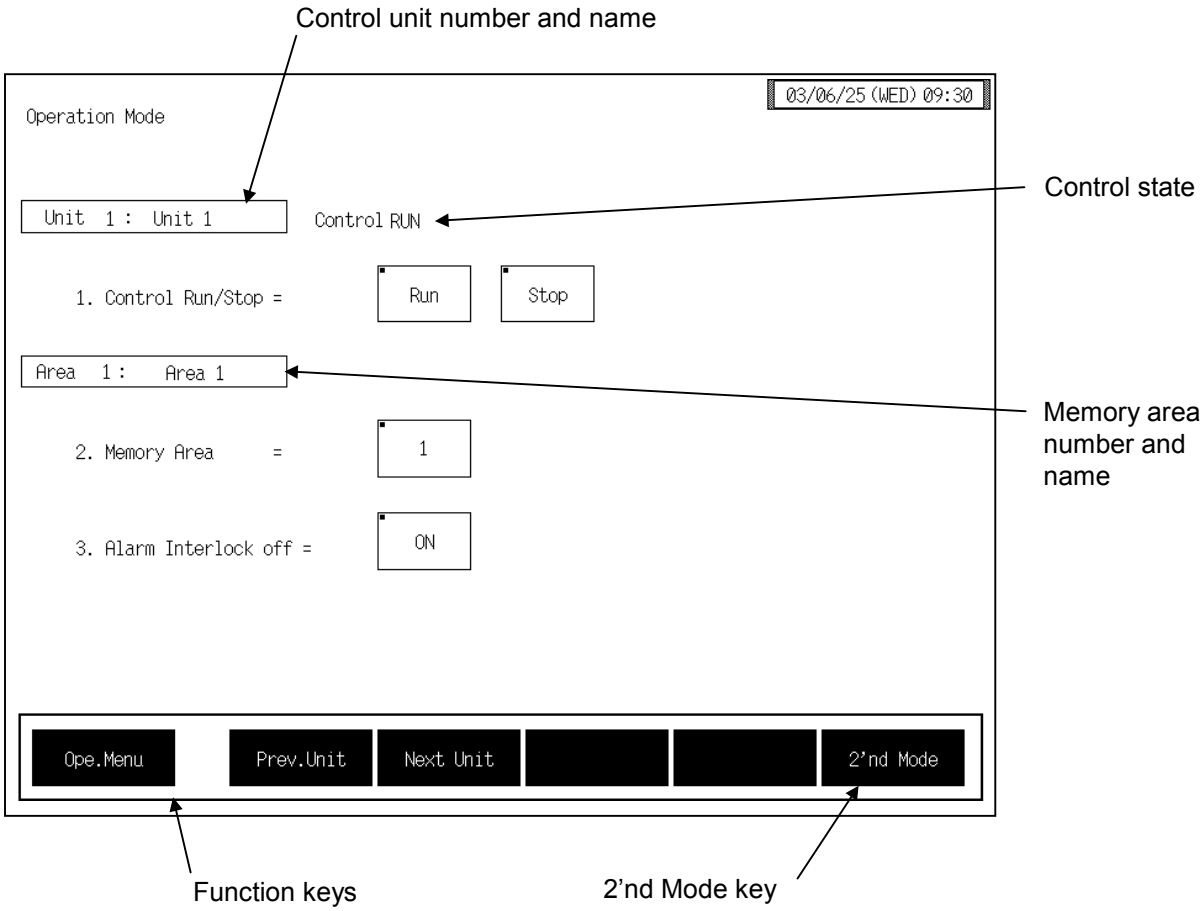
Screen name	Setting item	Necessary module	Page
Operation mode	Control RUN/STOP Memory area transfer Alarm interlock release	H-PCP-A/B/J, H-TIO-□, H-CIO-A H-AI-A/B, H-TI-A/B-C	3-87
2'nd mode menu [1]	Change to each screen of 2'nd mode setting item.	—	3-91
2'nd mode setting: TIO [2]	PID/AT transfer Control response parameters Operation mode transfer	H-TIO-□, H-CIO-A	3-94
2'nd mode setting: AI1 [2]	AI zero point correction AI full scale correction	H-AI-A/B	3-97
2'nd mode setting: AI2 [2]	AI operation mode transfer	H-AI-A/B	3-99
2'nd mode setting: AO [2]	AO zero point correction AO full scale correction	H-AO-A/B	3-100
2'nd mode setting: TI [2]	TI operation mode transfer	H-TI-A/B/C	3-101
2'nd mode setting: CIO [2]	Cascade ON/OFF transfer	H-CIO-A	3-102

[1] This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing 2'nd mode calling up key protect (P. 3-90).**

[2] The screens are only displayed if the required modules are mounted.

3.7.1 Operation mode screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.



This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing 2'nd mode calling up key protect (P. 3-90).**

Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Unit Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

1. Control Run/Stop:
Sets the control state (control RUN/STOP).
Set the controlled state by touching the [Run] key or [Stop] key.
Factory set value: Control STOP

When changed to control stop, both the control and alarm output change to the OFF condition.

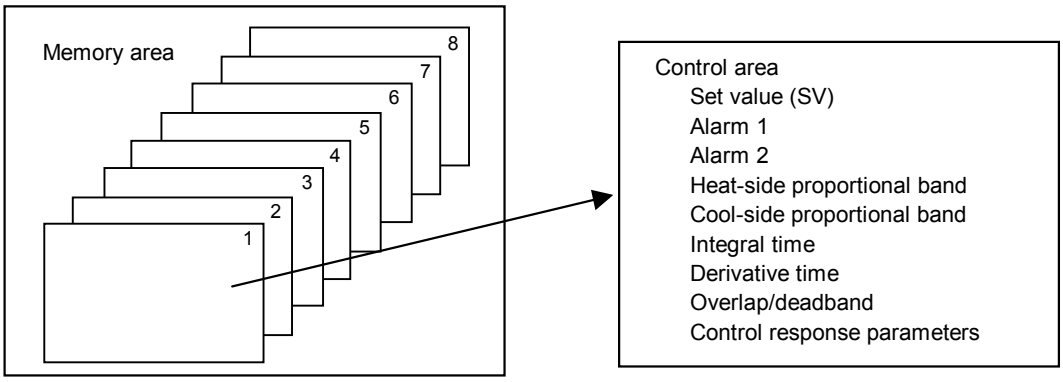
Control state: Display the control state (control RUN/STOP).

2. Memory Area: Sets the memory area used for control.
Setting range: 1 to 8
Factory set value: 1
Invalid when the H-TIO-□/H-CIO-A modules are not installed.

Memory area number and name:
Displays the number and name for the memory area whose data is being displayed. The memory area name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

<Memory area function>

This function is to store the parameters such as set value (SV), etc. in up to eight memories. The parameters which can be stored as one of memories are set value (SV), alarm 1, alarm 2, heat-side proportional band, cool-side proportional band, integral time, derivative time, overlap/deadband and control response parameter.
The parameters stored in one of eight memories retrieved at necessity and used for control. The memory area used for this control is called the "control area."



3. Alarm Interlock off:
Sets the alarm interlock release.
Release the interlocked state by touching the [ON] key..
By executing "OFF," the interlock is released and the display also changes automatically to "ON."

<Alarm interlock release function>

The alarm interlock function is used to hold the alarm state even if the measured value (PV) is out of the alarm zone after its entry into the zone once.

Function keys:

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

2'nd Mode: Touching this key changes to the "2'nd Mode Menu" screen.
This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing 2'nd mode calling up key protect (P. 3-90).**

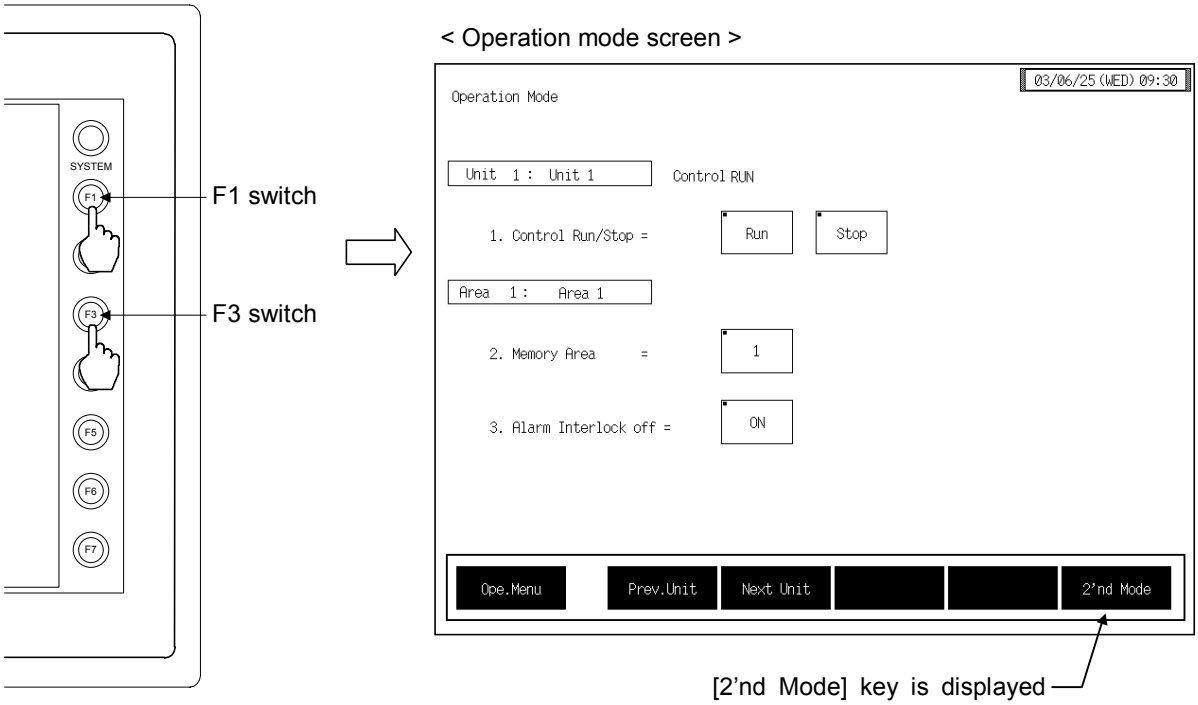
3.7.2 2’nd mode menu screen

The [2’nd Mode] key for changing the display to the “2’nd Mode Menu” screen is protected, so you cannot change to this screen without removing the protection.

■ Releasing 2’nd mode calling up key protect

1. Touch the [Operation Mode] key on the “Operation Menu” screen, to change to the “Operation Mode” screen.

2. Press and hold the [F1] switch, and press the [F3] switch at the same time.
[2’nd Mode] key is displayed, and key operation becomes valid.



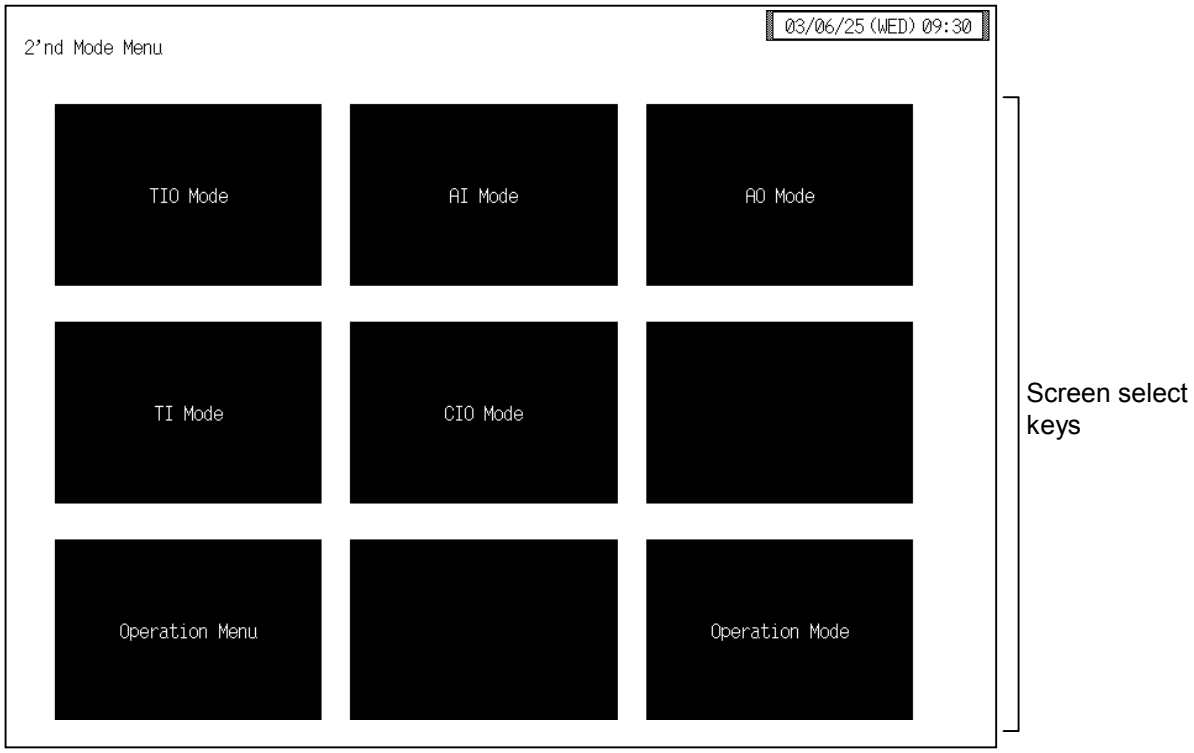
This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

After the [2’nd Mode] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the “Operation Mode” screen again to perform the protect release operation.

3. Touching the [2’nd Mode] key displayed changes the “2’nd Mode Menu” screen.

■ 2’nd mode menu screen

The 2’nd setting menu screen is for selecting mode setting items relating to the temperature control, TI, AI and AO.



Screen select keys:

TIO Mode: Touching this key changes to the “2’nd Mode Setting: TIO” screen.

AI Mode: Touching this key changes to the “2’nd Mode Setting: AI (1)” screen.

AO Mode: Touching this key changes to the “2’nd Mode Setting: AO” screen.

TI Mode: Touching this key changes to the “2’nd Mode Setting: TI” screen.

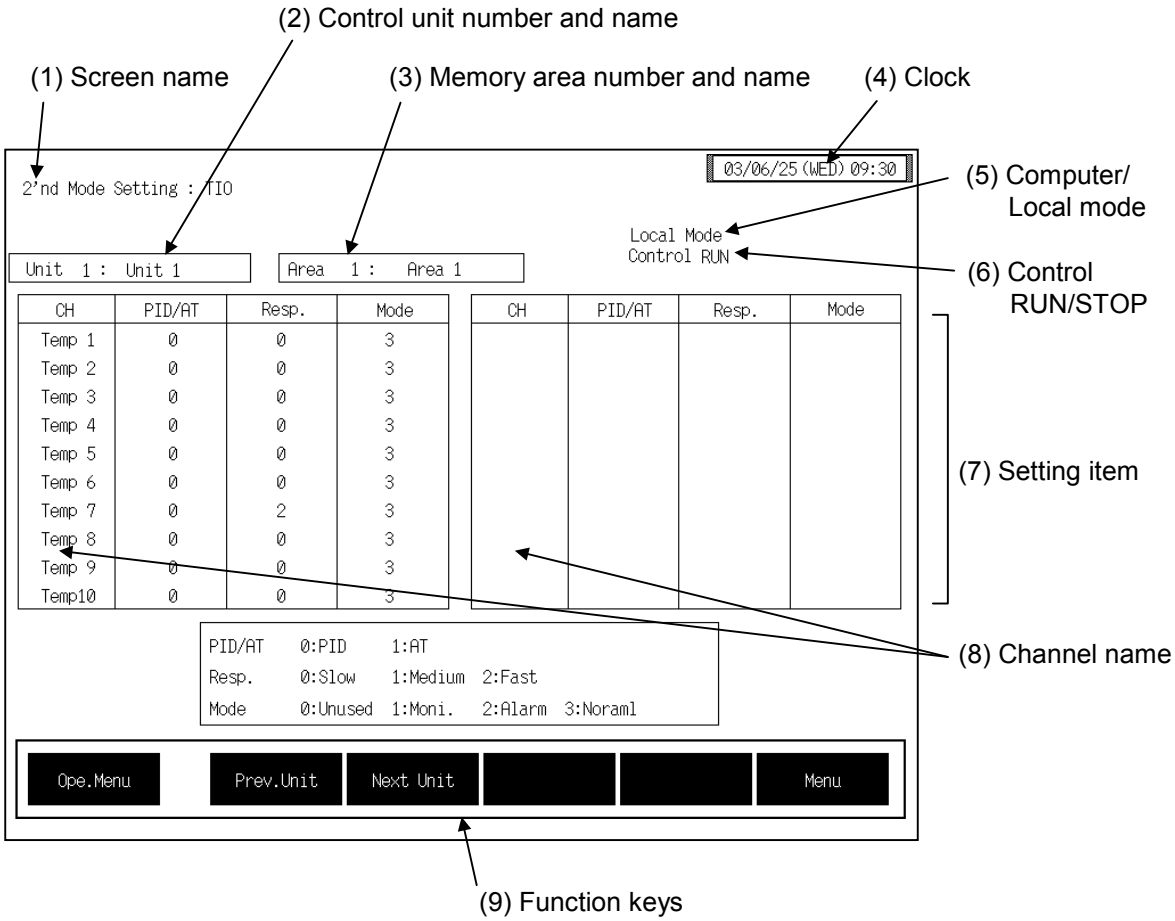
CIO Mode: Touching this key changes to the “2’nd Mode Setting: CIO” screen.

Operation Menu: Touching this key changes to the “Operation Menu” screen.

Operation Mode: Touching this key changes to the “Operation Mode” screen.

3.7.3 Basic configuration of 2’nd mode setting screen

The basic configuration of each 2’nd mode setting screen is as shown below.
Example: 2’nd Mode setting: TIO screen



(1) Screen name: Displays the screen name.

(2) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial “Used/Unused, Unit Name Set, (C)/(F) Set” screen (P. 3-153).

(3) Memory area number and name:
Displays the number and name for the memory area whose data is being displayed. The memory area number can be changed with the “Operation mode” screen (P. 3-87). In addition, the memory area name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).
However, this item is not displayed on the “2’nd Mode Setting: AI (1),” “2’nd Mode Setting: AI (2),” “2’nd Mode Setting: AO,” “2’nd Mode Setting: TI” and “2’nd Mode Setting: CIO” screens.

(4) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(5) Computer/Local mode:

Displays whether the current state is computer mode or local mode. The mode can be changed with the initial "Host Communication" screen (P. 3-118).

Computer: Computer mode
Local: Local mode

Cannot be set by the OPC-V07 when in the computer mode.

(6) Control RUN/STOP:

Displays the control state (Control RUN/STOP). The control mode can be changed with the "Operation mode" screen (P. 3-87).

(7) Setting item: Displays the item and data. Details of display varies depending on the each 2'nd mode setting screen.

(8) Channel name: Displays the TIO channel name, TI channel name and AI channel name.
However, AO channel numbers instead of AO channel names are displayed on the "2'nd Mode Setting: AO" screens.

(9) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

Prev. Para.: Touching this key changes to the screen one before the one being displayed.

Next Para.: Touching this key changes to the screen one after the one being displayed.

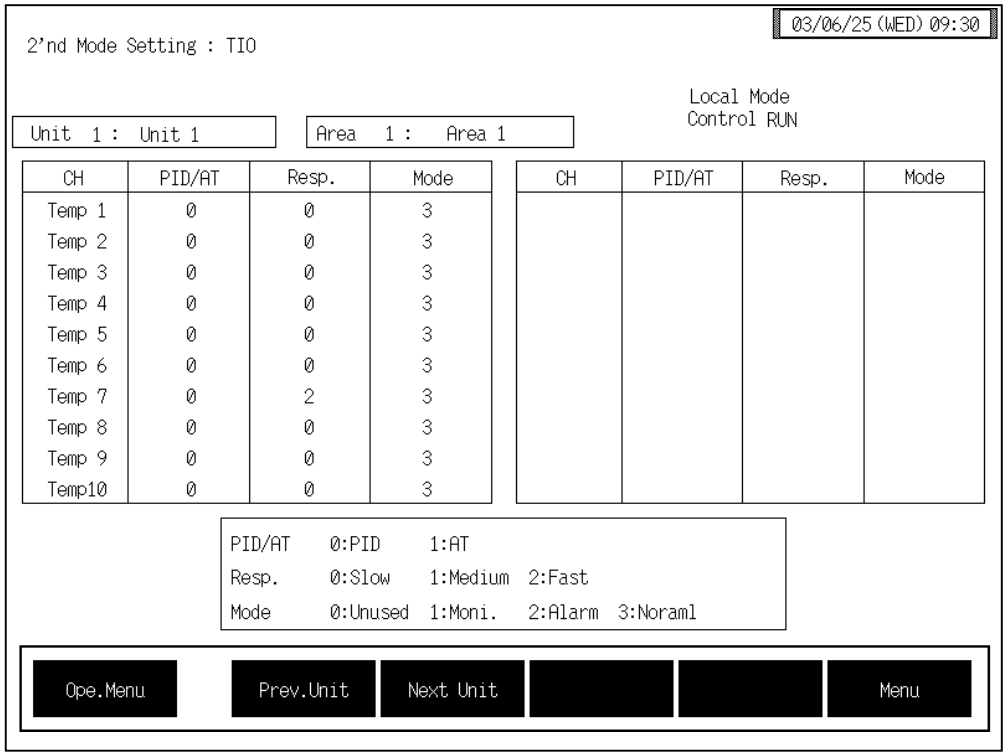
Next CH: Touching this key changes to the screen for the channel (CH) after the current one.

2'nd Mode: Touching this key changes to the "2'nd Mode Menu" screen.

3.7.4 2'nd mode setting: TIO screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.7.3 Basic configuration of 2'nd mode setting screen (P. 3-92)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

PID/AT: Sets whether to use PID control or AT (autotuning).
Setting range: 0: PID control operation
1: AT (autotuning) operation
Factory set value: 0

<Autotuning>

Autotuning (AT) is the function which automatically measures, calculates and sets the optimum PID constants according to the set temperature.

Calculation data by AT: Heat-side proportional band, Cool-side proportional band, Integral time, Derivative time, LBA time

Caution for using the Autotuning (AT)

When a temperature change (UP and/or Down) is 1 °C or less per minute during Autotuning, Autotuning may be cancelled before calculating PID values. In that case, adjust the PID values manually. It is possible to happen when the set value is around the ambient temperature or is close to the maximum temperature achieved by the load.

The following is the conditions necessary to carry out autotuning and the conditions which will cause the autotuning to stop.

Conditions necessary for autotuning:

The autotuning should be executed after satisfying all of the following conditions:

- Operation mode conditions:
  - Auto/Manual transfer → Auto mode
  - PID/AT transfer → PID control mode
  - Control RUN/STOP transfer → Control RUN mode
- The input value should not be an underscale or overscale displayed.
- The output limiter high limit should be more than 0.1 % and the output limiter low limit should be less than 99.9 %.
- When operation mode is set to "Normal (Can be controlled)."

When the autotuning is finished, the display of each channel automatically returns to "0: PID control operation."

Conditions which will cause the autotuning to stop:

- When the temperature set value (SV) is changed.
- When the memory area is changed.
- When the PV bias value is changed.
- When the AT bias value is changed.
- When transfer to Manual mode using the Auto/Manual transfer.
- When the input value becomes an underscale or overscale display.
- When the power is cut off.
- When FAIL occurs in the module whose channel is under the autotuning. Otherwise, when FAIL occurs in the H-PCP-A/B/J module.
- When transfer to the PID control mode by the PID/AT transfer.
- When operation mode is set to "Unused," "Monitor" or "Alarm."
- When the Control RUN/STOP function is changed to the "Control STOP" function.

When the above-mentioned conditions to stop the autotuning occurs, the autotuning is immediately stopped and switch over to the PID control mode. The PID constants return to the values at the start of the autotuning.

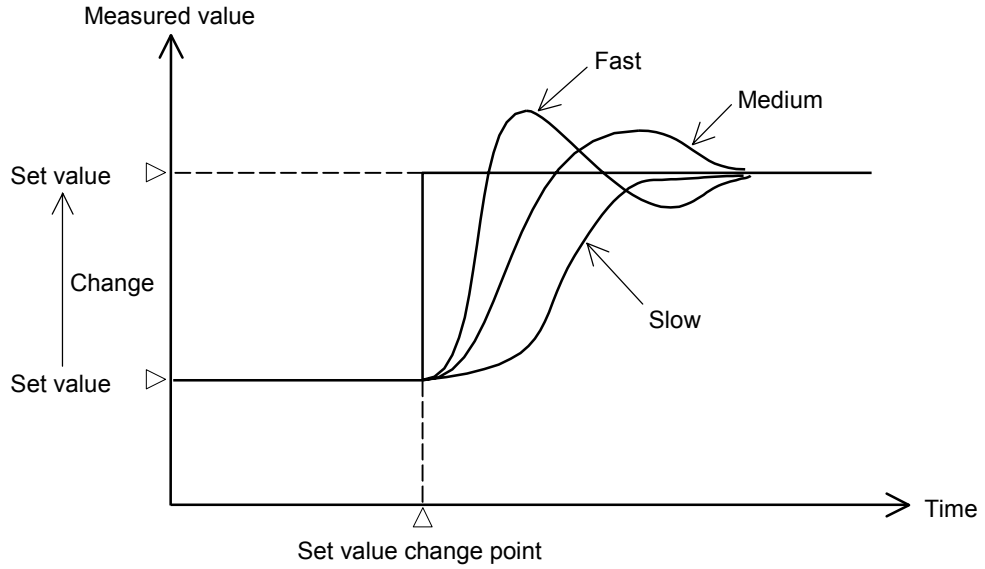
Resp.: Sets the response resulting from a temperature change in PID control.

Setting range:
0: Slow
1: Medium
2: Fast

Factory set value:
Heat control: 0
Heat/cool control: 2
Position proportioning control: 0

<Control response parameters>

This is the function of enabling the setting of response to set value (SV) change in select any one of 3 steps (Slow, Medium, Fast) in PID control. In order to achieve faster controlled object response to set value (SV) change, select "Fast." However, slight overshoot is unavoidable when selecting "Fast." Depending on the controlled object, specify "Slow" if overshoot should be avoided.



When executing PID control by the fuzzy function, specify "2: Fast." The fuzzy function is useful for restricting overshooting or undershooting when starting operation or changing the set value. (The fuzzy function corresponds only to the H-TIO-P/R module.)

Mode: Sets the operation state.

Setting range:

0: Unused
If set to "Unused," no control, monitoring or alarm monitoring is performed.

1: Monitor
If set to "Monitor," only the monitoring is performed. No control or alarm monitoring is performed.

2: Alarm
If set to "Alarm," monitoring or alarm monitoring is performed. No control is performed.

3: Normal
Control, monitoring and alarm monitoring are performed.

Factory set value: 3

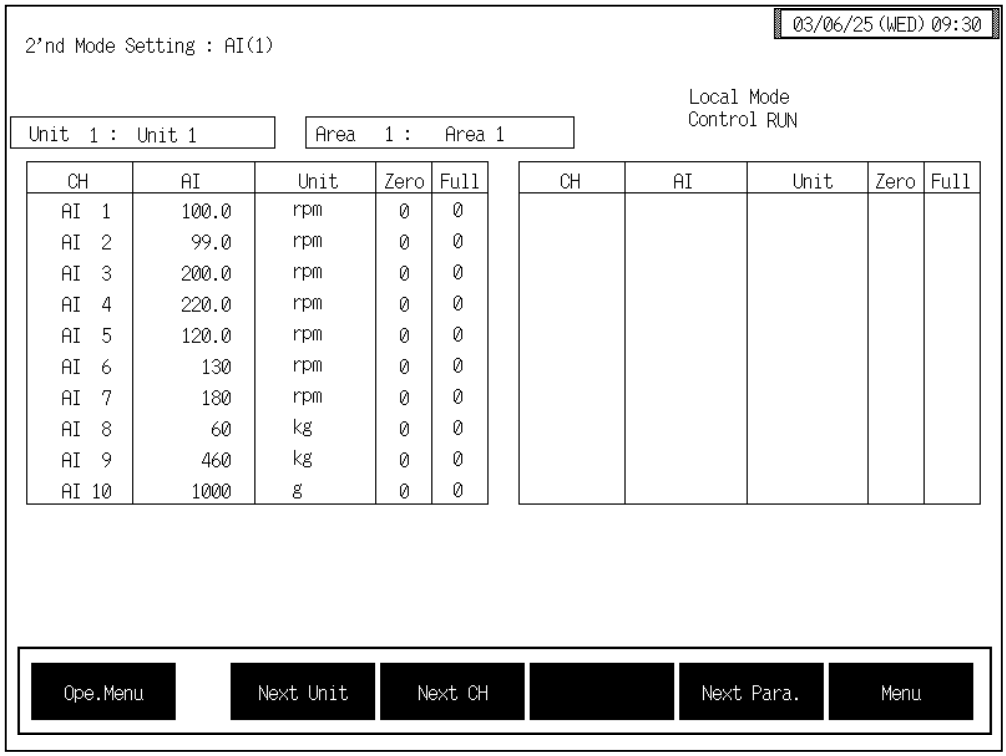
Even if the temperature rise completion function (Heat up Judge) is set to the "Unused" mode, it continues to be effective. If the temperature rise completion function is also to be set invalid, change the setting of the temperature rise completion trigger function to "Unused."

3.7.5 2’nd mode setting: AI screen

There are “2’nd Mode Setting: AI (1)” and “2’nd Mode Setting: AI (2)” screens in the AI screen. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.7.3 Basic configuration of 2’nd mode setting screen (P. 3-92)**.

■ 2’nd mode setting: AI1 screen



CH: Displays the AI channel name.
The channel name can be changed with the OPC initial “AI CH Name Set” screen (P. 3-156).

AI: Displays the AI input measured value (H-AI-A/B module).
Display range: Within display scale range
The position of the decimal point differs depending on the AI decimal point position setting (P. 3-229).

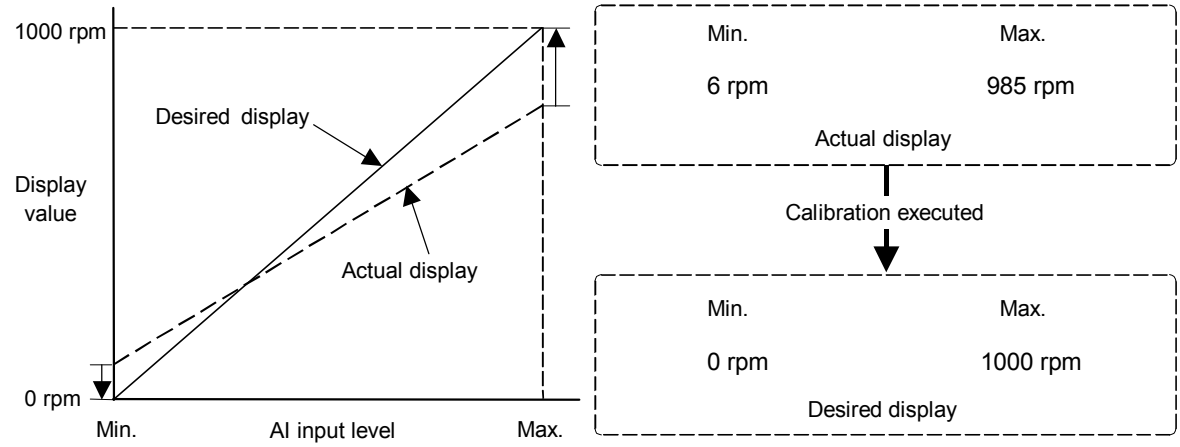
Unit: Displays the engineering unit.
The engineering unit can be changed with the OPC initial “AI Unit Set” screen (P. 3-157).

Zero: Sets whether the zero point correction (calibration function) of an AI measured value is executed or not.
Setting range: 0: OFF (Cancel)
1: ON (Execution)
Factory set value: 0

Full: Sets whether the full scale correction (calibration function) of an AI measured value is executed or not.
Setting range: 0: OFF (Cancel)
1: ON (Execution)
Factory set value: 0

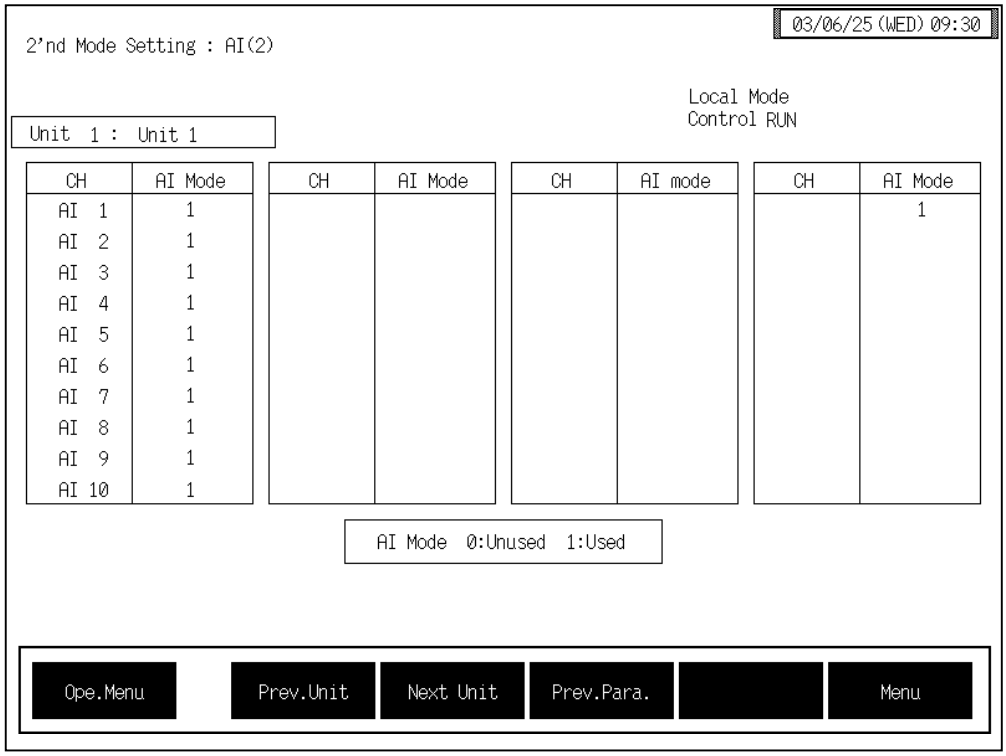
<Input calibration function>
This function is used to forcibly match the displayed value with the zero or full scale point for the purpose of correcting the AI zero or full scale point. If the displayed value deviates from the H-AI-☐ module input value, the displayed value is calibrated (corrected) at its zero and full scale points so as to match the H-AI-☐ module input value.

Example: Motor rotation rate display



Sometimes the maximum value and minimum value displays deviate from the desired values due to motor rotation rate external output signals, shunt resistance, current transformer error, or the like. In this case, it is possible to match the display to the actual rotation rate by forcibly calibrating the display at the point when the input equivalent to the maximum value and minimum value came in. Using a tachometer (for current values and the like, clamp meter) and calibrating using this display value as the reference makes more accurate monitoring possible.

■ 2’nd mode setting: AI2 screen

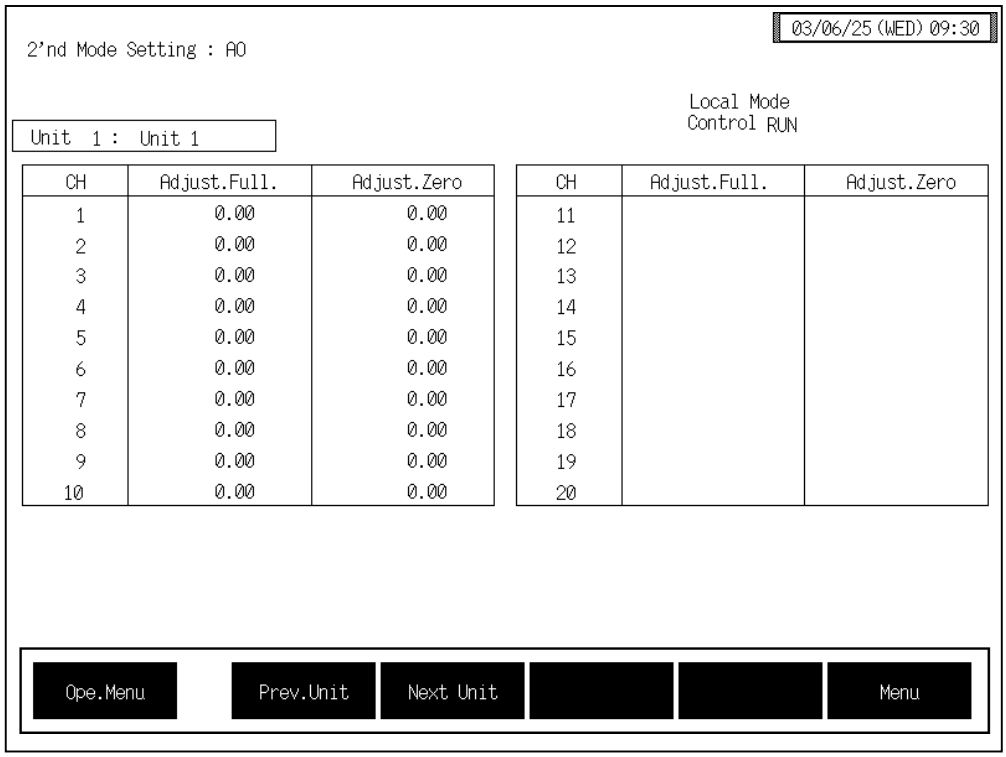


CH: Displays the AI channel name.
The channel name can be changed with the OPC initial “AI CH Name Set” screen (P. 3-156).

AI Mode: Sets the AI channel (H-AI-A/B module) usage state.
Setting range: 0: Unused
If set to “Unused,” no monitor and alarm monitor is performed.
1: Used
Monitor and alarm monitoring are performed.
Factory set value: 1

3.7.6 2’nd mode setting: AO screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.7.3 Basic configuration of 2’nd mode setting screen (P. 3-92)**.



CH: Displays the AO channel number.

Adjust. Full.: The full scale correction value (calibration function) of an AO output value (H-AO-A/B module) is set.
Setting range: −5.00 to +5.00 %
Factory set value: 0.00

Adjust. Zero: The zero point correction value (calibration function) of an AO output value (H-AO-A/B module) is set.
Setting range: −5.00 to +5.00 %
Factory set value: 0.00

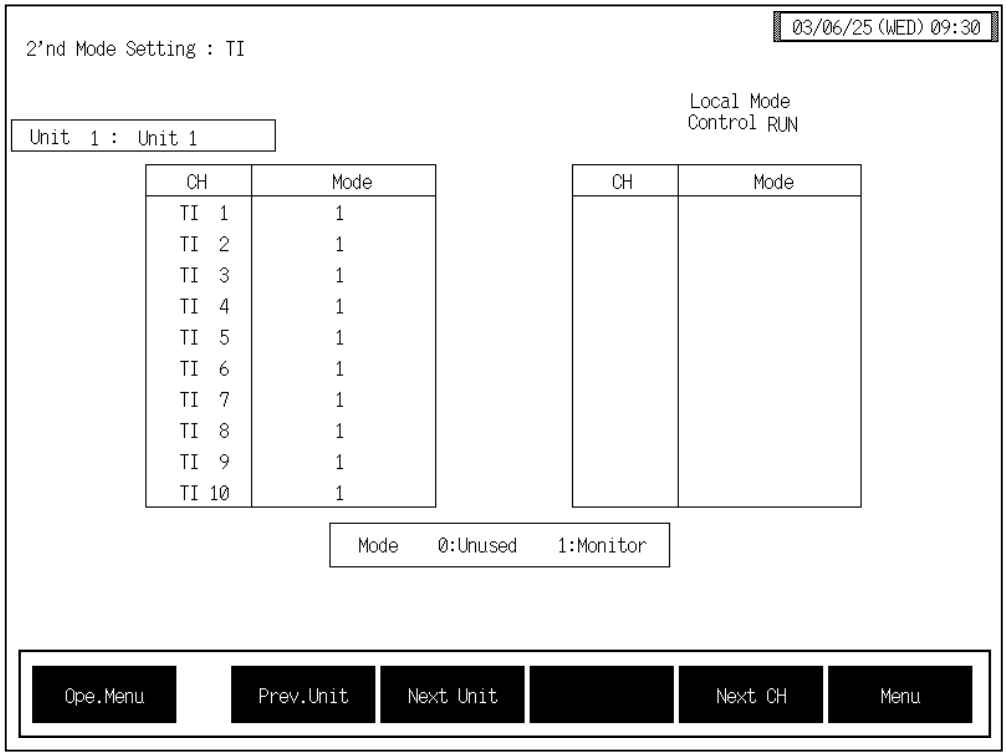
<Output calibration function>

If some deviation occurs between the output value of the H-AO-A/B module and the actual operation of externally connected equipment, this function is used to forcibly correct the output signal of the H-AO-A/B modules at the zero and full scale points. For example, if the number of motor revolutions is set using the H-AO-A/B module with an output signal of 1 to 5 V, but the voltage value corresponding the actual number of revolutions is 0.1 V lower than the output value of the H-AO-A/B module, a correction of +2.5 % at the zero point changes the output value of the H-AO-A/B module to 1.1 to 5.1 V, thereby matching the AO displayed value to the actual number of revolutions.

🕮 If the zero point is corrected, the full scale point is also corrected by the same amount. If the full scale point is corrected, no zero point is corrected.

3.7.7 2'nd mode setting: TI screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.7.3 Basic configuration of 2'nd mode setting screen (P. 3-92)**.

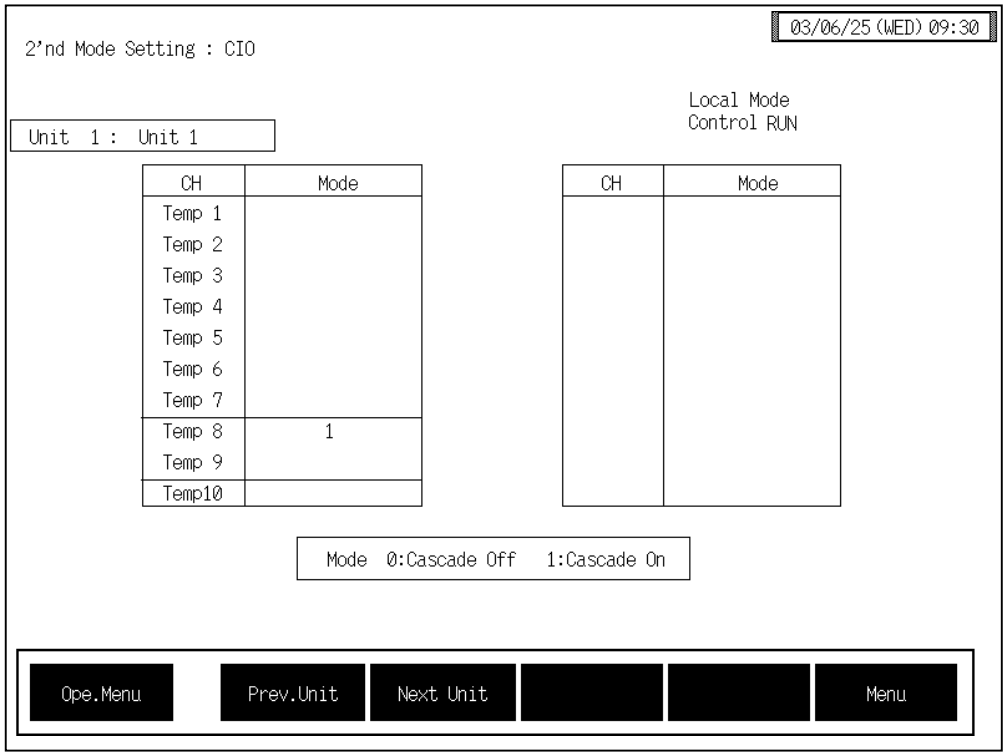


CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

Mode: Sets the TI channel (H-TI-A/B/C module) usage state.
Setting range: 0: Unused
If set to "Unused," no monitor and alarm monitor is performed.
1: Used
Monitor and alarm monitoring are performed.
Factory set value: 1

3.7.8 2’nd mode setting: CIO screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.7.3 Basic configuration of 2’nd mode setting screen (P. 3-92)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial “TIO CH Name Set, Memory Area Name Set” screen (P. 3-154).

Mode: It is set whether the cascade control is executed or not.
Setting range: 0: Cascade OFF
1: Cascade ON
Factory set value: 0
Only master channel is valid.

🕮 The cascade monitor value of the slave channel corresponding to the master channel which selected “Cascade OFF” becomes the display “0 (0.0).”

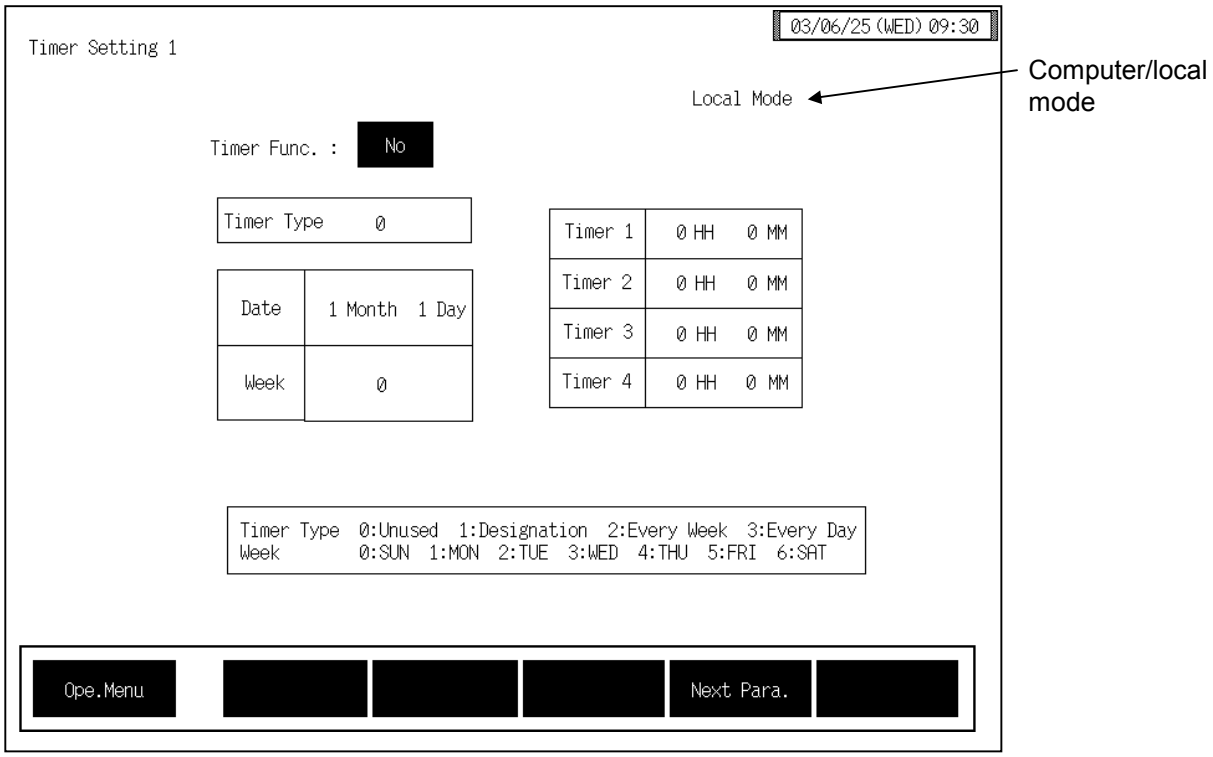
<Cascade control>
Cascade control monitors the controlled object temperature in the master unit and then corrects the set value in the slave unit depending on the deviation between the target value (set value) and actual temperature. The slave unit controls the non-controlled object. As a result, this control matches the controlled object temperature to the target value. This cascaded control is suitable when there is a large time lag between the heat source (heater) and section whose temperature is necessary to be stabilized.

3.8 Timer Mode Screen

The timer set screen is for setting the timer function of starting the control (temperature rise) in the TIO channel at the specified time. Control started by the timer function means that the TIO operation mode ("2'nd Mode Setting: TIO " screen) is forcibly changed to "3: Normal" from "1: Monitor."
As timer mode screens, both "Timer Setting 1 setting" screen and "Timer setting 2" screens are available. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

■ Timer mode setting 1 screen



Computer/local mode:

Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Host Communication" screen (P. 5-118).

Computer: Computer mode
Local: Local mode

The timer function can be activated in local mode.

In computer mode, setting can not be made on the OPC-V07.

Timer Func.: Sets the used/unused of timer function.
Touching the key changes "Yes/No" alternately.
Set the used/unused of the timer after all of the settings relating to the timer is completed. The timer function starts its activation just when the used/unused of the timer is set to "yes."

Timer Type: Sets the timer function type.
Setting range: 0: Unused
1: Designation
Control is to be started at the specified month/day and time.
2: Every week
Control is to be started at the same specified day of the week and time every week.
3: Every day
Control is to be started at the specified time every day.
Factory set value: 0

Date: Sets the timer start date. This setting becomes valid when the timer type selects the "Designation".
Setting range: January 1 to December 31
Factory set value: January 1

Week: Sets the day of the week when the timer is started. This setting becomes valid when the timer type selects "Every Week".
Setting range: 0: Sunday 1: Monday 2: Tuesday 3:Wednesday
4: Thursday 5: Friday 6: Saturday
Factory set value: 0

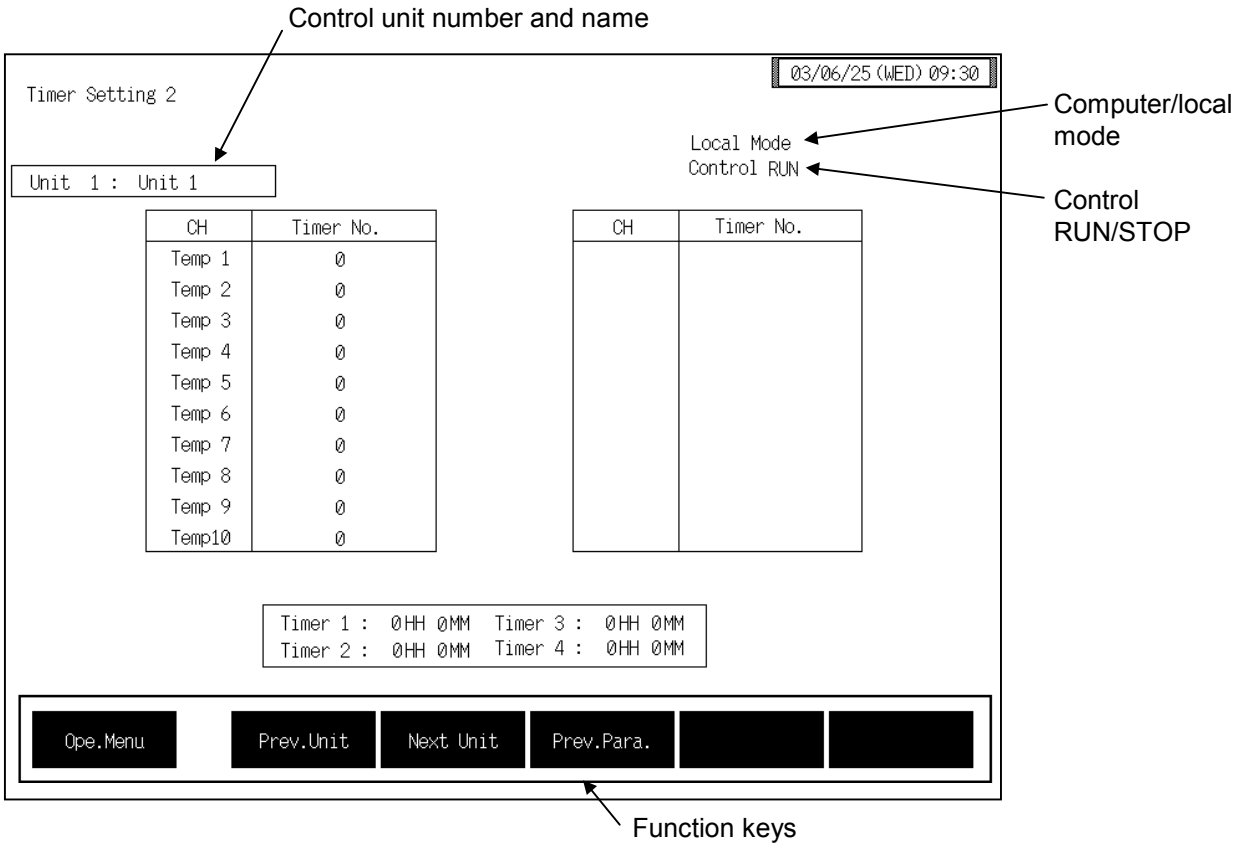
Time 1 to 4: Sets the timer start time. Up to four types can be registered.
Setting range: 0:00 to 23:59 (In steps of one minute)
Factory set value: 0:00

Function keys:

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Next Para.: Touching this key changes to the "Timer Setting 2" screen.

■ Timer mode setting 2 screen



Control unit number and name:

Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initialize "Unit Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

Computer/local mode:

Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Host Communication" screen (P. 5-118).

Computer: Computer mode
Local: Local mode

In computer mode, setting can not be made on the OPC-V07.

Control RUN/STOP:

Displays the control state (Control RUN/STOP). The control mode can be changed with the "Operation mode" screen (P. 3-87).

CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Timer No.: The start time block number registered on the "Timer Setting 1" screen is set (P. 5-103).
Setting range: 0 to 4 (0: No timer function)
Factory set value: 0

Function keys:

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

Prev. Para.: Touching this key changes to the "Timer Setting 1" screen.

<Timer function>

The timer functions start temperature controlling by changing the operation mode forcibly from "1: Monitor" to "3: Normal" at the time specified. Thus during timer operation, there is a possibility that the operation mode may differ from the setting you first specified. The chart below shows the relationship between the timer type and the operation mode.

Operation	Timer type [1]	Timer No. [2]	Operation Mode of temperature control [3]
When timer type changed	0: Unused 1: Designation 2: Every week 3: Every day ↓ Type changed	0: No timer function	Same as before changing the timer type.
	1: Designation 2: Every week 3: Every day	1 to 4	Forcibly "1: Monitor" Timer function effective, returns to "3: Normal" after passing the timer set time.
	0: Unused 1: Designation 2: Every week 3: Every day ↓ Type changed	0: No timer function	Same as before changing the timer type.
	0: Unused	1 to 4	Forcibly "3: Normal"
When power ON	0: Unused	0 to 4	Same as before Power OFF
	1: Designation 2: Every week 3: Every day	0: No timer function	Same as before Power OFF
		1 to 4	Forcibly "1: Monitor" Timer function effective, returns to "3: Normal" after passing the timer set time.

[1] Timer type of "Timer Setting 1" screen.
[2] Timer No. setting of "Timer Setting 2" screen.
[3] Mode of "2'nd Mode Settung: TIO" screen.

- Be sure to set the Timer Func." on the "Timer Setting 1" screen last of all the timer setting because the timer function starts at once after setting the "Yes."
- Even if the timer start day and timer type (1 to 3) are set, the set data is invalid if the control unit for the timer function is set to control STOP. Set to control RUN before using the timer functions.
- Even if "Run" is set on the "Operation Mode" screen when the timer function is activated with the timer function set to any position other than "0: Unused" control does not start until the specified time.

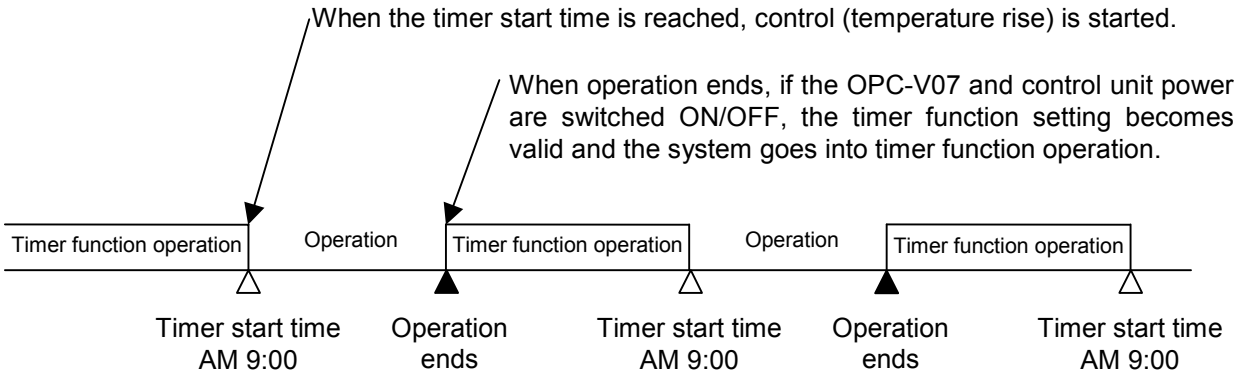
☞ For the control RUN/STOP, see the "Operation Mode" screen (P. 3-87).

Using the timer function with "2: Every Week" or "3: Every Day":

When using the timer function with the "2: Every Week" or "3: Every Day" setting, always leave the control unit in the control RUN state.

When using the timer function repeatedly with the "2: Every Week" or "3: Every Day" setting, after operation ends, the OPC-V07 and control unit power are switched off without stopping control unit control. Before the timer start time, switch on the OPC-V07 and control unit power.

Example: Setting the timer type to "3: Every Day" and the timer start time to 9:00 AM



When unused the timer function:

- If control needs to be started on the "Operation Mode" screen but not by the timer function, set the "Timer Func." on the "Timer setting 1" screen to "No."
- When not using the timer function on several temperature control channels, set the timer number setting "0: No timer function" on the "Timer Setting 2" screen for the channels not to execute the timer functions.

3.9 Initial Setting Screen

The initialize screen is used to display and set data items which are not usually set such as time setting, operation monitoring screen scanning designation, computer/local transfer, printer, job file, OPC initial and controller initial etc.
The table below shows the types of initial setting screen and the items to be set with each screen.

■ Initial setting

Screen name	Setting item	Necessary module	Page
Initial setting menu	Change to each screen of initial setting.	—	3-113
Clock set	Clock setting	—	3-115
Screen scan, Screen saver set	Screen scan: yes/no Scan time Screen saver time	—	3-116
Host Communication *	Computer/local transfer	—	3-118
Printer	Interval printout Interval time Periodical printout Alarm print doc. No. Alarm history print doc. No. Manual print	—	3-119
Job file menu	Change to each screen of job file.	—	3-129
Job file list	Job file operation (batch registration, batch setting, file copying, file deletion, attribute changing and editing/exit) Job file name	—	3-130
TIO setting 1 (Job file)	Temperature set value (SV) Alarm 1 set value Alarm 2 set value	H-TIO-□, H-CIO-A	3-138
TIO setting 2 (Job file)	Heat-side proportional band Integral time Derivative time	H-TIO-□, H-CIO-A	3-140
TIO Setting 3 (Job file)	Cool-side proportional band Overlap/deadband PV bias	H-TIO-□, H-CIO-A	3-141
TIO Setting 4 (Job file)	Control response parameters Operation mode transfer	H-TIO-□, H-CIO-A	3-142
AI setting (Job file)	AI alarm 1 set value AI alarm 2 set value	H-AI-A/B	3-143
Extension alarm setting (Job file)	Event DO extension alarm set value	H-DO-C	3-144
TI setting 1 (Job file)	TI alarm 1 set value TI alarm 2 set value	H-TI-A/B/C	3-145

* Not displayed if there is no host communication.

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Screen name	Setting item	Necessary module	Page
TI setting 2 (Job file)	TI_PV bias TI operation mode transfer	H-TI-A/B/C	3-146
PC setting (Job file)	Device data of the programmable controller	—	3-147
Memo setting (Job file)	Memo of the job file	—	3-148

■ OPC initial

The OPC-V initial is the screen for making settings concerning the OPC-V07 itself.
Protection release is necessary to display “OPC Initial Menu” screen.

☞ For details, see the **■ Releasing OPC initial calling up key protect (P. 3-149).**

Screen name	Setting item	Necessary module	Page
OPC initial menu	Change to each screen of OPC initial.	—	3-150
Unit used/unused, Unit name, Temperature input unit	Use state of control unit Control unit name Temperature engineering unit	—	3-153
Channel name, Memory area name	TIO channel name Memory area name	H-TIO-□, H-CIO-A	3-154
TI channel name	TI channel name	H-TI-A/B/C	3-155
AI channel name	AI channel name	H-AI-A/B	3-156
AI unit	AI engineering unit	H-AI-A/B	3-157
AO channel name	AO channel name	H-AO-A/B	3-158
AO unit	AO engineering unit	H-AOA/B	3-159
Extension alarm channel name	Extension alarm channel name	H-DO-C	3-160
Alarm message setting	Alarm message Alarm message display on/off Alarm history endless on/off	—	3-161

■ Controller initial

The controller initial is the screen for making settings concerning the control unit (modules) itself. Protection release is necessary to display “Controller Initial Menu” screen.

☞ For details, see the ■ **Procedure for changing to controller initial mode (P. 3-163).**

Screen name	Setting item	Necessary module	Page
Controller initial menu	Change to each screen of controller initial.	—	3-166
Digital filter (F1)	Digital Filter (F1)	H-TIO-□, H-CIO-A	3-170
Output change rate limiter (PH, PL)	Output change rate limiter (up) [PH] Output change rate limiter (down) [PL]	H-TIO-□, H-CIO-A	3-171
Output limiter (OH, OL), Manipulated output value at input error (OE)	Output limiter (high) [OH] Output limiter (low) [OL] Manipulated output value at input error (OE)	H-TIO-□, H-CIO-A	3-172
AT bias (GB), Setting change rate limiter (HH)	AT bias (GB)、 Setting change rate limiter (HH)	H-TIO-□, H-CIO-A	3-174
ON/OFF control differential gap (IV, IW)	ON/OFF control differential gap (upper) [IV] ON/OFF control differential gap (lower) [IW]	H-TIO-□, H-CIO-A	3-175
Alarm differential gap, Number of alarm delay times	Alarm differential gap Number of alarm delay times	H-TIO-□, H-CIO-A	3-176
TI digital filter (F3)	TI digital filter (F3)	H-TI-A/B/C	3-177
TI alarm differential gap, Number of alarm delay times	TI alarm differential gap Number of TI alarm delay times	H-TI-A/B/C	3-178
PCP module setting	DO type selection Control RUN/STOP holding Temperature rise completion hold function Communication transfer time setting Power supply frequency selection	H-PCP-A/B/J	3-179
PCP module DI function selection	PCP module DI function selection PCP module DI use selection	H-PCP-B	3-181
DI module function selection (XK), Use Selection (H2)	DI module function selection (XK) DI module use selection (H2)	H-DI-A	3-184
DO module function selection	DO module function selection 1 to 4 DO module function selection 5 to 8	H-DO-A/B	3-188

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Screen name	Setting item	Necessary module	Page
CT module use channel setting (ZF), Number of CT alarm delay times	CT use channel setting (ZF) Number of CT alarm delay times	H-CT-A	3-189
AI digital filter (F2)	AI digital filter (F2)	H-AI-A/B	3-190
AI moving average selection (VA)	AI moving average selection (VA)	H-AI-A/B	3-191
AI alarm differential gap, Number of AI alarm delay times	AI alarm differential gap Number of AI alarm delay times	H-AI-A/B	3-192
AO output change rate limiter (PW)	AO output change rate limiter (PW)	H-AO-A/B	3-193
Event function selection (XF), Event corresponding channel (XG), Event mode transfer setting (XH)	Event function selection (XF) Event corresponding channel (XG) Event mode transfer setting (XH)	H-DO-C	3-194
Extension alarm differential gap, Extension alarm interlock, Number of extension alarm delay times	Extension alarm differential gap Extension alarm interlock Number of extension alarm delay times	H-DO-C	3-199
Cascade tracking (XL), Cascade data selection (KD), Cascade DI function selection (H3)	Cascade tracking (XL) Cascade data selection (KD) Cascade DI function selection (H3)	H-CIO-A	3-200
Motor time, Proportioning adjustment counter	Motor time Proportioning adjustment counter	H-TIO-K	3-202
Event input type selection	Event input type selection 1 to 4	H-DI-B	3-204
Event input corresponding channel selection	Event input corresponding channel selection 1 to 4	H-DI-B	3-205
Event input reversal selection	Event input reversal selection 1 to 4	H-DI-B	3-206
Event input logic circuit selection, Event input delay timer setting	Event input logic circuit selection Event input delay timer setting	H-DI-B	3-207

■ Initial setting 2 (Controller initial level 1)

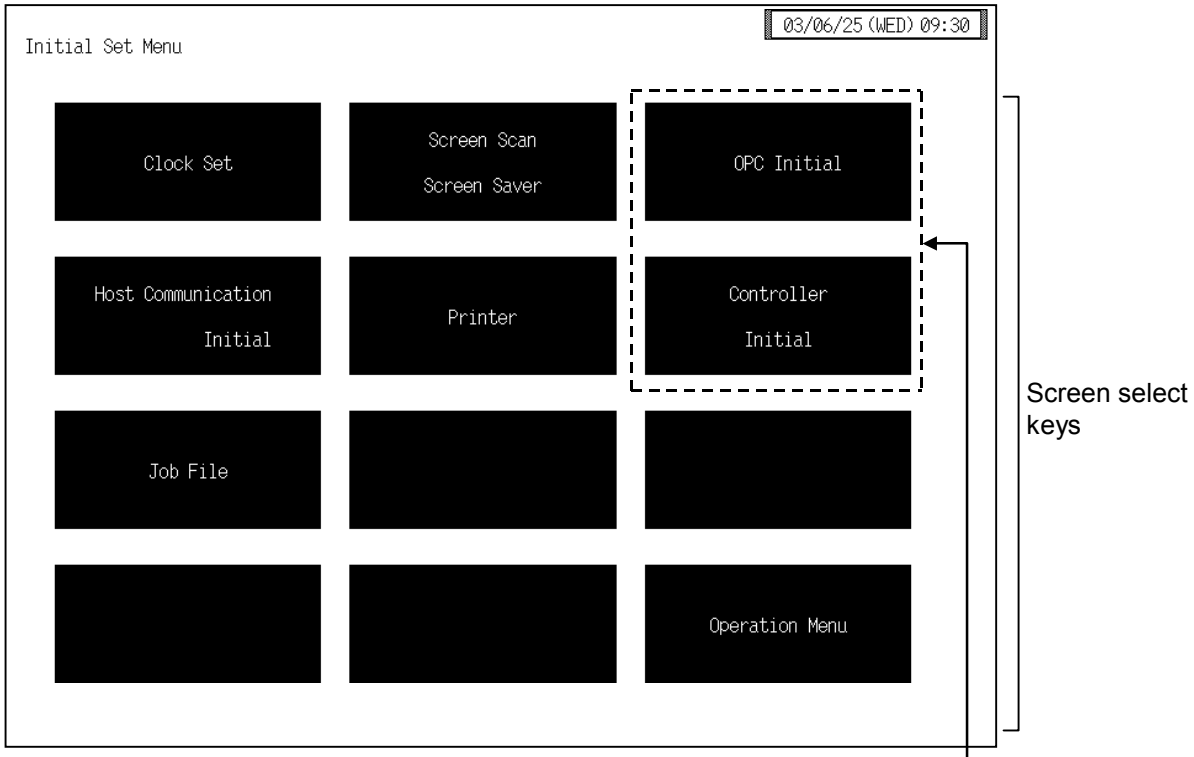
The initial setting 2 (Controller initial level 1) is the screen for making settings concerning the model cod of the control unit (modules) itself.
Protection release is necessary to display “Initial setting 2 menu” screen.

☞ For details, see the ■ **Releasing Level 1 calling up key protect (P. 3-210).**

Screen name	Setting item	Necessary module	Page
Initial setting 2 menu	Change to each screen of initial setting 2.	—	3-212
Input range number (XI), Setting limiter (SH, SL)	Input range number (XI) Setting limiter (high) [SH] Setting limiter (low) [SL]	H-TIO-□、 H-CIO-A	3-215
Display scale (XV, XW), Decimal point position (XU)	Display scale (high) [XV] Display scale (low) [XW] Decimal point position (XU)	H-TIO-H/J、 H-CIO-A	3-219
Input error determination point (AV, AW), Action at input error (WH, WL)	Input error determination point (high) [AV] Input error determination point (low) [AW] Action at input error (high) [WH] Action at input error (low) [WL]	H-TIO-□、 H-CIO-A	3-221
Direct/Reverse action selection (XE), Hot/Cold start selection (XN), Start determination point (SX)	Direct/Reverse action selection (XE) Hot/Cold start selection (XN) Start determination point (SX)	H-TIO-□、 H-CIO-A	3-223
TIO alarm related	Alarm type selection Alarm hold action Alarm interlock Alarm action at burnout	H-TIO-□、 H-CIO-A	3-225
TI input range number (XJ)	TI input range number (XJ)	H-TI-A/B/C	3-227
TI alarm related	TI type selection TI alarm hold action TI alarm interlock Alarm action at TI burnout	H-TI-A/B/C	3-228
AI input range number (VK), AI decimal point position (JU), AI display scale (JS, JV)	AI input range number (VK) AI decimal point position (JU) AI display scale (high) [JS] AI display scale (low) [JV]	H-AI-A/B	3-229
AI alarm related	AI type selection AI alarm hold action AI alarm interlock	H-AI-A/B	3-231
AO decimal point position (JR), AO display scale (HV, HW)	AO decimal point position (JR) AO display scale (high) [HV] AO display scale (low) [HW]	H-AO-A/B	3-232

3.9.1 Initial setting menu

The initial setting menu screen is for selecting each initial setting screen.



[OPC Initial] key, [Controller Initial] key

This screen is not displayed normally.
Protection release is necessary to display each screen.
For details, see the ■ **Releasing OPC initial calling up key protect (P. 3-149) , ■ Procedure for changing to controller initial mode (P. 3-163).**

Screen select keys:

Clock Set: Touching this key changes to the “Clock Set” screen.

Screen Scan, Screen Saver:
Touching this key changes to the “Screen Scan, Screen Saver” screen.

Host Communication Initial:
Touching this key changes to the “Host Communication” screen.

Printer: Touching this key changes to the “Printer” screen.

Job File: Touching this key changes to the “Job File Menu” screen.

OPC Initial: Touching this key changes to the “OPC Initial Menu” screen.
This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing OPC initial calling up key protect (P. 3-149).**

Controller Initial:

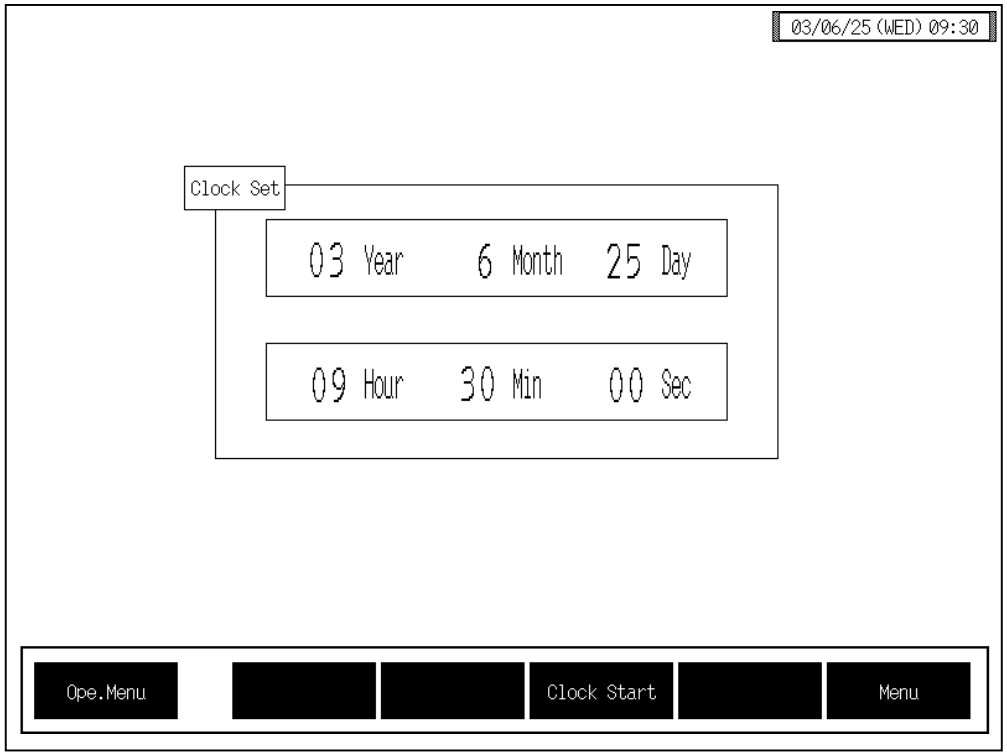
Touching this key changes to the “Controller Initial Menu” screen.
This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Procedure for changing to controller initial mode (P. 3-163)**

Operation Menu:

Touching this key changes to the “Operation Menu” screen.

3.9.2 Clock set screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.



Date, Time: Set the date and time of the clock function that is built into the operation panel. After changing the date or time, always touch the [Clock Start] key to register the new date and time.

📖 The day of the week is set automatically after the year/month/day are input. (Supported to 2097/12/31)

Function keys:

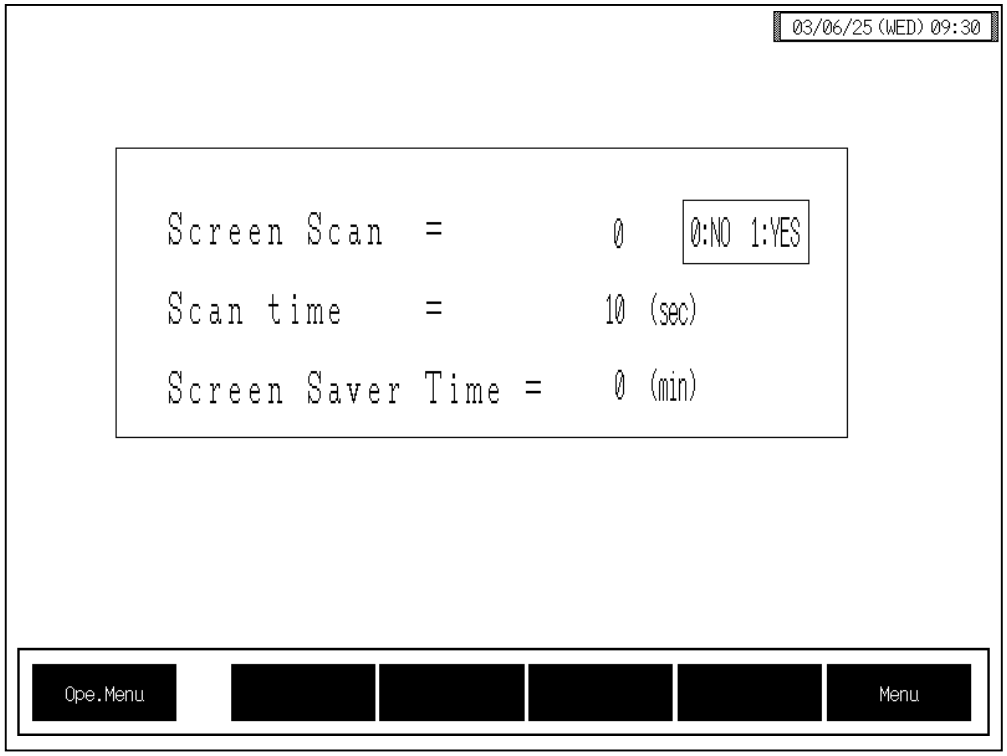
Ope. Menu: Touching this key changes to the “Operation Menu” screen.

Clock Start: Touching this key registers the date and time showing on the screen.

Menu: Touching this key changes to the “Initial Setting Menu” screen.

3.9.3 Screen scan, Screen saver screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.



Screen Scan: Sets whether the screen scan function is executed or not.
Setting range: 0: No (Unused)
1: Yes (Used)
Factory set value: 0

Scan time: Sets the screen scan switching time.
Setting range: 10 to 9999 seconds
Factory set value: 10

Screen Saver Time: Sets the screen saver time.
Setting range: 0 to 99 minutes (0: screen saver off)
Factory set value: 0

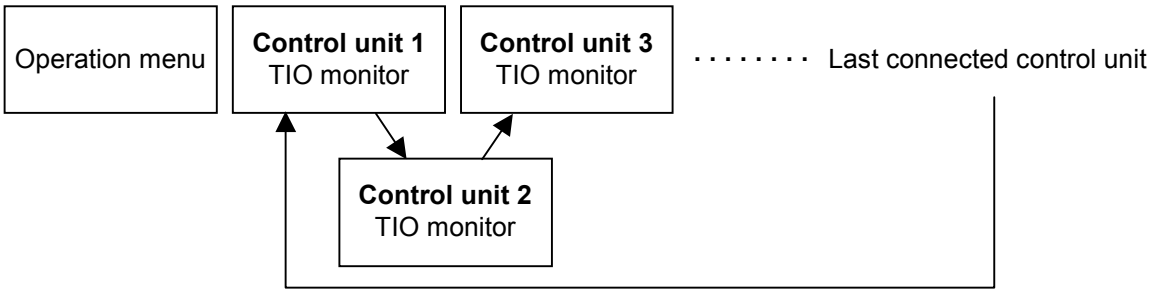
Function keys:

Ope. Menu: Touching this key changes to the “Operation Menu” screen.

Menu: Touching this key changes to the “Initial Setting Menu” screen.

- **Screen scan example**

Example: TIO monitor

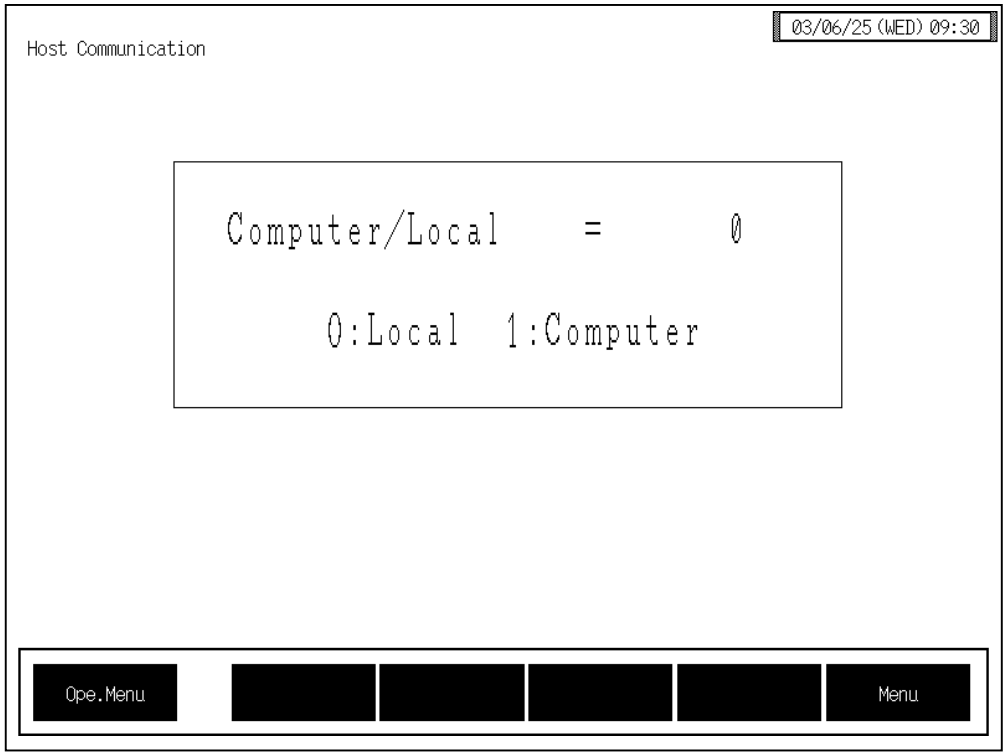


To scan other operations monitor screens, return to the "Operation Menu" screen and touch the key for the screen you wish to scan.

The screen scan function does not work if only one control unit is connected.

3.9.4 Host communication screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.



Computer/Local: Sets whether the data settings shall be carried out by a host computer or by the OPC-V07.

Setting range: 0: Local mode
The data setting by a OPC-V07.
1: Computer mode
The data setting by a host computer.

Factory set value: 0

🕮 In the Computer mode, the host computer has priority and none of the OPC-V07 keys concerning the settings are effective. (Except for the setting of computer/local.)

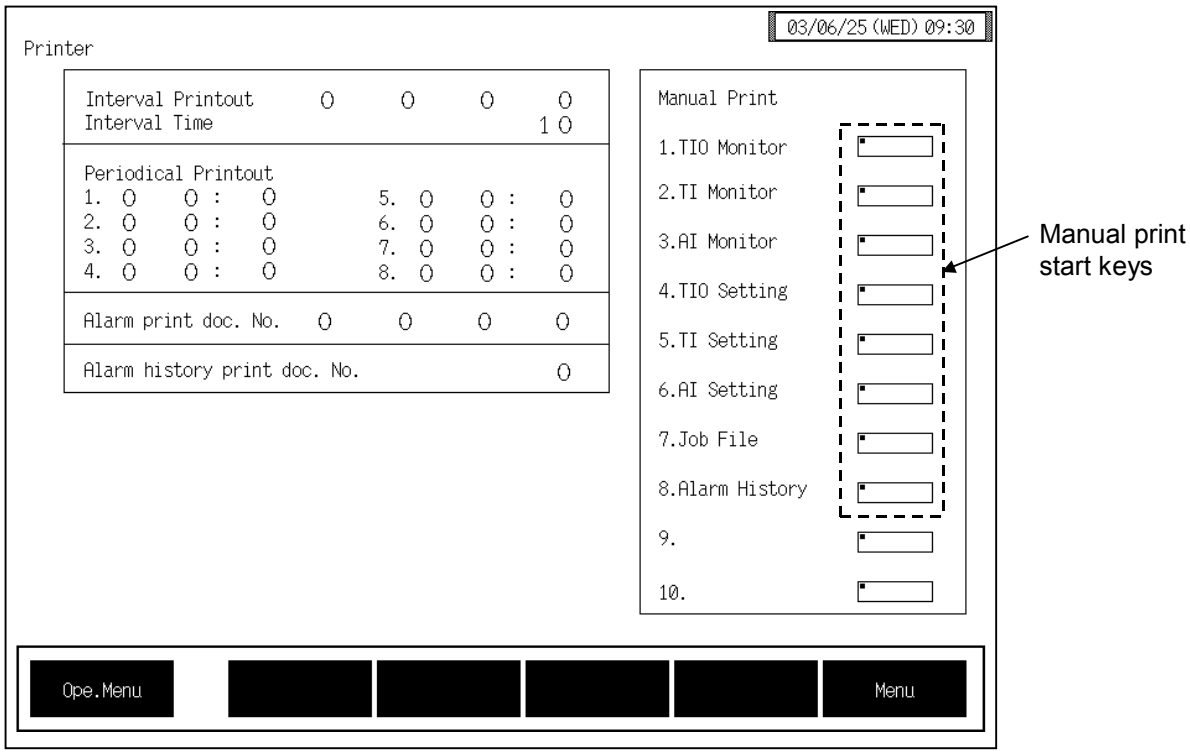
Function keys:

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Menu: Touching this key changes to the "Initial Setting Menu" screen.

3.9.5 Printer screen

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.



Interval Printout: Sets the ledger number for fixed interval printing. Up to four types of ledgers can be set. When you select one and set its number, the first printing is executed.

Setting range: 0: No fixed interval printing
1: TIO monitor
2: TI monitor
3: AI monitor
4: TIO settings
5: TI settings
6: AI settings
7: Job file
8: Alarm history

Factory set value: 0

Interval Time: Sets the time interval for fixed interval printing.

Setting range: 1 to 240 minutes

Factory set value: 10

Periodical Printout: Set the ledger number and printing time for fixed time printing. Up to eight fixed time printings can be registered.

Ledger number: Setting range: 0: No fixed time printing
1: TIO monitor
2: TI monitor
3: AI monitor
4: TIO settings
5: TI settings
6: AI settings
7: Job file
8: Alarm history
Factory set value: 0

Printing time: Setting range: 0:0 to 23:59 minutes (setting unit: 1 minutes)
Factory set value: 0:0

Alarm Print doc. No.:

Sets the numbers for the ledgers to print when an alarm occurs. Up to four ledger types can be set.

Setting range: 0: No alarm item printing
1: TIO monitor
2: TI monitor
3: AI monitor
4: TIO settings
5: TI settings
6: AI settings
7: Job file
8: Alarm history
Factory set value: 0

Alarm history print doc. No.:

Sets whether or not to automatically print the alarm history when it reaches 20 items.

Setting range: 0: Alarm history not printed
1: Alarm history printed
Factory set value: 0

Manual Print: Executes manual printing. Eight types of ledgers (printing items) are registered. Touching the manual print start key at the right edge of each item prints it.

📖 However if the target unit dose not exists, nothing is printed.

Function keys:

Ope. Menu: Touching this key changes to the “Operation Menu” screen.

Menu: Touching this key changes to the “Initial Setting Menu” screen.

Compatible printer control code system and printer models.

- EPSON: Compatibles with ESC/P24-84 or later
- NEC: PC-PR201 series

The printer type to use is changed by the panel editor V-SFTE. For the panel editor V-SFTE, please contact RKC sales office or the agent.

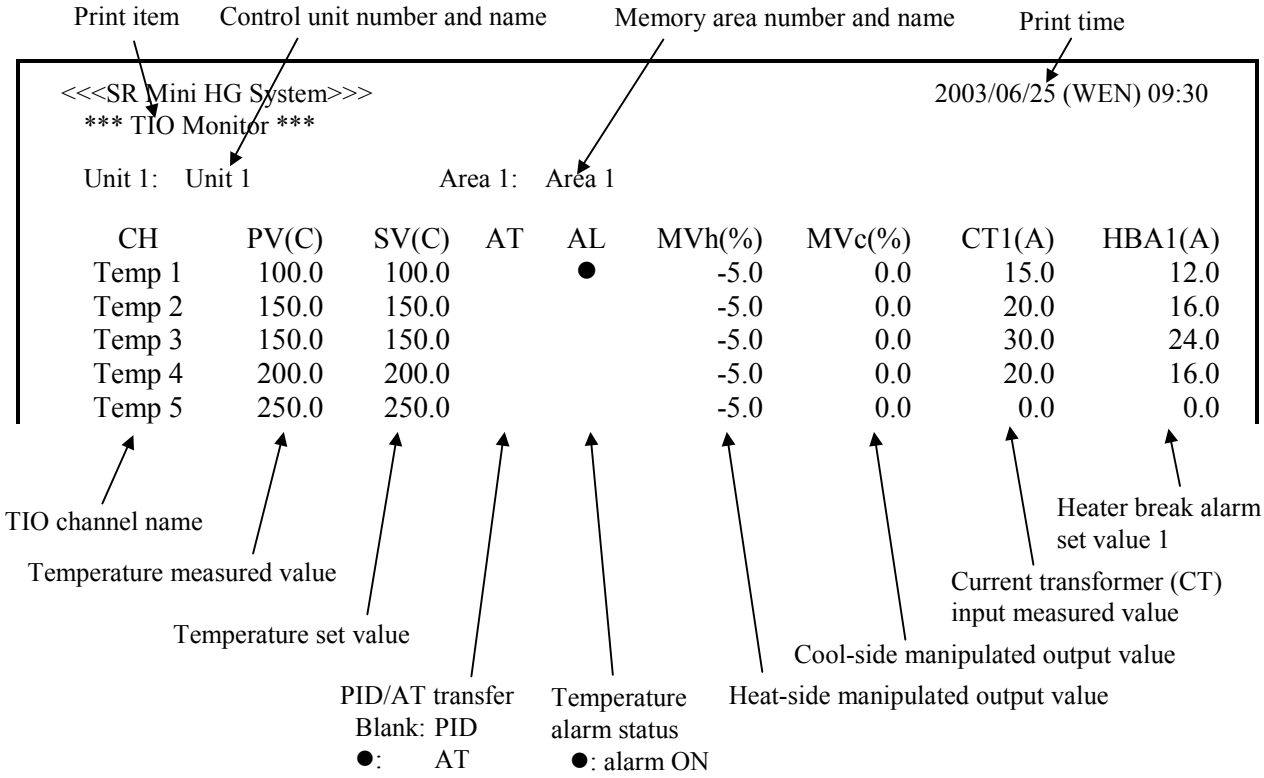
Screen hard copy

Pressing the F6 switch on the front of the operation panel makes a hard copy of the contents of the screen. It is possible to screen hard copy in all the screens (except the "Main Menu" screen).

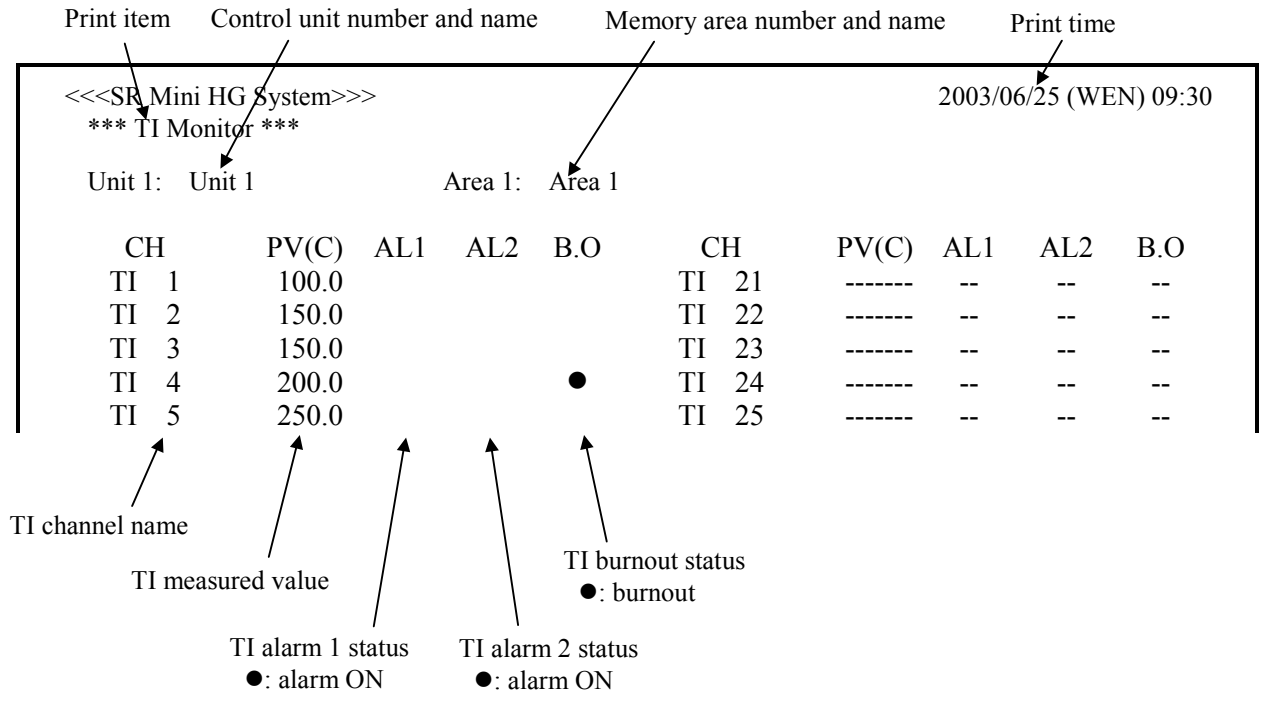
For the connection method of the printer, see **2.1.3 Connection to the Printer (P. 2-11)**.

■ List printing example

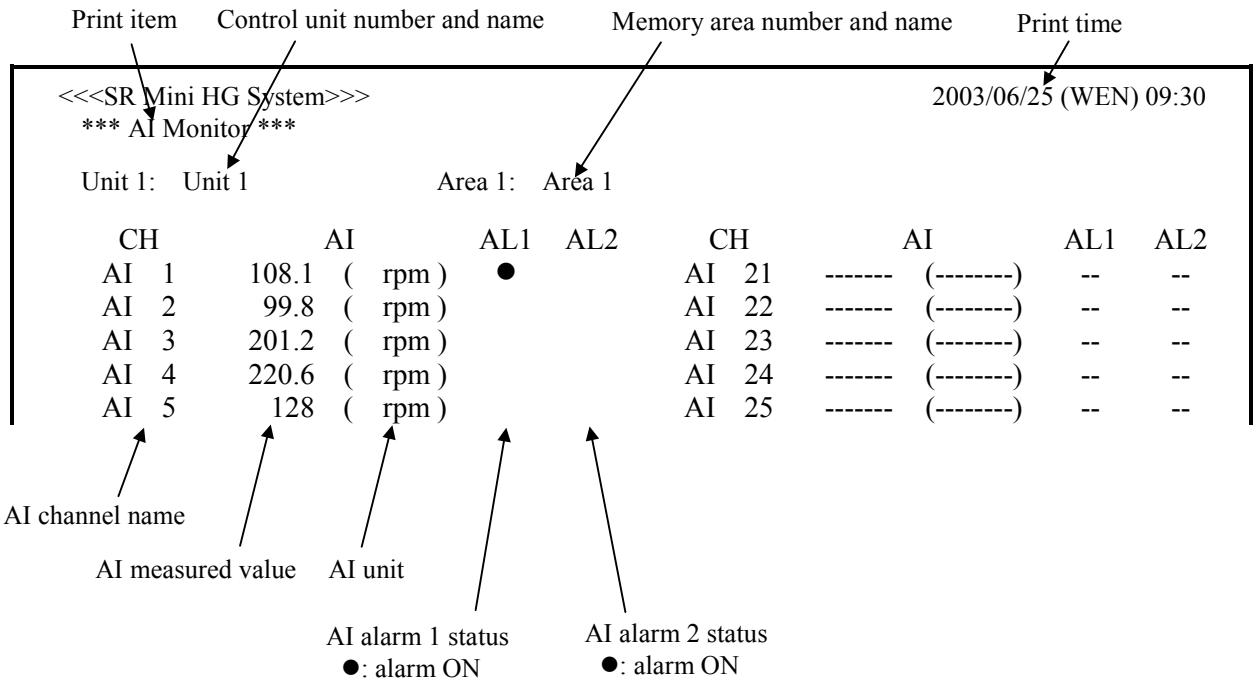
● TIO monitor



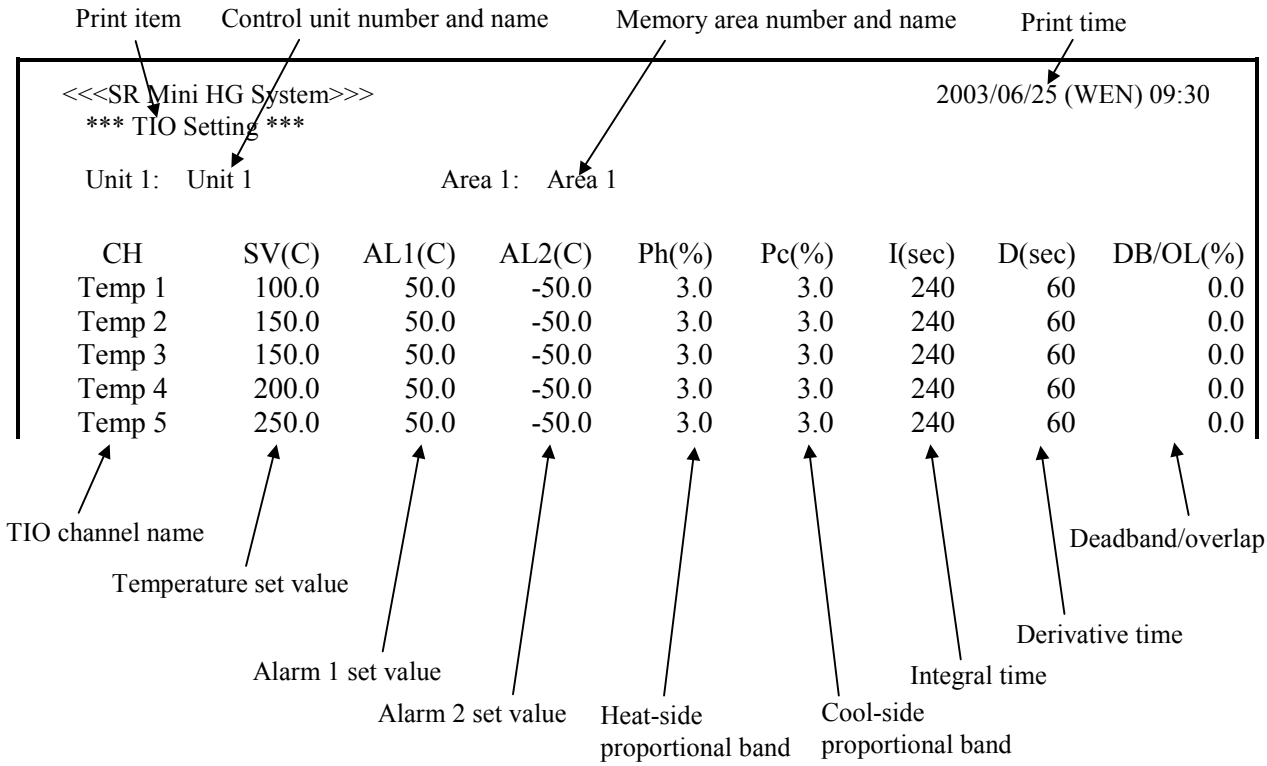
● TI monitor



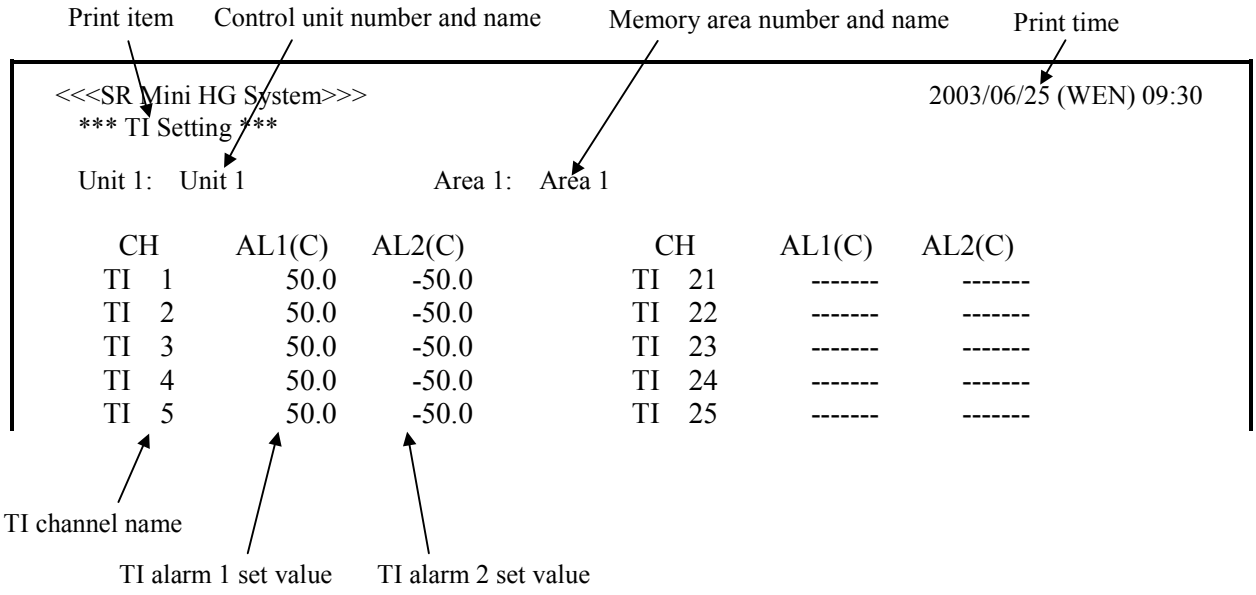
- **AI monitor**



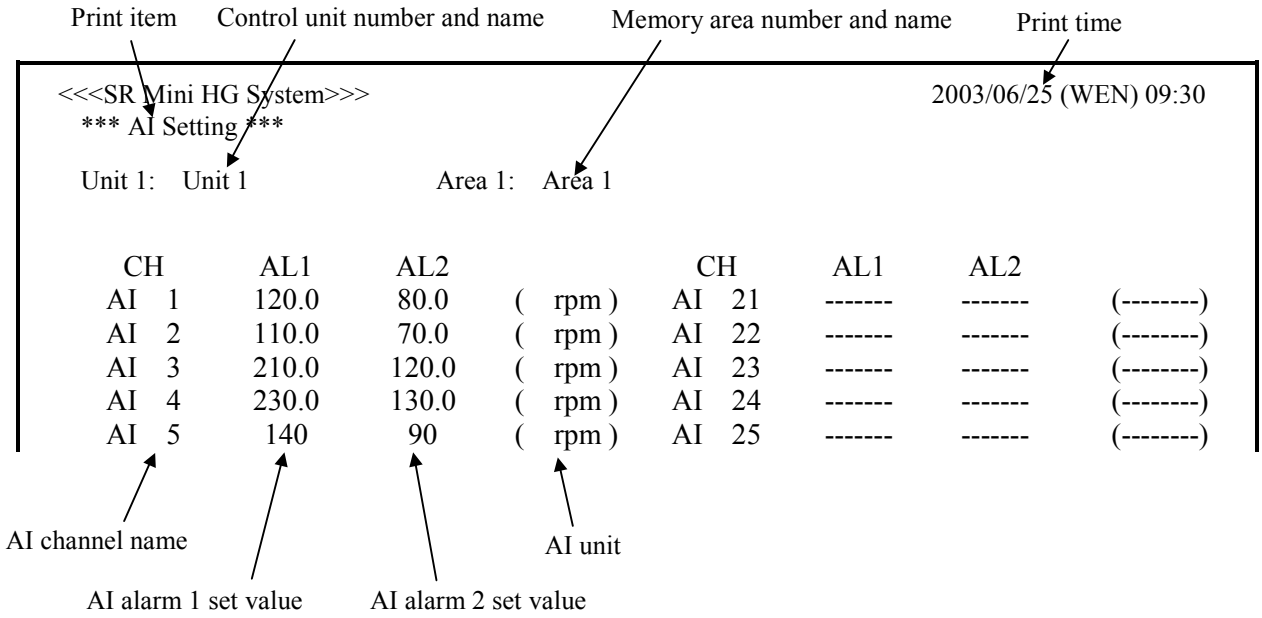
- **TIO set value**



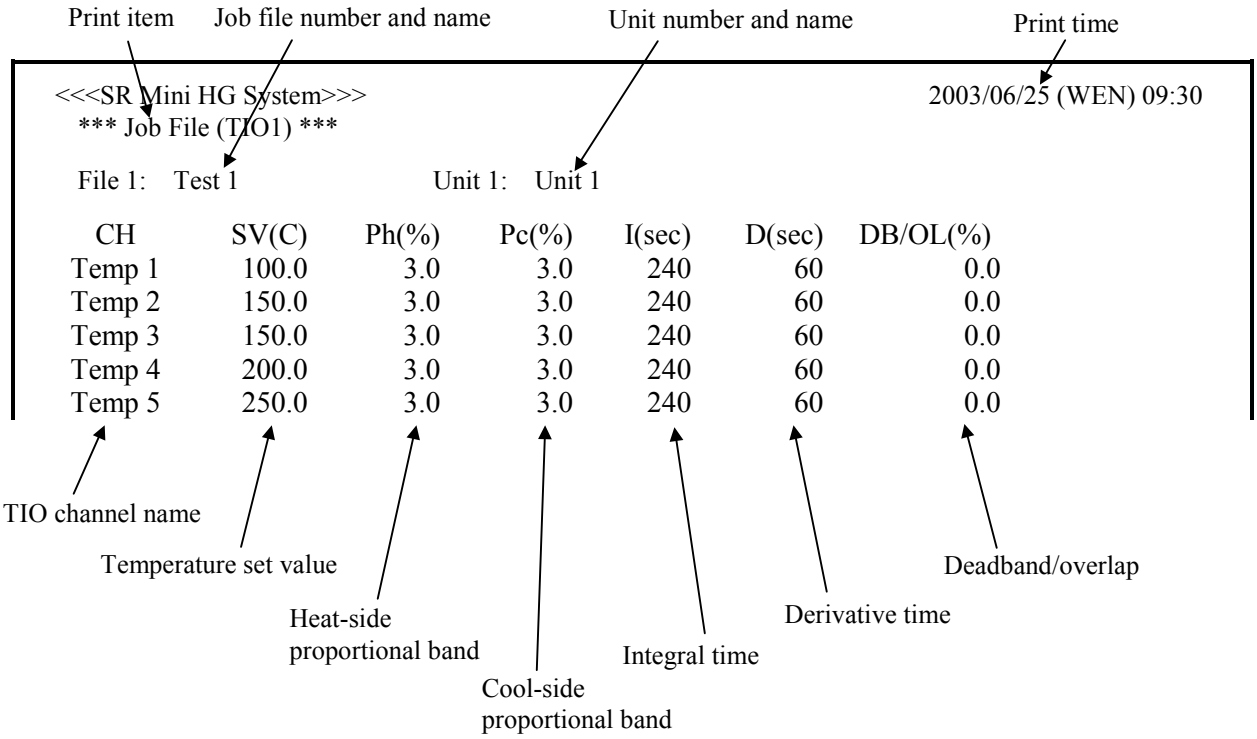
- **TI set value**



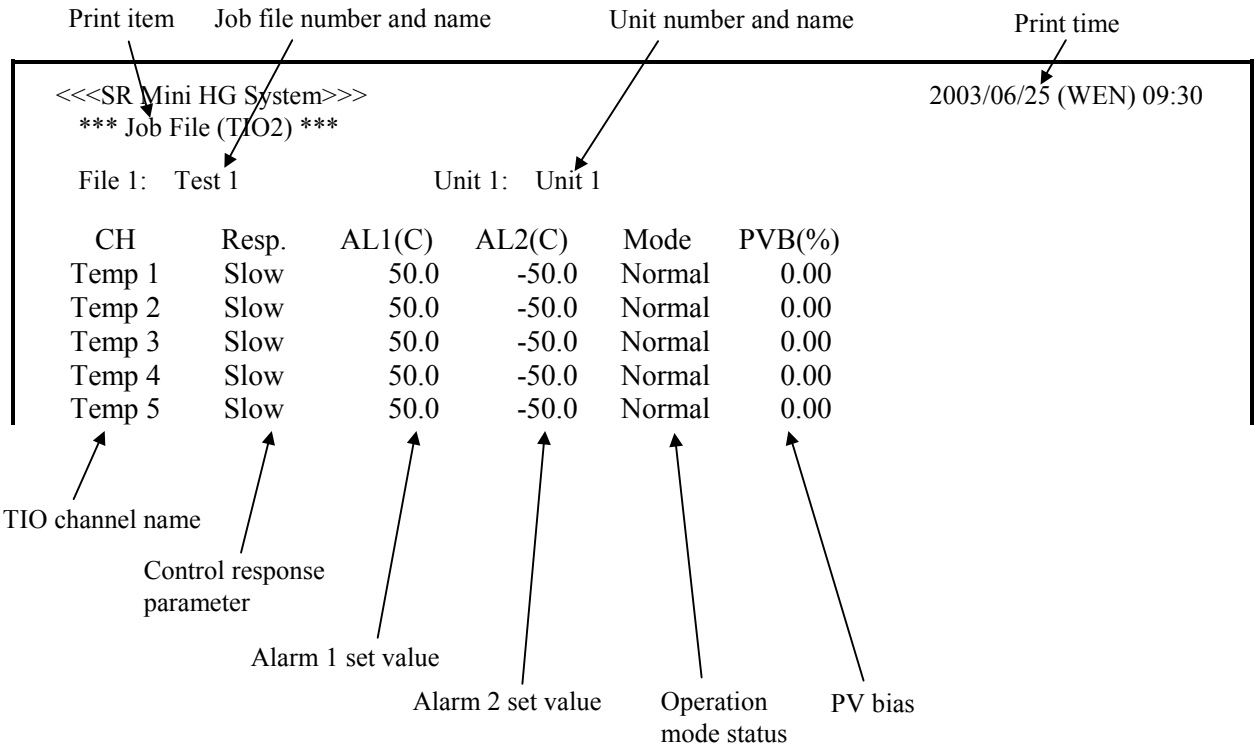
- **AI set value**



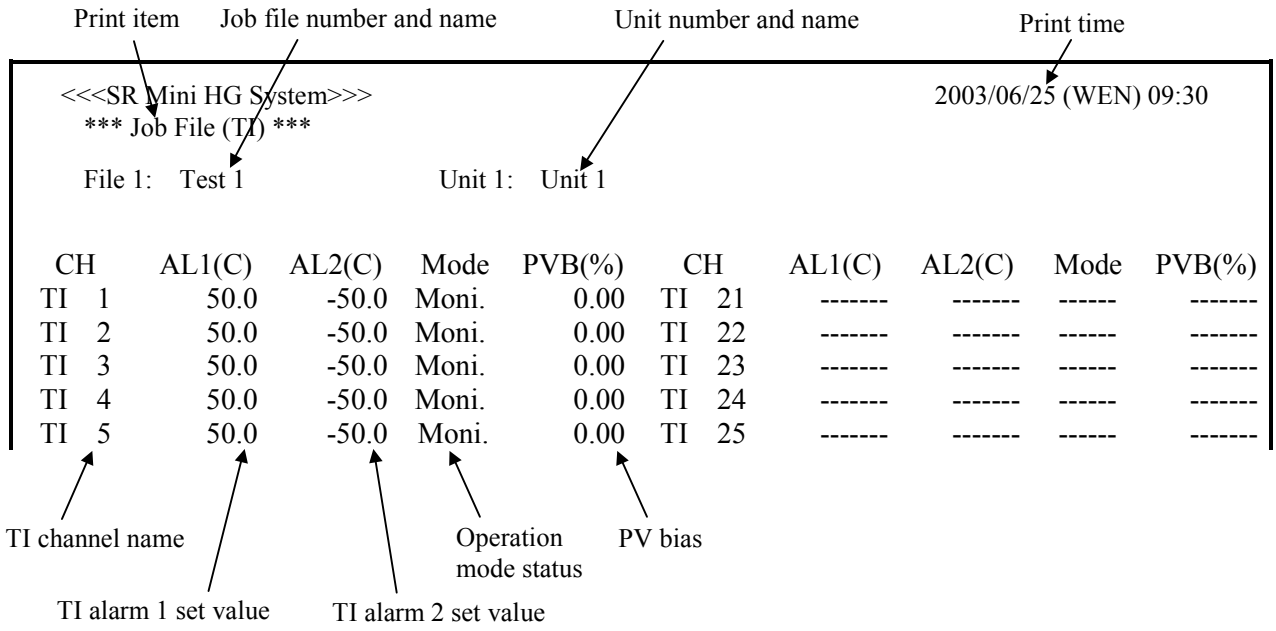
- **Job file (TIO1)**



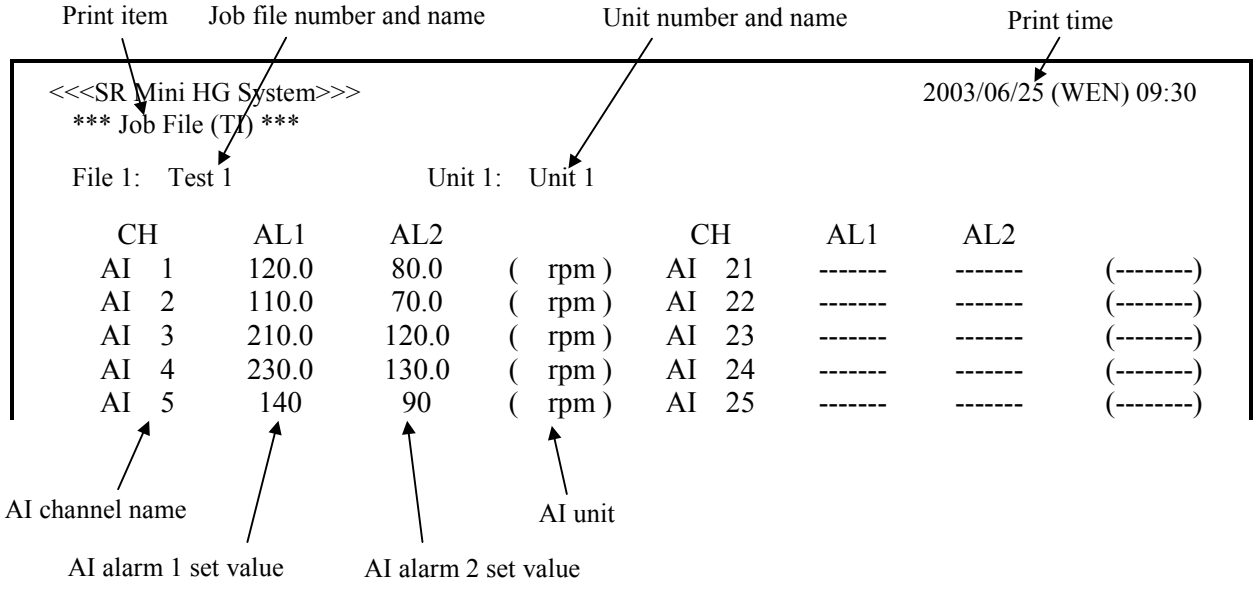
- **Job file (TIO2)**



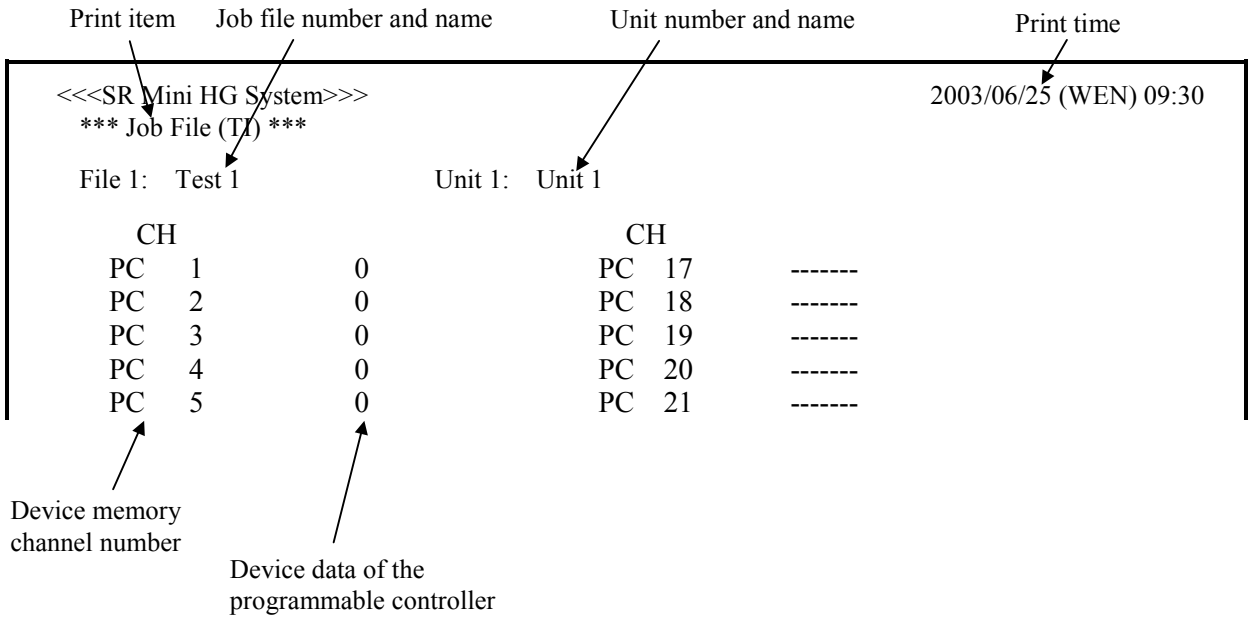
- **Job file (TI)**



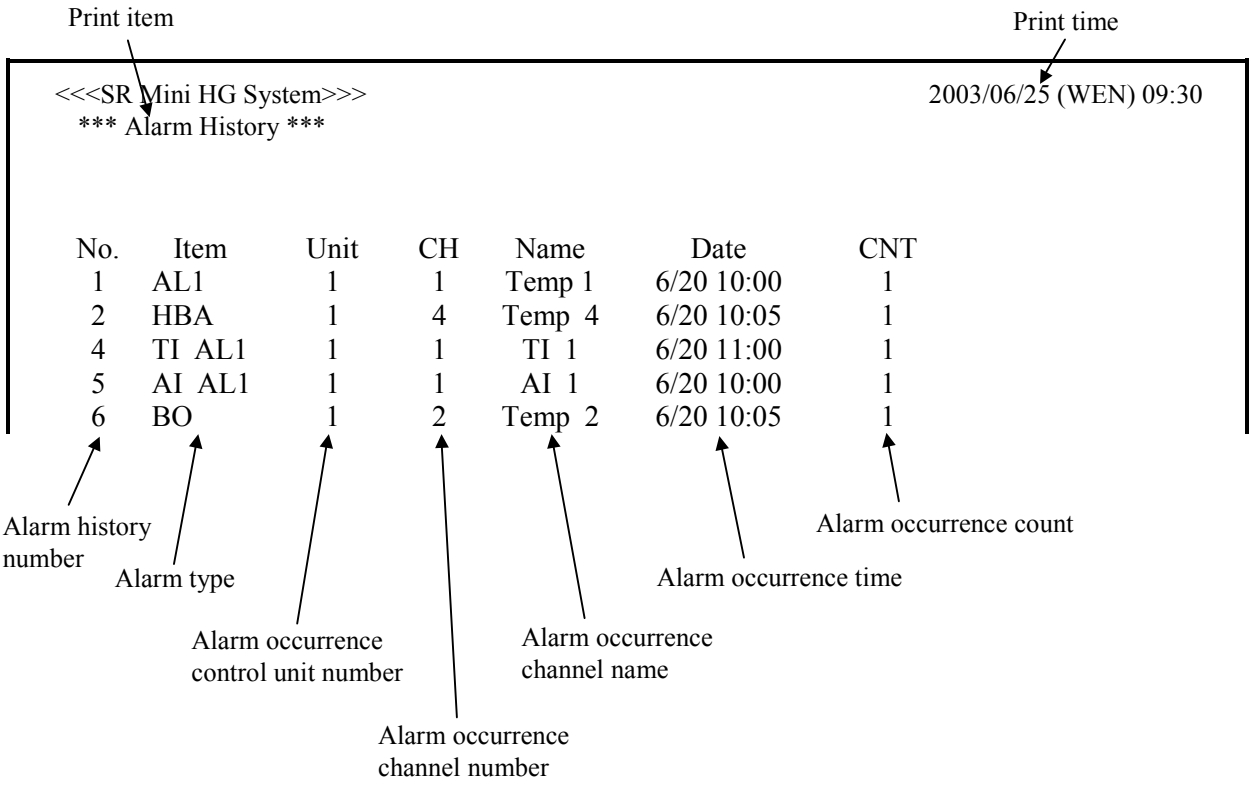
- **Job file (AI)**



- **Job file (PC)**



- **Alarm history**



3.9.6 Job file screen

The job file screen is the screens that perform the display, setting and operation of job file related items. The job files are files that store the various settings used for control. The job file can store to the internal memory and CF (CompactFlash) card.

Internal memory: Maximum 20 files

CF card: Maximum 80 files (Card capacity: more than 16 MB)

Customer must provide the CF card.

Recommended CF card:

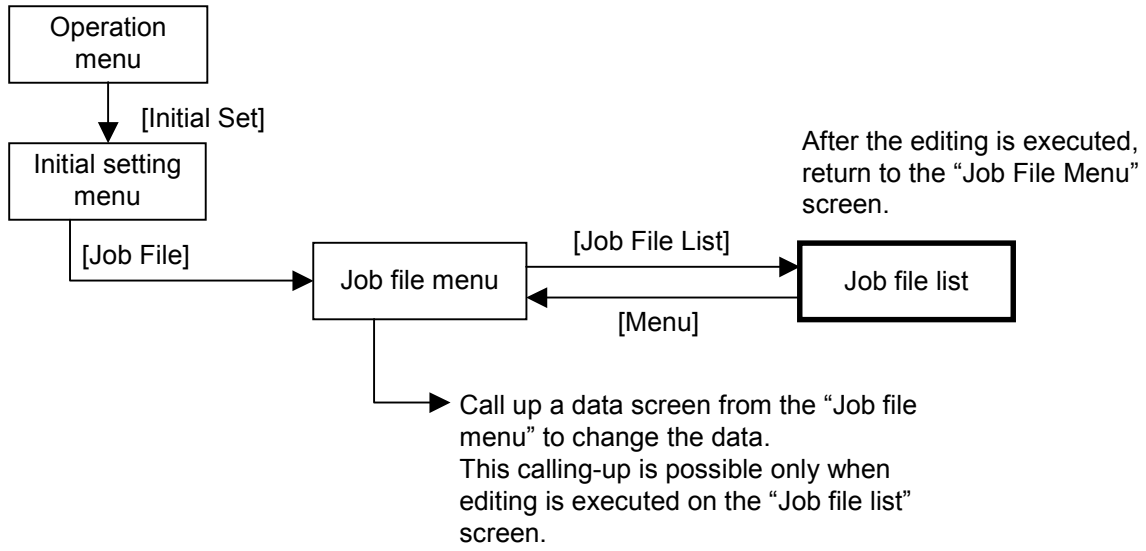
CF cards in compliance with CompactFlash ™ can be used.

The following card is recommended.

Manufacturer	Type	Capacity
Kodak	KPCN- 32	32MB
SanDisk	SDCFB- 64- 505	64MB
I-O Data Device	CFS- 32MA	32MB

■ 5.10.1 Calling procedure of the job file screen

Job file operation (batch registration, batch setting, file copying, file deletion, attribute changing and editing/exit) is performed on the “Job File List” screen. In addition, each data screen cannot be selected if the fob file to make editing on the “Job File List” screen is not developed. Therefore, call up the “Job File List” screen first.



If the editing is executed on the “Job File List” screen, execute the editing exit on the “Job File List” screen after a data change on the data screen is finished. Otherwise it is impossible to be changed to the “Initial Set Menu” screen or “Operation Menu” screen.

[ ] : key name

3.9.7 Job file menu screen

The job file menu is screen for selecting setting item of job file.

Screen select keys:

Job File List: Touching this key changes to the "Job File List (1)" screen.

TIO Setting: Touching this key changes to the "TIO Setting (1)" screen.

AI Setting: Touching this key changes to the "AI Setting (1)" screen.

EX-Alarm Setting:
Touching this key changes to the "Extend Alarm Setting" screen.

TI Setting: Touching this key changes to the "TI Setting 1 (1)" screen.

PC Setting: Touching this key changes to the "PC Setting (1)" screen.

File Memo: Touching this key changes to the "File Memo" screen.

Operation Menu: Touching this key changes to the "Operation Menu" screen.

Initial Menu: Touching this key changes to the "Initial Set Menu" screen.

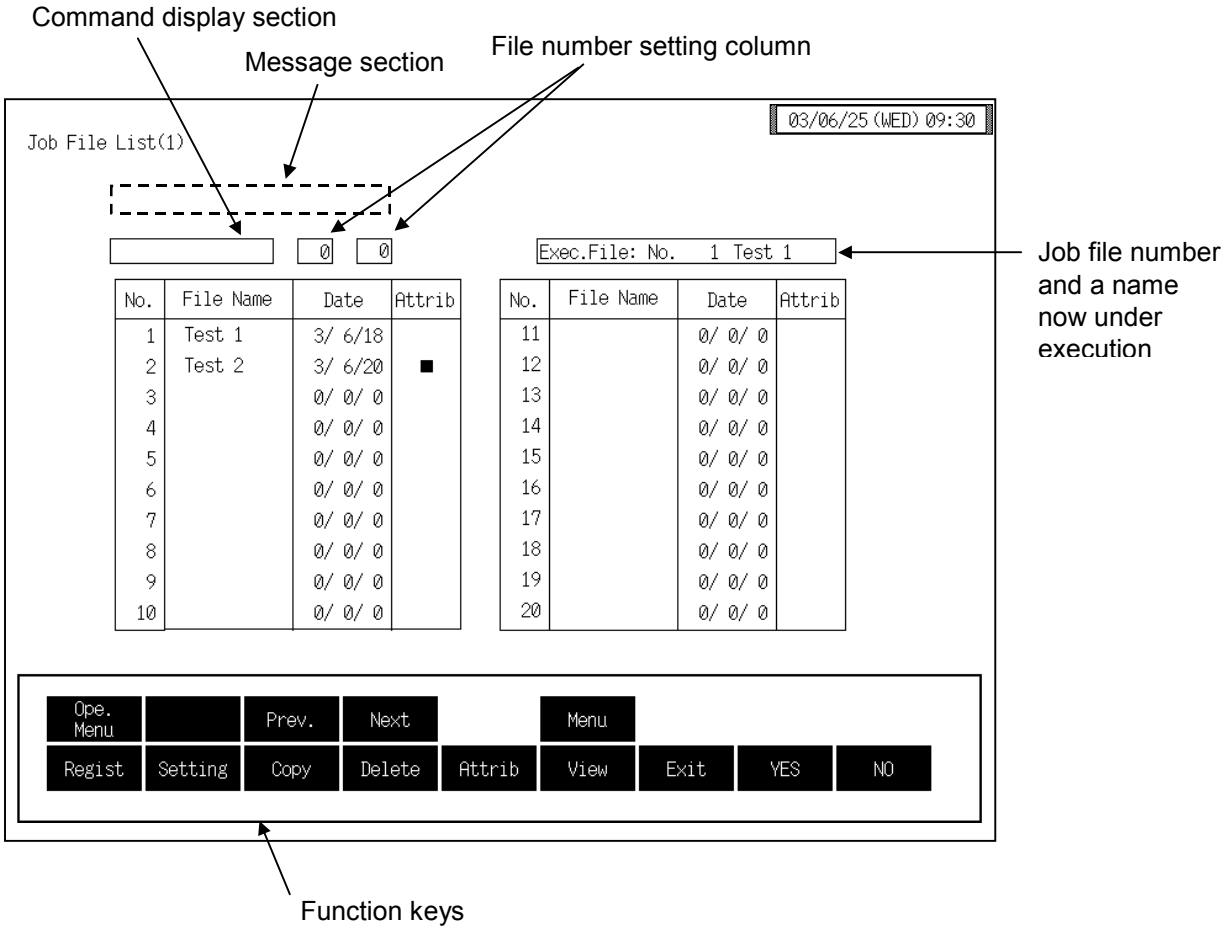
Each screen in the following cannot be selected if no editing exit is executed on the "Job File List" screen.
"TIO Setting (1)" screen, "AI Setting (1)" screen, "Extend Alarm Setting" screen, "TI Setting 1 (1)" screen, "PC Setting (1)" screen, "File Memo" screen

If the editing is executed on the "Job File List" screen, execute the editing exit on the "Job File List" screen after a data change on the data screen is finished. Otherwise it is impossible to be changed to the "Initial Set Menu" screen or "Operation Menu" screen.

For the editing/exit, see the **<Job file operation> (P. 3-132 to 135)**.

3.9.8 Job file list screen

The “Job File List (1)” screen is used to job file operation (batch registration, batch setting, file copying, file deletion, attribute changing and editing/exit).



Exec. File: Displays the number and name of the job file currently being used for operations. If data not registered in a job file is being used for operations, “0” is displayed as the number.

No.: Display the job file number.
Every time [Prev.] key or [Next] key is touched, the job file number changes.

If the CF (compact flash) card is not inserted, an error screen is displayed as the number of files in which job files can be strode is 20.

File Name: Sets the job file name.
When you touch the “File Name” column for the file number whose name you want to input, the text editing window appears, so set the name as explained in **3.2.3 Text editing (P. 3-18)**.
Setting range: Within 10 characters
Factory set value: Blank (No file name is set.)

Date: Displays the registration date of job file. This is written automatically in the following cases.
- When batch settings are made
- When a file is copied
- When a job file is opened for editing, edited, then closed
  (The registration date is only updated if the contents of the file are changed.)

Attrib: Files with "■" displayed cannot be written to. Batch registration, file copying, file deletion, and data changing are not possible for these files (but such a file can be copied from).
Change attribute with [Attrib] key.

Function keys:

Regist: The settings currently being used for control are registered into the job file.

Setting: A file to use for control is called out from the stored job files and all the settings are set to the values in that file.

Copy: The job file is copied.

Delete: The job file is deleted.

Attrib: The job file attribute is changed. If the job file attribute is changed to make the job file read-only, batch registration, file copying, file deletion, and data changing are not possible for these files (but such a file can be copied from).

View: Used to check the contents of a stored job file and change the data.

Exit: Touching this key ends editing.

YES: Used to confirm execution of the batch registration, batch setting, file copying, file deletion, attribute changing, and editing/exit functions.

NO: Used to cancel the batch registration, batch setting, file copying, file deletion, attribute changing and editing/exit functions underway.

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Prev.: Touching this key changes to the screen one before the one being displayed.

Next: Touching this key changes to the screen one after the one being displayed.

Menu: Touching this key changes to the "Job File Menu" screen.

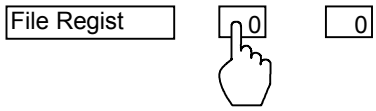
☞ For the operation procedure of function key, see the **<Job file operation> (P. 3-132 to 135)**.

< Job file operation >

A short period of time is required for executing job file operation. As the message "Execution!" appears during execution, do not pull out the CF card halfway.

Batch registration: The settings currently being used for control are registered into the job file.

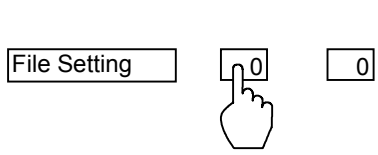
1. Touch the [Regist] key.
2. "Select a File number" are displayed in the message section.
3. Touch the file number display section, the numeric keypad window appears on the screen.



4. Input the number of the file you want to register, then touch the [Enter] key.
5. "File registration! Execute (yes/no)?" is displayed in the message section.
6. If acceptable, touch the [YES] key.
7. The settings currently being used for control are registered in the job file and the registration date is written automatically.

Batch setting: A file to use for control is called out from the stored job files and all the settings are set to the values in that file.

1. Touch the [Setting] key.
2. "Select a File number" are displayed in the message section.
3. Touch the file number display section, the numeric keypad window appears on the screen.



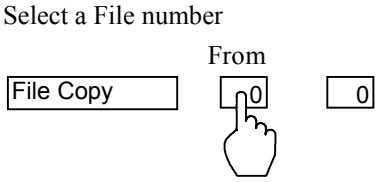
4. Input the number of the file you want to set, then touch the [Enter] key.
5. "Execute a job file (YES/NO)?" is displayed in the message section.
6. If acceptable, touch the [YES] key.
7. The file data is set as the settings to use for control. The number and name of the file for which the batch settings were made is displayed in the "Exec. File" display column on the top right of the screen.

File copying: The job file is copied.

1. Touch the [Copy] key.

2. "Select a File number" and "From" are displayed in the message section.

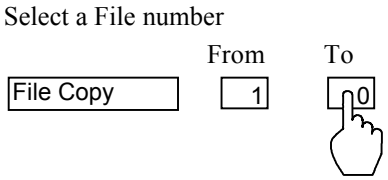
3. Touch the source file number setting section, the numeric keypad window appears on the screen.



4. Input the number of the file you want to copy from, then touch the [Enter] key.

5. "To" are displayed in the message section.

6. Touch the target file number setting section. The number keys are displayed.



7. Input the number of the file you want to copy to, then touch the [Enter] key.

8. "Execute a job file (YES/NO)?" is displayed in the message section.

9. If acceptable, touch the [YES] key.

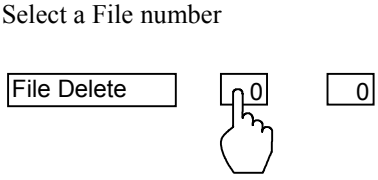
10. The file is copied and the registration date of the source file is automatically written for the destination file.

File deletion: The job file is deleted.

1. Touch the [Delete] key.

2. "Select a File number" are displayed in the message section.

3. Touch the file number display section, the numeric keypad window appears on the screen.



4. Input the number of the file you want to delete, then touch the [Enter] key.

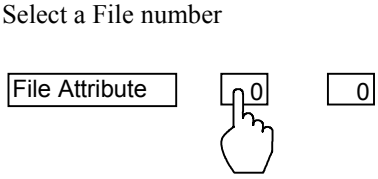
5. "Execute a job file (YES/NO)?" is displayed in the message section.

6. If acceptable, touch the [YES] key.

7. The file is deleted.

Attribute change: The job file attribute is changed. If the job file attribute is changed to make the job file read-only, batch registration, file copying, file deletion, and data changing are not possible for these files (but such a file can be copied from).

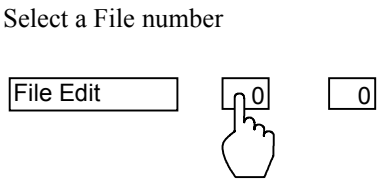
1. Touch the [Attrib] key.
2. "Select a File number" are displayed in the message section.
3. Touch the file number display section, the numeric keypad window appears on the screen.



4. Input the number of the file you want to change, then touch the [Enter] key.
5. "Execute a job file (YES/NO)?" is displayed in the message section.
6. If acceptable, touch the [YES] key.
7. The attribute is changed.

Editing method: Used to check the contents of a stored job file and change the data.

1. Touch the [View] key.
2. "Select a File number" are displayed in the message section.
3. Touch the file number display section, the numeric keypad window appears on the screen.



4. Input the number of the file you want to edit, then touch the [Enter] key.
5. "Execute a job file (YES/NO)?" is displayed in the message section.
6. If acceptable, touch the [YES] key.
7. Editing becomes possible, so touch the [Menu] key and switch the display to the "Job File Menu" screen.
8. Calls the TIO setting screen, AI setting screen, extension alarm setting screen, TI setting screen, PC setting screen and File memo screen to check or change the job file data.

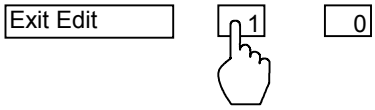
After you touch the [YES] key, it takes a short while for editing actually become possible.

File registration, setting, copying, deletion and attribute changing are not possible during editing.

Exit method: Editing ends.

1. After editing the data in the file in editing mode, touch the [List] key on one of the screens for the file to change the display to the "Job File List" screen.
2. Touch the [Exit] key.
3. "Execute a job file (YES/NO)?" is displayed in the message section.

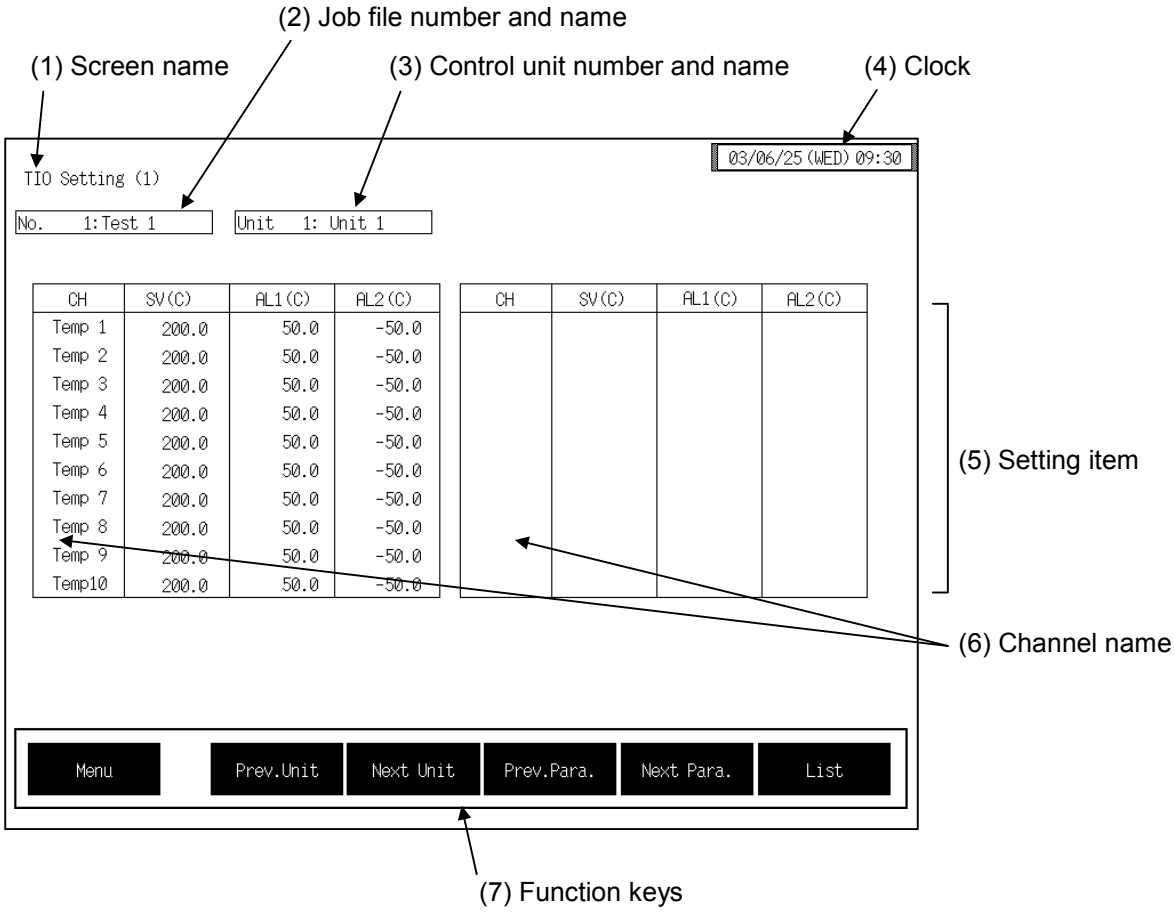
Execute a job file (YES/NO)?



4. If acceptable, touch the [YES] key.
5. Editing ends.

3.9.9 Basic configuration of job file data screen

The basic configuration of each data setting screen is as shown below.
Example: TIO setting (1) screen



(1) Screen name: Displays the screen name.

(2) Job file number and name:
Displays the number and name for the job file whose data is being displayed.

(3) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).
However, this item is not displayed on the "PC Setting" and "File Memo" screens.

(4) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(5) Setting item: Displays the item and data. Details of display varies depending on the each data screen.

(6) Channel name: Displays the TIO channel name.
However, this item is not displayed on the "File Memo" screens.
In addition, device memory channel numbers instead of TIO channel names are displayed on the "PC Setting" screens.

(7) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Menu: Touching this key changes to the "Job File Menu" screen.

Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

Prev. Para.: Touching this key changes to the screen one before the one being displayed.

Next Para.: Touching this key changes to the screen one after the one being displayed.

Next CH: Touching this key changes to the screen for the channel (CH) after the current one.

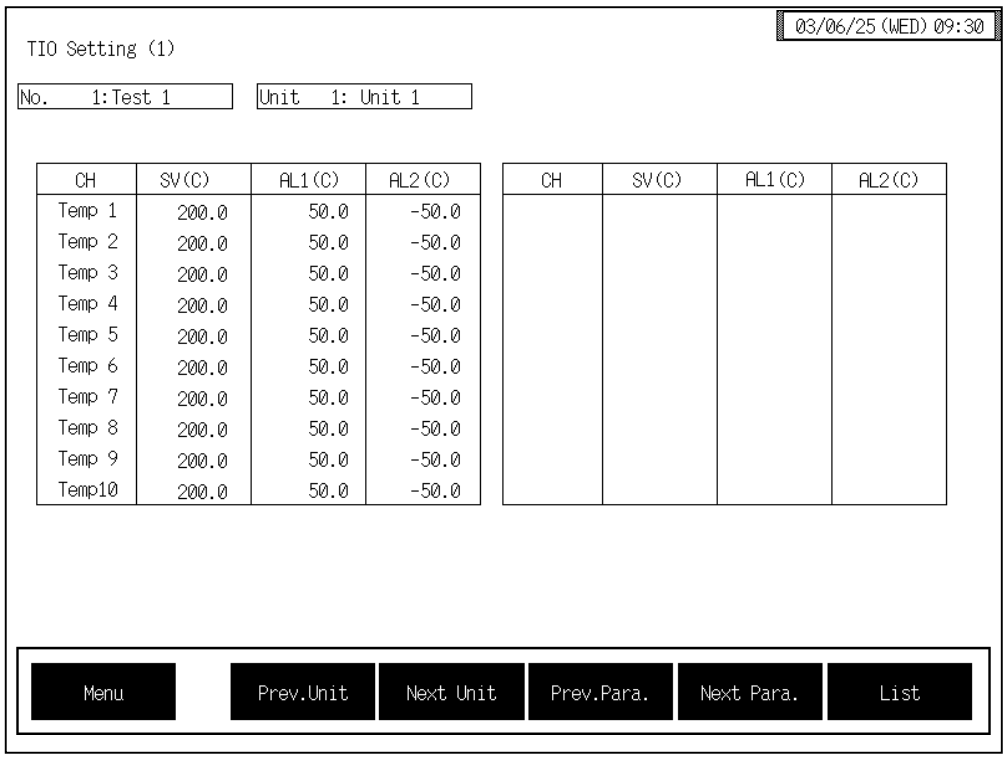
List: Touching this key changes to the "Job File List (1)" screen.

3.9.10 TIO setting screen (Job file)

There are TIO setting 1, TIO setting 2, TIO setting 3 and TIO setting 4 screens in the TIO setting. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.9 Basic configuration of job file data screen (P. 3-136)**.

■ TIO setting 1 screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

SV (C): Sets the temperature set value (SV).
Setting range: TC/RTD input:
Within input range (Within setting limit)
Current/voltage input:
Within display scale (Within setting limit)
Factory set value: 0
The position of the decimal point differs depending on the input range.

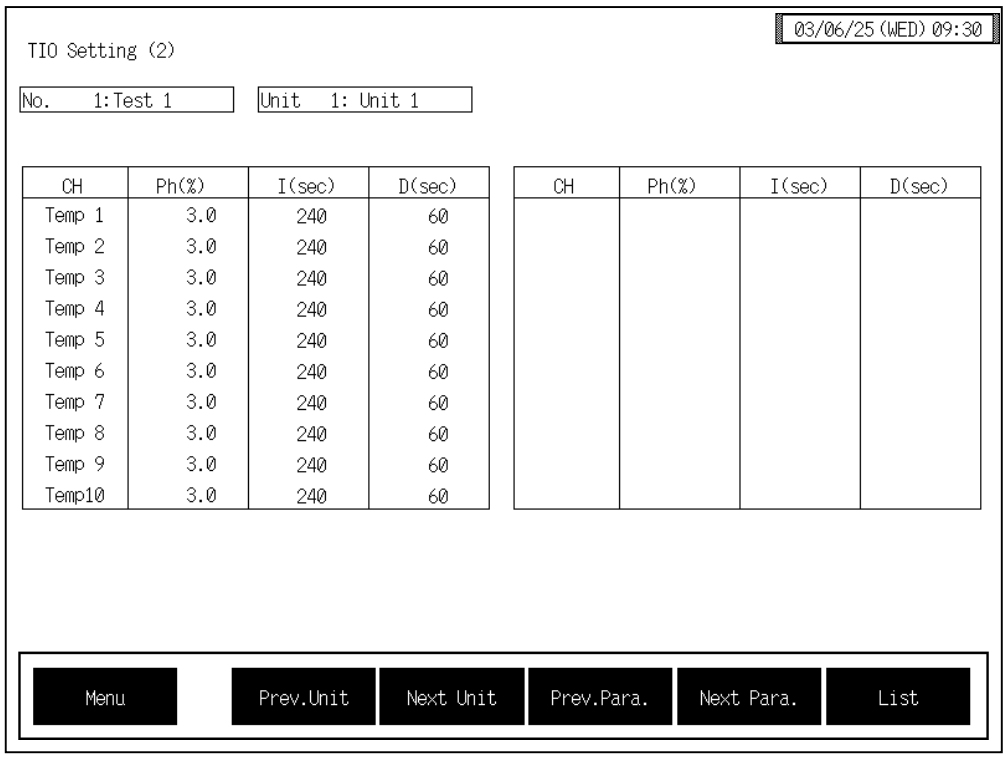
AL1 (C): Sets the alarm 1 set value.
Setting range: TC/RTD input:
Within input range or span range.
Current/voltage input:
Within display scale range or span range.
Factory set value: See **Factory set value table of Alarm 1/Alarm 2 set value.**
The position of the decimal point differs depending on the input range.

AL2 (C): Sets the alarm 2 set value.
Setting range: TC/RTD input:
Within input range or span range.
Current/voltage input:
Within display scale range or span range.
Factory set value: See **Factory set value table of Alarm 1/Alarm 2 set value.**
The position of the decimal point differs depending on the input range.

Factory set value table of Alarm 1/Alarm 2 set value

Input type	Alarm type	Alarm 1 set value	Alarm 2 set value
TC/RTD input	Process high alarm	Input range (high limit)	Input range (high limit)
	Process low alarm	Input range (low limit)	Input range (low limit)
	Deviation high alarm, Deviation high/low alarm, Band alarm	50 °C	50 °C
	Deviation low alarm	−50 °C	−50 °C
	No alarm function	Input range (high limit)	Input range (low limit)
Current/voltage input	Process high alarm	100.0 %	100.0 %
	Process low alarm	0.0 %	0.0 %
	Deviation high alarm, Deviation high/low alarm, Band alarm	50 %	50 %
	Deviation low alarm	−50 %	−50 %
	No alarm function	100.0 %	0.0 %

■ TIO setting 2 screen



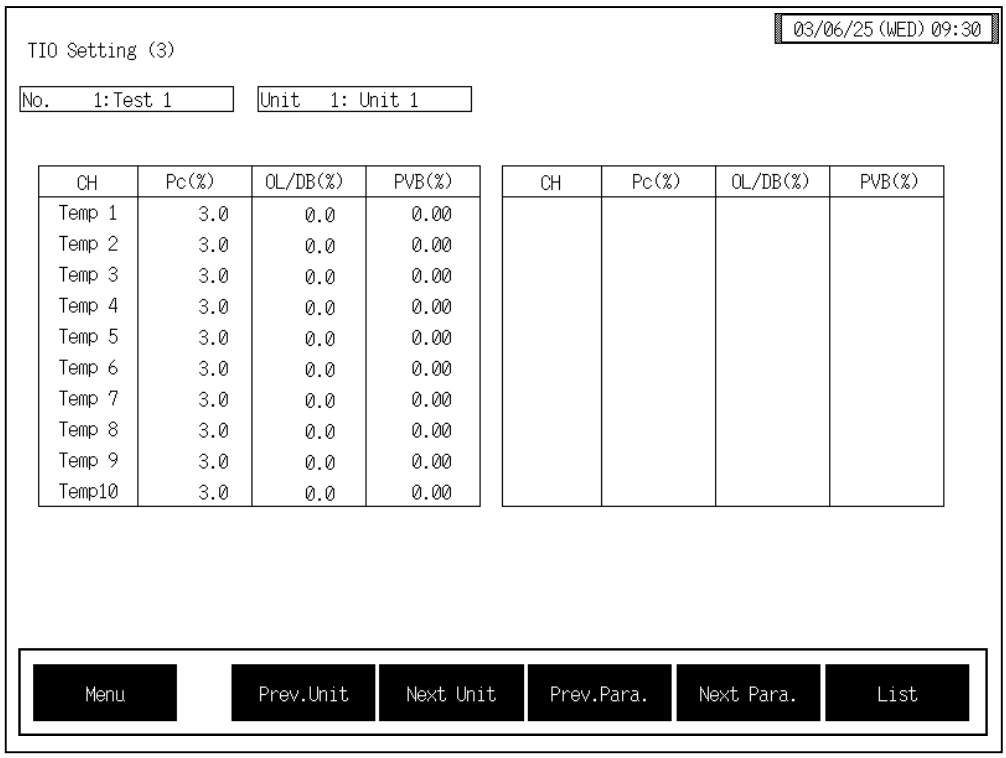
CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Ph (%): Sets the heat-side proportional band for PI, PID or heat/cool PID control.
Setting range: 0.1 to 1000.0 % of span
Factory set value: 3.0

I (sec): Sets the integral time to eliminate the offset produced in proportional control.
Setting range: 1 to 3600 seconds
Factory set value: 240

D (sec): Sets the derivative time to prevent ripples by predicting output changes and thus to improve control stability.
Setting range: 0 to 3600 seconds (0: PI action)
Factory set value: 60

■ TIO setting 3 screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Pc (%): Sets the cool-side proportional band for heat/cool PID control.
Setting range: 0.1 to 1000.0 % of span
Factory set value: 3.0

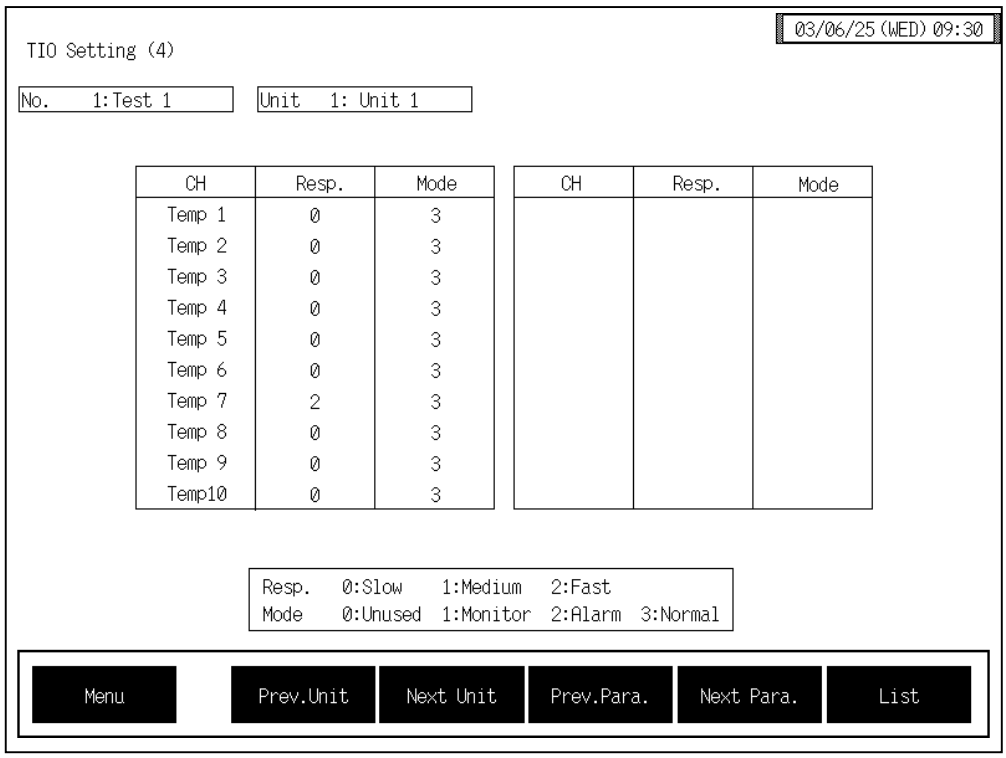
This setting becomes invalid for ON/OFF control, position proportioning control or heat control.

OL/DB (%): Sets the control deadband between heat-side and cool-side proportional bands in heat/cool PID control.
Setting range: −10.0 to +10.0 % of span (Overlapped by minus setting)
Factory set value: 0.0

This setting becomes invalid for ON/OFF control, position proportioning control or heat control.

PVB (%): Sets the bias added to the measured value for sensor correction.
Setting range: −5.00 to +5.00 % of span
Factory set value: 0.00

■ TIO setting 4 screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Resp.: Sets the response resulting from a temperature change in PID control.
Setting range: 0: Slow
1: Medium
2: Fast
Factory set value: Heat control: 0
Heat/cool control: 2
Position proportioning control: 0

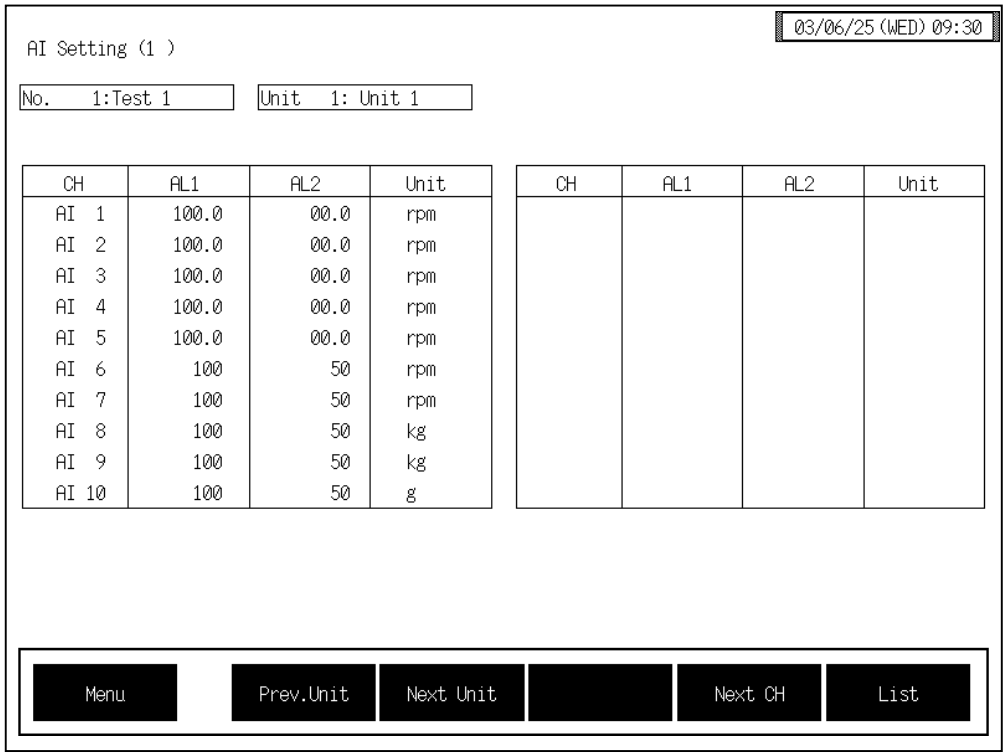
Mode: Sets the operation state.
Setting range:
0: Unused
If set to "Unused," no control, monitoring or alarm monitoring is performed.
1: Monitor
If set to "Monitor," only the monitoring is performed. No control or alarm monitoring is performed.
2: Alarm
If set to "Alarm," monitoring or alarm monitoring is performed. No control is performed.
3: Normal
Control, monitoring and alarm monitoring are performed.
Factory set value: 3

Even if the temperature rise completion function (Heat up Judge) is set to the "Unused" mode, it continues to be effective. If the temperature rise completion function is also to be set invalid, change the setting of the temperature rise completion trigger function to "Unused."

3.9.11 AI setting screen (Job file)

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.9.9 Basic configuration of job file data screen (P. 3-136)**.



CH: Displays the AI channel name.
The channel name can be changed with the OPC initial "AI CH Name Set" screen (P. 3-156).

AL1: Sets the AI alarm 1 set value.
Setting range: Within display scale range
Factory set value: Process high alarm: 100.0
Process low alarm: 0.0
No alarm function: 100.0
The position of the decimal point differs depending on the AI decimal point position setting (P. 3-229).

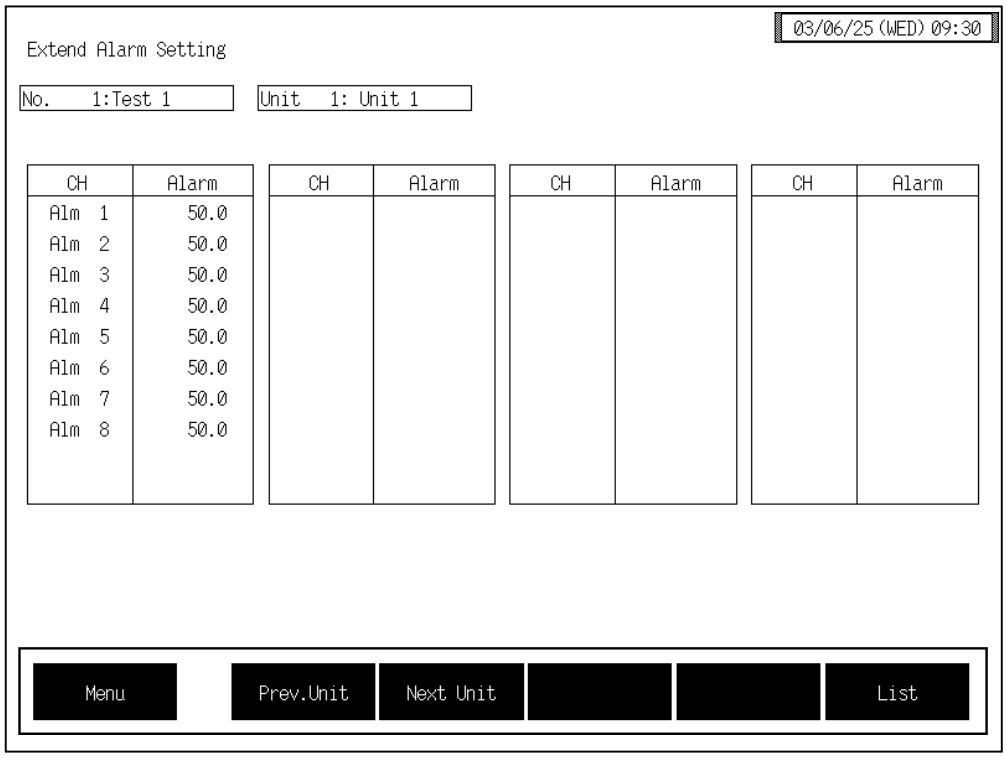
AL2: Sets the AI alarm 2 set value.
Setting range: Within display scale range
Factory set value: Process high alarm: 100.0
Process low alarm: 0.0
No alarm function: 100.0
The position of the decimal point differs depending on the AI decimal point position setting (P. 3-229).

Unit: Displays the engineering unit.
The engineering unit can be changed with the OPC initial "AI Unit Set" screen (P. 3-157).

3.9.12 Extension alarm setting screen (Job file)

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.9.9 Basic configuration of job file data screen (P. 3-136)**.



CH: Displays the extension alarm channel name.
The channel name can be changed with the OPC initial "EX-Alarm CH Name Set" screen (P. 3-160).

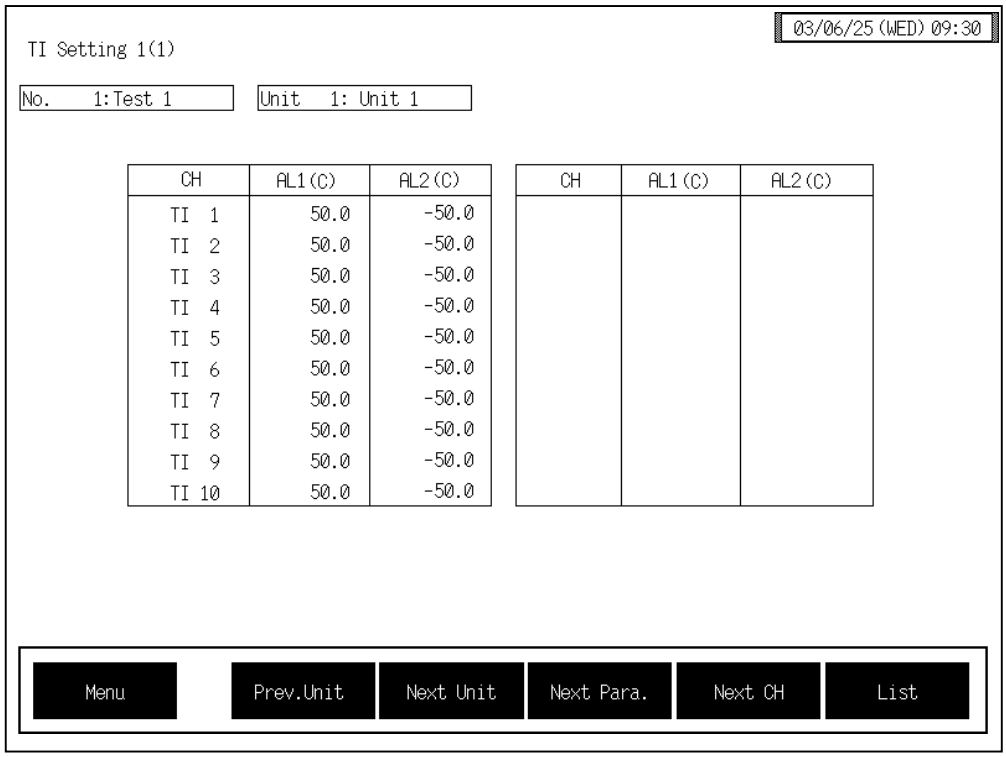
Alarm: Sets the event DO extension alarm set value.
Setting range: TC/RTD input: Within input range or span range
Current/voltage input: Within display scale or span range
Factory set value: 0
The position of the decimal point differs depending on the input range.

3.9.13 TI setting screen (Job file)

There are TI setting 1 and TI setting 2 screens in the TI setting. Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.9 Basic configuration of job file data screen (P. 3-136)**.

■ TI setting 1 screen

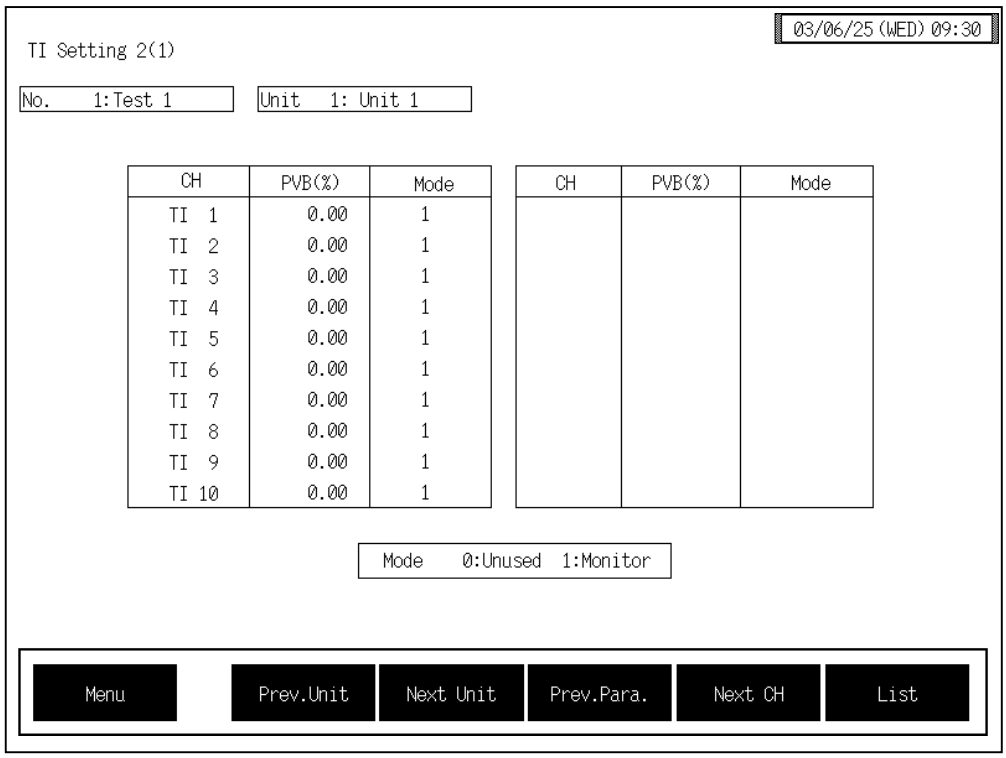


CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

AL1 (C): Sets the TI alarm 1 set value.
Setting range: Within input range
Factory set value: Process high alarm: Input range (high limit)
Process low alarm: Input range (low limit)
No alarm function: Input range (high limit)
The position of the decimal point differs depending on the input range.

AL2 (C): Sets the TI alarm 2 set value.
Setting range: Within input range
Factory set value: Process high alarm: Input range (high limit)
Process low alarm: Input range (low limit)
No alarm function: Input range (high limit)
The position of the decimal point differs depending on the input range.

■ TI setting 2 screen



CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

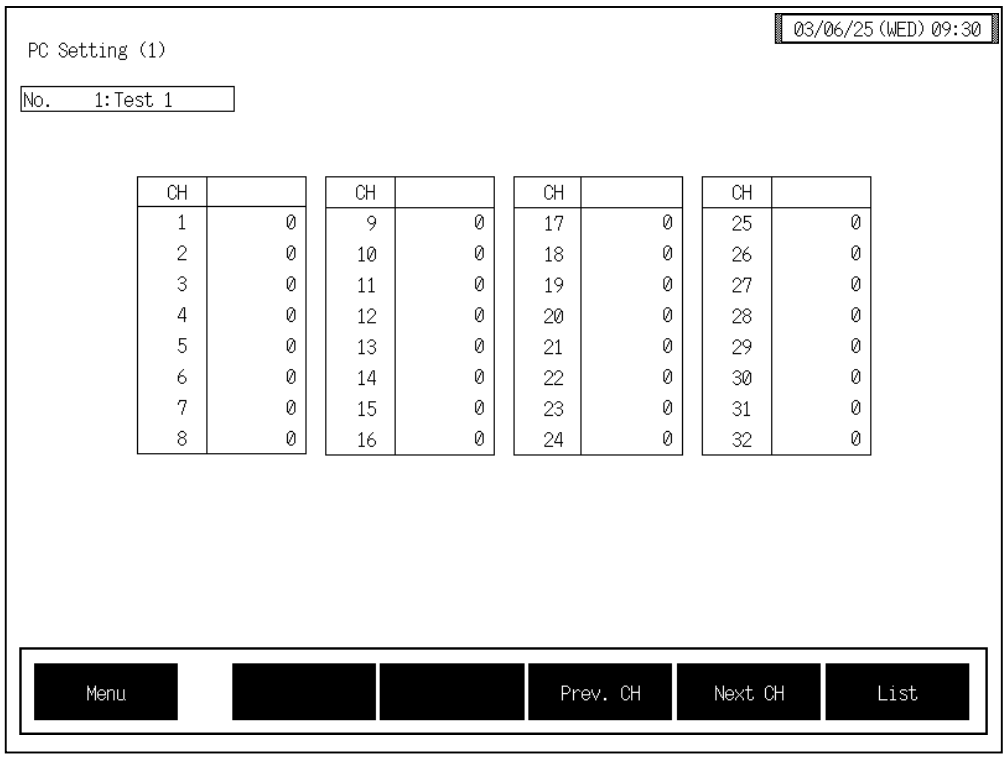
PVB (%): Sets the bias added to the TI measured value for sensor correction.
Setting range: −5.00 to +5.00 of span
Factory set value: 0.00

Mode: Sets the TI channel (H-TI-A/B/C module) usage state.
Setting range: 0: Unused
If set to "Unused," no monitor and alarm monitor is performed.
1: Used
Monitor and alarm monitoring are performed.
Factory set value: 1

3.9.14 PC setting screen (Job file)

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.9.9 Basic configuration of job file data screen (P. 3-136)**.



CH: Displays the device memory channel number.
CH1 to CH256: $L8500 to 8755 (SRAM cassette internal memory number)

PC: Sets the device data on the programmable controller.
Setting range: −32768 to +32767
Factory set value: 0

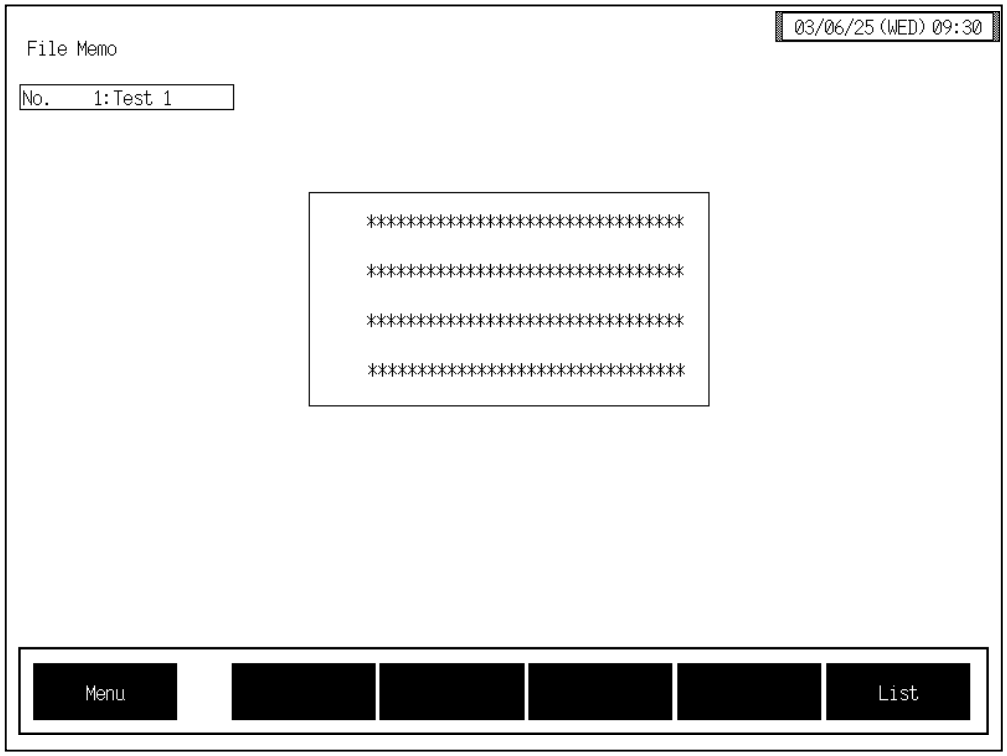
This is valid only when the programmable controller is connected.

3.9.15 Memo setting screen (Job file)

This screen is for registering job file memos. Use this screen to register job file headers, contents, etc.

☞ For the setting procedure, see the **3.2.3 Text editing (P. 3-18)**.

☞ For the function keys and other items, see the **3.9.9 Basic configuration of job file data screen (P. 3-136)**.



Memo setting: Sets job file memos etc. Up to four memos can be registered in each job file.
Setting range: Within 32 characters
Factory set value: Blank (No memo is set.)

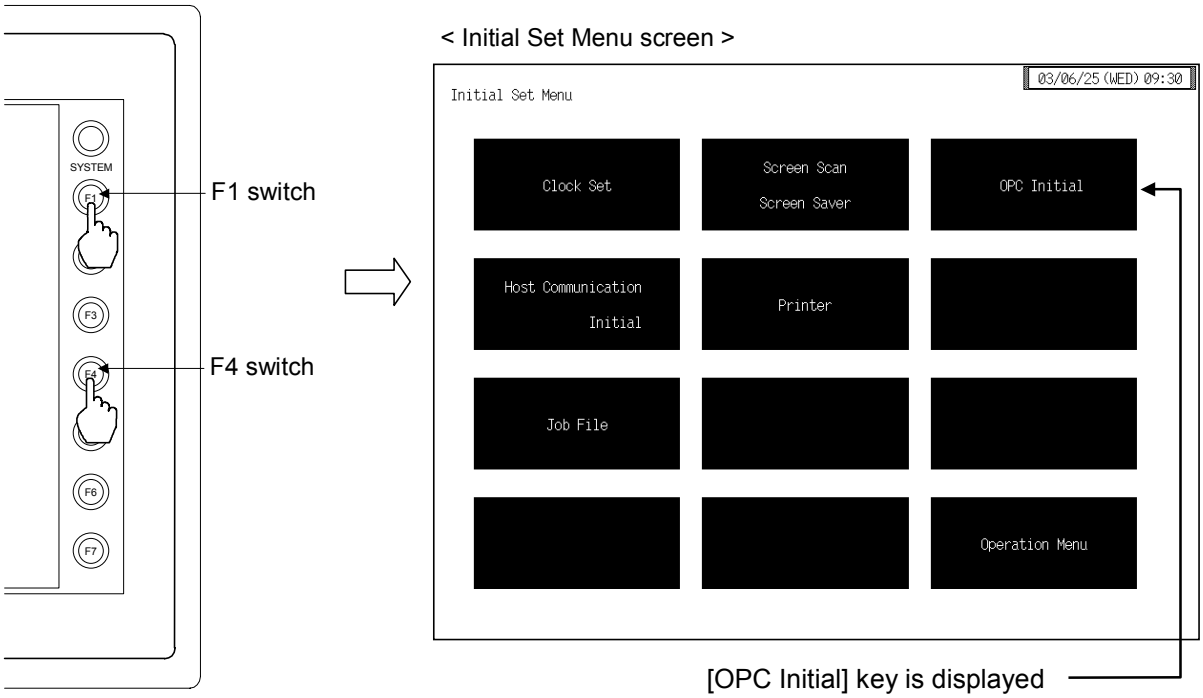
3.9.16 OPC initial menu screen

The OPC initial screen is the screen for making settings concerning the operation panel OPC-V07 itself. The [OPC Initial] key for changing the display to the “OPC Initial Menu” screen is protected, so you cannot change to this screen without removing the protection.

■ Releasing OPC initial calling up key protect

1. Touch the [Initial Set] key on the “Operation Menu” screen to change the display to the “Initial Set Menu” screen.

2. Press and hold the [F1] switch, and press the [F4] switch at the same time.
[OPC Initial] key is displayed, and key operation becomes valid.



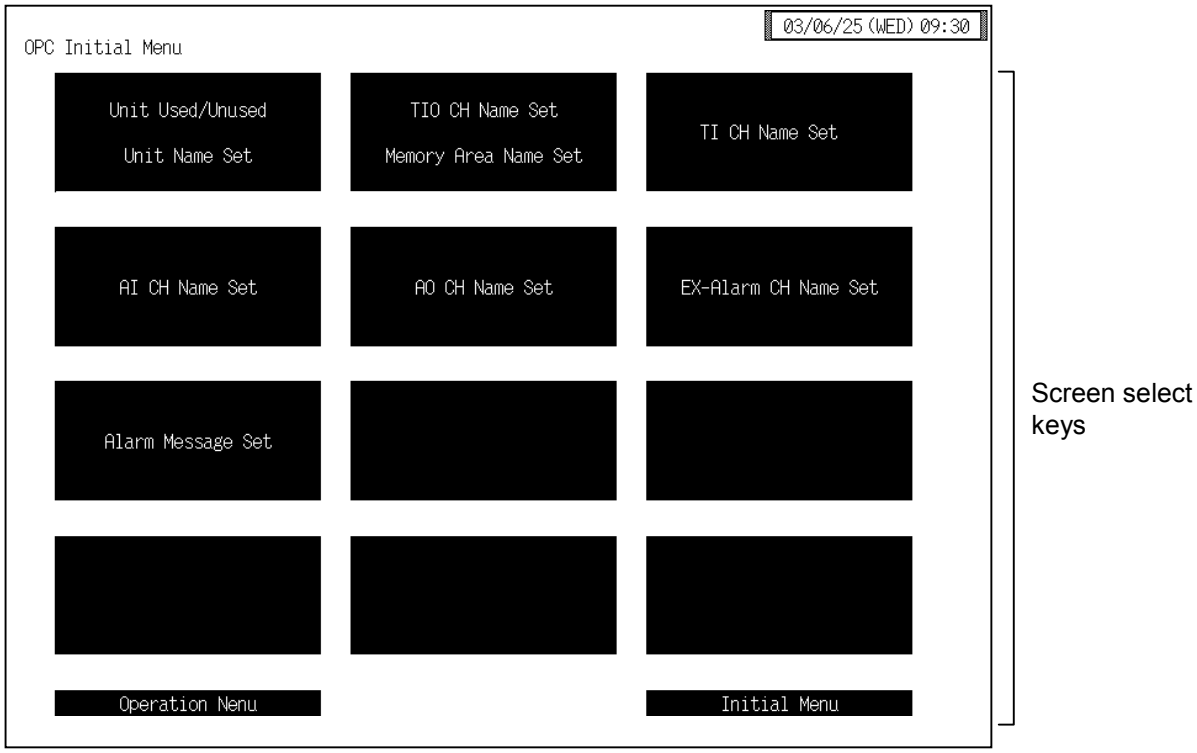
This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

After the [OPC Initial] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the “Initial Set Menu” screen again to perform the protect release operation.

3. Touching the [OPC Initial] key displayed changes the “OPC Initial Menu” screen.

■ OPC initial menu screen

The OPC initial menu screen is for selecting setting items relating to the OPC initial.



Screen select keys:

Unit Used/Unused, Unit Name Set:
Touching this key changes to the "Unit Used/Unused, Unit Name Set, (C)/(F) Set" screen.

TIO CH Name Set, Memory Area Name Set:
Touching this key changes to the "TIO CH Name Set, Memory Area Name Set" screen.

TI CH Name Set: Touching this key changes to the "TI CH Name Set" screen.

AI CH Name Set: Touching this key changes to the "AI CH Name Set" screen.

AO CH Name Set:
Touching this key changes to the "AO CH Name Set" screen.

EX-Alarm CH Name Set:
Touching this key changes to the "EX-Alarm CH Name Set" screen.

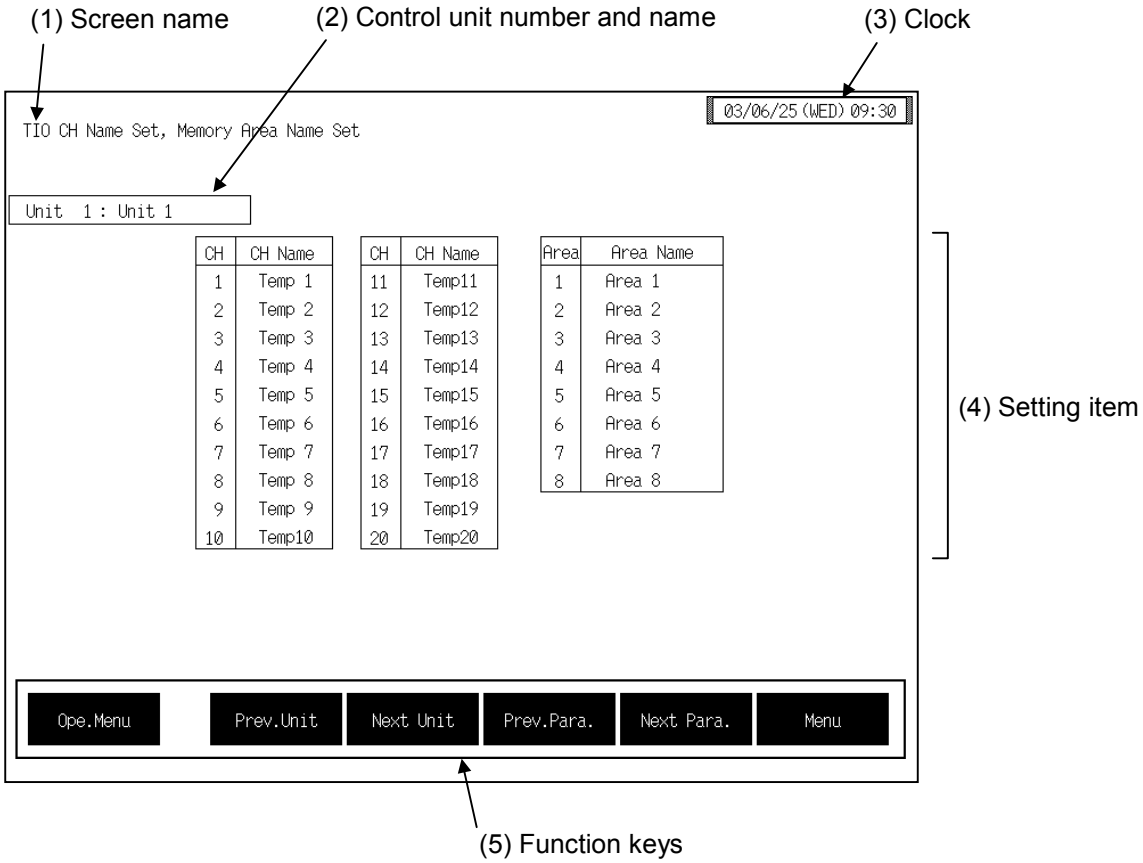
Alarm Message Set:
Touching this key changes to the "Alarm Message Set" screen.

Operation Menu: Touching this key changes to the "Operation Menu" screen.

Initial Menu: Touching this key changes to the "Initial Set Menu" screen.

3.9.17 Basic configuration of OPC initial screen

The basic configuration of each OPC initial screen is as shown below.
Example: TIO CH Name Set, Memory Area Name Set screen



(1) Screen name: Displays the screen name.

(2) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

(3) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(4) Setting item: Displays the item and data. Details of display varies depending on the each OPC initial screen.

(5) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Ope. Menu: Touching this key changes to the "Operation Menu" screen.

Continued on the next page.

Continued from the previous page.

Prev. Unit:	Touching this key changes to the screen for the previous unit. When there is only one control unit, touching this key does not change the display.
Next Unit:	Touching this key changes to the screen for the next unit. When there is only one control unit, touching this key does not change the display.
Prev. Para.:	Touching this key changes to the screen one before the one being displayed.
Next Para.:	Touching this key changes to the screen one after the one being displayed.
Menu:	Touching this key changes to the “OPC Initial Menu” screen.

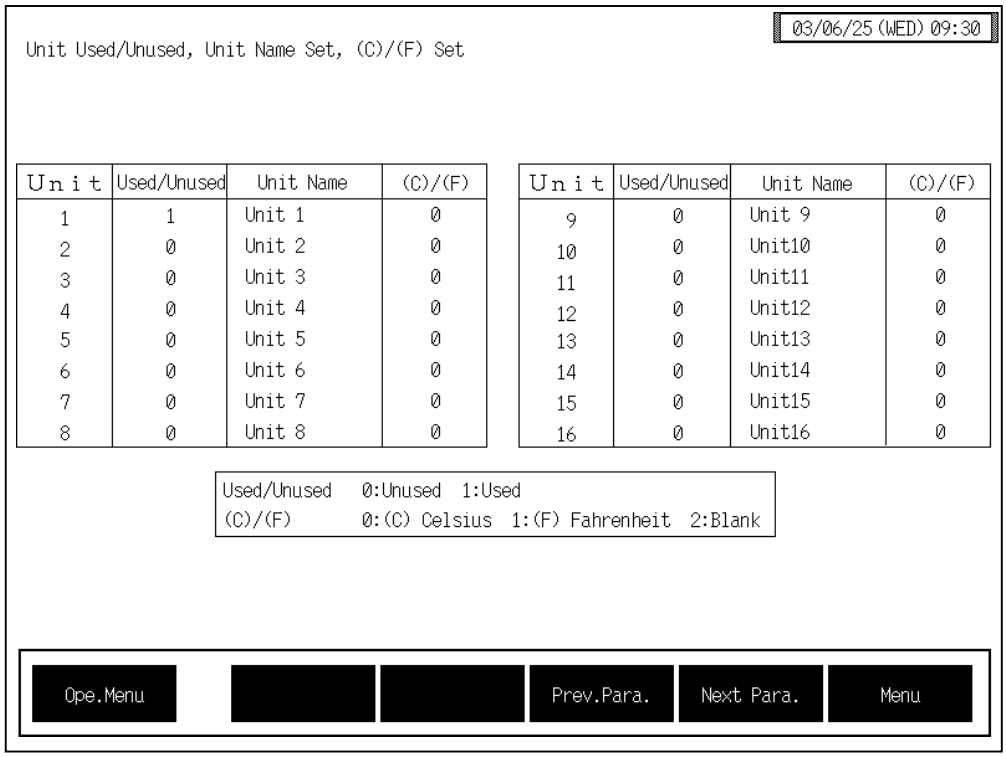
3.9.18 Each OPC initial screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.9.17 Basic configuration of OPC initial screen (P. 3-151)**.

■ Unit used/unused, Unit name, Temperature input unit screen



Unit	Used/Unused	Unit Name	(C)/(F)
1	1	Unit 1	0
2	0	Unit 2	0
3	0	Unit 3	0
4	0	Unit 4	0
5	0	Unit 5	0
6	0	Unit 6	0
7	0	Unit 7	0
8	0	Unit 8	0

Unit	Used/Unused	Unit Name	(C)/(F)
9	0	Unit 9	0
10	0	Unit10	0
11	0	Unit11	0
12	0	Unit12	0
13	0	Unit13	0
14	0	Unit14	0
15	0	Unit15	0
16	0	Unit16	0

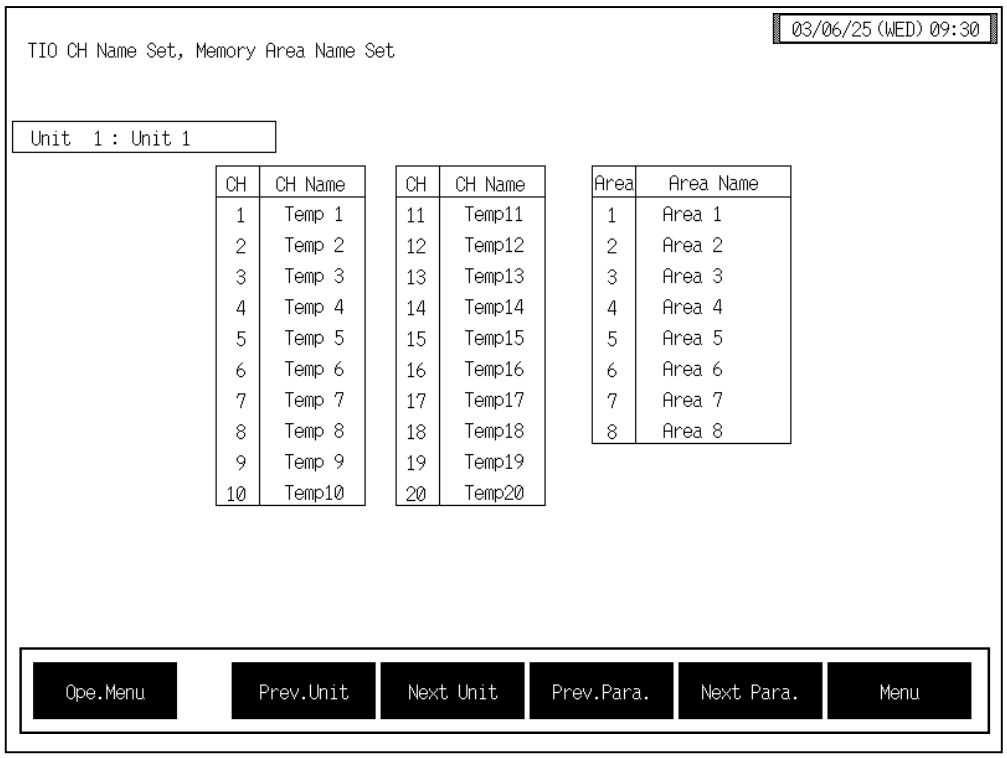
Unit: Displays the control unit number.

Used/Unused: Sets the used/unused of each control unit.
Setting range: 0: Unused
1: Used
Factory set value: Control unit 1: 1
Control unit 2 to 16: 0

Unit Name: Sets the control unit name.
Setting range: Within 12 characters
Factory set value: Unit 1 to 16

(C)/(F): Sets the TIO channel temperature-engineering unit.
Setting range: 0: °C
1: °F
2: Blank (not displayed)
Factory set value: 0

■ Channel name, Memory area name screen



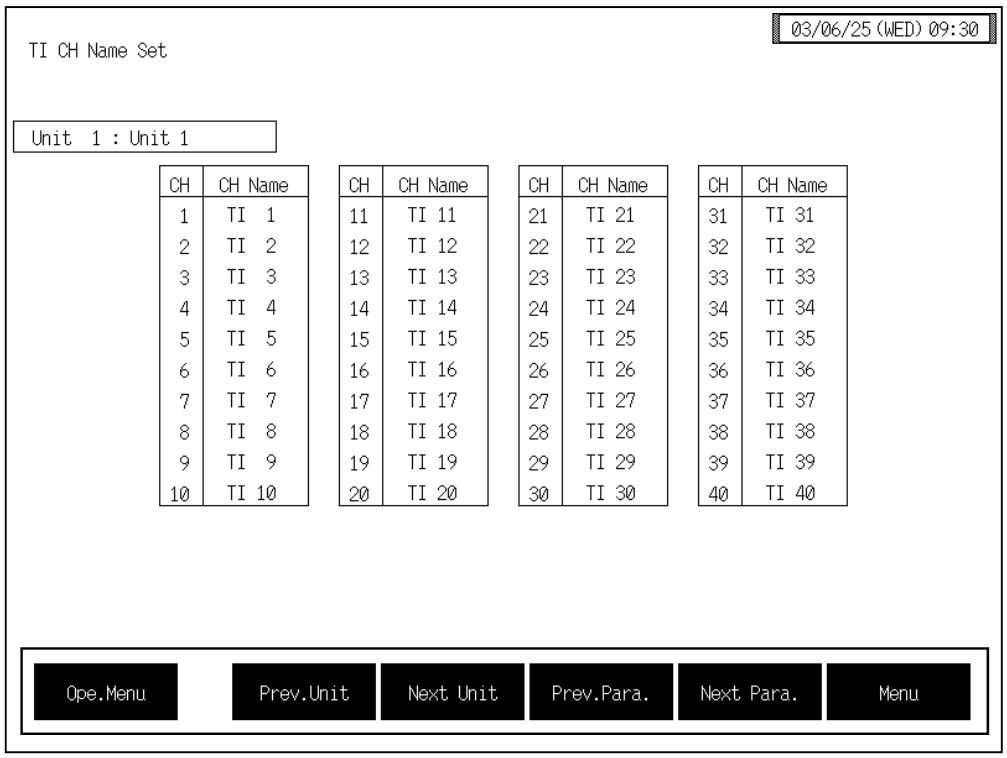
CH: Displays the TIO channel number.

CH Name: Sets the TIO channel (H-TIO □, H-CIO-A module) name.
Setting range: Within 8 characters
Factory set value: Temp 1 to 20

Area: Displays the memory area number.

Area Name: Sets the memory area name.
Setting range: Within 12 characters
Factory set value: Area 1 to 8

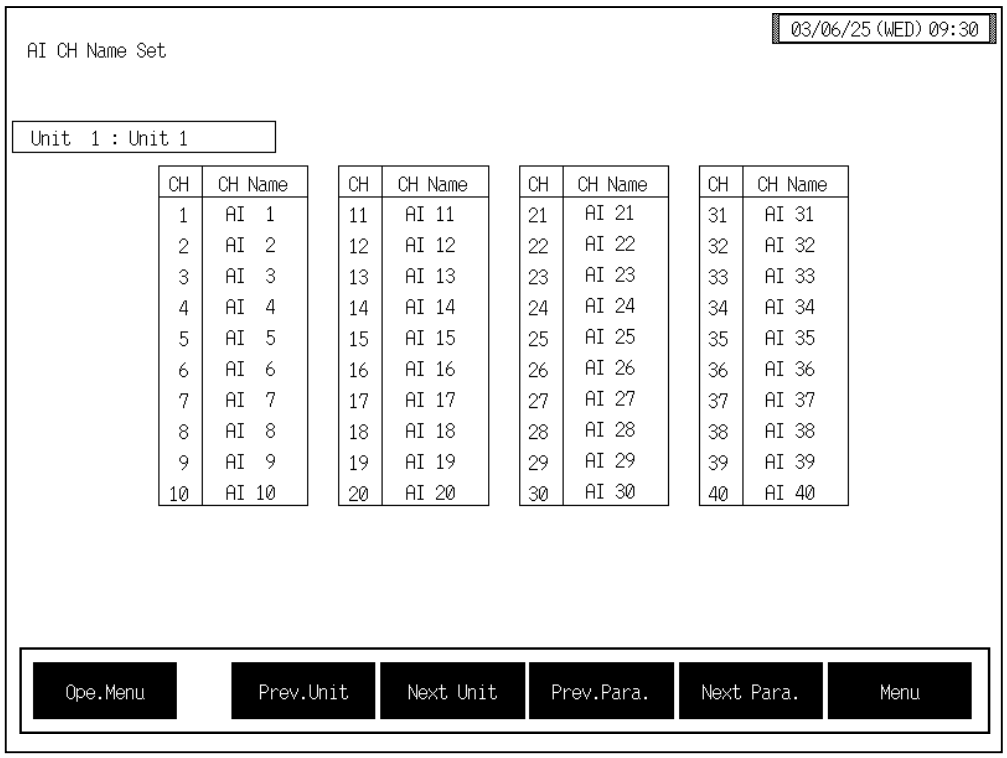
■ TI channel name screen



CH: Displays the TI channel number.

CH Name: Sets the TI channel (H-TI-A/B/C module) name.
Setting range: Within 8 characters
Factory set value: TI 1 to 40

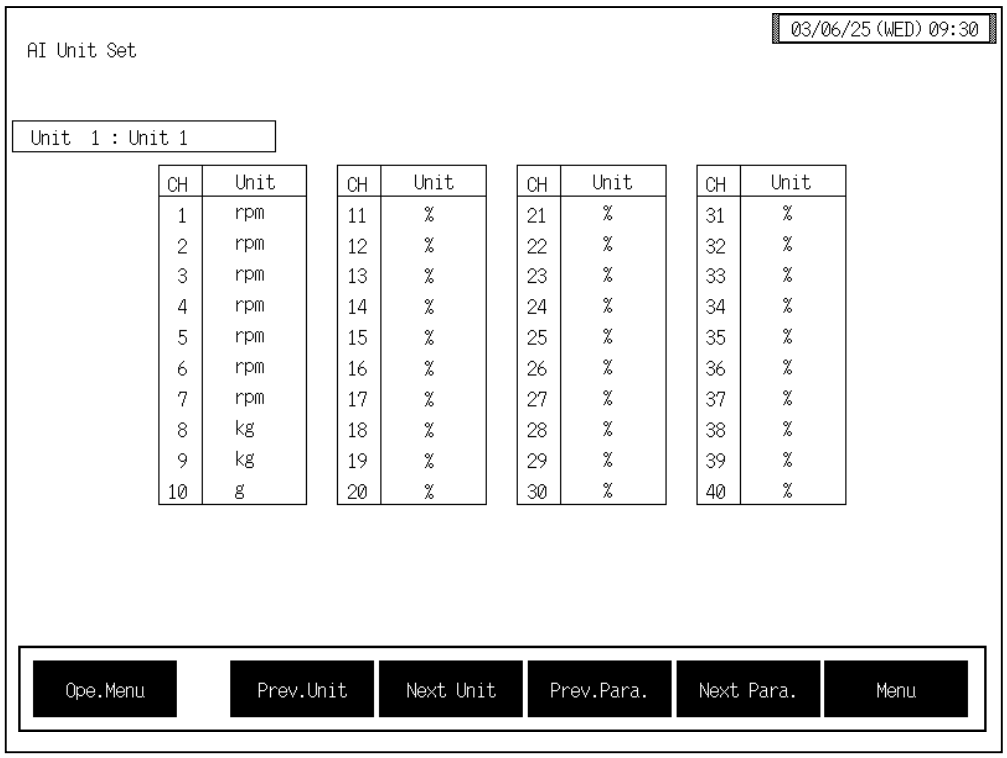
■ AI channel name screen



CH: Displays the AI channel number.

CH Name: Sets the AI channel (H-AI-A/B module) name.
Setting range: Within 8 characters
Factory set value: AI 1 to 40

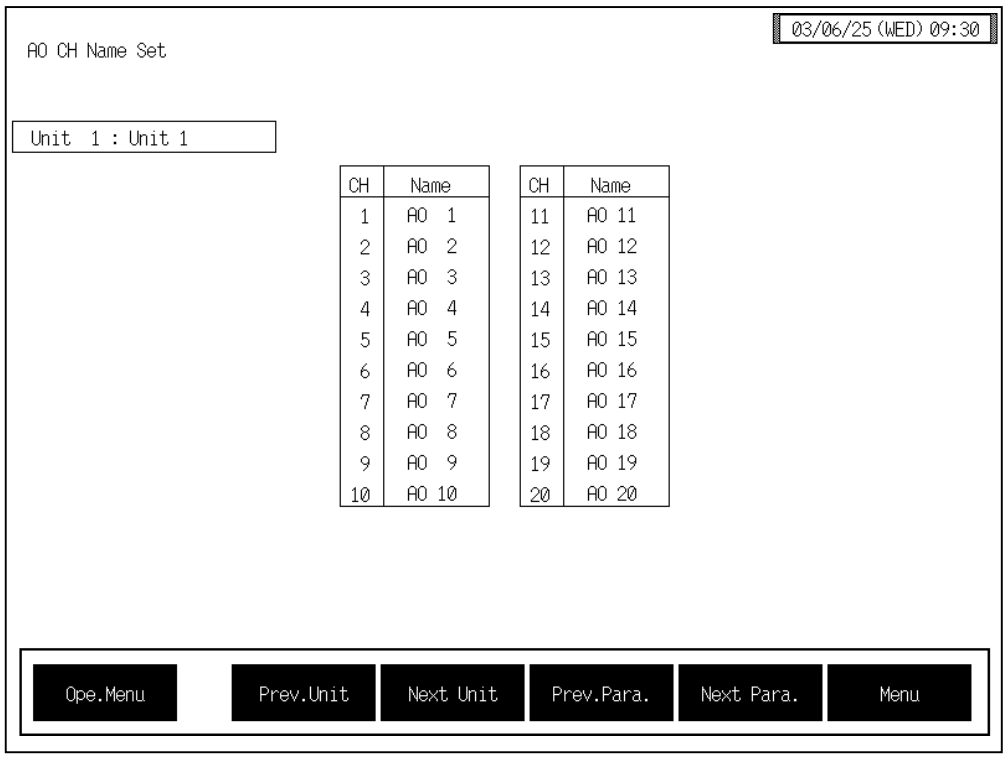
■ AI unit screen



CH: Displays the AI channel number.

Unit: Sets the engineering unit of AI channel (H-AI-A/B module).
Setting range: Within 8 characters
Factory set value: %

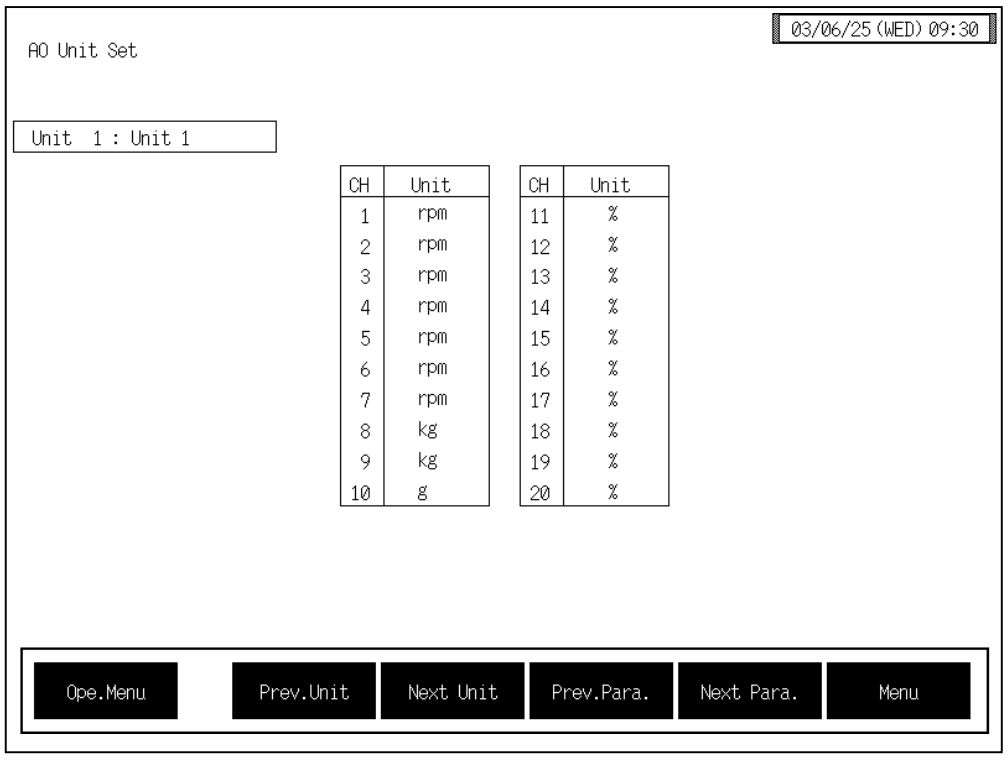
■ AO channel name screen



CH: Displays the AO channel number.

Name: Sets the AO channel (H-AO-A/B module) name.
Setting range: Within 8 characters
Factory set value: AO 1 to 20

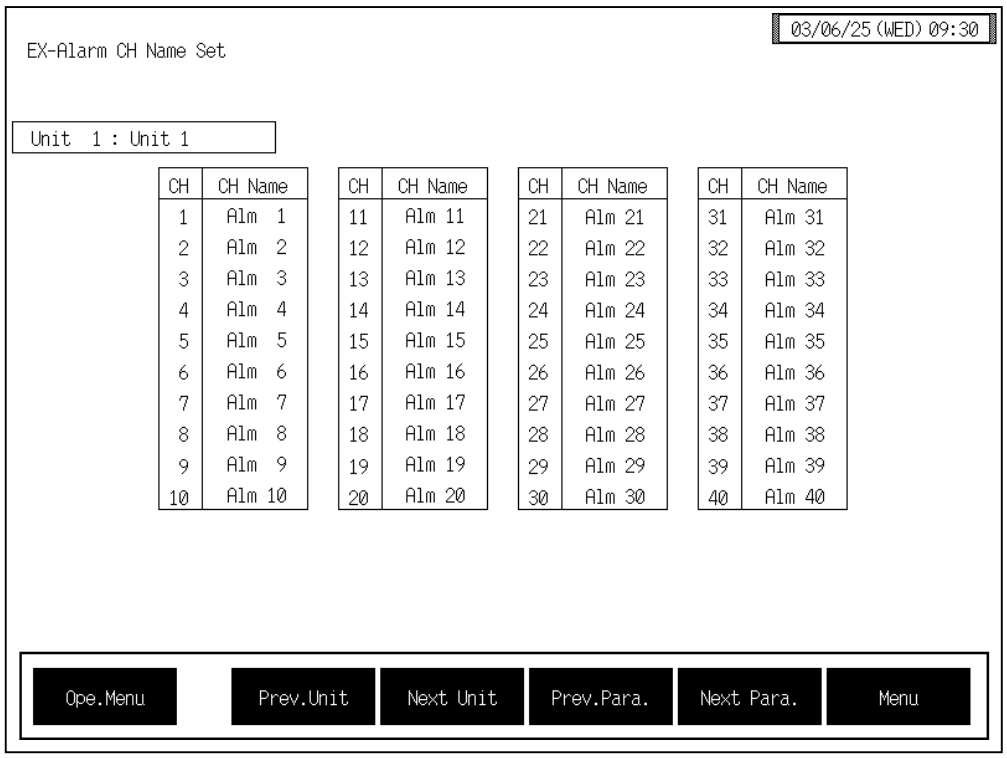
■ AO unit screen



CH: Displays the AO channel number.

Unit: Sets the engineering unit of AO channel (H-AO-A/B module).
Setting range: Within 8 characters
Factory set value: %

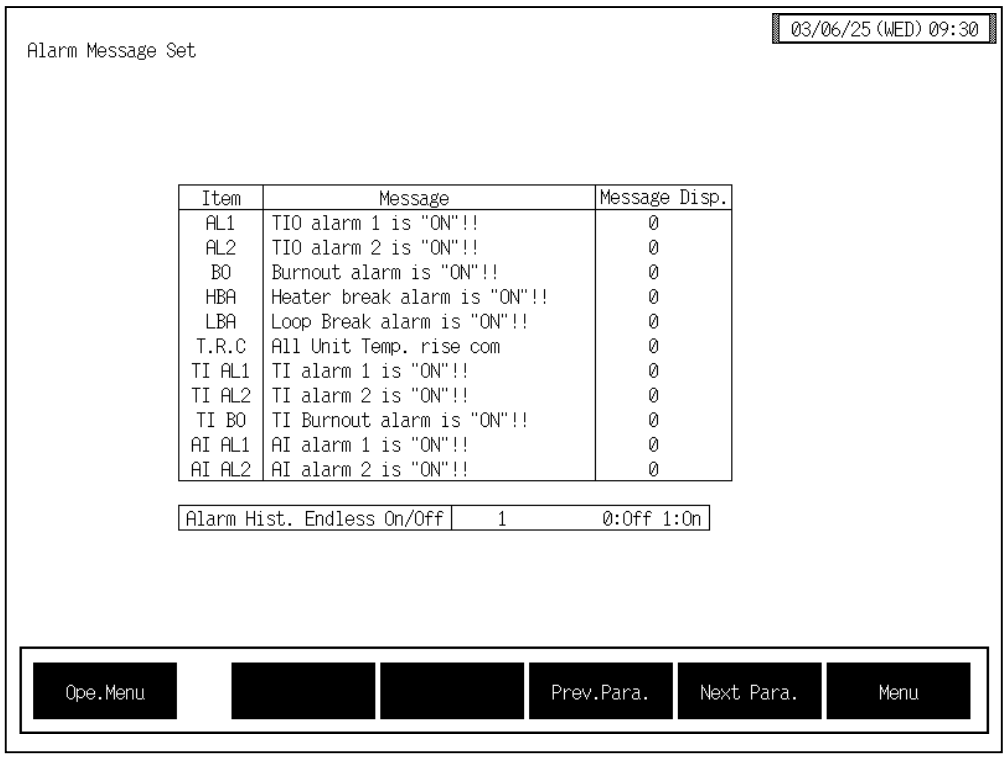
■ Extension alarm channel name screen



CH: Displays the event DO (H-DO-C module) channel number.

CH Name: Sets the extension alarm channel (H-DO-C module) name.
Setting range: Within 8 characters
Factory set value: Alm 1 to 40

■ Alarm message setting screen



Item: Displays the alarm item.

Message: The contents of messages corresponding to alarms occurring during are set.
Alarm message is displayed in the message section on the operation monitor screen.
Setting range: Within 32 characters
Factory set value: See the alarm message list.

Alarm message list

Item		Message (Factory set value)	Priority order
AL1	Alarm 1	TIO alarm 1 is “ON”!!	3
AL2	Alarm 2	TIO alarm 2 is “ON”!!	4
BO	Burnout	Burnout alarm is “ON”!!	1
HBA	Heater break alam	Heater break alarm is “ON”!!	2
LBA	Loop break alarm	Loop break alarm is “ON”!!	7
T.R.C	Temp. rise comp.	All unit temp. rise comp.	11
TI_AL1	TI alarm 1	TI alarm 1 is “ON”!!	9
TI_AL2	TI alarm 2	TI alarm 2 is “ON”!!	10
TI_BO	TI burnout	TI burnout is “ON”!!	8
AI_AL1	AI alarm 1	AI alarm 1 is “ON”!!	5
AI_AL2	AI alarm 2	AI alarm 2 is “ON”!!	6

The message of the burnout, heater break alarm, TIO alarm 1, TIO alarm 2, AI alarm 1, AI alarm 2, loop break alarm, TI burnout, TI alarm 1, TI alarm 2 is displayed if the relevant alarm occurs in any of the using channels. However, the message of temperature rise completion is displayed when temperature rises in all of the channels used are completed.

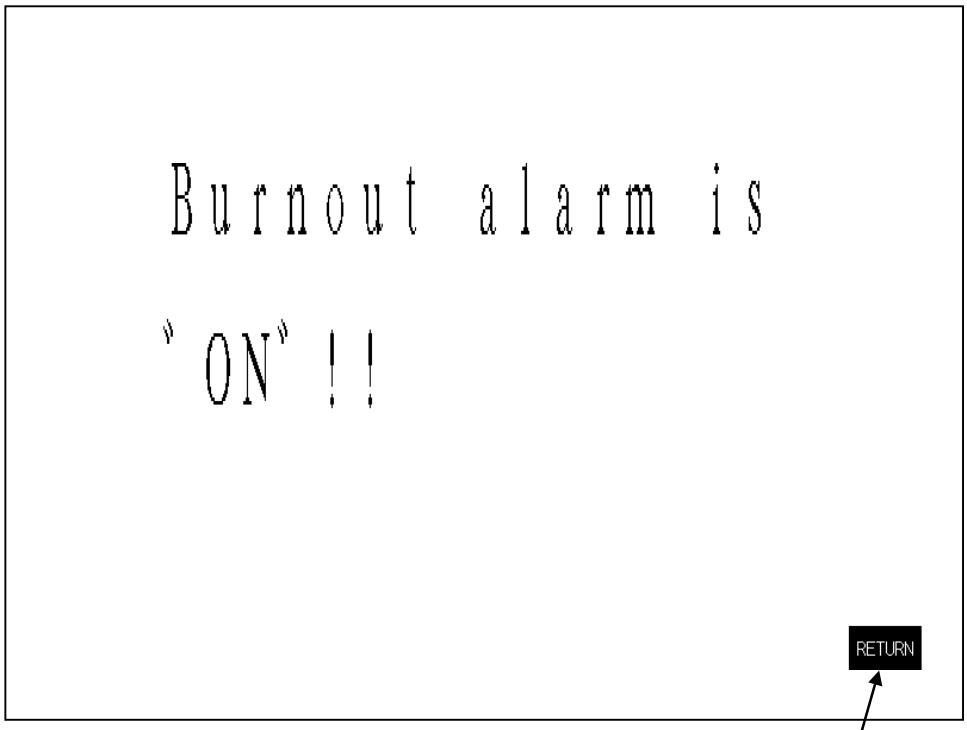
Message Disp.: Sets whether or not to display the "Alarm message monitor" screen.

Setting range: 0: Not displayed
1: Displayed
When the alarm occurs, the display automatically changes to the "Alarm message monitor" screen.

Factory set value: 0

<Alarm message monitor screen>

Example: Burnout occurrence



Return key
Touching this key returns the display to the screen it was showing before it changed to the "alarm message monitor" screen.

Alarm Hist. Endless On/Off:

Selects whether the alarm item recording stops when the prescribed number of alarms have been recorded or continues to record, bumping the oldest items from the history.

Recorded contents are displayed on the "Alarm history" screen (P. 3-49).

Setting range: 0: off (Stops when 20 data items are recorded.)
1: on
(Older data is renewed and then recorded successively even if the number of data items exceeds 20.)

Factory set value: 0

3.9.19 Controller initial menu screen

The controller initial is the screen for making settings concerning the control unit itself.

⚠ WARNING

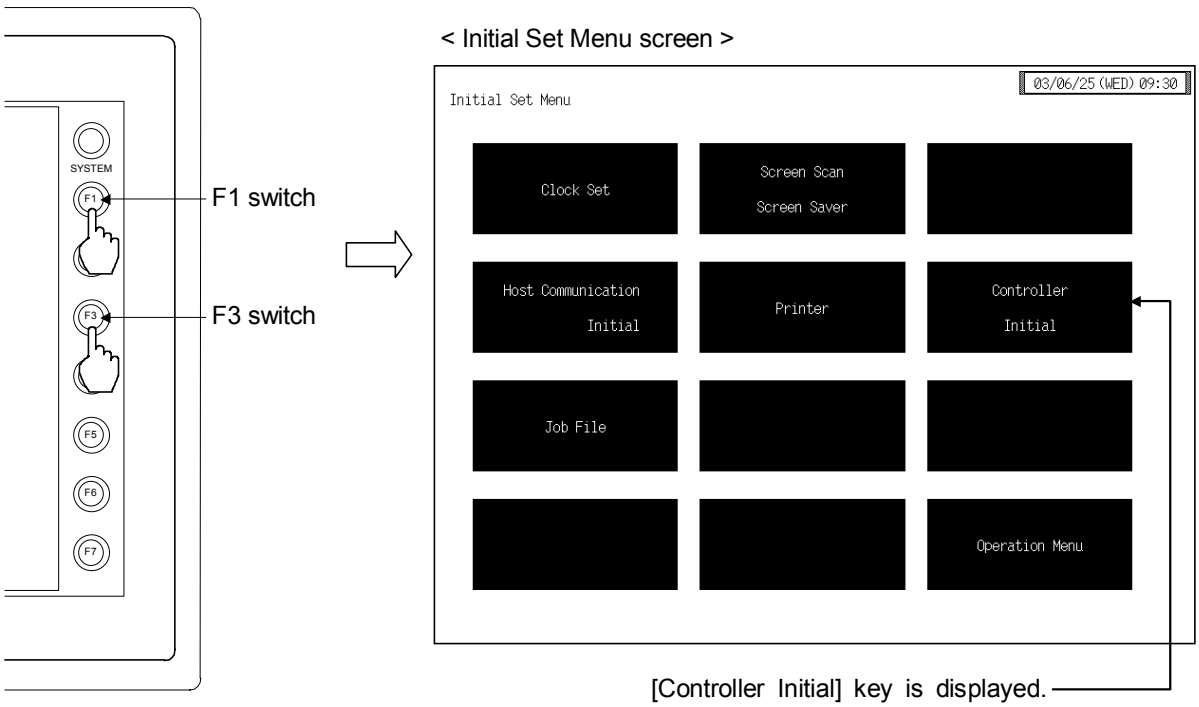
The Initial setting data should be set according to the application before setting any parameter related to operation. Once the Initial setting data is set correctly, those data is not necessary to be changed for the same application under normal conditions. If they are changed unnecessarily, it may result in malfunction or failure of the instrument. RKC will not bear any responsibility for malfunction or failure as a result of improper changes in the Initial setting.

The [Controller Initial] key for changing the display to the "Controller Initial Menu" screen is protected, so you cannot change to this screen without removing the protection.

■ Procedure for changing to controller initial mode

1. Touch the [Initial Set] key on the "Operation Menu" screen to change the display to the "Initial Set Menu" screen.

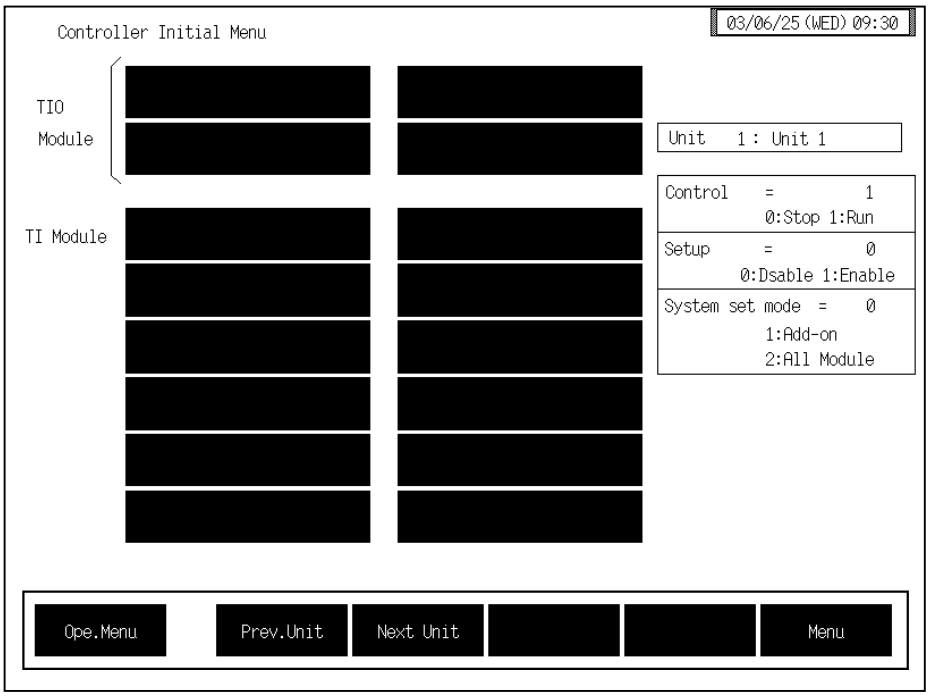
2. Press and hold the [F1] switch, and press the [F3] switch at the same time.
[Controller Initial] key is displayed, and key operation becomes valid (Releasing key protect).



This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

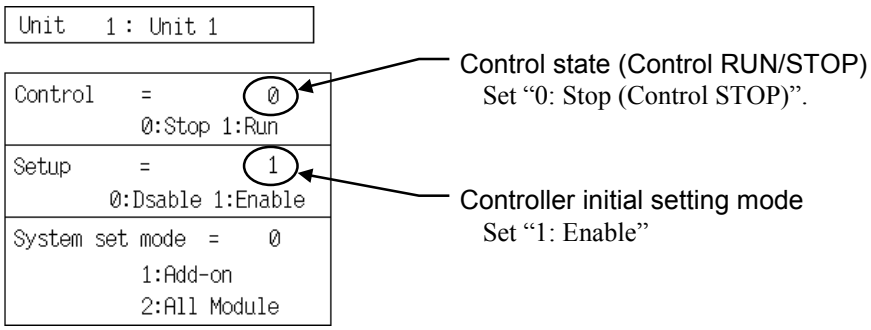
After the [Controller Initial] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the "Initial Set Menu" screen again to perform the protect release operation.

3. Touching the [Controller Initial] key displayed changes the "Controller Initial Menu" screen. Screen select keys are not displayed yet.

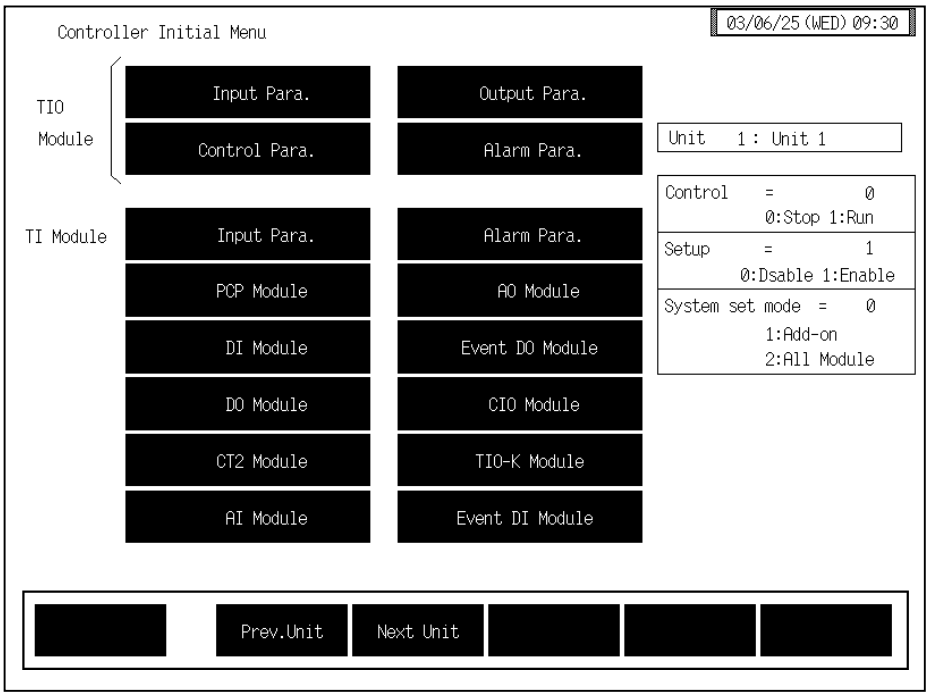


4. Set "0: Stop" to control.

5. Set "1: Enable" to Setup (Releasing initial lock).



6. Screen select keys are displayed on “Controller Initial Menu” screen.



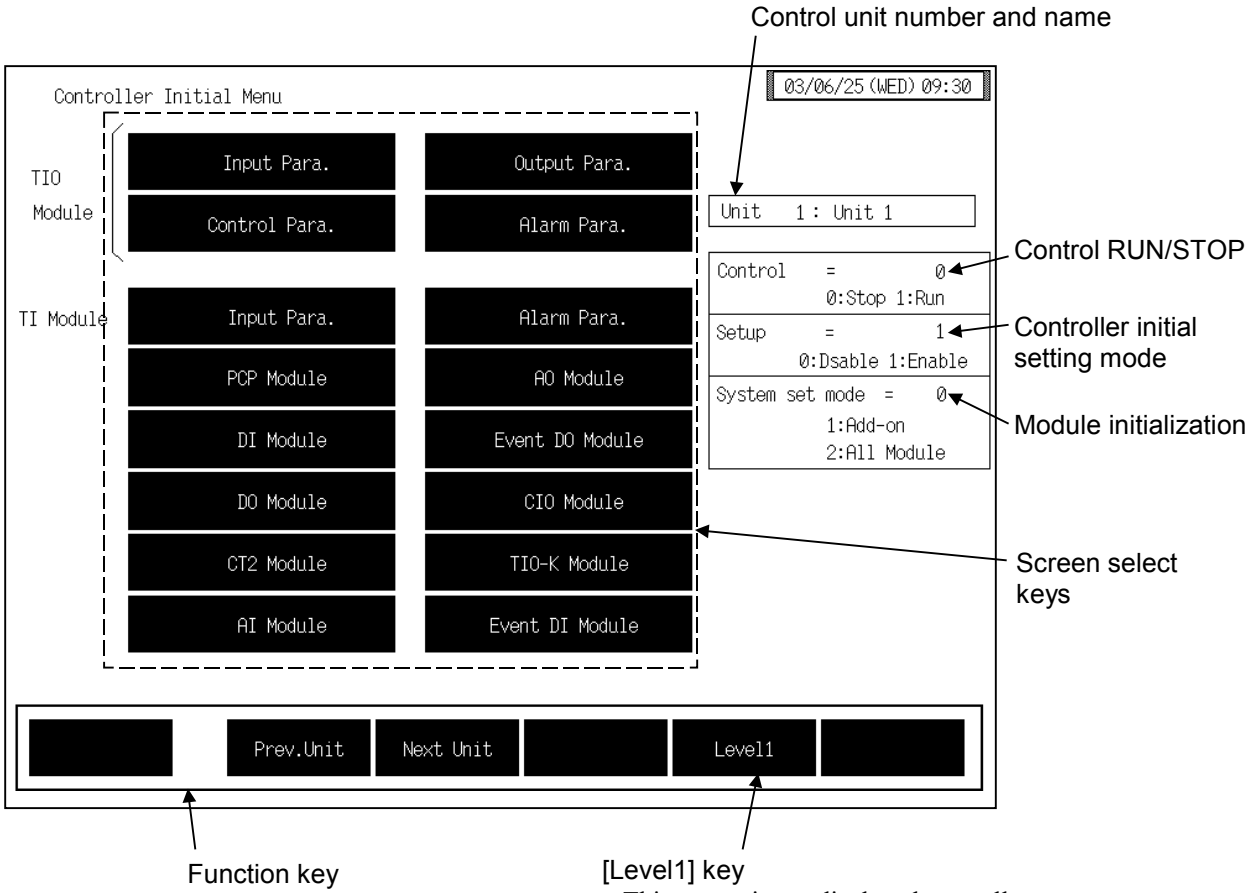
■ End of Controller Initial Settings

1. Set “0: Disable” to Setup on the “Controller Initial Menu” screen.

2. Touch the [Menu] key or [Ope.Menu] key to change the display to the “Initial Set Menu” screen or “Operation Menu” screen.

■ Controller initial menu

The controller initial menu screen allows the selection of each of the controller initial setting screen.



Control unit number and name:

Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

Control RUN/STOP: Sets the control state (control RUN/STOP).

Setting range: 0: Control STOP
1: Control RUN

Factory set value: 0

Controller initial setting mode:

Sets the controller initial setting mode.

Setting range: 0: Disable
1: Enable (Controller initial item can be set.)

Factory set value: 0

Module initialization:

Initialize the control unit.

Setting range: 0: Normal state (Initialization is not executed)
1: Initialize only the new module (Only modules which are not recognized by the H-PCP-□ module are initialized)
2: Initialize all module

Factory set value: 0

If "All module initialize" is executed, data within all modules are set to the default values. Therefore, perform this operation only after checking all the data.
Details of default:
Setting values or items other then those dependent on the model.

Only 1 or 2 can be used in the selecting and the value will automatically return to 0 after the selection of 1 or 2.

To change module configuration, use the following procedures:
- When a module is added to the control unit.....Initialize only the new module
- When a module is deleted from the control unit.....Initialize only the new module
- When a module is inserted (added) between the modules in the control unit.....Initialize all modules
- To change the arrangement of the modules in the control unit.....Initialize all modules

Screen select keys:

< TIO Module >

Input Para. : Touching this key changes to the "Digital filter (F1)" screen.

Output Para. : Touching this key changes to the "Output change rate limiter (PH, PL)" screen.

Control Para. : Touching this key changes to the "AT bias (GB),Setting change rate limiter (HH)" screen.

Alarm Para. : Touching this key changes to the "Alarm differential gap, Number of alarm delay times" screen.

< TI Module >

Input Para. : Touching this key changes to the "TI digital filter (F3)" screen.

Alarm Para. : Touching this key changes to the "TI alarm differential gap, Number of alarm delay times" screen.

< Other Modules>

PCP Module: Touching this key changes to the "PCP module setting" screen.

DI Module: Touching this key changes to the "DI module function selection (XK), Use Selection (H2)" screen.

DO Module: Touching this key changes to the "DO module function selection" screen.

CT2 Module: Touching this key changes to the "CT module use channel setting (ZF), Number of CT alarm delay times" screen.

AI Module: Touching this key changes to the "AI digital filter (F2)" screen.

AO Module: Touching this key changes to the "AO output change rate limiter (PW)" screen.

Event DO Module:
Touching this key changes to the "Event function selection (XF), Event corresponding channel (XG), Event mode transfer setting (XH)" screen.

CIO Module: Touching this key changes to the "Cascade tracking (XL), Cascade data selection (KD), Cascade DI function selection (H3)" screen.

TIO-K Module: Touching this key changes to the "Motor time, Proportioning adjustment counter" screen.

Event DI Module:
Touching this key changes to the "Event input type selection" screen.

Function keys:

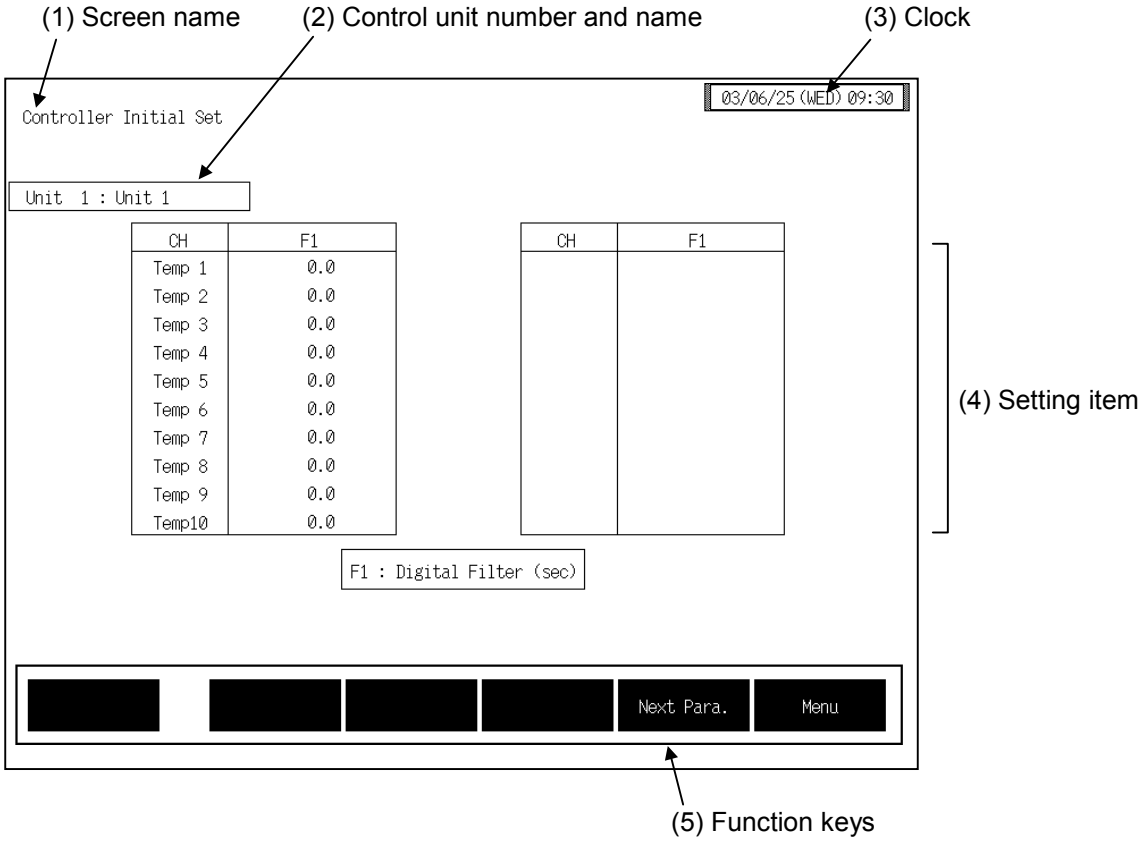
Prev. Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

Level1: Touching this key changes to the "Initial Setting 2 Menu" screen. This screen is not displayed normally. Protection release is necessary to display each screen.
For details, see the ■ **Releasing Level 1 calling up key protect (P. 3-210)**.

3.9.20 Basic configuration of controller initial screen

The basic configuration of controller initial screen is as shown below.
Example: Digital filter (F1) screen



(1) Screen name: Displays the screen name.

(2) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

(3) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(4) Setting item: Displays the item and data. Details of display varies depending on the each controller initial screen.

(5) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Next CH: Touching this key changes to the screen for the channel (CH) after the current one.

Prev. Para.: Touching this key changes to the screen one before the one being displayed.

Next Para.: Touching this key changes to the screen one after the one being displayed.

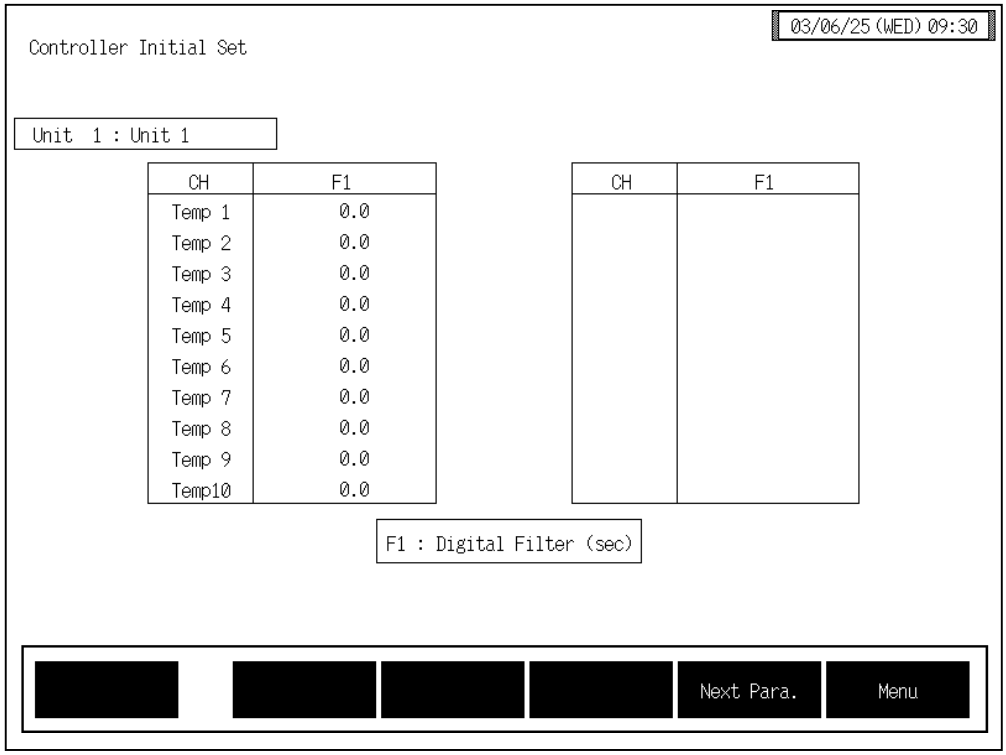
Menu: Touching this key changes to the "Controller Initial Menu" screen.

3.9.21 Temperature control module (H-TIO-□, H-CIO-A module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

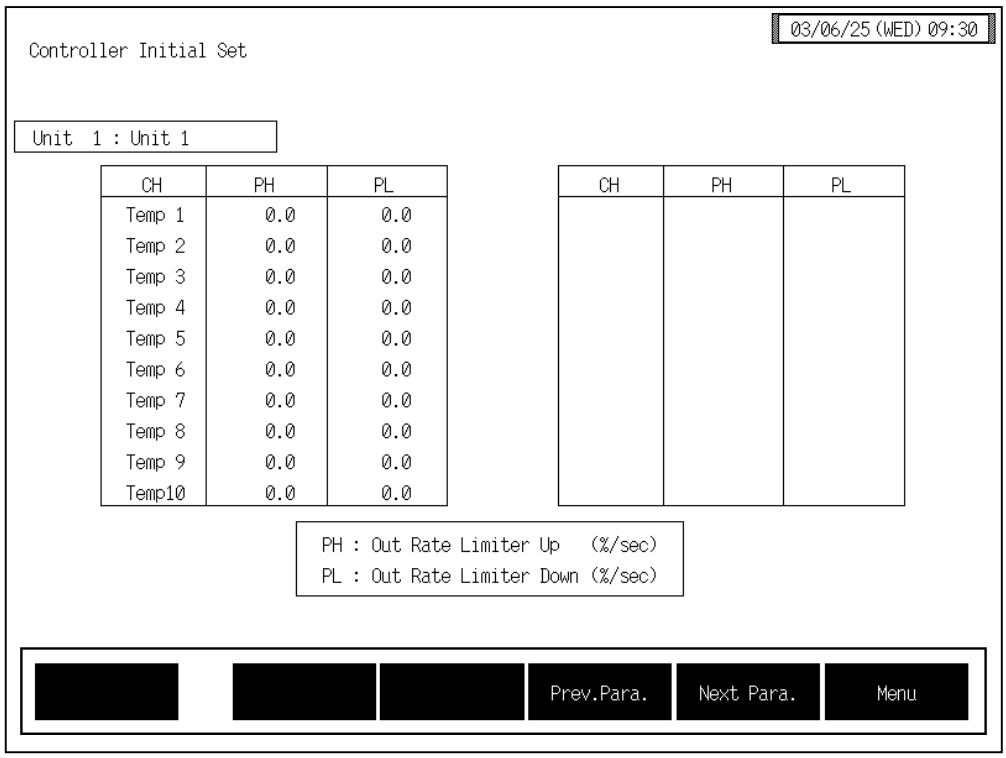
■ Digital filter (F1) screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Digital filter (F1): Decreases noise contained sensor input by using a first-order lag filter with the preset time constant.
Setting range: H-TIO-A/B/C/D/K/P:
0 to 100 seconds (0: OFF)
H-TIO-E/F/G/H/J/R, H-CIO-A:
0.0 to 100.0 seconds (0.0: OFF)
Factory set value: 0 or 0.0

■ Output change rate limiter (PH, PL) screen

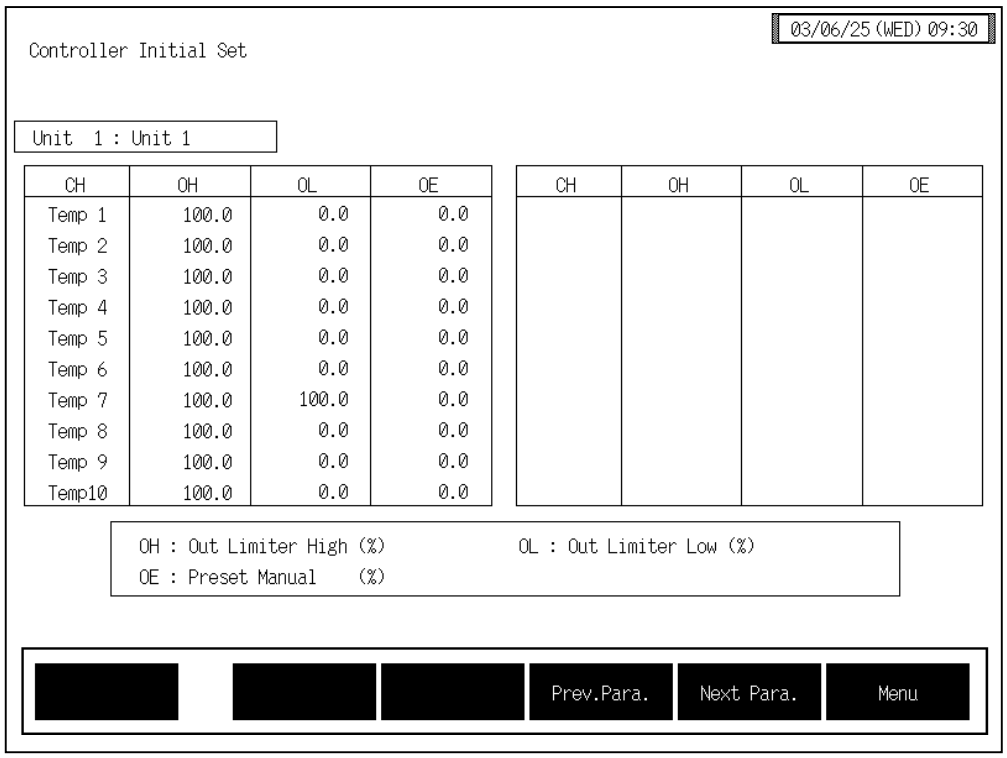


CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Output change rate limiter (up) [PH]:
When the output changes in the increasing direction, sets the gradient at which the outputs needs to be gradually increased.
Setting range: 0.0 to 100.0 %/second (0.0: OFF)
Setting will be invalid in ON/OFF control.
Factory set value: 0.0

Output change rate limiter (down) [PL]:
When the output changes in the decreasing direction, sets the gradient at which the outputs needs to be gradually decreased.
Setting range: 0.0 to 100.0 %/second (0.0: OFF)
Setting will be invalid in ON/OFF control.
Factory set value: 0.0

■ Output limiter (OH, OL), Manipulated output value at input error (OE) screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Output limiter (high) [OH]:
Sets the Output limiter (high limit).
Setting range: [Heat control, Position proportioning control]
Output limiter (low) to 105.0 %
[Heat/cool control]
Heat-side output limiter (high): −5.0 % to +105.0 %
Heat-side output limiter (low): −5.0 % (fixed)
Factory set value: 100.0

Output limiter (low) [OL]:
Sets the Output limiter (low limit).
Setting range: [Heat control, Position proportioning control]
−5.0 % to Output limiter (high)
Cool-side output limiter (high): −5.0 % to +105.0 %
Cool-side output limiter (low): −5.0 % (fixed)

For the heat/cool control, the cool-side output limiter (high) is set by using the value of the output limiter (low) [OL].

Factory set value: Heat control, Position proportioning control: 0.0
Heat/cool control: 100.0

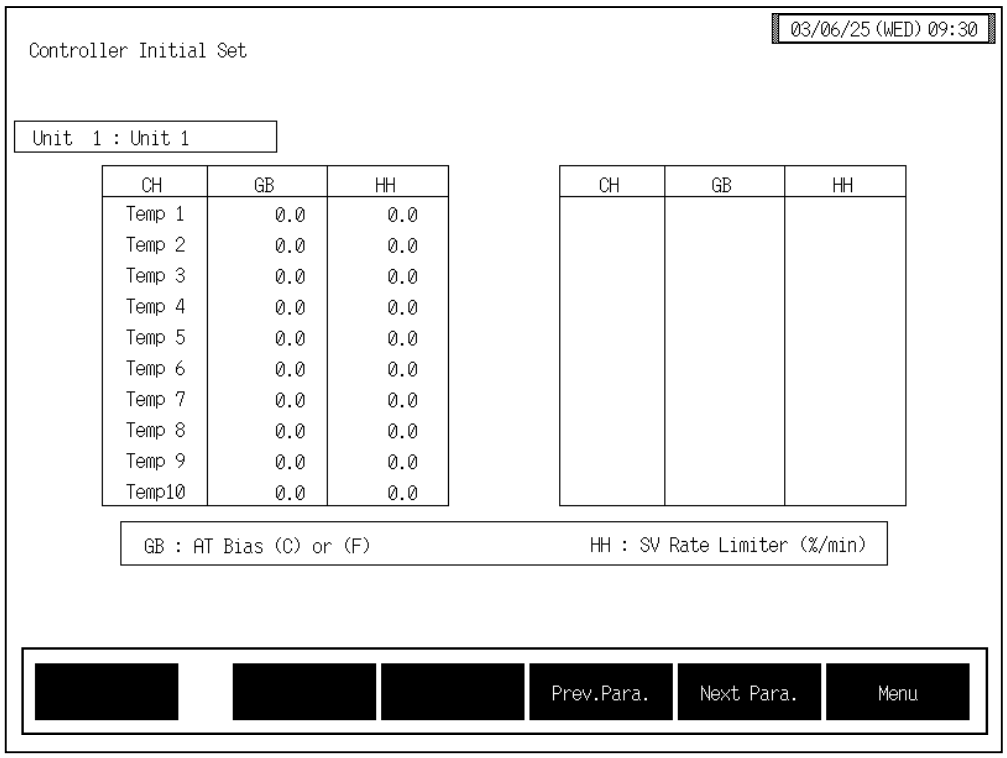
Manipulated output value at input error (OE):

Sets the manipulated output value (manual output value) to be output when temperature measured value exceeds the abnormal input trigger input.

Setting range: Heat control, Position proportioning control:
−5.0 to +105.0 %
Heat/cool control:
−105.0 to +105.0 %

Factory set value: 0.0

■ AT bias (GB), Setting change rate limiter (HH) screen

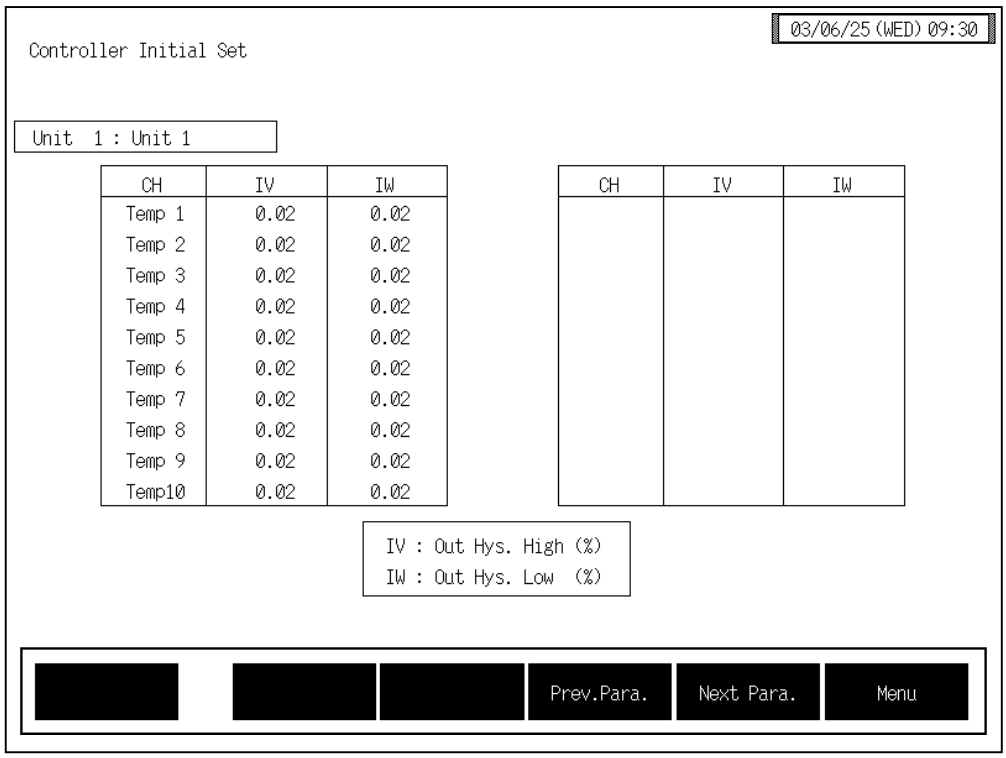


CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

AT bias (GB): Add the bias to the point (temperature set value) at which AT (autotuning) is executed and calculated.
Setting range: Within ± input span range
Factory set value: 0
The position of the decimal point differs depending on the input range.

Setting change rate limiter (HH):
When the temperature set value is changed, sets the gradient when the temperature set value is gradually changed up to the changed temperature set value.
Setting range: 0.0 to 100.0 % of span/minute
Factory set value: 0.0

■ ON/OFF control differential gap (IV, IW) screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

ON/OFF control differential gap (upper) [IV]:
Sets the differential gap larger than the temperature set value in ON/OFF action.
Setting range: 0.00 to 10.00 % of span
Factory set value: 0.02

ON/OFF control differential gap (lower) [IW]:
Sets the differential gap smaller than the temperature set value in ON/OFF action.
Setting range: 0.00 to 10.00 % of span
Factory set value: 0.02

■ Alarm differential gap, Number of alarm delay times screen

Alarm Differential Gap (%):

Sets the differential gap of alarm 1 and alarm 2.
Setting range: 0.00 to 10.00 % of span
Factory set value: 0.10

Number of Alarm delay times:

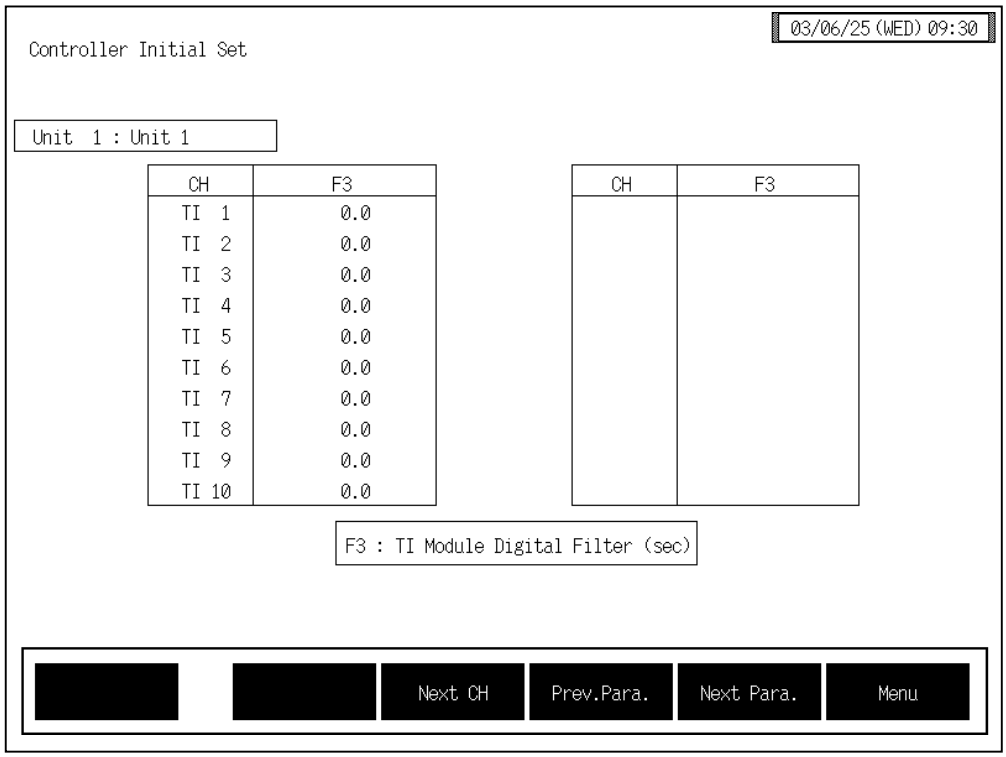
Sets the number of sampling period counting times until the alarm is turned ON after temperature measured value enters the alarm region.
Setting range: 0 to 255 times
Factory set value: 0

3.9.22 TI module (H-TI-A/B/C module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

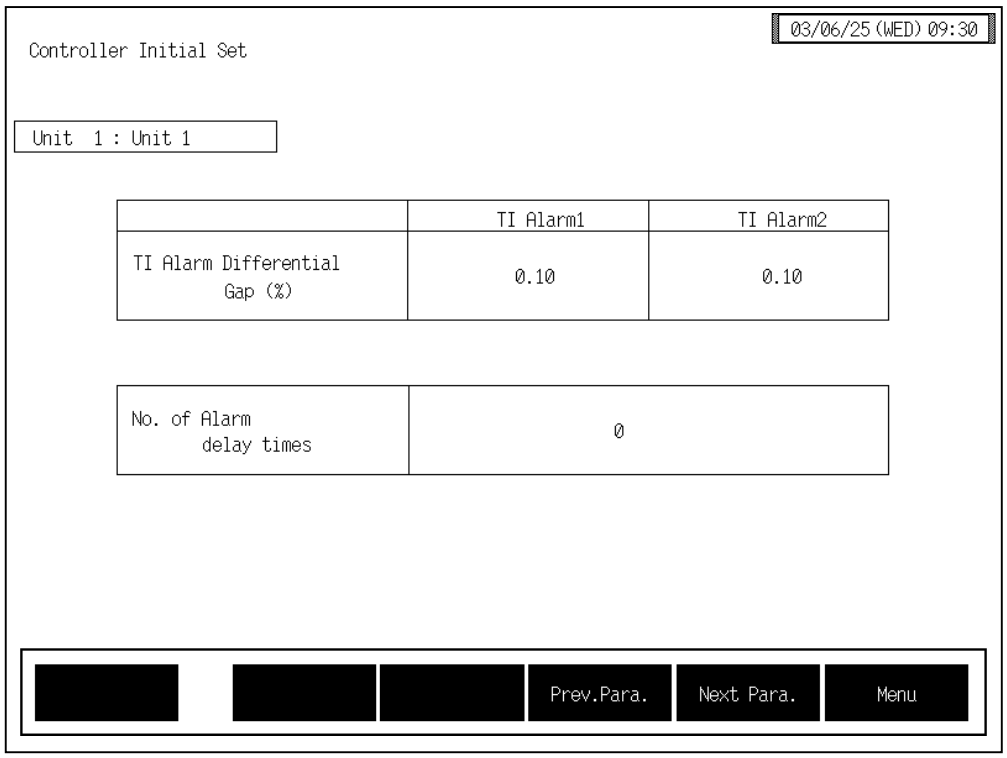
■ TI digital filter (F3) screen



CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

TI digital filter (F3):
Decreases noise contained sensor input by using a first-order lag filter with the preset time constant.
Setting range: 0.0 to 100.0 seconds (0.0: OFF)
Factory set value: 0.0

■ TI alarm differential gap, Number of alarm delay times screen



TI Alarm Differential Gap (%):

Sets the differential gap of TI alarm 1 and TI alarm 2.
Setting range: 0.00 to 10.00 % of span
Factory set value: 0.10

Number of Alarm delay times:

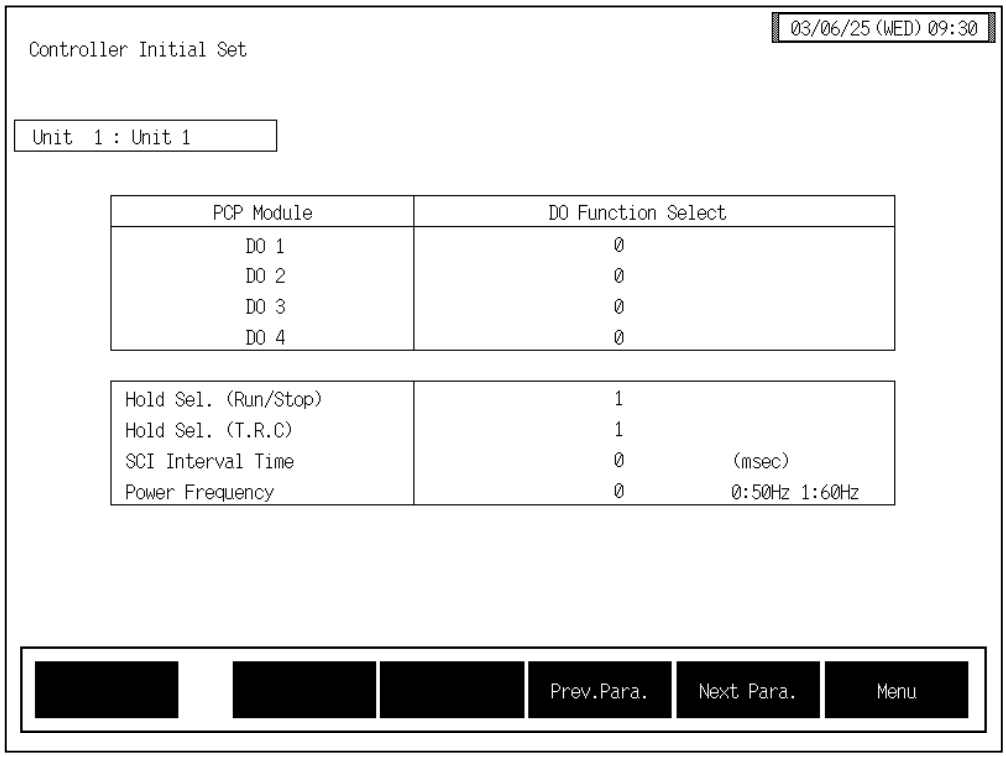
Sets the number of sampling period counting times until the alarm is turned ON after TI measured value enters the alarm region.
Setting range: 0 to 255 times
Factory set value: 0

3.9.23 PCP module (H-PCP-A/B/J module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ PCP module setting screen



DO Function Select: Sets the function No. to be assigned to the digital output (DO) terminals of the H-PCP-A/B/J module.

Setting range:
0: Unused (No alarm function)
1: Alarm 1/TI alarm 1
2: Alarm 2/TI alarm 2
3: Burnout
4: Heater break alarm (HBA)
5: Temperature rise completion output
6: AI alarm 1
7: AI alarm 2
8: Control loop break alarm (LBA)

Factory set value: Varies depending on the specification when ordering.

Setting will be valid for only DO1 and DO2 in case of H-PCP-B module.

DO 5 to DO 8 of the H-PCP-J module are as specified when ordered and cannot be changed.

Hold Sel. (Run/Stop):

Sets the control start power ON.
Setting range: 0: Not hold (Control start from STOP state)
1: Hold (Control start from state before STOP)
Factory set value: 1

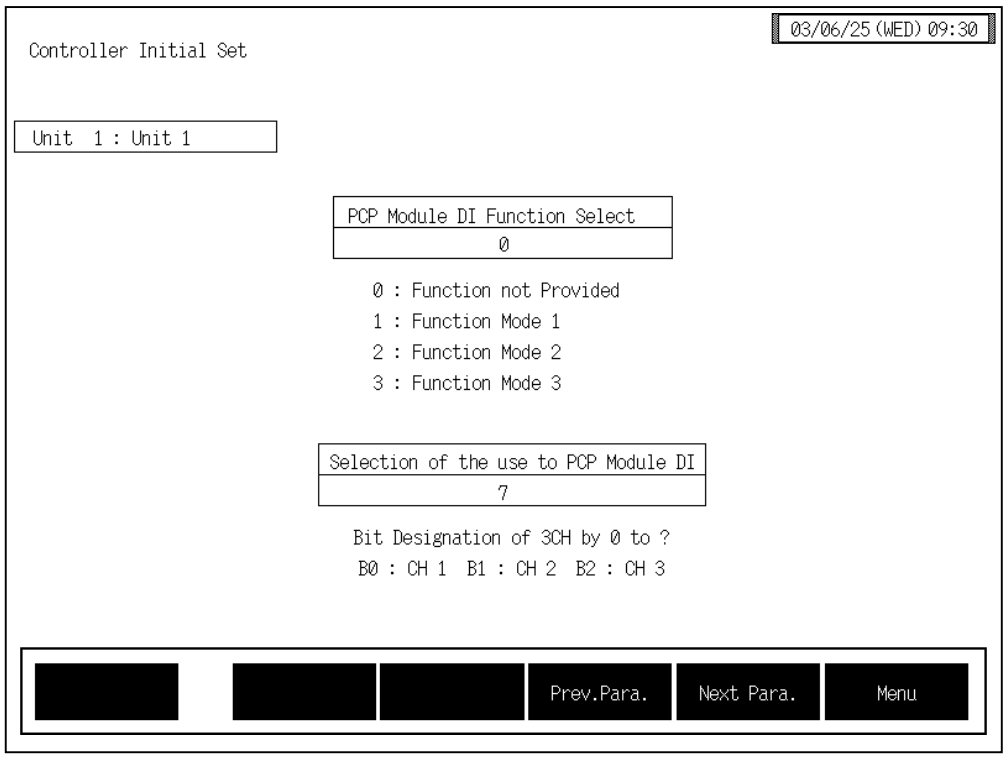
Hold Sel. (T.R.C): When the temperature measured value whose temperature rise has been completed once goes out of the temperature rise completion range, selects whether the temperature rise completion state is hold.
Setting range: 0: Not hold
1: Hold
Factory set value: 1

SCI interval time: Sets the interval time to keep the send/receive timing during RS-485 (2-wire system).
Setting range: 0 to 255 ms
Factory set value: H-PCP-A/B module: 0
H-PCP-J module: 1

It is interval time for [COM. PORT1] and [COM. PORT2] of H-PCP-A/B/J module.
The [COM. PORT3] interval time of the H-PCP-J module is set at a factory set value of 1 ms and cannot be changed.

Power Frequency: Sets the power frequency of the H-PCP-□ module.
Setting range: 0: 50 Hz
1: 60 Hz
Factory set value: 0

■ PCP module DI function selection screen



PCP Module DI Function Select:

Sets the function number to be assigned to the digital input (DI) terminals of the H-PCP-B module.

Setting range: 0: Function not provided
1: Function mode 1
Memory area selection (8 areas selection)
2: Function mode 2
Combination of control RUN/STOP selection and memory area selection (4 areas selection)
3: Function mode 3
Combination of control RUN/STOP selection, alarm interlock release and memory area selection (2 areas selection)

Factory set value: 0

After the contact is closed, it takes a short time until the action of this device is actually selected. Therefore, pay attention to this delay time if the device is used together with a sequencer, etc.

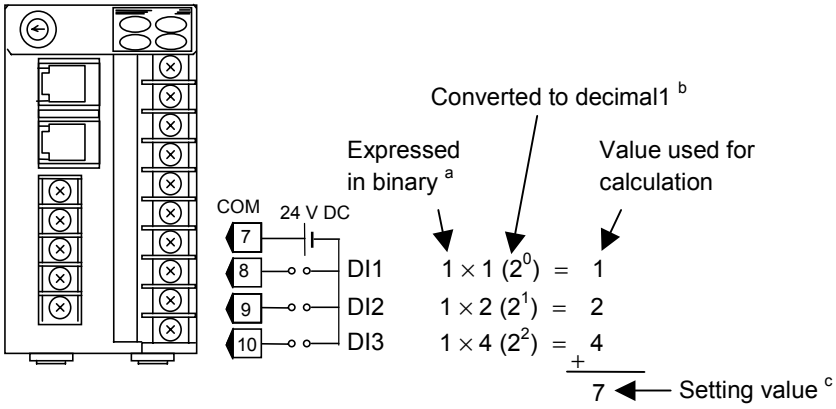
External power (24 V DC) supply is required for digital input.

Selection of the use to PCP module:

Sets whether to use the H-PCP-B module digital input (DI) by the bit image.
Setting range: 0 to 7
Factory set value: 7

Calculation method of setting value:

Example: When DI 1 to DI 3 are used.



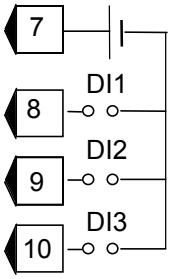
[a] For the binary value, enter either 0 (unused) or 1 (used).
[b] When calculating the setting, express the states for DI 1 to DI 3 as 1-digit binaries, then convert to decimal
[c] The setting value is the sum of the calculation values for DI 1 to DI 3.

Selection on the "Operation mode" screen becomes impossible when memory area transfer, alarm interlock release or control start/stop transfer is set to "used" by selecting the use of DI of the H-PCP-B module.

<Digital input (DI) function (H-PCP-B)>

Memory area selection (Function mode 1):

The memory area (control area) can be selected depending on the open or close state of terminal numbers 7 to 10. Select the memory area by configuring an external contact circuit or using a contact output signal from the sequencer, if necessary.

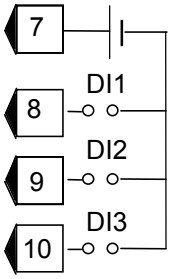


Control area / Terminal Nos.	1	2	3	4	5	6	7	8
7 - 8	–	×	–	×	–	×	–	×
7 - 9	–	–	×	×	–	–	×	×
7 - 10	–	–	–	–	×	×	×	×

–: Open ×: Close

Control RUN/STOP selection, memory area selection (Function mode 2):

Selection can be performed depending on the open or close state of terminal numbers 7 to 10.



Control area / Terminal Nos.	1	2	3	4
7 - 8	–	×	–	×
7 - 9	–	–	×	×

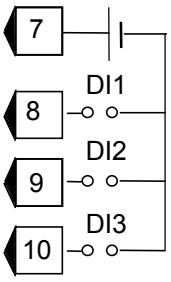
–: Open ×: Close

DI3…Contact opened: Control STOP Contact closed: Control RUN

When Function Mode 2 is selected, the memory area switching is restricted 1 to 4.

Control RUN/STOP selection, alarm interlock release specifying and memory area selection (Function mode 3):

Selection or release specifying can be performed depending on the open or close state of terminal numbers 7 to 10.



DI1…Contact opened: Memory area No.1 Contact closed: Memory area No.2

DI2…Contact closed: Alarm interlock released

DI3…Contact opened: Control STOP Contact closed: Control RUN

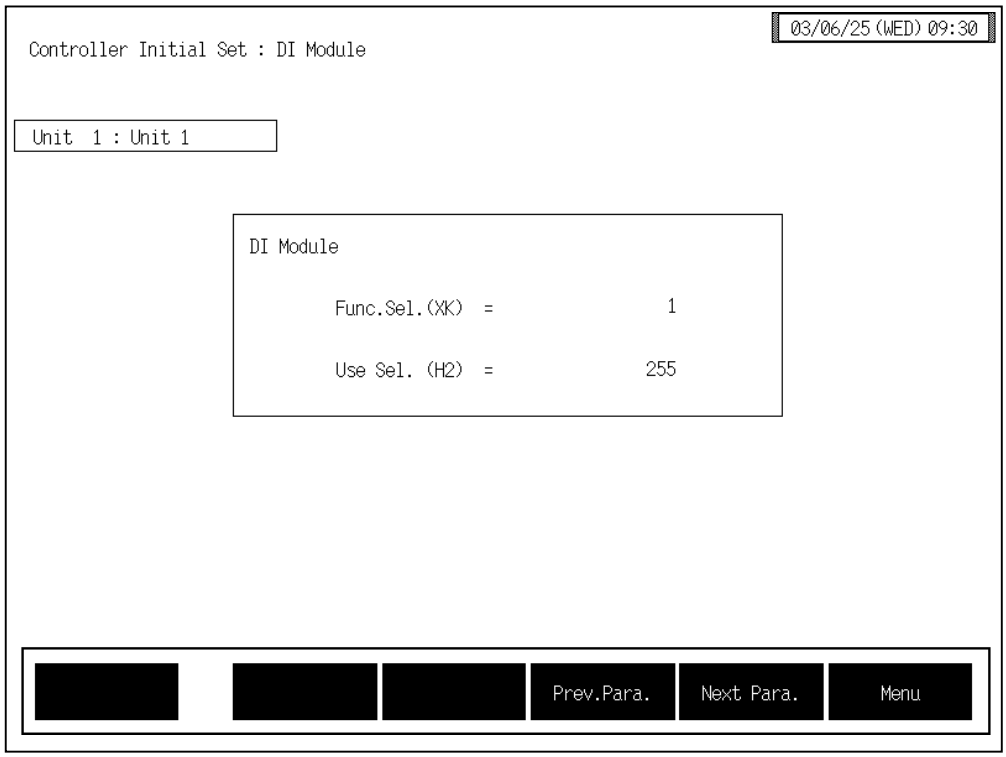
When Function Mode 3 is selected, the memory area switching is restricted 1 to 2.

3.9.24 DI module (H-DI-A module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ DI module function selection (XK), Use Selection (H2) screen



Func. Sel. (XK): Sets the function No. to be assigned to the digital input (DI) terminals of the H-DI-A module.

Setting range: 0: Not provided
1: Mode 1
- Memory area transfer (ENABLE terminal is used)
  After area selection setting, the actual area is changed by detecting the ENABLE edge.
- Control RUN/STOP transfer
- Alarm interlock release

2: Mode 2
- Memory area transfer
  The actual area is changed approximately 2 seconds after area selection setting.
- Control RUN/STOP transfer
- Alarm interlock release

Factory set value: 1

After the contact is closed, it takes a short time until the action of this device is actually selected. Therefore, pay attention to this delay time if the device is used together with a sequencer, etc.

When you select "1: Mode 1" with the function selection (XK) and use memory area switching, always calculate the setting value with DI 4 (memory area enable) set to Used.

External power (24 V DC) supply is required for digital input.

Use Sel. (H2): Sets whether to use the H-DI-A module digital input (DI) by the bit image.
Setting range: 0 to 255
Factory set value: 255

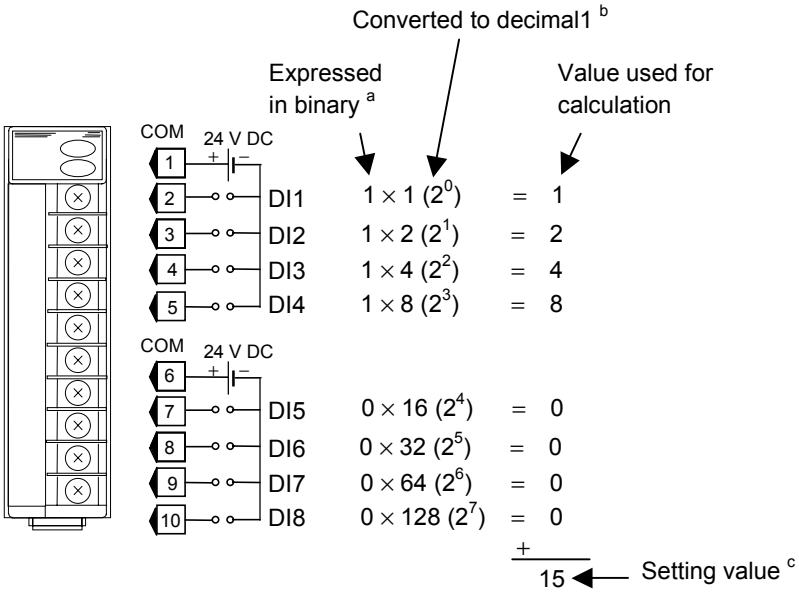
Setting example ×: Used –: Unused

Setting data	Memory area transfer	Control RUN/STOP transfer	Alarm interlock release
63	×	×	×
127			
191			
255			
48	–	×	×
47	×	–	×
32	–	–	×
31	×	×	–
16	–	×	–
15	×	–	–
0	–	–	–

Selection on the "Operation mode" screen becomes impossible when memory area transfer, alarm interlock release or control start/stop transfer is set to "used" by selecting the use of DI of the H-DI-A module.

Calculation method of setting value

Example: When DI 1 to DI 4 are used, but DI 5 to DI 8 are not used.



[a] For the binary value, enter either 0 (unused) or 1 (used).

[b] When calculating the setting, express the states for DI 1 to DI 8 as 1-digit binaries, then convert to decimal

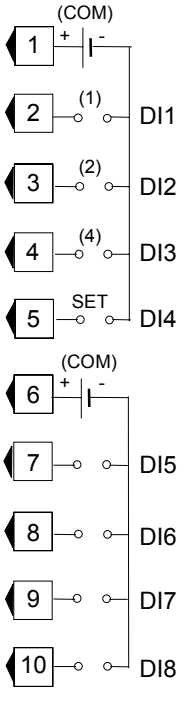
[c] The setting value is the sum of the calculation values for DI 1 to DI 8.

< Digital input (DI) function (H-DI-A) >

The digital input function can be used to select the memory area in the control unit to which the H-DI-A module is connected, to select control RUN/STOP or alarm interlock release.

Terminal configuration and DI function:

Selection or release can be performed depending on the open or close state of terminal numbers 1 to 8. For memory area selection, configure an external contact circuit or use a contact output signal from the sequencer, if necessary.



Control area / Terminal No.	1	2	3	4	5	6	7	8
1 - 2	–	×	–	×	–	×	–	×
1 - 3	–	–	×	×	–	–	×	×
1 - 4	–	–	–	–	×	×	×	×

–: Open ×: Close

The memory area (control area) is established by closing terminal number 5. (Mode 2)

DI5 ← Control RUN/STOP selection (contact closed: RUN, contact opened: STOP)

DI6 ← Alarm interlock release (contact closed: alarm interlock release)
(No alarm interlock function is activated if the contact is in the normally closed state.)

DI7, DI8 ← Unused

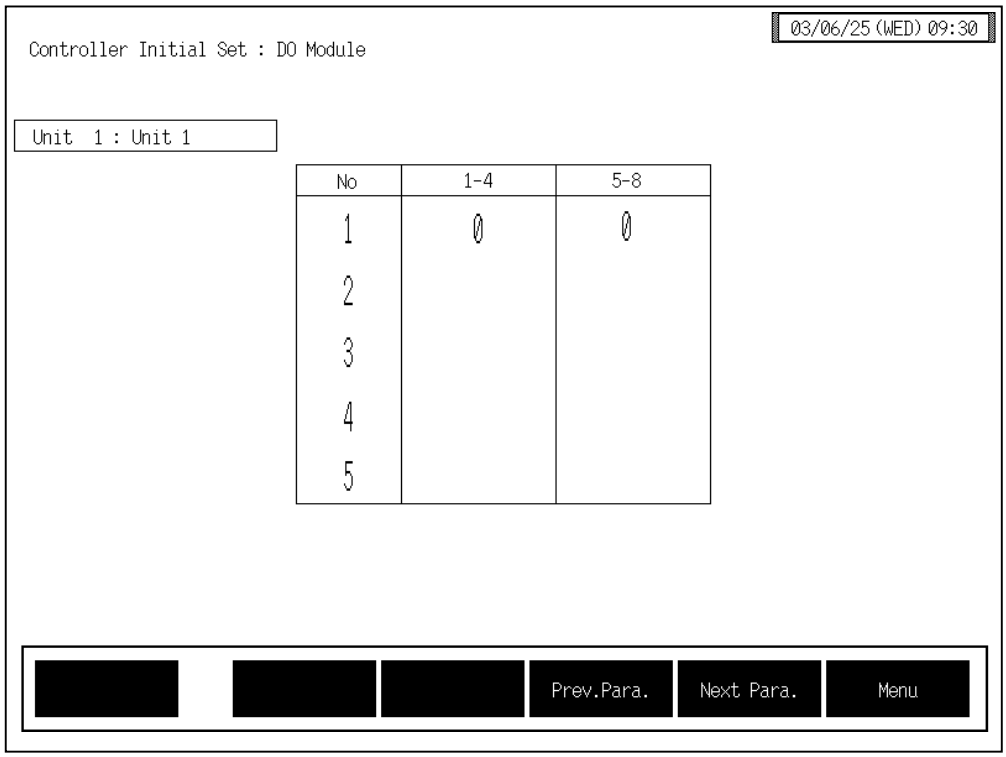
Connect external power (24V DC) to the number 1 and number 6 COM (common) terminals on the DI module so that these terminal sides become positive (+).

3.9.25 DO module (H-DO-A/B module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ DO module function selection screen



No: Displays the module number whose data is being displayed.

1-4 (DO1 to DO4), 5-8 (DO5 to DO8):
Sets the type of alarm to output from the H-DO-A/B/D module digital output (DO) terminals. The setting is made for a block (1-4/5-8) comprising the outputs for one module.

Setting range:
0: Unused (No alarm function)
1: Alarm 1
2: Alarm 2
3: Burnout
4: Heater break alarm (HBA)
5: AI alarm 1
6: AI alarm 2
7: Control loop break alarm (LBA)
8: (Not settable)

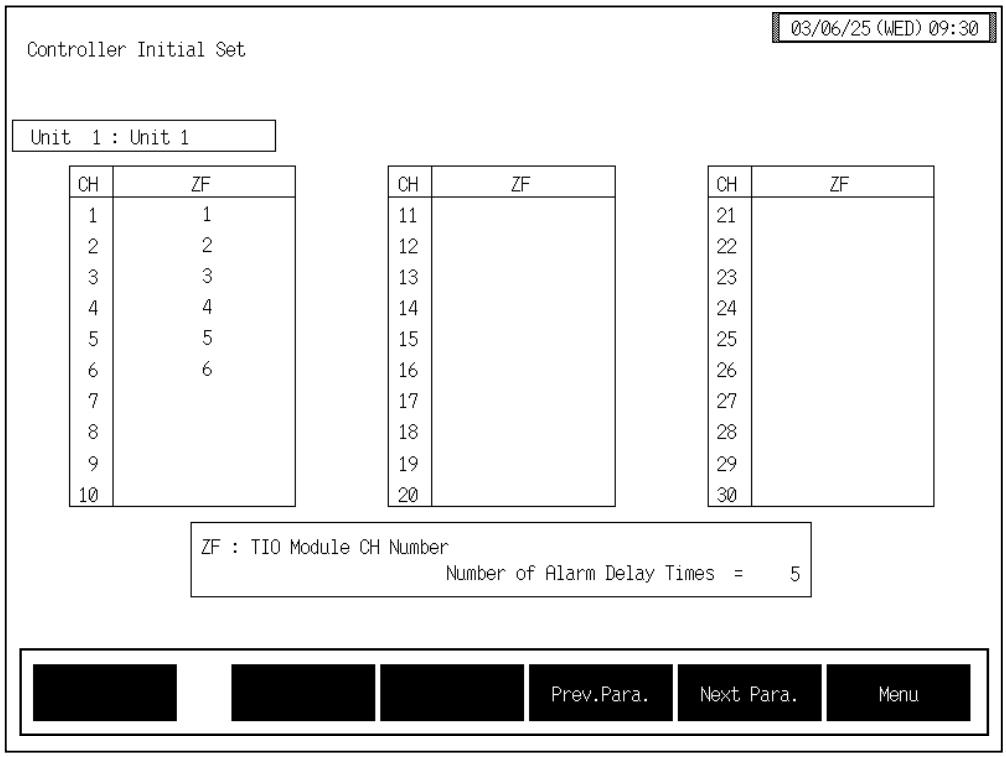
Factory set value: Varies depending on the specification when ordering.

3.9.26 CT module (H-CT-A module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ CT module use channel setting (ZF), Number of CT alarm delay times screen



CH Displays the channel number of H-CT-A module.

CT use channel setting (ZF):

Allocates the channels for H-TIO-□ module to the input channels of H-CT-A module.
Setting range: 0 to 20 (0: Unused)
Factory set value: Varies depending on the specification when ordering.

Number of Alarm Delay Times:

Sets how many times in a row the CT input value has to be in the alarm range for the alarm output to be switched on.
Setting range: 0 to 255
Factory set value: 5

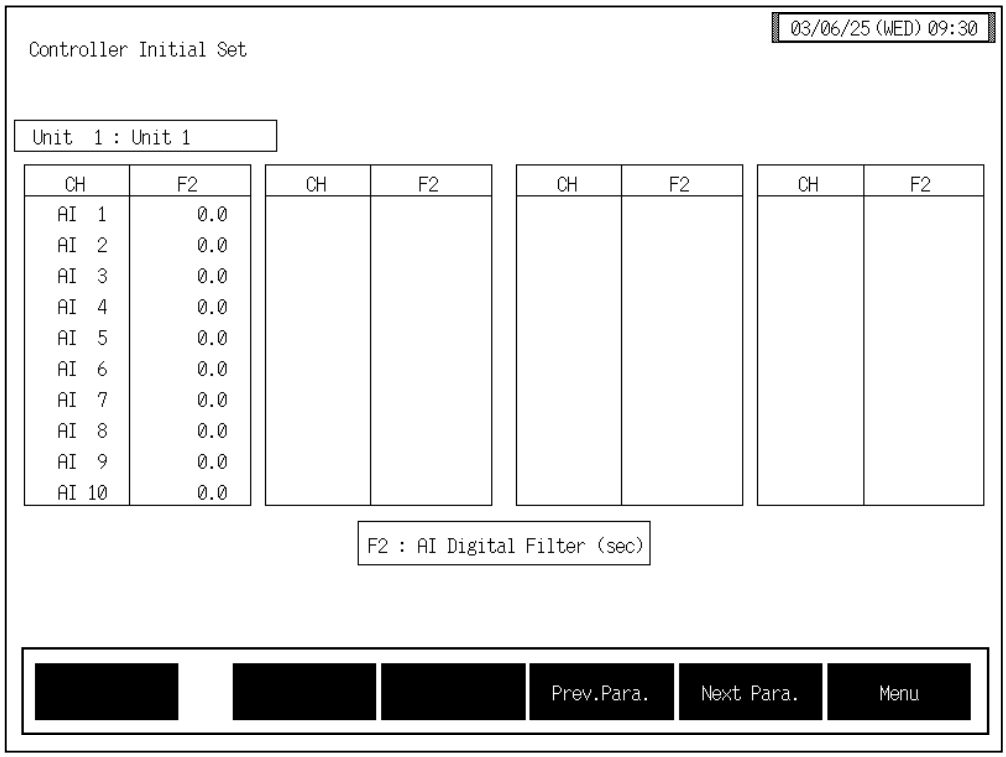
3.9.27 AI module (H-AI-A/B module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

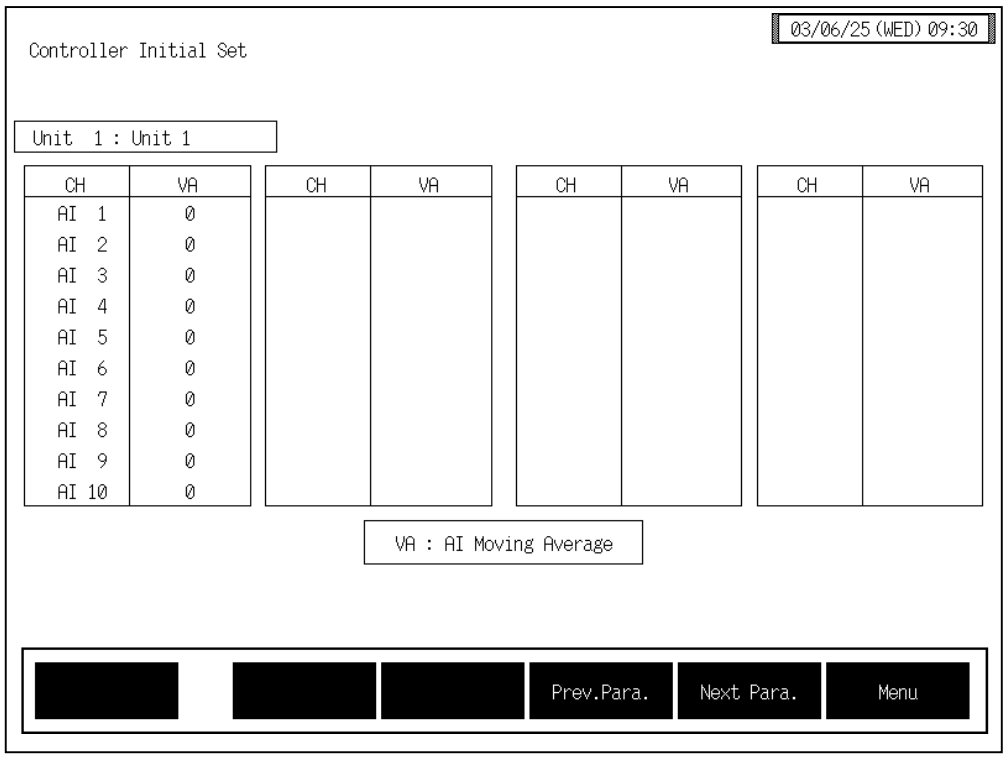
■ AI digital filter (F2) screen



CH: Displays the AI channel name.
The channel name can be changed with the OPC initial "AI CH Name Set" screen (P. 3-158).

AI digital filter (F2):
Decreases noise contained sensor input by using a first-order lag filter with the preset time constant.
Setting range: 0.0 to 100.0 seconds (0.0: OFF)
Factory set value: 0.0

■ AI moving average selection (VA) screen



CH: Displays the AI channel name.
The channel name can be changed with the OPC initial "AI CH Name Set" screen (P. 3-156).

AI moving average selection (VA):
Sets the used/unused of AI moving average. Gets the average of the sampling results corresponding to 4 times when "1" is set to decrease noise.
Setting range: 0: Unused
1: Used
Factory set value: 0

■ AI alarm differential gap, Number of AI alarm delay times screen

AI Alarm Differential Gap (%):

Sets the differential gap of AI alarm 1 and AI alarm 2.
Setting range: 0.00 to 10.00 % of span
Factory set value: 0.10

Number of Alarm delay times:

Sets the number of sampling period counting times until the alarm is turned ON after AI measured value enters the alarm region.
Setting range: 0 to 255 times
Factory set value: 0

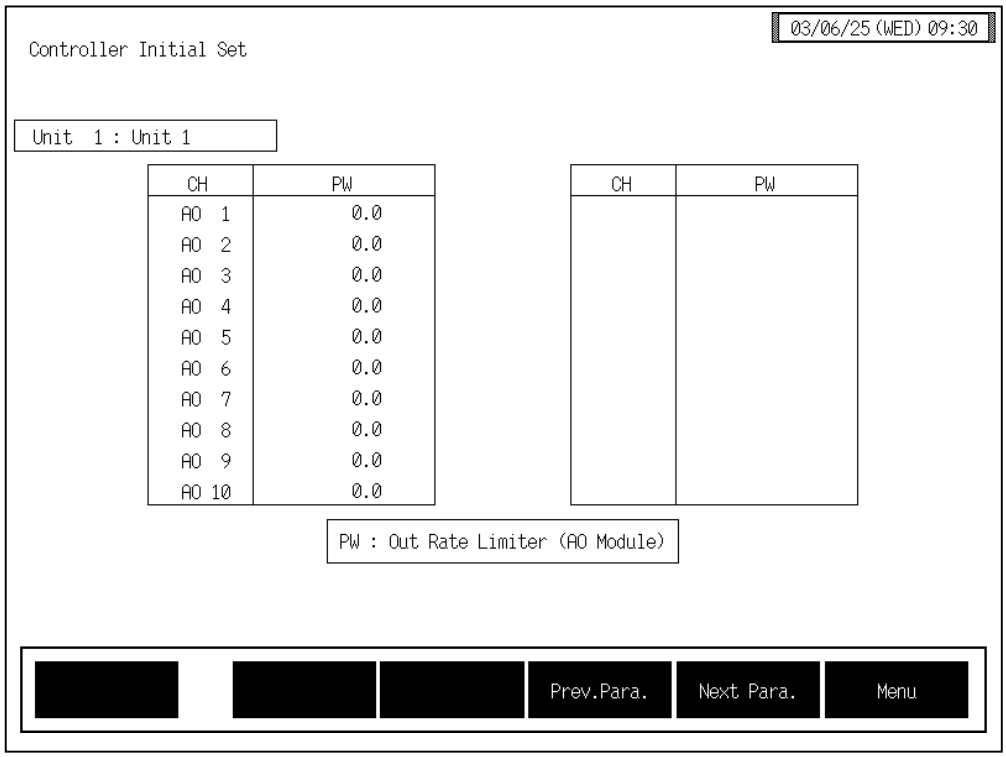
3.9.28 AO module (H-AO-A/B module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.

☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ AO output change rate limiter (PW) screen



CH: Displays the AO channel name.
The channel name can be changed with the OPC initial "AO CH Name Set" screen (P. 3-158).

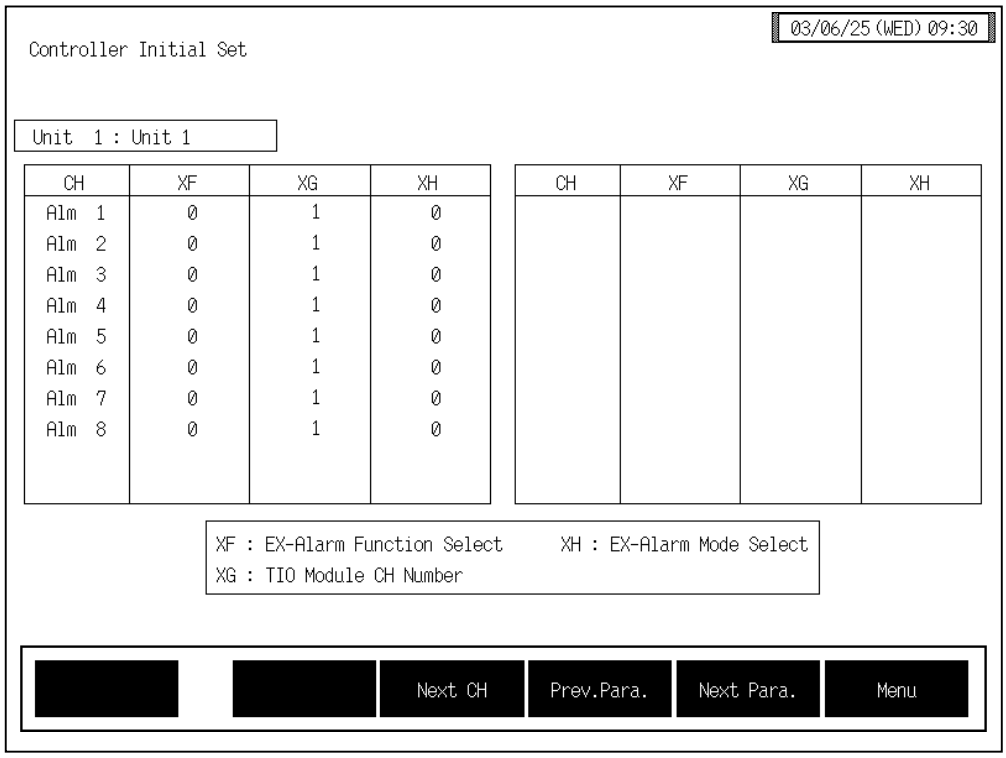
AO output change rate limiter (PW):
Sets the amount of analog output per time to restrict sudden analog output changes.
Setting range: 0.0 to 100.0 %/second (0.0: OFF)
Factory set value: 0.0

3.9.29 Event DO module (H-DO-C module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ Event function selection (XF), Event corresponding channel (XG), Event mode transfer setting (XH) screen



CH: Displays the extension alarm channel name.
The channel name can be changed with the OPC initial "EX-Alarm CH Name Set" screen (P. 3-160).

Event function selection (XF):
Sets the event DO (H-DO-C) module event output function.
Setting range: 0 to 30
See **Event output function (P. 3-196)**.
Factory set value: 0

Event corresponding channel (XG):

Sets the event corresponding channel number.
Setting range: 1 to 40
See **Event output function (P. 3-196)**.
Factory set value: 1

Event mode transfer setting (XH):

Sets the alarm action or channel number.
Setting range: 0 to 40
See **Event output function (P. 3-196)**.
Factory set value: 0

< Event output function >

The event output function enables up to eight points to be output per module of unique alarms different from ordinary temperature and AI alarms (Extension alarm output function), control unit operations (Status output function) and comparison results which are output only under certain conditions (Data comparison output function). The function can be set for each channel of the H-DO-C module.

- **Extension alarm output function**

An extension alarm is output independently of H-TIO-☐ module alarms. As it is independently set, it can be provided as a dedicated alarm output.

Event DO function selection (Identifier XF)		Event DO corresponding channel setting (Identifier XG)	Event DO mode select setting (Identifier XH)
Setting data	Function name		
10	Temperature deviation alarm	1 to 20 CH (H-TIO-☐ module)	0: High alarm 1: Low alarm 2: High/low alarm 3: Band alarm 4: High alarm with hold action 5: Low alarm with hold action 6: High/low alarm with hold action 7: Band alarm with hold action 8: High alarm with re-hold action 9: Low alarm with re-hold action 10: High/low alarm with re-hold action
11	Temperature process alarm	1 to 20 CH (H-TIO-☐ module)	0: High alarm 1: Low alarm 2: High alarm with hold action 3: Low alarm with hold action
12	Temperature set value alarm	1 to 20 CH (H-TIO-☐ module)	0: High alarm 1: Low alarm
13	AI process alarm	1 to 40 CH (H-AI-☐ module)	0: High alarm 1: Low alarm 2: High alarm with hold action 3: Low alarm with hold action
20	TI process alarm	1 to 40 CH (H-TI-☐ module)	0: High alarm 1: Low alarm 2: High alarm with hold action 3: Low alarm with hold action

This output is different from the ordinary alarm output from the H-DO-A/B type module. Similarly, the ordinary alarm cannot be output from the H-DO-C type module (for event output).

The alarm differential gap and alarm delay timer are commonly set.

Continued on the next page.

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- **Status output function**

  This function is used to output the control unit action status other than the extension alarm output in addition to the ordinary alarm output status (Alarm 1 status, etc.).

Event DO function selection (Identifier XF)		Event DO corresponding channel setting (Identifier XG)	Event DO mode select setting (Identifier XH)
Setting data	Function name		
0	Unused (Manual mode)	—	—
1	Alarm 1	1 to 20 CH (H-TIO-☐ module)	—
2	Alarm 2	1 to 20 CH (H-TIO-☐ module)	—
3	Burnout	1 to 20 CH (H-TIO-☐ module)	—
4	Heater break alarm (HBA)	1 to 20 CH (H-TIO-☐ module)	—
5	AI alarm 1	1 to 40 CH (H-AI-☐ module)	—
6	AI alarm 2	1 to 40 CH (H-AI-☐ module)	—
7	Control loop break alarm (LBA)	1 to 20 CH (H-TIO-☐ module)	—
8	PID/AT	1 CH	—
17	TI alarm 1	1 to 40 CH (H-TI-☐ module)	—
18	TI alarm 2	1 to 40 CH (H-TI-☐ module)	—
19	TI burnout	1 to 40 CH (H-TI-☐ module)	—
22	Event DI logic output status	1 to 40 CH (H-DI-B module)	—
9	Not settable	—	—
23 to 30	Not settable	—	—

Continued on the next page.

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- **Data comparison output function**

This function is used to output the result of comparison between the measured value and measured value (or set value and set value) within the same group.

Event DO function selection (Identifier XF)		Event DO corresponding channel setting (Identifier XG)	Event DO mode select setting (Identifier XH)
Setting data	**Function name**	**Data 1**	**Data 2**
14	**Temperature measured value comparison** Comparison between the temperature measured value and temperature measured value	1 to 20 CH (H-TIO-☐ module)	1 to 20 CH (H-TIO-☐ module)
15	**Temperature set value comparison** Comparison between the temperature set value and temperature set value	1 to 20 CH (H-TIO-☐ module)	1 to 20 CH (H-TIO-☐ module)
16	**AI measured value comparison** Comparison between the AI measured value and AI measured value	1 to 40 CH (H-AI-☐ module)	1 to 40 CH (H-AI-☐ module)
21	**TI measured value comparison** Comparison between the TI measured value and TI measured value	1 to 40 CH (H-TI-☐ module)	1 to 40 CH (H-TI-☐ module)

[Relationship between output and comparison]

Computing equation:

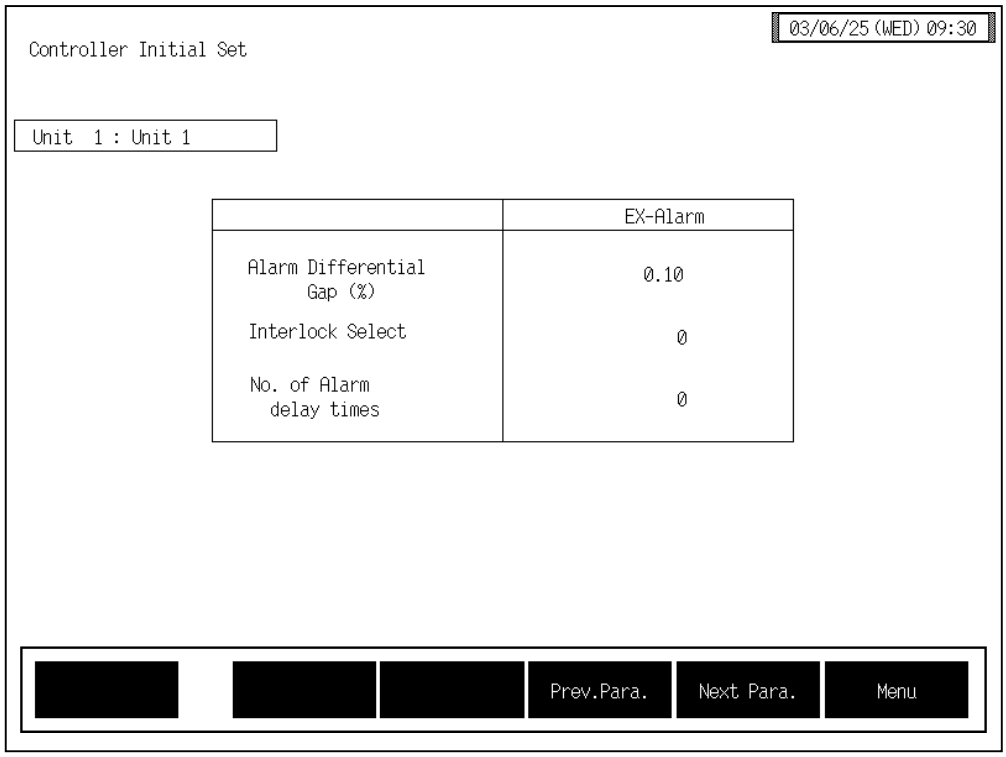
The output turns ON at (Data 2) – (Data 1) ≤ 0

This means :

The output turns ON if (Data 2) is smaller than or equal to (Data 1). {Data 2 ≤ Data 1}

The output turns OFF if (Data 2) is larger than (Data 1). {Data 2 > Data 1}

■ Extension alarm differential gap, Extension alarm interlock, Number of extension alarm delay times screen



Alarm Differential Gap (%):

When the event DO function corresponds to the extension alarm output function, sets the alarm differential gap.
Setting range: 0.00 to 10.00 % of span
Factory set value: 0.10

Interlock Select: When the event DO function corresponds to the extension alarm output function, sets the use/unused of the alarm interlock function.
Setting range: 0: Unused
1: Used
Factory set value: 0

No. of Alarm delay times:

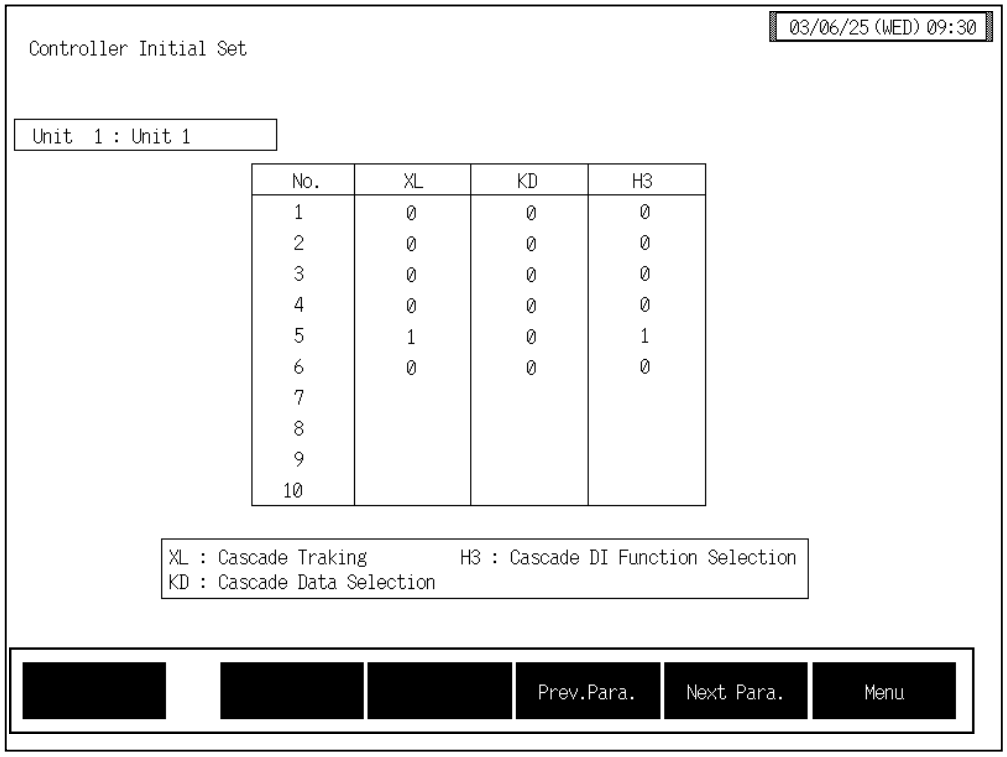
When the event DO function corresponds to the extension alarm output function, sets the number of sampling period counting times until the alarm is turned ON after the measured value of the channel specified by the setting of the channel corresponding to event DO enters the alarm region.
Setting range: 0 to 255 times
Factory set value: 0

3.9.30 CIO module (H-CIO-A module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ Cascade tracking (XL), Cascade data selection (KD), Cascade DI function selection (H3) screen



No.: Displays the number of H-CIO-A module and H-TIO-□ module.

Cascade tracking (XL):
Sets the cascade monitoring state at cascade OFF.
Setting range: 0: Cascade monitored value becomes zero.
1: Cascade monitored value just before is hold.
Factory set value: 0

Data entered into setting sections other than for the H-CIO-A module is invalid.

Cascade data selection (KD):

Sets data given to the slave channel.

Setting range: 0: Manipulated output value
1: Temperature measured value (PV)
2: Temperature set value (SV)
3: Set value monitor
4: Temperature deviation

Factory set value: 0

Cascade DI function selection (H3):

Sets the H-CIO-A module DI function.

Setting range: 0: Unused
1: Cascade control ON/OFF only
2: Auto/Manual transfer only
3: DI1 valid (Cascade control ON/OFF)、
DI2 valid (Auto/Manual transfer)

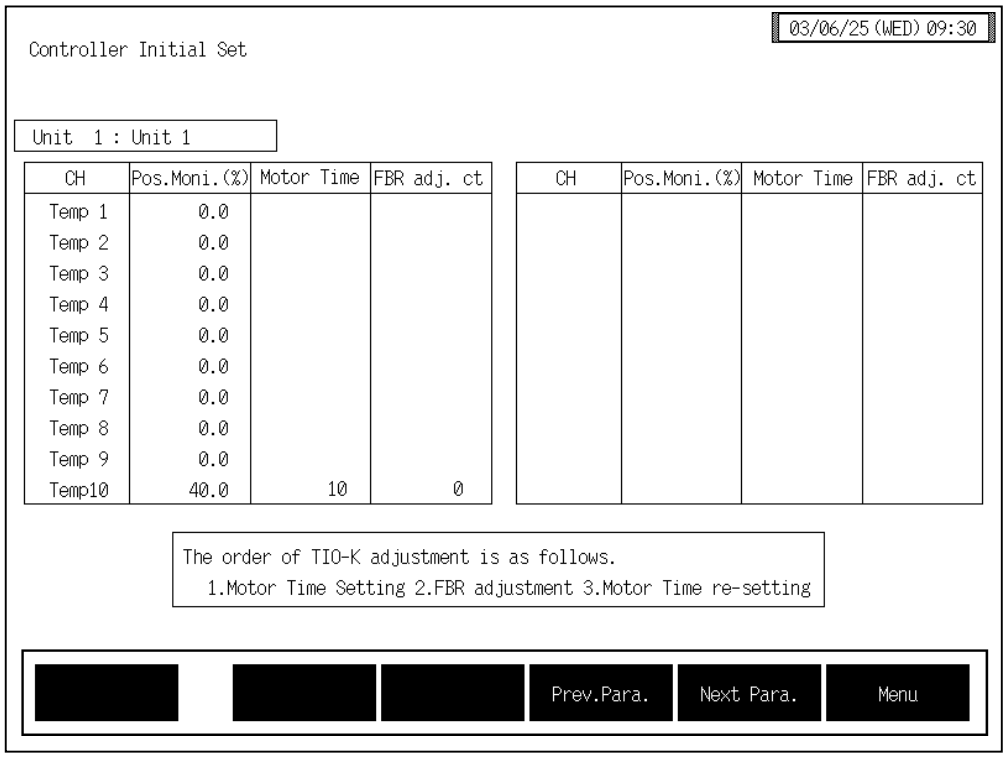
Factory set value: 3

3.9.31 H-TIO-K module screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

■ Motor time, Proportioning adjustment counter screen



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

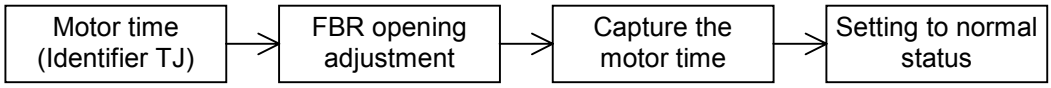
Pos. Moni. (%): Displays the positioning monitor value.
Display range: −5.0 to +105.0 %

Motor time: Sets the time when the control motor changes from the close side to the open side. (Control output sets the motor time to 100 %.)
Setting range: 5 to 1000 seconds
Factory set value: 10

FBR adj. ct: Setting to start positioning adjustment and motor time capture. If the specified counter value is reset, each operation starts. (Valid only at control STOP and in initialize mode.)
Setting range: 0 to 100
Factory set value: 0

< Positioning adjustment counter >

Always adjust the opening first and capture the motor time after the adjustment is complete.



Item	Setting data (Setting counter value)	Description	Status
Opening adjustment	0	Normal status	
	1	Opening adjustment star, open-side output start (Motor time: 110 %)	Automatic
	2	Capture the open-side opening value after 3 seconds stop	
	3	Close-side output start (Motor time: 110%)	
	4	Capture the close-side opening value after 3 seconds stop	
	5	Above data stored in H-TIO-K module	
	6	Hold status	
Capture the motor time	7	Outputs the close-side until the positioning becomes 0%. Open-side output start if the positioning is less than 0%. Stops at an positioning of more than 100%, and capture the motor time by H-TIO-K module	Automatic
	8	After the motor time has been captured, close-side output comes ON (Motor time : 110%)	
	9	Hold status	
–	10 to 100	Not settable	

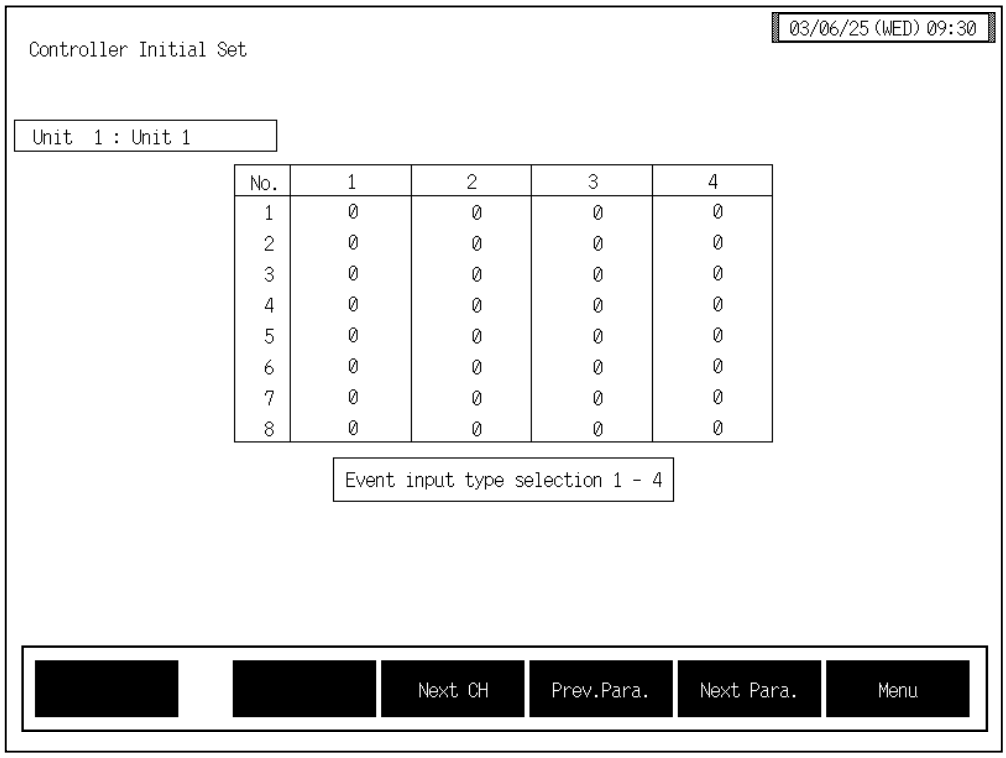
When you input setting counter 1, the opening adjustment starts, operations are carried out automatically up to setting counter 6, then the system goes on hold status. When you input setting counter 7, the motor time capture starts, operations are carried out automatically up to setting counter 9, then the system goes on hold status. After the settings are complete, always set to “0: Normal status.”

3.9.32 Event DI module (H-DI-B module) screen

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.20 Basic configuration of controller initial screen (P. 3-169)**.

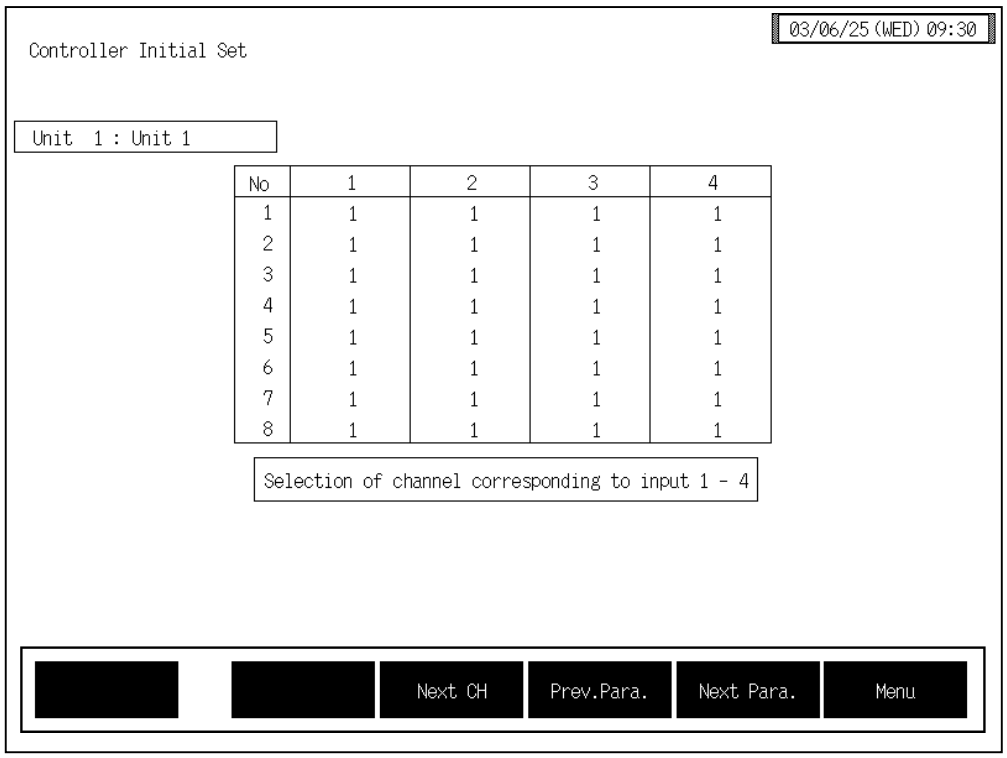
■ Event input type selection screen



No.: Displays the event input logic circuit number.

Event input type selection 1 to 4:
Sets the type of logic input 1 to 4.
Setting range: 0 to 30 (17 to 30: Not settable)
For the data, see the **Logic input function (P. 3-208)**.
Factory set value: 0

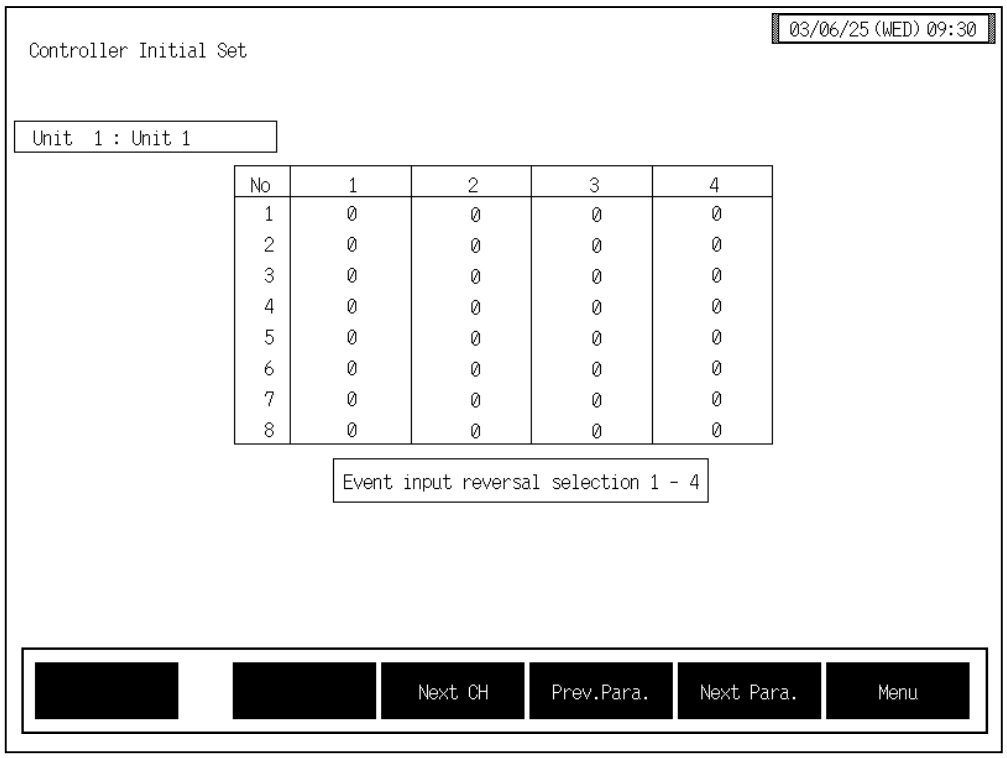
■ Event input corresponding channel selection screen



No.: Displays the event input logic circuit number.

Event input corresponding channel selection 1 to 4:
Sets the channel or logic number to be input to the logic input 1 to 4.
Setting range: 1 to 80
For the data, see the **Logic input function (P. 3-208)**.
Factory set value: 1

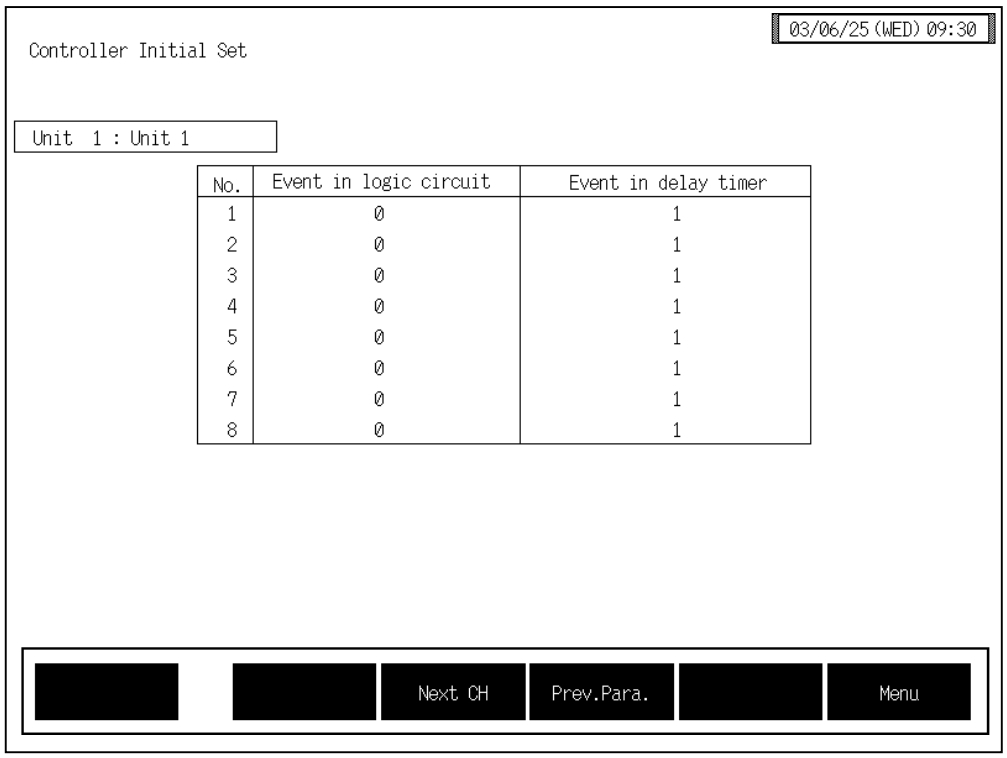
■ Event input reversal selection screen



No.: Displays the event input logic circuit number.

Event input reversal selection 1 to 4:
Sets whether the inverted logic input 1 to 4 is captured.
Setting range: 0: Normal
1: Reversal
Factory set value: 0

■ Event input logic circuit selection, Event input delay timer setting screen



No.: Displays the event input logic circuit number.

Event input logic circuit selection:

Sets the logic circuit type.
Setting range: 0: *AND* (1 active)
1: *NAND* (0 active)
2: *OR* (1 active)
3: *NOR* (0 active)
Factory set value: 0

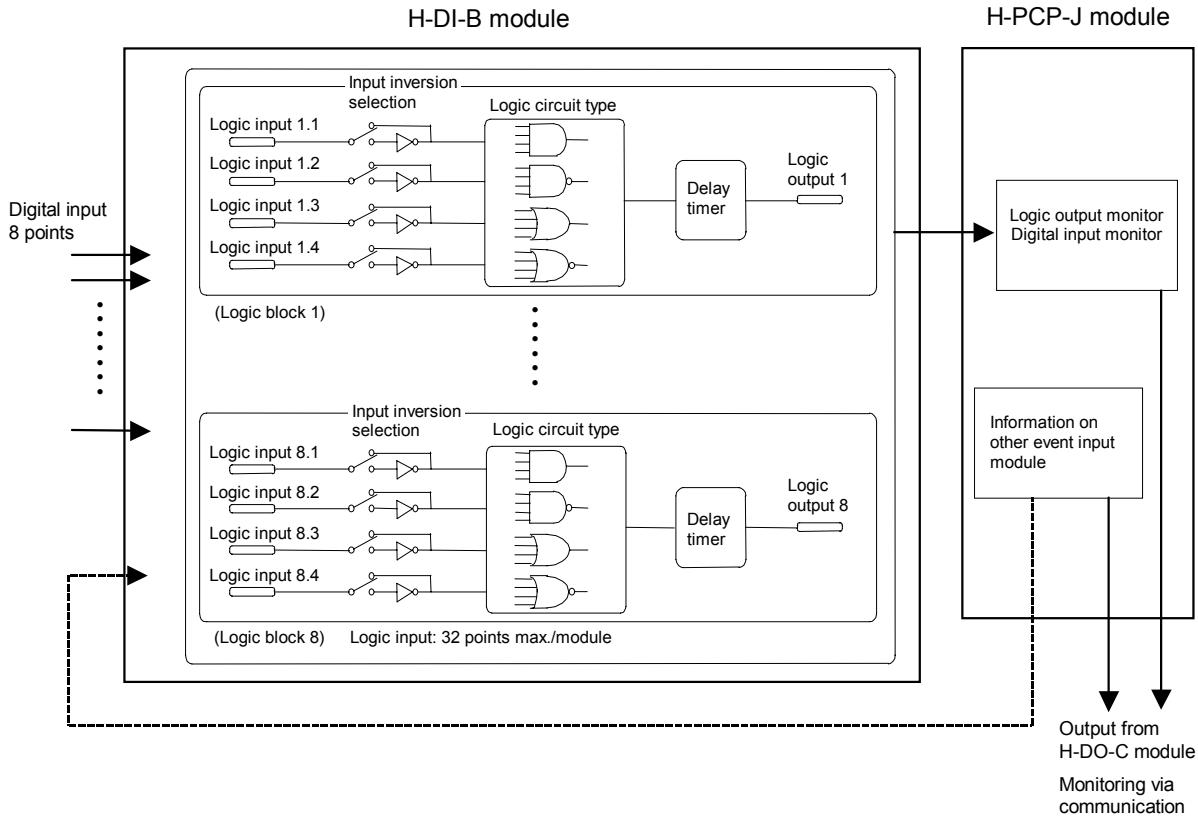
Event input delay timer setting:

Set number of times to delays the logical output. A delay of 200 ms/time (only active side).
Setting range: 0 to 255 times
Factory set value: 1

<Logic input function>

Each logic is built by four event inputs. Up to eight logic results (logic outputs) per H-DI-B module can be monitored through communication or can be output from H-DO-C module. In addition, this function can assign the input of the H-DI-B module to any channel number of the H-DO-C module to output the result.

The logic section of event DI module consists of 4 logic input points, input reversal selection, logic circuit type selection, input delay timer and logic output.



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Event DI type selection (Identifier R1 to R4)		Event DI corresponding channel selection (Identifier E1 to E4)	Note
Setting data	Description		
0	Input always OFF	—	Always ON at "Reversal" selection
1	Event DI input	1 to 80	0: OFF 1: ON
2	Event DI logic output	1 to 80	0: OFF 1: ON
3	Event DO output	1 to 72	0: OFF 1: ON
4	PCP error code	—	0: Unused 1: Used
5	Temperature rise completion	—	0: Rise not complete 1: Rise completed
6	PID/AT logical *OR*	—	0: All PID 1: Any one is in AT
7	Alarm 1	1 to 18	0: OFF 1: ON
8	Alarm 2	1 to 18	0: OFF 1: ON
9	Burnout	1 to 18	0: OFF 1: ON
10	Heater break alarm (HBA)	1 to 18	0: OFF 1: ON
11	Control loop break alarm (LBA)	1 to 18	0: OFF 1: ON
12	AI alarm 1	1 to 36	0: OFF 1: ON
13	AI alarm 2	1 to 36	0: OFF 1: ON
14	TI alarm 1	1 to 36	0: OFF 1: ON
15	TI alarm 2	1 to 36	0: OFF 1: ON
16	TI burnout	1 to 36	0: OFF 1: ON
17 to 30	Not settable	—	—

3.9.33 Initial setting 2 menu screen

The initial setting 2 is the screen for making settings concerning the model cod of the control unit (modules) itself.

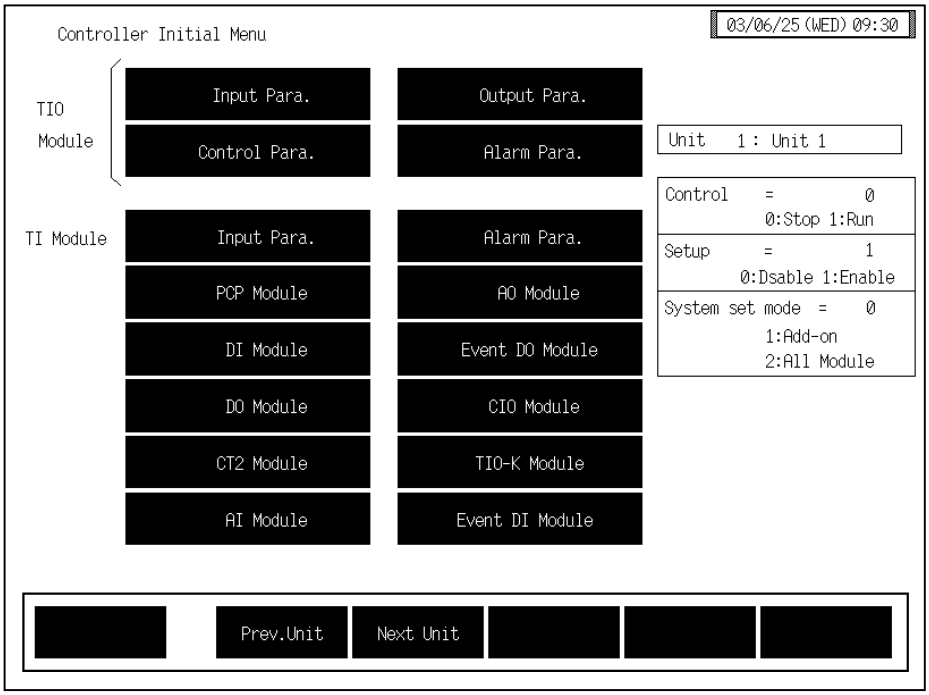
> **⚠ WARNING**
>
> The Initial setting data should be set according to the application before setting any parameter related to operation. Once the Initial setting data is set correctly, those data is not necessary to be changed for the same application under normal conditions. If they are changed unnecessarily, it may result in malfunction or failure of the instrument. RKC will not bear any responsibility for malfunction or failure as a result of improper changes in the Initial setting.

The [Level1] keys for changing the display to the "Initial Setting 2 Menu" screen are protected, so you cannot change to this screen without removing the protection.

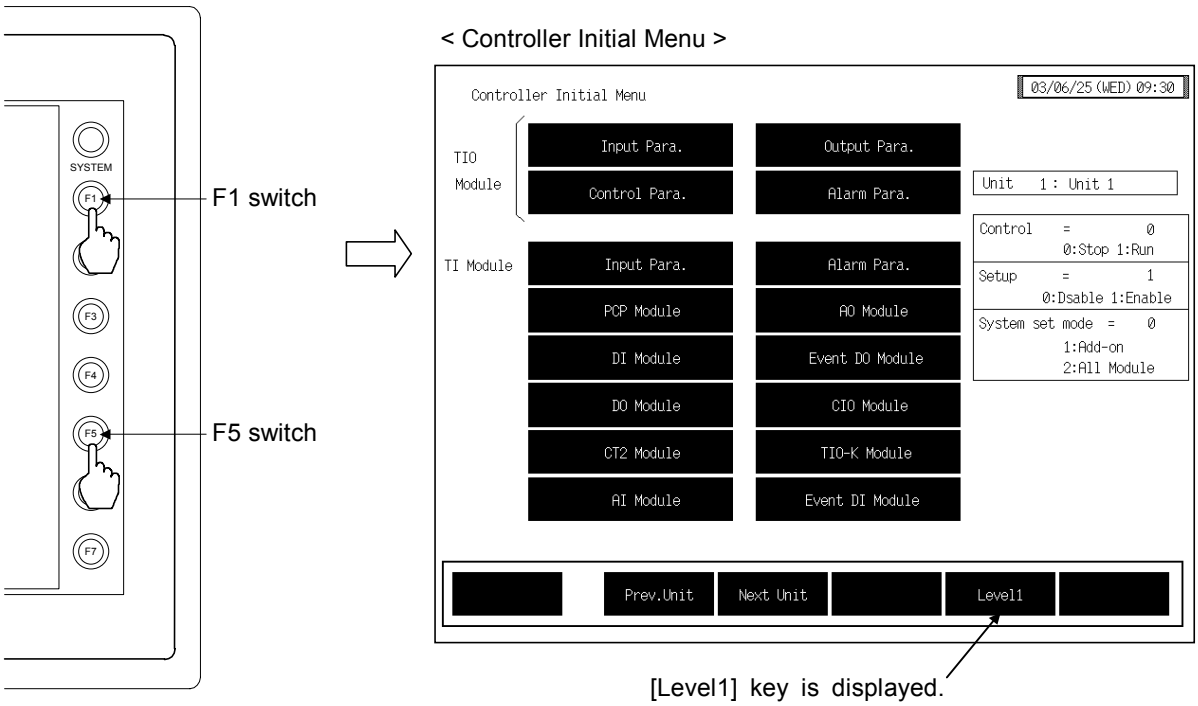
■ Releasing Level1 calling up key protect

1. Touch the [Initial Set] key on the "Operation Menu" screen to change the display to the "Initial Set Menu" screen.

2. Display the "Controller Initial Menu" screen by referring to the **3.9.19 ■ Procedure for changing to controller initial mode (P. 3-163).**



3. Press and hold the [F1] switch, and press the [F5] switch at the same time.
[Level1] key is displayed, and key operation becomes valid.



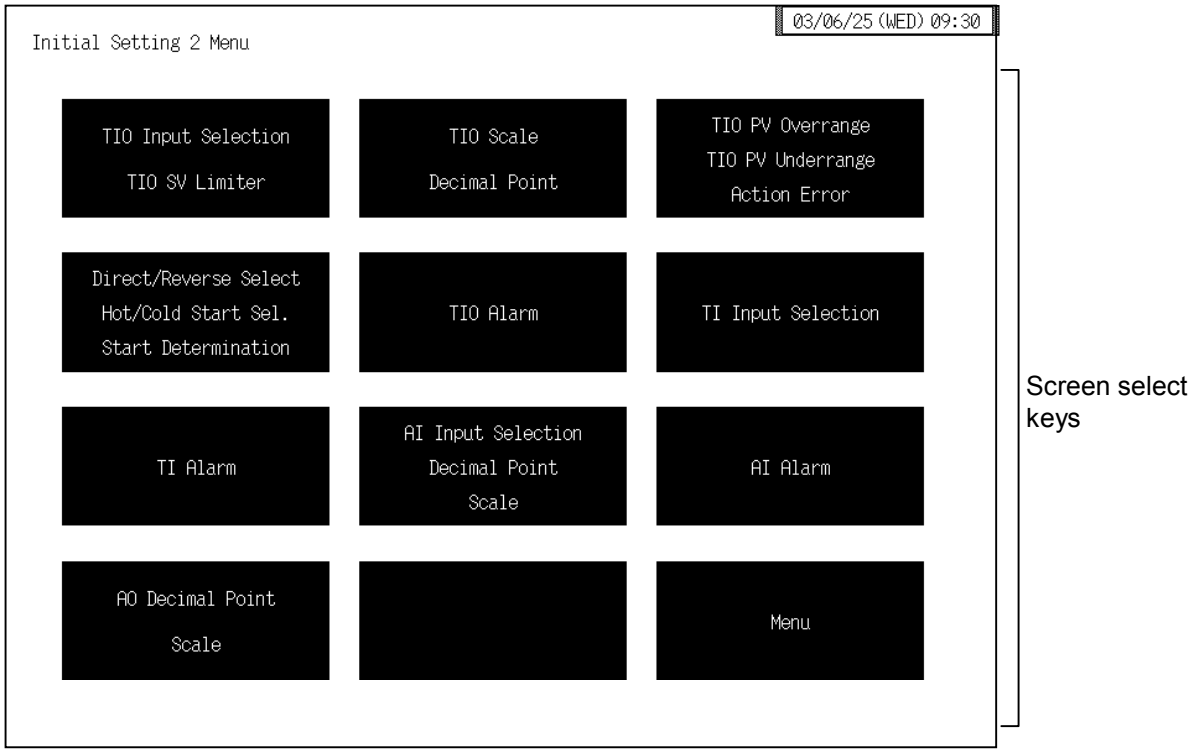
This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

After the [Level1] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the “Controller Initial Menu” screen again to perform the protect release operation.

3. Touching the [Level1] key displayed changes the “Initial Setting 2 Menu” screen.

■ Initial setting 2 menu

The initial setting 2 menu screen allows the selection of each of the initial setting 2 screen.



Screen select keys:

TIO Input Selection, TIO SV Limiter:
Touching this key changes to the "Input range number (XI), Setting limiter (SH, SL)" screen.

TIO Scale, Decimal Point:
Touching this key changes to the "Display scale (XV, XW), Decimal point position (XU)" screen.

TIO PV Over range, TIO PV Under rang, Action Error:
Touching this key changes to the "Input error determination point (AV, AW), Action at input error (WH, WL)" screen.

Direct/Reverse Select, Hot/Cold Start Sel., Start Determination:
Touching this key changes to the "Direct/Reverse action selection (XE), Hot/Cold start selection (XN), Start determination point (SX)" screen.

TIO Alarm: Touching this key changes to the "TIO alarm related" screen.

TI Input Selection:
Touching this key changes to the "TI input range number (XJ)" screen.

TI Alarm: Touching this key changes to the "TI alarm related" screen.

AI Input Selection, Decimal Point, Scale:
Touching this key changes to the "AI input range number (VK), AI decimal point position (JU), AI display scale (JS, JV)" screen.

AI Alarm: Touching this key changes to the "AI alarm related" screen.

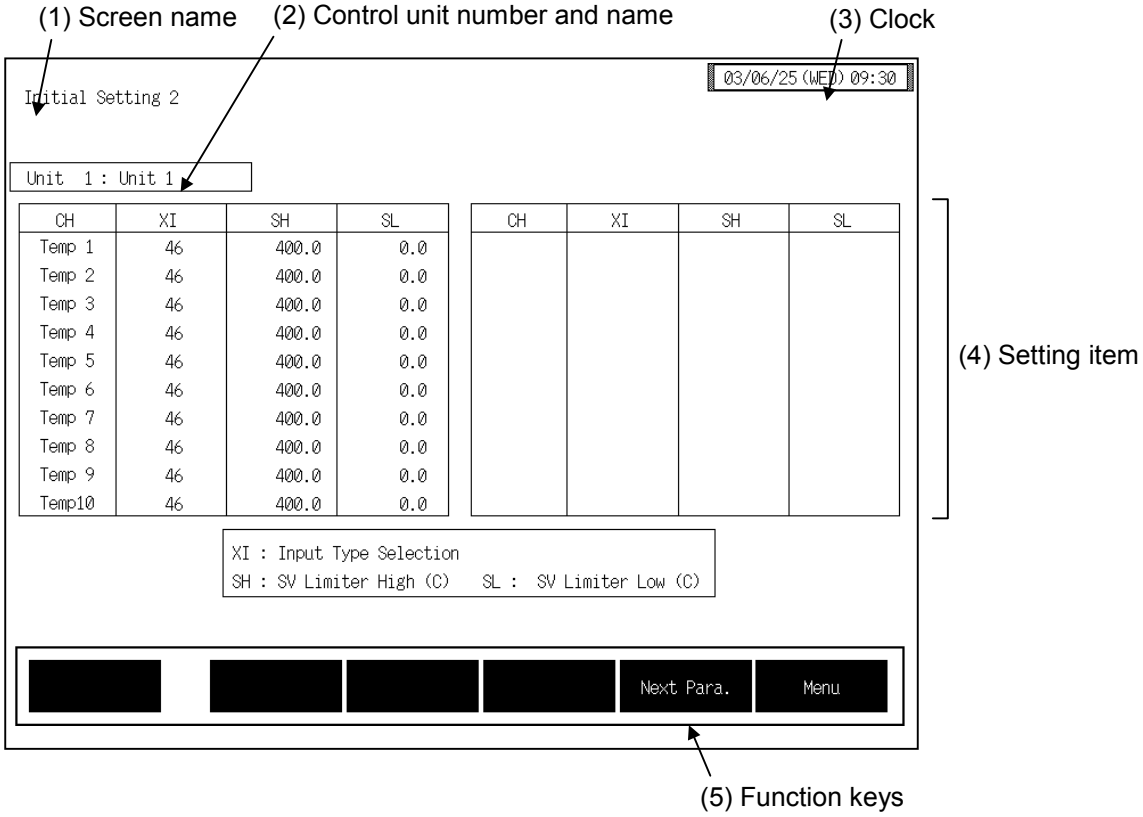
AO Decimal Point, Scale:
Touching this key changes to the "AO decimal point position (JR), AO display scale (HV, HW)" screen.

Menu: Touching this key changes to the "Controller Initial Menu" screen.

3.9.34 Basic configuration of initial setting 2 screen

The basic configuration of each initial setting 2 screen is as shown below.

Example: Input range number (XI), Setting limiter (SH, SL) screen



(1) Screen name: Displays the screen name.

(2) Control unit number and name:
Displays the number and name for the control unit whose data is being displayed. The unit name can be changed with the OPC initial "Used/Unused, Unit Name Set, (C)/(F) Set" screen (P. 3-153).

(3) Clock: Displays year/month/day (day of the week) hour:minute. The clock can be changed with the initial "Clock Set" screen (P. 3-115).

(4) Setting item: Displays the item and data. Details of display varies depending on the each initial setting 2 screen.

(5) Function keys: These key switches are assigned to match the contents of the screen.
The function key displayed differs depending on screens.

Next CH: Touching this key changes to the screen for the channel (CH) after the current one.

Prev. Para.: Touching this key changes to the screen one before the one being displayed.

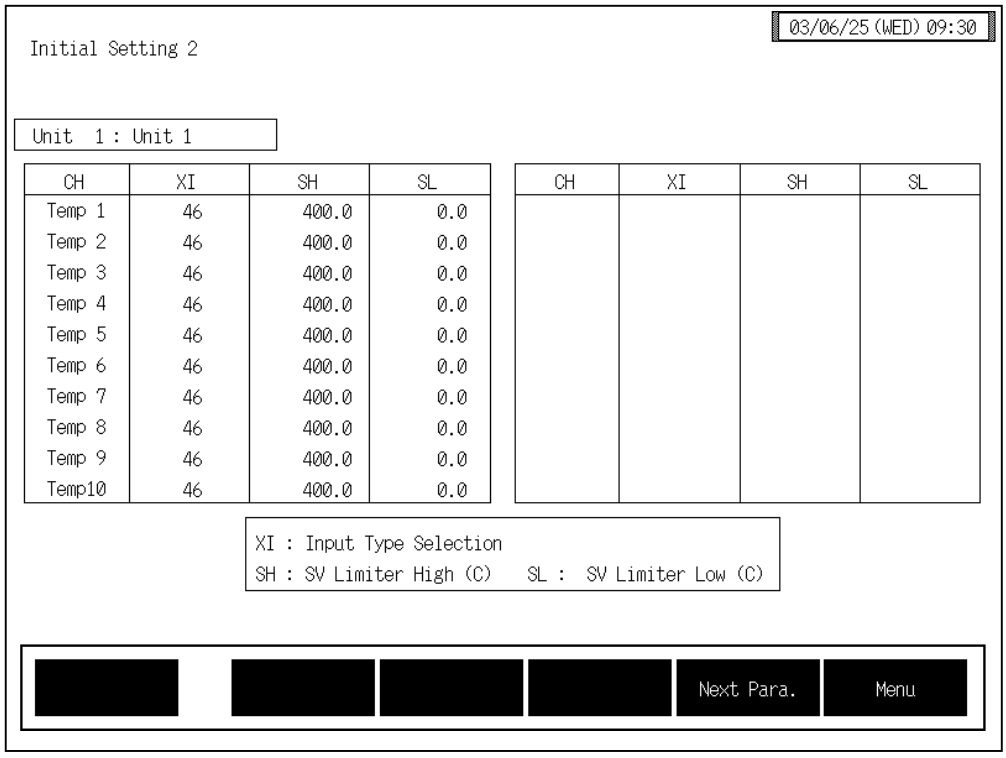
Next Para.: Touching this key changes to the screen one after the one being displayed.

Menu: Touching this key changes to the "Initial Setting 2 Menu" screen.

3.9.35 Input range number (XI), Setting limiter (SH, SL) screen [H-TIO-□, H-CIO-A module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Input range number (XI):
Sets the input range number.
Setting range: H-TIO-A/B/C/D/K/P: 0 to 63
H-TIO-E/F/G/R、H-CIO-A: 0 to 120
H-TIO-H/J、H-CIO-A: 0 to 12
See ■ **Input range table (P. 3-217)**.
Factory set value: Varies depending on the specifications when ordering.

If the input range number is changed, all of the settings corresponding to the channels in the relevant module return to the default values.

Setting limiter (high) [SH]:

Sets the setting limiter (high).

Setting range: TC/RTD input:
Setting limiter (low) to input range (high limit)
Current/voltage input:
Setting limiter (low) to display scale high

Factory set value: TC/RTD input: Input range (high limit)
Current/voltage input: Display scale high

Setting limiter (low) [SL]:

Sets the setting limiter (low).

Setting range: TC/RTD input:
Input range (low limit) to setting limiter (high)
Current/voltage input:
Display scale low to setting limiter (high)

Factory set value: TC/RTD input: Input range (low limit)
Current/voltage input: Display scale low

■ Input range table

Thermocouple input (H-TIO-A/B/C/D/E/G/K/P/R, H-TI-B/C, H-CIO-A)

Input type		Range No.
K	0 to 400 °C	0
	0 to 800 °C	1
	0 to 1300 °C	2
	0.0 to 400.0 °C	46
	0.0 to 800.0 °C	47
	0.0 to 1300.0 °C [1]	80
	0 to 800 °F	3
	0.0 to 800.0 °F	48
	0 to 2400 °F	4
	0.0 to 2400.0 °F [1]	81
	−200.0 to +300.0 °C [1]	64
	−100.0 to +400.0 °C [2]	67
J	0 to 400 °C	5
	0 to 800 °C	6
	0 to 1200 °C	7
	0.0 to 400.0 °C	49
	0.0 to 800.0 °C	50
	0.0 to 1200.0 °C [1]	82
	0 to 1600 °F	8
	0.0 to 700.0 °F	51
	0 to 2100 °F	9
	0.0 to 1600.0 °F [1]	83
	−200.0 to +300.0 °C [1]	65
R	0 to 1700 °C	10
	0.0 to 1700.0 °C [1]	84
	0 to 3000 °F	11
S	0 to 1700 °C	12
	0.0 to 1700.0 °C [1]	85
	0 to 3000 °F	13
B [3]	0 to 1800 °C	14
	0.0 to 1800.0 °C [1]	86
	0 to 3000 °F	15
E	0 to 1000 °C	17
	0.0 to 700.0 °C	52
	0 to 400 °C	16
	0.0 to 400.0 °C [1]	87
	0.0 to 1000.0 °C [1]	88
	0 to 1800 °F	18
	0.0 to 1800.0 °F [1]	89

Input type		Range No.
T	0.0 to 400.0 °C	53
	0 to 400 °C	20
	0 to 200 °C	19
	−200 to +200 °C	21
	0.0 to 200.0 °C [1]	90
	−200.0 to +200.0 °C [1]	91
	0.0 to 700.0 °F	54
	0 to 700 °F	22
	−300 to +400 °F	23
	−300.0 to +400.0 °F [1]	92
N	0 to 1300 °C	24
	0.0 to 1300.0 °C [1]	93
	0 to 2300 °F	25
	0.0 to 2300.0 °F [1]	94
PL II	0 to 1200 °C	26
	0.0 to 1200.0 °C [1]	95
	0 to 2300 °F	27
	0.0 to 2300.0 °F [1]	96
W5Re/ W26Re	0 to 2300 °C	28
	0.0 to 2300.0 °C [1]	97
	0 to 3000 °F	29
U	0.0 to 600.0 °C	55
	0 to 400 °C	30
	−200 to +200 °C	31
	0.0 to 400.0 °C [1]	98
	−200.0 to +200.0 °C [1]	99
	0 to 700 °F	32
	−300 to +400 °F	33
	0.0 to 700.0 °F [1]	100
	−300.0 to +400.0 °F [1]	101
L	0 to 400 °C	34
	0.0 to 400.0 °C	56
	0.0 to 900.0 °C	57
	0 to 900 °C	35
	0 to 800 °F	36
	0 to 1600 °F	37
	0.0 to 800.0 °F [1]	102
	0.0 to 1600.0 °F [1]	103

[1] The range can be specified only by H-TIO-E/G/R, H-TI-B or H-CIO-A module (high accuracy type).

[2] The range can be specified only by H-TIO-A/B/C/D [Z-1013 specification] or H-TI-C module [Z-1013 specification].

[3] Accuracy is not guaranteed between 0 to 399 °C (0 to 799 °F) for type “B” thermocouple input.

RTD input (H-TIO-A/B/C/D/E/F/G/K/P/R, H-TI-A/B, H-CIO-A)

Input type		Range No.
JPt100	0.0 to 400.0 °C	59
	0 to 400 °C	38
	−200 to +200 °C	39
	−200.0 to +200.0 °C	58
	−50.00 to +150.00 °C [1]	106
	−300 to +900 °F	41
	0 to 800 °F	40
	0.0 to 800.0 °F	60
	−300.0 to +900.0 °F [2]	104
Pt100	0.0 to 400.0 °C	62
	0 to 400 °C	42
	−200 to +200 °C	43
	−200.0 to +200.0 °C	61
	−50.00 to +150.00 °C [1]	107
	−300 to +1200 °F	45
	0 to 800 °F	44
	0.0 to 800.0 °F	63
	−300.0 to +1200.0 °F [2]	105

[1] The range with the resolution of 1/100 can be specified only by H-TIO-E module.
[2] The range can be specified only by H-TIO-F module (high accuracy type).

Current input and Voltage input (H-TIO-H/J, H-CIO-A)

Input type			Range No.	Input group
Voltage input *	0 to 10 mV DC	0.0 to 100.0 %	0	Voltage (low) input group
	−10 to +10 mV DC	0.0 to 100.0 %	1	
	0 to 100 mV DC	0.0 to 100.0 %	2	
	−100 to +100 mV DC	0.0 to 100.0 %	3	
	0 to 1 V DC	0.0 to 100.0 %	4	
	−1 to +1 V DC	0.0 to 100.0 %	5	
	0 to 5 V DC	0.0 to 100.0 %	6	
	1 to 5 V DC	0.0 to 100.0 %	7	
	−5 to +5 V DC	0.0 to 100.0 %	8	
	0 to 10 V DC	0.0 to 100.0 %	9	Voltage (high) input group
	−10 to +10 V DC	0.0 to 100.0 %	10	
Current input *	0 to 20 mA DC	0.0 to 100.0 %	11	Current input group
	4 to 20 mA DC	0.0 to 100.0 %	12	

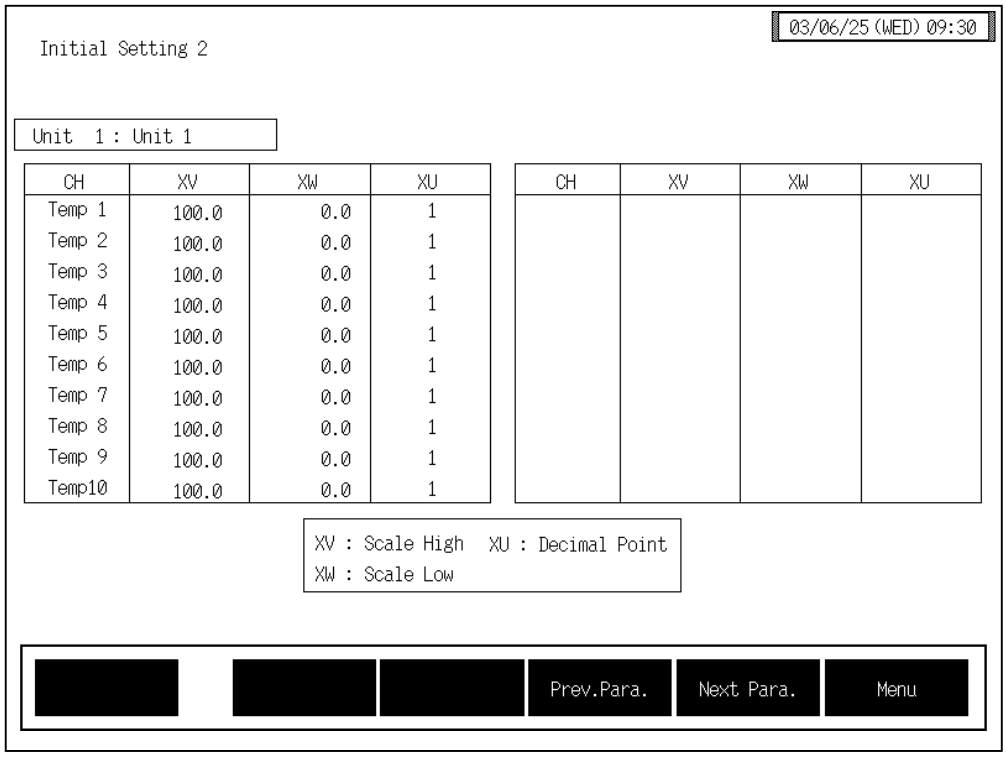
* Display scale of the current and voltage input can be changed.

An input type change may only be made within the input groups as shown above.

3.9.36 Display scale (XV, XW), Decimal point position (XU) screen [H-TIO-H/J, H-CIO-A module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Display scale high (XV):
Sets the display scale high limit (current/voltage input).
Setting range: Span 10000 or less (within −9999 to +10000)
Factory set value: 100.0
The position of the decimal point differs on Decimal point position (XU) setting.

Display scale low (XW):
Sets the display scale low limit (current/voltage input).
Setting range: Span 10000 or less (within −9999 to +10000)
Factory set value: 0.0
The position of the decimal point differs on Decimal point position (XU) setting.

Decimal point position (XU):

Sets the input display (current/voltage input) decimal point position.

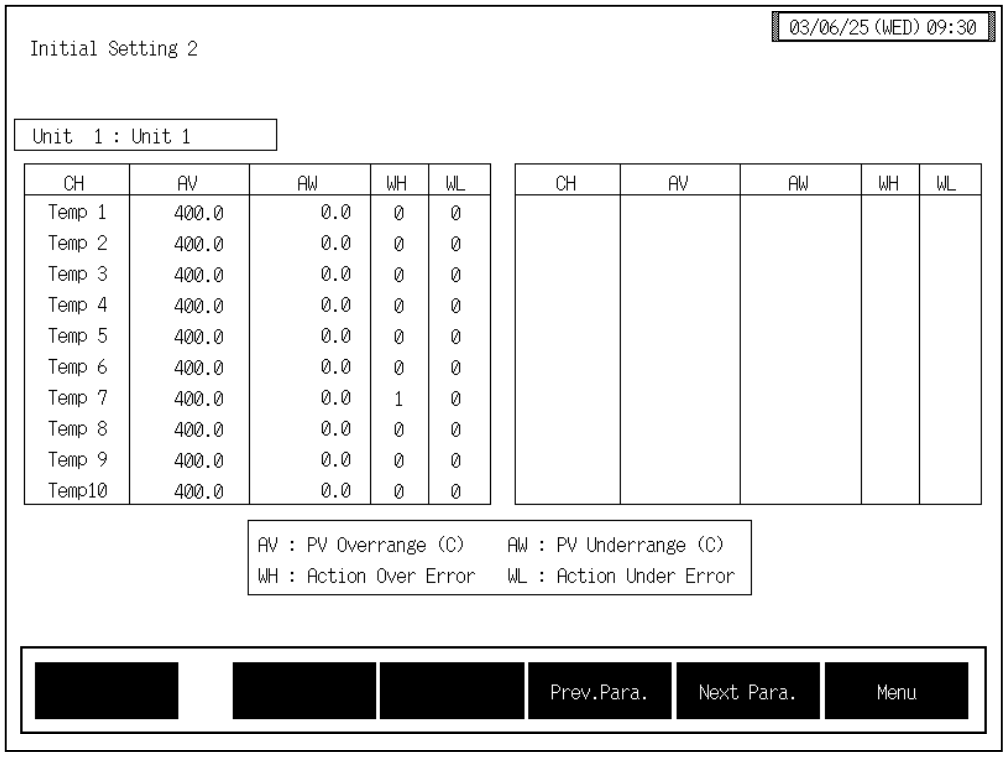
Setting range: 0: No decimal place
1: One decimal place
2: Two decimal places
3: Three decimal places

Factory set value: 1

3.9.37 Input error determination point (AV, AW), Action at input error (WH, WL) screen [H-TIO-☐, H-CIO-A module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Input error determination point (high limit) [AV]:
Sets the high limit of the abnormal input trigger point.
If temperature measured value (PV) exceeds this limit, takes action for abnormal input.

Setting range:	TC/RTD input:	Within input range
	Current/voltage input:	Within display scale range
Factory set value:	TC/RTD input:	Input range (high limit)
	Current/voltage input:	Display scale high

Input error determination point (low limit) [AW]:

Sets the low limit of the abnormal input trigger point.
If temperature measured value (PV) falls below this limit, takes action for abnormal input.

Setting range:	TC/RTD input:	Within input range
	Current/voltage input:	Within display scale range
Factory set value:	TC/RTD input:	Input range (low limit)
	Current/voltage input:	Display scale low

Action at input error (high limit) [WH]:

Selects action taken when temperature measured value (PV) exceeds the high limit of the abnormal input trigger point.

Setting range:	0: Normal control	
	1: Manipulated output value at input error	
Factory set value:	Heat control (H-TIO-□/H-CIO-A):	0
	Heat/cool control (H-TIO-□/H-CIO-A):	1
	Position proportioning control (H-TIO-K):	0

Action at input error (low limit) [WL]:

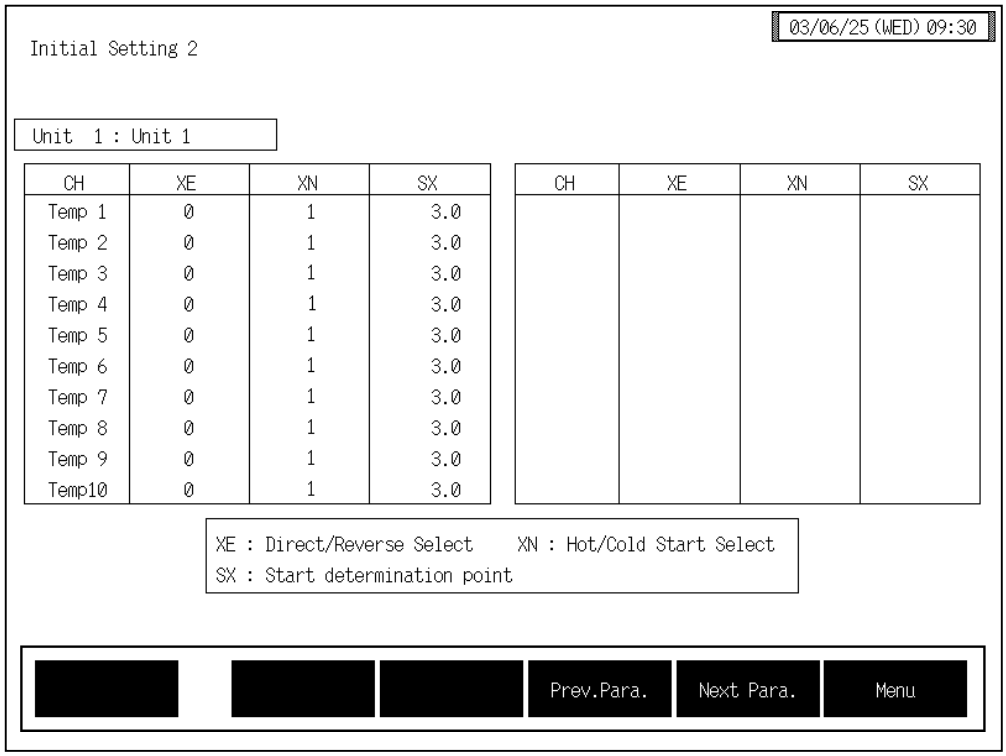
Selects action taken when temperature measured value (PV) falls below the low limit of the abnormal input trigger point.

Setting range:	0: Normal control
	1: Manipulated output value at input error
Factory set value:	0

3.9.38 Direct/Reverse action selection (XE), Hot/Cold start selection (XN), Start determination point (SX) screen [H-TIO-☐, H-CIO-A module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH: Displays the TIO channel name.
The channel name can be changed with the OPC initial "TIO CH Name Set, Memory Area Name Set" screen (P. 3-154).

Direct/Reverse action selection (XE):
Sets direct/reverse control action.
Setting range: 0: Direct action
1: Reverse action
Factory set value: Varies depending on the specifications when ordering.

If the Direct/Reverse action selection is changed, all of the settings corresponding to the channels in the relevant module return to the default values. Setting will be invalid in heat/cool control.

Hot/Cold start selection (XN):

Sets the action taken when power failure recovers.

Setting range: 0: Hot start
At restarting:
Operation mode → Same as mode before the power failure
Output value → Same as value before the power failure
1: Cold start
At restarting:
Operation mode → Same as mode before the power failure
Output value → Output limiter (low)

Factory set value: 1

Start determination point (SX):

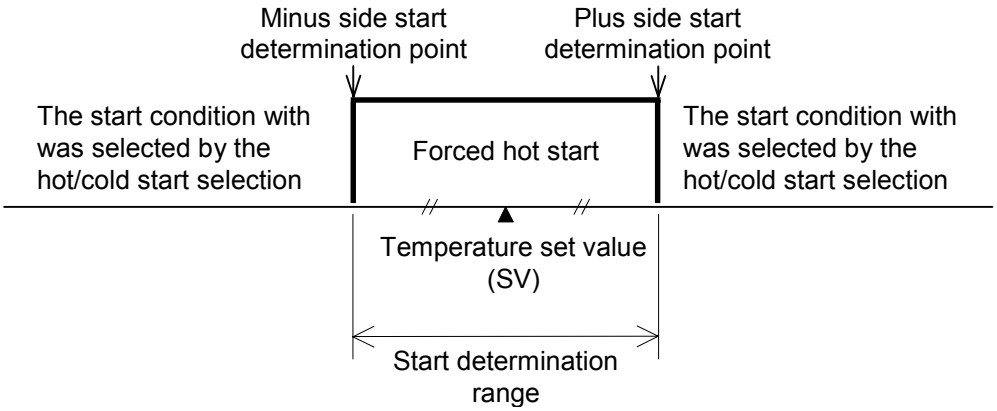
Sets the forced hot start range by setting the deviation from the temperature set value.

Setting range: 0.0 to 100.0 % of span
(Deviation setting from the temperature set value)

Factory set value: 3.0

< Start determination point >

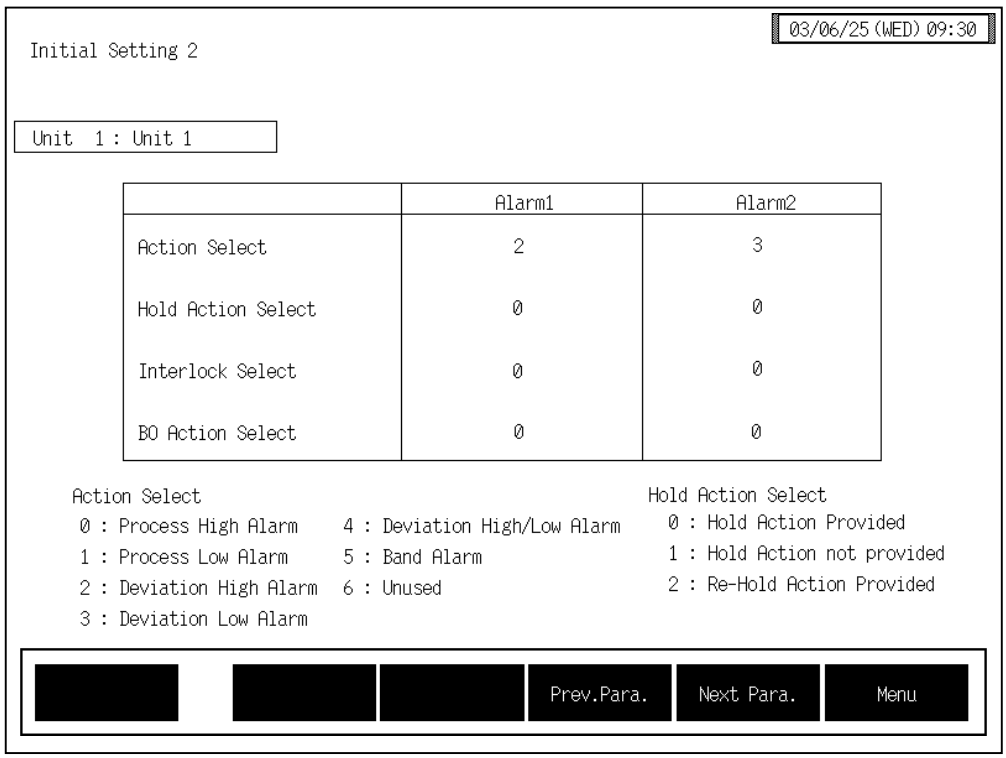
On restarting after power failure, if the temperature measured value (PV) is within the setting range by the start determination points, the hot start will definitely be carried out. If the temperature measured value (PV) is outside this range, the operation will begin with the start condition with was selected by the hot/cold start selection (Identifier XN).



3.9.39 TIO alarm related screen [H-TIO-□, H-CIO-A module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



Action Select: Sets the alarm 1 and alarm 2 type.
Setting range: 0: Process high alarm
1: Process low alarm
2: Deviation high alarm
3: Deviation low alarm
4: Deviation high/low alarm
5: Band alarm
6: No alarm function
Factory set value: Varies depending on the specifications when ordering.

Hold Action Select: Sets the used/unused of alarm 1 and alarm 2 hold action.
Setting range: 0: Not hold action
1: Hold action
2: Re-hold action
(Re-hold action will be valid in deviation alarm.)
Factory set value: Varies depending on the specifications when ordering.

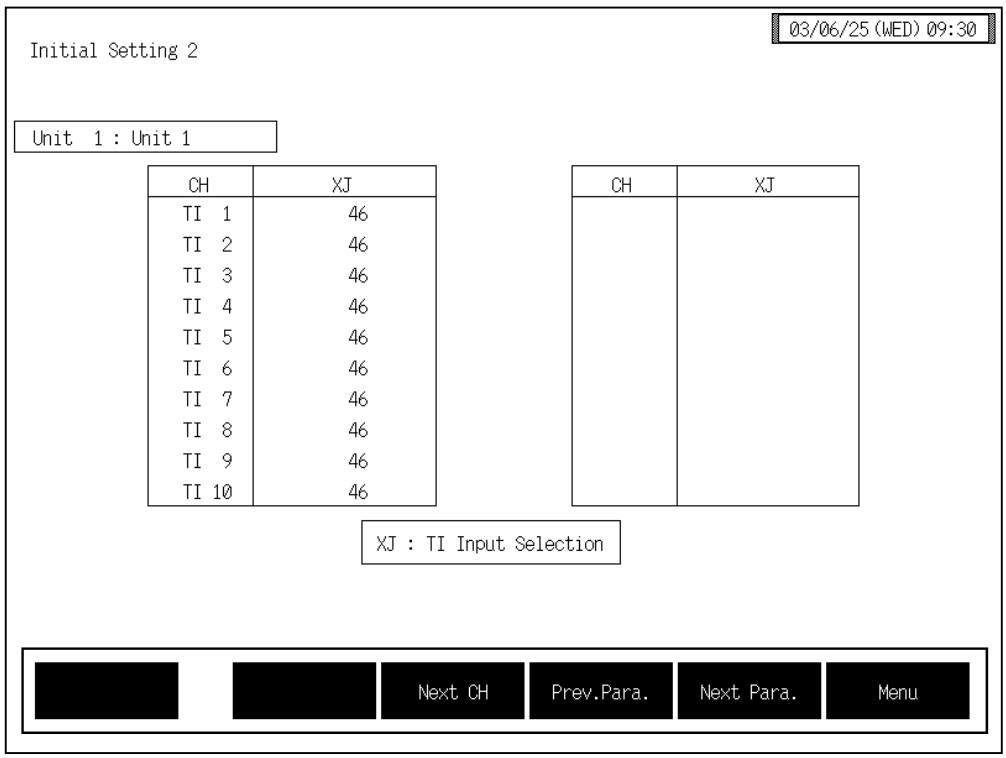
Interlock Select: Sets the used/unused of alarm 1 and alarm 2 interlock.
Setting range: 0: Unused
1: Used
Factory set value: 0

BO Action Select: Sets the alarm 1 and alarm 2 action when temperature measured value (PV) exceeds the abnormal input trigger input.
Setting range: 0: Normal alarm action
1: Forced alarm ON when temperature measured value (PV) exceeds abnormal input trigger input.
Factory set value: 0

3.9.40 TI input range number (XJ) [H-TI-A/B/C module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH: Displays the TI channel name.
The channel name can be changed with the OPC initial "TI CH Name Set" screen (P. 3-155).

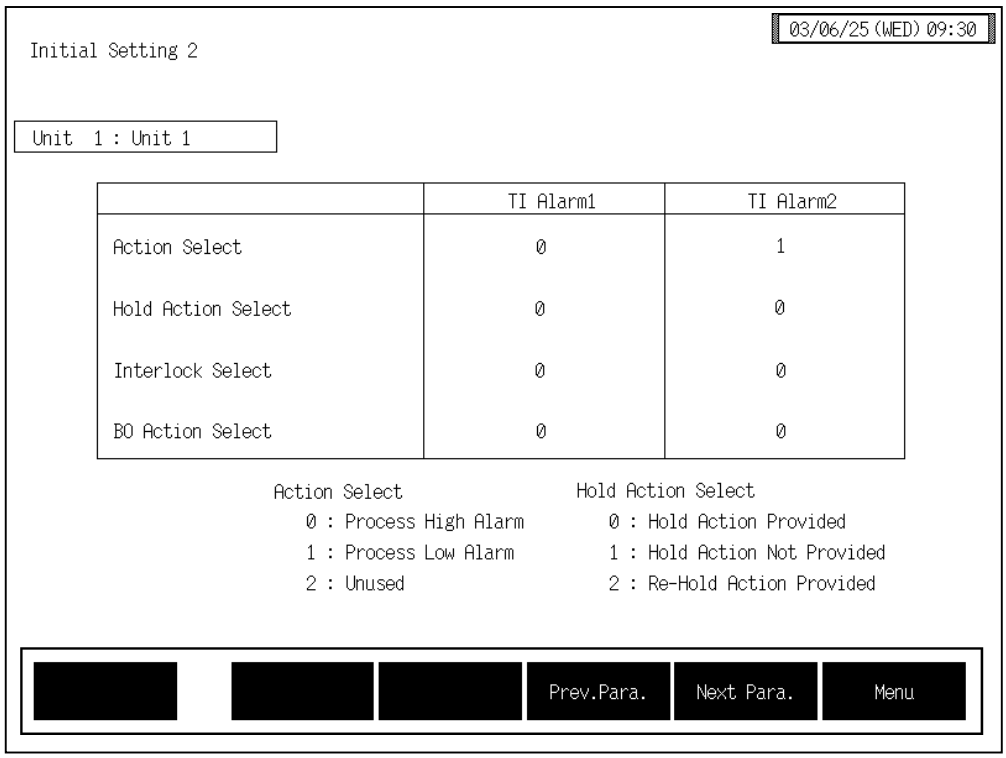
TI input range number (XJ):
Sets the input range number of H-TI-□ module.
Setting range: 0 to 120
See ■ **Input range table (P. 3-217)**.
Factory set value: Varies depending on the specifications when ordering.

If the input range number is changed, all of the settings corresponding to the channels in the relevant module return to the default values.

3.9.41 TI alarm related screen [H-TI-A/B/C module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



Action Select: Sets the TI alarm 1 and TI alarm 2 type.
Setting range: 0: Process high alarm
1: Process low alarm
2 to 6: No alarm function
Factory set value: Varies depending on the specifications when ordering.

Hold Action Select: Sets the used/unused of TI alarm 1 and TI alarm 2 hold action.
Setting range: 0: Not hold action
1: Hold action
Factory set value: Varies depending on the specifications when ordering.

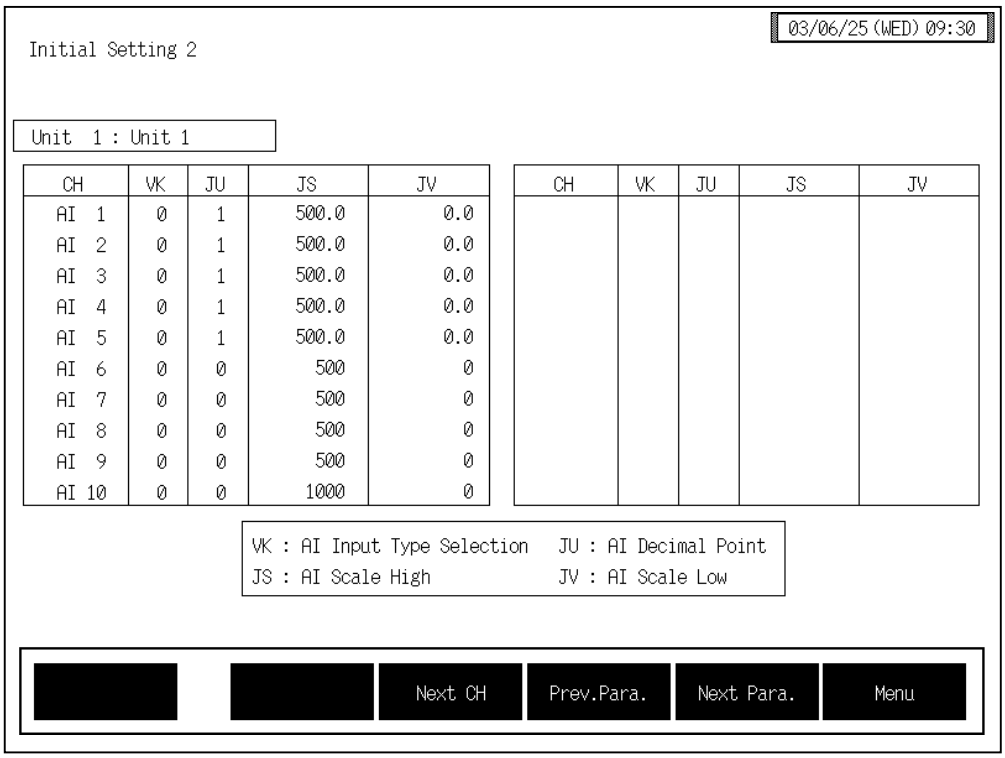
Interlock Select: Sets the used/unused of TI alarm 1 and TI alarm 2 interlock.
Setting range: 0: Unused
1: Used
Factory set value: 0

BO Action Select: Sets the TI alarm 1 and TI alarm 2 action when temperature measured value (PV) exceeds the abnormal input trigger input.
Setting range: 0: Normal alarm action
1: Forced alarm ON when TI measured value exceeds abnormal input trigger input.
Factory set value: 0

3.9.42 AI input range number (VK), AI decimal point position (JU), AI display scale (JS, JV) screen [H-AI-A/B module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH	VK	JU	JS	JV
AI 1	0	1	500.0	0.0
AI 2	0	1	500.0	0.0
AI 3	0	1	500.0	0.0
AI 4	0	1	500.0	0.0
AI 5	0	1	500.0	0.0
AI 6	0	0	500	0
AI 7	0	0	500	0
AI 8	0	0	500	0
AI 9	0	0	500	0
AI 10	0	0	1000	0

CH	VK	JU	JS	JV

CH: Displays the AI channel name.
The channel name can be changed with the OPC initial "AI CH Name Set" screen (P. 3-156).

AI input range number (VK):
Sets the input range number of H-AI-□ module.
Setting range:

0:	DC 0 to 10 mV	0 to 8: Voltage (low) input group
1:	DC −10 to +10 mV	
2:	DC 0 to 100 mV	
3:	DC −100 to +100 mV	
4:	DC 0 to 1 V	
5:	DC −1 to +1 V	
6:	DC 0 to 5 V	
7:	DC 1 to 5 V	
8:	DC −5 to +5 V	
9:	DC 0 to 10 V	9 to 10: Voltage (high) input group
10:	DC −10 to +10 V	
11:	DC 0 to 20 mA	11 to 12: Current input group
12:	DC 4 to 20 mA	

An input type change may only be made within the input groups as shown above.

If the input range number is changed, all of the settings corresponding to the channels in the relevant module return to the default values.

Factory set value: Varies depending on the specifications when ordering.

AI decimal point position (JU):

Sets the AI display decimal point position.

Setting range: 0: No decimal place
1: One decimal place
2: Two decimal places
3: Three decimal places

Factory set value: 1

AI display scale high (JS):

Sets the AI display scale high limit.

Setting range: Span 10000 or less (within −9999 to +10000)

Factory set value: 100.0

The position of the decimal point differs on AI decimal point position (JU) setting.

AI display scale low (JV):

Sets the AI display scale low limit.

Setting range: Span 10000 or less (within −9999 to +10000)

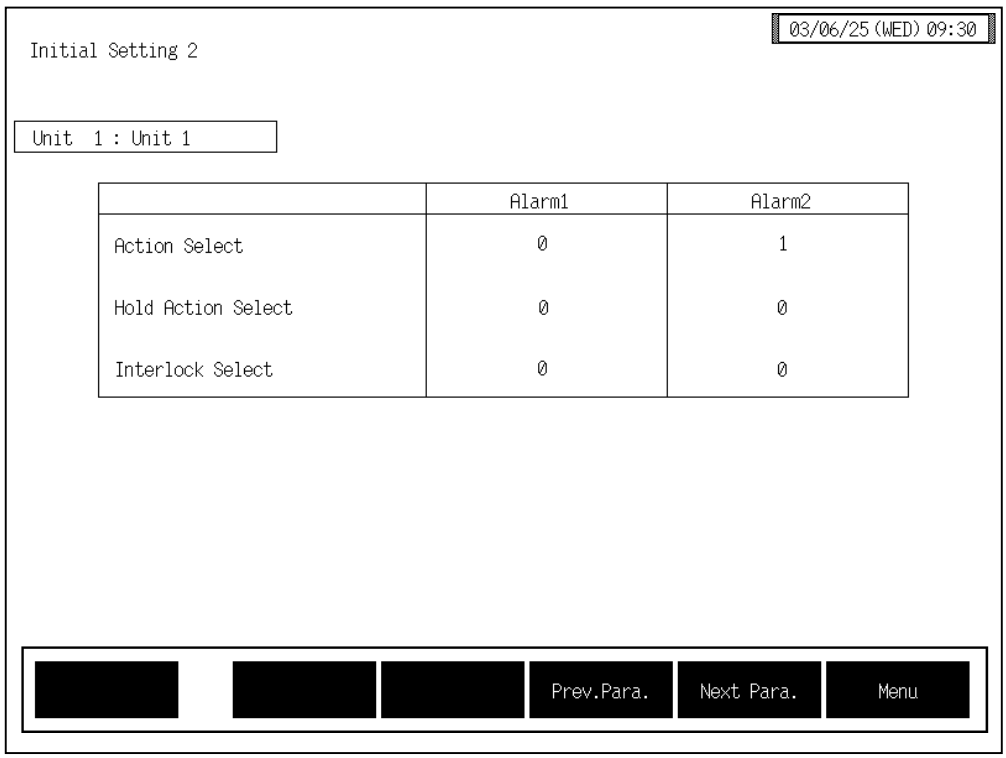
Factory set value: 0.0

The position of the decimal point differs on AI decimal point position (JU) setting.

3.9.43 AI alarm related [H-AI-A/B module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



Action Select: Sets the AI alarm 1 and AI alarm 2 type.
Setting range: 0: Process high alarm
1: Process low alarm
2 to 6: No alarm function
Factory set value: Varies depending on the specifications when ordering.

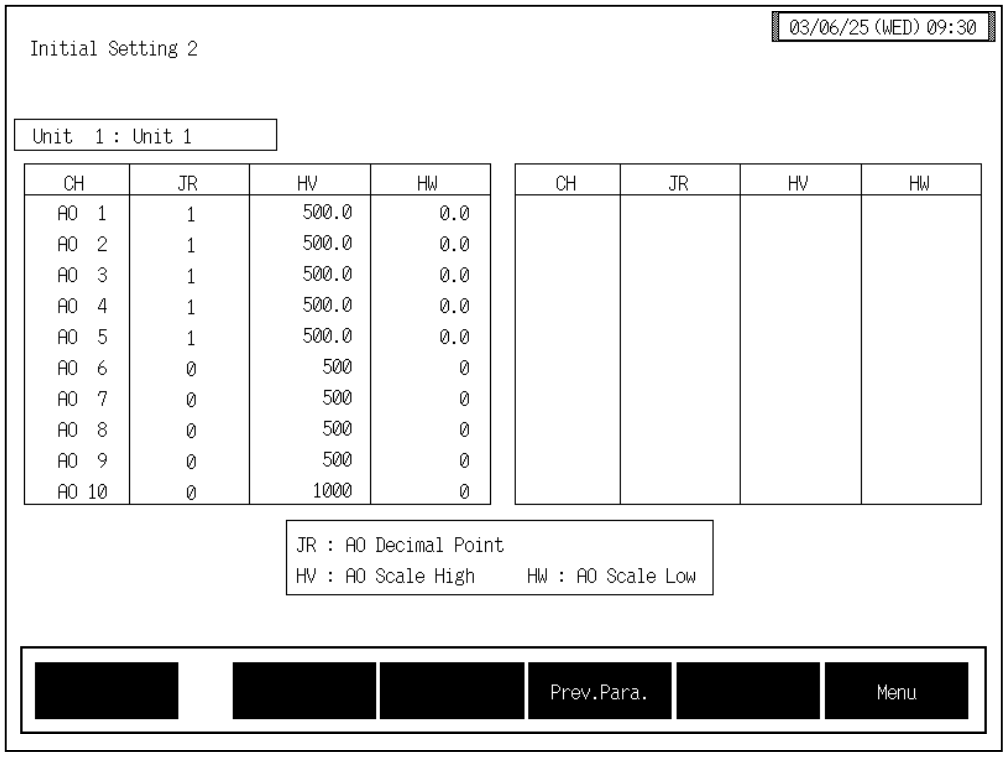
Hold Action Select: Sets the used/unused of AI alarm 1 and AI alarm 2 hold action.
Setting range: 0: Not hold action
1: Hold action
Factory set value: Varies depending on the specifications when ordering.

Interlock Select: Sets the used/unused of AI alarm 1 and AI alarm 2 interlock.
Setting range: 0: Unused
1: Used
Factory set value: 0

3.9.44 AO decimal point position (JR), AO display scale (HV, HW) [H-AO-A/B module]

Changes the screen by touching [Prev. Para.] key or [Next Para.] key.

☞ For the setting procedure, see the **3.2.2 Data settings (P. 3-12)**.
☞ For the function keys and other items, see the **3.9.34 Basic configuration of initial setting 2 screen (P. 3-214)**.



CH: Displays the AO channel name.
The channel name can be changed with the OPC initial "AO CH Name Set" screen (P. 3-158).

AO decimal point position (JR):
Sets the AO display decimal point position.
Setting range: 0: No decimal place
1: One decimal place
2: Two decimal places
3: Three decimal places
Factory set value: 1

AO display scale high (HV):
Sets the AO display scale high limit.
Setting range: Span 10000 or less (within −9999 to +10000)
Factory set value: 100.0
The position of the decimal point differs on AO decimal point position (JR) setting.

AO display scale low (HW):

Sets the AO display scale low limit.
Setting range: Span 10000 or less (within −9999 to +10000)
Factory set value: 0.0
The position of the decimal point differs on AO decimal point position (JR) setting.

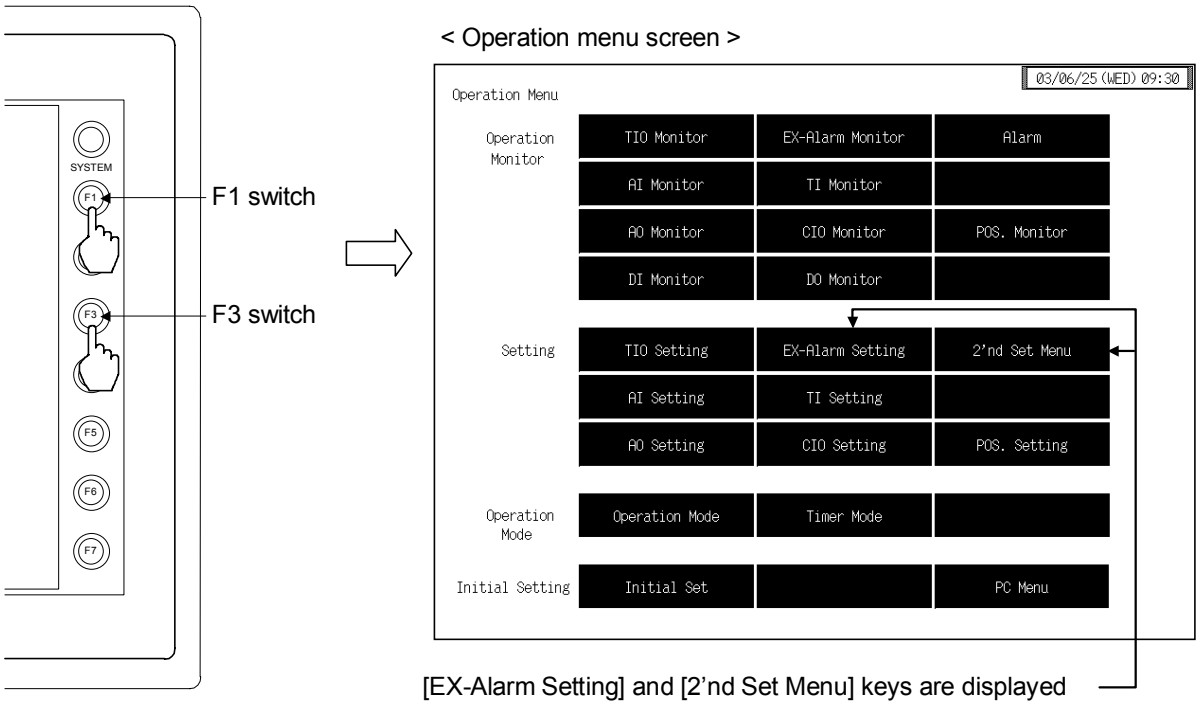
3.10 ROM VERSION CHECK

On the “ROM Number” screen, it is possible to check operation panel and control unit ROM version. You can not change to the “ROM Number” screen without removing the protection.

■ Releasing protect

1. Call up the “Operation Menu” screen.

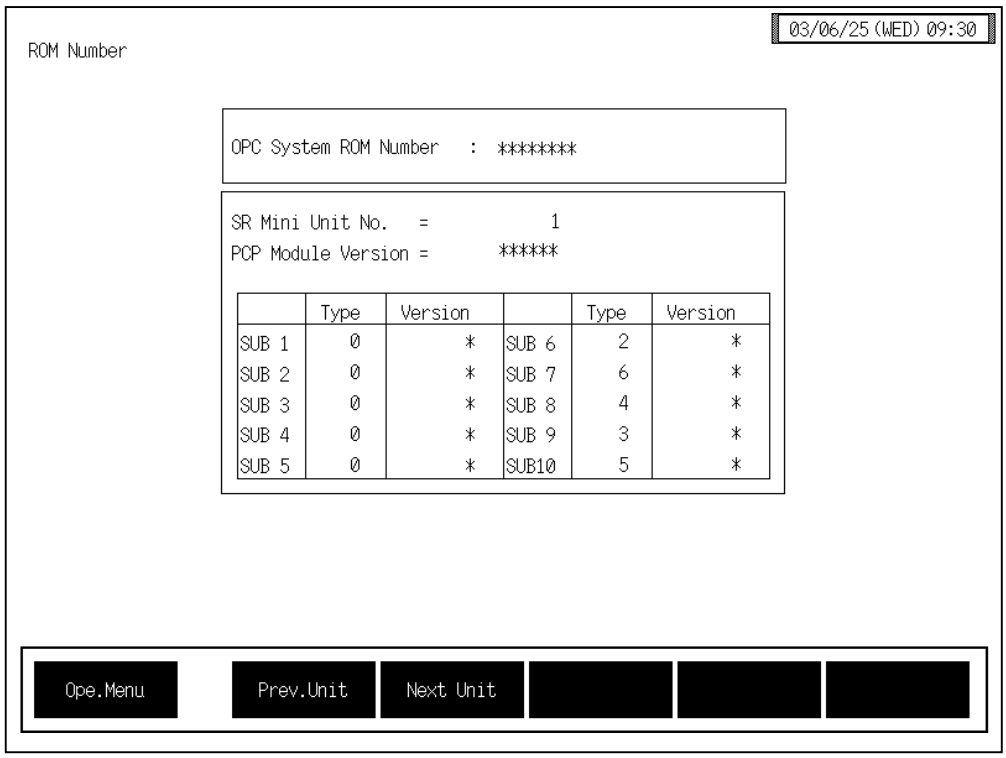
2. Press and hold the [F1] switch, and press the [F3] switch at the same time.
[EX-Alarm Setting] and [2’nd Set Menu] keys are displayed.



This diagram is created by the OPC-V07 (8.4 inches) and OPC-V07 (10.4 inches). For the OPC-V07 (12.1 inches), function switches are located under the screen.

3. Touching the selection where time is displayed on the screen changes to the “ROM Number” seen.

■ ROM Number screen



OPC System ROM Number:
Display the screen ROM number of operation panel OPC-V07.

SR Mini Unit No.: Display the control unit number.

PCP Module Version:
Display the ROM number of H-PCP-☐ module.

SUB 1 to SUB10: Displays the module configuration number in the control unit.

Type: Displays the type number of each module other than the H-PCP-☐ module.

Version: Displays the ROM number of each module other than the H-PCP-☐ module.

Function key:

Ope.Menu: Touching this key changes to the "Operation Menu" screen.

Prev.Unit: Touching this key changes to the screen for the previous unit.
When there is only one control unit, touching this key does not change the display.

Next Unit: Touching this key changes to the screen for the next unit.
When there is only one control unit, touching this key does not change the display.

MEMO

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