Operation Panel

OPC-V06

[For SR Mini HG SYSTEM]

Instruction Manual

RKC INSTRUMENT INC. IMS01M03-E3

- 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.

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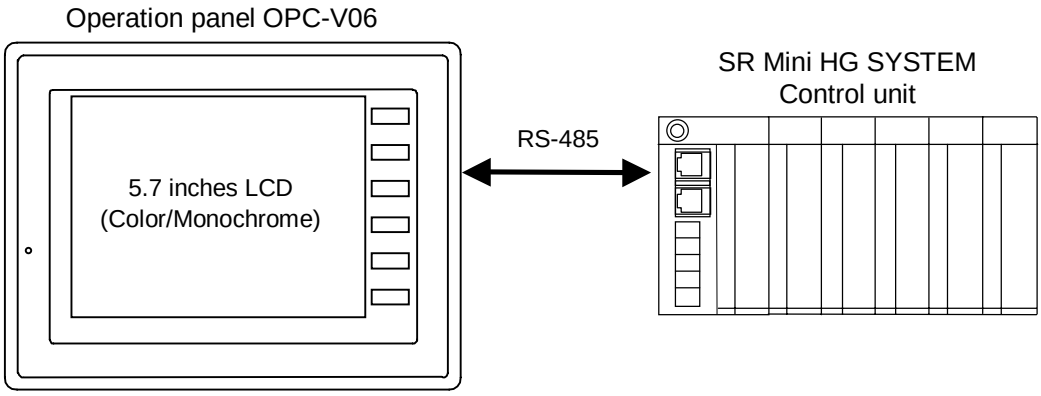
1 OUTLINE

1.1 Features

This instrument 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.



■ Easy operation using the transparent touch panel

By touching the transparent touch panel on the display of this operation panel OPC-V06, 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-V06 has a dustproof, splashproof construction equivalent to **IP65** (IEC standards).
(Only the front section of the OPC-V06 mounted on the control panel.)

■ Data control by a memory card (option)

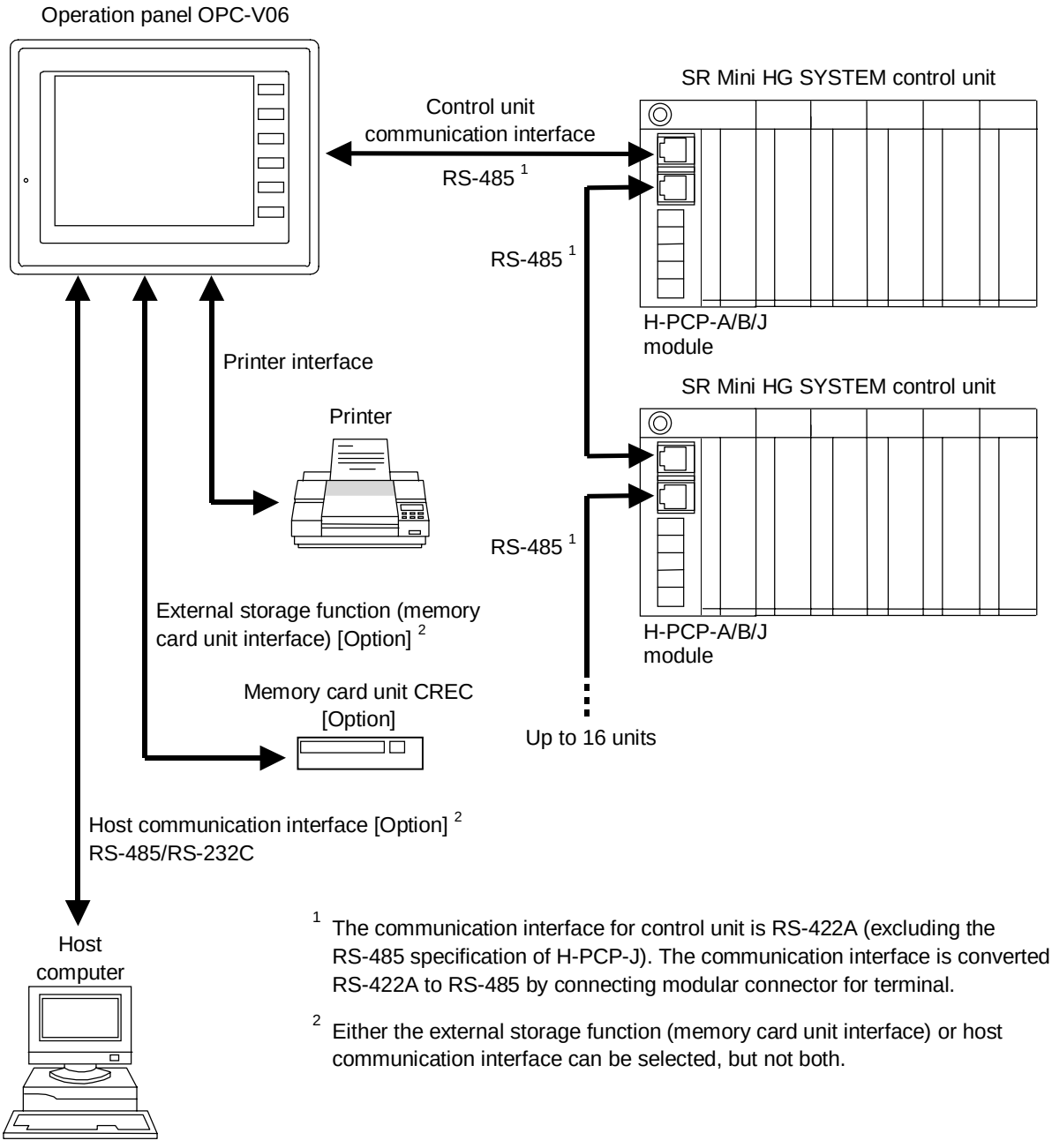
Set data (job files) during operation can be stored in the memory card by connecting an external storage unit (memory card unit).

■ 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

< System configuration >



1 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.

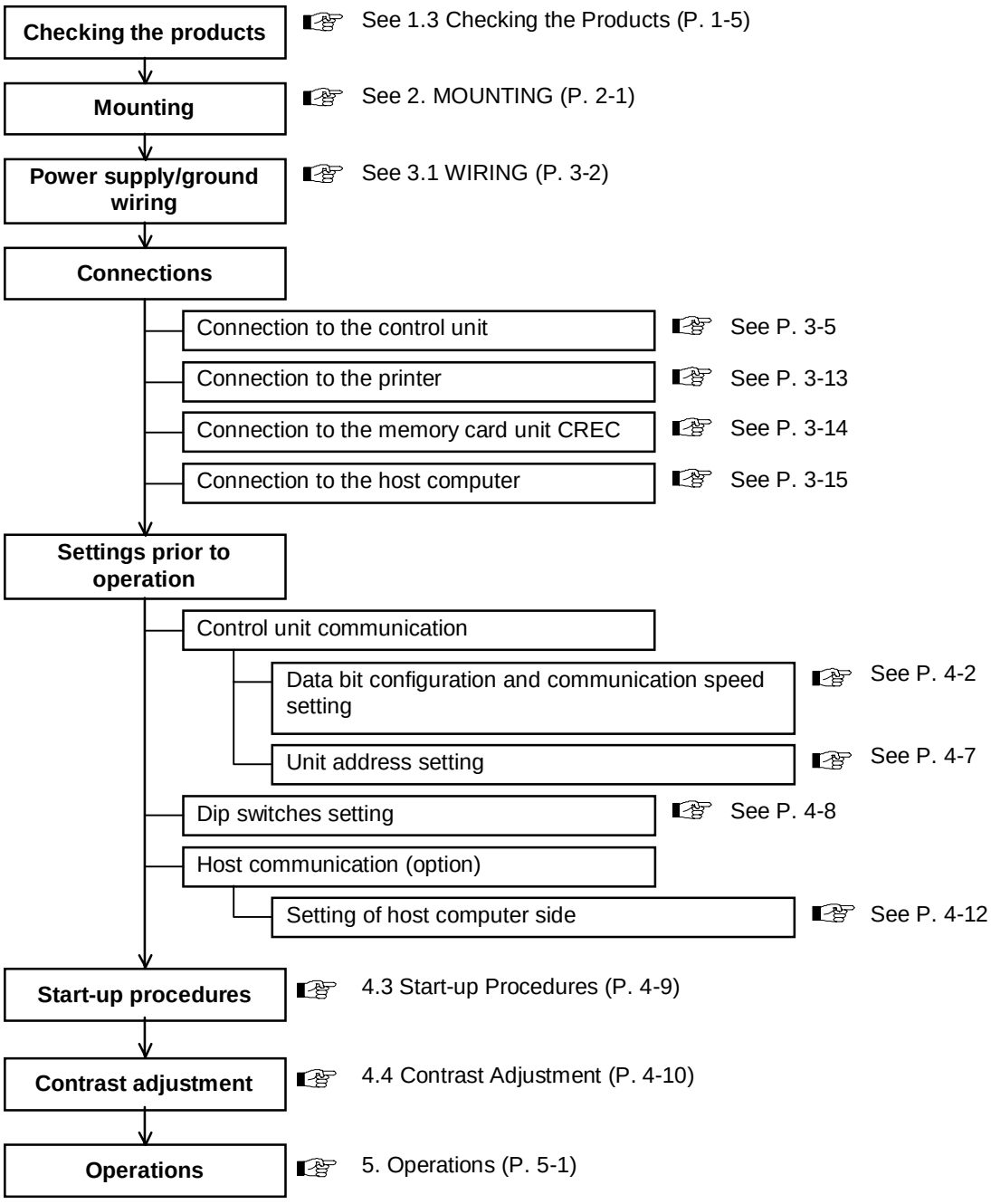
2 Either the external storage function (memory card unit interface) or host communication interface can be selected, but not both.

■ Usable Power supply/CPU modules (Control unit)

- H-PCP-A (DO 4 points type)
- H-PCP-B (DO 2 points type with DI function)
- H-PCP-J (PLC communication type)

1.2 Handling Procedures

Conduct handling according to the procedure described below.



1.3 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, or 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 - V06 - 1 □ 6 ∗ □□□ / □ - □□□ - □□□□□
(1)(2)(3) (4)(5)(6) (7) (8) (9) (10)(11) (12)

(1) Display size
1: 5.7 inches

(2) Display method
1: TFT color LCD
2: STN color LCD
3: STN monochrome LCD (blue mode)

(3) Power supply voltage
6: 24 V DC

(4) External storage function (memory card unit interface)
N: No function
M: With external storage function *

(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 module (RKC communication protocol)
2: H-PCP-J (Modbus 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

* Either the external storage function (memory card unit interface) or host communication interface can be selected, but not both.

■ Accessories

- Mounting brackets 4
- Operation panel OPC-V06 [For SR Mini HG SYSTEM]
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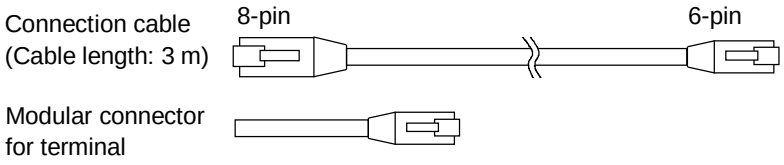
■ Peripheral equipment (Sold separately)

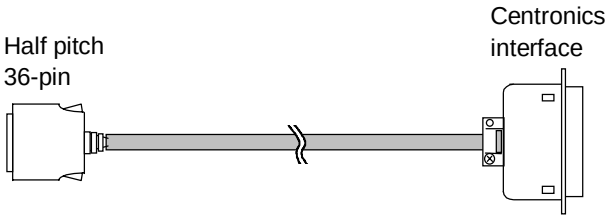
- Cable for control unit connection Type: V6-SR422

  Used for the connection of the OPC-V06 and the control unit (PCP module).
  With modular connector for terminal



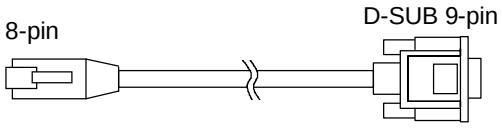
- Printer cable Type: V6-PT

  Used for the connection of the OPC-V06 (with printer interface) and the printer.
  Cable length: 2.5 m



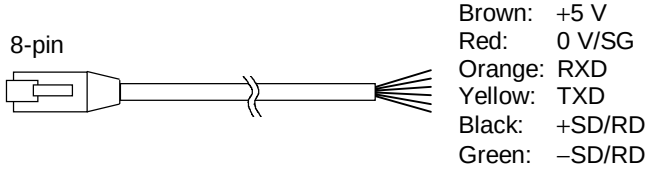
- Cable for host computer connection Type: V6-CP

  Used for the connection of the OPC-V06 (with host communication interface) and the host computer.
  With conversion connector (Type: ADP 25-9) for D-SUB 25-pin
  Cable length: 3 m



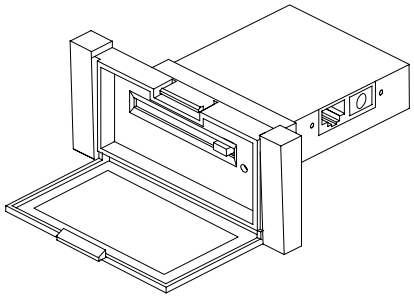
- Cable for host computer connection Type: V6-TMP

  Used for the connection of the OPC-V06 (with host communication interface) and the host computer.
  Cable length: 3 m



- Memory card unit Type: CREC

  Used for job file registration and data backup. Used for the connection of the OPC-V06 (with external storage function).
  With connection cable (Type: CREC-CP)



- Memory card Type: REC-MCARD SRAM 2M

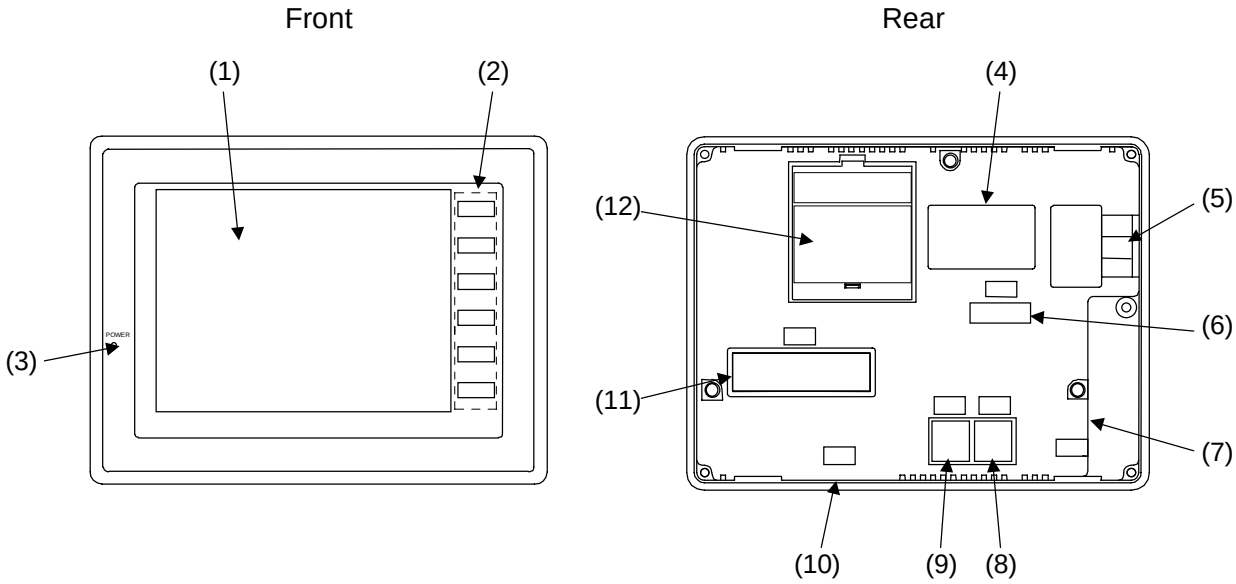
  Use as a recording medium for job file registration and data backup.
  Capacity: 2 MB

- Protection sheet Package of 5 sheets Type: V606-GS

  Protects the OPC-V06 surface.

1.4 Parts Description

■ Operation panel OPC-V06



(1) Display/touch panel

Displays various data and touch switches. And, they execute operation by the touch panel is also done.

(2) Function switches

Changes the main menu screen. Adjusts the contrast of LCD. In addition, pressing the F3 switch makes a hard copy of the screen.

☞ For details, see **4.4 Contrast Adjustment (P. 4-10)**.

(3) POWER lamp [Green]

This lamp lights in red when the power is supplied to the OPC-V06.

(4) Model code nameplate

Nameplate on which the model code and serial No. are described.

(5) Power terminals

Terminals for connecting the power and ground.

(6) Dip switches

Set the terminal resistance of connector.

☞ For details, see **4.2 Dip switches setting (P. 4-8)**.

(7) Connector for the PLC [CN1]

Cannot be used in this specification.

(8) Connector for the memory card unit/host computer [MJ1]

Connector to connect the memory card unit or host computer.

OPC-V06-1□6∗MN□/□-□NN-NNNNN:
Connector for the memory card unit

OPC-V06-1□6∗N1□/□-□□□-□□□□□:
Connector for the host computer (RS-232C)

OPC-V06-1□6∗N5□/□-□□□-□□□□□:
Connector for the host computer (RS-485)

(9) Connector for the control unit [MJ2]

Connector to connect the control unit.

(10) Connector for the printer [CN2]

Connector to connect the printer.

(11) Connector for the communication interface unit

Cannot be used in this specification.

(12) SRAM cassette

SRAM cassette is calendar timer and SRAM backup memories

2 MOUNTING

2.1 Mounting Precautions

⚠ WARNING

To prevent electric shock or instrument failure, always turn off the power before mounting or removing the operation panel.

■ Mounting Environment

(1) This instrument is intended to be used under the following environmental conditions. (**IEC61010-1)** [OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2]

(2) Use this instrument within the following ambient temperature and ambient humidity.

- Allowable ambient temperature: 0 to 50 °C
- Allowable ambient humidity: 5 to 95 % RH
  (Absolute humidity: MAX. W. C 29 g/m^3 dry air at 101.3 kPa)

(3) Avoid the following conditions when selecting the mounting location:

- Rapid changes in ambient temperature which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.
- Water, oil, chemicals, vapor or steam splashes. *
- Excessive dust, salt or iron particles. *
- Excessive induction noise, static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Exposure to direct sunlight.
- Excessive heat accumulation.

* The front OPC-V06 has a dustproof, splashproof construction equivalent to **IP65** when the instrument is mounted on the panel, allowing it to be used safety even in harsh environments.

📖 **IP65** (IP code)
Grades of protection against access to a dangerous place prescribed by IEC (International Electricity Standard Conference), alien solid substance or water intrusion, with the following conditions:

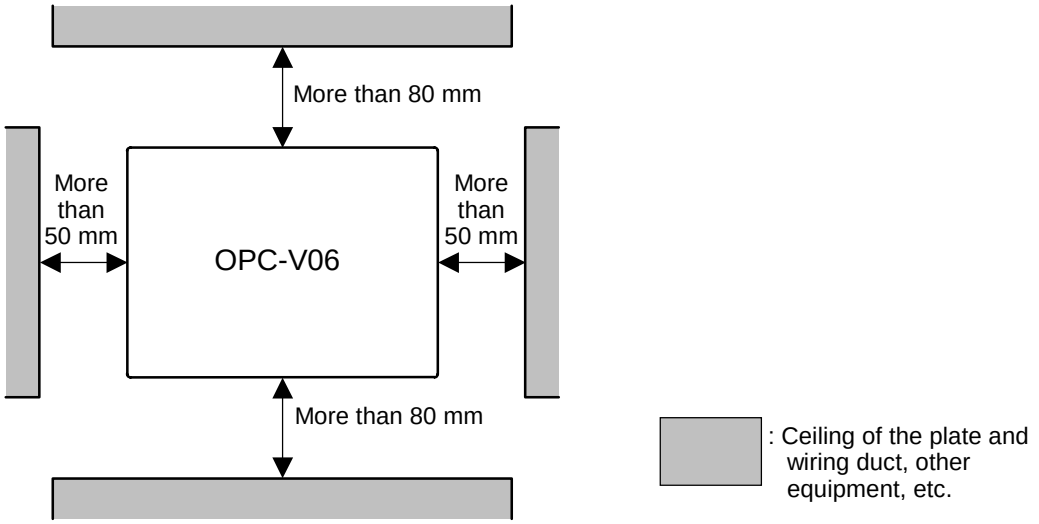
- No intrusion of dust of the quantity that operation and safety might be obstructed.
- No intrusion of wire with a diameter 1.0 mm.
- No adverse or harmful influence even if it is based on the jet flow water from every direction.

Corresponding standard: IEC 529, JIS C 0920

■ Mounting position inside the panel

Take the following points into consideration when mounting this instrument in the panel.

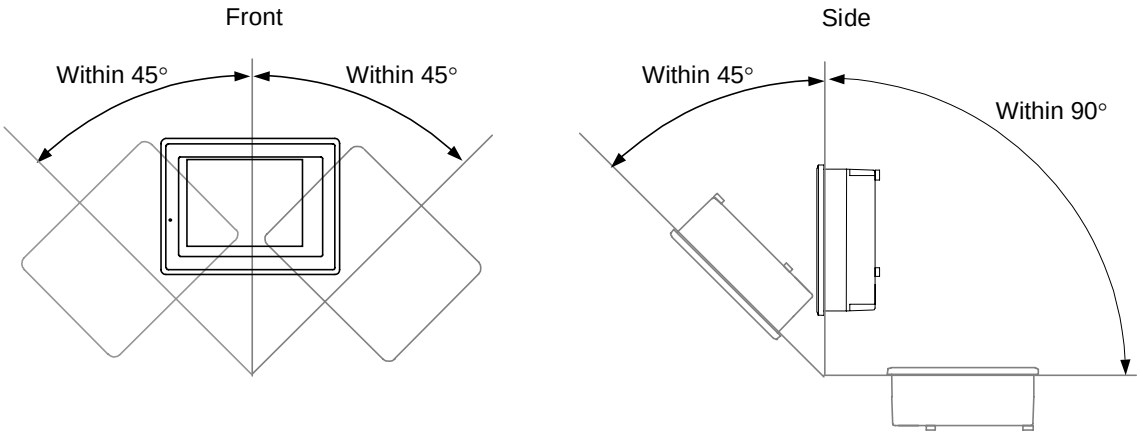
- Provide adequate ventilation space so that heat does not build up. At least 50 mm is necessary on the left and right and at least 80 mm on the top and bottom.



- Do not mount this instrument directly above equipment that generates large amount of heat (heaters, transformers, semi-conductor functional devices, large-wattage resistors).
- If the ambient temperature rises above 50 °C, cool this instrument with a forced air fan, cooler, or the like. However, do not allow cooled air to blow this instrument directly.
- In order to improve safety and the immunity to withstand noise, mount this instrument as far away as possible from high voltage equipment, power lines, and rotating machinery.
  High voltage equipment: Do not mount within the same panel.
  Power lines: Separate at least 200 mm.
  Rotating machinery: Separate as far as possible.

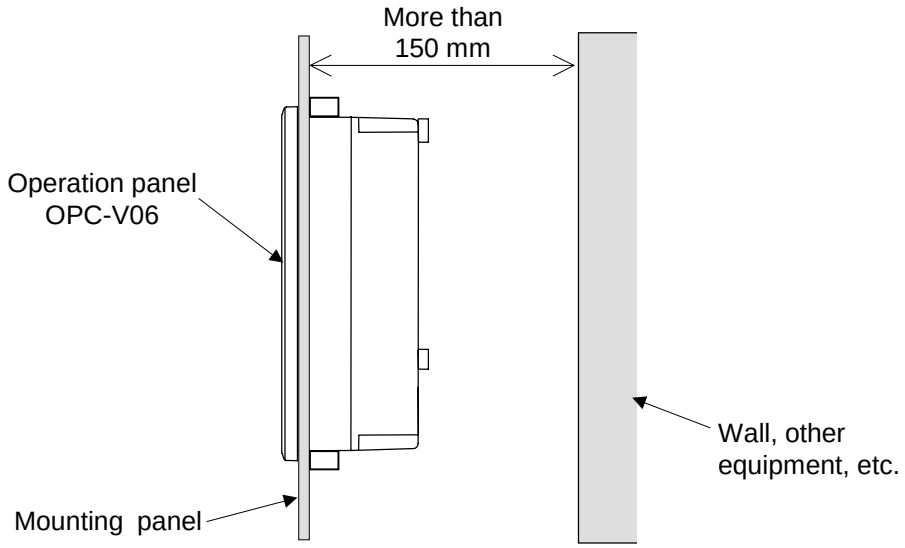
■ Mounting angle

Mount the OPC-V06 tilted no more than 45° forward, 90° back, or 45° to the left or right. If you mount it tilted more than these angles, this can cause malfunctioning.



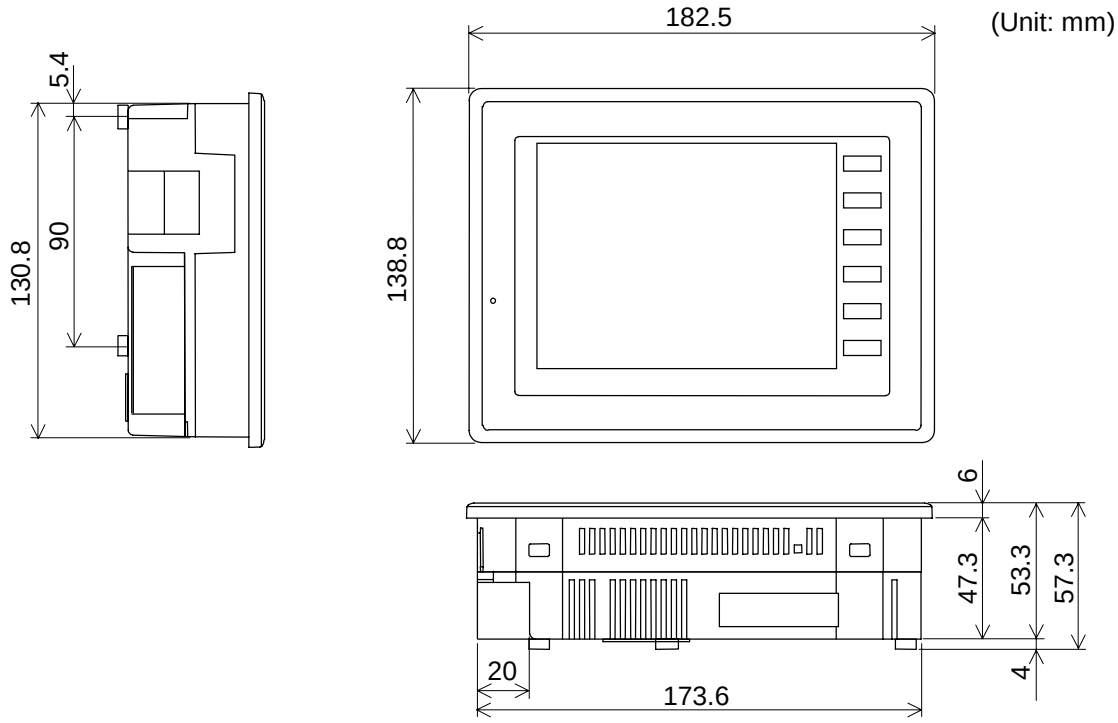
■ Mounting depth

For improving operability and safety, make the mounting depth as great as possible.
The depth of more than 150 mm from the mounting panel

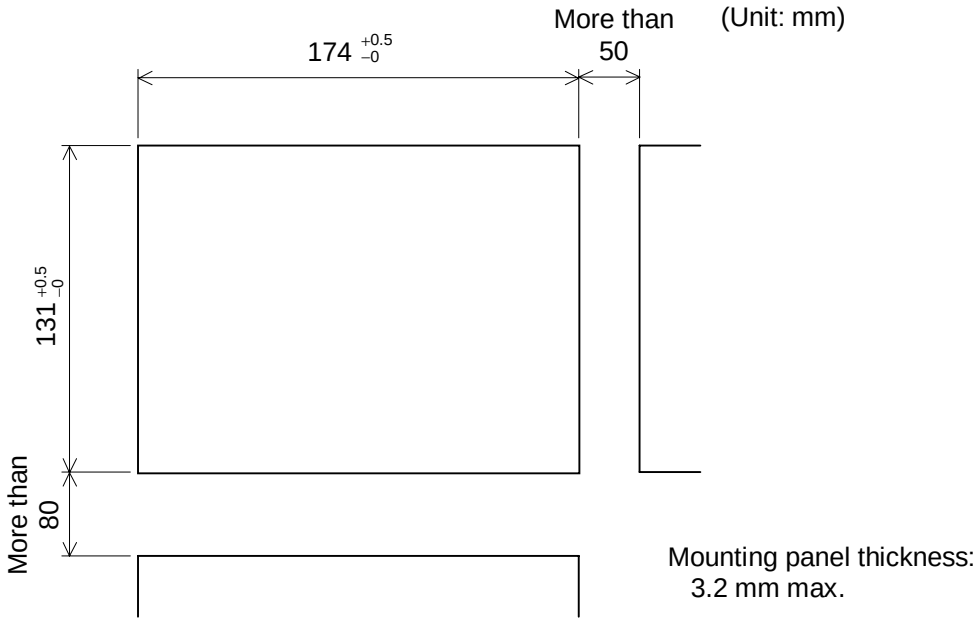


2.2 Dimensions

■ External dimensions



■ Panel cutout

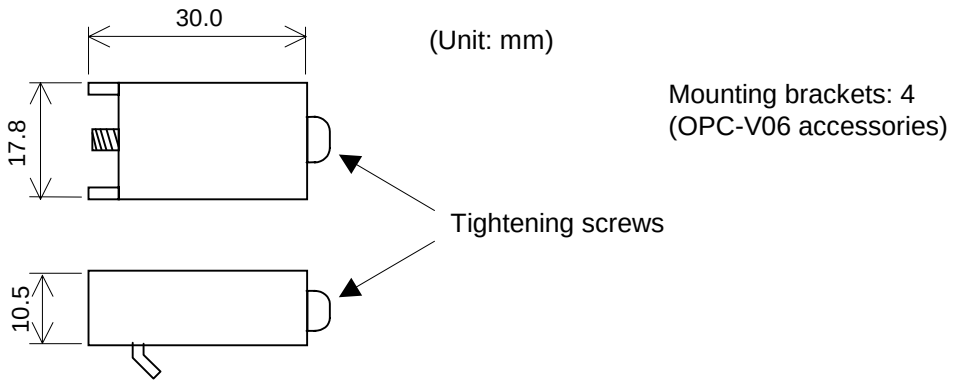


2.3 Mounting/Removing Method

2.3.1 Mounting method

The maximum mountable panel thickness (the range that the mounting brackets can be fitted) is 3.2 mm. However, for safety and improved splashproof and dustproof effect, mount on as thick a panel as possible.

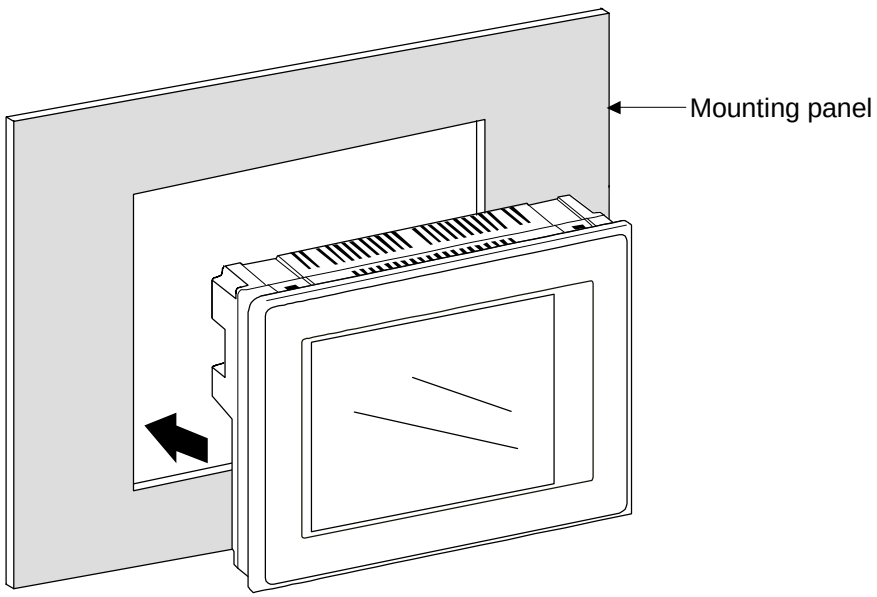
1. Prepare four of the mounting brackets that came with the OPC-V06.



Mounting brackets

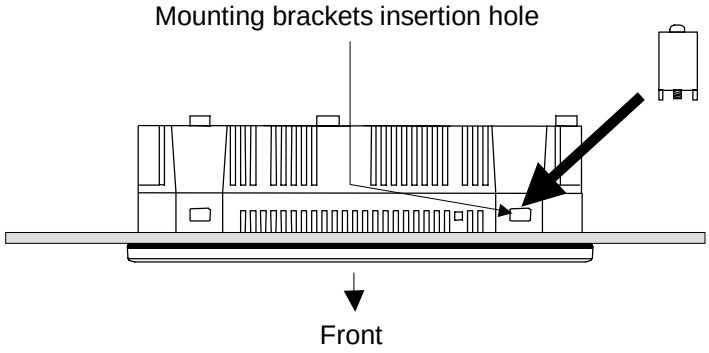
2. Make a rectangular hole in the mounting panel referring to the panel cutout dimensions (See P. 2-5).

3. Insert the OPC-V06 main unit from the front of the mounting panel.



Insert of the OPC-V06

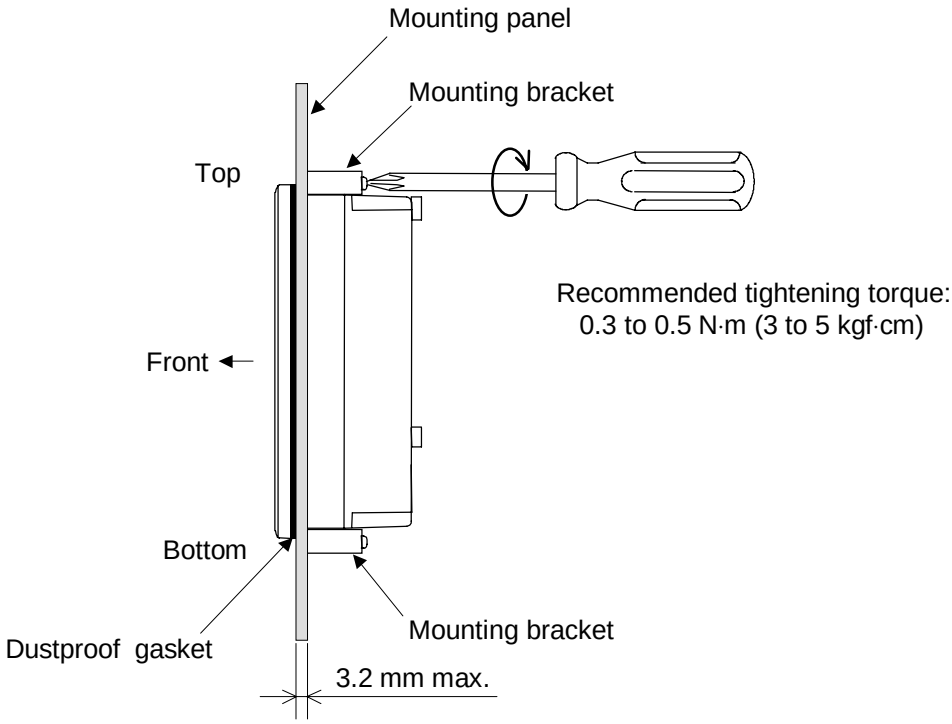
4. Insert the mounting brackets into the mounting bracket insertion holes (two each top and bottom).



Insertion of mounting brackets (View seen from the top)

5. Tighten the tightening screws with a Phillips screwdriver to fasten the OPC-V06.

Tighten the mounting brackets in such a way that the dustproof gasket thickness becomes uniform. If the dustproof gasket is thicker in one section than in another, the dustproof and splashproof effects may not be obtained.



Tightening of the screw (View seen from the side)

2.3.2 Removing method

The way of removing the OPC-V06 is fundamentally executed in a reverse way of the mounting procedures.

1. Remove the wiring and connector.

2. Remove the mounting bracket from the OPC-V06.

3. Hold the OPC-V06 firmly by hand, and remove it from the mounting panel.

3 WIRING

3.1 Wiring

⚠ WARNING

To prevent electric shock or instrument failure, do not turn on the power until all the wiring is completed.

CAUTION

Power supply wiring:

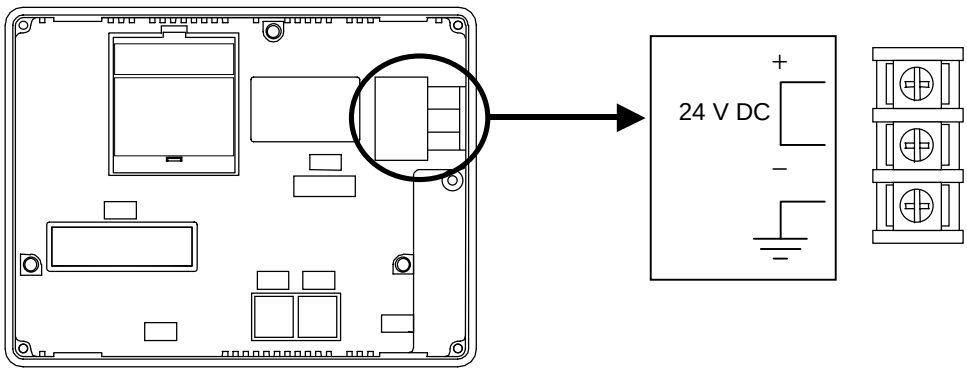
- Use power supply as specified in power supply voltage range.
- Power supply wiring must be twisted and have a low voltage drop.
- Provide separate power supply for this instrument independent of other input/output circuits, motors, equipment and operating circuits.
- If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter.
  - Shorten the distance between the twisted power supply wire pitches to achieve the most effective noise reduction.
  - Always install the noise filter on a grounded panel.
  - Minimize the wiring distance between the noise filter output and the instrument power supply terminals to achieve the most effective noise reduction.
  - Do not connect fuses or switches to the noise filter output wiring as this will reduce the effectiveness of the noise filter.
  - Take into consideration the instrument power supply voltage and filter frequency characteristics when selecting the most effective noise filter.
- To the instrument with power supply of 24 V, please be sure to supply the power from SELV circuit.

Ground wiring:

- Ground the instrument separately from other equipment. The grounding resistance should be 100 Ω or less.
- Use grounding wires with a cross section area of 2.0 mm^2 or more.

■ Terminal configuration

Operation panel OPC-V06 (Rear)



● Power supply

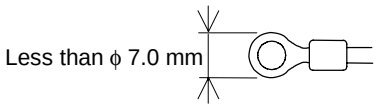
Including power supply voltage variations
24 V ± 10% DC (Rating: 24 V DC)

● Ground

Ground the module using grounding wire with a cross section area of 2 mm^2 or more and with a grounding resistance of 100 Ω or less. Do not connect the grounding wire to the grounding wire of any other equipment.

● Terminal Screws

Screw size: M3.5
Recommended tightening torque: 0.5 N·m (5 kgf·cm)
Solderless terminal: Use the solderless terminal appropriate to the M3.5 screw size.



3.2 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).

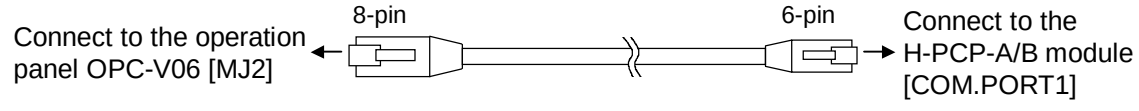
3.2.1 Connection to the control unit

■ Connection to the H-PCP-A/B module

Use connection cable V6-SR422 (Sold separately, Cable length: 3 m) to connect the operation panel OPC-V06 and the H-PCP-A/B module

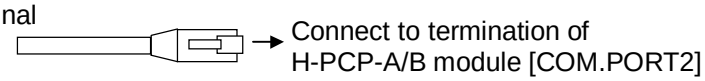
- **Cable for control unit connection V6-SR422 (with modular connector for terminal)**

Connection cable (Cable length: 3 m)

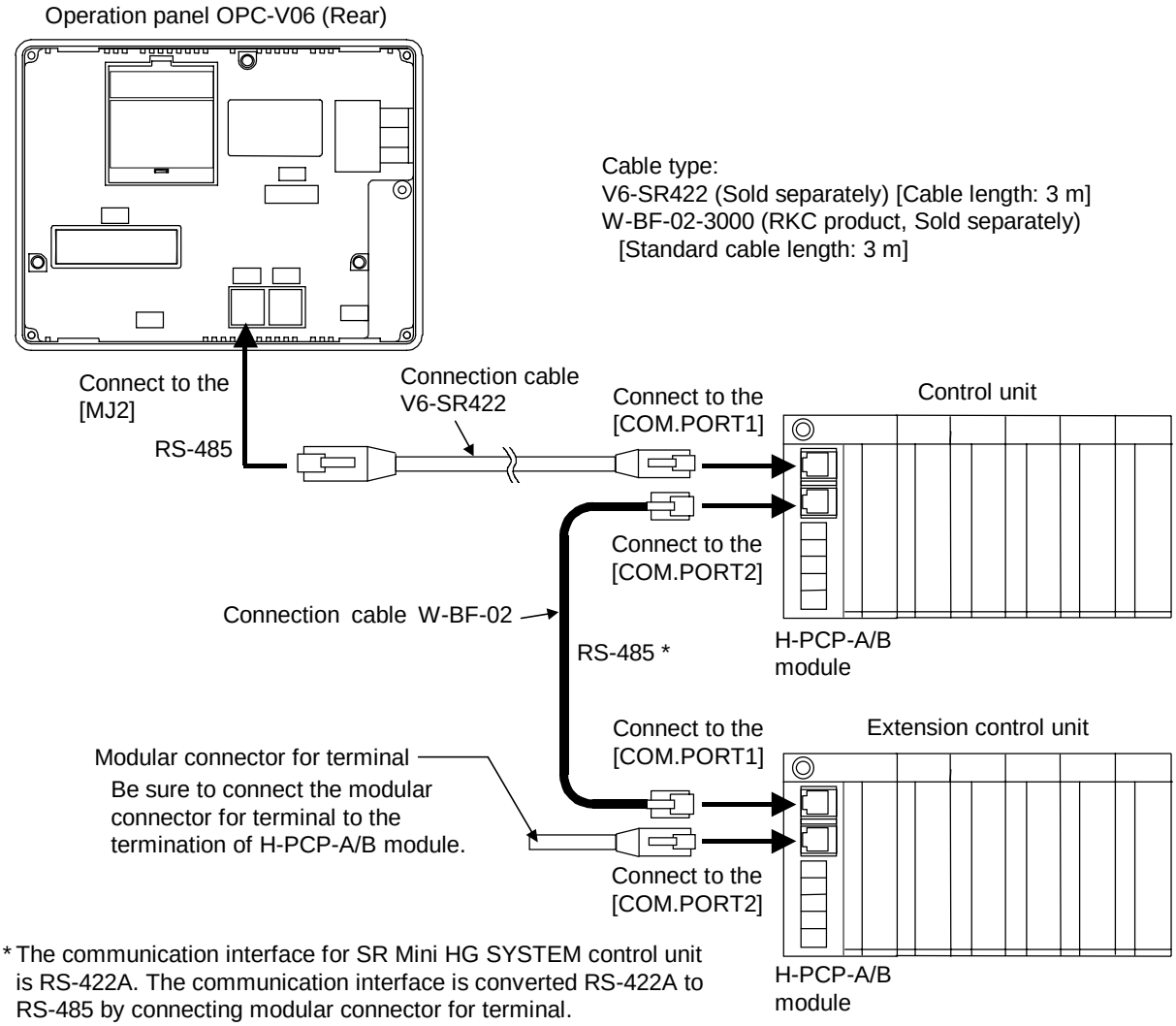


The V6-TMP shield FG is connected to the operation panel OPC-V06.

Modular connector for terminal

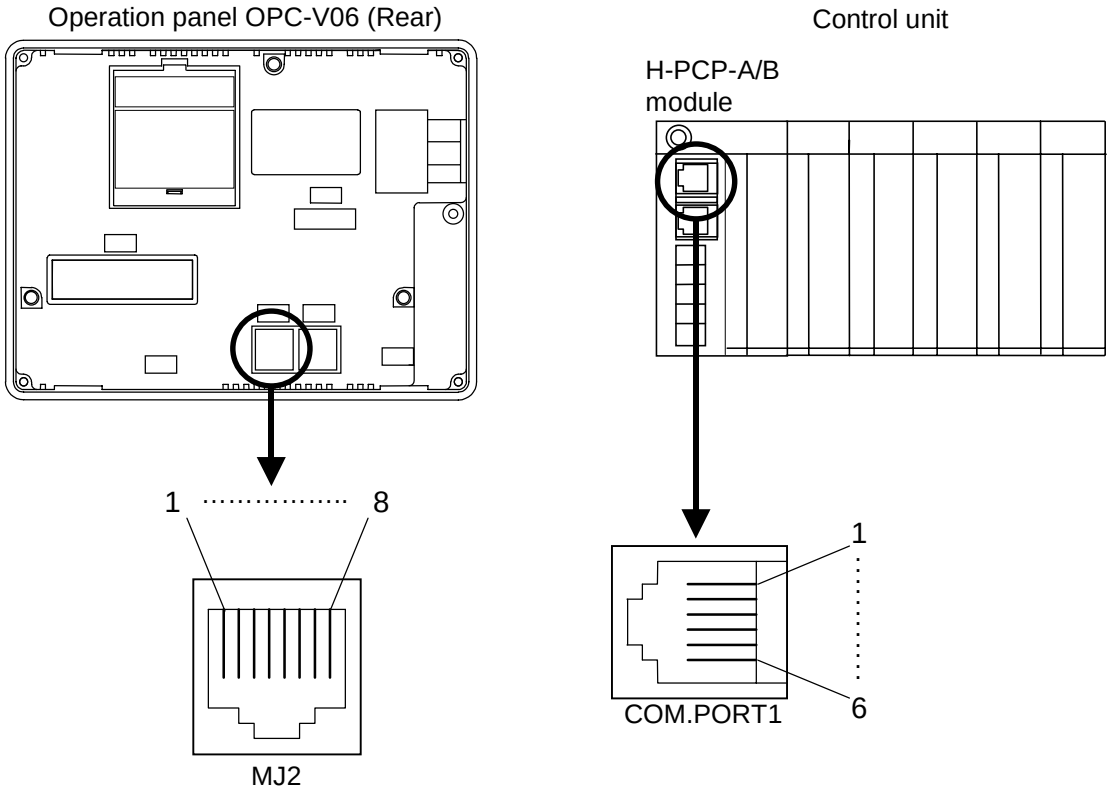


- **Connection method**



* 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**

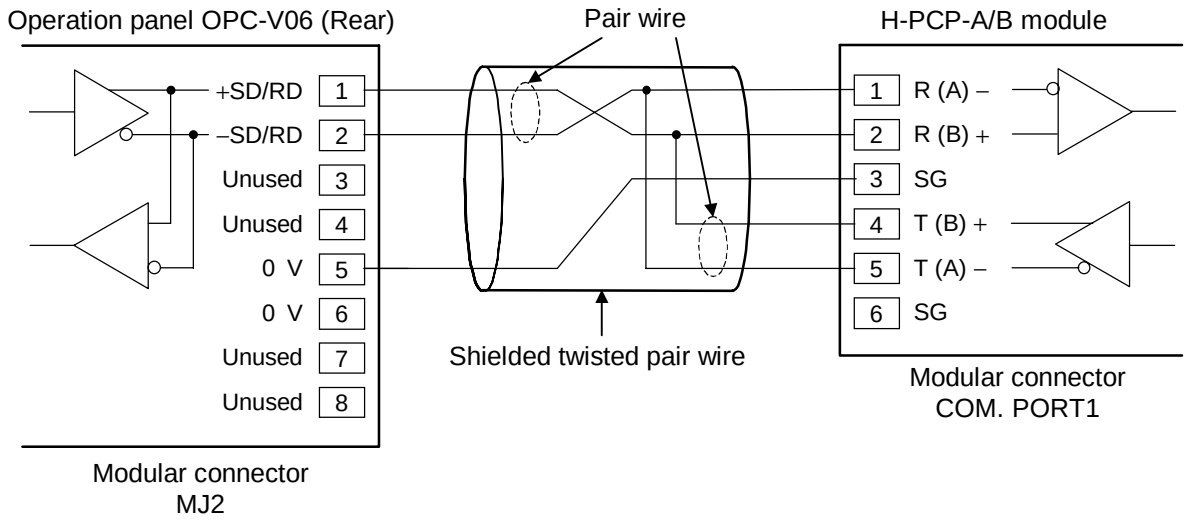
Operation panel OPC-V06 [MJ2]

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	0 V
6	GND	0 V
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-V6:
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.,)

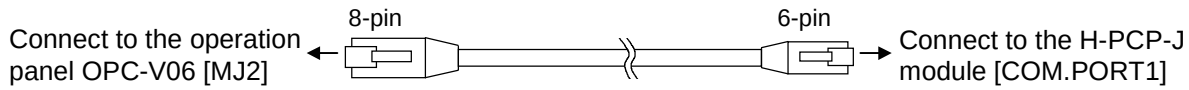
■ Connection to the H-PCP-J module

<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-V06 and the H-PCP-J module.

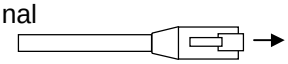
● Cable for control unit connection V6-SR422 (with modular connector for terminal)

Connection cable (Cable length: 3 m)



The V6-TMP shield FG is connected to the operation panel OPC-V06.

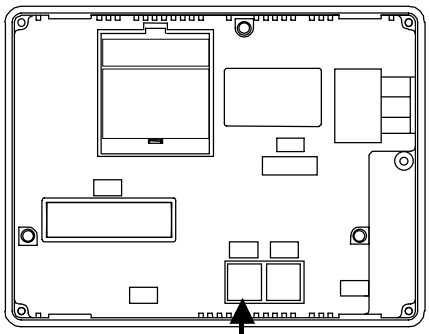
Modular connector for terminal



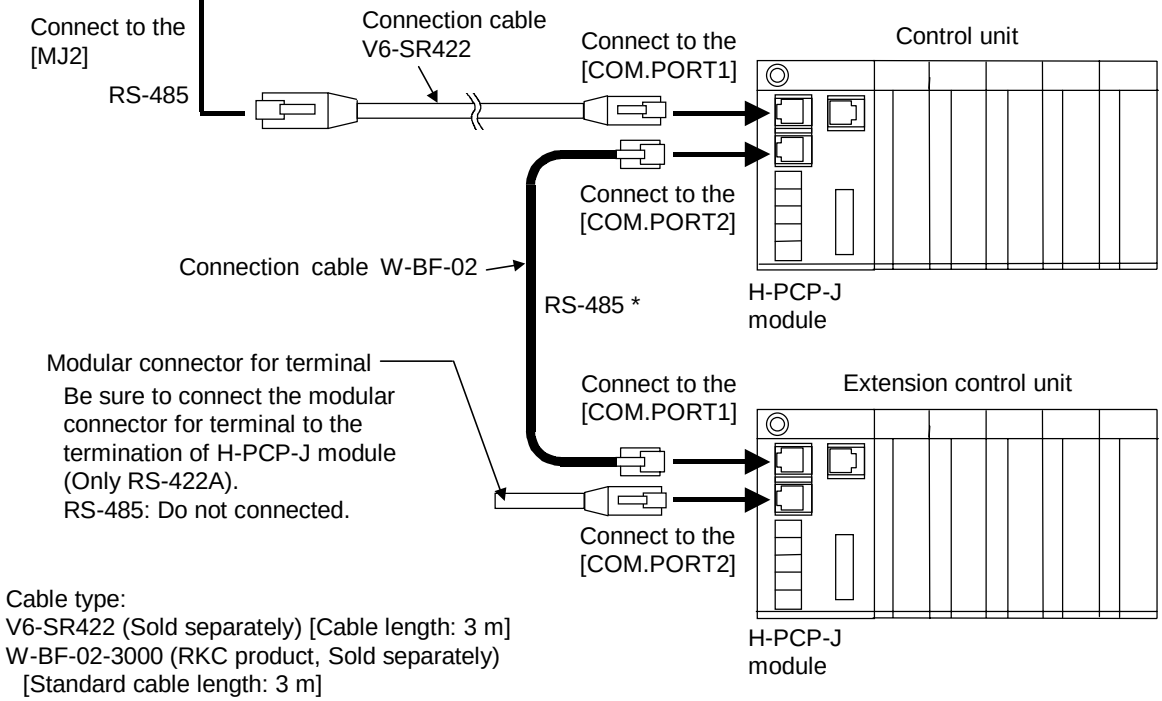
Connect to termination of H-PCP-J module [COM.PORT2]

● Connection method

Operation panel OPC-V06 (Rear)



- 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.

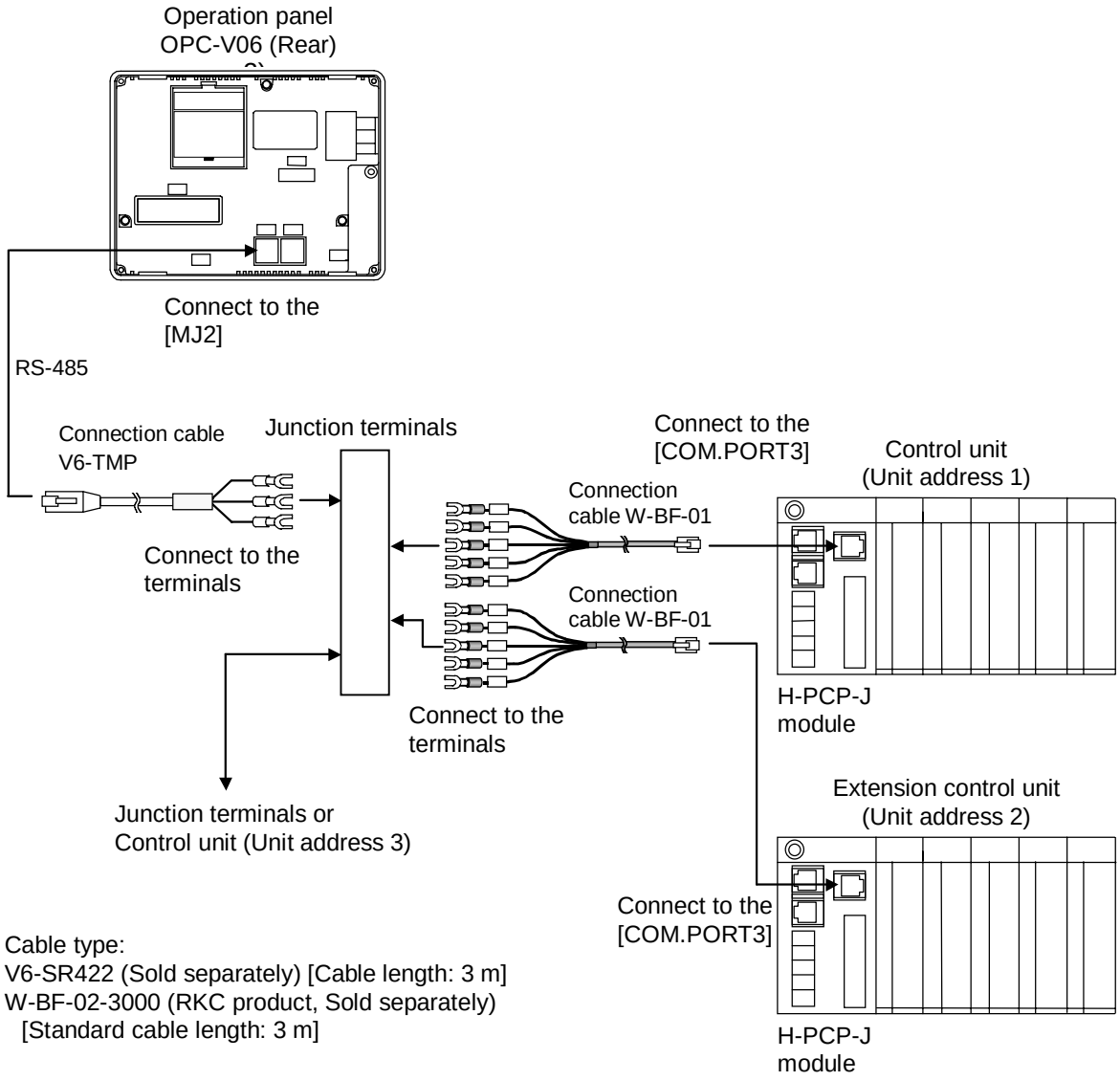


Cable type:
V6-SR422 (Sold separately) [Cable length: 3 m]
W-BF-02-3000 (RKC product, Sold separately)
[Standard cable length: 3 m]

<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-V06 and the H-PCP-J module.

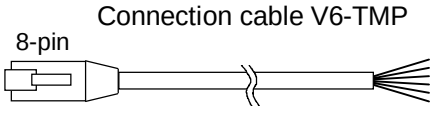
- **Connection method**



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

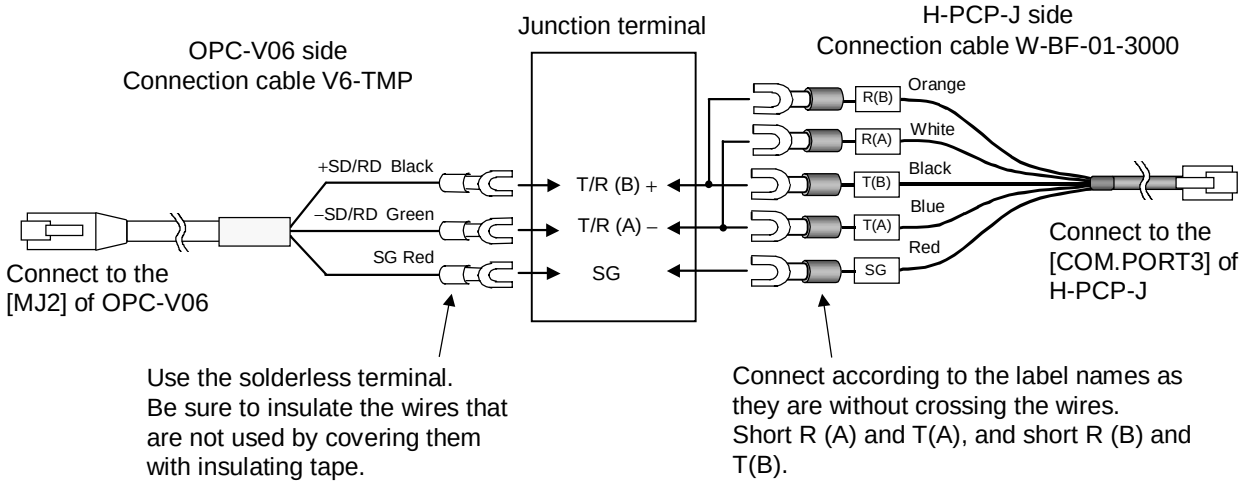
The V6-TMP has six electrical wires. Be sure to insulate the wires that are not used by covering them with insulating tape.



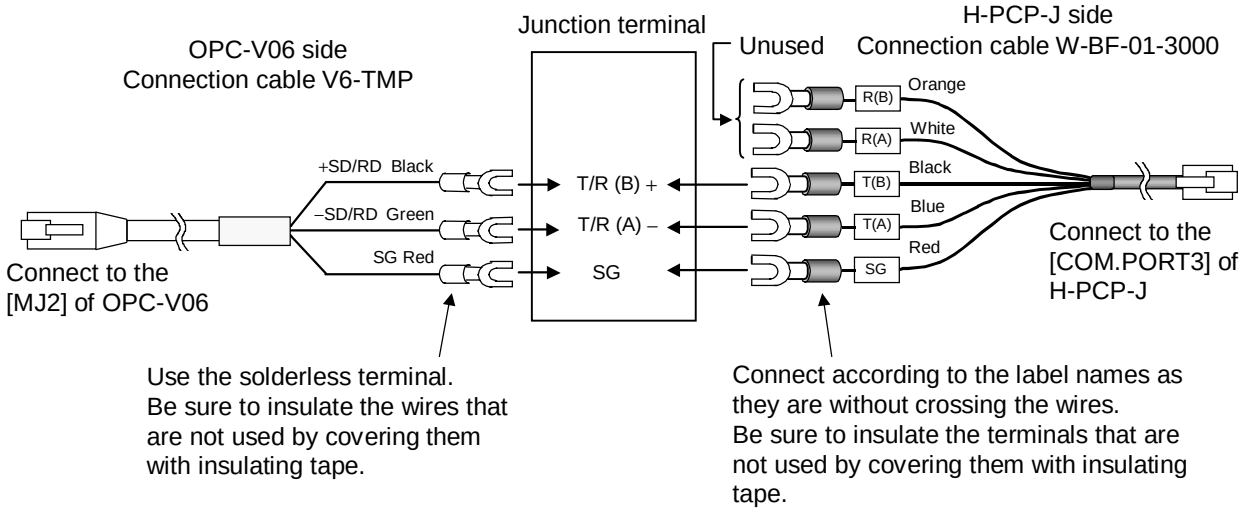
The V6-TMP shield FG is connected to the operation panel OPC-V06.

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

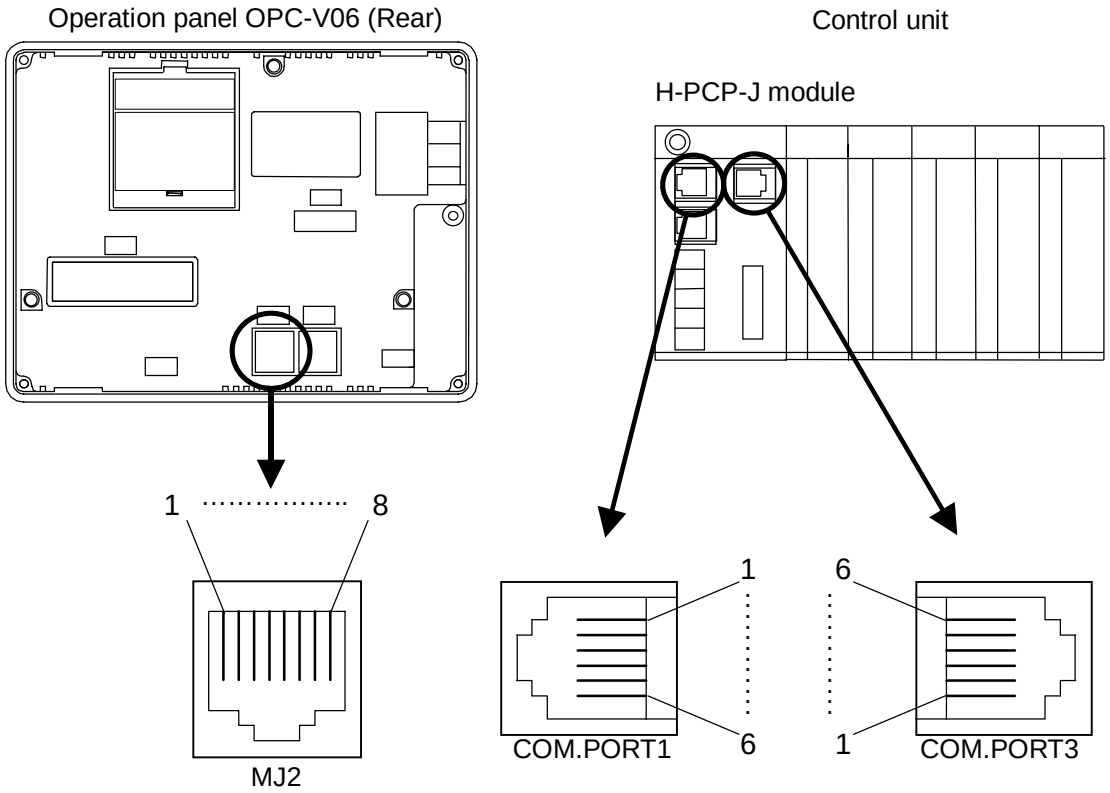
Interface of H-PCP-J module [COM. PORT3]: RS-422A



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



- **Pin layout of connector**



- **Connector pin number and signal details**

Operation panel OPC-V06 [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	0 V
6	GND	0 V
7	Unused	—
8	Unused	—

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

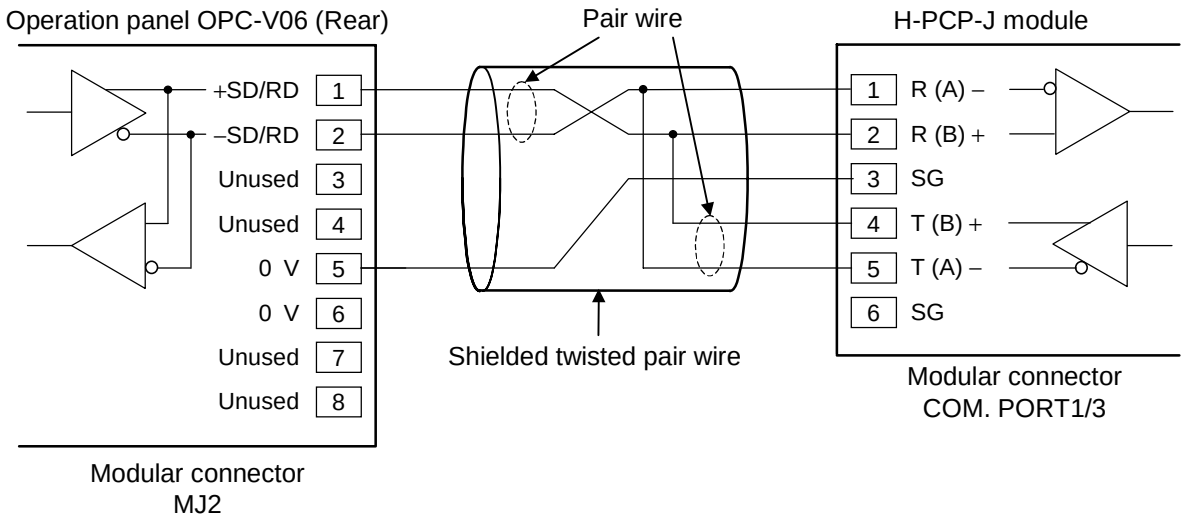
Pin No.	Signal name	Symbol
1	RS-422A receive data	R (A) −
2	RS-422A receive data	R (B) +
3	Signal ground	SG
4	RS-422A send data	T (B) +
5	RS-422A send data	T (A) −
6	Signal ground	SG

RS-485

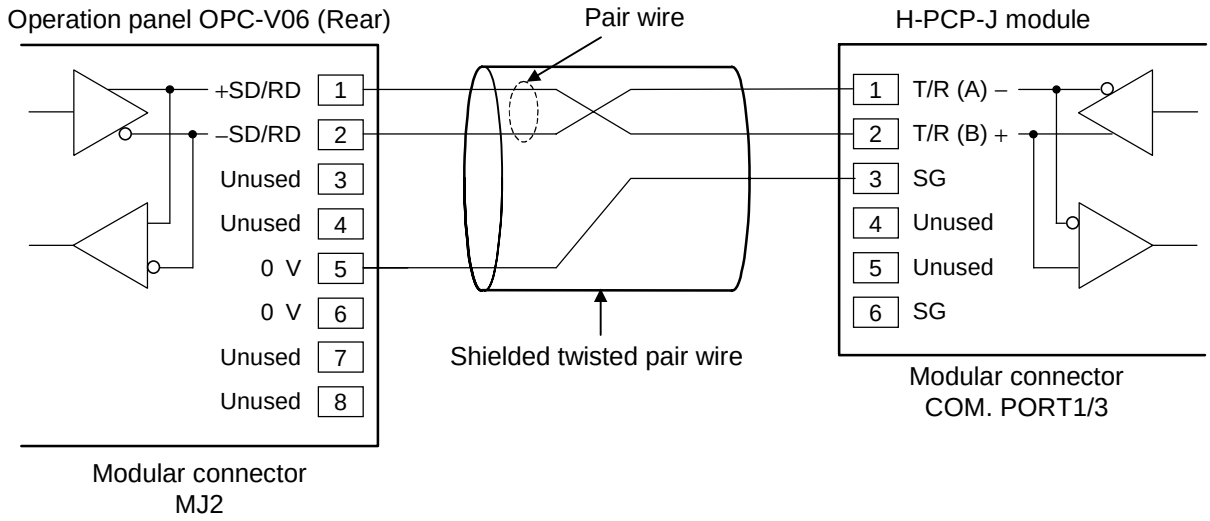
Pin No.	Signal name	Symbol
1	RS-485 send/receive data	T/R (A) −
2	RS-485 send/receive data	T/R (B) +
3	Signal ground	SG
4	Unused	—
5	Unused	—
6	Signal ground	SG

- **Wiring contents**

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



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



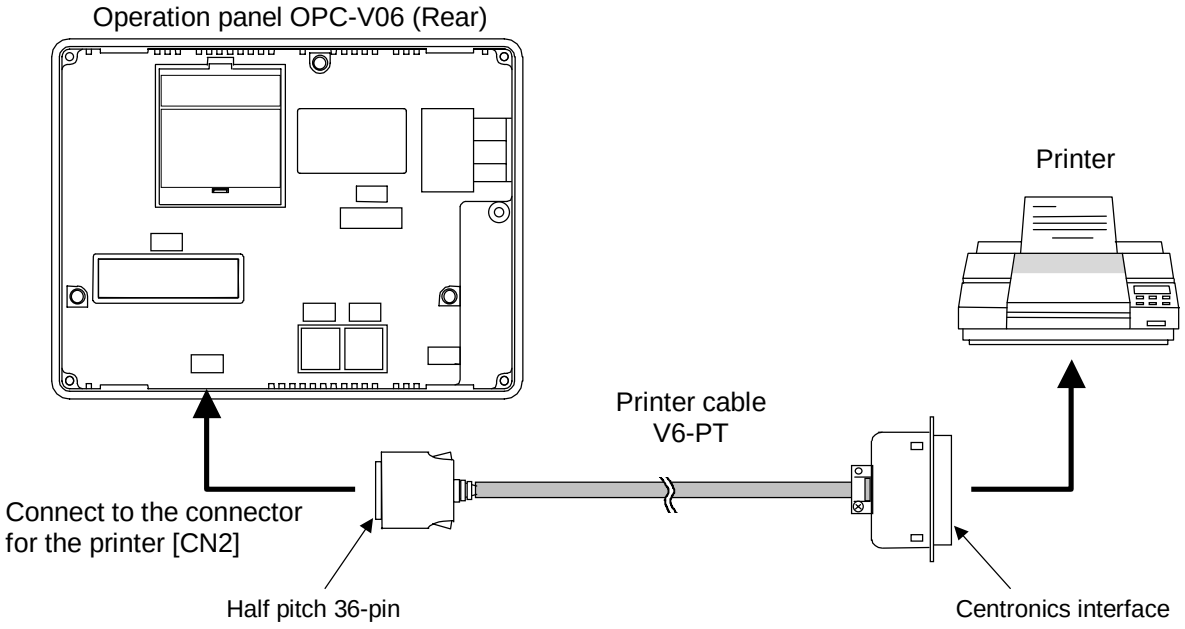
Recommended modular connector
Modular connector for connect to operation panel OPC-V06:
TM10P-88P (Manufactured by HIROSE ELECTRIC CO., LTD.,)
Modular connector for connect to H-PCP-J:
TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.,)

3.2.2 Connection to the Printer

By connecting a printer to the operation panel OPC-V06, you can print data sheets, make hard copies of screen.
Data sheets print is executed with “Printer” screen (P. 5-87). Six 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

Pressing the function switch [F3] on the front of the OPC-V06 makes a hard copy of the contents of the screen (except the “Main Menu” screen).



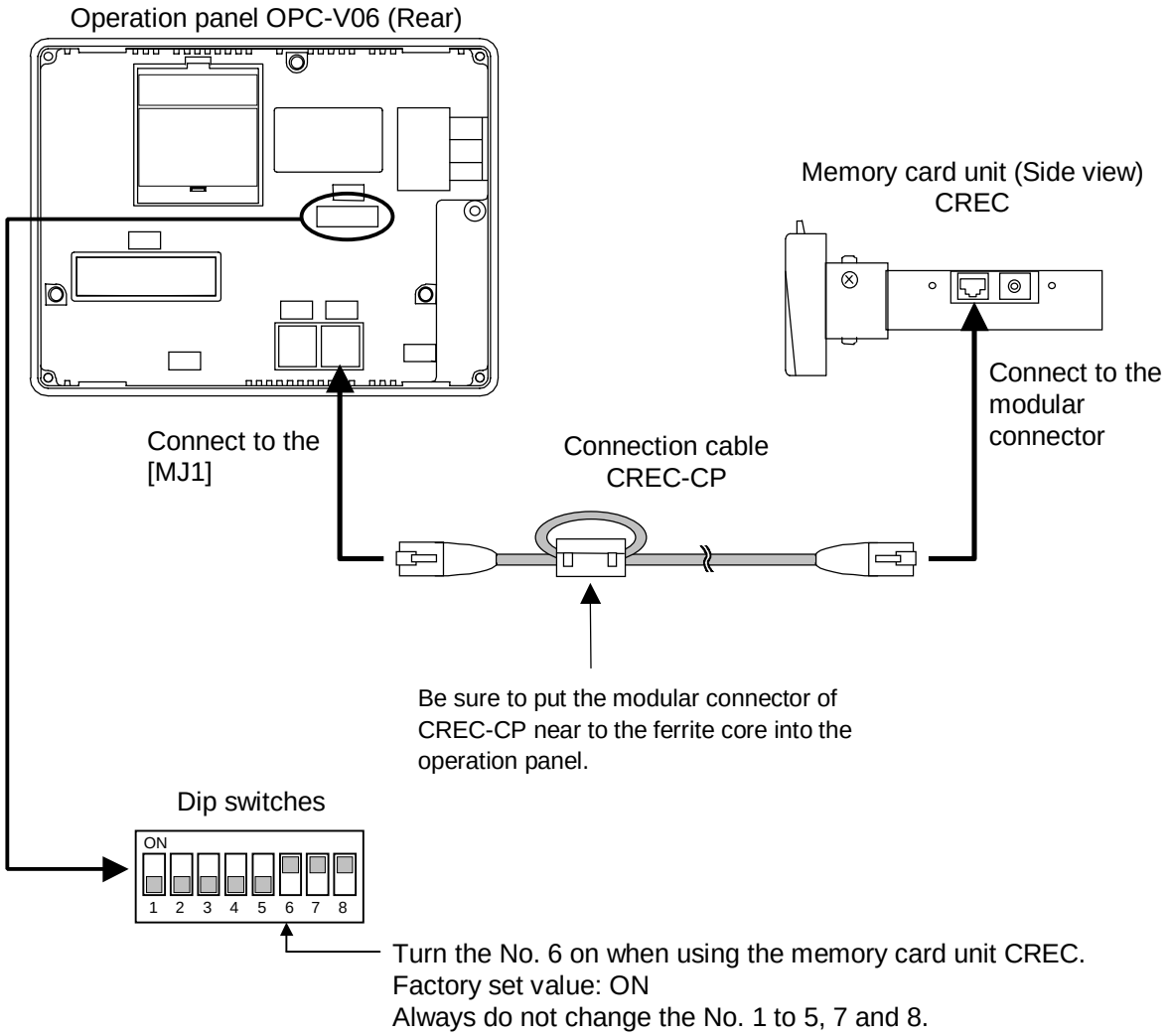
In connection of OPC-V06 and printer, recommend use of printer cable V6-PT (Sold separately, Cable length: 2.5 m).

Usable printer type

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

3.2.3 Connection to the memory card unit (CREC)

Set data (job files) during operation can be stored in the memory card by connecting a memory card unit CREC.



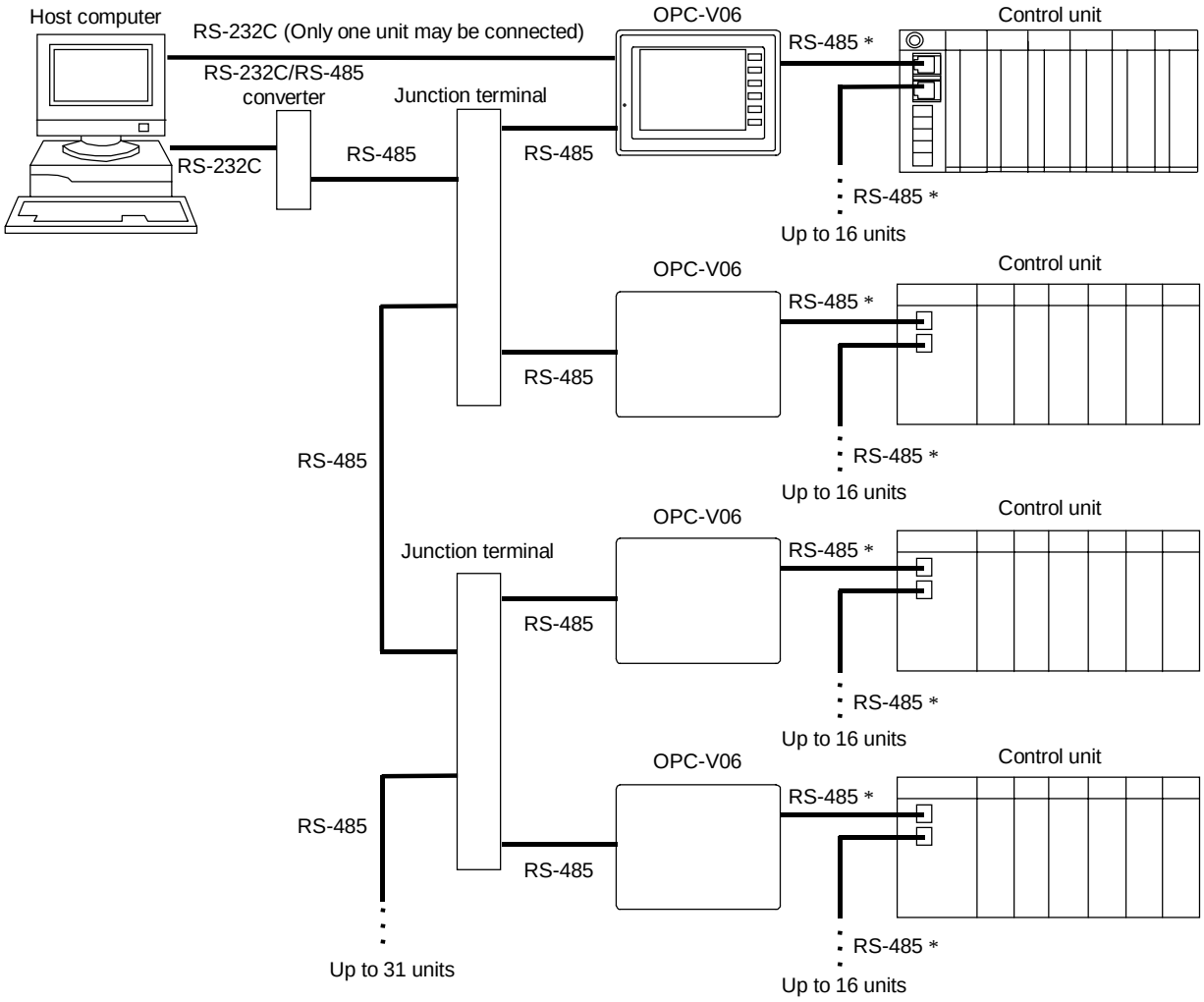
The memory card unit cab be used when the OPC-V06 is provided with the external memory function (option).

Connection cable CREC-CP is attached to memory card unit CREC.

3.2.4 Connection to the host computer

The communication interface for operation panel OPC-V06 are RS-232C and RS-485. When using the RS-485, a maximum of 31 OPC-V06s can be connected. However, when connecting to the computer which only has a RS-232C driver, RS-232C/RS-485 converter will be necessary.

■ Connection block diagram

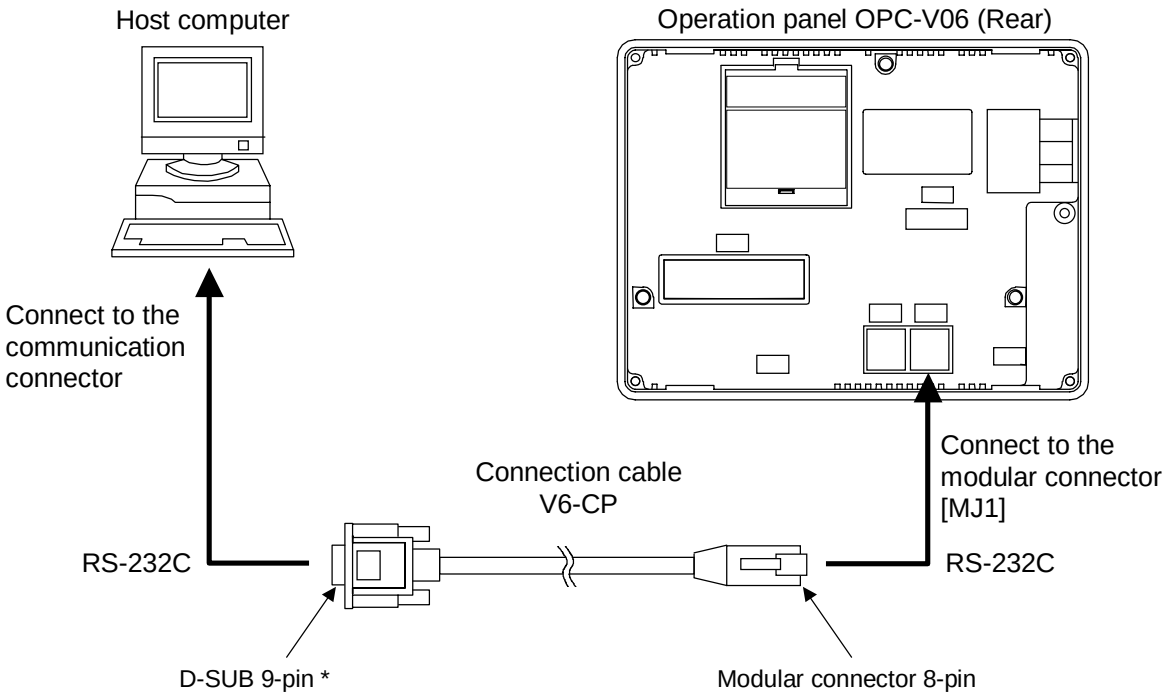


* The communication interface for SR Mini HG SYSTEM control unit is RS-422A (excluding the RS-485 specification of H-PCP-J). The communication interface is converted RS-422A to RS-485 by connecting modular connector for terminal.

☞ For connection between operation panel OPC-V06 and control unit, see the **3.2.1 Connection to the control unit (P. 3-5)**.

■ RS-232C

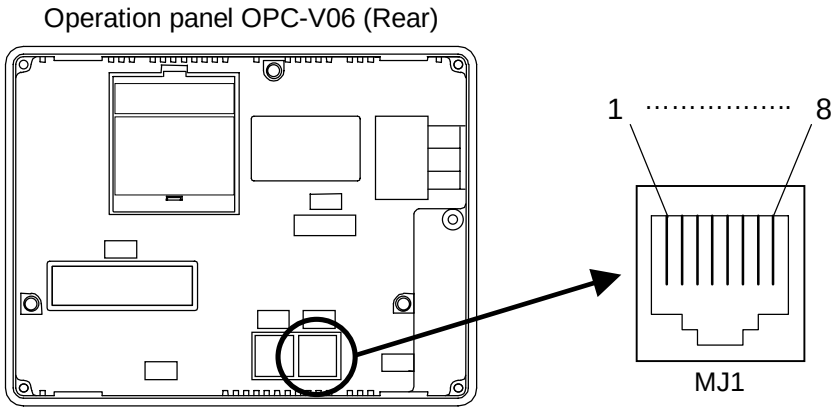
In connection of operation panel OPC-V06 and host computer, recommend use of connection cable V6-CP (Sold separately, Cable length: 3 m).



* Use attached conversion connector (Type: ADP 25-9) when connector of host computer is D-SUB 25-pin.

The host computer cab be used when the OPC-V06 is provided with the host communication interface (option).

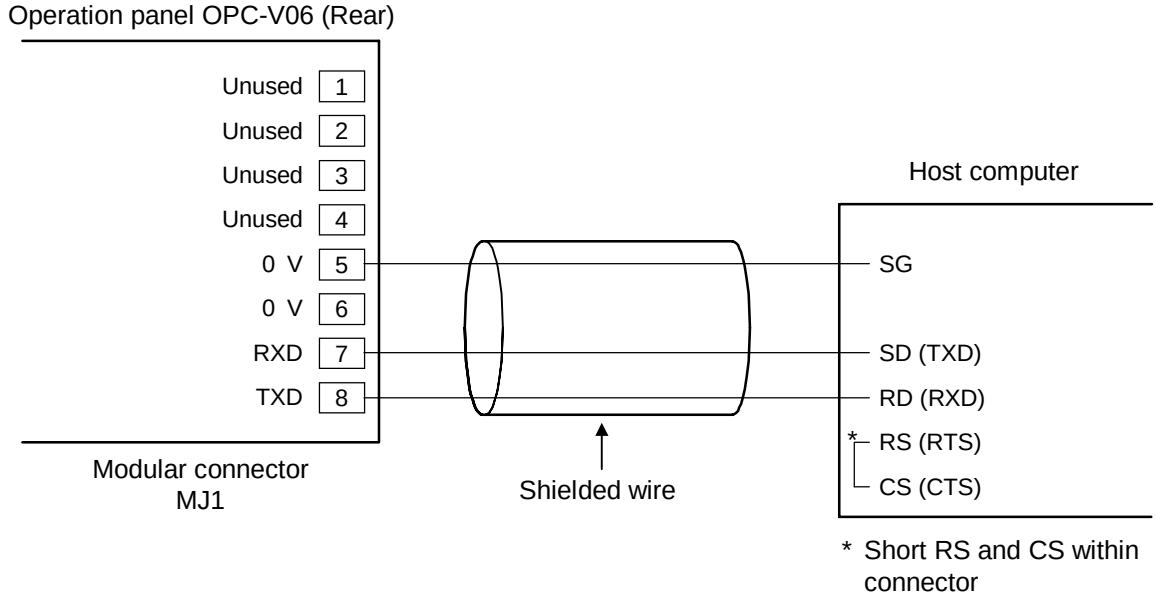
- **Pin layout of connector**



- **Connector pin number and signal details [MJ1]**

Pin No.	Signal name	Symbol
1	Unused	—
2	Unused	—
3	Unused	—
4	Unused	—
5	GND	0 V
6	GND	0 V
7	RS-232C receive data	RXD
8	RS-232C send data	TXD

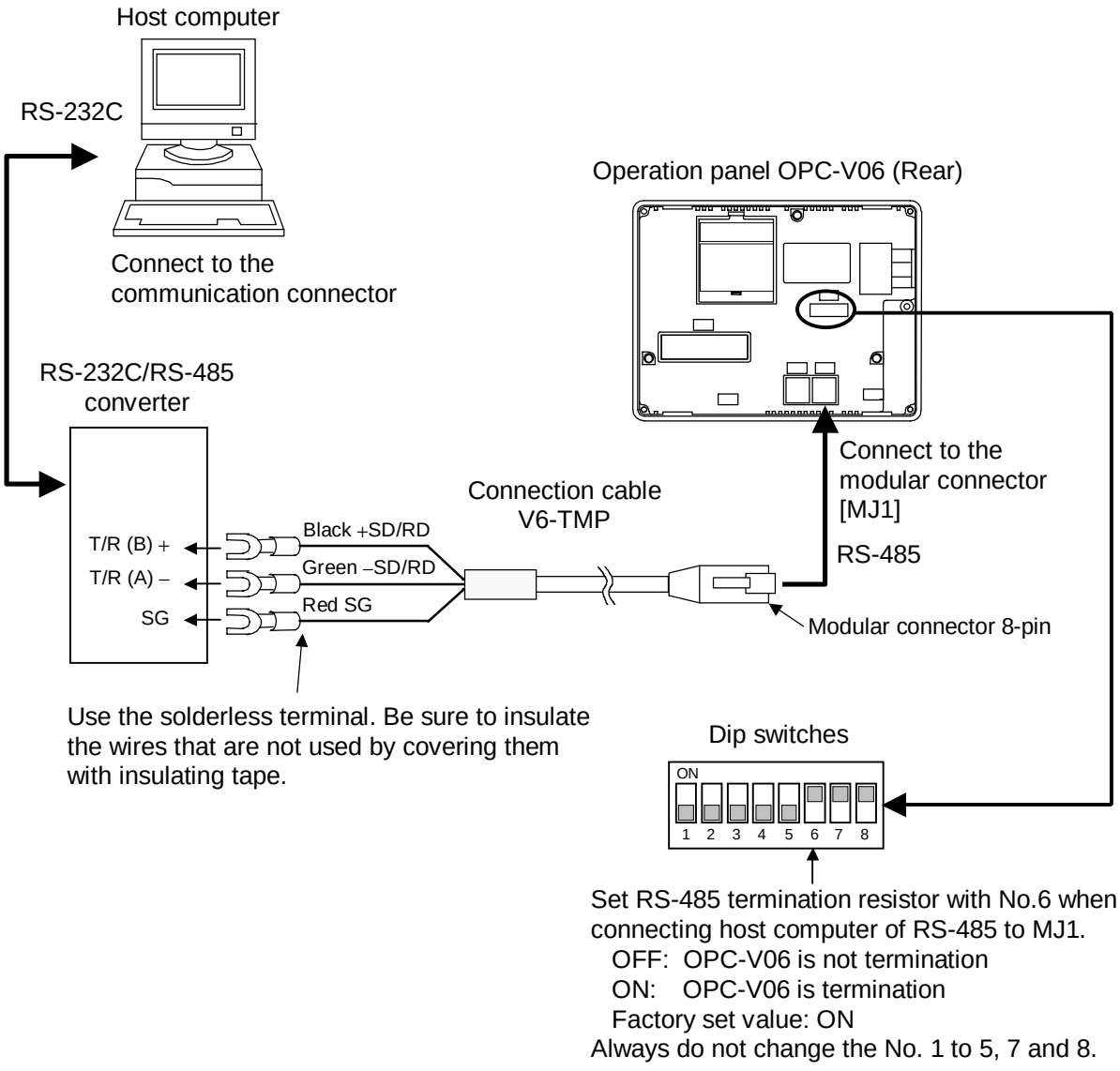
- **Wiring contents**



Recommended modular connector:
TM10P-88P (Manufactured by HIROSE ELECTRIC CO., LTD.,)

■ RS-485

In connection of operation panel OPC-V06 and host computer, recommend use of connection cable V6-TMP (Sold separately, Cable length: 3 m).

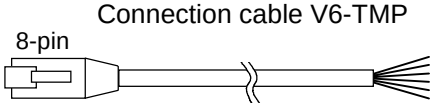


Set RS-485 termination resistor with No.6 when connecting host computer of RS-485 to MJ1.
- OFF: OPC-V06 is not termination
- ON: OPC-V06 is termination
- Factory set value: ON

Always do not change the No. 1 to 5, 7 and 8.

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-V06.

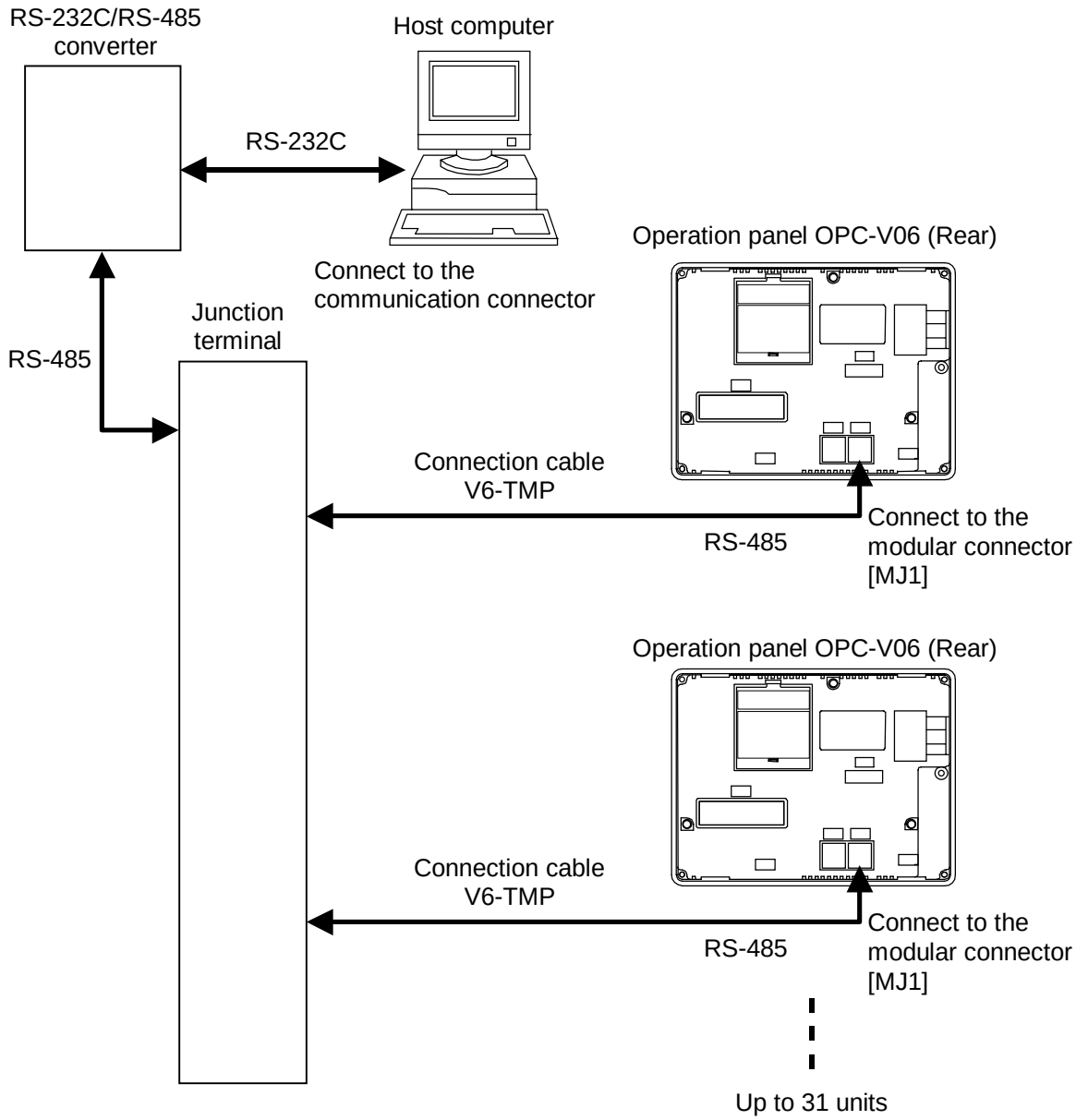
Brown:	+5 V
Red:	0 V/SG
Orange:	RXD
Yellow:	TXD
Black:	+SD/RD
Green:	–SD/RD

When the host computer (master) uses Windows 95/98/NT, use a RS-232C/RS-485 converter with an automatic send/receive transfer function.
Recommended: CD485/V-T manufactured by Data Link, Inc. or equivalent.

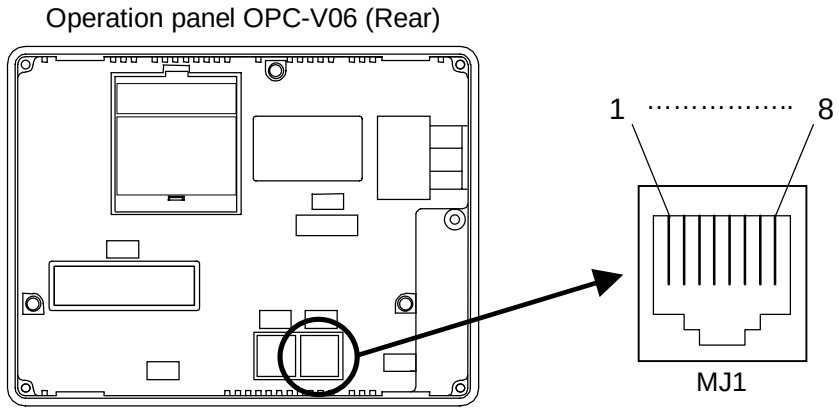
Customer is requested to prepare a cable for connection between RS-232C/RS-485 converter and host computer.

The host computer cab be used when the OPC-V06 is provided with the host communication interface (option).

Use the junction terminal when using two or more OPC-V06s (multiple connections).



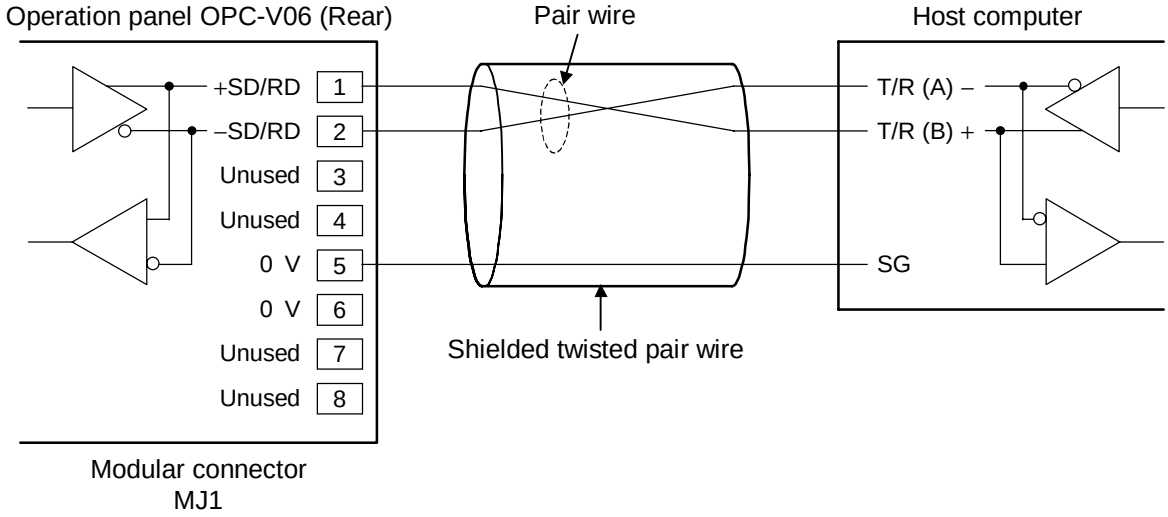
- **Pin layout of connector**



- **Connector pin number and signal details [MJ1]**

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	0 V
6	GND	0 V
7	Unused	—
8	Unused	—

- **Wiring contents**



Recommended modular connector:
TM10P-88P (Manufactured by HIROSE ELECTRIC CO., LTD.,)

SETTINGS BEFORE OPERATION

4

4.1 Control Unit Communication Setting

Set the communication parameter for communication between the operation panel OPC-V06 and the control unit.

4.1.1 Data bit configuration and communication speed setting

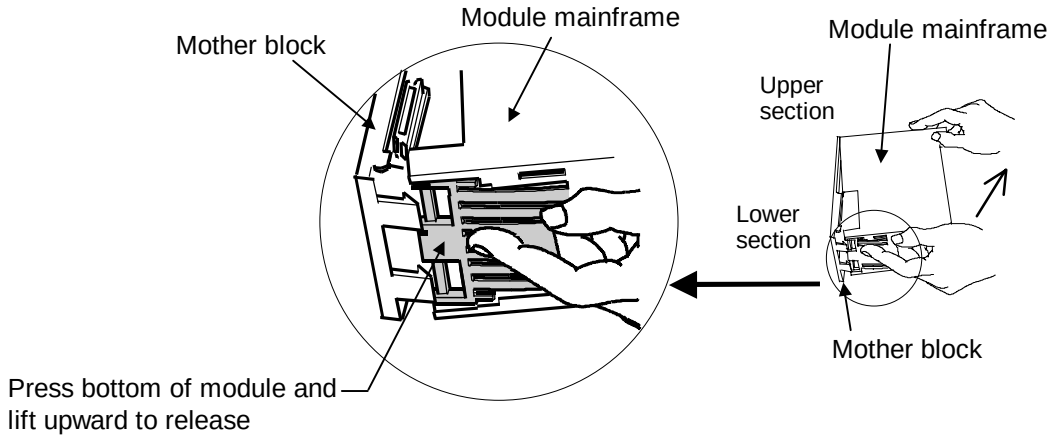
⚠ WARNING

- 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.

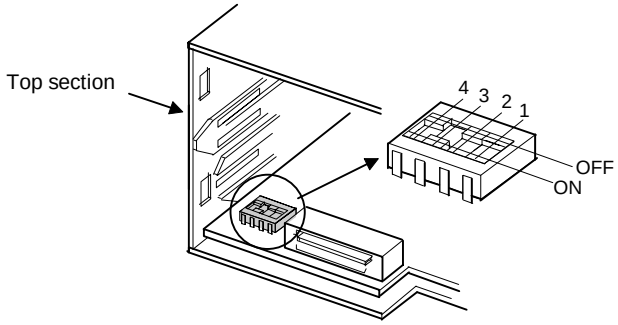
Communication parameter (data bit configuration and communication speed) of control unit are set with the dip switches located in the H-PCP-A/B/J module.

■ 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.



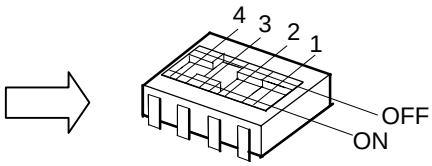
2. Data bit configuration and communication speed can be set with the dip switches located in the H-PCP-A/B module. Always make the same communication settings on the OPC-V06 and control unit.



Rear view of module mainframe with mother block removed

H-PCP-A/B module
dip switches setting

Factory set value of operation panel OPC-V06:
- 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

Factory set value: Data 8-bit, Non parity

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

Factory set value: 9600 bps

📖 Stop bit: 1 (Fixed)

📖 The parameter for communication between the OPC-V06 and control unit on the OPC-V06 side can be checked on the “Extension Prog. Info.

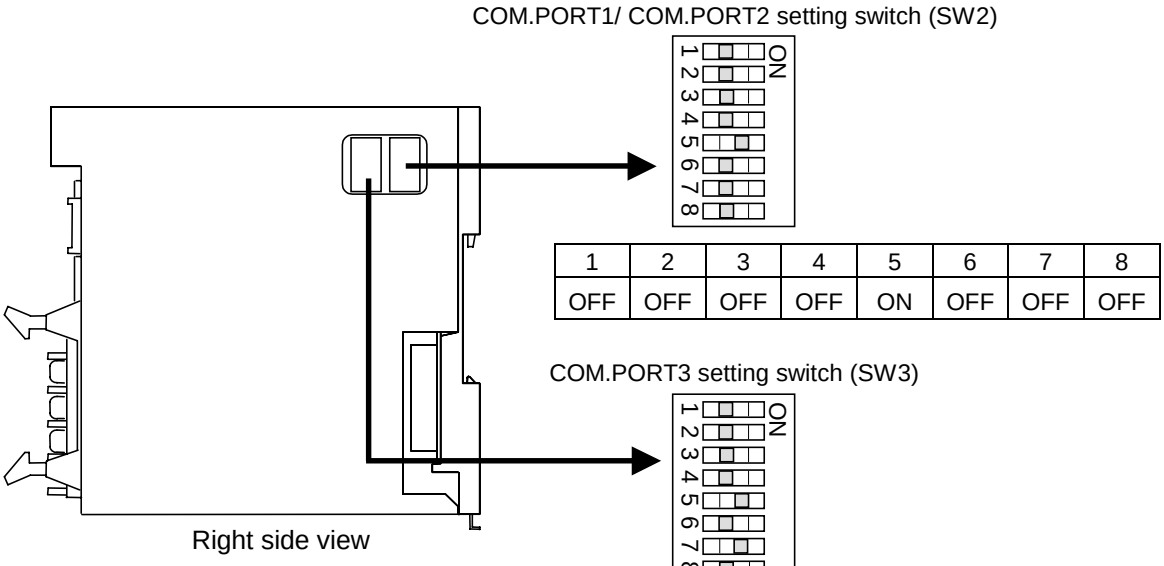
☞ For the “Extension Prog. Info.” screen, see the **APPENDIX, 3. Check the Communication Parameter (P. A-75)**.

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-V06 and control unit.

Factory set value of operation panel OPC-V06:
Data 8-bit Non parity
Stop 1-bit Communication speed 9600 bps



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

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

● 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

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

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

Factory set value: 9600 bps

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

Factory set value: RKC communication protocol

Set the Modbus protocol.

- **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

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

Factory set value: 9600 bps

Set the COM.PORT3 setting switch (SW3) No. 5 to ON (Modbus protocol).

SW3	Protocol
5	
OFF	RKC communication protocol (Based on ANSI X3.28 subcategory 2.5 B1)
ON	Modbus protocol

Factory set value: RKC communication protocol

Set the COM.PORT3 setting switch (SW3) No. 6 to OFF (Normal).

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

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

Continued on the next page.

Continued from the previous page.

Set the COM.PORT3 setting switch (SW3) No. 7 to ON (Modbus mode 2).

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. (When MONITOUCH V6 series manufactured by Hakko Electronics Co., Ltd. is used.)

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.

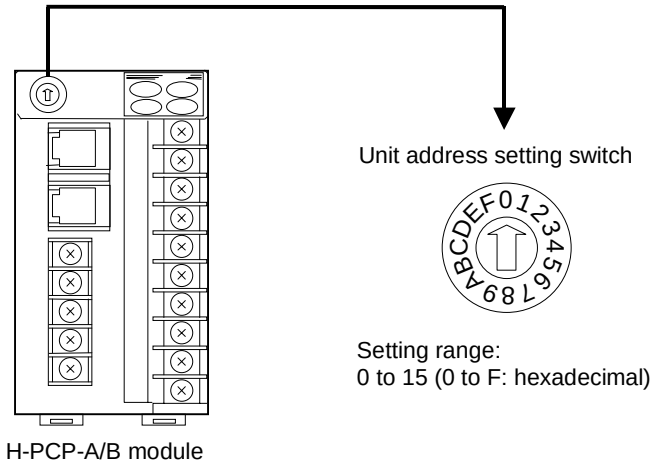
The parameter for communication between the OPC-V06 and control unit on the OPC-V06 side can be checked on the “Extension Prog. Info.”

For the “Extension Prog. Info.” screen, see the **APPENDIX, 3. Check the Communication Parameter (P. A-75)**.

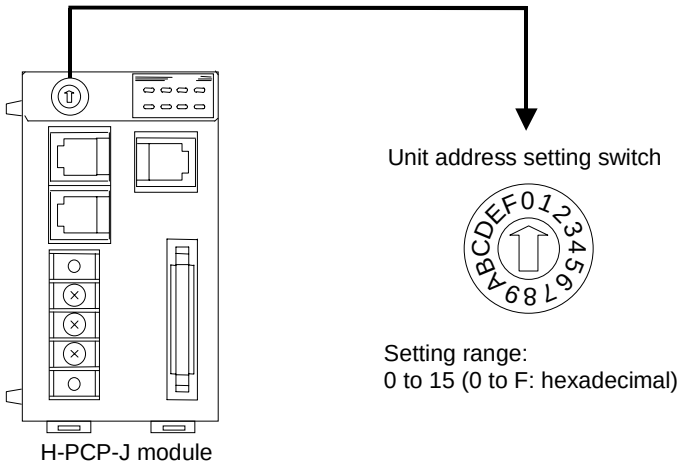
4.1.2 Unit address setting

When each control unit is multi-drop connected to host computer, 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

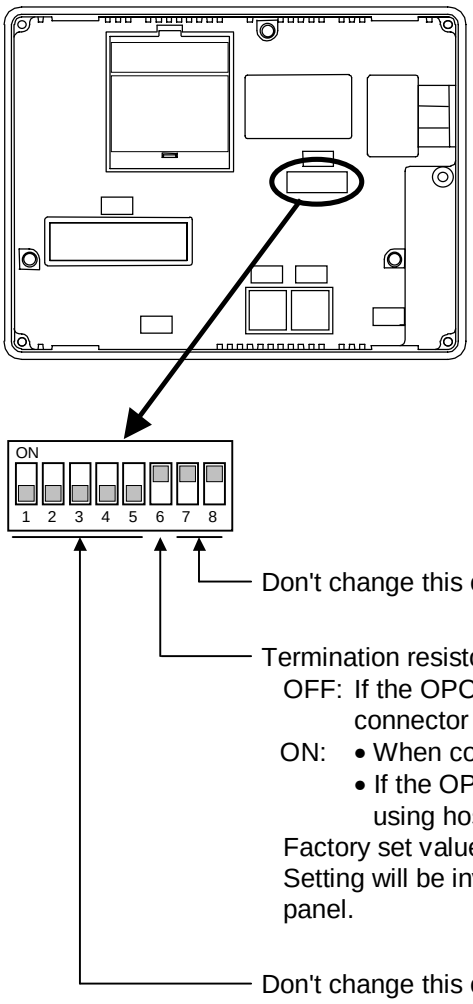


Set the unit address such that it is different to the other addresses on the same line. Otherwise, problems or malfunction may result.

4.2 Dip Switches Setting

Set the termination resistor of connector for the memory card unit/host computer [MJ1] with dip switches No. 6.

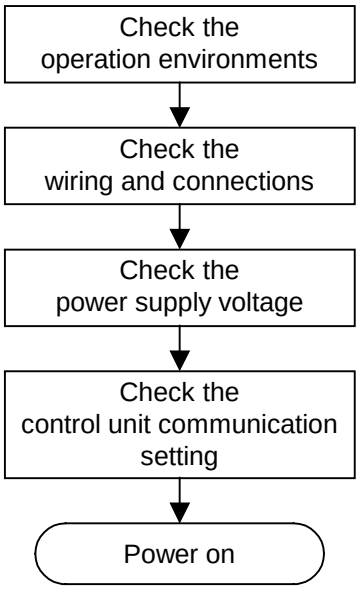
Operation panel OPC-V06 (Rear)



4.3 Start-up Procedures

■ Check prior to power on

Check the following items before turning on the power to the operation panel OPC-V06.



Operation environments conform to **item 2.1 ■ Mounting Environment (P. 2-2)**.

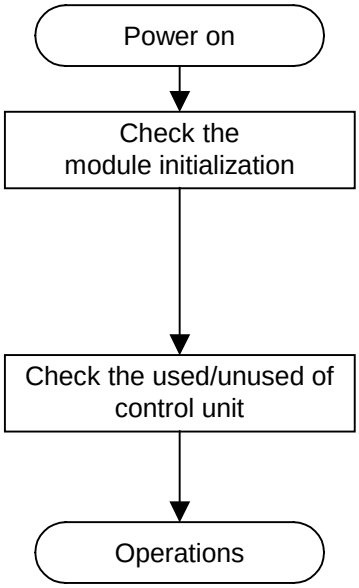
Wiring and connections conform to **3. WIRING (P. 3-1)**.

Power supply voltage conforms to **7. SPECIFICATIONS (P. 7-1).**

Control unit communication setting conform to **4.1 Control Unit Communication Setting (P. 4-2)**.

First, turn on the power for control unit, then for operation panel OPC-V06.

■ Check after power on



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 **APPENDIX, 2.5 Module Initialization (P. A-20)**.

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

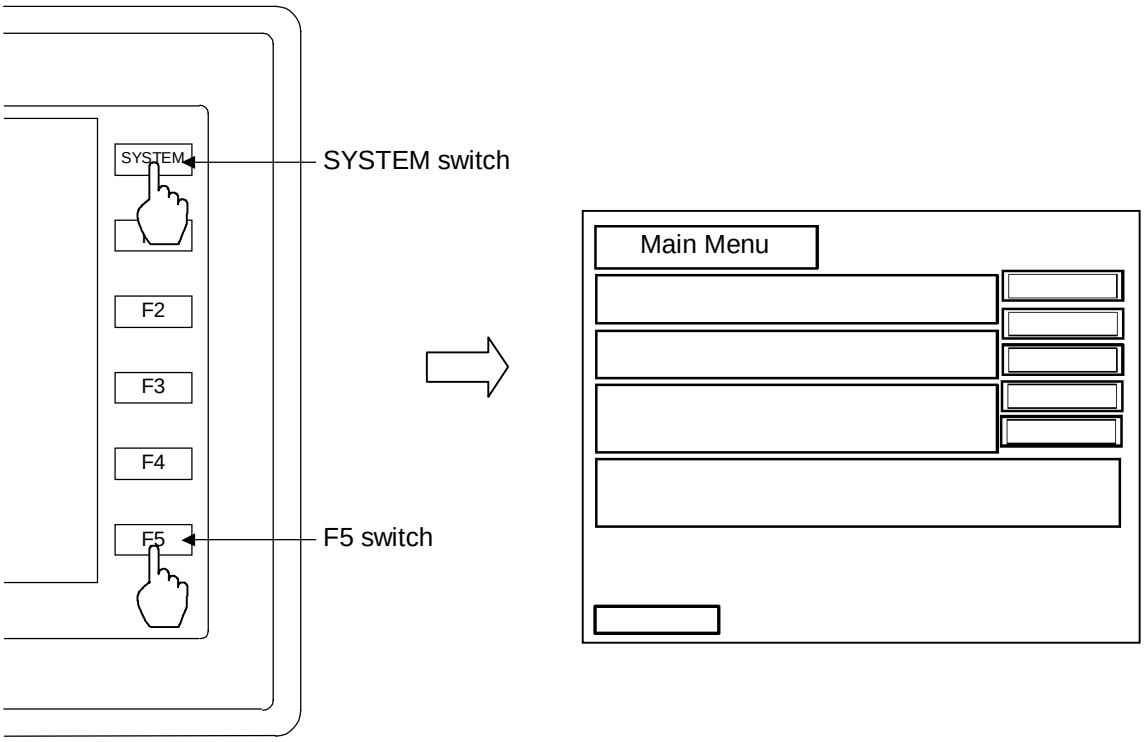
☞ For details, see the **APPENDIX, 1. OPC-V Initial Settings ■ Unit Use/Unused screen (P. A-8)**.

4.4 Contrast Adjustment

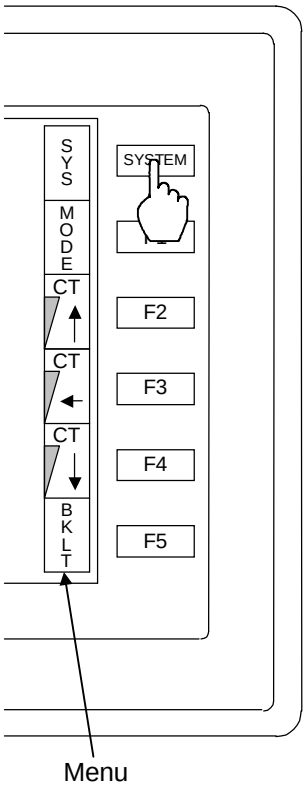
The contrast adjustment can be set with the function switches. The contrast adjustment can be set only when the operation panel OPC-V06 is STN color LCD and STN monochrome LCD.

Operation procedures

1. Press and hold the [SYSTEM] switch, and press the [F5] switch at the same time.
"Main Menu" screen is displayed. The "Main Menu" screen can be changed on any 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: Contrast adjustment (dark) *
This switch adjusts the contrast of LCD. When the [F2] switch is pressed once, the LCD color becomes dark. If this switch is held down for 1 second, the LCD color changes rapidly into darkness.

F3: Contrast adjustment (intermediate) *
This switch adjusts the contrast of LCD. When the [F3] switch is pressed once, the LCD color becomes intermediate.

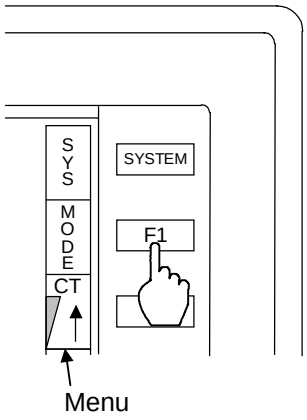
F4: Contrast adjustment (light) *
This switch adjusts the contrast of LCD. When the [F4] switch is pressed once, the LCD color becomes light. If this switch is held down for 1 second, the LCD color changes rapidly into lightness.

F5: Invalidity (Ignored)

* Invalid in case of the TFT color LCD
(OPC-V06-116∗□□□/□-□□□-□□□□□)

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

4. Press the [F1] switch with the menu being displayed.
Pressing the [F1] switch displays the "Operation Menu" screen after checking the error.



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

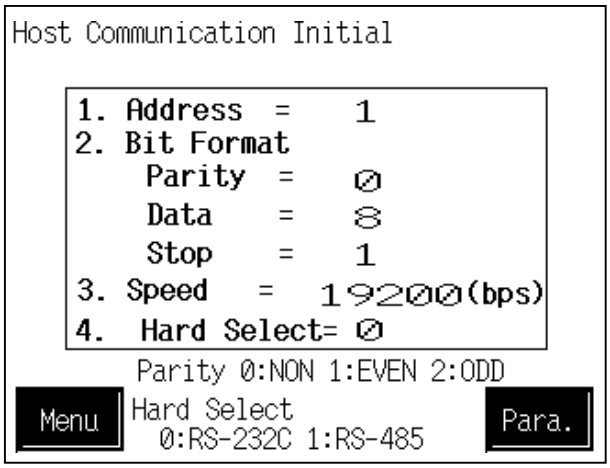
4.5 Host Communication Setting

Set the communication parameter for communication between the operation panel OPC-V06 and the host computer.
Always make the same communication settings on the OPC-V06 and host computer.
Host communication parameter of OPC-V06 can be checked on the "Host Communication Initial" screen.

■ Host Communication Initial screen

This screen is used to monitor communication parameter when the operation panel OPC-V06 is controlled by a host computer. **Cannot be set.** Set the host computer communication parameter so as to match this display.

<Host Communication Initial screen>



Factory set value of operation panel OPC-V06:
(If default is specified when ordering)

- Address 1
- Non parity
- Data 8-bit
- Stop 1-bit
- Communication speed 19200 bps
- Hard Select:
  Varies depending on the specification when ordering

1. Address:
Display range: 1 to 31
Factory set value: Varies depending on the specification when ordering.

2. Bit Format
Parity:
Display range: 0: None 1: Even 2: Odd
Factory set value: Varies depending on the specification when ordering.

Data:
Display range: 8
Factory set value: 8

Stop:
Display range: 1 or 2
Factory set value: Varies depending on the specification when ordering.

3. Speed:
Display range: 4800, 9600 and 19200 bps
Factory set value: Varies depending on the specification when ordering

4. Hard Select:
Display range: 0: RS-232C 1: RS-485
Factory set value: Varies depending on the specification when ordering.

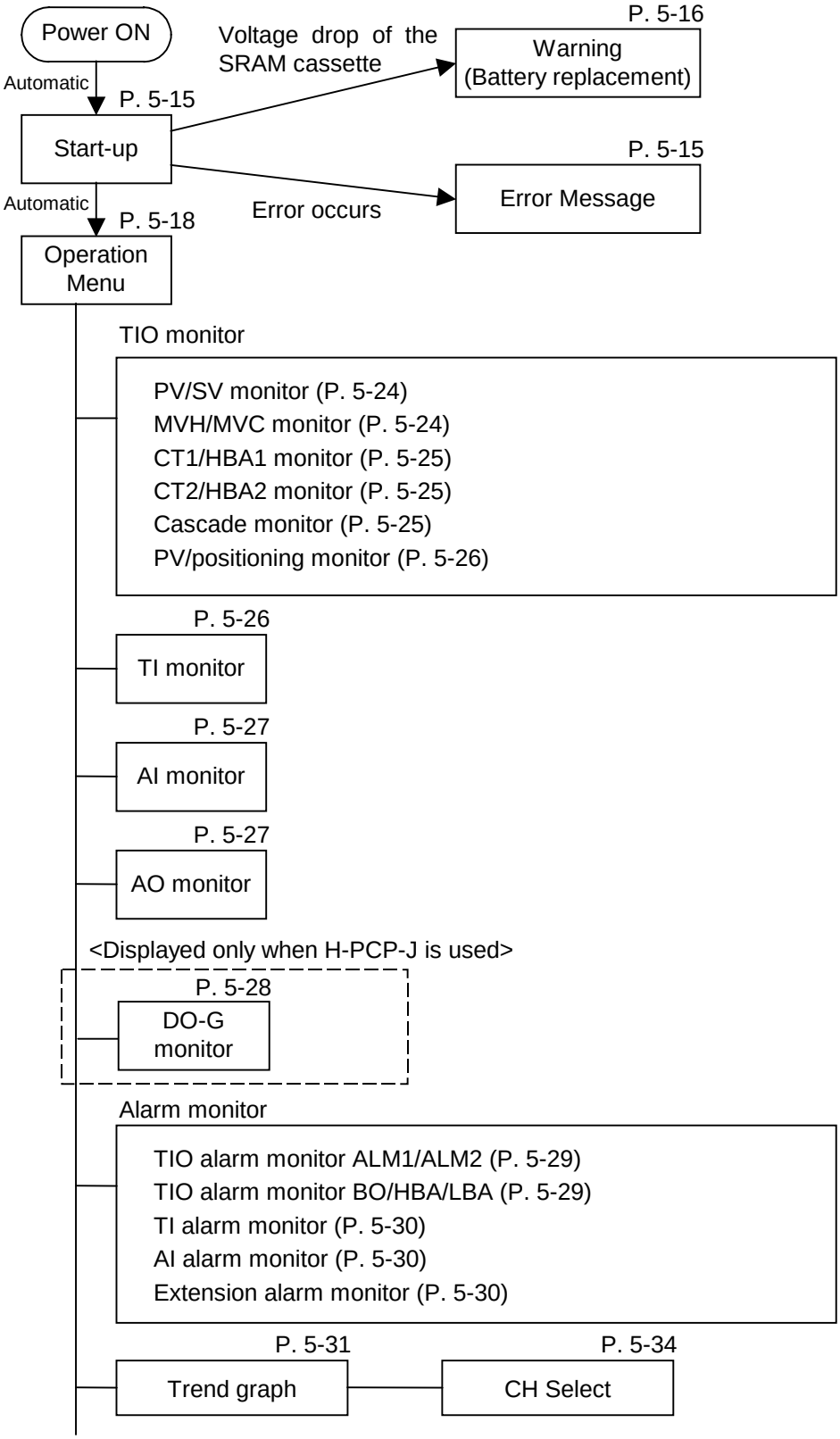
The address and parameter for communication on the operation panel OPC-V06 side is changed by the panel editor V-SFTE. For the panel editor V-SFTE, please contact RKC sales office or the agent.

"Host Communication Initial" screen is OPC-V initial. The keys for changing the display to the OPC-V Initial Settings screens are protected, so you can not switch to these screens without removing the protection.
For details, see the **APPENDIX, 1.1 Releasing OPC-V initial settings calling up key protect (P. A-3)**.

5 OPERATIONS

5.1 Screen Configuration

Some screens may not be displayed depending on the specification.
Screen configuration changes by PCP module (H-PCP-A/B or H-PCP-J) to use partly.



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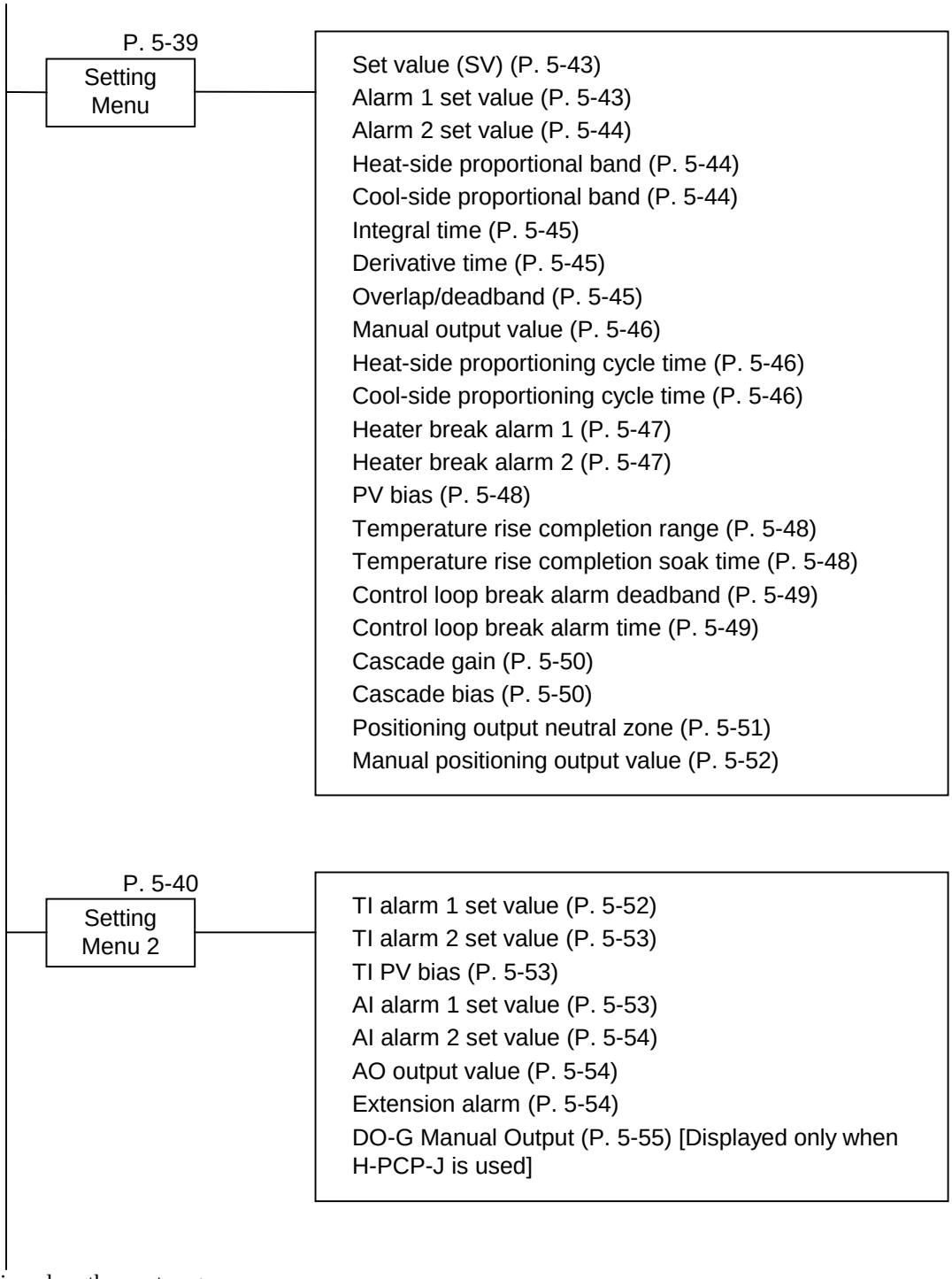
Continued from the previous page.



Continued on the next page.

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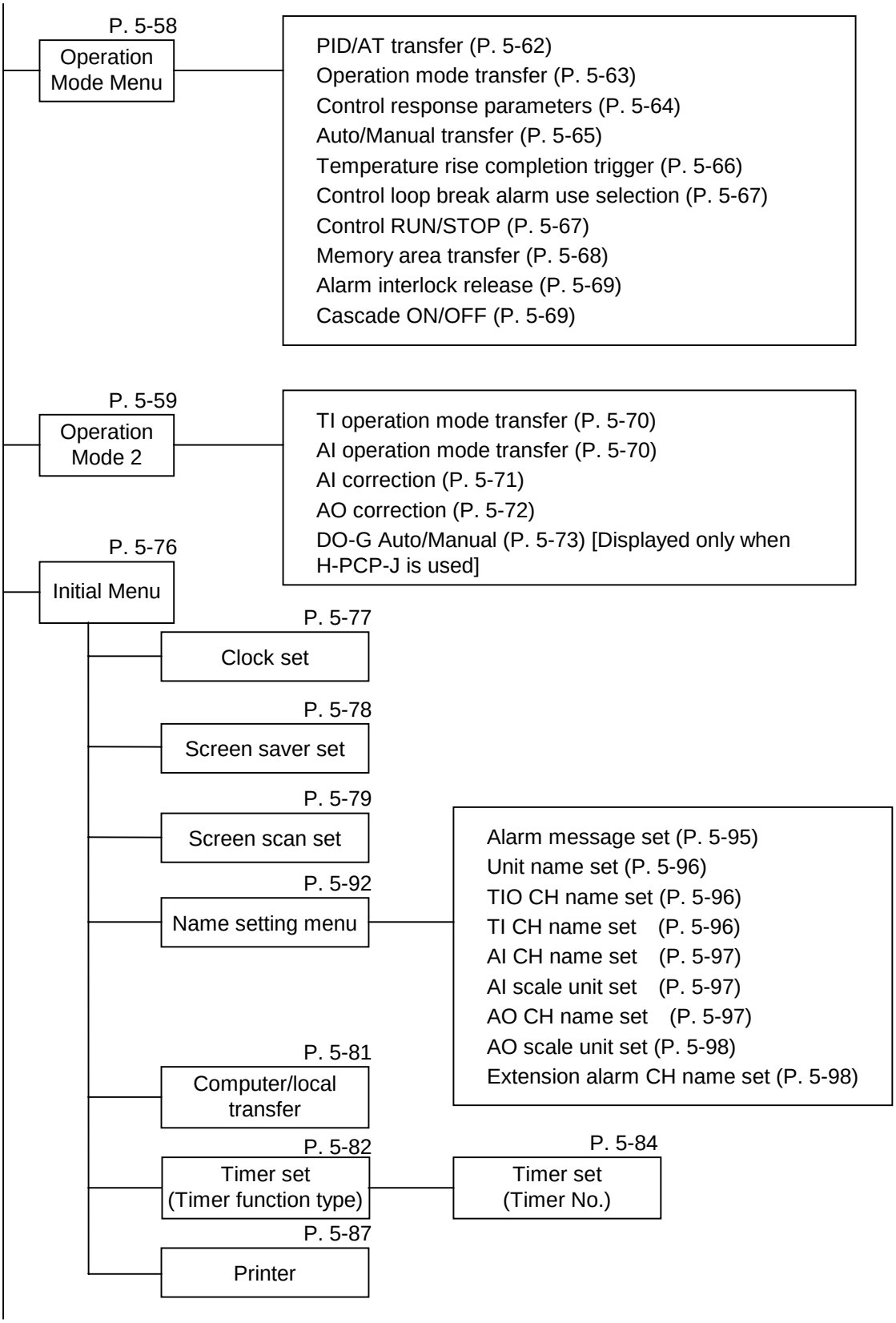

Continued on the next page.

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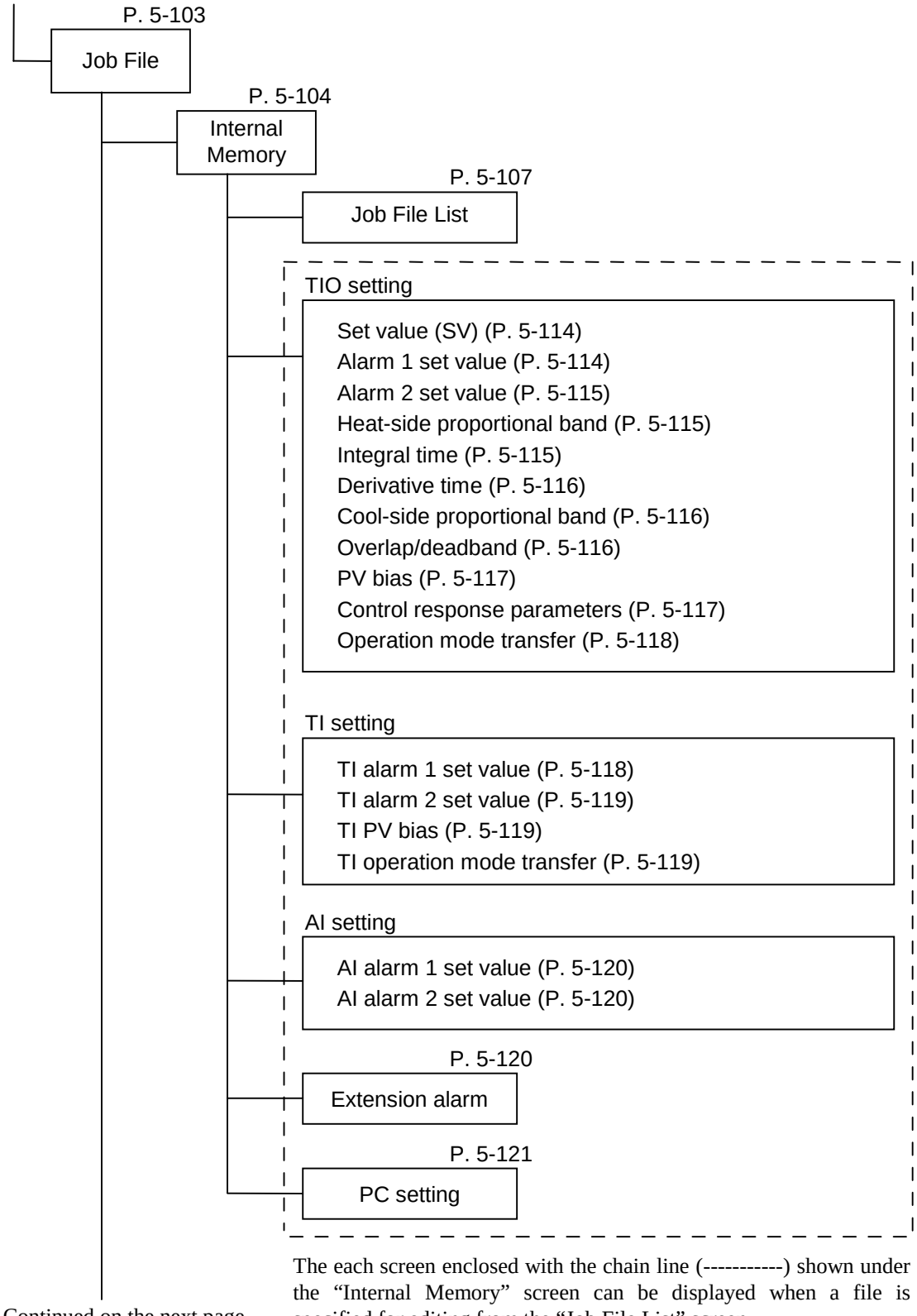
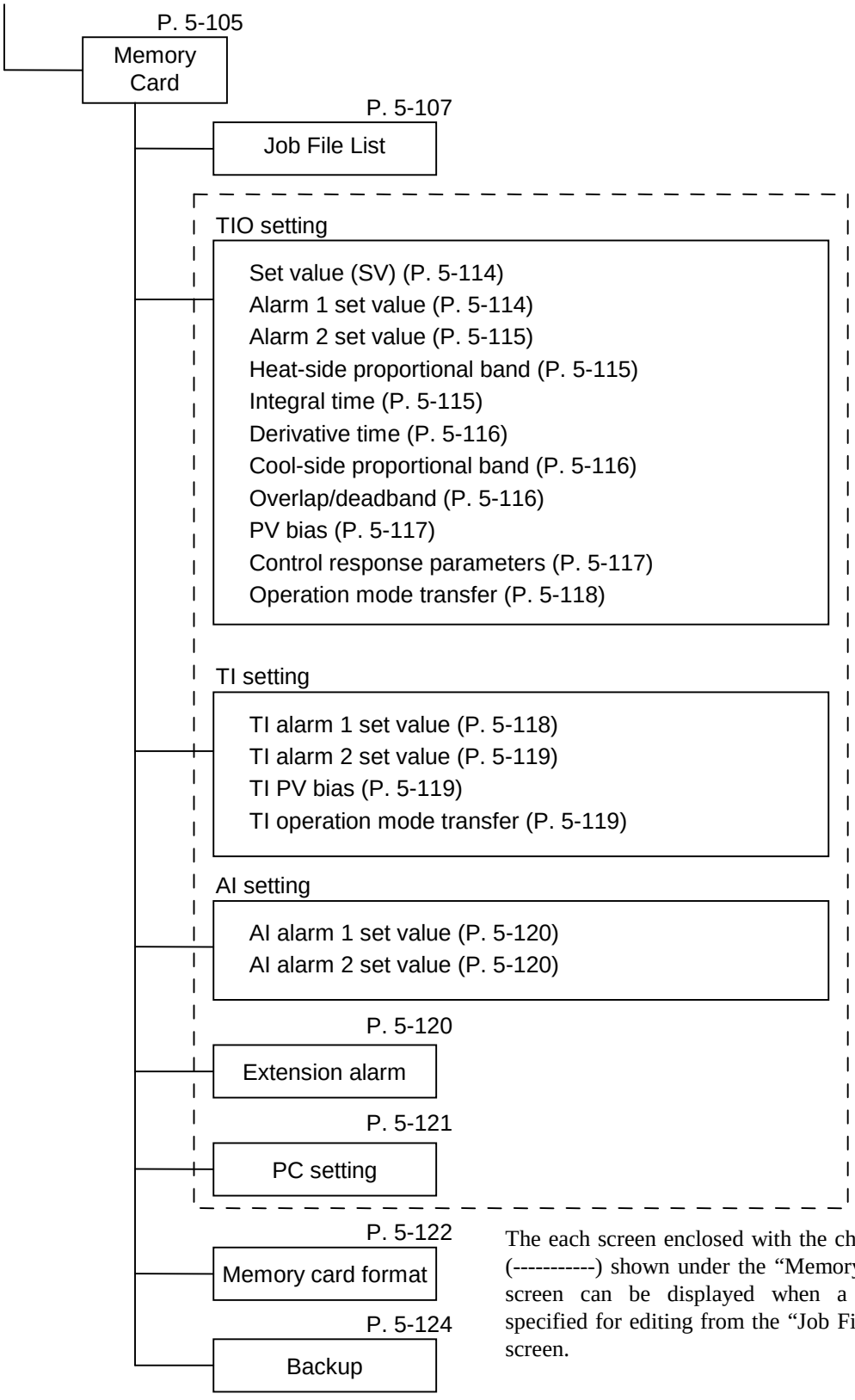


The each screen enclosed with the chain line (----------) shown under the “Internal Memory” screen can be displayed when a file is specified for editing from the “Job File List” screen.

Continued on the next page.

Continued from the previous page.



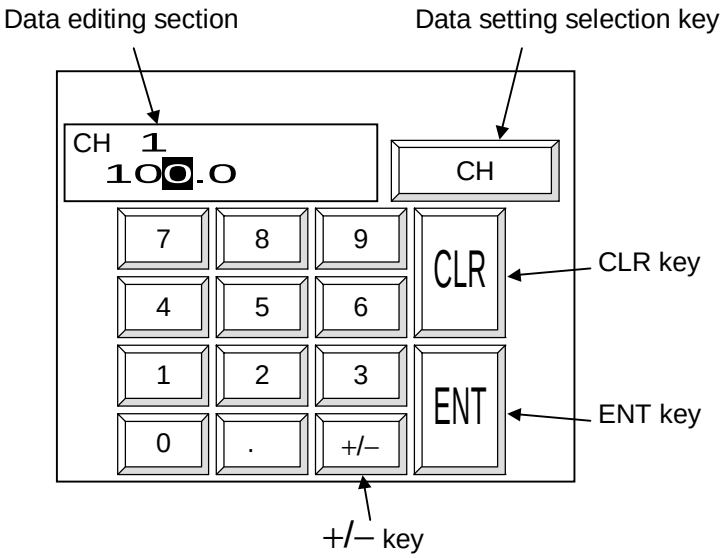
The each screen enclosed with the chain line (----------) shown under the “Memory Card” screen can be displayed when a file is specified for editing from the “Job File List” screen.

“Memory Card” screen is not displayed if there is no external memory function (memory card).

5.2 Basic Operations

5.2.1 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.。

Data setting selection key:

Used to select any one of the following data settings. Every time this key touched, the data setting changes.

CH: Setting for each channel
The desired data is directly touched for its setting.

Unit: Setting for each unit
The same items related to the same unit are simultaneously set to the same numeric values.

All Unit: Setting for all units
The same items related to all units are simultaneously set to the same numeric values.

The available setting differs depending on the setting item. If the setting cannot be changed even when touched on the data setting selection key, that setting cannot be used. In addition, there are some setting items in which no data setting selection key is displayed.

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

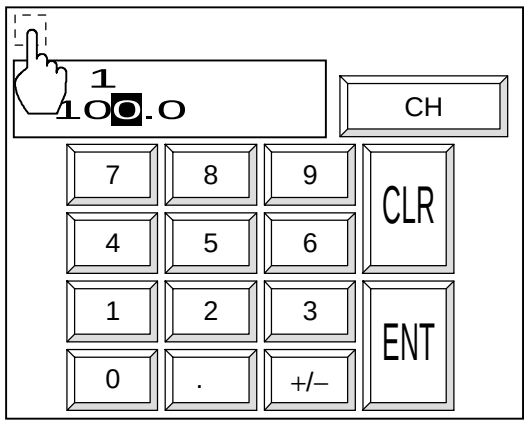
ENT key: Enters the text displayed in the data editing section and closes the numeric keypad window.

+/– 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.

■ 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 [ENT] 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.

Touch twice in a row

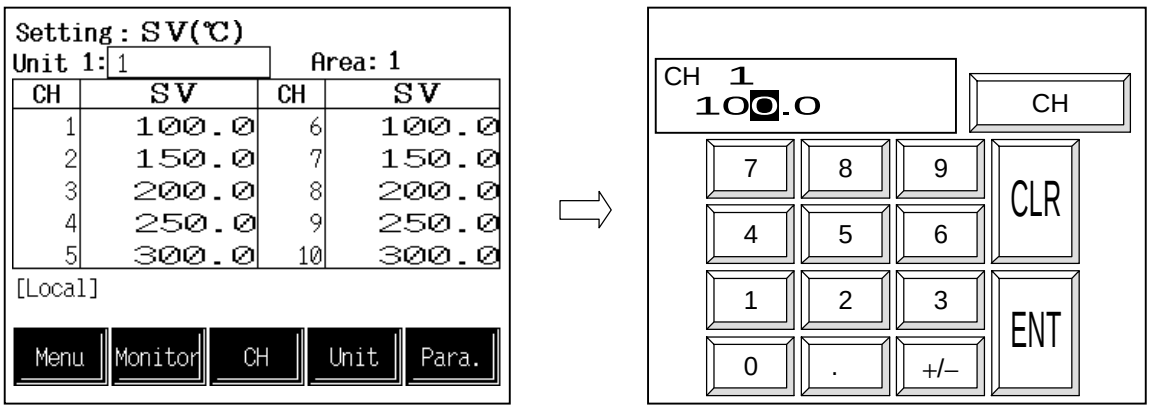


■ Setting for each channel

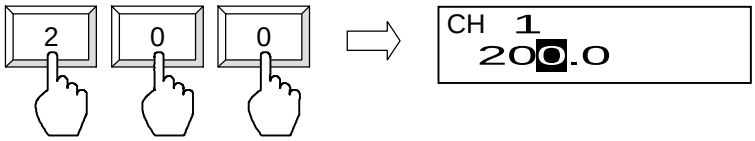
Example: When CH1 set value (SV) is change from 100 °C to 200 °C.

1. Touch the [Setting] key on the “Operation Menu” screen, to switch to the “Setting Menu” screen.
2. Touch the [SV] key on the “Setting Menu” screen, to switch to the “Set value (SV)” screen.
3. From the “Set value (SV)” screen, directly touch the part you want to setting (CH1 SV). The numeric keypad window appears on the screen.

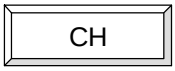
Numeric keypad window



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

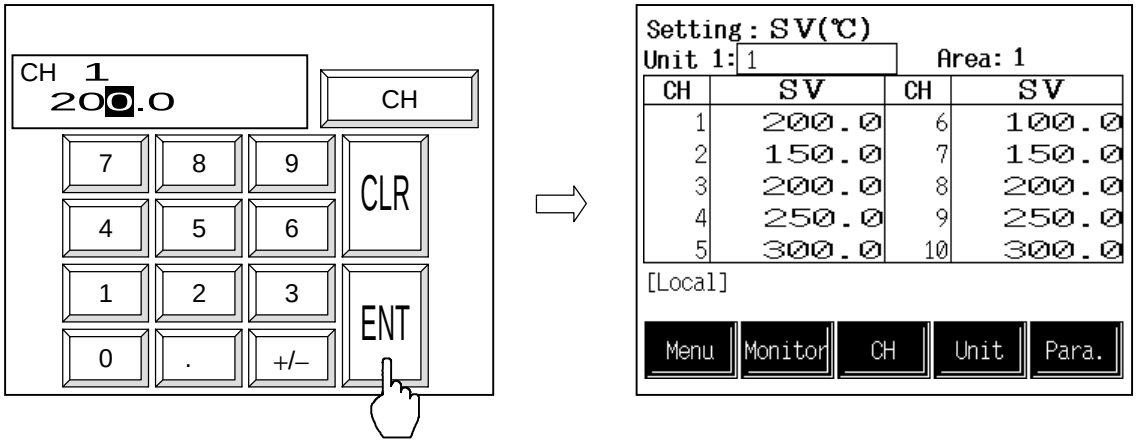


5. Check that the data setting selection key is [CH].



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

Numeric keypad window



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

■ Setting for each unit/all unit (Batch setting)

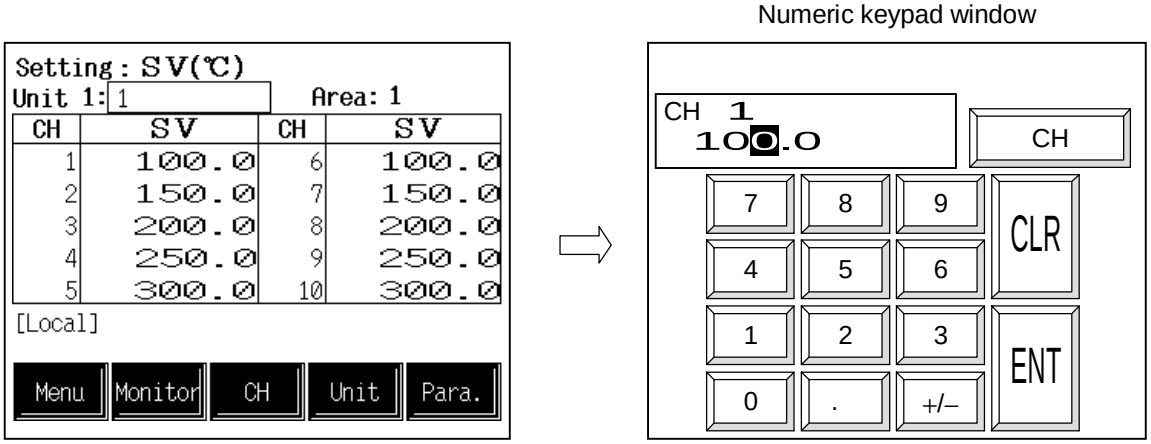
Example: When all set value (SV) is change to 200 °C.

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

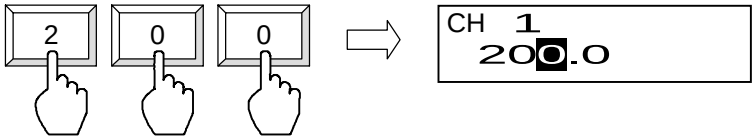
2. Touch the [SV] key on the "Setting Menu" screen, to switch to the "Set value (SV)" screen.

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

Numeric keypad window



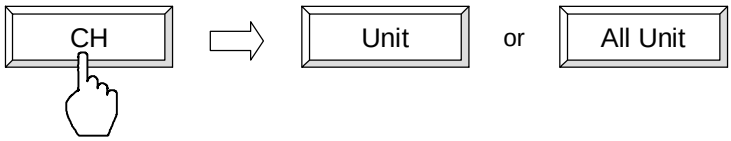
4. Touch the [2], [0], [0] key.



5. Touch the data setting selection key to change the display to the [Unit] or [All Unit].

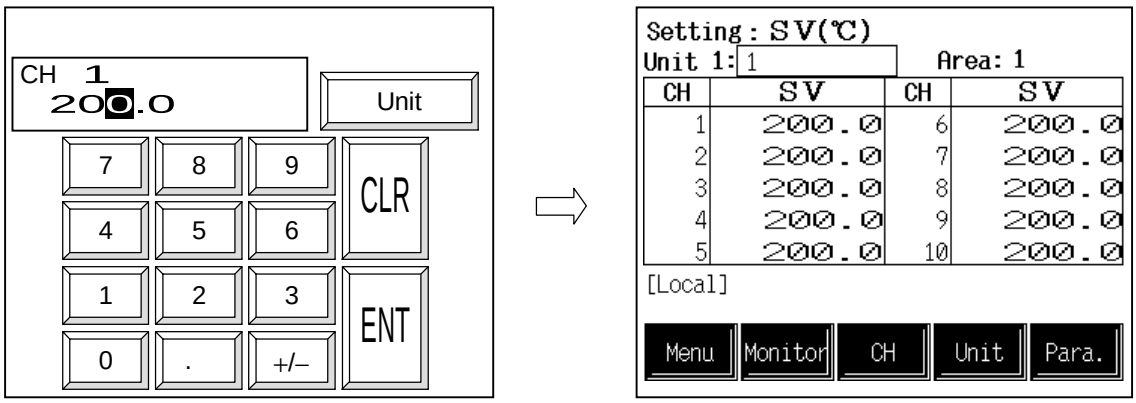
[Unit]: The all channels related to the same unit are simultaneously set to the same numeric values.

[All Unit]: The all channels related to all units are simultaneously set to the same numeric values.



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

Numeric keypad window

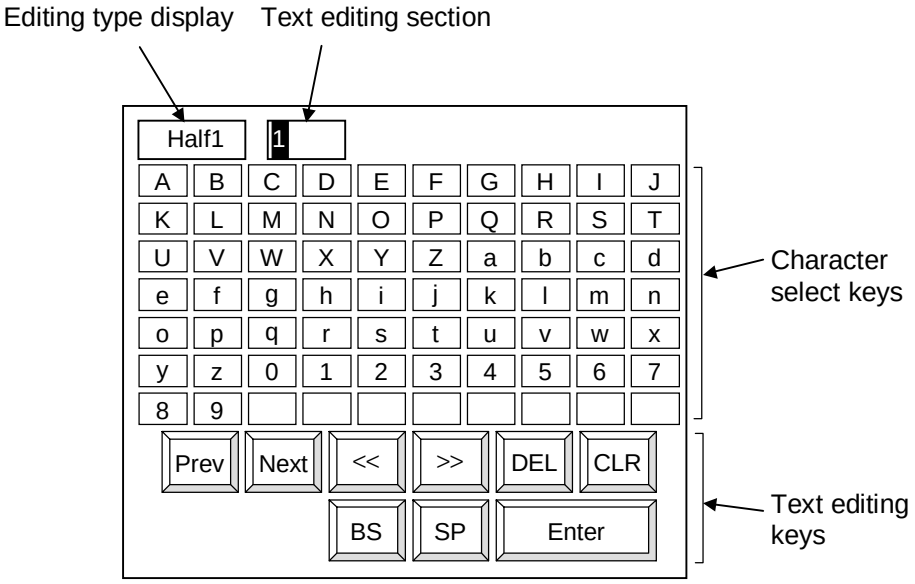


If you input a number outside the valid range, when you touch the [ENT] key, the numeric keypad window does disappear, but the value is not changed.

5.2.2 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>



Editing type display: Below is a list of the types of character editing. Editing type switches by [Prev] key, [Next] key.

Half1: Alphabet, numeral

Half2: Symbols

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.

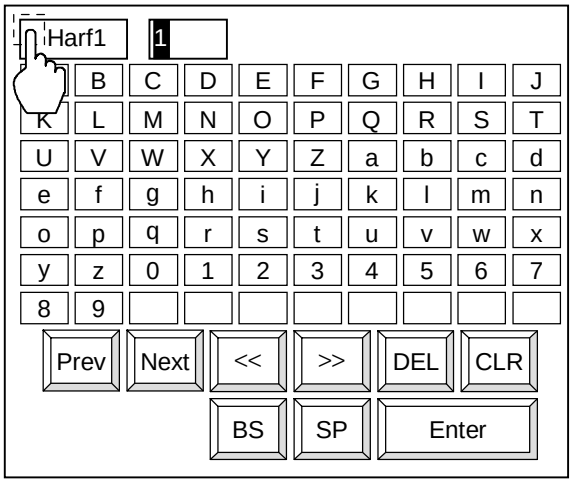
Text editing keys

Prev key, Next key:	Switch the type of characters required for making and editing the name or message. These keys are used to switch the editing type display and the character selection key display.
<< key:	Moves the text editing section cursor to the left.
>> key:	Moves the text editing section cursor to the right.
DEL key:	Deletes the character at the cursor of the text editing section.
CLR key:	Clears all the characters displayed in the text editing section.
BS key:	Deletes the character to the left of the cursor of the text editing section.
SP key:	Inserts a 1-byte space at the cursor of the text editing section.
Enter key:	Enters the text displayed in the text editing section and closes the text editing window.

■ 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.

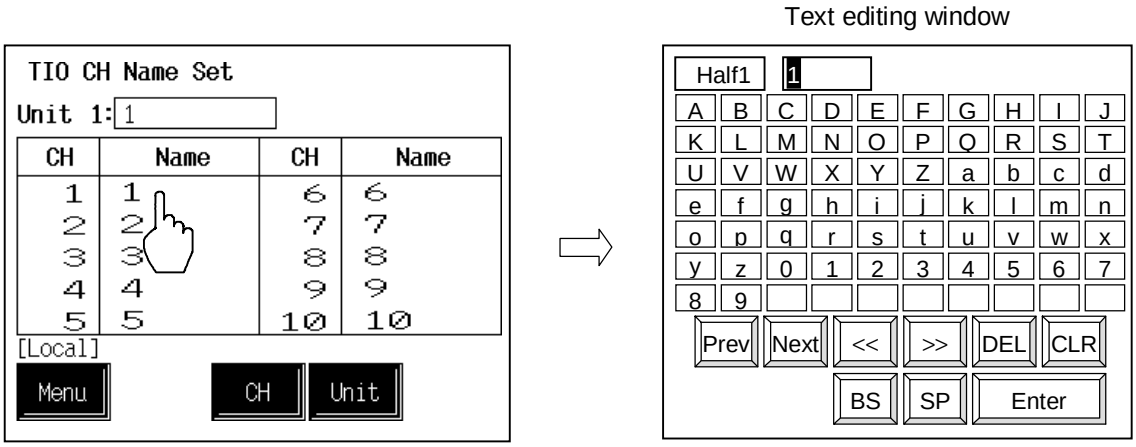
Touch twice in a row



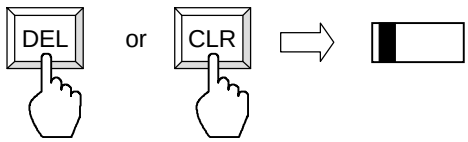
■ Text editing

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

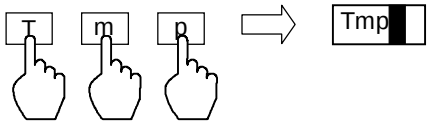
1. Touch the [Initial Setting] key on the “Operation Menu” screen, to switch to the “Initial Menu” screen.
2. Touch the [Name Set] key on the “Initial Menu” screen, to switch to the “Name Setting Menu” screen.
3. Touch the [TIO CH Name] key on the “Name Setting Menu” screen, to switch to the “TIO CH Name Set”screen.
4. When you touch the section for setting the TIO CH 1 name, the text editing window appears.



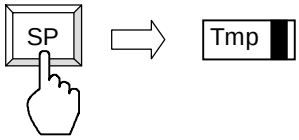
5. Touch the [DEL] key or the [CLR] key to erase the text now displayed in the text editing section.



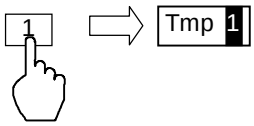
6. Touch the [T], [m], [p] keys to input “Tmp.”



7. Touch the [SP] key to insert a 1-byte space.

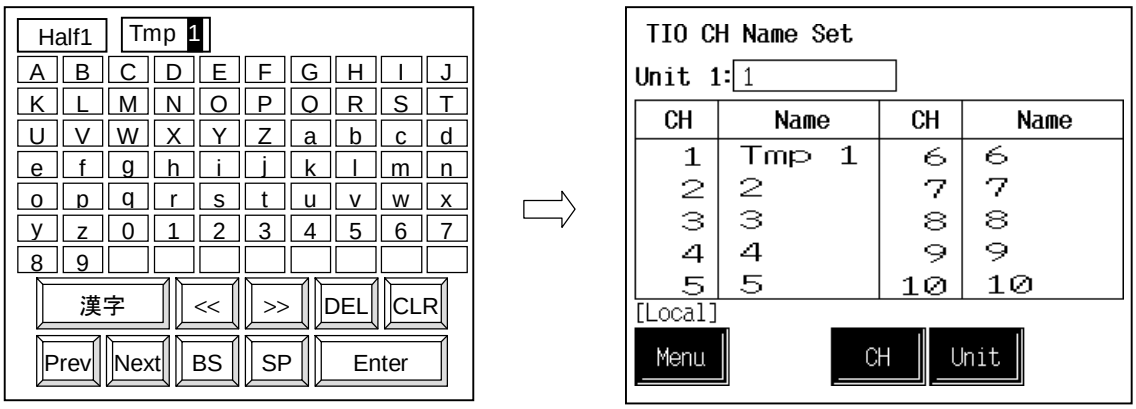


8. Touch the [1] key to input “1.”



9. Touch the [Enter] key, after confirming “Tmp 1” inputted correctly in the text editing section. When entered, the text editing window disappears and “1” is replaced with “Tmp 1.”

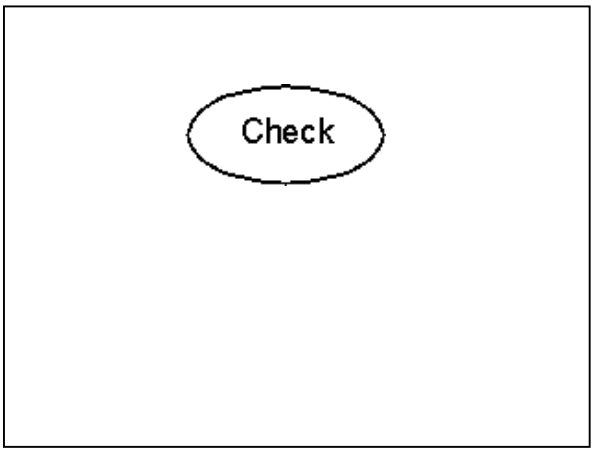
Text editing window



5.3 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).

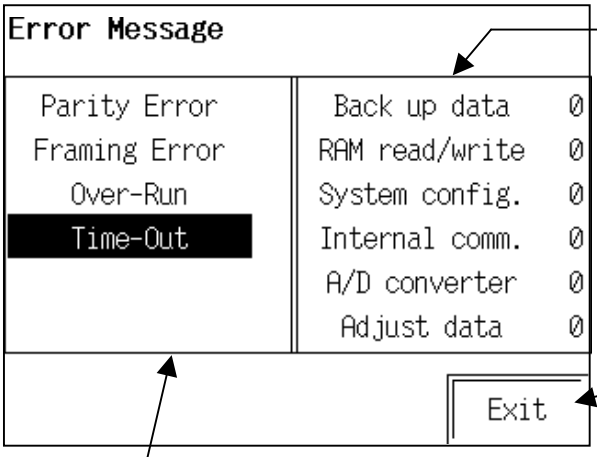
<Start-up screen>



The operation panel 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 “Error Message” 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**

<Error message screen>



Display of control unit error
When an error occurs, the error contents is shown in inversed display. The number of the abnormal unit is also displayed.

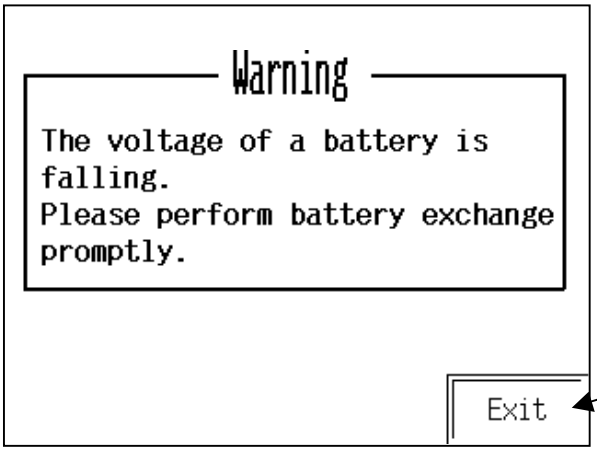
Exit key
By touching this key, the previous screen just before the error can be displayed. (If the error will occur when the power was turned on, the screen will return to the operation menu screen.)

Display of error details of the operation panel itself
When an error occurs, the error contents is shown in inversed display.

☞ For the details of errors, see the **6. IN CASE OF TROUBLE (P. 6-1)**.

- **When a voltage drop of the SRAM cassette battery**

<Warning (battery replacement) screen>



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: V6EM/RB

Exit 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:

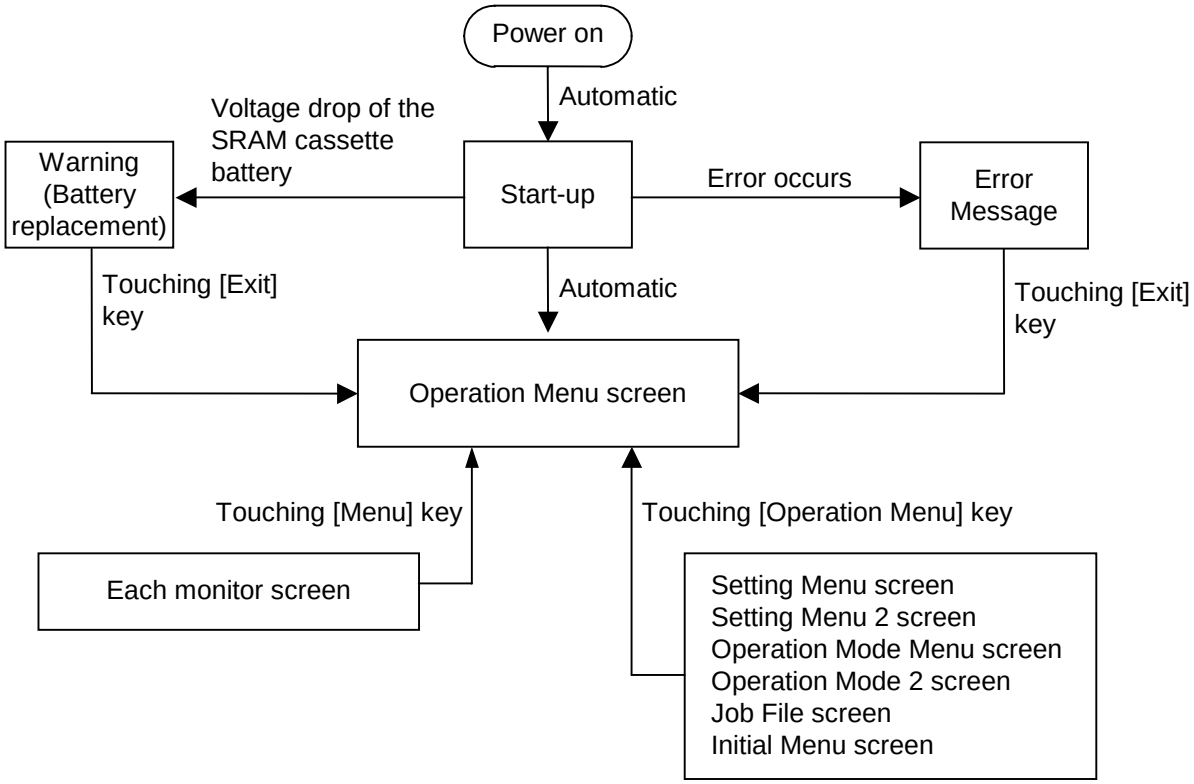
Unit used/unused	Engineering unit setting
Screen saver setting	Computer/Local transfer
Option setting	Screen scan setting
PCP module type selection	Timer setting
Alarm message	Unit name
TIO CH name	TI CH name
AI CH name	AI engineering unit name
AO CH name	AO engineering unit name
Extension alarm CH name	Trend graph
Job file data	

☞ For the replace the battery, see the **SRAM Cassette V6EM/Rsi Instruction Manual (IMS01M06-E□)**.

5.4 Operation Menu Screen

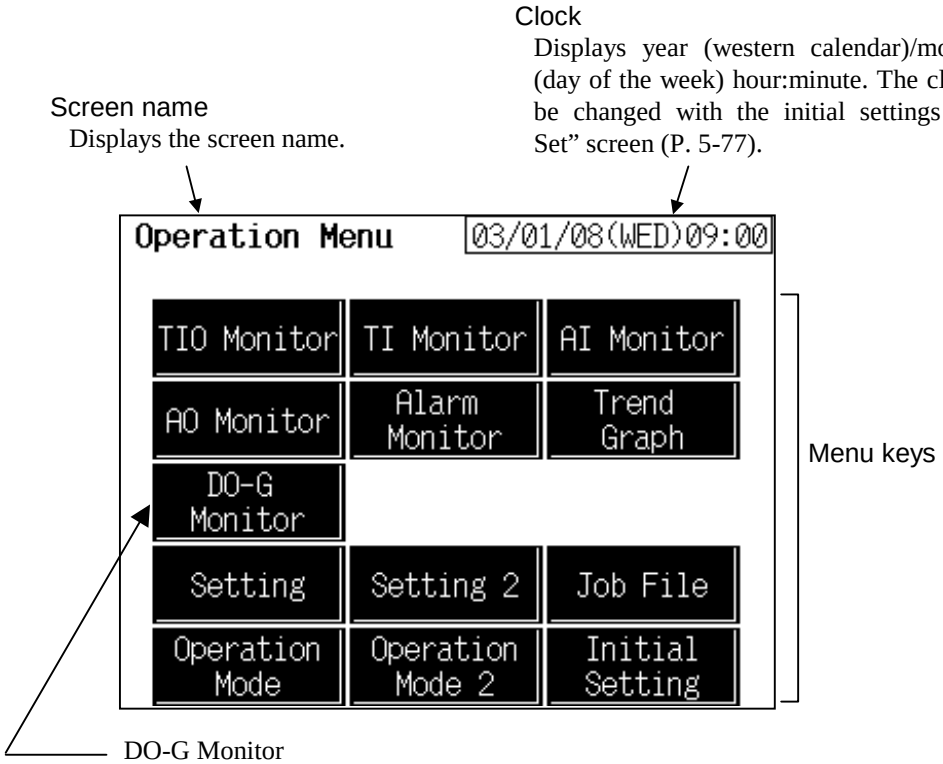
The operation menu screen allows the selection of each of the “Operation Monitor,” “Setting,” “Operation Mode,” and “Initial Set” screens.

■ Calling procedure of the operation menu screen



■ Operation menu screen

<Operation menu screen>



Menu keys: Touching this key, screen can be selected.

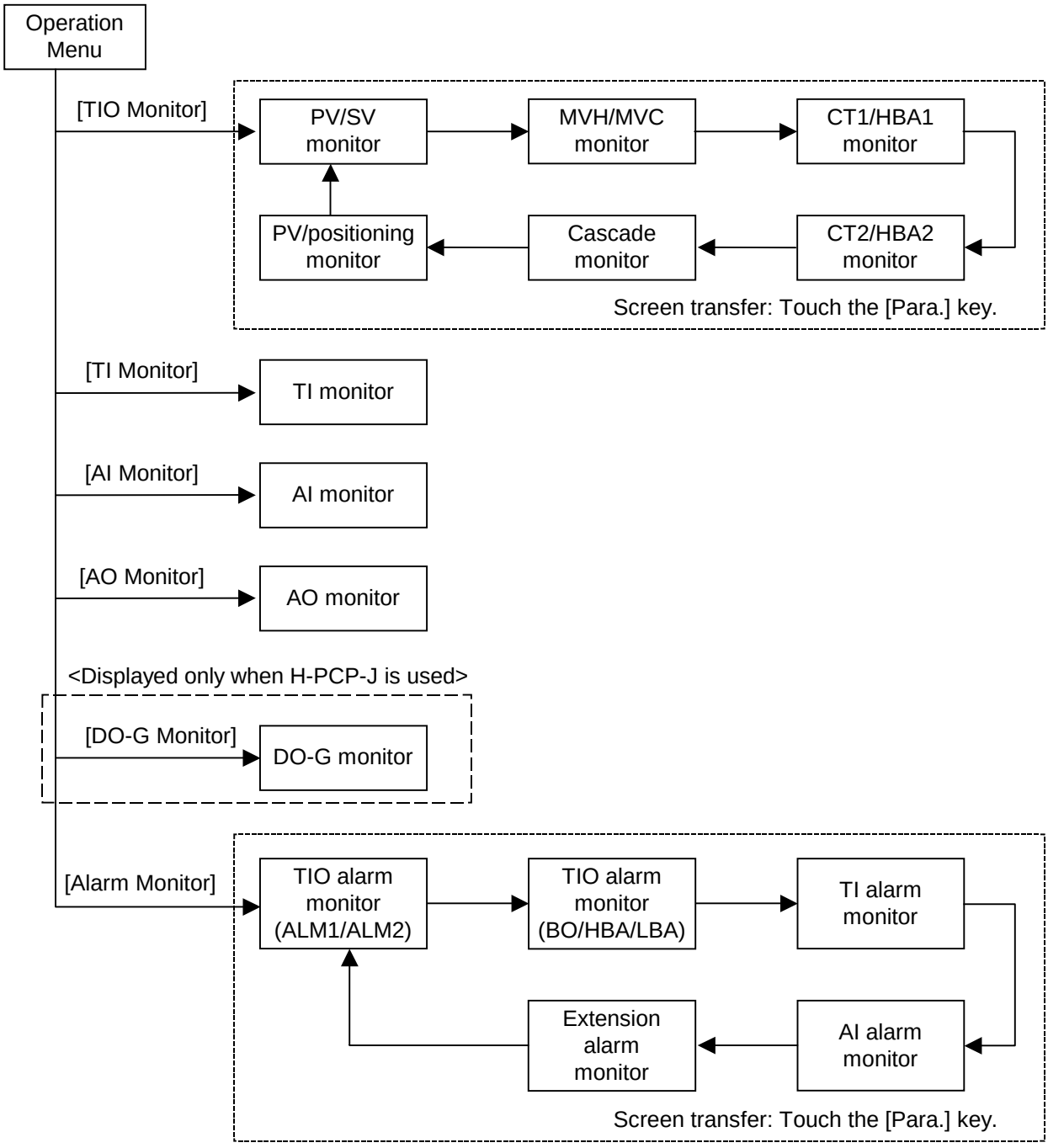
TIO Monitor:	"TIO Monitor" screen (PV/SV)
TI Monitor:	"TI Monitor" screen
AI Monitor:	"AI Monitor" screen
AO Monitor:	"AO Monitor" screen
Alarm Monitor:	"TIO Alarm Monitor" screen (ALM1/ALM2)
Trend Graph:	"Trend Graph" screen
DO-G Monitor:	"DO-G Monitor" screen
Setting:	"Setting Menu" screen
Setting 2:	"Setting Menu 2" screen
Job File:	"Job File" screen
Operation Mode:	"Operation Mode Menu" screen
Operation Mode 2:	"Operation Mode 2" screen
Initial Setting:	"Initial Menu" screen

5.5 Monitor Screen

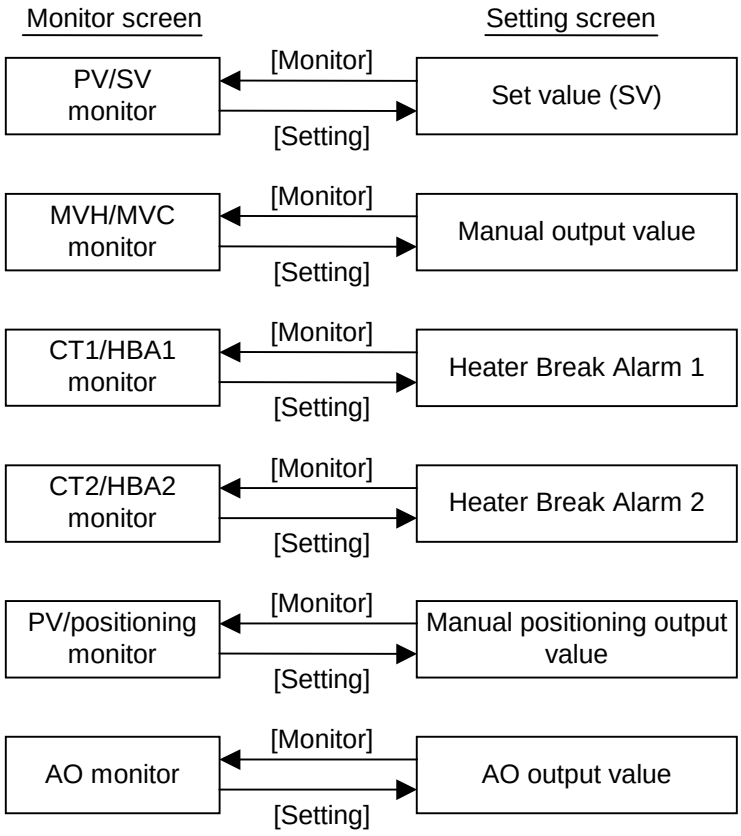
Monitor screens are used to monitor the set value, measured value, control output value, alarm output, etc. There are temperature control, TI, AI, AO, DO-G and alarm monitor screens.

5.5.1 Calling procedure of the monitor screen

- Some screens may not be displayed depending on the specification.
- [ ] : key name.
- Screen configuration changes by PCP module (H-PCP-A/B or H-PCP-J) to use partly.



Touching the [Monitor] key on the setting screen displays the respective monitor screen. In addition, touching the [Setting] key on the monitor screen displays the respective setting screen.

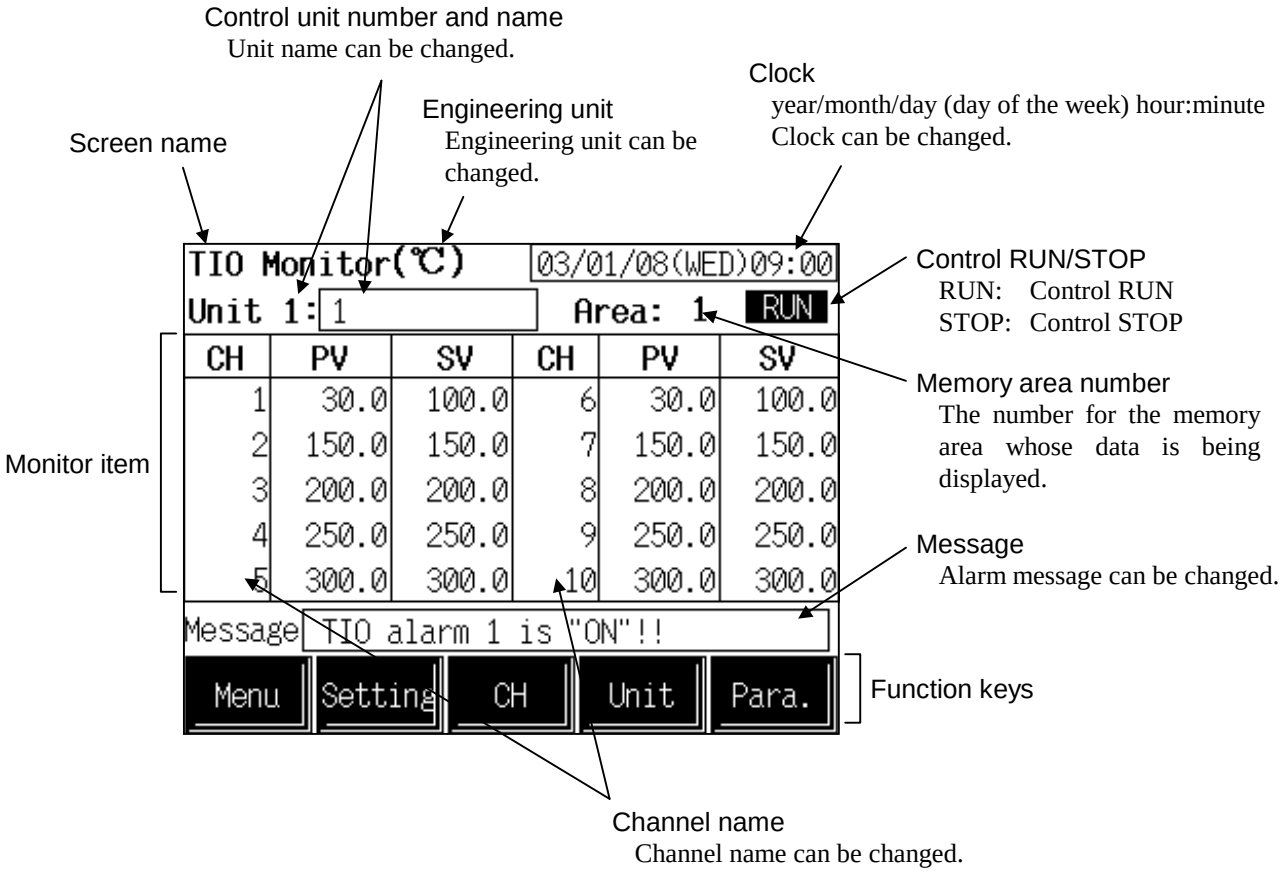


5.5.2 The basic configuration of monitor screen

Even if there are two or more display resolutions (1 °C and 0.1 °C), the relevant data items are displayed on the operation monitoring screen. However, data items in temperature engineering units of °C/°F cannot be displayed on the above screen.

The operation panel identifies the unit from the temperature unit set by OPC-V initialize. (Factory set value of temperature unit: °C)

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



Screen name: Displays the screen name.

Engineering unit: Displays the engineering unit. The engineering unit (°C/°F) can be changed with the OPC-V initialize “Temperature Scale Unit Selection” screen (P. A-9).

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. 5-77).

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 initialize “Unit Name Set” screen (P. 5-96).

Memory area number: Displays the number for the memory area whose data is being displayed. The memory area number can be changed with the operation mode "Memory Area" screen (P. 5-68). Display on the "TIO Monitor" screen and "TIO Alarm Monitor" screen.

Control RUN/STOP: Displays the control state. (Control RUN/STOP) The control mode can be changed with the operation mode "TIO Ope. Mode Change" screen (P. 5-63). Display on the "TIO Monitor" screen and "TIO Alarm Monitor" screen.
RUN: Control RUN STOP: Control STOP

Monitor item: Displays the item and data. Details of display varies depending on the each monitor screen.

☞ For the details of display, see the **5.5.3 TIO monitor screen (P. 5-24)**, **5.5.4 TI monitor screen (P. 5-26)**, **5.5.5 AI monitor screen (P. 5-27), 5.5.6 AO monitor screen (P. 5-27)** and **5.5.7 DO-G monitor screen (P. 5-28)**.

Channel name: Displays the TIO channel name, TI channel name, AI channel name and AO channel name. The channel name can be changed with the initialize "TIO CH Name Set" screen (P. 5-96), "TI CH Name Set" screen (P. 5-96), "AI CH Name Set" screen (P. 5-97) and "AO CH Name Set" screen (P. 5-97).

Message: The alarm message is displayed at temperature rise completion or alarm occurrence. Touching the message display area when an alarm occurs changes to the alarm monitoring screen. Alarm occurring unit and channel Nos. can be checked.

Alarm message list (Factory set value)

Item		Message	Priority order
BO	Burnout	Burnout alarm is "ON"!!	
HBA	Heater break alam	Heater break alarm is "ON"!!	High
AL1	Alarm 1	TIO alarm 1 is "ON"!!	
AL2	Alarm 2	TIO alarm 2 is "ON"!!	
AI_AL1	AI alarm 1	AI alarm 1 is "ON"!!	
AI_AL2	AI alarm 2	AI alarm 2 is "ON"!!	
LBA	Loop break alarm	Loop break alarm is "ON"!!	
TI_BO	TI burnout	TI burnout is "ON"!!	
TI_AL1	TI alarm 1	TI alarm 1 is "ON"!!	
TI_AL2	TI alarm 2	TI alarm 2 is "ON"!!	Low
Temp. rise comp. (All units)		All unit temp. rise comp.!!	

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. 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 initialize "Alarm Message Set" screen (P. 5-95).

Function keys: These key switches are assigned to match the contents of the screen.

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

Setting: Touching this key changes from the monitor screen to the setting screen.
Item whose settings can be changed:
Set value (SV), manual output value (MVH), heater break alarm 1 (HBA1), heater break alarm 2 (HBA2), manual positioning output value, AO output value

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Unit: Every time this key is touched, the control unit number changes. If the number of control units used is one, the [Unit] key is invalid.

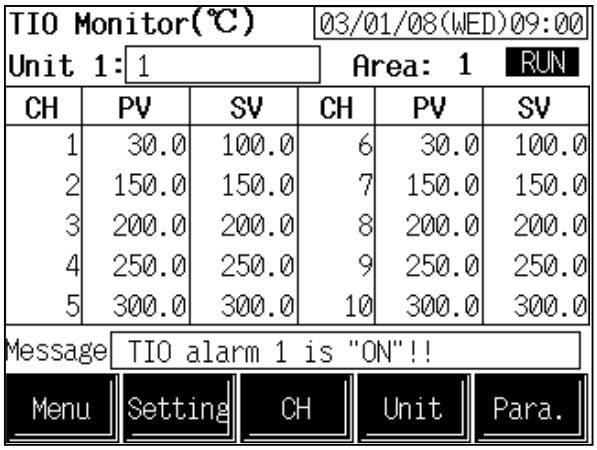
Para.: Every time this key is touched, the monitor screen changes. There is no this key on the "TI Monitor" screen, "AI Monitor" screen and "AO Monitor" screen.

5.5.3 TIO monitor screen

There are PV/SV monitor, MVH/MVC monitor, CT1/HBA1 monitor, CT2/HBA2 monitor, cascade monitor and PV/positioning monitor screens in the TIO monitor screen. Changes the screen by touching [Para.] key.

☞ For the function keys and other items, see the **5.5.2 The basic configuration of monitor screen (P. 5-21)**.

■ PV/SV monitor



CH: Displays the TIO channel name.

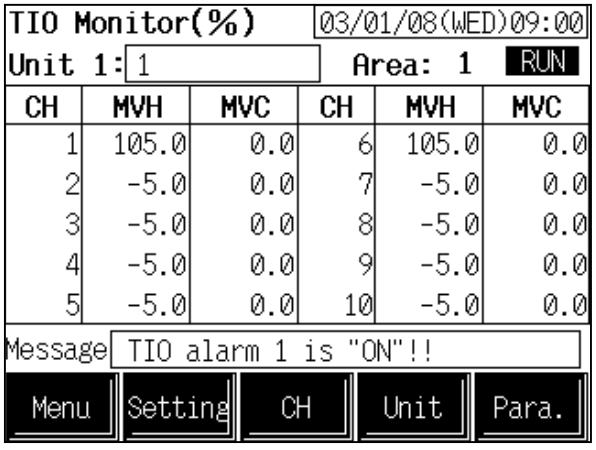
PV: Displays the temperature measured value (PV) or motor speed measured value.
Display range:
Within input range (TC/RTD input)
Within display scale range
(Current/voltage input/H-SIO-A)

SV: Displays the temperature set value (SV) or motor speed set value.
Display range:
Within input range (TC/RTD input)
Within display scale range
(Current/voltage input/H-SIO-A)

The position of the decimal point for PV/SV differs depending on the input range.

Touching [Setting] key changes to the “Setting: SV” screen. (P. 5-43)

■ MVH/MVC monitor



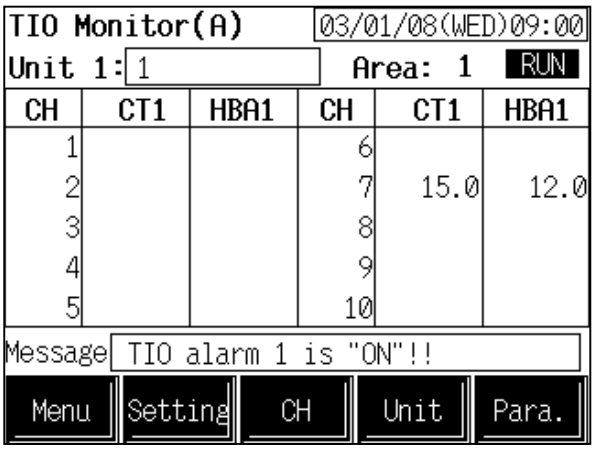
CH: Displays the TIO channel name.

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 [Setting] key changes to the “Setting: Manual Output” screen. (P. 5-46)

■ CT1/HBA1 monitor



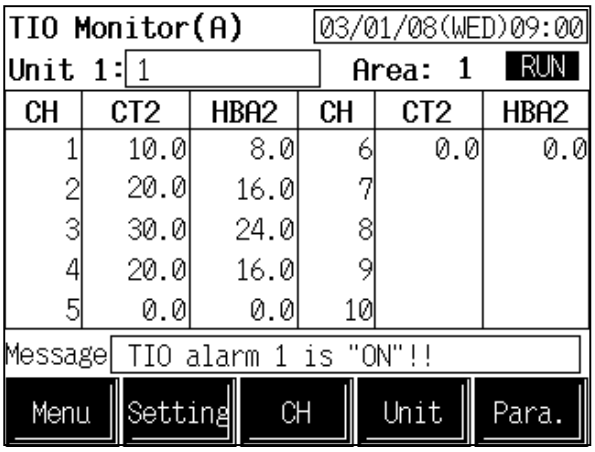
CH: Displays the TIO channel name.

CT1: Displays the 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: Displays the heater break alarm set value 1 corresponding to current transformer (CT) 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 [Setting] key changes to the "Setting: Heater Break Alarm 1" screen. (P. 5-47)

■ CT2/HBA2 monitor



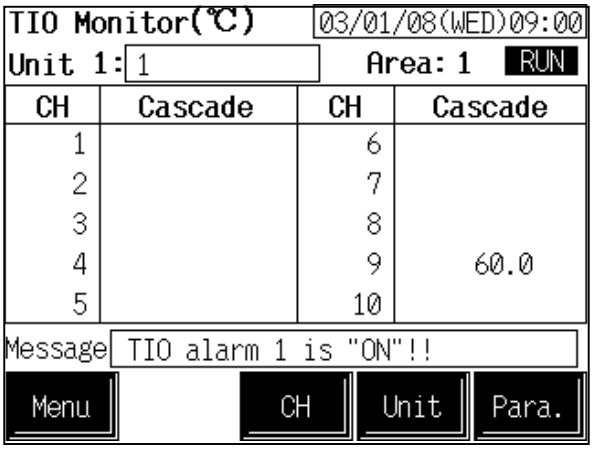
CH: Displays the TIO channel name of H-TIO-A module corresponding to channel of H-CT-A module.

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

Touching [Setting] key changes to the "Setting: Heater Break Alarm 2" screen. (P. 5-47)

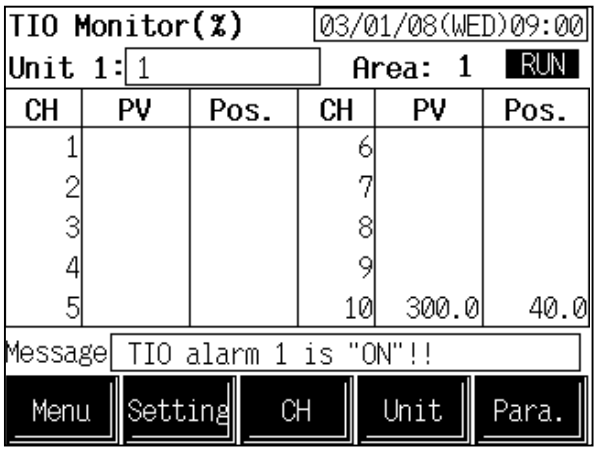
■ Cascade monitor



CH: Displays the TIO channel name.

Cascade:
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.

■ PV/positioning monitor



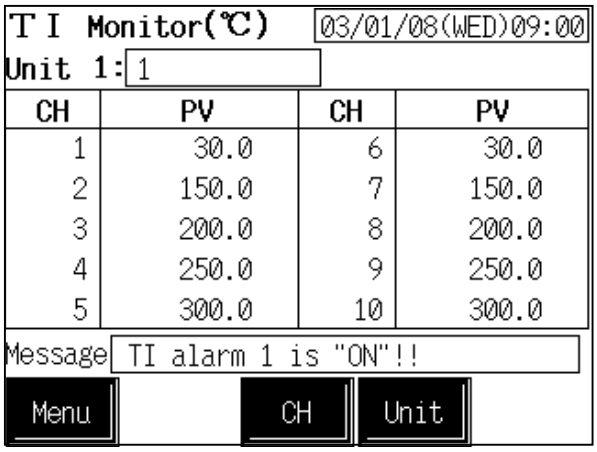
CH: Displays the TIO channel name.

PV: Displays the temperature measured value (PV).
Display range:
Within input range (TC/RTD input)
Within display scale range
(Current/voltage input)

Pos.: Displays the positioning monitor value.
Display range: −5.0 to +105.0 %

Touching [Setting] key changes to the "Setting: Position Manual Output" screen. (P. 5-52)

5.5.4 TI monitor screen

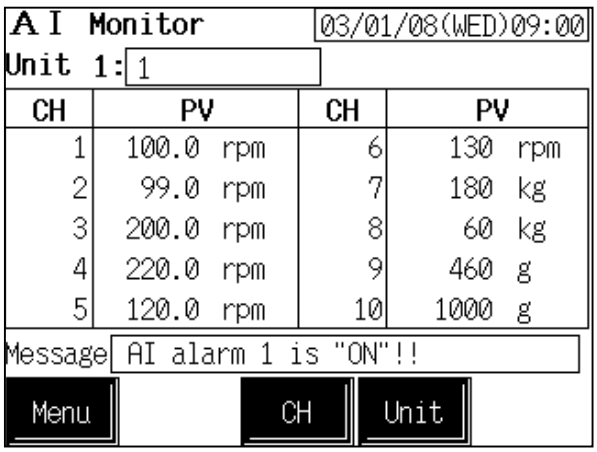


CH: Displays the TI channel name.

PV: 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.

☞ For the function keys and other items, see the **5.5.2 The basic configuration of monitor screen (P. 5-21)**.

5.5.5 AI monitor screen

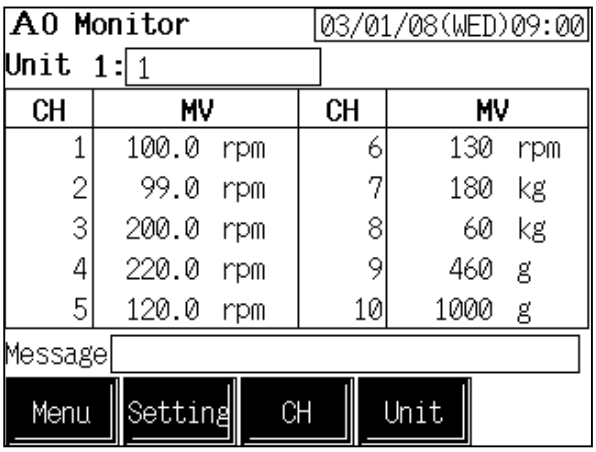


CH: Displays the AI channel name.

PV: Displays the AI measured value (H-AI-☐ module).
Display range: Within display scale range
The position of the decimal point differs depending on the specification.

☞ For the function keys and other items, see the **5.5.2 The basic configuration of monitor screen (P. 5-21)**.

5.5.6 AO monitor screen



CH: Displays the AO channel name.

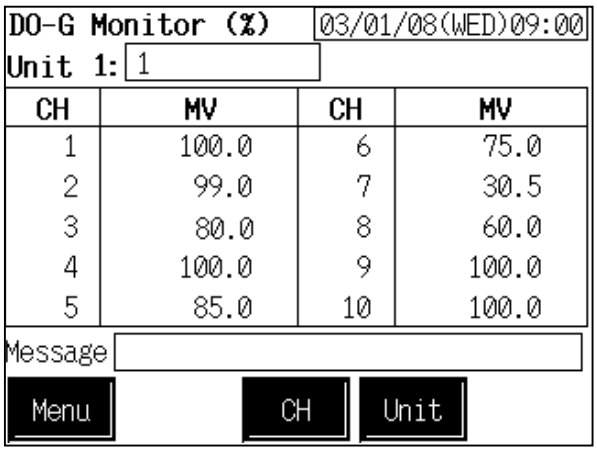
MV: Displays the AO output value (H-AO-☐ module).
Display range: Within display scale range
Effective only for manual mode.
The position of the decimal point differs depending on AO decimal point position setting (P. A-43).

Touching [Setting] key changes to the "Setting: AO_MV_SV" screen. (P. 5-54)

☞ For the function keys and other items, see the **5.5.2 The basic configuration of monitor screen (P. 5-21)**.

5.5.7 DO-G monitor screen

Displayed only when H-PCP-J is used.



CH: Displays the DO-G channel number.

MV: Displays the output value that output ratio did computation of output value from temperature control module with H-DO-G module.
Display range: –0.5 to +105.0 %

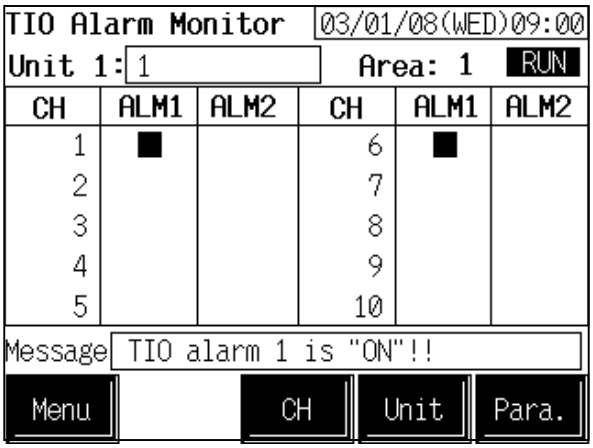
For the function keys and other items, see the **5.5.2 The basic configuration of monitor screen (P. 5-21)**.

5.5.8 Alarm monitor screen

There are TIO alarm monitor 1 (ALM1/ALM2), TIO alarm monitor 2 (BO/HBA/LBA), TI alarm monitor, AI alarm monitor and extension alarm monitor screens in the alarm monitor screen. Changes the screen by touching [Para.] key.

☞ For the function keys and other items, see the **5.5.2 The basic configuration of monitor screen (P. 5-21)**.

■ TIO alarm monitor (ALM1/ALM2)

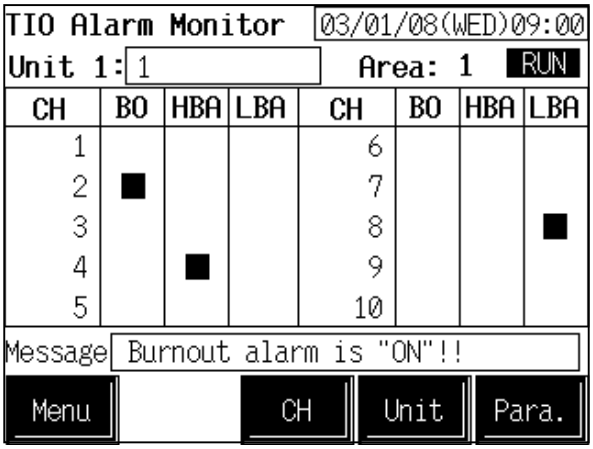


CH: Displays the TIO channel name.

ALM1: Displays the alarm 1 status.
Alarm occurrence: Flashes the ■

ALM2: Displays the alarm 2 status.
Alarm occurrence: Flashes the ■

■ TIO alarm monitor (BO/HBA/LBA)



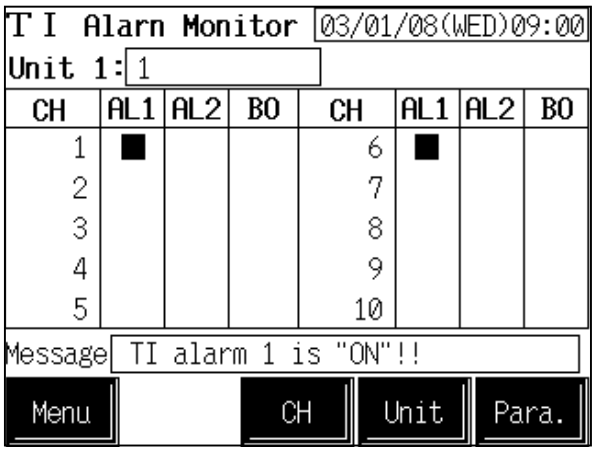
CH: Displays the TIO channel name.

BO: Displays the burnout status.
Burnout occurrence: Flashes the ■

HBA: Displays the heater break alarm status.
Alarm occurrence: Flashes the ■

LBA: Displays the control loop break alarm status.
Alarm occurrence: Flashes the ■

■ TI alarm monitor



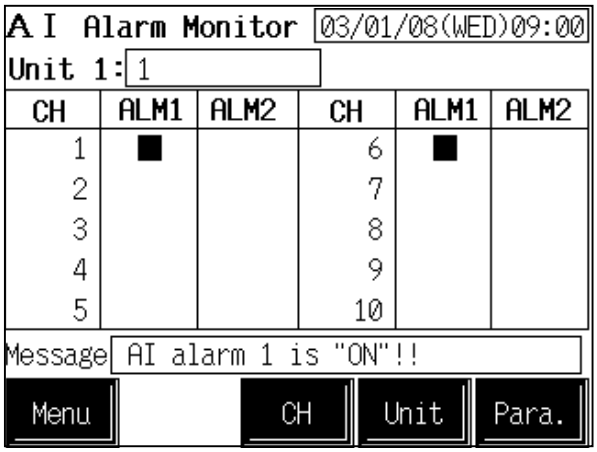
CH: Displays the TI channel name.

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

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

BO: Displays the TI burnout status.
Burnout occurrence: Flashes the ■

■ AI alarm monitor

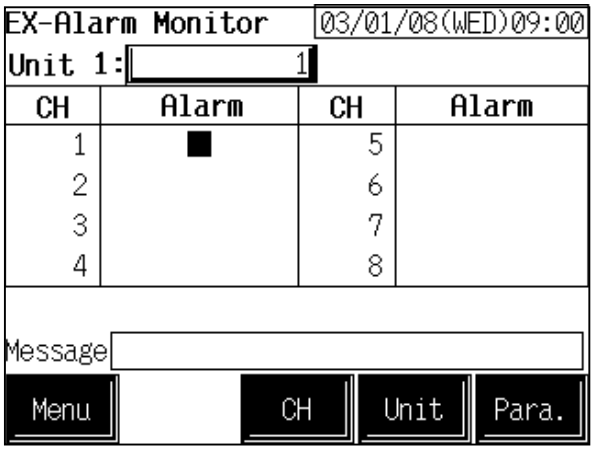


CH: Displays the AI channel name.

ALM1: Displays the AI alarm 1 status.
Alarm occurrence: Flashes the ■

ALM2: Displays the AI alarm 2 status.
Alarm occurrence: Flashes the ■

■ Extension alarm monitor



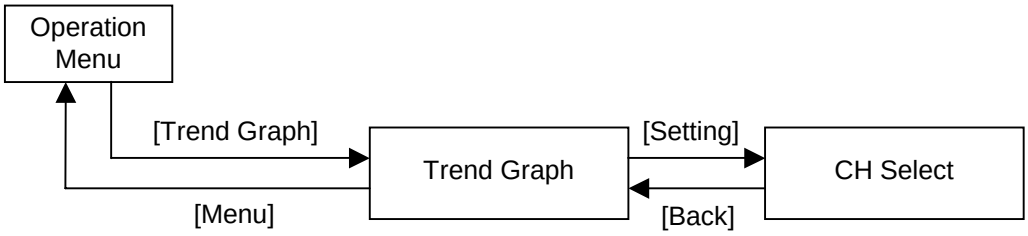
CH: Displays the extension alarm channel name.

Alarm: Displays the extension alarm (event DO) status.
Alarm occurrence: Flashes the ■

5.6 Trend Graph Screen

As trend graph screens, both trend graph screens to show trend graphs and display channel selection screens to conduct the setting necessary for displaying trend graphs are available.

5.6.1 Calling procedure of the trend graph screen



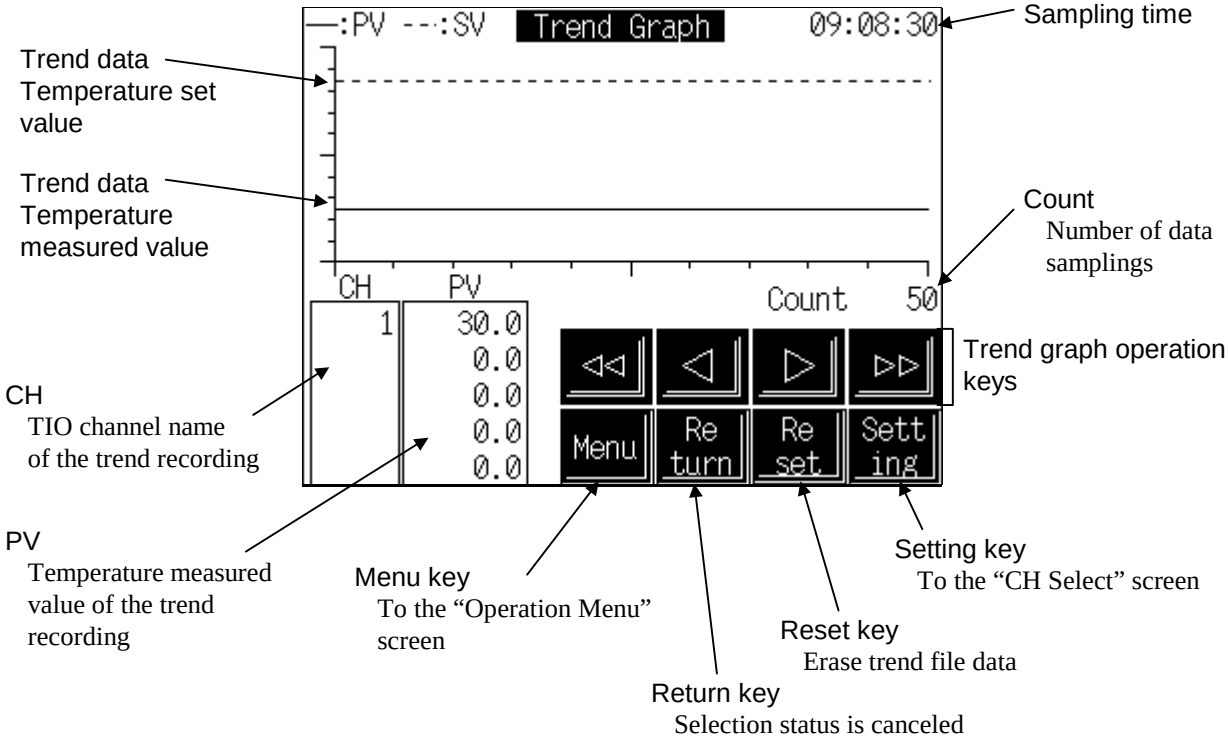
[ ] : key name.

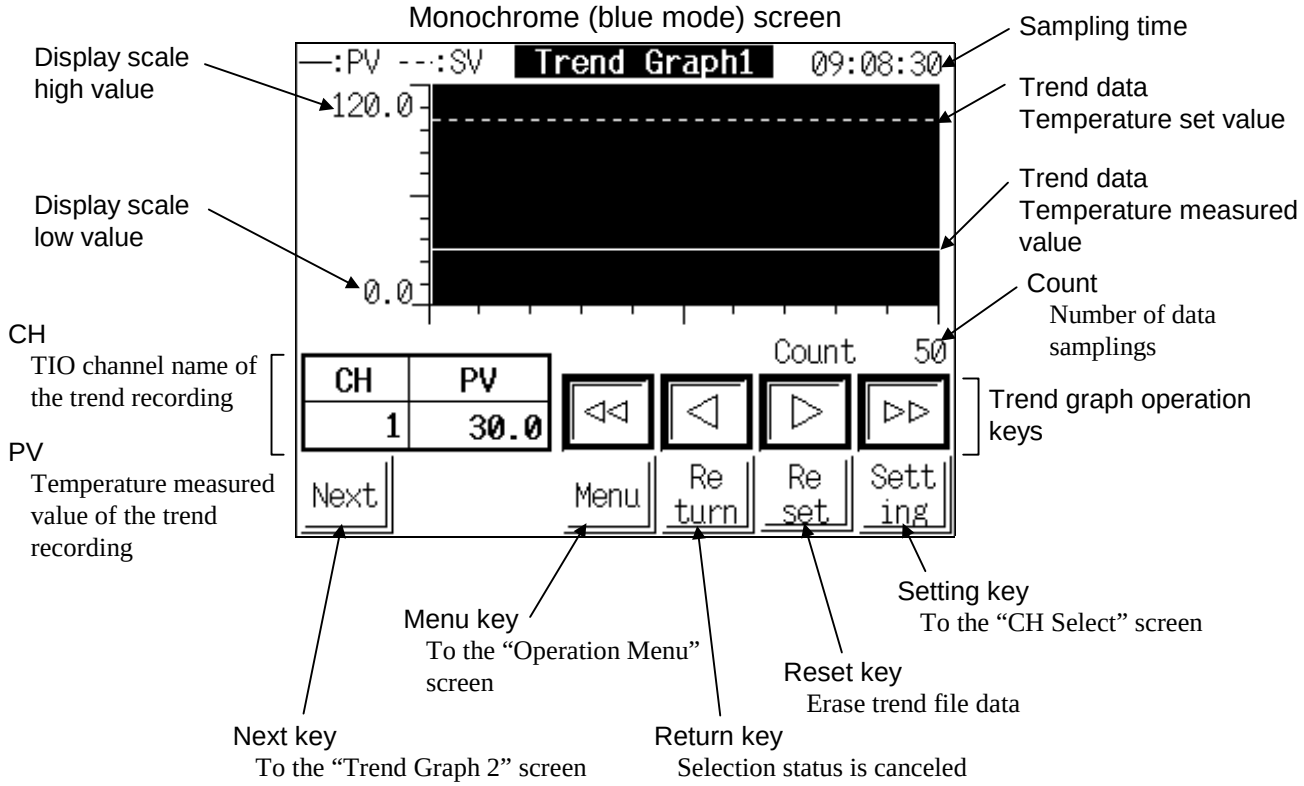
5.6.2 Trend graph screen

The trend graph screen is for displaying temperature measured values (Including motor speed measured value) and temperature set values (Including motor speed set value) in trend graphs at a sampling period of 10 seconds. Up to 5 channels can be displayed.

Color screen: 5 channels/screen (number of screen: 1)
Monochrome (blue mode) screen: 1 channel/screen (number of screen: 5)

Color screen





Sampling time: Displays the final sampling time or the time that the selected trend data was sampled.

Trend data: Displays 50 data in a time-based sequence from among 2370 data in the trend file.
——— : Temperature measured value or motor speed measured value
····· : Temperature set value or motor speed set value

Count: Displays what number of data samplings have been made on the selected trend data or the total count of data samplings in the left lower portion on each trend graph.
Display range: 1 to 2730
If the total number of sampling data points exceeds 2730, a display of 2730 remains unchanged and older data is erased in order.

Sampling starts at the same time that the power is turned on. In addition, all trend data is erased by turn OFF the power.

CH: The TIO channel name during trend recording is displayed. Any channel whose trend recording is made is selected on the "CH Select" screen (P. 5-34).

PV: The temperature measured value or motor speed measured value during trend recording is displayed.

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

Reset key: Sampling starts at the same time that the power is turned on and old data exceeding 2730 items are erased in sequence. Touch the [Reset] key when you want to erase this trend file data. The [Reset] key turns red (monochrome screen: highlighted displayed) the first time it is touched. When touched twice within 2 seconds, the trend file is cleared. Reset is performed all at once for an 5 point portion of the data file for that sampling period. Also sampling restarts right away after being cleared. However if the [Reset] key is not touched again within 2 seconds, operation is aborted and returns to former status.

Setting key: Touching this key changes to the "CH Select" screen.

Next key: Every time this key is touched, the trend graph number changes. There is no this key on the color screen.

<Trend graph operation>

In the trend graph screen, the latest 50 sampled data are displayed on the right. The screen is automatically updated for the sampling cycle. (10 seconds) The total data count (maximum of 2730) is displayed in the "Count" column and the latest sampling time is displayed in the "Time" column.
Use the 4 keys [⏮], [◀], [▶] and [⏭] to scroll to view data that cannot all be shown at once on one screen. Touch any of the [⏮], [◀], [▶] or [⏭] keys to select a trend data in the center of the screen (draws a dotted line) and the [Return] key starts to flash. Now you can use the [⏮], [◀], [▶] and [⏭] keys to display the data zone you want on the graph and view that data and time. Selection is canceled by touching the [Return] key.

◀ key: Touching this key move the selected vertical trend dot line by one increment to an old trend.

▶ key: Touching this key move the selected vertical trend dot line by one increment to a new trend.

⏮ key: Touching this key, scroll the selected vertical trend dot line in one page (50 data) increments to an old trend and displays it.

⏭ key: Touching this key, scroll the selected vertical trend dot line in one page (50 data) increments to a new trend and displays it.

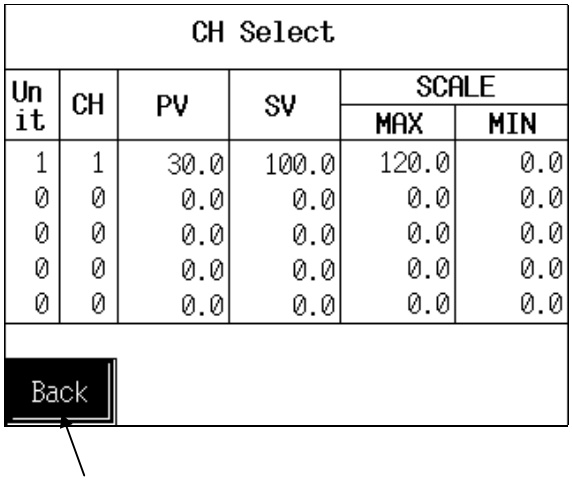
Return key: Touch the flashing [Return] key in selection status to return to the latest trend sampling display. Selection status is then canceled and the [Return] key stops flashing.

In selection status, the "Count" column displays the serial count of the selected data. The sampling time of the selected data is shown in the "Time" column.

5.6.3 CH select screen

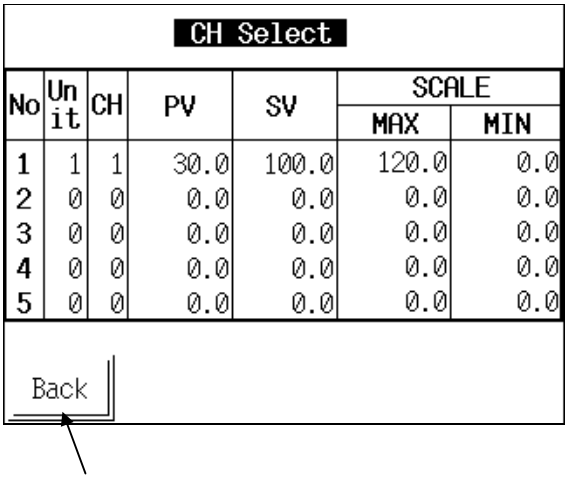
This screen select the channel of carrying out the trend record. When displaying data as the trend graph, set the scale high and scale low limit values.

Color screen



Back key
To the "Trend Graph" screen

Monochrome (blue mode) screen



Back key
To the "Trend Graph" screen

No: Displays the trend graph number. There is no this item on the color screen.

Unit: Set the control unit number to record the trend data.
Setting range: 0 to 16 CH (0: Unused)
Factory set value: 0

CH: Set the TIO channel number to record the trend data.
Setting range: 0 to 20 CH (0: Unused)
Factory set value: 0

PV: Displays the temperature measured value (PV) or motor speed measured value.
Display range: Within input range (TC/RTD input)
Within display scale range (Current/voltage input/H-SIO-A)

SV: Displays the temperature set value (SV) or motor speed set value.
Display range: Within input range (TC/RTD input)
Within display scale range (Current/voltage input/H-SIO-A)

SCALE MAX: Set display scale high value becoming vertical line of graph.
Setting range: −30000 to +30000 (No decimal place)
−3000.0 to +3000.0 (One decimal place)
−300.00 to +300.00 (Two decimal places)
−30.000 to +30.000 (Three decimal places)
The position of the decimal point varies depending on the selected TIO channel.
Factory set value: 0

SCALE MIN: Set display scale low value becoming vertical line of graph.
Setting range: −30000 to +30000 (No decimal place)
−3000.0 to +3000.0 (One decimal place)
−300.00 to +300.00 (Two decimal places)
−30.000 to +30.000 (Three decimal places)
The position of the decimal point varies depending on the selected TIO channel.
Factory set value: 0

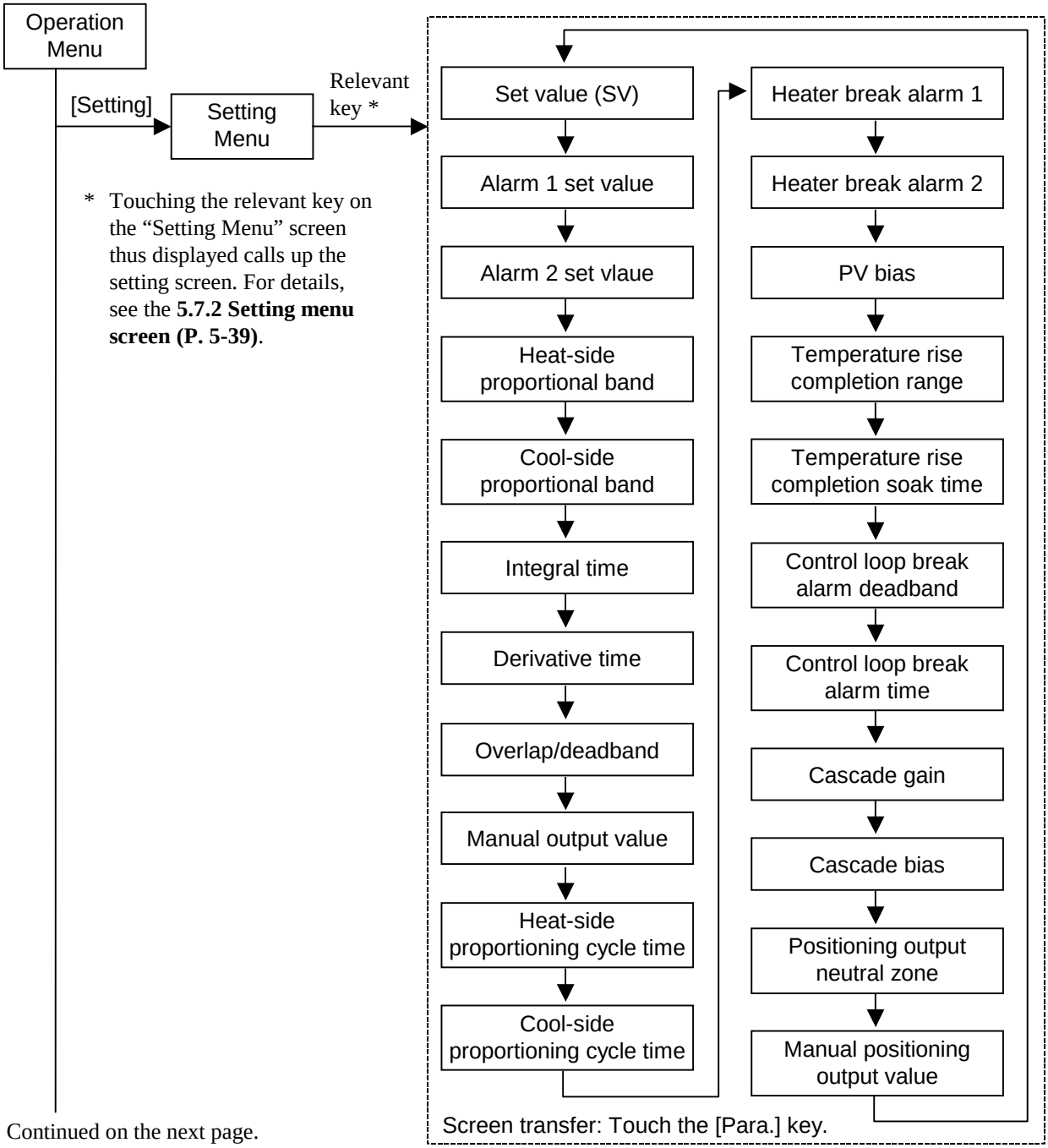
Back key: Touching this key changes to the “Trend Graph” screen.

5.7 Setting Screen

The setting screen is used to set the temperature set value, alarm set value or control related set values. As setting screen groups, there are two groups; “Setting Menu” group which can select setting items relating to the control of the H-TIO-☐, H-CIO-A and H-SIO-A modules and “Setting Menu 2” group which can select setting items relating to the H-TI-☐, H-AI-☐, H-AO-☐ and H-DO-☐ modules.

5.7.1 Calling procedure of the setting screen

- Some screens may not be displayed depending on the specification.
- [ ] : key name.
- Screen configuration changes by PCP module (H-PCP-A/B or H-PCP-J) to use partly.



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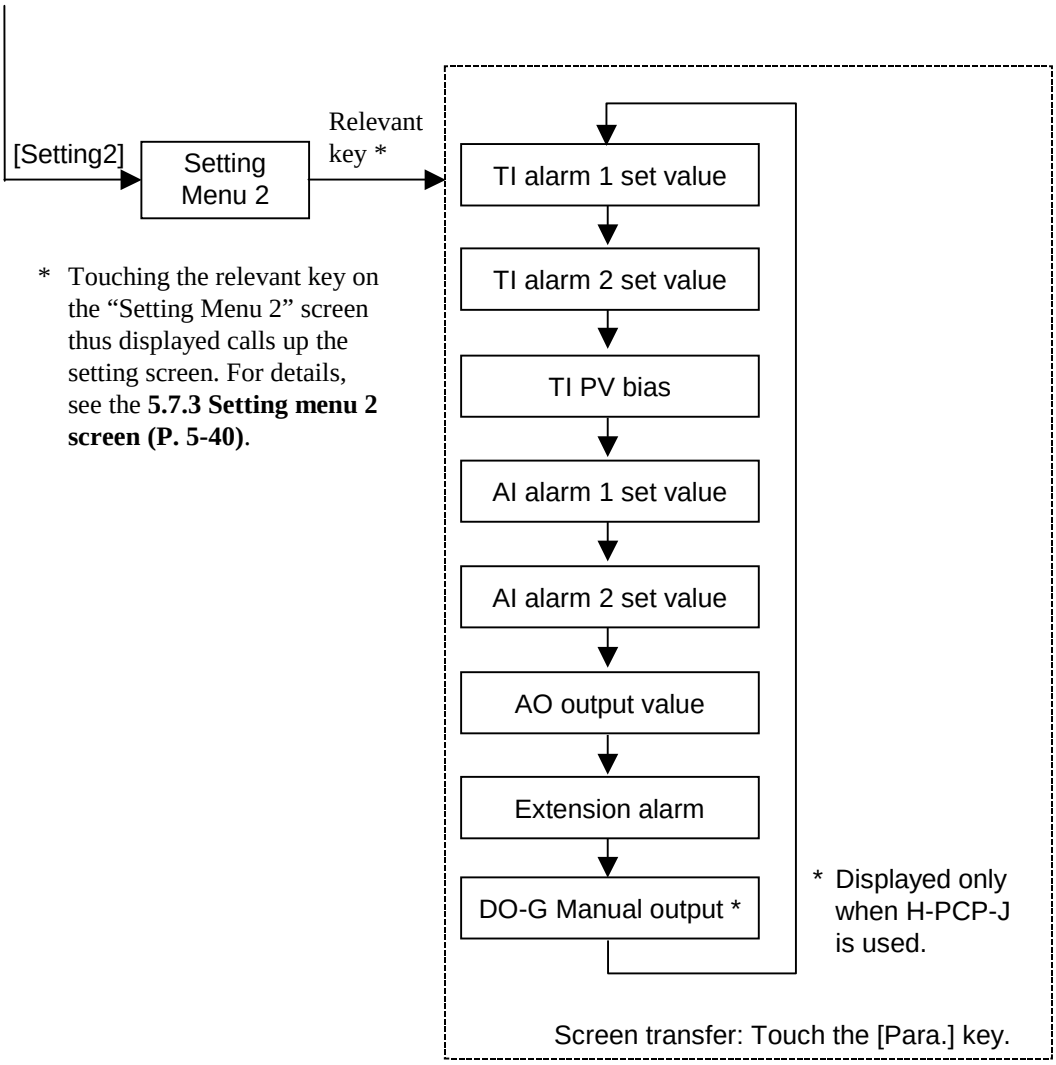
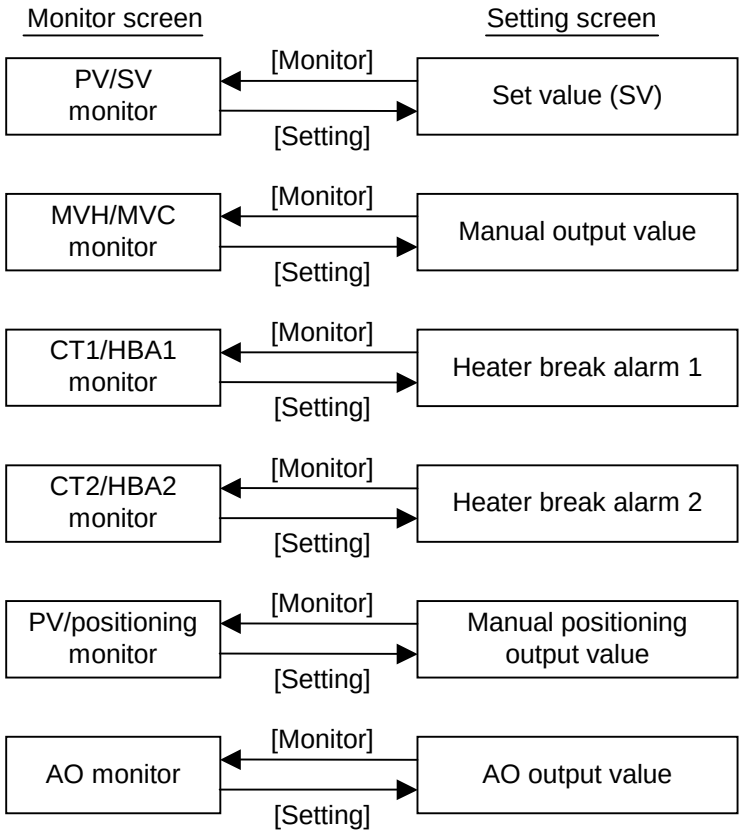


* Touching the relevant key on the "Setting Menu 2" screen thus displayed calls up the setting screen. For details, see the **5.7.3 Setting menu 2 screen (P. 5-40)**.

Touching the [Setting] key on the monitor screen displays the respective setting screen. In addition, touching the [Monitor] key on the setting screen displays the respective monitor screen.



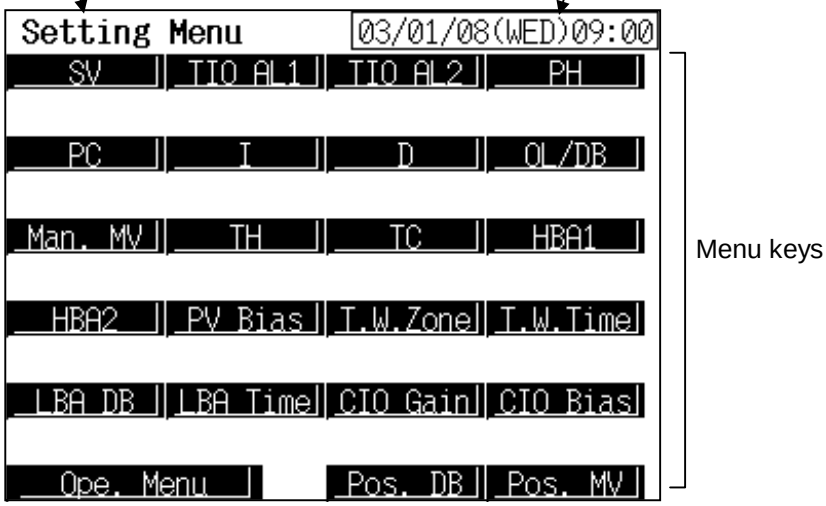
5.7.2 Setting menu screen

The setting menu screen is for selecting setting items relating to the control of the H-TIO-□ and H-CIO-A modules.

<Setting menu screen>

Clock
Displays year (western calendar)/month/day (day of the week) hour:minute. The clock can be changed with the initial settings "Clock Set" screen (P. 5-77).

Screen name
Displays the screen name.



Menu keys: Touching this key, screen can be selected.

SV:	"Setting: SV" screen
TIO AL1:	"Setting: AL 1" screen
TIO AL2:	"Setting: AL 2" screen
PH:	"Setting: Heating Prop. Band" screen
PC:	"Setting: Cooling Prop. Band" screen
I:	"Setting: Integral Time" screen
D:	"Setting: Derivative Time" screen
OL/DB:	"Setting: Overlap/Deadband" screen
Man. MV:	"Setting: Manual Output" screen
TH:	"Setting: Heating Cycle" screen
TC:	"Setting: Cooling Cycle" screen
HBA1:	"Setting: Heater Break Alarm 1" screen
HBA2:	"Setting: Heater Break Alarm 2" screen
PV Bias:	"Setting: PV Bias" screen
I.W.Zone:	"Setting: Temp. Wait Zone" screen
I.W.Time:	"Setting: Temp. Wait Time" screen

Continued on the next page.

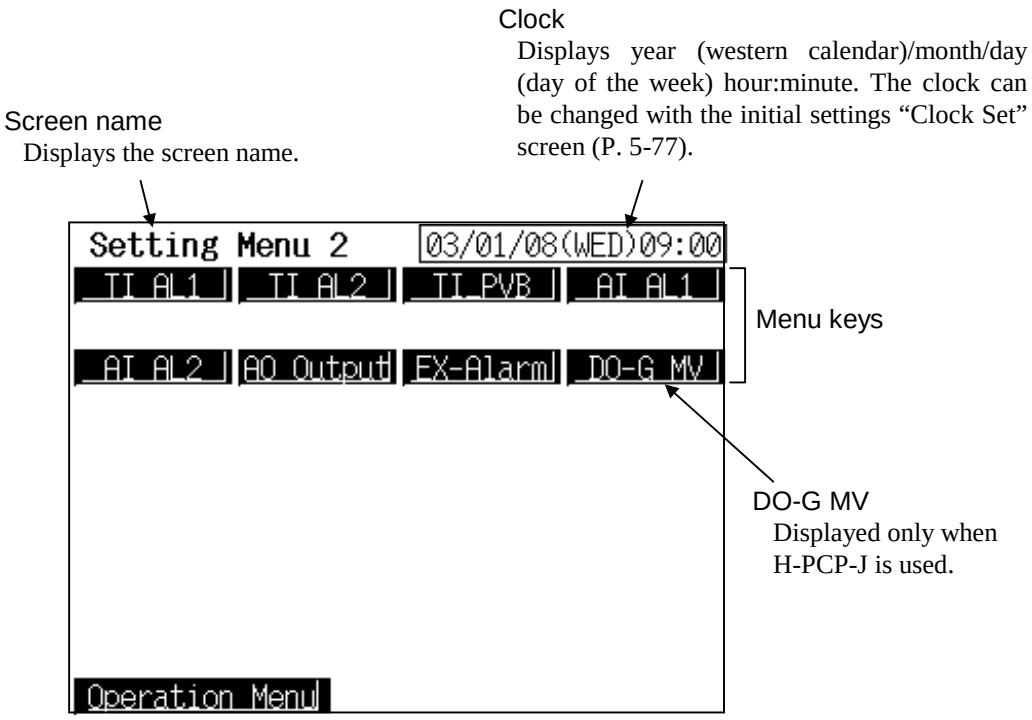
LBA DB: "Setting: LBA Deadband" screen
LBA Time: "Setting: LBA Time" screen
CIO Gain: "Setting: Cascade Gain" screen
CIO Bias: "Setting: Cascade Bias" screen
Pos. DB: "Setting: Position Deadband" screen
Pos. MV: "Setting: Position Manual Output" screen

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

5.7.3 Setting menu 2 screen

The setting menu 2 screen is for selecting setting items relating to the H-TI-☐, H-AI-☐, H-AO-☐ and H-DO-☐ modules.

<Setting menu 2 screen>



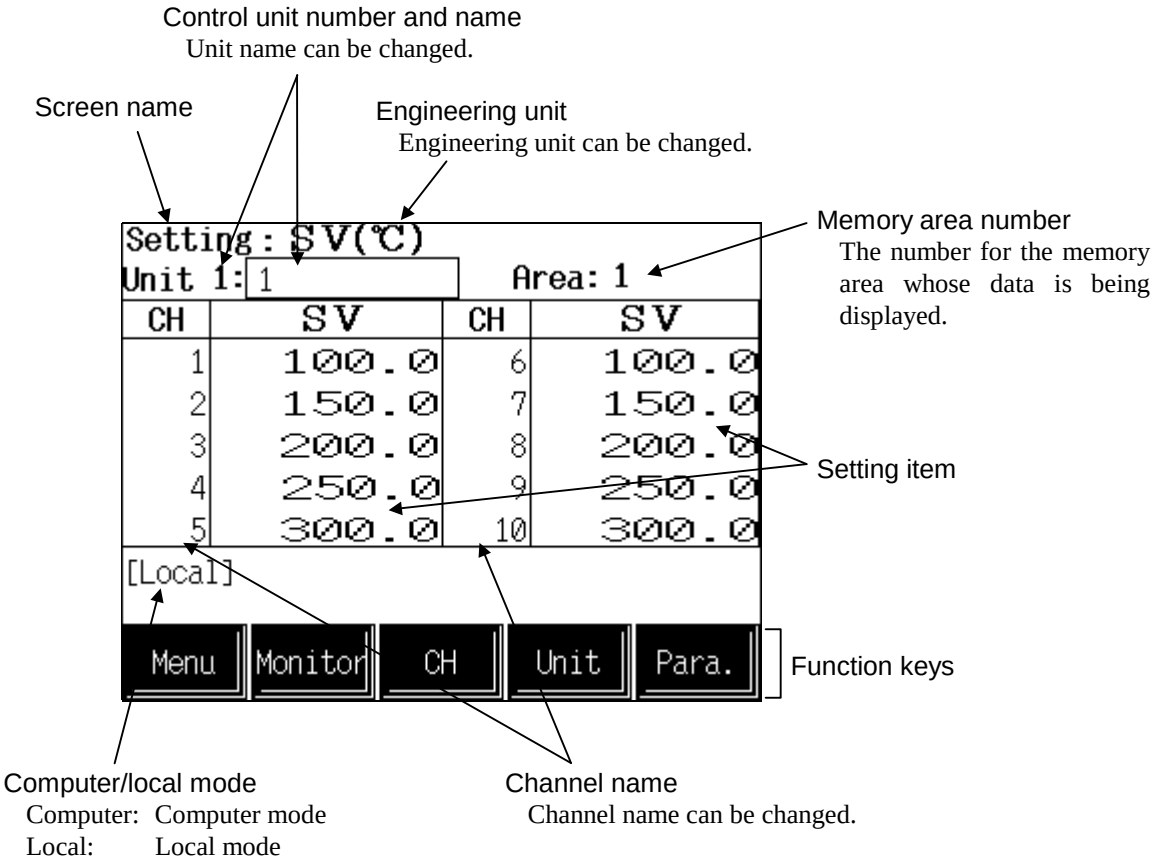
Menu keys: Touching this key, screen can be selected.

TI AL1: "Setting: TI_Alarm 1" screen
TI AL2: "Setting: TI_Alarm 2 setting" screen
TI_PVB: "Setting: TI_PV Bias" screen
AI AL1: "Setting: AI Alarm 1" screen
AI AL2: "Setting: AI Alarm 2" screen
AO Output: "Setting: AO_MV_SV" screen
EX-Alarm: "Setting: EX_Alarm" screen
DO-G MV: "Setting: DO-G Manual Output" screen

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

5.7.4 The basic configuration of setting screen

The basic configuration of each setting screen is as shown below.
Example: Set value (SV) screen



Screen name: Displays the screen name.

Engineering unit: Displays the engineering unit. The engineering unit (°C/°F) can be changed with the OPC-V initialize "Temperature Scale Unit Selection" screen (P. A-9).

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 initialize "Unit Name Set" screen (P. 5-96). There is no this column on the "Temp. Wait Time" screen.

Memory area number: Displays the number for the memory area whose data is being displayed. The memory area number can be changed with the operation mode "Memory Area" screen (P. 5-68). Display on the "SV" screen, "AL1" screen, "AL2" screen, "Heating Prop. Band" screen, "Cooling Prop. Band" screen, "Integral Time" screen, "Derivative Time" screen and "Overlap/Deadband" screen.

Setting item: Displays the item and data. Details of display varies depending on the each setting screen.

☞ For the details of setting, see the **5.7.5 Each setting screen (P. 5-43)**.

Channel name: Displays the TIO channel name, TI channel name, AI channel name and AO channel name. The channel name can be changed with the initialize "TIO CH Name Set" screen (P. 5-96), "TI CH Name Set" screen (P. 5-96), "AI CH Name Set" screen (P. 5-97) and "AO CH Name Set" screen (P. 5-97).

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).

Computer: Computer mode Local: Local mode

📖 In computer mode, setting can not be made on the operation panel.

Function keys: These key switches are assigned to match the contents of the screen.

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

Monitor: Touching this key changes from the settings screen to the monitor screen.
Following item can be monitored:

Set value (SV), manual output value (MVH), heater break alarm 1 (HBA1), heater break alarm 2 (HBA2), manual positioning output value, AO output value

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid. There is no this column on the "Temp. Wait Time" screen.

Unit: Every time this key is touched, the control unit number changes. If the number of control units used is one, the [Unit] key is invalid.

Para.: Every time this key is touched, the setting screen changes.

5.7.5 Each setting screen

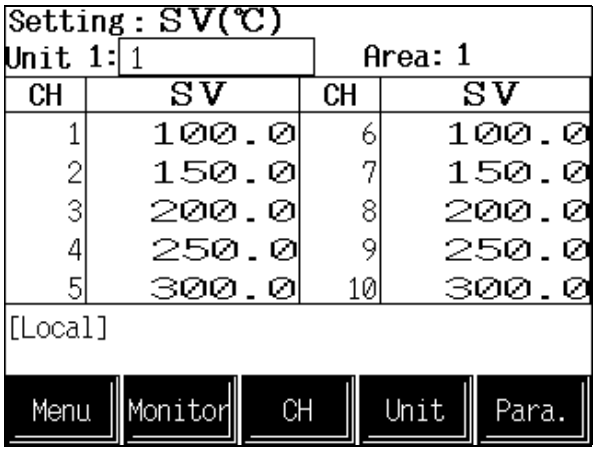
Change the screen by touching [Para.] key.

In computer mode, setting can not be made on the operation panel.

For the setting procedure, see the **5.2.1 Data settings (P. 5-7)**.

For the function keys and other items, see the **5.7.4 The basic configuration of setting screen (P.5-44)**.

■ Set value (SV)

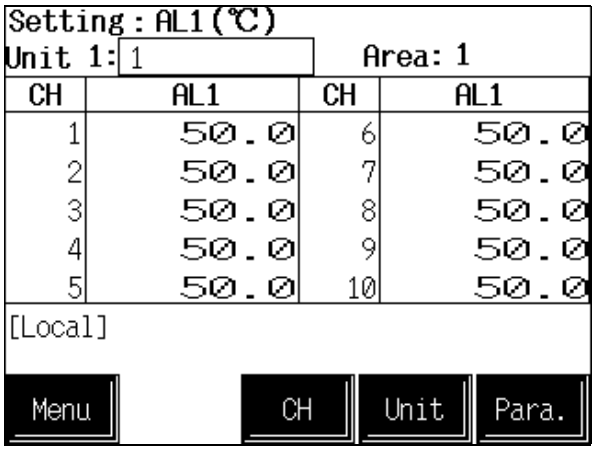


CH: Displays the TIO channel name.

SV: Sets the temperature set value (SV) or motor speed set value.
Setting range:
Within input range (TC/RTD input)
Within display scale range
(Current/voltage input/H-SIO-A)
However, within the setting limit.
Factory set value: 0
The position of the decimal point differs depending on the input range.

Touching [Monitor] key changes to the "TIO Monitor" screen (PV/SV).

■ Alarm 1 set value



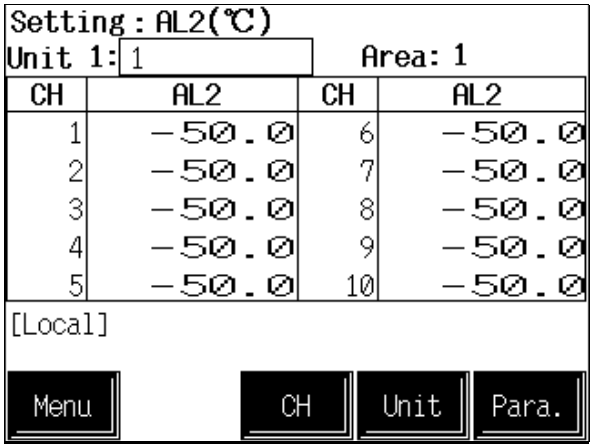
CH: Displays the TIO channel name.

AL1: Sets the Alarm 1 set value.
Setting range:
Within input range or span range
(TC/RTD input)
Within display scale range or span range
(Current/voltage input/H-SIO-A)
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 %

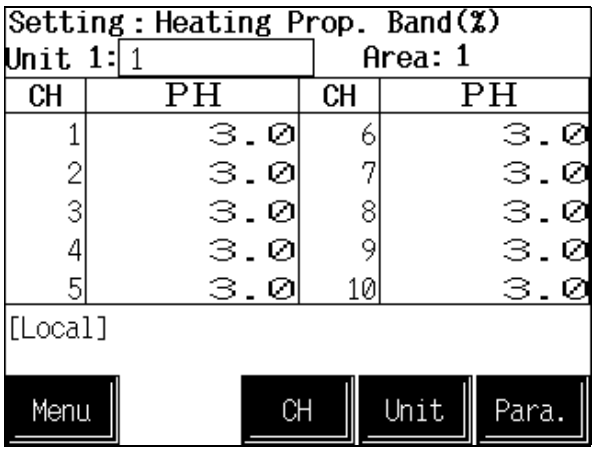
■ Alarm 2 set value



CH: Displays the TIO channel name.

AL2: Sets the Alarm 2 set value.
Setting range:
Within input range or span range
(TC/RTD input)
Within display scale range or span range
(Current/voltage input/H-SIO-A)
Factory set value:
See **Factory set value table of Alarm 1/Alarm 2 set value (P. 5-43).**
The position of the decimal point differs depending on the input range.

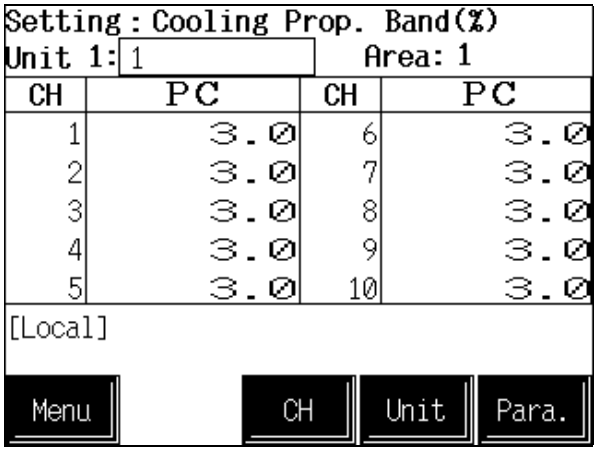
■ Heat-side proportional band



CH: Displays the TIO channel name.

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 (H-TIO-□)
300.0 (H-SIO-A)

■ Cool-side proportional band

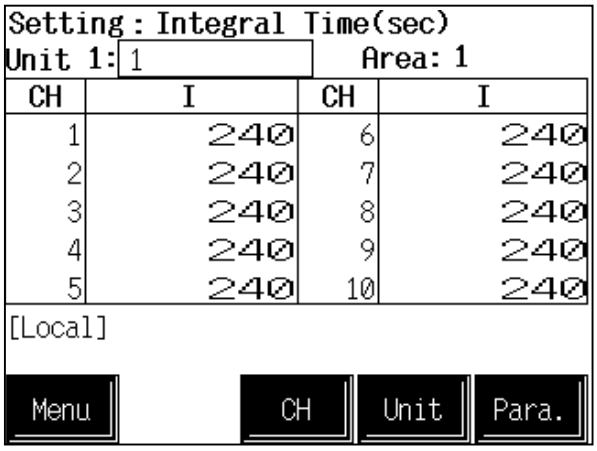


CH: Displays the TIO channel name.

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.

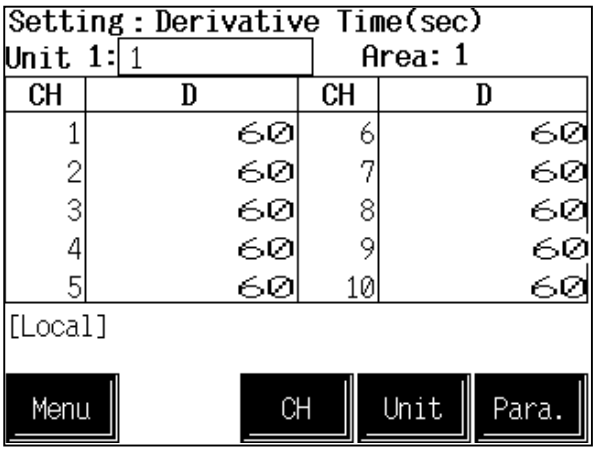
■ Integral time



CH: Displays the TIO channel name.

I: Sets the integral time to eliminate the offset produced in proportional control.
Setting range: 1 to 3600 seconds
Factory set value: 240 (H-TIO-□)
2 (H-SIO-A)

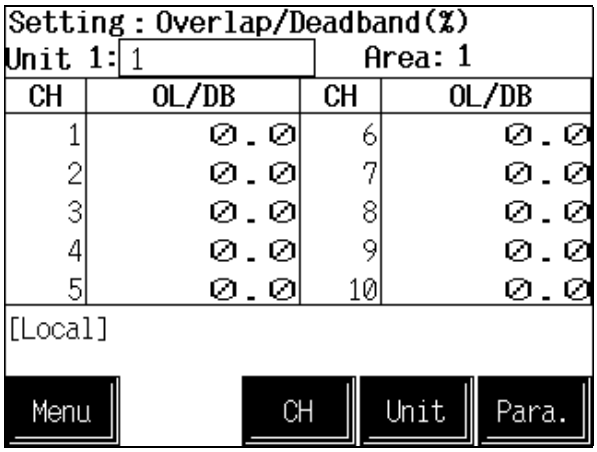
■ Derivative time



CH: Displays the TIO channel name.

D: 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 (H-TIO-□)
0 (H-SIO-A)

■ Overlap/deadband

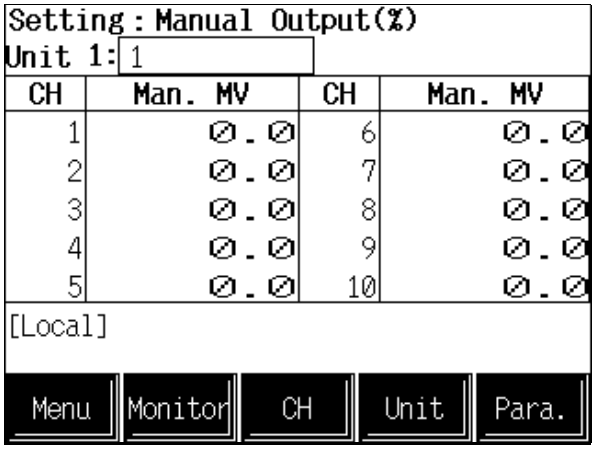


CH: Displays the TIO channel name.

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.

■ Manual output value



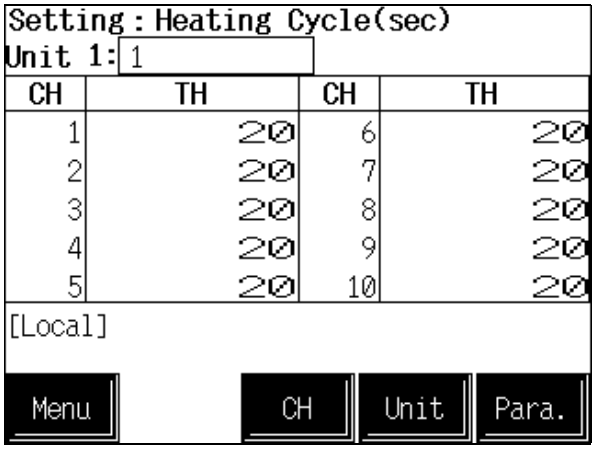
CH: Displays the TIO channel name.

Man. MV:
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.

Touching [Monitor] key changes to the "TIO Monitor" screen (MVH/MVC).

■ Heat-side proportioning cycle time

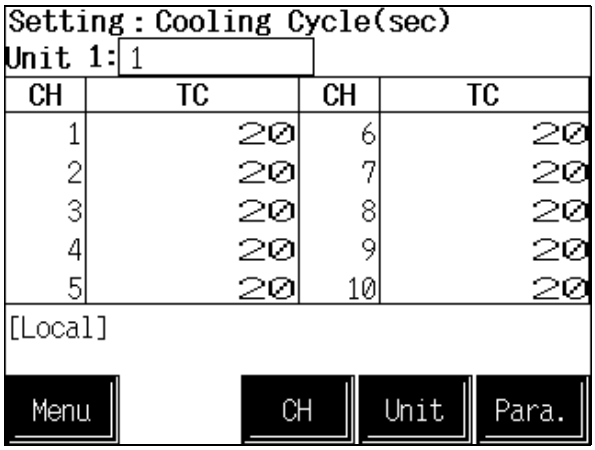


CH: Displays the TIO channel name.

TH: 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.

■ Cool-side proportioning cycle time

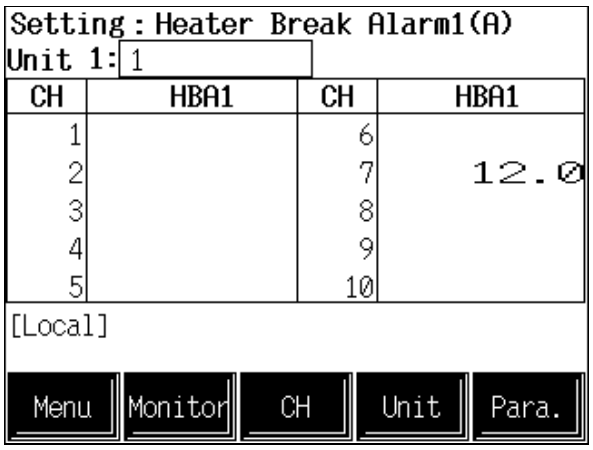


CH: Displays the TIO channel name.

TC: 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.

■ Heater break alarm 1



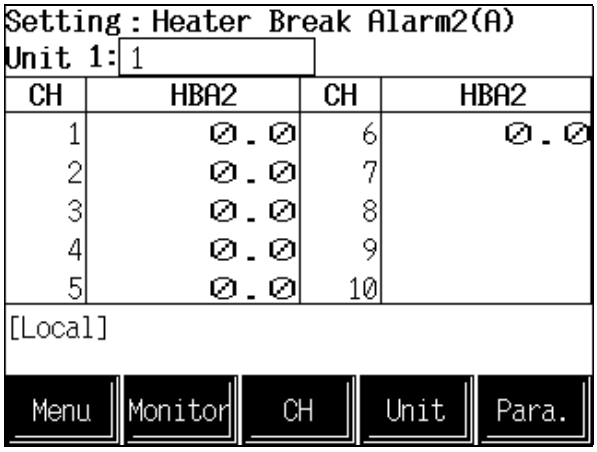
CH: Displays the TIO channel name.

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

Touching [Monitor] key changes to the "TIO Monitor" screen (CT1/HBA1).

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).

■ Heater break alarm 2



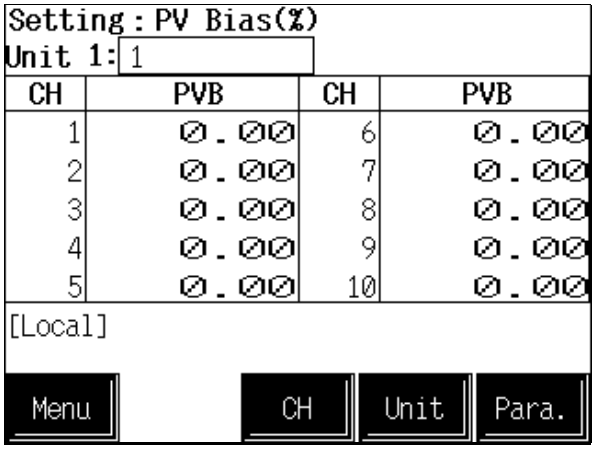
CH: Displays the TIO channel name.

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

Touching [Monitor] key changes to the "TIO Monitor" screen (CT2/HBA2).

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).

■ PV bias

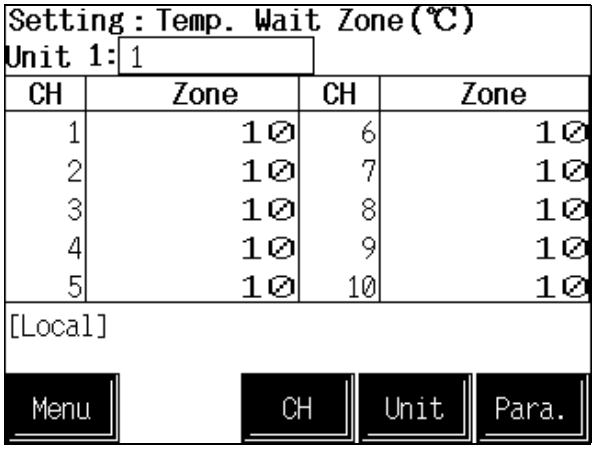


CH: Displays the TIO channel name.

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

H-PCP-J [ZK-1103 specification]
Setting range: –Input span to +Input span
For –Input span < –999.9
Low limit value: –999.9
For –Input span < –99.99
Low limit value: –99.99
For –Input span < –9.999
Low limit value: –9.999
Factory set value: 0
The position of the decimal point differs depending on the input range.

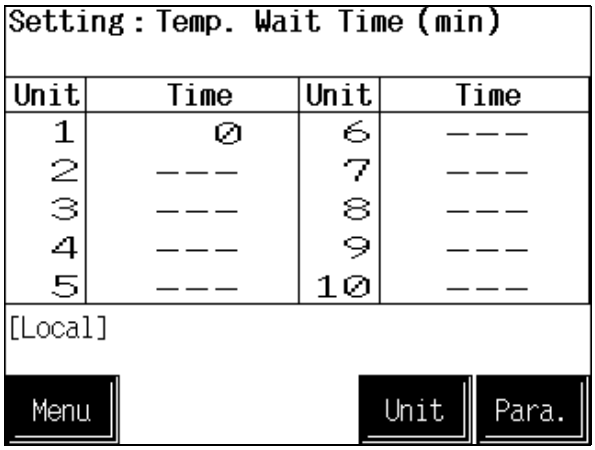
■ Temperature rise completion range



CH: Displays the TIO channel name.

Zone: 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 or 20 °F
Current/voltage input/H-SIO-A:
10 % or 20 % of display scale

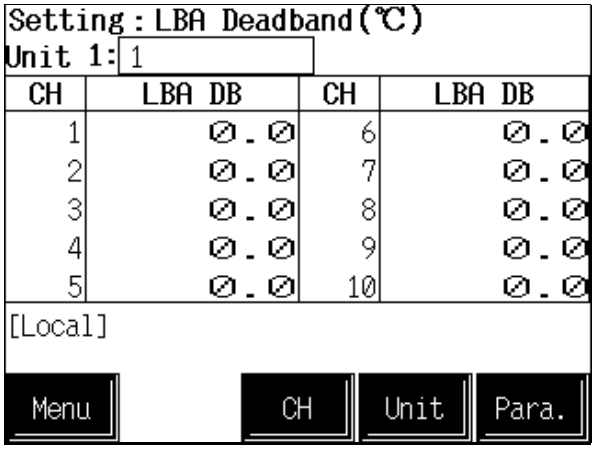
■ Temperature rise completion soak time



Unit: Displays the control unit number.

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

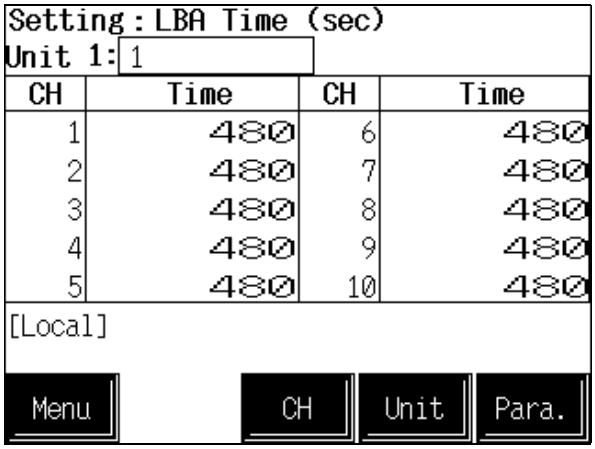
■ Control loop break alarm deadband



CH: Displays the TIO channel name.

LBA DB:
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.

■ Control loop break alarm time



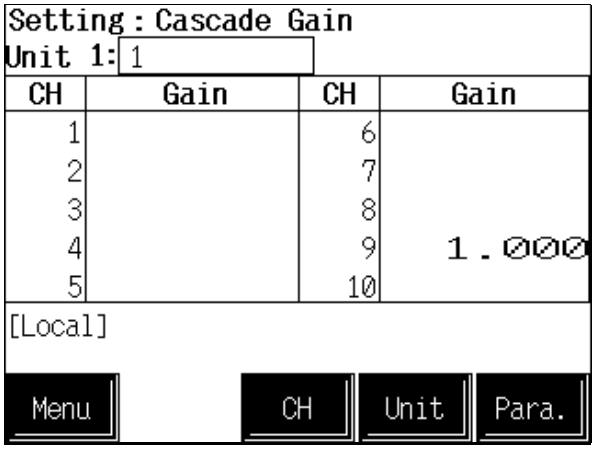
CH: Displays the TIO channel name.

Time: 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 which is twice the integral time thus set is automatically set. No LBA set time changes even if the integrated value is changed.

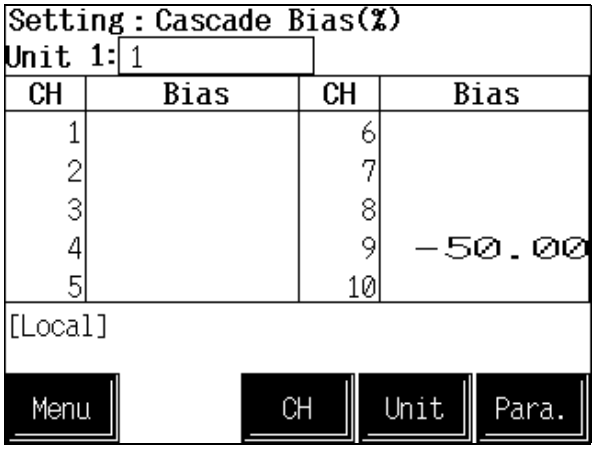
■ Cascade gain



CH: Displays the TIO channel name.

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.

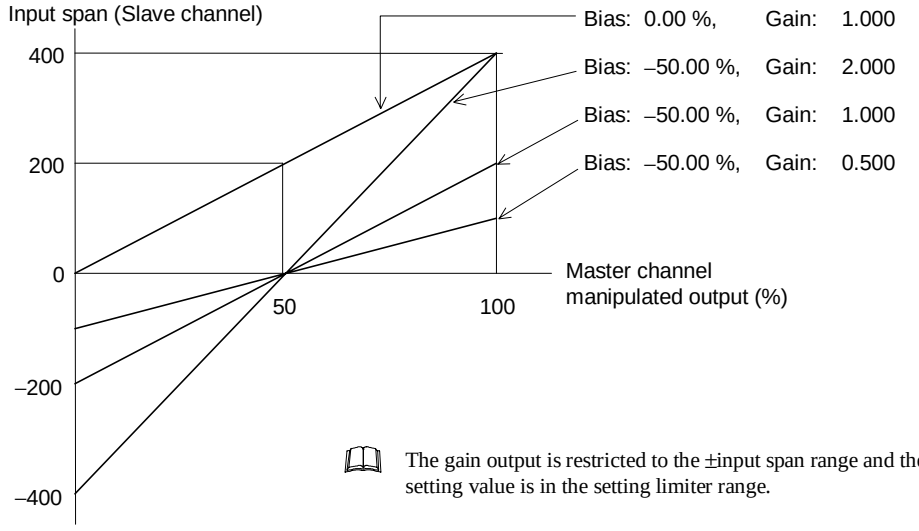
■ Cascade bias



CH: Displays the TIO channel name.

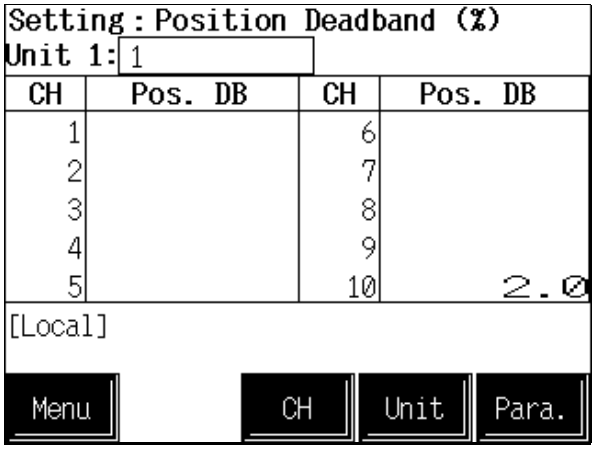
Bias: Sets the bias added to the input value on the slave side for sensor correction, etc.
Setting range: –99.99 to +100.00 %
Factory set value: –50.00
Only slave channel is valid.

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.

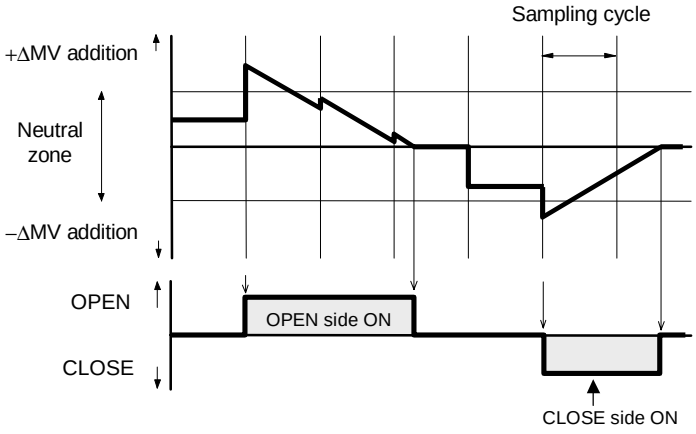
■ Positioning output neutral zone



CH: Displays the TIO channel name.

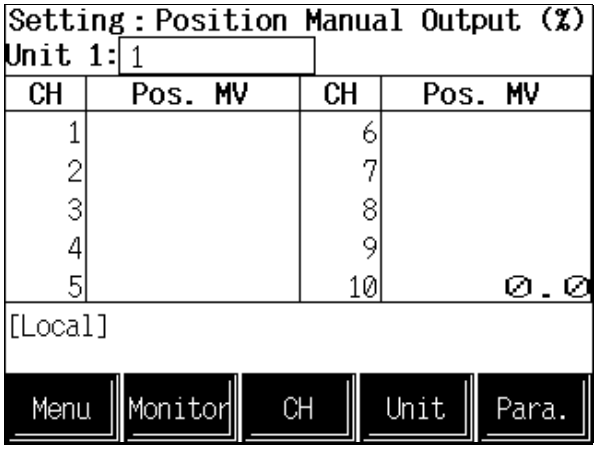
Pos. DB:
Sets the area where the output between open-side and close-side outputs is turned off.
Setting range: 0.1 to 10.0 % of motor time
Factory set value: 2.0

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.

■ Manual positioning output value



CH: Displays the TIO channel name.

Pos. MV:
Sets the positioning output value in manual mode.
Setting range: –5.0 to +105.0 %
Factory set value: 0.0

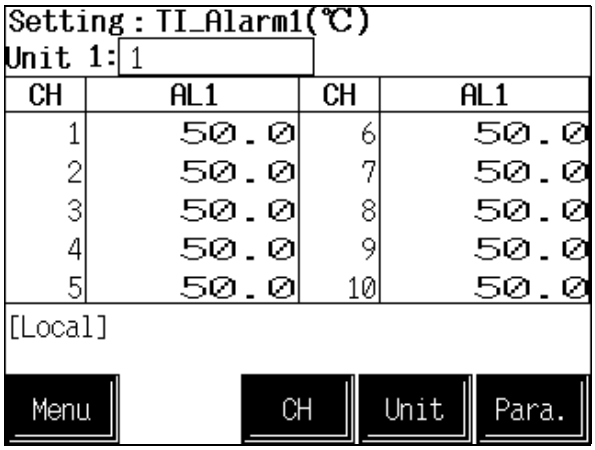
Touching [Monitor] key changes to the "TIO Monitor" screen (PV/Pos.).

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.

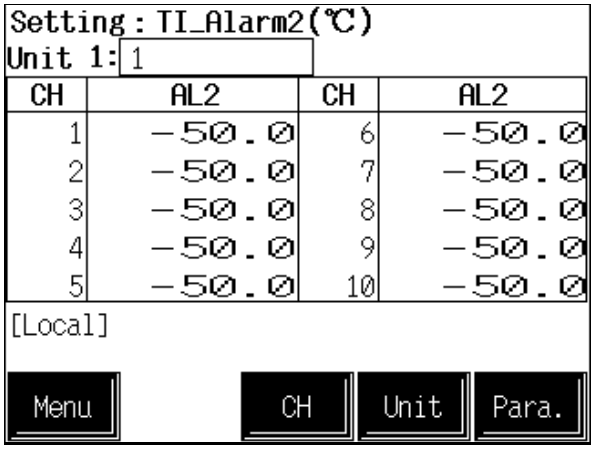
■ TI alarm 1 set value



CH: Displays the TI channel name.

AL1: 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.

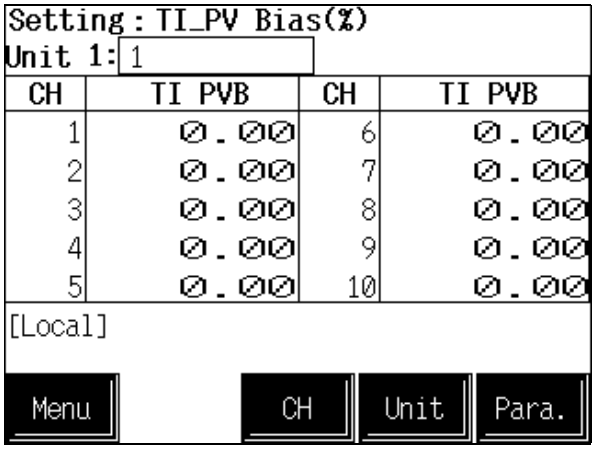
■ TI alarm 2 set value



CH: Displays the TI channel name.

AL2: 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 (low limit)
The position of the decimal point differs depending on the input range.

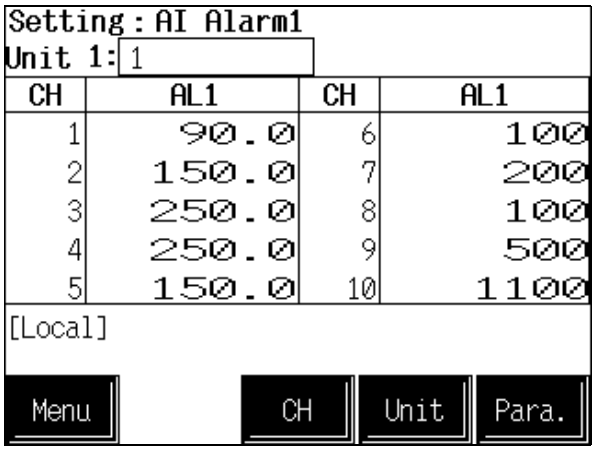
■ TI_PV bias



CH: Displays the TI channel name.

TI 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

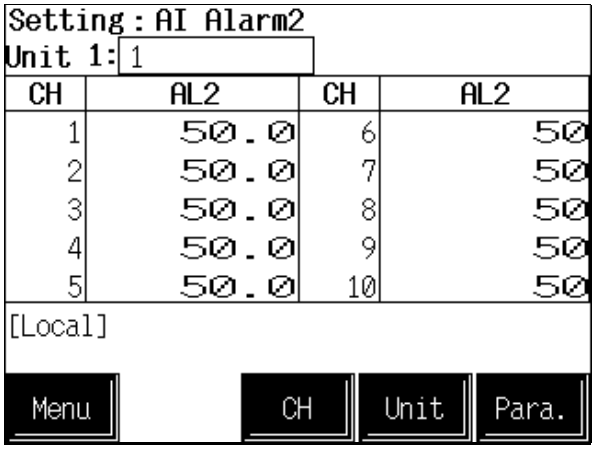
■ AI alarm 1 set value



CH: Displays the AI channel name.

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 specification.

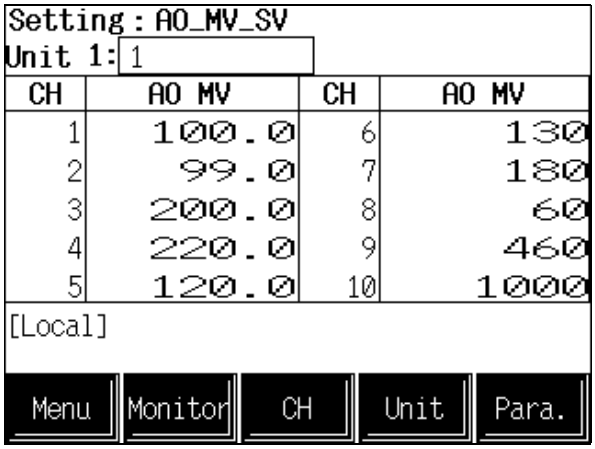
■ AI alarm 2 set value



CH: Displays the AI channel name.

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: 0.0
The position of the decimal point differs depending on the specification.

■ AO output value

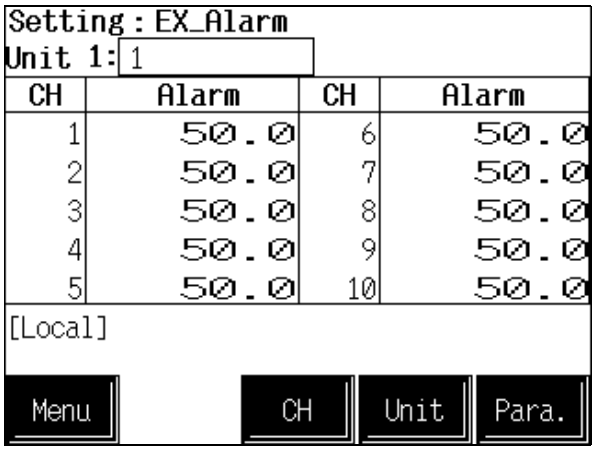


CH: Displays the AO channel name.

AO MV:
Sets the AO output value in manual mode.
Setting range: Within display scale range
Factory set value: 0.0
The position of the decimal point differs depending on AO decimal point position setting (P. A-51).

Touching [Monitor] key changes to the “AO monitor” screen.

■ Extension alarm

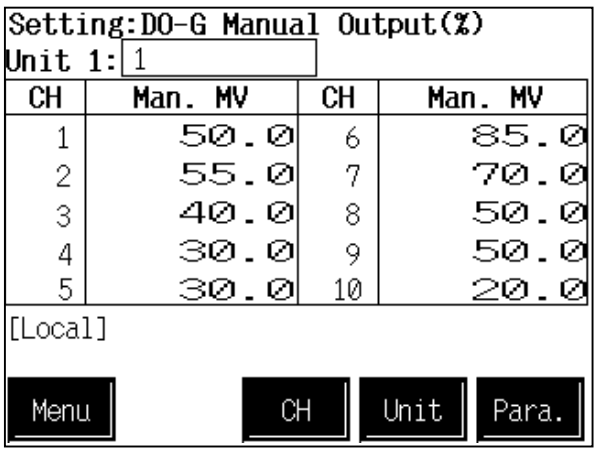


CH: Displays the extension alarm channel name.

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

■ DO-G Manual Output

Displayed only when H-PCP-J is used.



CH: Displays the DO-G channel number.

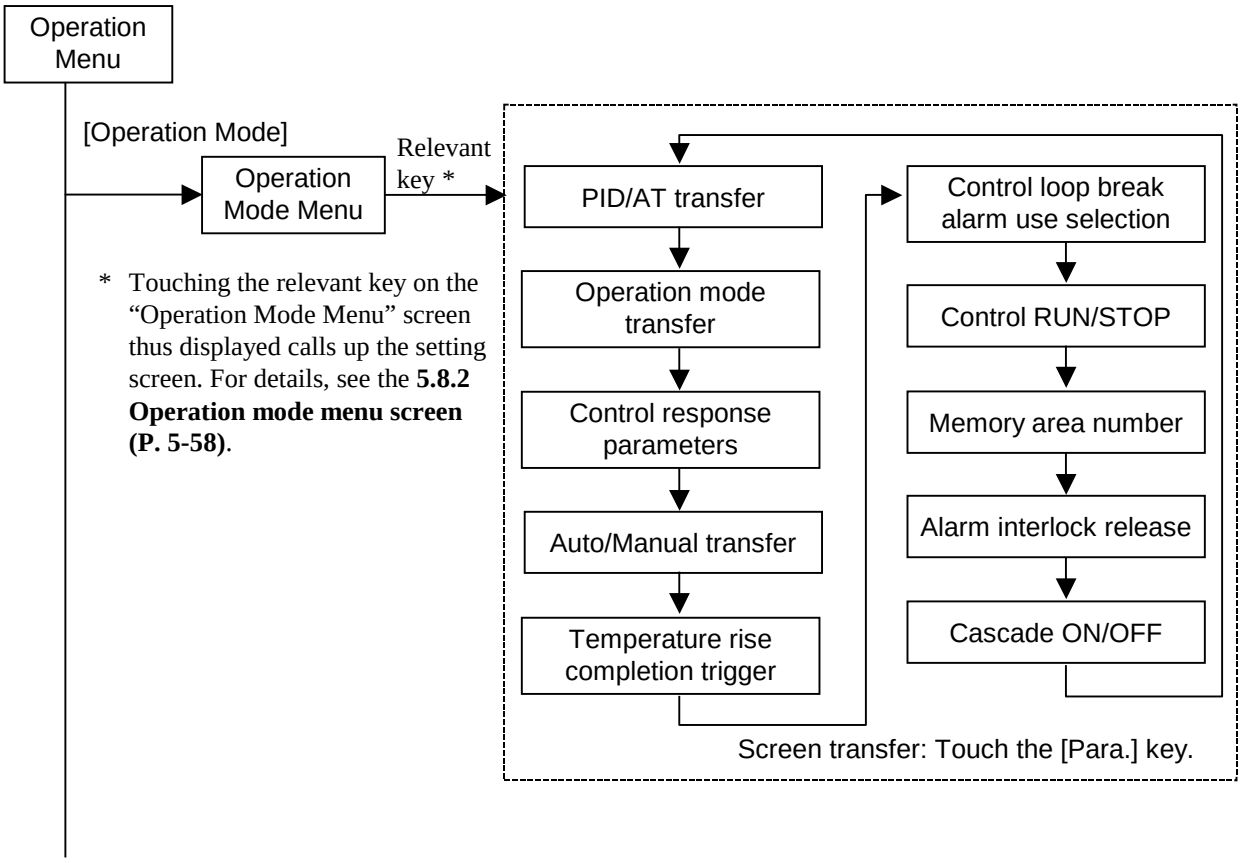
Man. MV: Sets the manual output value from H-DO-G module.
Setting range: –0.5 to +105.0 %
Factory set value: 0.0

5.8 Operation Mode Screen

The operation mode screen is used to transfer or specify operation mode (status) relating to control, temperature control, TI, AI and AO. As operation mode screen groups, there are two groups; “Operation Mode Menu” group which can select operation mode relating to the H-TIO-☐, H-CIO-A and H-SIO-A modules and “Operation Mode 2” group which can select operation mode relating to the H-TI-☐, H-AI-☐, H-AO-☐ and H-DO-G modules.

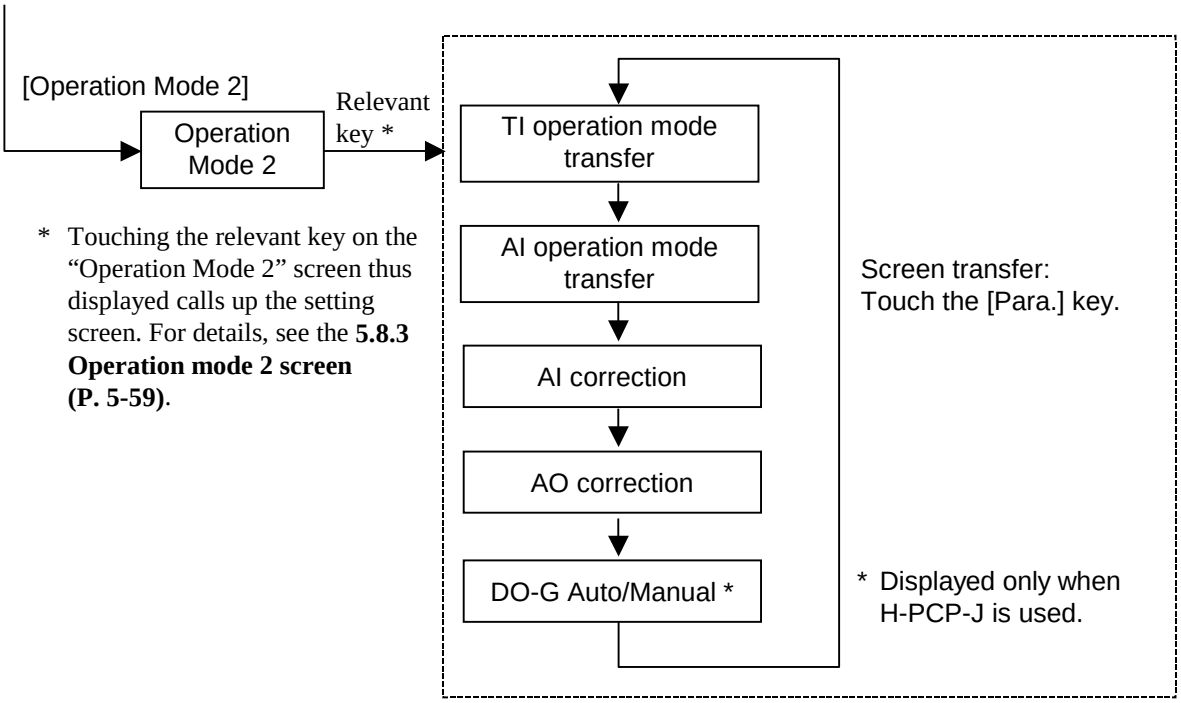
5.8.1 Calling procedure of the operation menu screen

- Some screens may not be displayed depending on the specification.
- [ ] : key name.
- Screen configuration changes by PCP module (H-PCP-A/B or H-PCP-J) to use partly.



Continued on the next page.

Continued from the previous page.

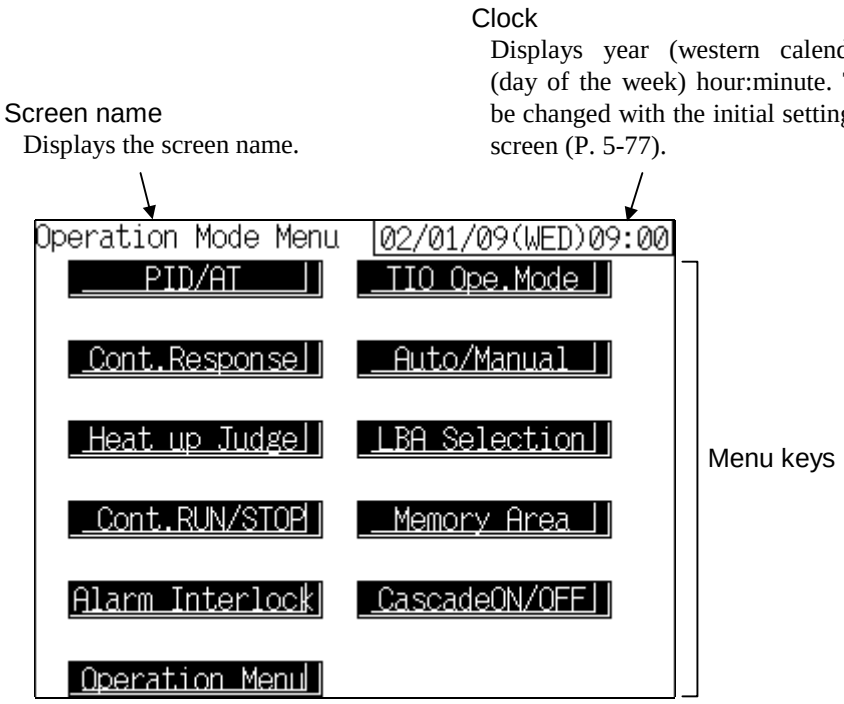


* Touching the relevant key on the "Operation Mode 2" screen thus displayed calls up the setting screen. For details, see the **5.8.3 Operation mode 2 screen (P. 5-59)**.

5.8.2 Operation mode menu screen

The operation mode menu screen is for selecting operation mode screens relating to the H-TIO-□, H-CIO-A and H-SIO-A modules.

<Operation mode menu screen>



Menu keys: Touching this key, screen can be selected.

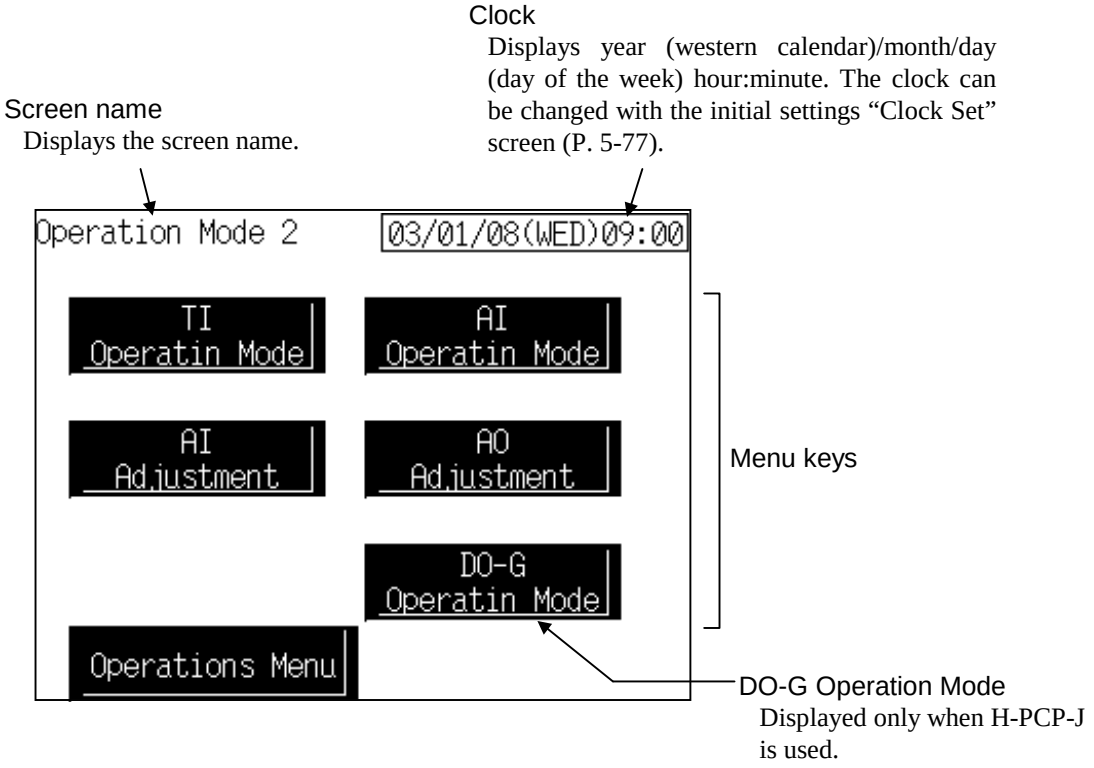
PID/AT:	"Operation Mode: PID/AT" screen
TIO Ope. Mode:	"Operation Mode: TIO Ope. Mode Change" screen
Cont. Response:	"Operation Mode: Control Response" screen
Auto/Manual:	"Operation Mode: Auto/Manual" screen
Heat up Judge:	"Operation Mode: Heat up Judge" screen
LBA Selection:	"Operation Mode: LBA Selection" screen
Cont. RUN/STOP:	"Operation Mode: Control Run/Stop" screen
Memory Area:	"Operation Mode: Memory Area" screen
Alarm Interlock:	"Operation Mode: Alarm Interlock" screen
CascadeON/OFF:	"Operation Mode: Cascade ON/OFF" screen

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

5.8.3 Operation mode 2 screen

The operation mode 2 screen is for selecting operation mode screens relating to the H-TI-□, H-AI-□, H-AO-□ and H-DO-G modules.

<Operation mode 2 screen>



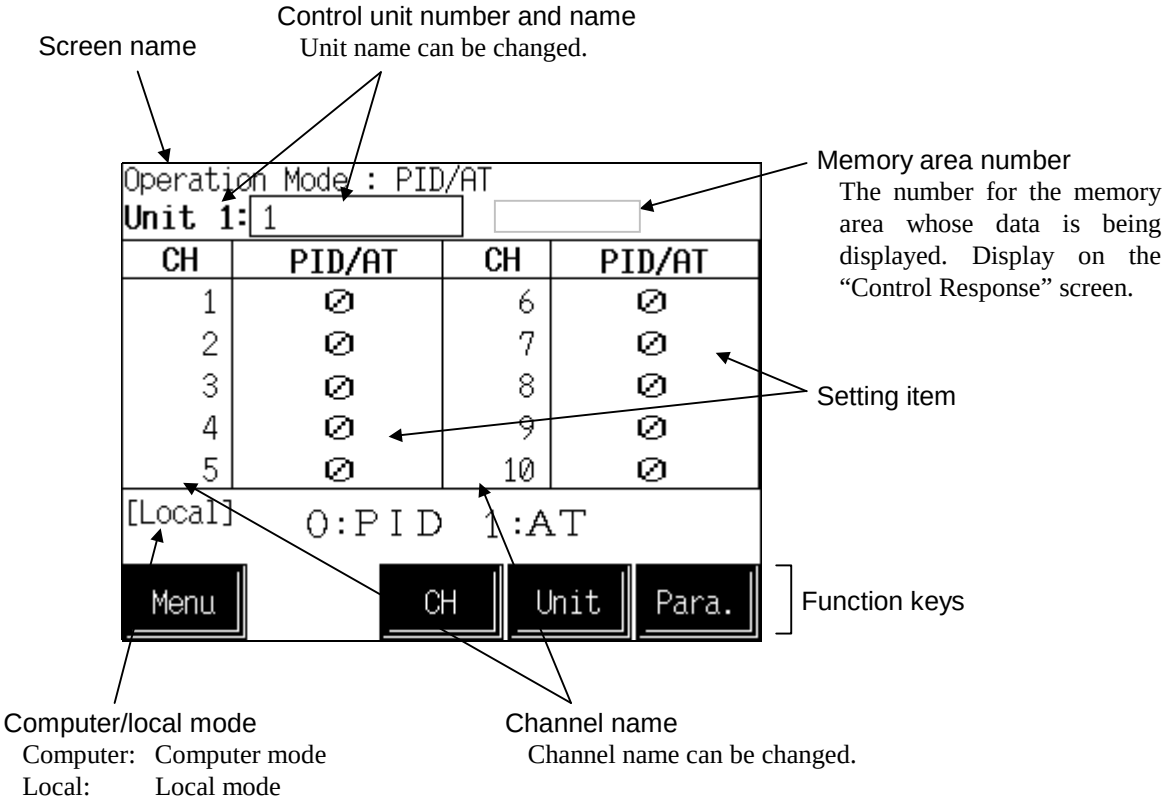
Menu keys: Touching this key, screen can be selected.

- **TI Operation Mode:** "Operation Mode: TI Ope. Mode Change" screen
- **AI Operation Mode:** "Operation Mode: AI Ope. Mode Change" screen
- **AI Adjustment:** "Operation Mode: AI Adjustment" screen
- **AO Adjustment:** "Operation Mode: AO Adjustment" screen
- **DO-G Operation Mode:** "Operation Mode: DO-G Auto/Manual" screen

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

5.8.4 The basic configuration of operation mode screen

The basic configuration of each operation mode screen is as shown below.
Example: PID/AT transfer screen



Screen name: Displays the screen name.

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 initialize "Unit Name Set" screen. (P. 5-96) There is no this column on the "Control Run/Stop" screen, "Memory Area" screen and "Alarm Interlock" screen.

Memory area number: Displays the number for the memory area whose data is being displayed. The memory area number can be changed with the operation mode "Memory Area" screen (P. 5-68). Displays on the "Control Response" screen.

Operation mode setting item:
Displays the item and data. Details of display varies depending on the each setting screen.

☞ For the details of setting, see the **5.8.5 Each operation mode screen (P. 5-62)**.

Channel name: Displays the TIO channel name, TI channel name, AI channel name and AO channel name. The channel name can be changed with the initialize "TIO CH Name Set" screen (P. 5-96), "TI CH Name Set" screen (P. 5-96), "AI CH Name Set" screen (P. 5-97) and "AO CH Name Set" screen (P. 5-97).

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).
Computer: Computer mode Local: Local mode

 In computer mode, setting can not be made on the operation panel.

Function keys: These key switches are assigned to match the contents of the screen.

Menu: Touching this key changes to the "Operation Mode Menu" screen or "Operation Mode 2" screen.

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid. There is no this column on the "Control Run/Stop" screen, "Memory Area" screen and "Alarm Interlock" screen.

Unit: Every time this key is touched, the control unit number changes. If the number of control units used is one, the [Unit] key is invalid.

Para.: Every time this key is touched, the operation mode screen changes.

5.8.5 Each operation mode screen

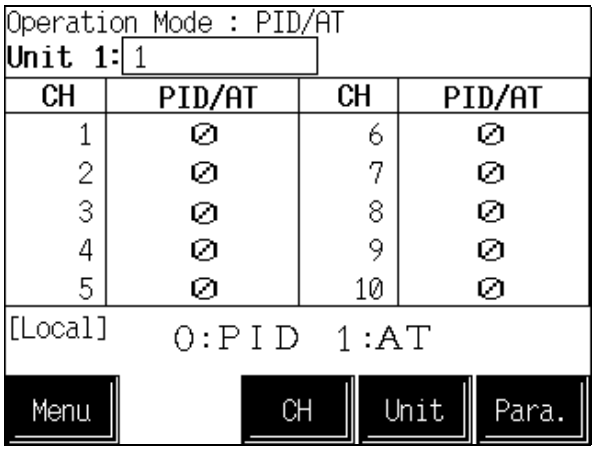
Changes the screen by touching [Para.] key.

In computer mode, setting can not be made on the operation panel.

For the setting procedure, see the **5.2.1 Data settings (P. 5-7)**.

For the function keys and other items, see the **5.8.4 The basic configuration of operation mode screen (P. 5-60)**.

■ PID/AT transfer



CH: Displays the TIO channel name.

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

By executing autotuning, the TIO channel name that is currently executed is shown in the inversed display on the "TIO monitor" screen.

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

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)."

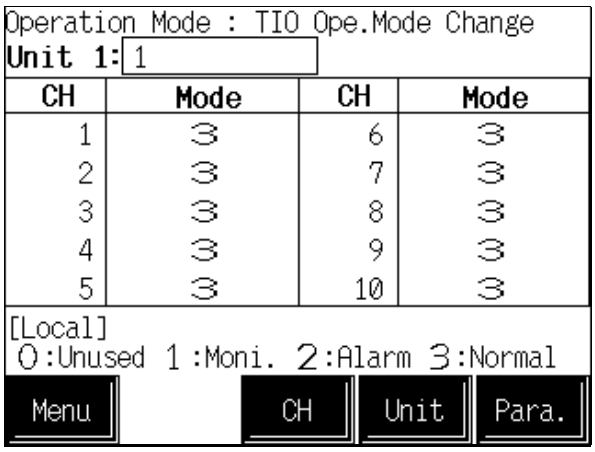
When the autotuning is finished, the display of each channel automatically returns to "0: PID control operation."

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-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.

■ Operation mode transfer

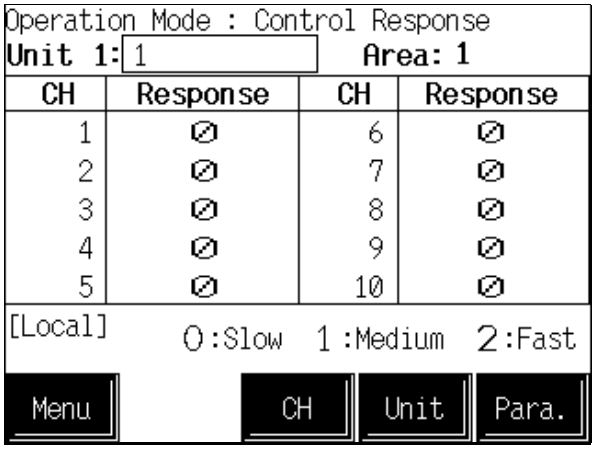


CH: Displays the TIO channel name.

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."

■ Control response parameters



CH: Displays the TIO channel name.

Response:

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

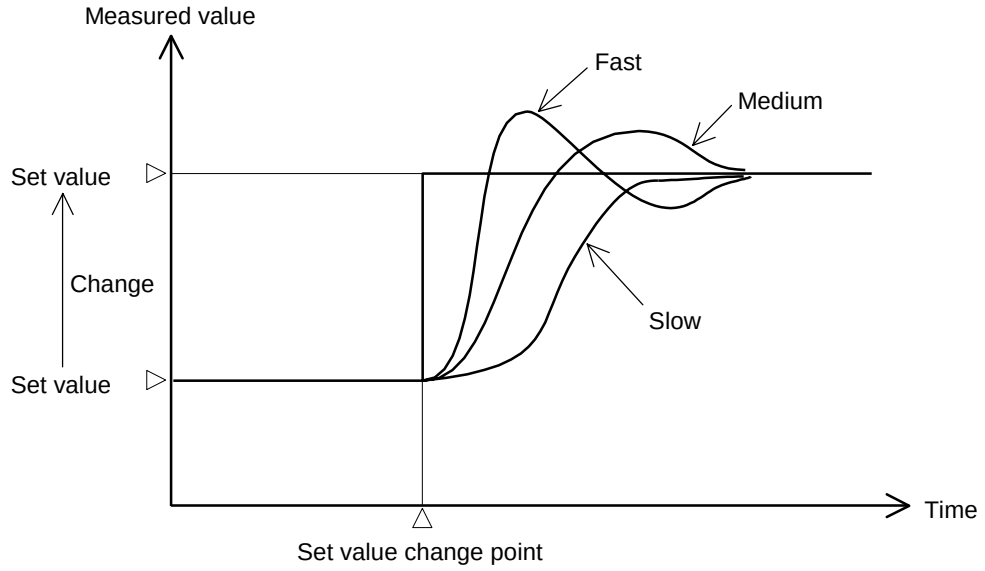
Setting range: 0: Slow
1: Medium
2: Fast

Factory set value:

Heat control:	0
Heat/cool control:	2
Position proportioning control:	0
Speed control:	0

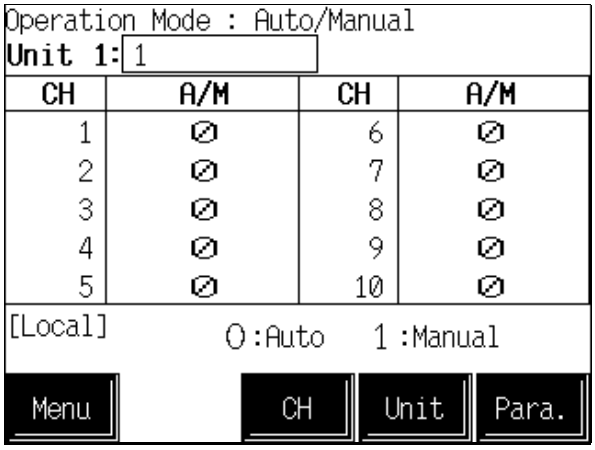
<Control response parameters>

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.)

■ Auto/Manual transfer



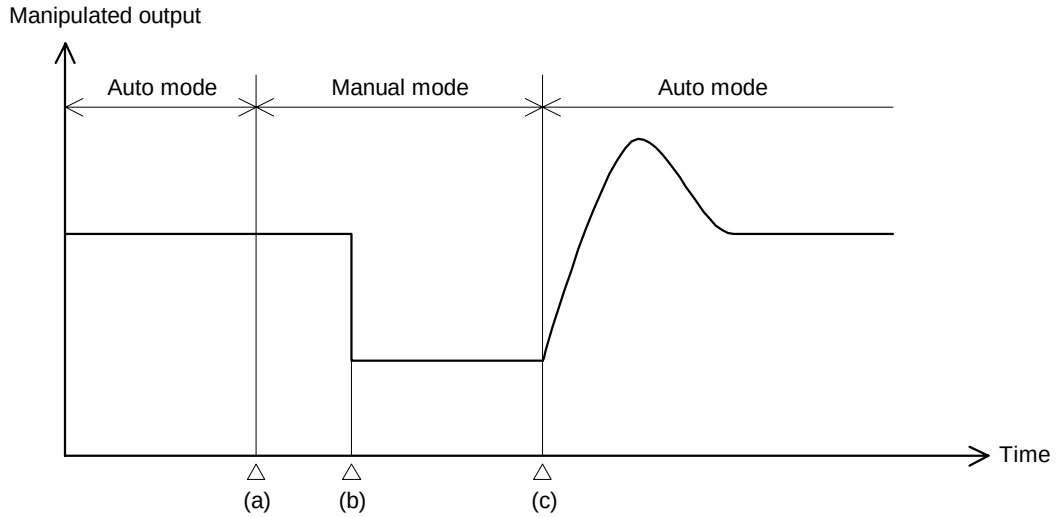
CH: Displays the TIO channel name.

A/M: 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.

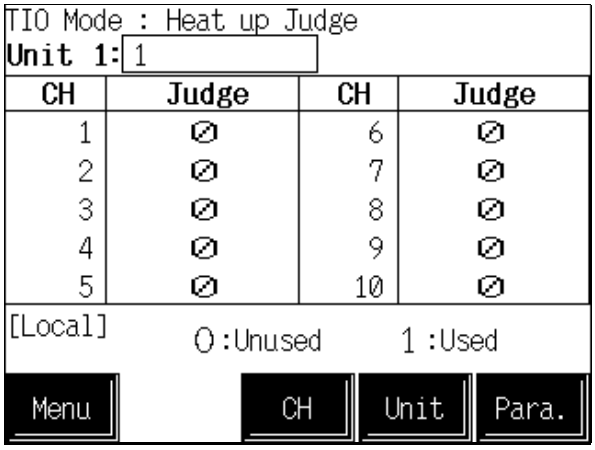
<Balanceless/bumpless function>
This function is used to prevent overload caused by the manipulated output value (MV) suddenly changing when auto mode is transferred to manual mode and vice versa.

- 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.

■ Temperature rise completion trigger



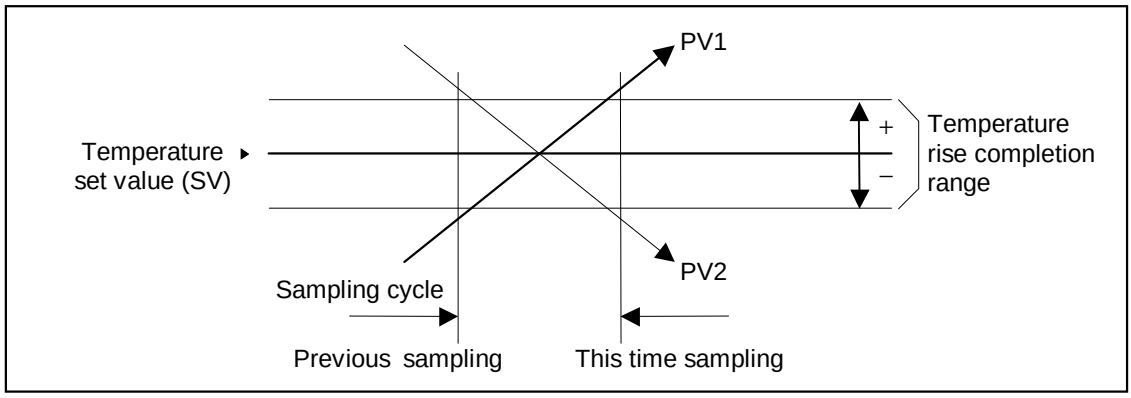
CH: Displays the TIO channel name.

Judge: Sets the 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

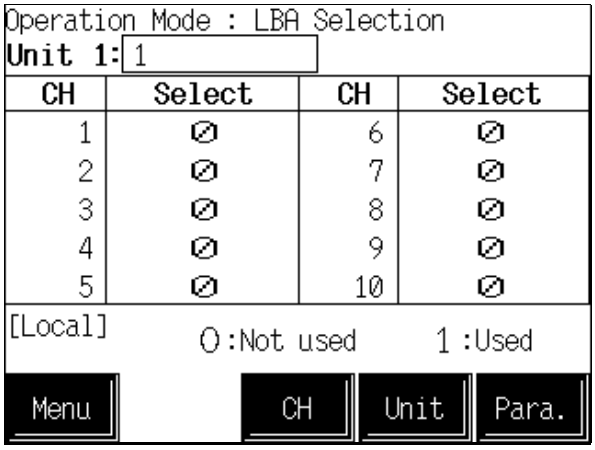
Do not set "1: Used" in H-TIO-H/J and H-SIO-A modules, because temperature rise completion is not judged. If the channel of each of the H-TIO-H/J and H-SIO-A modules is set "1: Used," it does no reach the completion of temperature rise. As a result, the state of this completion which is judged by performing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

<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.



■ Control loop break alarm use selection



CH: Displays the TIO channel name.

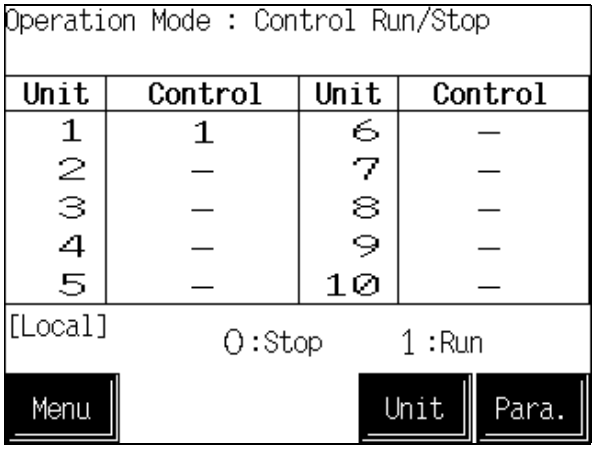
Select: Sets the select whether to use the loop break alarm function.
Setting range: 0: Unused
1: Used
Factory set value: 0

📖 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.

■ Control RUN/STOP

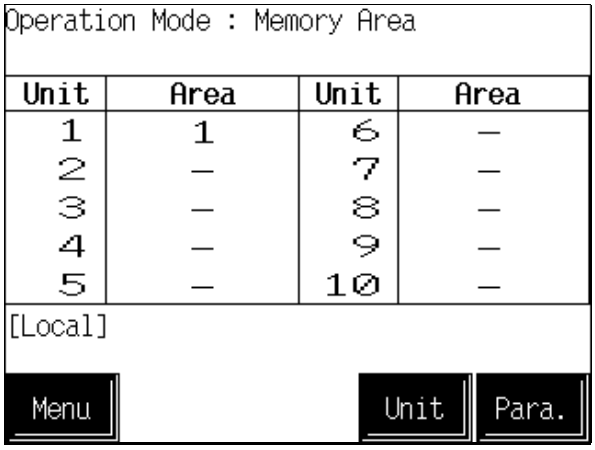


Unit: Displays the control unit number.

Control:
Sets the control state (control RUN/STOP).
Setting range: 0: Stop (Control STOP)
1: Run (Control RUN)
Factory set value: 0

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

■ Memory area number



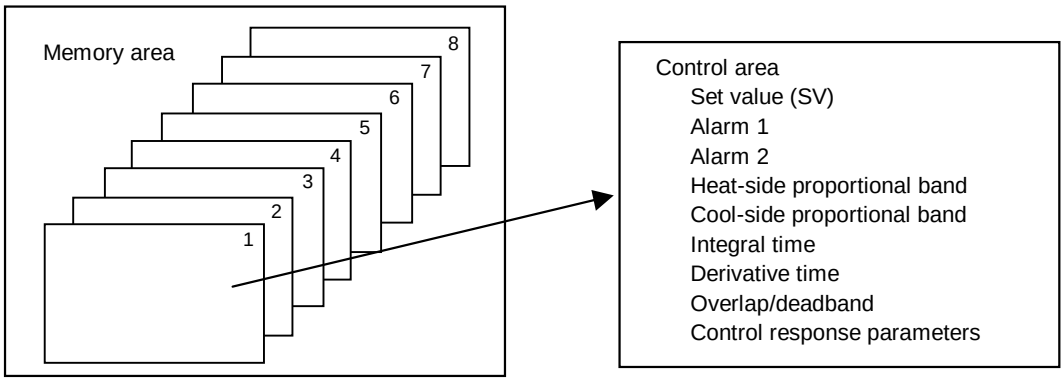
Unit: Displays the control unit number.

Area: Sets the memory area used for control.
Setting range: 1 to 8
Factory set value: 1

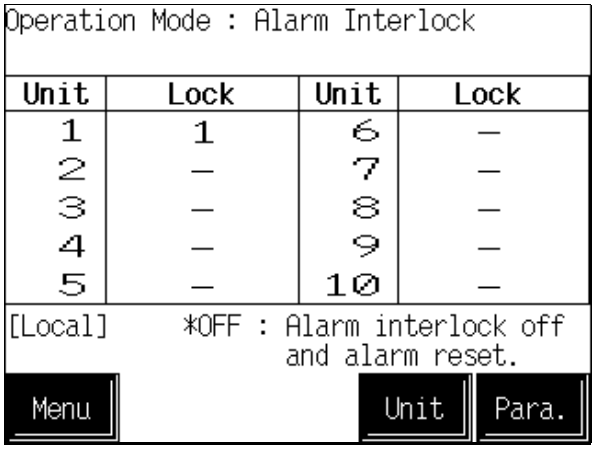
<Memory area function>

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."



■ Alarm interlock release



Unit: Displays the control unit number.

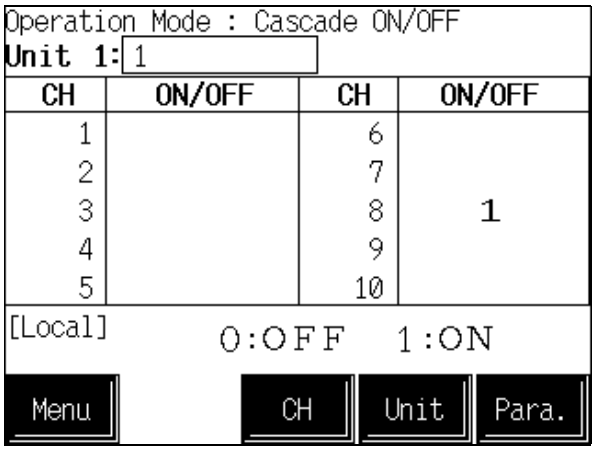
Lock: Sets the alarm interlock release.
Setting range: 0: ON
1: OFF
Factory set value: 0

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.

■ Cascade ON/OFF



CH: Displays the TIO channel name.

ON/OFF:
It is set whether the cascade control is executed or not.
Setting range: 0: OFF
1: ON
Factory set value: 0

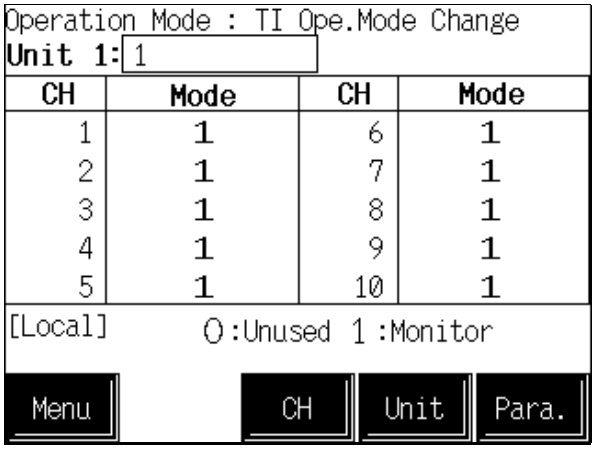
Only master channel is valid.

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.

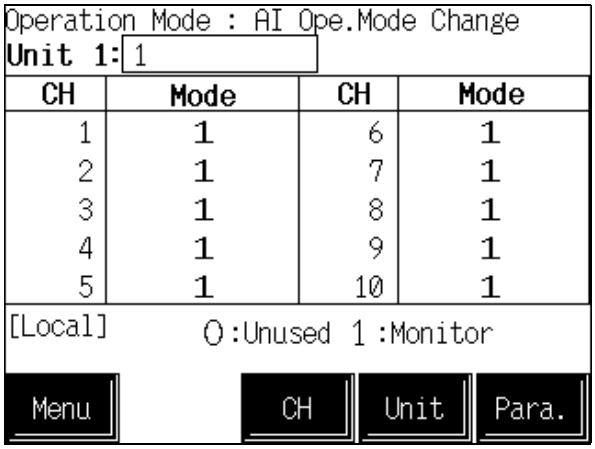
■ TI operation mode transfer



CH: Displays the TI channel name.

Mode: Sets the TI channel (H-TI-☐ module) usage state.
Setting range:
0: Unused
If set to "Unused," no control, monitoring or alarm monitoring is performed.
1: Monitor
Monitor and alarm monitoring are performed.
Factory set value: 1

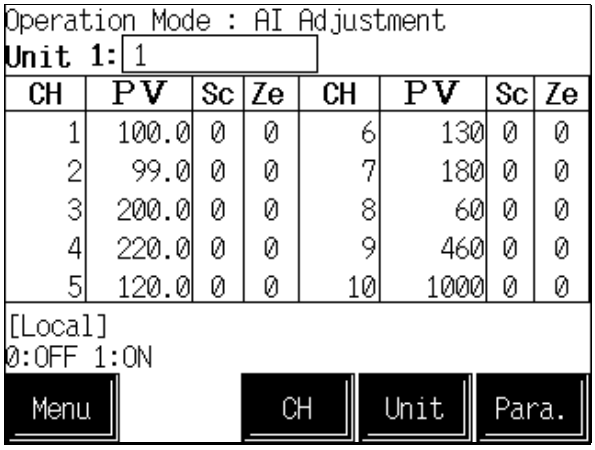
■ AI operation mode transfer



CH: Displays the AI channel name.

Mode: Sets the AI channel (H-AI-☐ module) usage state.
Setting range:
0: Unused
If set to "Unused," no control, monitor or alarm monitor is performed.
1: Monitor
Monitor and alarm monitoring are performed.
Factory set value:1

■ AI correction



CH: Displays the AI channel name.

PV: Displays the AI input measured value (H-AI-☐ module).
Setting range: Within display scale range

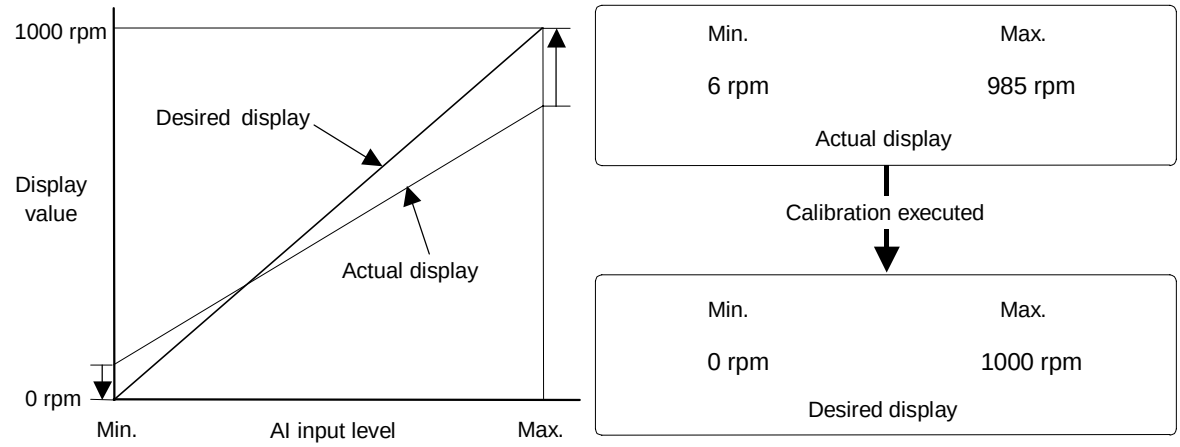
Sc: Sets whether the full scale correction (calibration function) of an AI measured value is executed or not.
Setting range: 0: OFF (Cancel)
1: ON (Execution)
Factory set value: 0

Ze: 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

<Input calibration function>

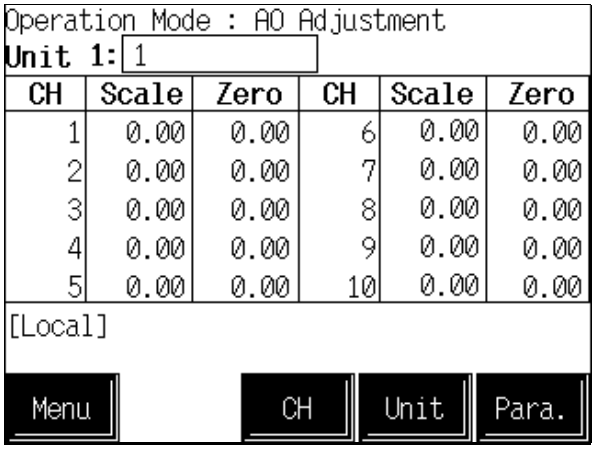
This function is used to forcibly match the displayed value with the zero or full scale point for the purpose of correcting the AI zero or full scale point. If the displayed value deviates from the H-AI-☐ module input value, the displayed value is calibrated (corrected) at its zero and full scale points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

■ AO correction



CH: Displays the AO channel name.

Scale: The full scale correction value (calibration function) of an AO output value (H-AO-☐ module) is set.
Setting range: –5.00 to +5.00 %
Factory set value: 0.00

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

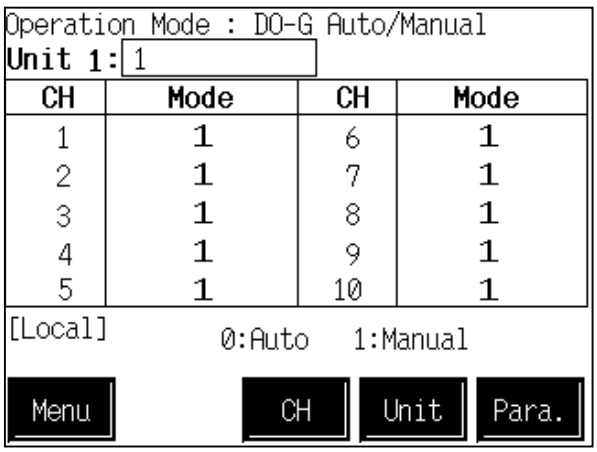
<Output calibration function>

If some deviation occurs between the output value of the H-AO-☐ module and the actual operation of externally connected equipment, this function is used to forcibly correct the output signal of the H-AO-☐ modules at the zero and full scale points. For example, if the number of motor revolutions is set using the H-AO-☐ 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-☐ module, a correction of +2.5 % at the zero point changes the output value of the H-AO-☐ 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.

■ DO-G Auto/Manual

Displayed only when H-PCP-J is used.



CH: Displays the DO-G channel number.

Mode: Sets whether to perform output of H-DO-G module with auto mode or manual mode.
Setting range:
0: Auto mode
Outputs the output ratio computation result
1: Manual mode
Outputs the H-DO-G manual output value
Factory set value: 0

5.9 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, etc.

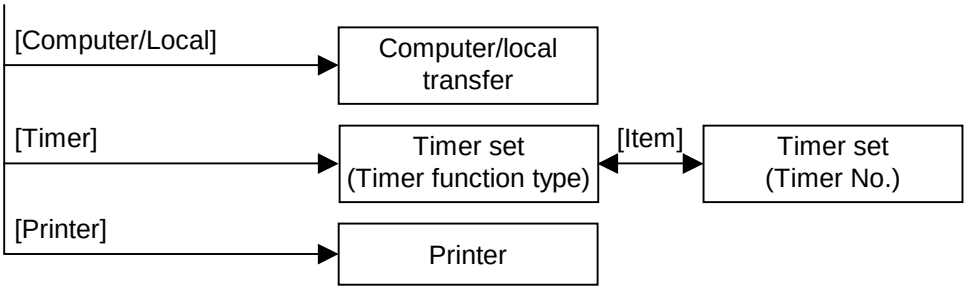
5.9.1 Calling procedure of the initial setting screen

📖 Some screens may not be displayed depending on the specification.

📖 [ ] : key name.

Continued on the next page.

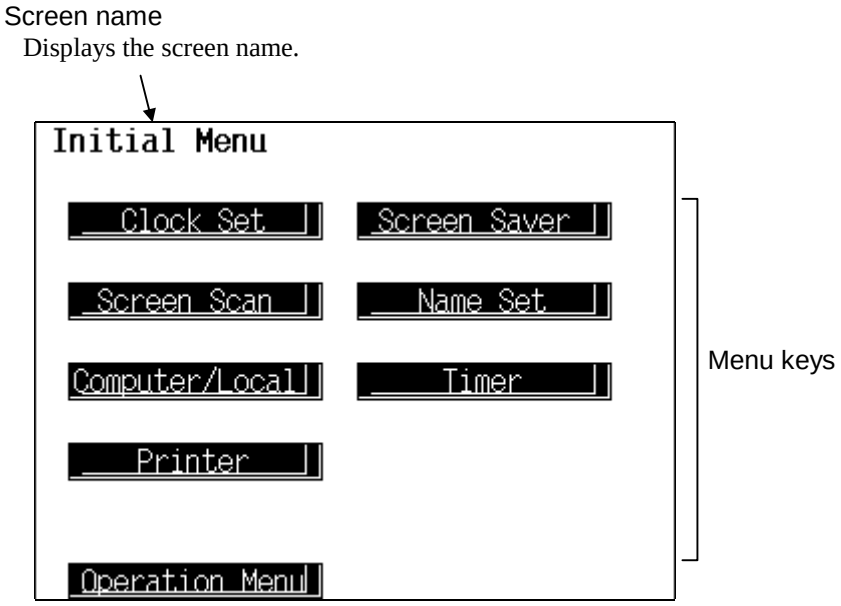
Continued from the previous page.



5.9.2 Initial menu screen

This screen allows selecting to each of the initialize setting screens.

<Initial menu screen>



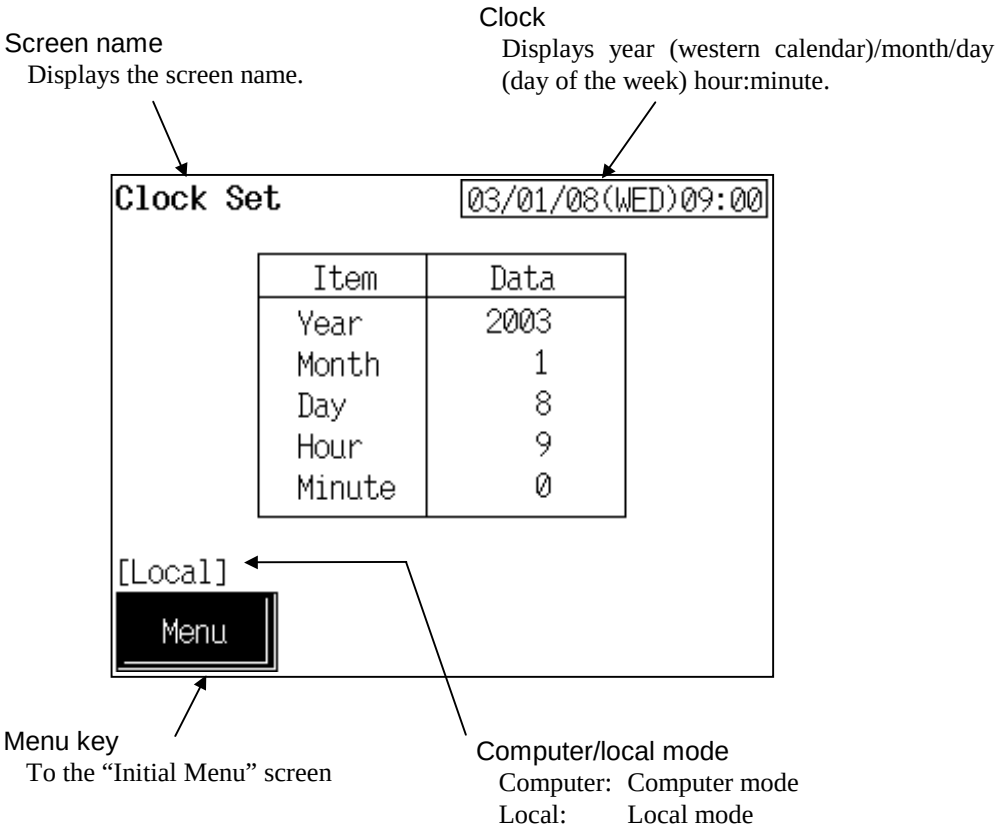
Menu keys: Touching this key, screen can be selected.

Clock Set:	"Clock Set" screen
Screen Saver:	"Screen Saver Set" screen
Screen Scan:	"Screen Scan Set" screen
Name Set:	"Name Setting Menu" screen
Computer/Local:	"Computer/Local Selection" screen
Timer:	"Timer Set" screen
Printer:	"Printer" screen

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

5.9.3 Clock set screen

<Clock set screen>



Setting item: Set the date and time of the clock function that is built into the operation panel.

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

☞ For the details of setting, see the **5.2.1 Data settings (P. 5-7)**.

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).

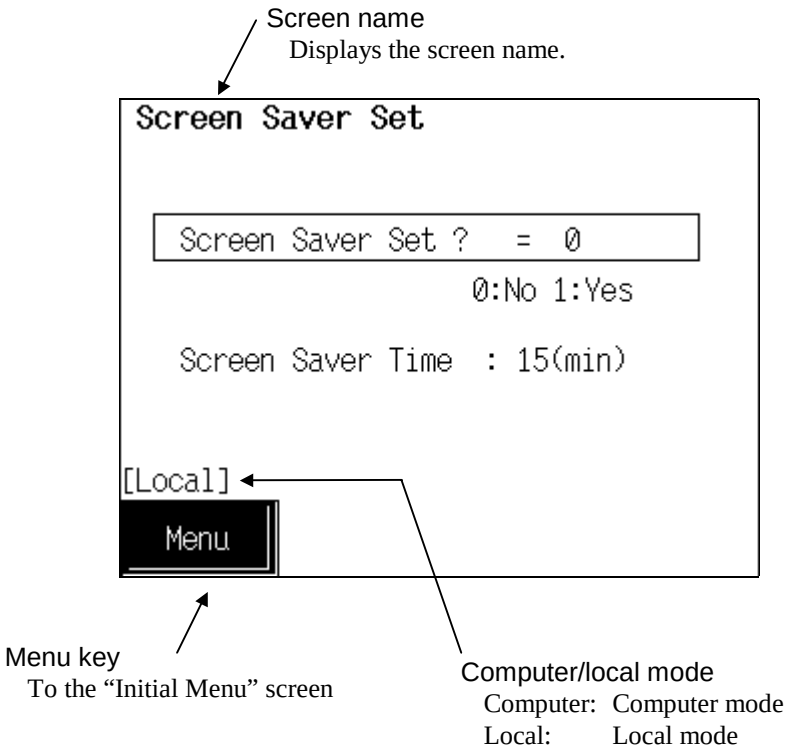
Computer: Computer mode Local: Local mode

📖 In computer mode, setting can not be made on the operation panel.

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

5.9.4 Screen saver set screen

<Screen saver set screen>



Screen Saver Set ?: If key operation is not performed for a specified period of time (15 minutes), it is set whether the function of automatically turning off the display is used or not. If the screen saver has turned off the screen display, touch an any part of the screen to make the display reappear.

Setting range: 0: No (Unused)
1: Yes (Used)

Factory set value: 0

☞ For the details of setting, see the **5.2.1 Data settings (P. 5-7)**.

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).

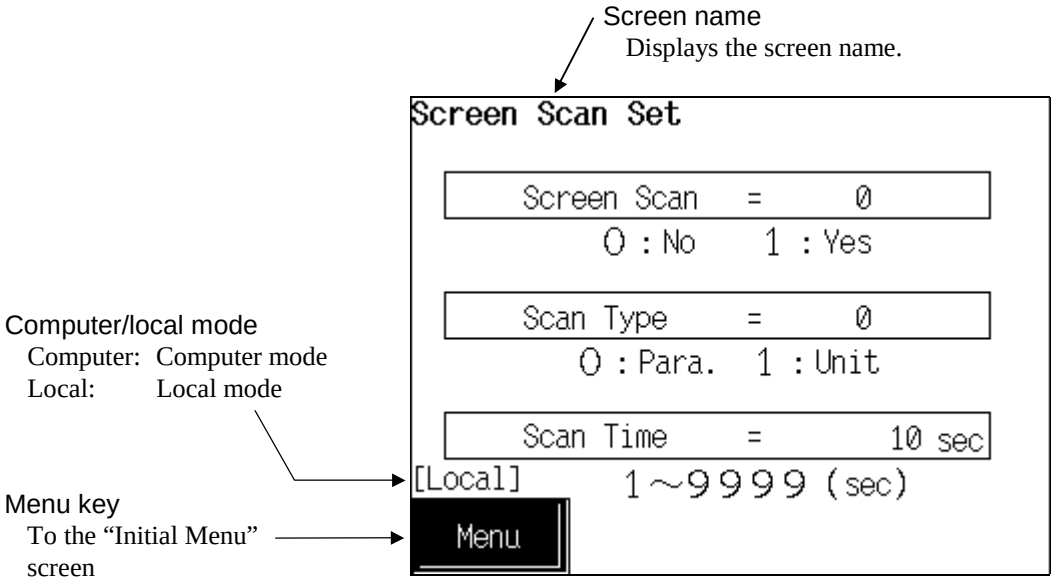
Computer: Computer mode Local: Local mode

📖 In computer mode, setting can not be made on the operation panel.

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

5.9.5 Screen scan set screen

<Screen scan set screen>



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 Type: Sets the screen scan type.
Setting range:
0: Para. (Item transfer)
Transfer the items in the TIO monitor.
1: Unit (Unit transfer)
In using several control units joined together, the displayed item in the TIO monitor can be transfer for each unit separately.
Factory set value: 0

Scan Time: Sets the screen scan switching time.
Setting range: 1 to 9999 seconds
Factory set value: 10

☞ For the details of setting, see the **5.2.1 Data settings (P. 5-7)**.

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).
Computer: Computer mode Local: Local mode

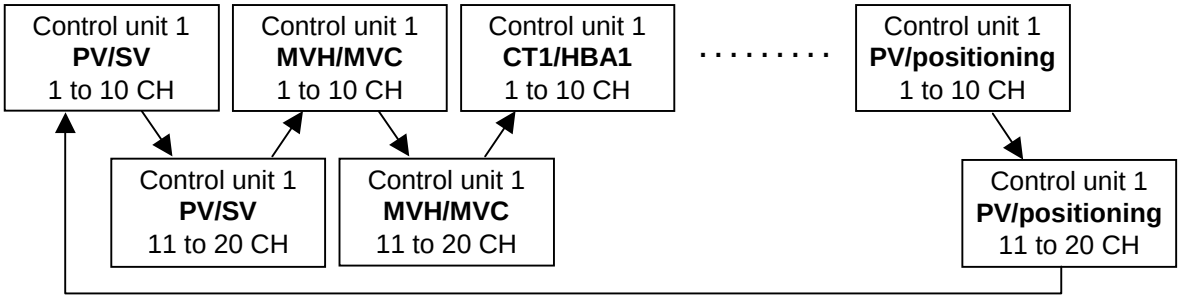
📖 In computer mode, setting can not be made on the operation panel.

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

<Scanning screen flow diagram>

• When “Para.” (item transfer) is selected

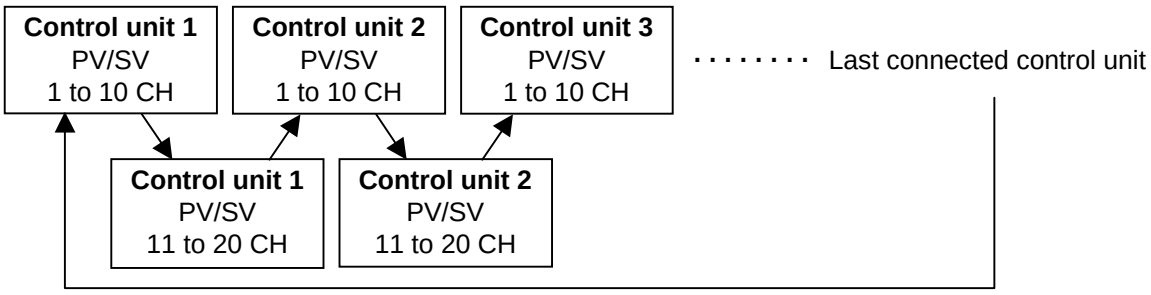
Example: Control unit 1



- If more than one control unit is connected, when the [Unit] key is touched during screen scanning, each item corresponding to the selected control unit is scanned.
- If there is no relevant module, that screen item is skipped.
- Channel screen which does not exist is skipped.

• When “Unit” (unit transfer) is selected

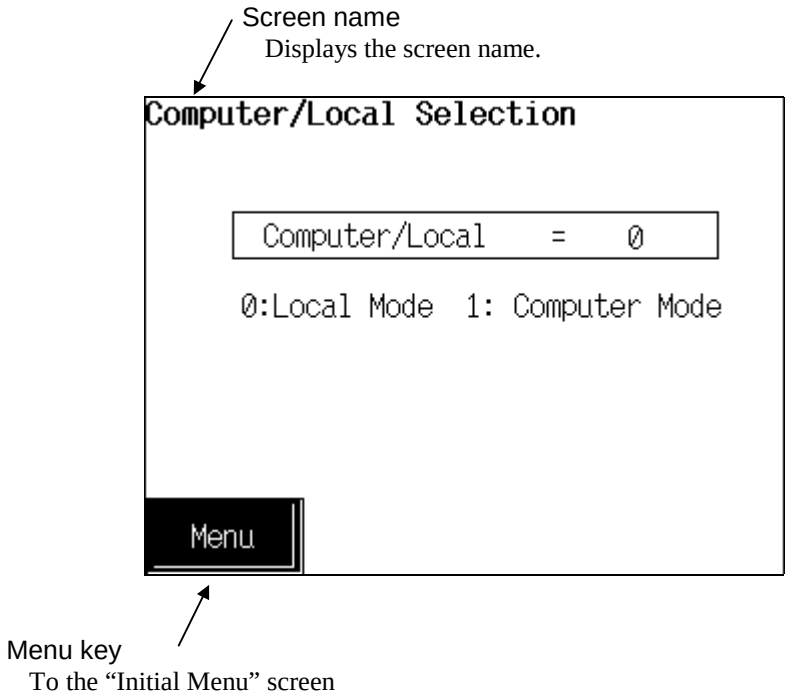
Example: PV/SV monitor



- If the [Para.] key is touched during screen scanning, when the select item that is scanned in each control unit.
- If there is no relevant module, that screen item is skipped.
- Channel screen which does not exist is skipped.

5.9.6 Computer/local transfer screen

<Computer/local selection screen>



Computer/Local: Sets whether the data settings shall be carried out by a host computer or by the operation panel.

Setting range: 0: Local mode
The data setting by a operation panel.
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 operation panel keys concerning the settings are effective. (Except for the setting of computer/local.)

For the details of setting, see the **5.2.1 Data settings (P. 5-7)**.

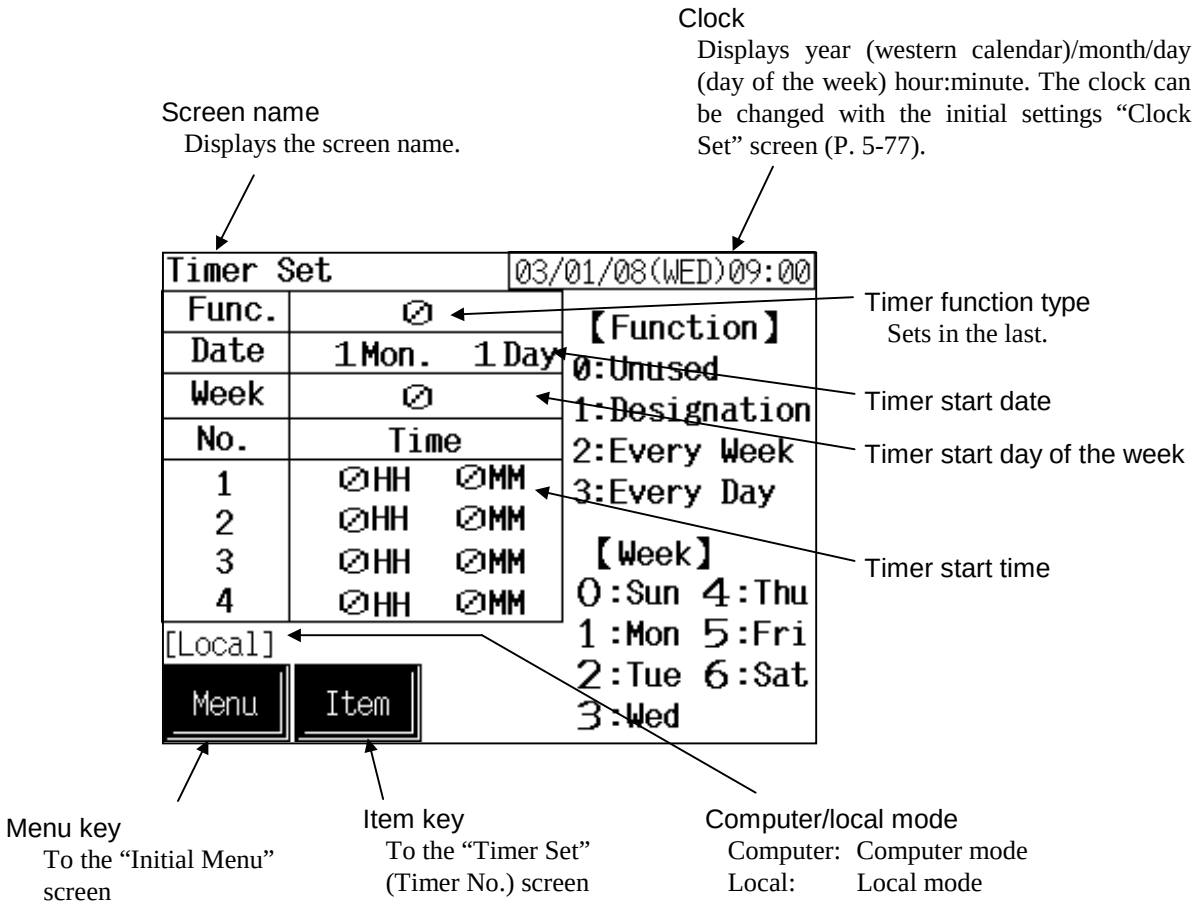
Menu key: Touching this key changes to the "Initial Menu" screen.

5.9.7 Timer set 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 ("TIO Ope. Mode Change" screen) is forcibly changed to "3: Normal" from "1: Monitor." As timer setting screens, both timer function type setting and timer No. setting screens are available. Changes the screen by touching [Para.] key.

■ Timer set: Timer function type

<Timer set: Timer function type screen>



Timer setting item:

Func.: 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

Sets the timer function type after completing all of the setting (month/day, day of the week, time, timer No. setting). If the timer function type is pre-specified, the setting lock is activated to prevent malfunction.

Date: Sets the timer start date. This setting becomes valid when the "Designation" is selected by the timer function.

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 "Every Week" is selected by the timer function.

Setting range: 0: Sunday 1: Monday 2: Tuesday 3:Wednesday 4: Thursday 5: Friday 6: Saturday

Factory set value: 0

No./Time: Sets the timer start time. Up to 4 types can be registered.

Setting range: 0:00 to 23:59 (In steps of one minute)

Factory set value: 0:00

For the details of setting, see the **5.2.1 Data settings (P. 5-7)**.

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).

Computer: Computer mode Local: Local mode

The timer function can be activated in local mode.

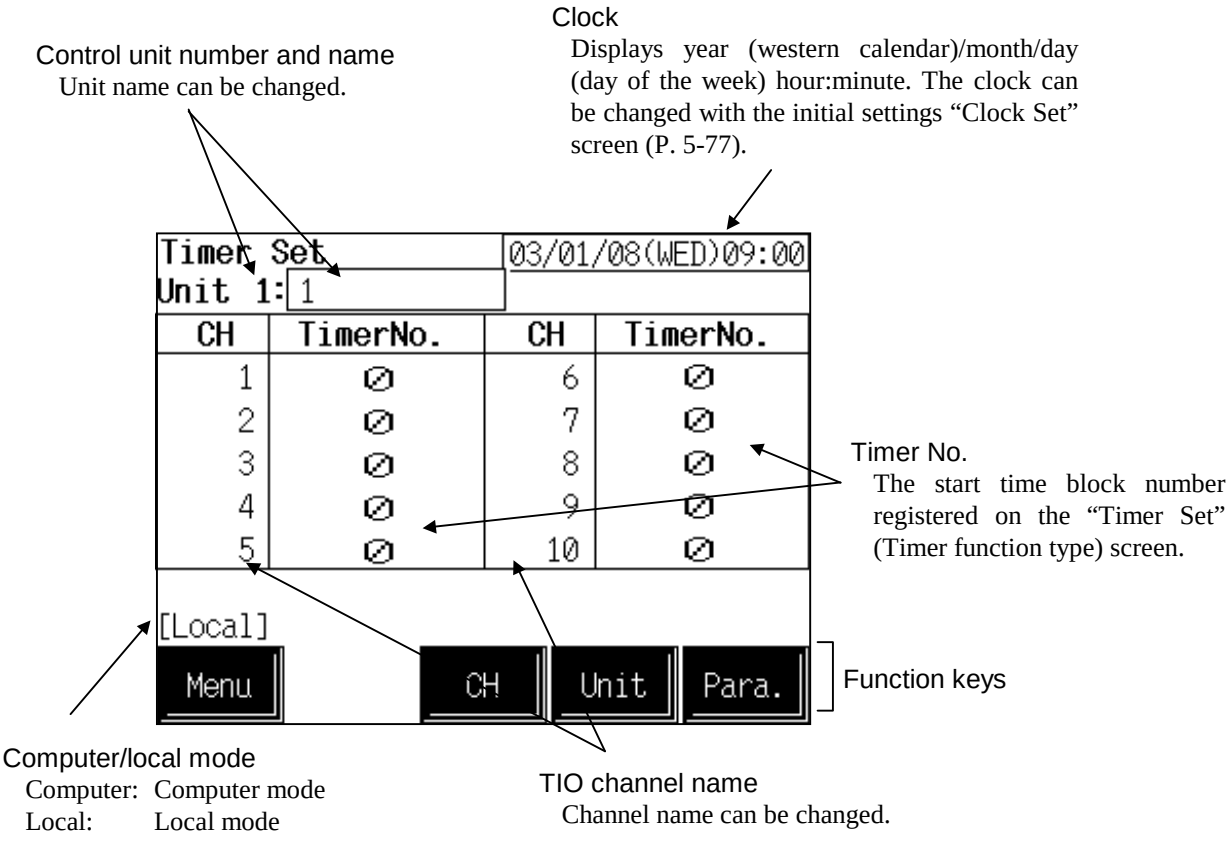
In computer mode, setting can not be made on the operation panel.

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

Item key: Touching this key changes to the "Timer Set" (Timer No.) screen.

■ Timer set: Timer No.

<Timer set: Timer No. 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 initialize "Unit Name Set" screen (P. 5-96).

CH: Displays the TIO channel name. The channel name can be changed with the initialize "TIO CH Name Set" screen (P. 5-96).

Timer No.: The start time block number registered on the "Timer Set" (Timer function type) screen is set (P. 5-82).
Setting range: 0 to 4 (0: No timer function)
Factory set value: 0

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).
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 operation panel.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Unit: Every time this key is touched, the control unit number changes. If the number of control units used is one, the [Unit] key is invalid.

Para.: Touching this key changes to the “Timer Set” (Timer function type) 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 function of “Timer Set” (Timer function type) screen.

[2] Timer No. setting of “Timer Set” (Timer No.) screen.

[3] Mode of “TIO Ope. Mode Change” screen.

📖 Be sure to set the timer type on the “Timer Set” (Timer function type) screen last of all the timer setting because the timer function starts at once after setting the timer type.

📖 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.

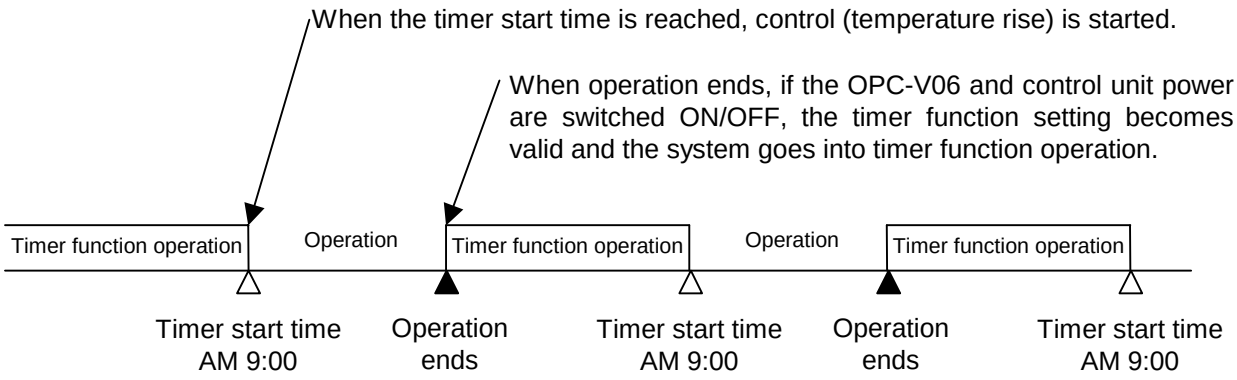
☞ For the control RUN/STOP, see the operation mode ”Control Run/Stop” screen (P. 5-67).

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-V06 and control unit power are switched off without stopping control unit control. Before the timer start time, switch on the OPC-V06 and control unit power.

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

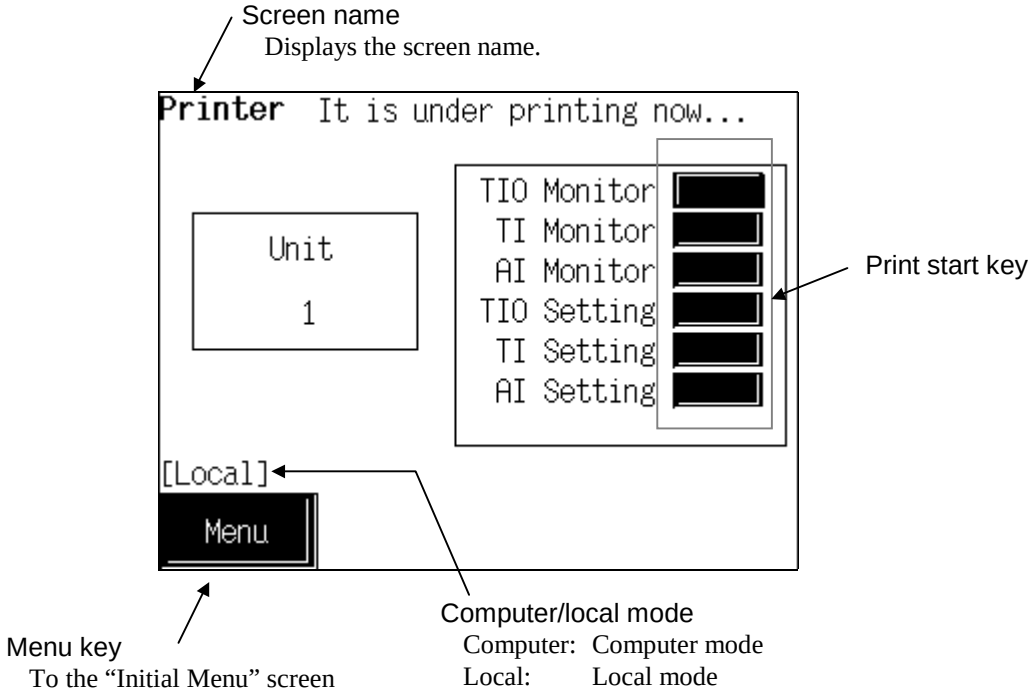


When unused the timer function:

- If control needs to be started on the “Control RUN/STOP” screen but not by the timer function, set the timer function on the “Timer set” (Timer function type) screen to “0: Unused.” Even if “1: Run” is set on the “Control RUN/STOP” 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.
- When not using the timer function on several temperature control channels, set the timer number setting “0: No timer function” on the “Timer Set” (Timer No.) screen for the channels not to execute the timer functions.

5.9.8 Printer screen

Print screen is for printing data with printer connected to operation panel.
<Printer screen>



Unit: Sets the control unit number of printing data.
Setting screen: 1 to 16
Factory set value: Blank (No control unit number is set.)

☞ For the details of setting, see the **5.2.1 Data settings (P. 5-7)**.

Print start key: Touching this key of each item prints it. Six types of ledgers (printing items) are registered.
TIO monitor, TI monitor, AI monitor, TIO set value, TI set value, AI set value

📖 The following items are printed the data of 1 digit below decimal point regardless of the module type or the decimal point position selection.
PV, SV, AL1 and AL2

📖 If the target data does not exist, nothing is printed.

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).
Computer: Computer mode Local: Local mode

📖 In computer mode, setting can not be made on the operation panel.

Menu key: Touching this key changes to the “Initial 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.

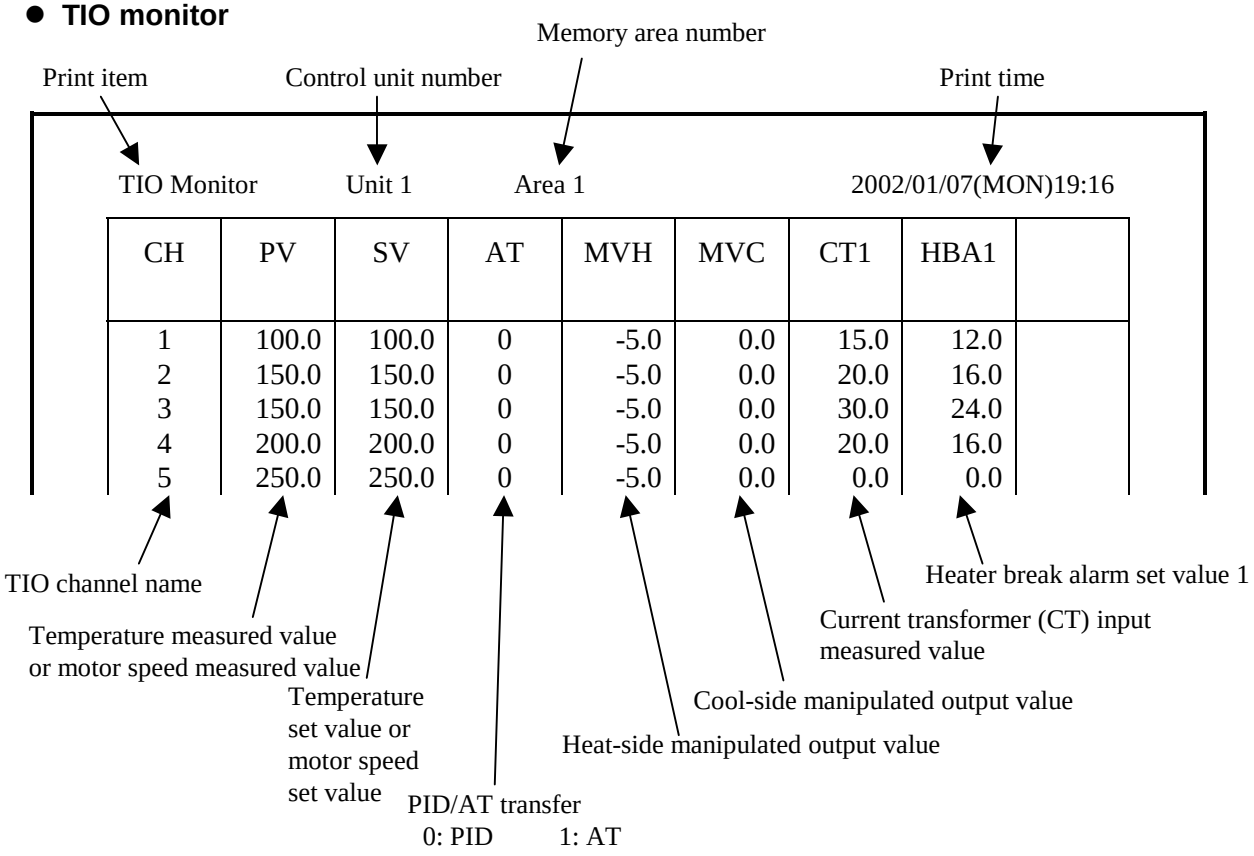
Screen hard copy

Pressing the F3 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 **3.2.2 Connection to the Printer (P. 3-13)**.

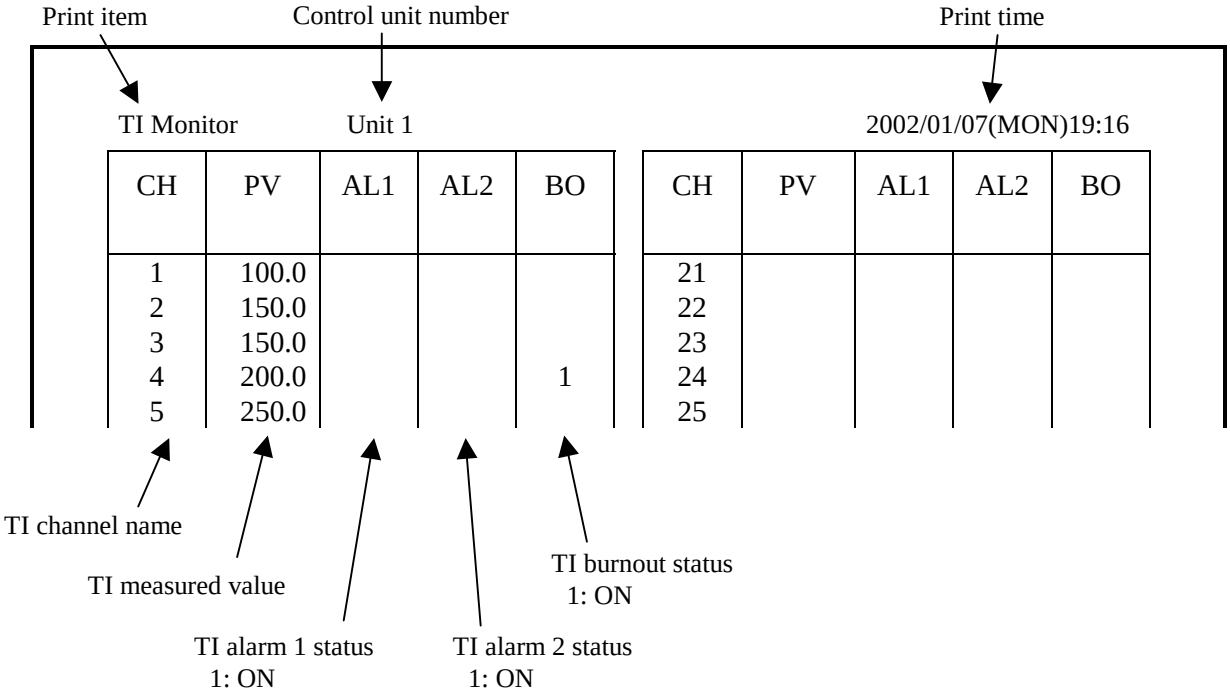
■ List printing example

● TIO monitor



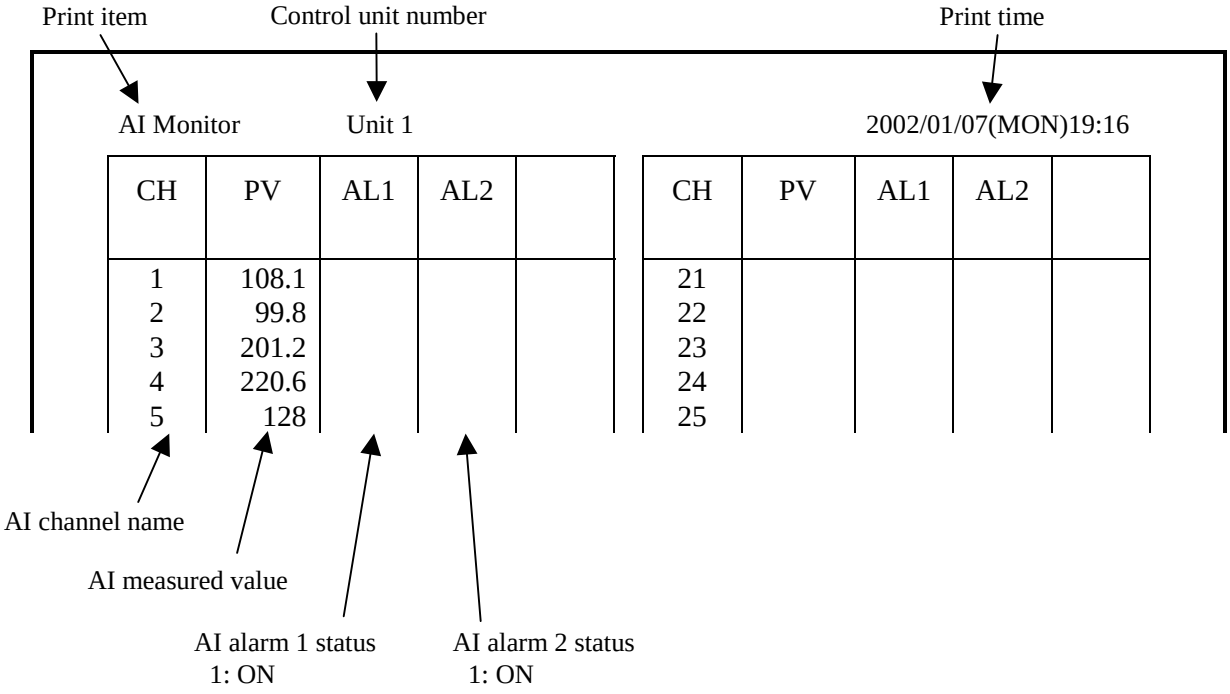
CH	PV	SV	AT	MVH	MVC	CT1	HBA1	
1	100.0	100.0	0	-5.0	0.0	15.0	12.0	
2	150.0	150.0	0	-5.0	0.0	20.0	16.0	
3	150.0	150.0	0	-5.0	0.0	30.0	24.0	
4	200.0	200.0	0	-5.0	0.0	20.0	16.0	
5	250.0	250.0	0	-5.0	0.0	0.0	0.0	

● TI monitor



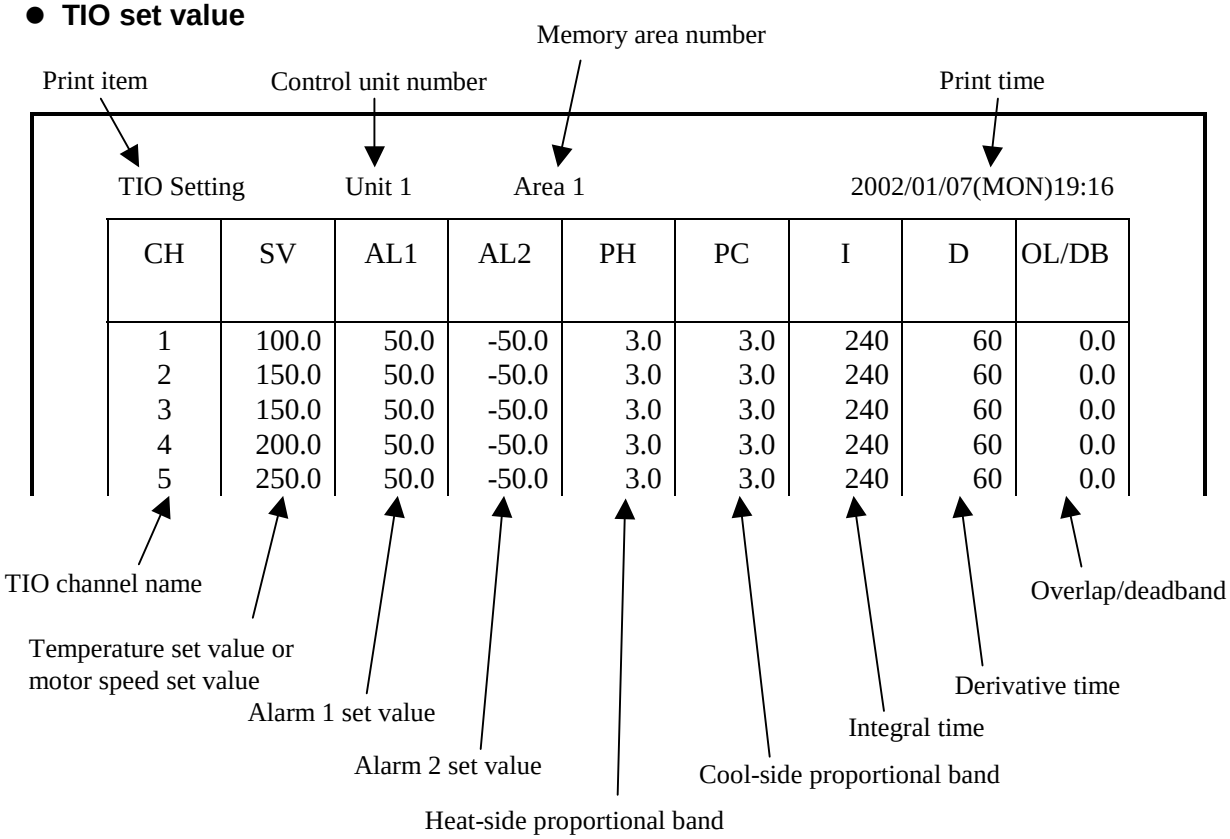
CH	PV	AL1	AL2	BO	CH	PV	AL1	AL2	BO
1	100.0				21				
2	150.0				22				
3	150.0				23				
4	200.0			1	24				
5	250.0				25				

- **AI monitor**



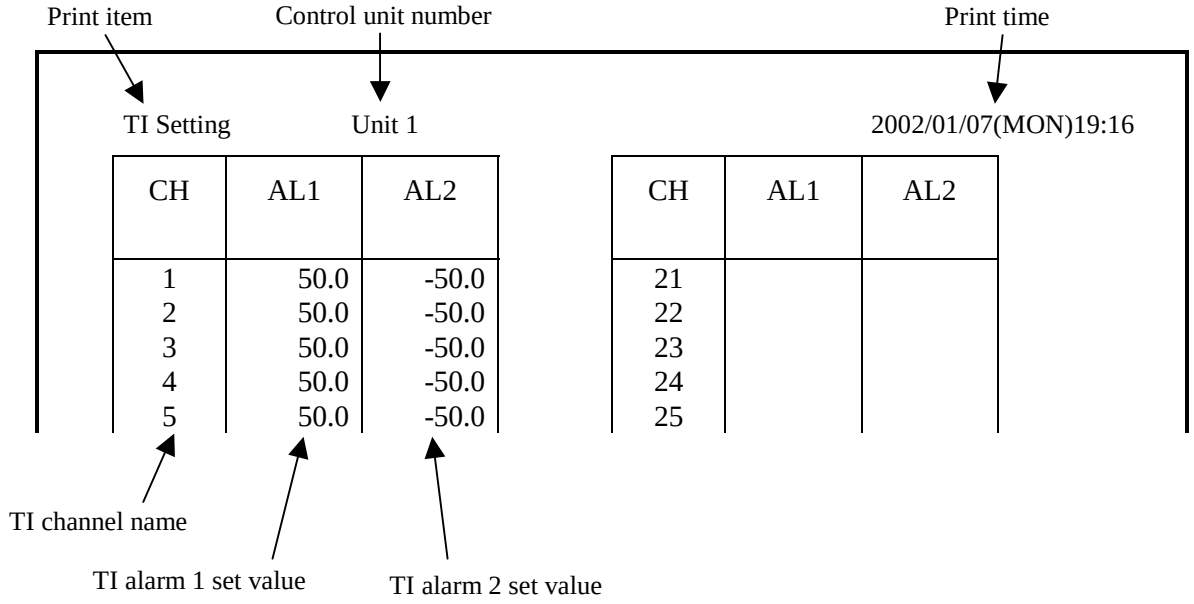
CH	PV	AL1	AL2		CH	PV	AL1	AL2	
1	108.1				21				
2	99.8				22				
3	201.2				23				
4	220.6				24				
5	128				25				

- **TIO set value**



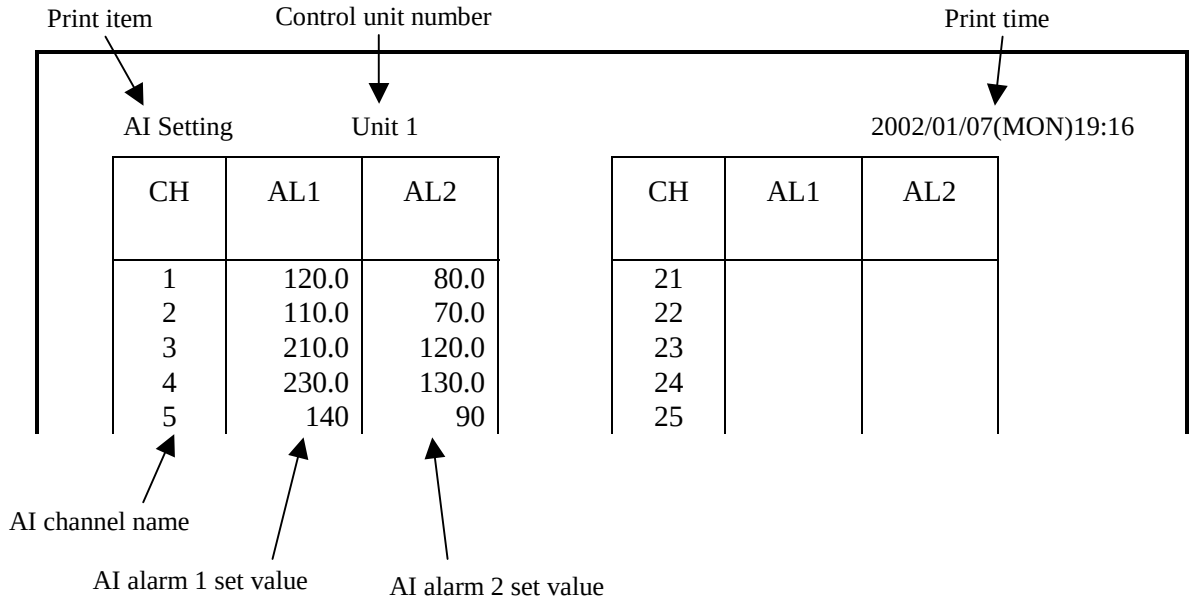
CH	SV	AL1	AL2	PH	PC	I	D	OL/DB
1	100.0	50.0	-50.0	3.0	3.0	240	60	0.0
2	150.0	50.0	-50.0	3.0	3.0	240	60	0.0
3	150.0	50.0	-50.0	3.0	3.0	240	60	0.0
4	200.0	50.0	-50.0	3.0	3.0	240	60	0.0
5	250.0	50.0	-50.0	3.0	3.0	240	60	0.0

- **TI set value**



CH	AL1	AL2	CH	AL1	AL2
1	50.0	-50.0	21		
2	50.0	-50.0	22		
3	50.0	-50.0	23		
4	50.0	-50.0	24		
5	50.0	-50.0	25		

- **AI Setting**

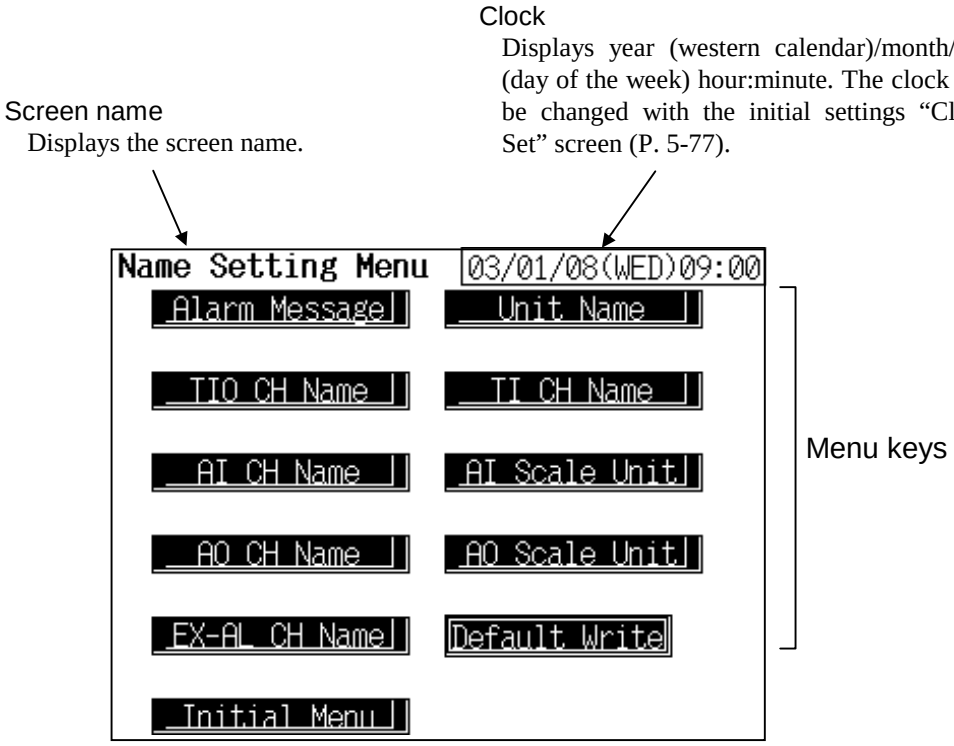


CH	AL1	AL2	CH	AL1	AL2
1	120.0	80.0	21		
2	110.0	70.0	22		
3	210.0	120.0	23		
4	230.0	130.0	24		
5	140	90	25		

5.9.9 Name setting menu screen

This screen is used to select the alarm message, unit name and channel name.

<Name setting menu screen>



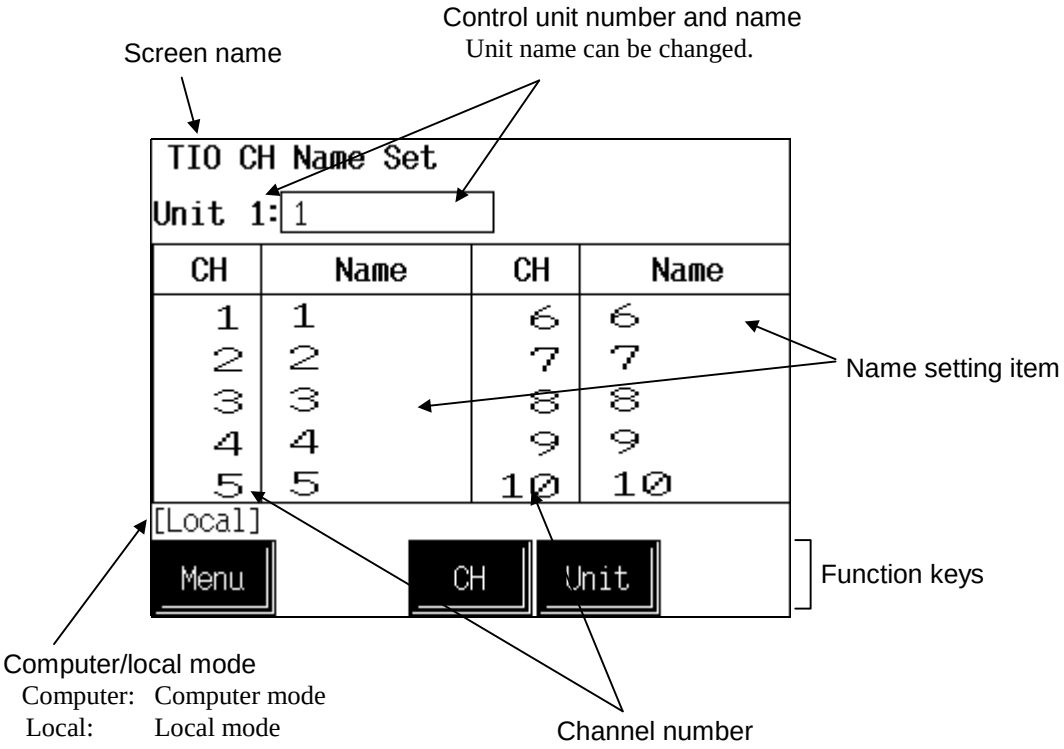
Menu keys: Touching this key, screen can be selected.

- **Alarm Message:** "Alarm Message Set" screen
- **Unit Name:** "Unit Name Set" screen
- **TIO CH Name:** "TIO CH Name Set" screen
- **TI CH Name:** "TI CH Name Set" screen
- **AI CH Name:** "AI CH Name Set" screen
- **AI Scale Unit:** "AI Scale Unit Set" screen
- **AO CH Name:** "AO CH Name Set" screen
- **AO Scale Unit:** "AO Scale Unit Set" screen
- **EX-AL CH Name:** "EX-Alarm CH Name Set" screen

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

5.9.10 The basic configuration of name setting screen

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



Screen name: Displays the screen name.

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 initialize "Unit Name Set" screen (P. 5-96). There is no this column on the "Alarm Message Set" screen and "Unit Name Set" screen.

Name setting item: Displays the item and data. Details of display varies depending on the each name setting screen.

☞ For the details of display, see the **5.9.11 Each name setting screen (P. 5-95)**.

CH: Displays the channel number.

Computer/local mode: Displays whether the current state is computer mode or local mode. The mode can be changed with the initialize "Computer/Local Selection" screen (P. 5-81).
Computer: Computer mode Local: Local mode

📖 In computer mode, setting can not be made on the operation panel.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed channel number changes. There is no this key on the “Alarm Message Set” screen and “Unit Name Set” screen.

Unit: Every time this key is touched, the control unit number changes. There is no this key on the “Alarm Message Set” screen and “Unit Name Set” screen.

5.9.11 Each name setting screen

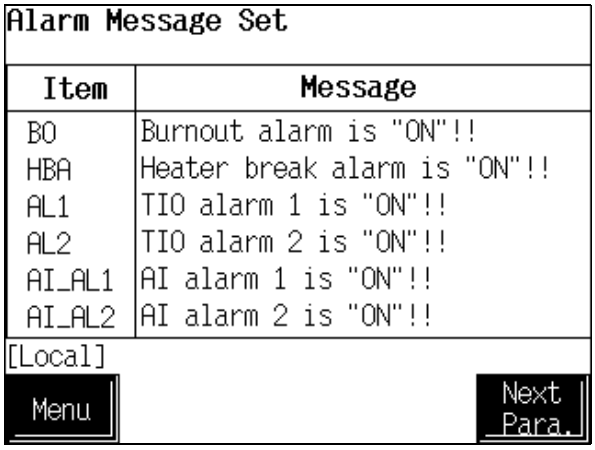
📖 In computer mode, setting can not be made on the operation panel.

📖 Even if control unit and module do not exist, name setting is possible.

☞ For the details of data setting, see the **5.2.2 Text editing (P. 5-11)**.

☞ For the function keys and other items, see the **5.9.10 The basic configuration of name setting screen (P. 5-93)**.

■ Alarm message



Item: Displays the alarm item.

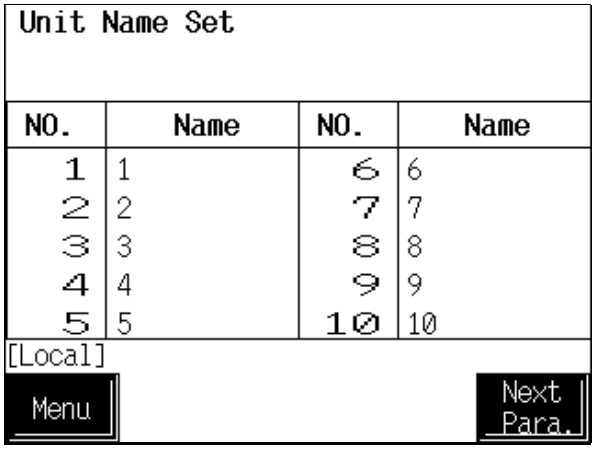
Message:
The contents of messages corresponding to alarms occurring during monitor are set.
Setting range: 30 characters
Factory set value: See the alarm message list.

Touching [Next Para.] key, the alarm item changes.

Alarm message list (Factory set value)

Item		Message	Priority order
BO	Burnout	Burnout alarm is “ON”!!	
HBA	Heater break alarm	Heater break alarm is “ON”!!	High
AL1	Alarm 1	Alarm 1 is “ON”!!	↑
AL2	Alarm 2	Alarm 2 is “ON”!!	
AI_AL1	AI alarm 1	AI alarm 1 is “ON”!!	
AI_AL2	AI alarm 2	AI alarm 2 is “ON”!!	
LBA	Loop break alarm	Loop break alarm is “ON”!!	
TI_BO	TI burnout	TI burnout is “ON”!!	
TI_AL1	TI alarm 1	TI alarm 1 is “ON”!!	
TI_AL2	TI alarm 2	TI alarm 2 is “ON”!!	Low
Temp. rise comp. (All units)		All unit temp. rise comp.!!	

■ Unit name set

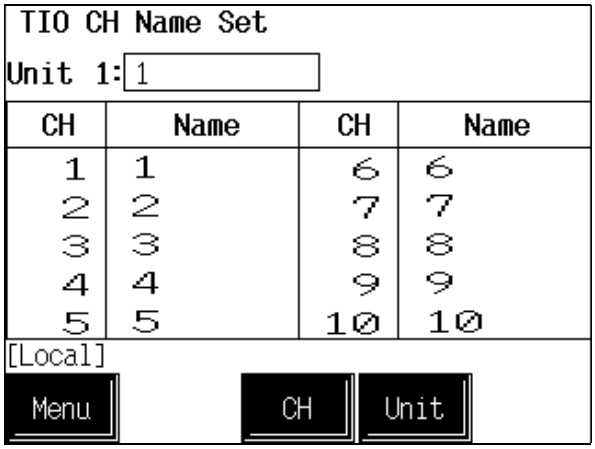


No.: Displays the control unit number.

Name: Sets the control unit name.
Setting range: 12 characters
Factory set value: Numeral (Control unit number)

Touching [Next Para.] key, the control unit number changes.

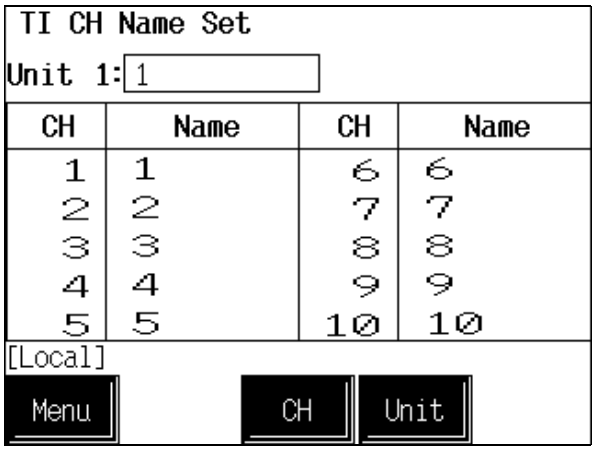
■ TIO CH name set



CH: Displays the TIO channel number.

Name: Sets the TIO channel name (Channel name of H-TIO-□, H-CIO-A, H-SIO-A).
Setting range: 5 characters
Factory set value: Numeral (TIO channel number)

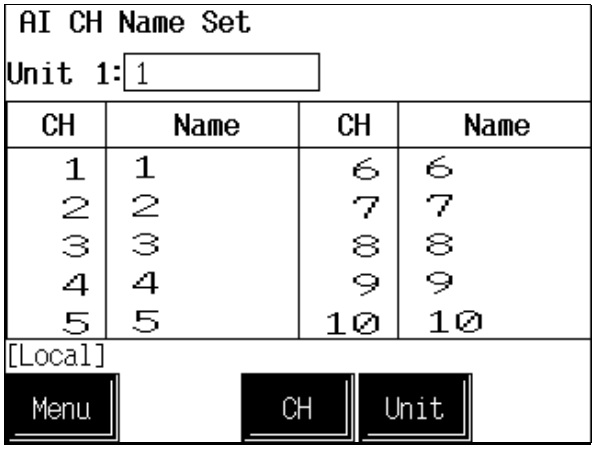
■ TI CH name set



CH: Displays the TI channel number.

Name: Sets the TI channel name.
Setting range: 5 characters
Factory set value: Numeral (TI channel number)

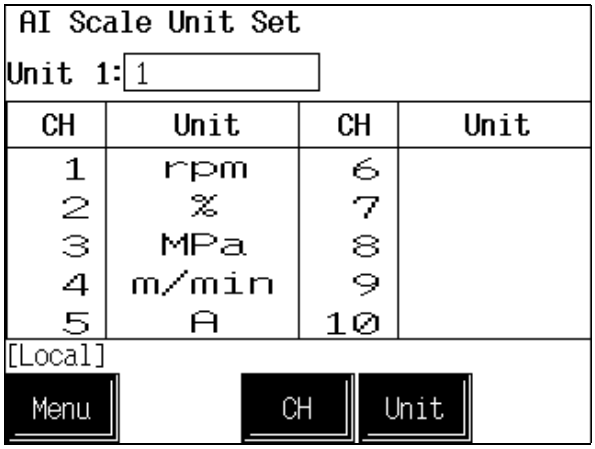
■ AI CH name set



CH: Displays the AI channel number.

Name: Sets the AI channel name.
Setting range: 5 characters
Factory set value: Numeral (AI channel number)

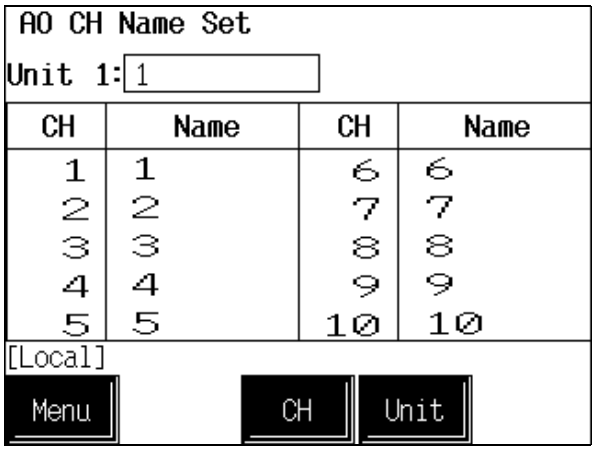
■ AI scale unit set



CH: Displays the AI channel number.

Unit: Sets the AI channel unit name.
Setting range: 5 characters
Factory set value: Blank
(No AI channel unit name.)

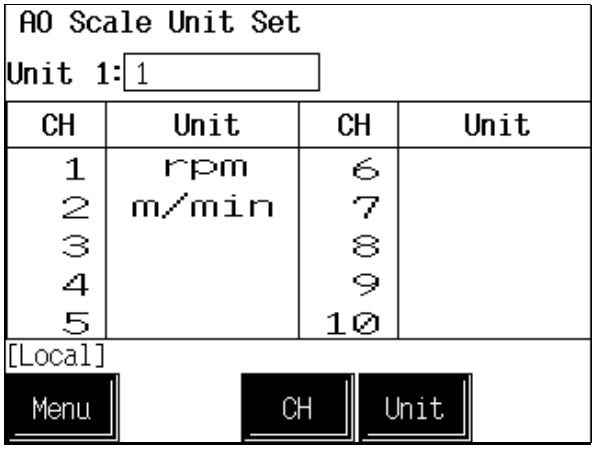
■ AO CH name set



CH: Displays the AO channel number.

Name: Sets the AO channel name.
Setting range: 5 characters
Factory set value: Numeral (AO channel number)

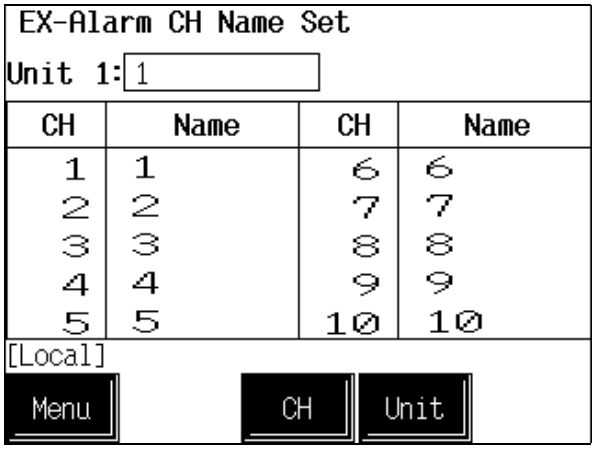
■ AO scale unit set



CH: Displays the AO channel number.

Name: Sets the AO channel unit name.
Setting range: 5 characters
Factory set value: Blank
(No AO channel unit name.)

■ EX-Alarm CH name set



CH: Displays the event DO (H-DO-C module) channel number.

Name: Sets the extension alarm channel name.
Setting range: 5 characters
Factory set value: Numeral
(Event DO channel number)

5.10 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 memory card (option).

Internal memory: Maximum 10 files Memory card: Maximum 80 files (SRAM card 2 MB)

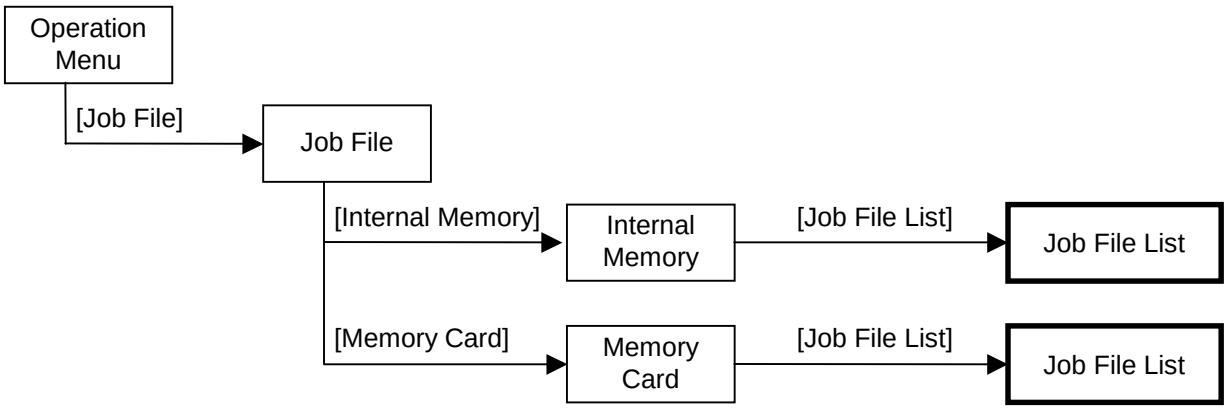
📖 When using the memory card, it is necessary to connect the memory card unit (option) to the operation panel.

The job file screen consists of screens relating to the internal memory and memory card, each of which has job file list and data screens. In addition, as screens relating to the memory card, there are screens which initialize the memory card and also backup all of the set values.

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.

■ Calling procedure of the "Job File List" screen

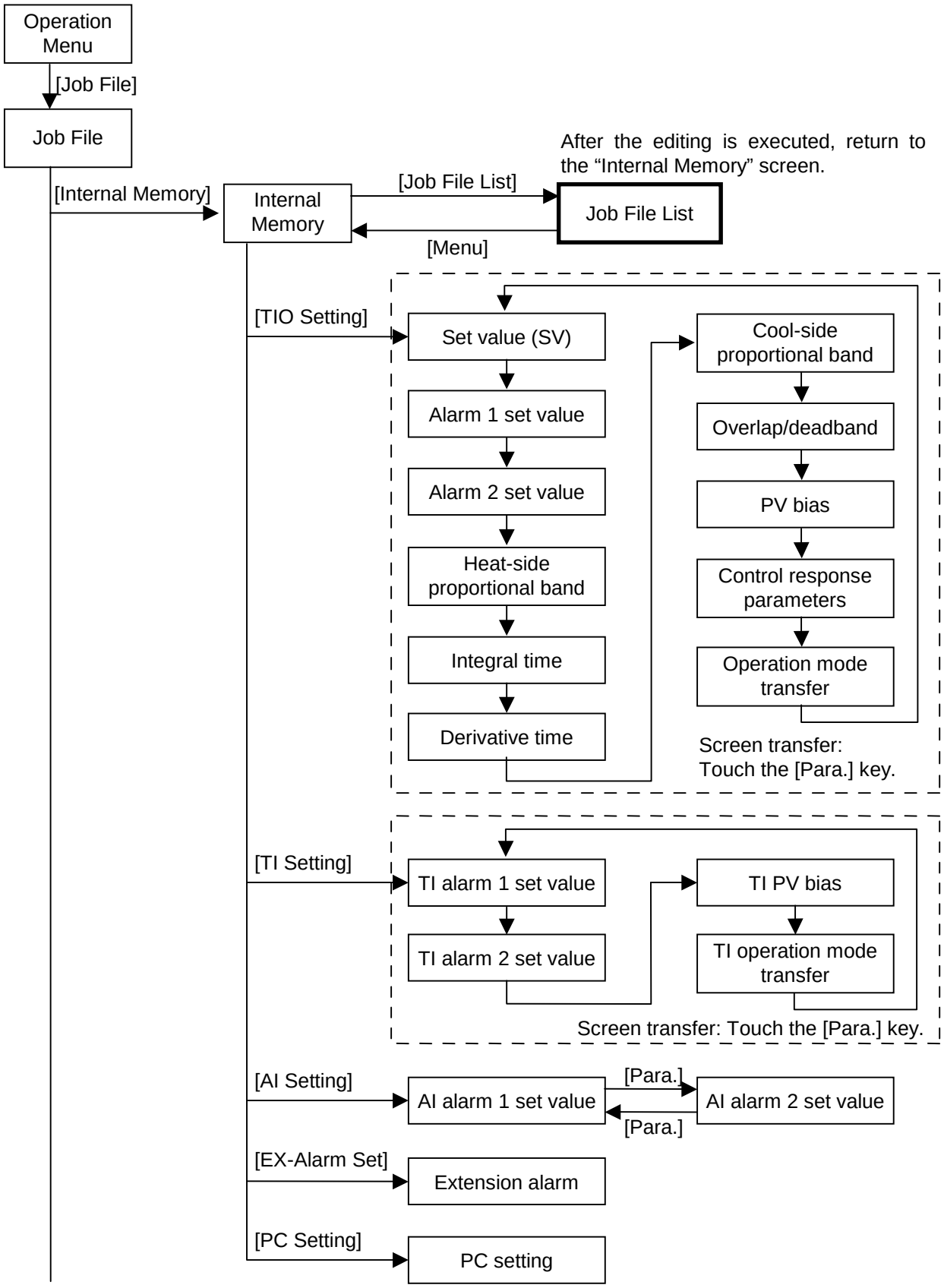


📖 "Memory Card" screen is not displayed if there is no external memory function (memory card).

📖 [ ] : key name.

■ Calling procedure of the data screen

- Some screens may not be displayed depending on the specification.
- Screens relating to the memory card are not displayed if there is no external memory function (memory card).
- 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 “Job File” screen or “Operation Menu” screen.
- [ ] : key name .



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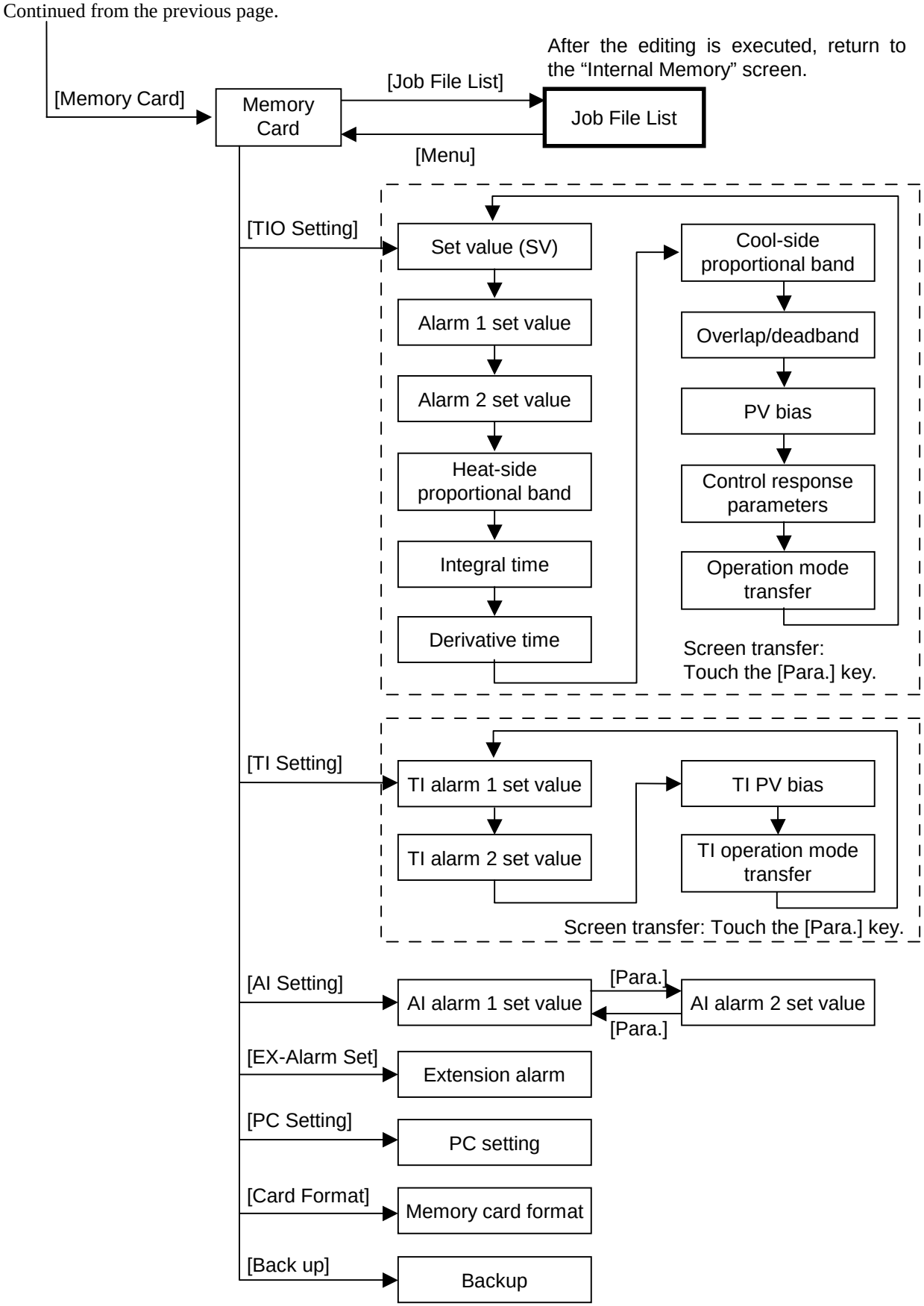
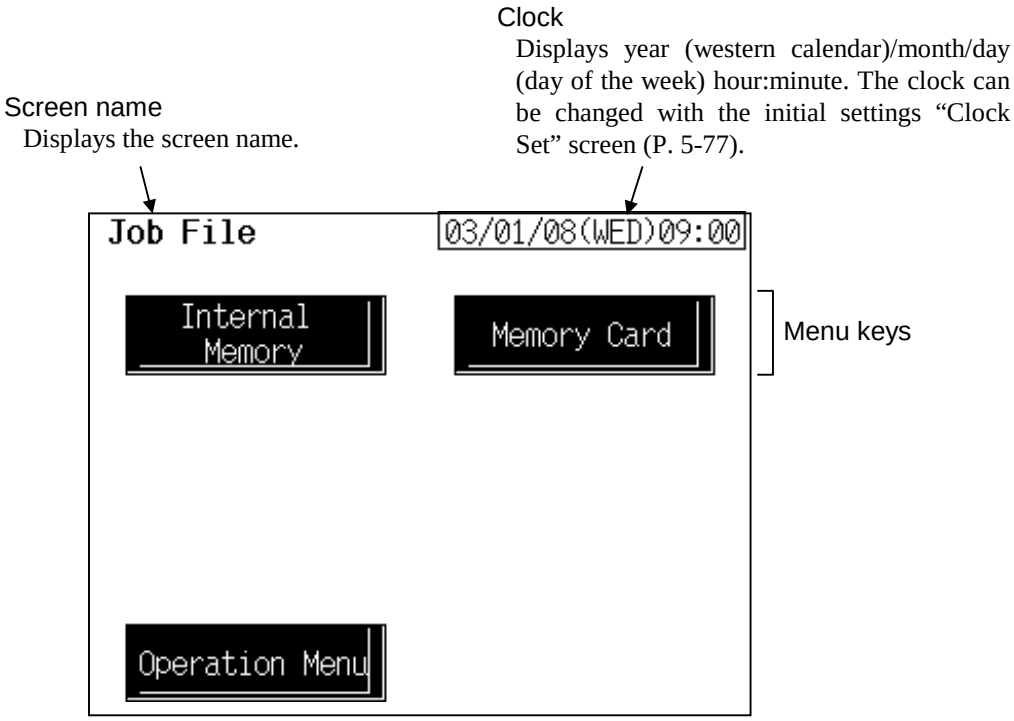


5.10.2 Job file screen

The “Job File” screen is used to select which job file of the internal memory or memory card is operated.

<Job file screen>



Internal Memory key: Touching this key changes to the “Internal Memory” screen.

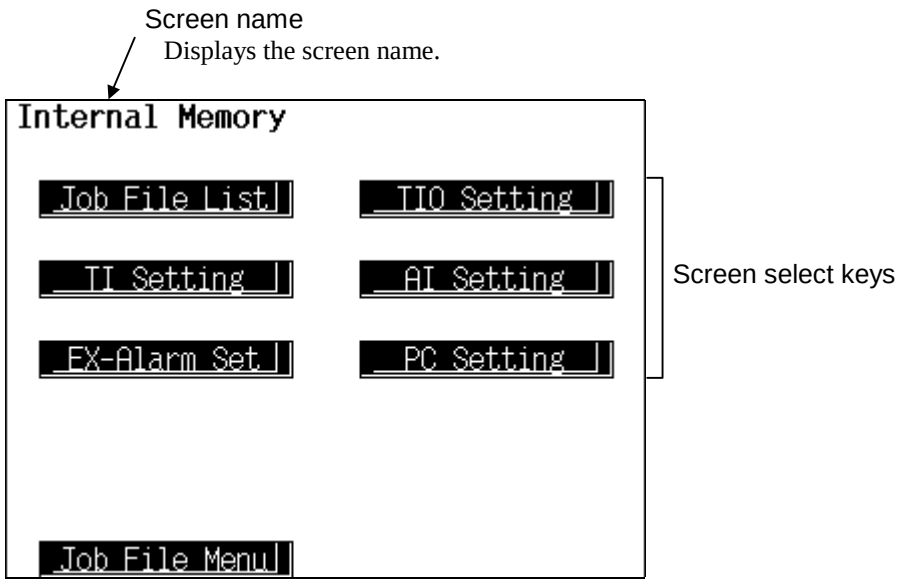
Memory Card key: Touching this key changes to the “Memory Card” screen.

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

5.10.3 Internal memory screen

The internal memory screen is for selecting screens relating to the job file of the internal memory.

<Internal memory screen>



Screen select keys: Touching this key, screen can be selected.

Job File List: "Job File List" screen
TIO Setting: "TIO Setting: SV" screen
TI Setting: "TI Setting: AL1" screen
AI Setting: "AI Setting: AL1" screen
EX-Alarm Set: "EX-Alarm Setting" screen
PC Setting: "PC Setting" screen

Each screen in the following cannot be selected if no editing exit is executed on the "Job File List" screen.
"Setting: SV" screen, "Setting: TI_alarm 1" screen,
"Settng: AI alarm 1" screen, "Setting: EX_Alarm" screen,
"PC Setting" screen

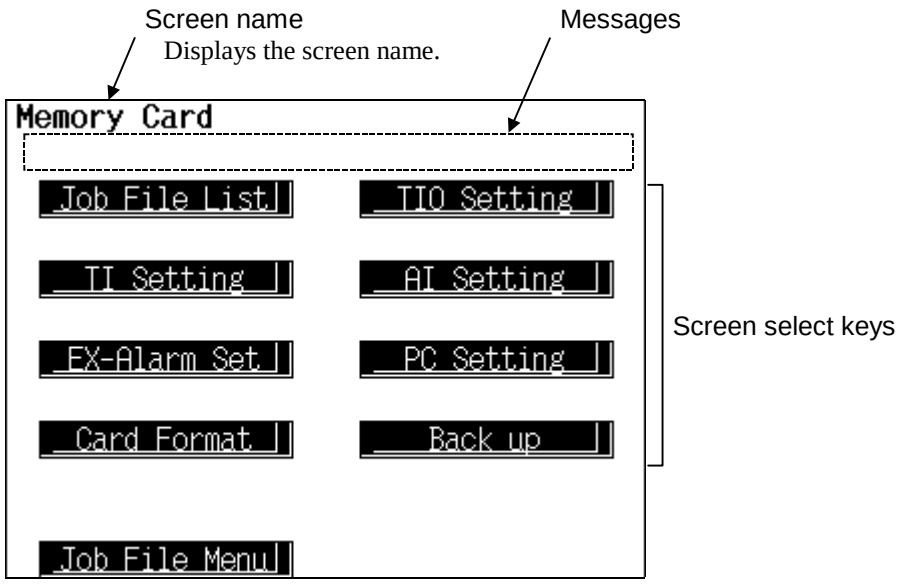
Job File Menu key: Touching this key changes to the "Job File" screen.

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 "Job File" screen.

5.10.4 Memory card screen

The memory card screen is for selecting screens relating to the memory card.

<Memory card screen>



Screen select keys: Touching this key, screen can be selected.

- **Job File List:** "Job File List" screen
- **TIO Setting:** "TIO Setting: SV" screen
- **TI Setting:** "TI Setting: AL1" screen
- **AI Setting:** "AI Setting: AL1" screen
- **EX-Alarm Set:** "EX-Alarm Setting" screen
- **PC Setting:** "PC Setting" screen
- **Card Format:** "Memory Card Format" screen
- **Back up:** "Backup" screen

Each screen in the following cannot be selected if no editing exit is executed on the "Job File List" screen.
"Setting: SV" screen, "Setting: TI_alarm 1" screen,
"Settng: AI alarm 1" screen, "Setting: EX_Alarm" screen,
"PC Setting" screen

Screens relating to the memory card are not selected if there is no external memory function (memory card).

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

Message: Displays the error messages relating to the memory card unit.

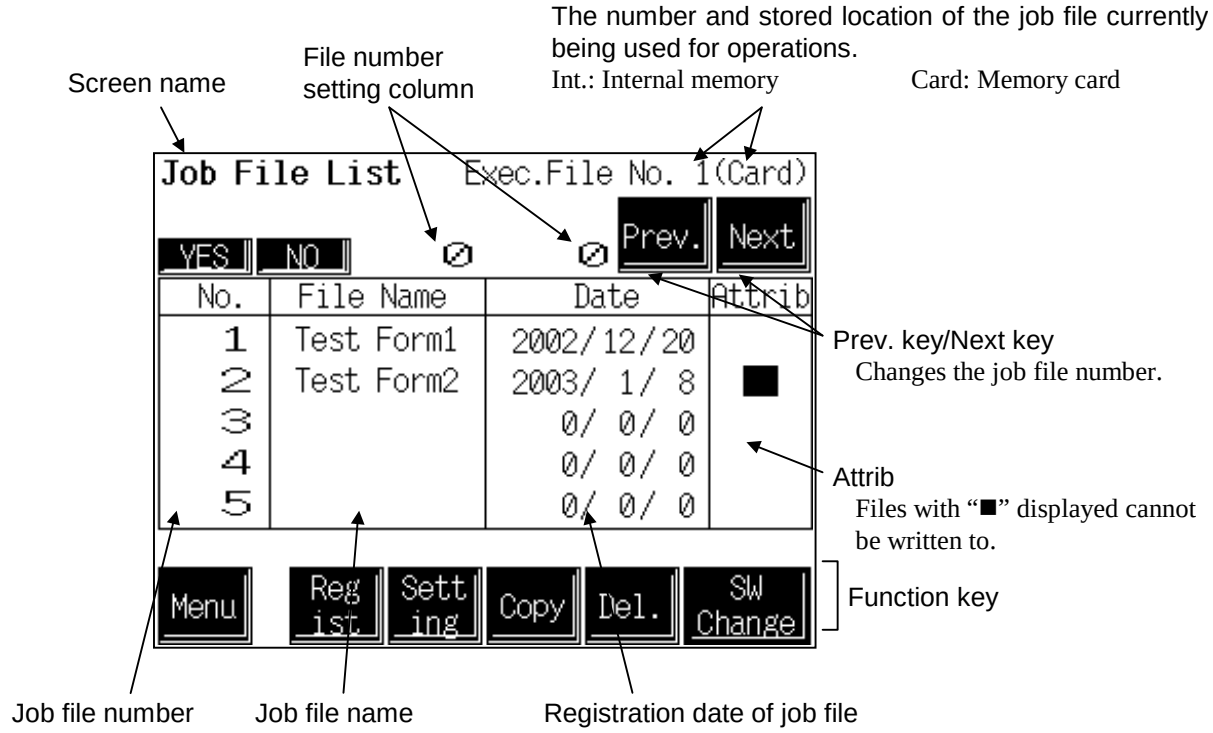
The kinds and the contents of the messages

Message	Contents
Unusual on a I/F Board!!	Memory card interface board is abnormality.
CREC has not been connected!!	Memory card unit CREC is not connecting.
There is no card!!	A memory card is not inserted.
Format Error!!	There is some discrepancy in format, when comparing format between a memory card and setting data.
Capacity is insufficient!!	Capacity of memory card is smaller than setting data size.

5.10.5 Job file list screen

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

<Job file list (memory card) screen>



Screen name: Displays the screen name.

Exec. File No. ( ): Displays the number and stored location (internal memory/memory card) 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.: Displays the job file number. Every time [Prev.] key or [Next] key is touched, the job file number changes.

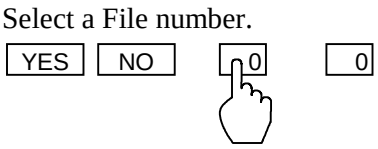
File Name: Sets the job file name. When you touch the “File Name” column for the file number whose name you want to input, the text editing window appears, so set the name as explained in **5.2.2 Text Editing (P. 5-11)**.
Setting range: Within 10 characters
Factory set value: Blank (No file name is set.)

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).

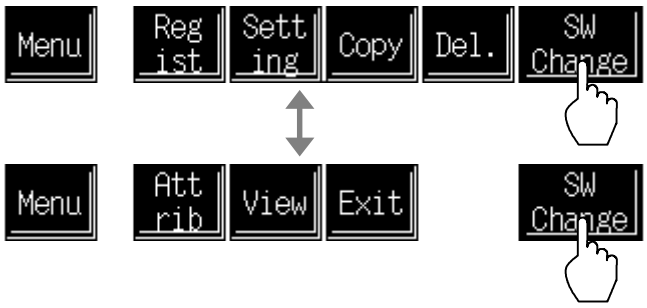
Attribute changing method

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



5. Input the number of the file you want to change the attribute for, then touch the [ENT] key.
6. "Execute ? (yes/no)" is displayed in the message section.
7. If acceptable, touch the [YES] key.
8. The attribute is changed.

Function keys: Used to job file operation. Touching [SW Change] key changes the contents.



Menu: Touching this key changes to the "Internal Memory" screen or "Memory Card" screen.

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.

Del.: 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.

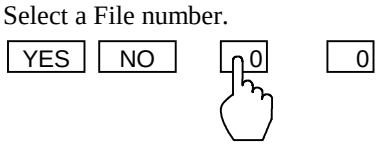
SW Change: Touching this key changes the contents of function key.

<Job file operation>

A short period of time is required for executing job file operation. As the message "Please wait for a while." appears during execution, do not pull out the memory card halfway.

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

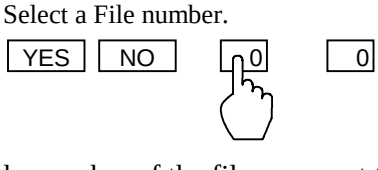
1. Touch the [Regist] key.
2. "Select a File number." are displayed in the message section.
3. Touch the file number display section, the numeric keypad window appears on the screen.



4. Input the number of the file you want to register, then touch the [ENT] key.
5. "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 [ENT] key.
5. "Execute ? (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 stored location (internal memory/memory card) 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.

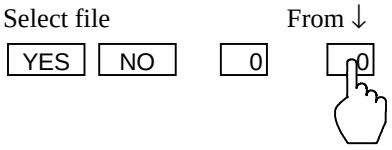
File copying:

The job file is copied.

1. Touch the [Copy] key.

2. "Select file From ↓" are displayed in the message section.

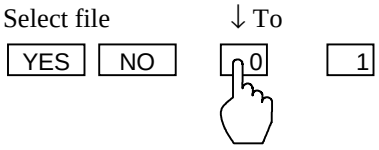
3. Touch the source file number setting section, the numeric keypad window appears on the screen.



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

5. "Select file ↓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 [ENT] key.

8. "Execute ? (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.

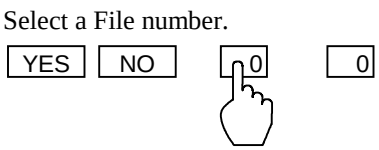
File deletion:

The job file is deleted.

1. Touch the [Del.] 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 [ENT] key.

5. "Execute ? (yes/no)" is displayed in the message section.

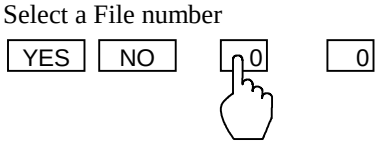
6. If acceptable, touch the [YES] key.

7. The file is deleted.

Editing method:

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

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



5. Input the number of the file you want to edit, then touch the [ENT] key.
6. "Execute ? (yes/no)" is displayed in the message section.
7. If acceptable, touch the [YES] key.
8. Editing becomes possible, so touch the [Menu] key and switch the display to the "Internal memory" or "Memory card" screen.
9. Calls the TI setting screen, AI setting screen, extension alarm setting screen and PC setting 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.

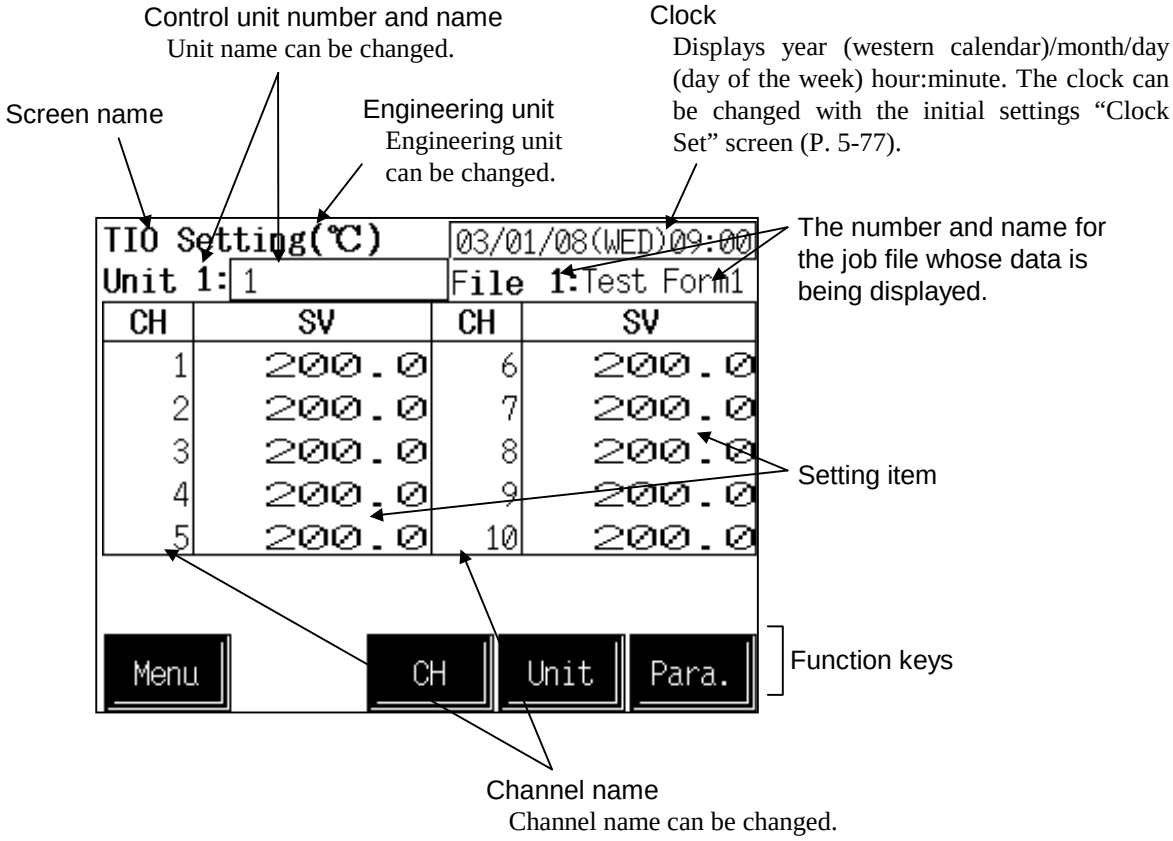
Exit method:

Editing ends.

1. After editing the data in the file in editing mode, touch the [Menu] key on one of the screens for the file to change the display to the "Internal memory" screen or "Memory card" screen.
2. Touching [Job File List] key on the "Internal memory" screen or "Memory card" screen changes to the "Job file list" screen.
3. "Please push the Exit key." are displayed in the message section.
4. Touch the [SW Change] key. Function keys are changed.
5. Touch the [Exit] key.
6. "Execute ? (yes/no)" is displayed in the message section.
7. If acceptable, touch the [YES] key.
8. Editing ends.

5.10.6 The basic configuration of data screen

The basic configuration of each data screen is as shown below.
Example: Set value (SV) screen



Screen name: Displays the screen name.

Engineering unit: Displays the engineering unit. The engineering unit (°C/°F) can be changed with the OPC-V initialize "Temperature Scale Unit Selection" screen (P. A-9).

Control unit number and name:
Displays the number and name for the control unit whose data is being displayed.
There is no this column on the "PC Setting" screen.

File number, name: Displays the number and name for the job file whose data is being displayed.

Setting item: Displays the item and data. Details of display varies depending on the each data screen.

☞ For the details of setting, see the **5.10.7 Each data screen (P. 5-114)**.

Function keys: These key switches are assigned to match the contents of the screen.

Menu: Touching this key changes to the “Internal Memory” screen or “Memory Card” screen.

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid. There is no this key on the “PC Setting” screen.

Unit: Every time this key is touched, the control unit number changes. If the number of control units used is one, the [Unit] key is invalid.

Para.: Every time this key is touched, the data screen changes. There is no this key on the “EX-Alarm Setting” screen and “PC Setting” screen.

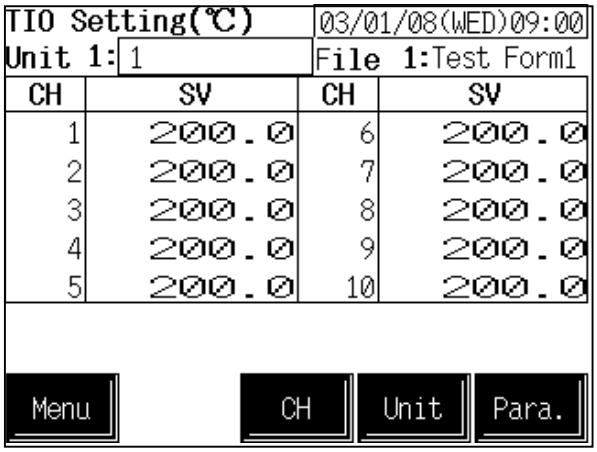
5.10.7 Each data screen

Changes the screen by touching [Para.] key.

For the setting procedure, see the **5.2.1 Data settings (P. 5-7)**.

For the function keys and other items, see the **5.10.6 The basic configuration of data screen (P.5-112)**.

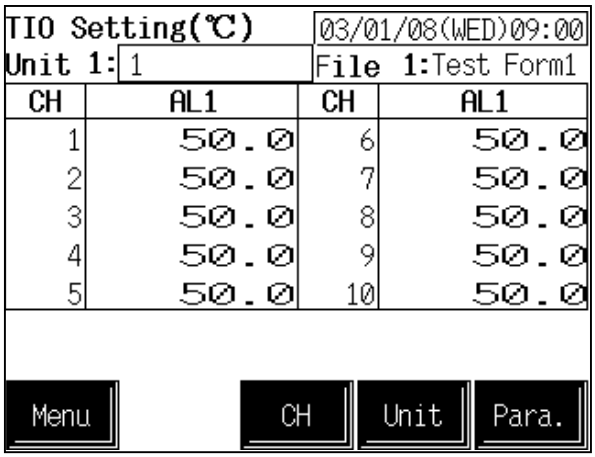
■ Set value (SV)



CH: Displays the TIO channel name.

SV: Sets the temperature set value (SV) or motor speed set value.
Setting range:
Within input range (TC/RTD input)
Within display scale range (Current/voltage input/H-SIO-A)
However, within the setting limit.
Factory set value: 0
The position of the decimal point differs depending on the input range.

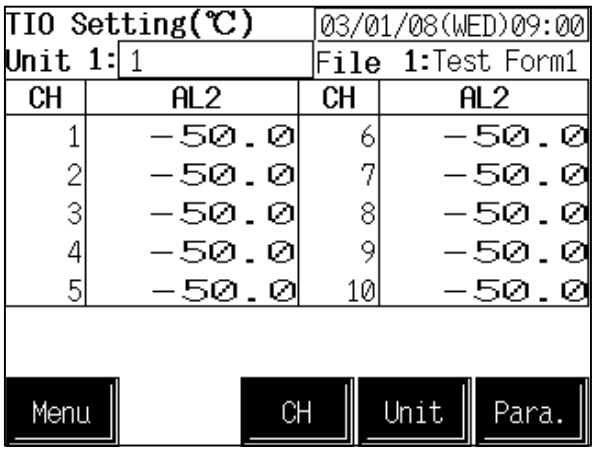
■ Alarm 1 set value



CH: Displays the TIO channel name.

AL1: Set the Alarm 1 set value.
Setting range:
Within input range or span range (TC/RTD input)
Within display scale range or span range (Current/voltage input/H-SIO-A)
Factory set value:
See **Factory set value table of Alarm 1/Alarm 2 set value (P. 5-43).**
The position of the decimal point differs depending on the input range.

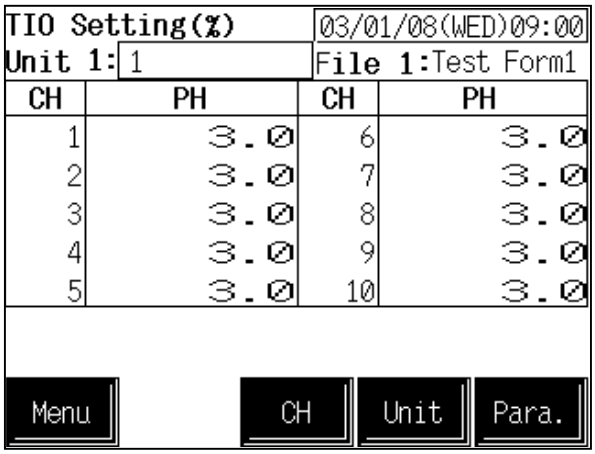
■ Alarm 2 set value



CH: Displays the TIO channel name.

AL2: Set the Alarm 2 set value.
Setting range:
Within input range or span range
(TC/RTD input)
Within display scale range or span range
(Current/voltage input/H-SIO-A)
Factory set value:
See **Factory set value table of Alarm 1/Alarm 2 set value (P. 5-43).**
The position of the decimal point differs depending on the input range.

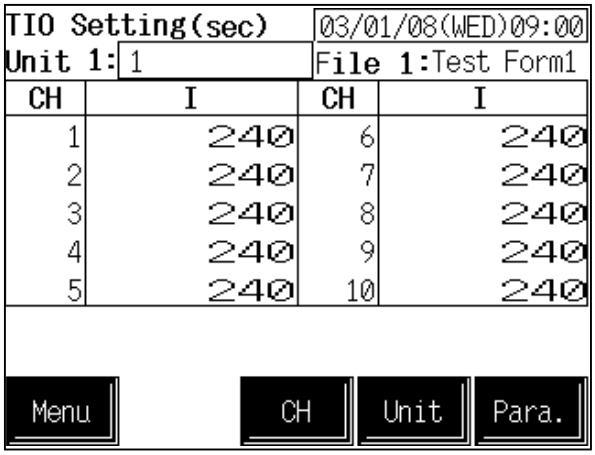
■ Heat-side proportional band



CH: Displays the TIO channel name.

PH: Set 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 (H-TIO-□)
300.0 (H-SIO-A)

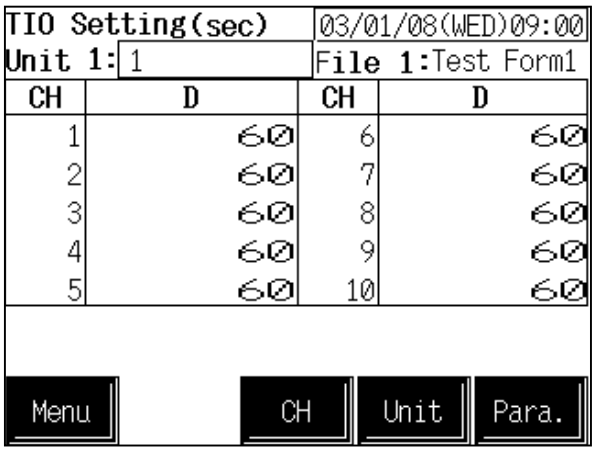
■ Integral time



CH: Displays the TIO channel name.

I: Set the integral time to eliminate the offset produced in proportional control.
Setting range: 1 to 3600 seconds
Factory set value: 240 (H-TIO-□)
2 (H-SIO-A)

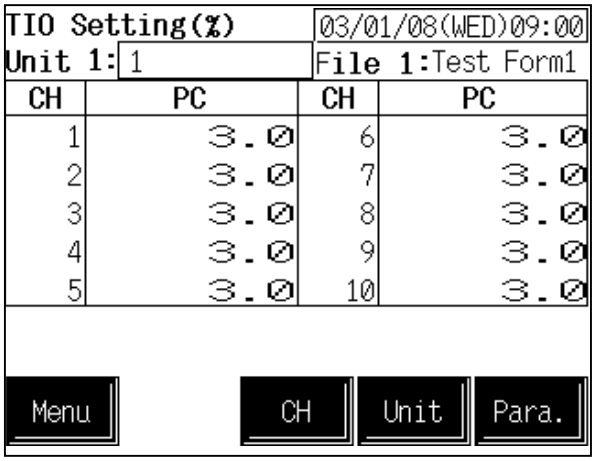
■ Derivative time



CH: Displays the TIO channel name.

D: Set 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 (H-TIO-□)
0 (H-SIO-A)

■ Cool-side proportional band

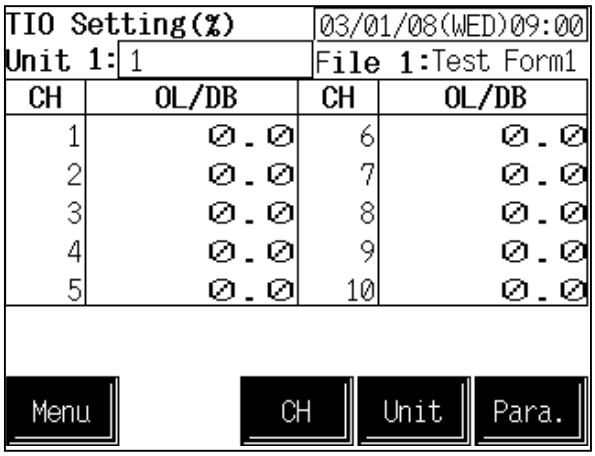


CH: Displays the TIO channel name.

PC: Set 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.

■ Overlap/deadband screen

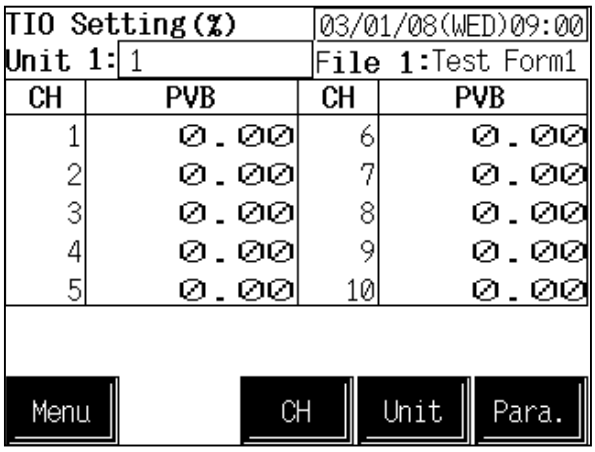


CH: Displays the TIO channel name.

OL/DB: Set 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.

■ PV bias

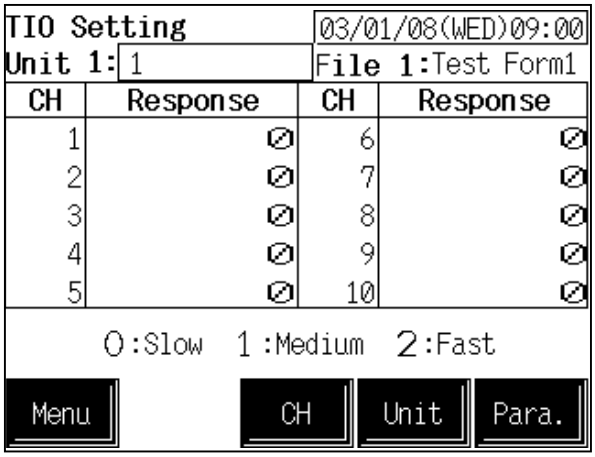


CH: Displays the TIO channel name.

PVB: Set the bias added to the measured value for sensor correction.
Setting range: –5.00 to +5.00 % of span
Factory set value: 0.00

H-PCP-J [ZK-1103 specification]
Setting range: –Input span to +Input span
For –Input span < –999.9
Low limit value: –999.9
For –Input span < –99.99
Low limit value: –99.99
For –Input span < –9.999
Low limit value: –9.999
Factory set value: 0
The position of the decimal point differs depending on the input range.

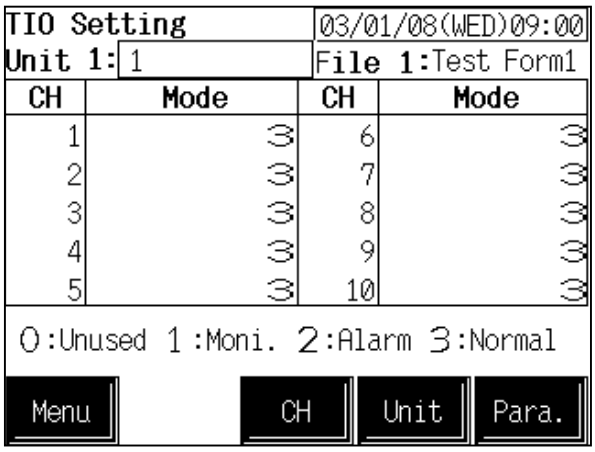
■ Control response parameters



CH: Displays the TIO channel name.

Response:
Set 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
Speed control: 0

■ Operation mode transfer

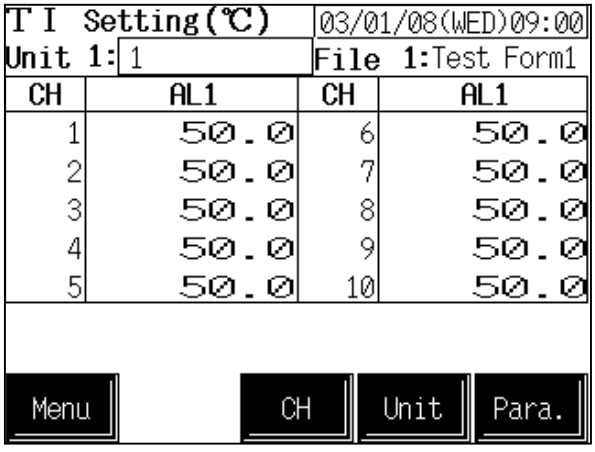


CH: Displays the TIO channel name.

Mode: Set 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."

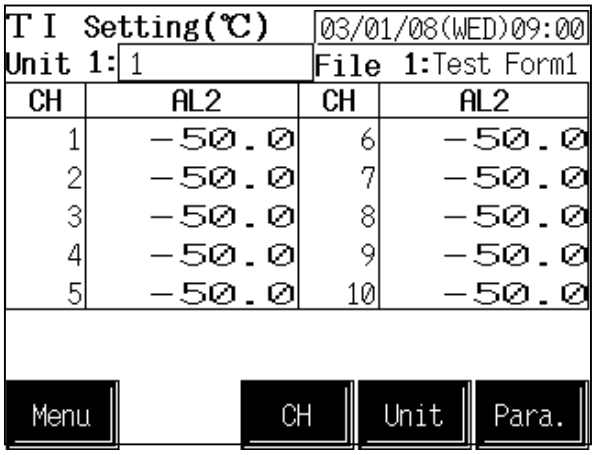
■ TI alarm 1 set value



CH: Displays the TI channel name.

AL1: Set 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.

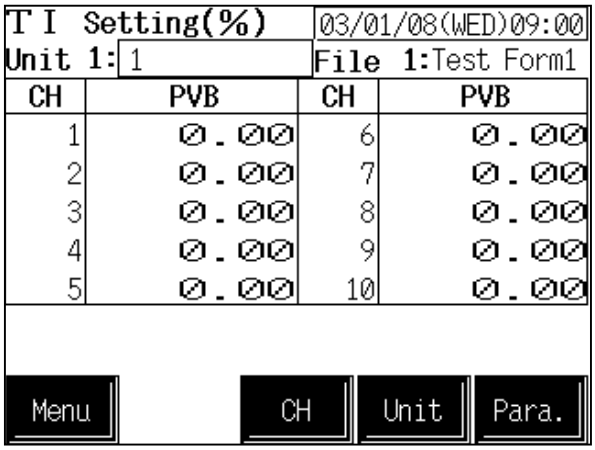
■ TI alarm 2 set value



CH: Displays the TI channel name.

AL2: Set 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 (low limit)
The position of the decimal point differs depending on the input range.

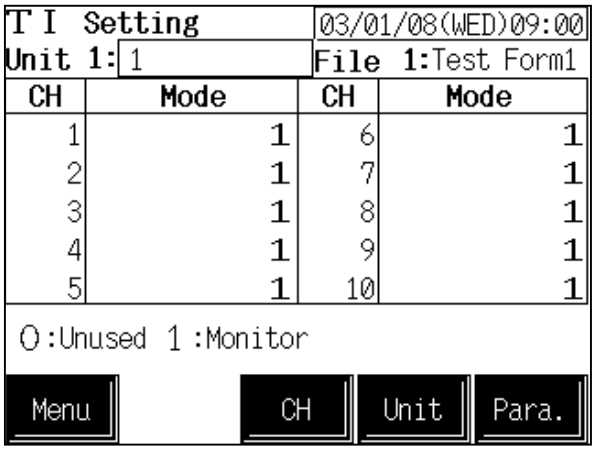
■ TI PV bias



CH: Displays the TI channel name.

PVB: Set 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

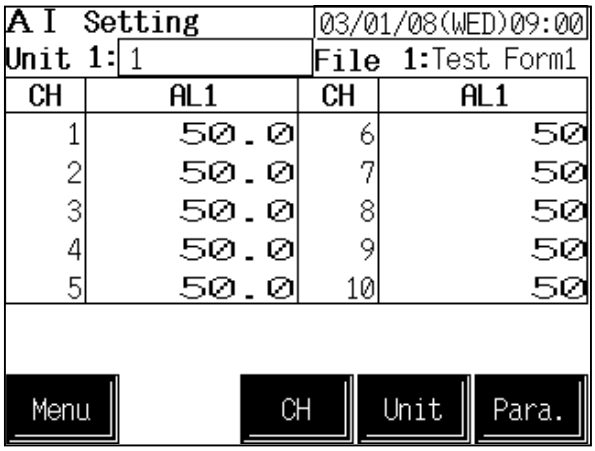
■ TI operation mode transfer



CH: Displays the TI channel name.

Mode: Set the
Setting range:
0: Unused
If set to “Unused,” no control, monitoring or alarm monitoring is performed.
1: Monitor
Monitoring and alarm monitoring are performed.
Factory set value: 1

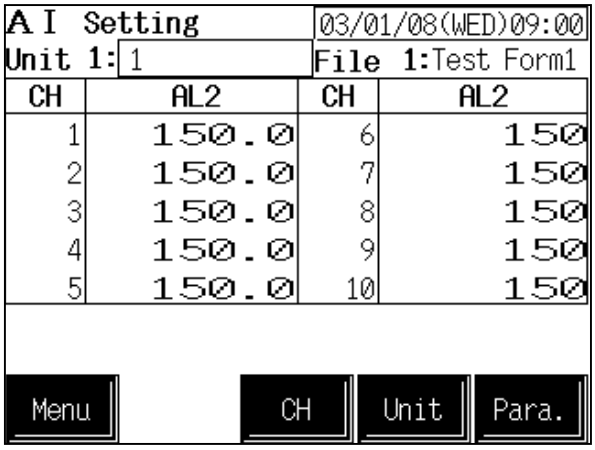
■ AI alarm 1 set value



CH: Displays the AI channel name.

AL1: Set 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 specification.

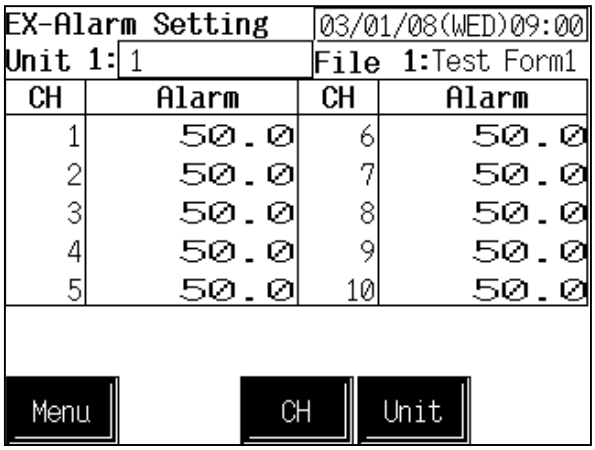
■ AI alarm 2 set value



CH: Displays the AI channel name.

AL2: Set 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: 0.0
The position of the decimal point differs depending on the specification.

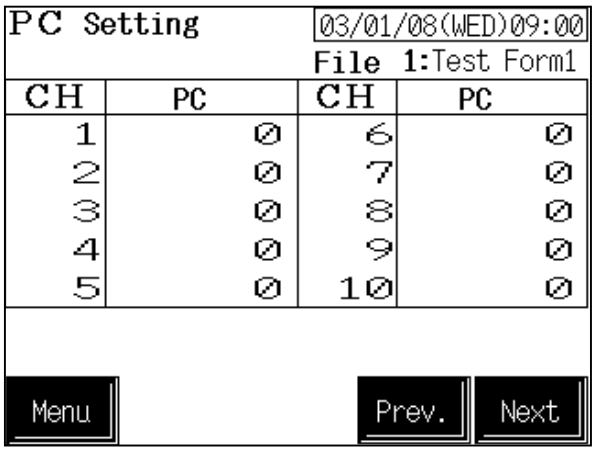
■ Extension alarm



CH: Displays the extension alarm channel name.

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

■ PC setting screen



CH: Displays the device memory channel number.
CH1 to CH256:
$L8500 to 8755
(SRAM cassette internal memory number)
CH257 to CH260:
Setting is invalid.

PC: Set device data on the programmable controller. Setting data is stored into the memory of the SRAM cassette.

Setting range: 0 to 65535
Factory set value: 0

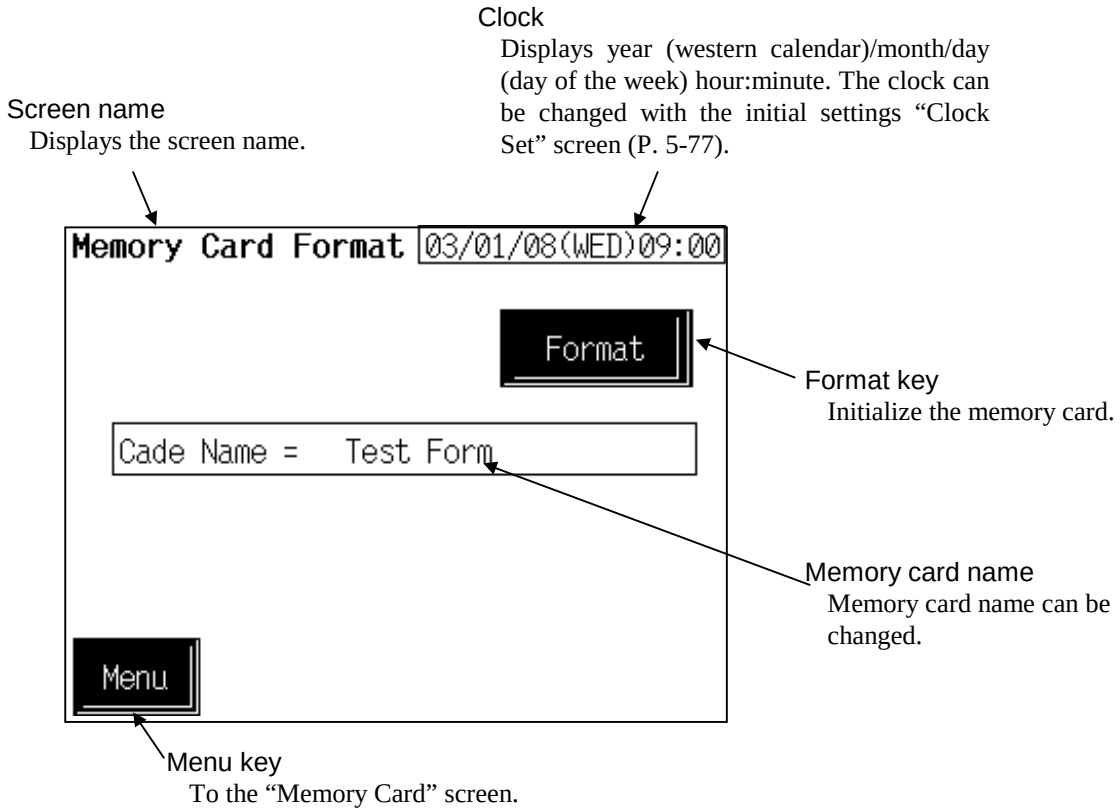
This is valid only when the programmable controller is connected.

Touching [Prev.] or [Next] key, the channel number changes.

5.10.8 Memory card format screen

This screen is for initializing memory cards and setting their names.

<Memory card format screen>



Card Name: Sets the memory card name.
When you touch the "Card Name" section on the screen, the text editing window appears. Sets the memory card name by referring to **5.2.2 Text editing (P. 5-11)**.
Setting range: Within 20 characters
Factory set value: Blank (No card name is set.)

Format key: Touching this key initializes the memory card.

Menu key: Touching this key changes to the "Memory Card" screen.

📖 The memory cards that can be used are SRAM cards (with lithium battery backup) conforming to JEIDA (Japan Electronics Industry Development Association) Version 4.1 Standards.

Model code: REC-MCARD SRAM 2M
Capacity: 2 MB

■ Memory card handling precautions

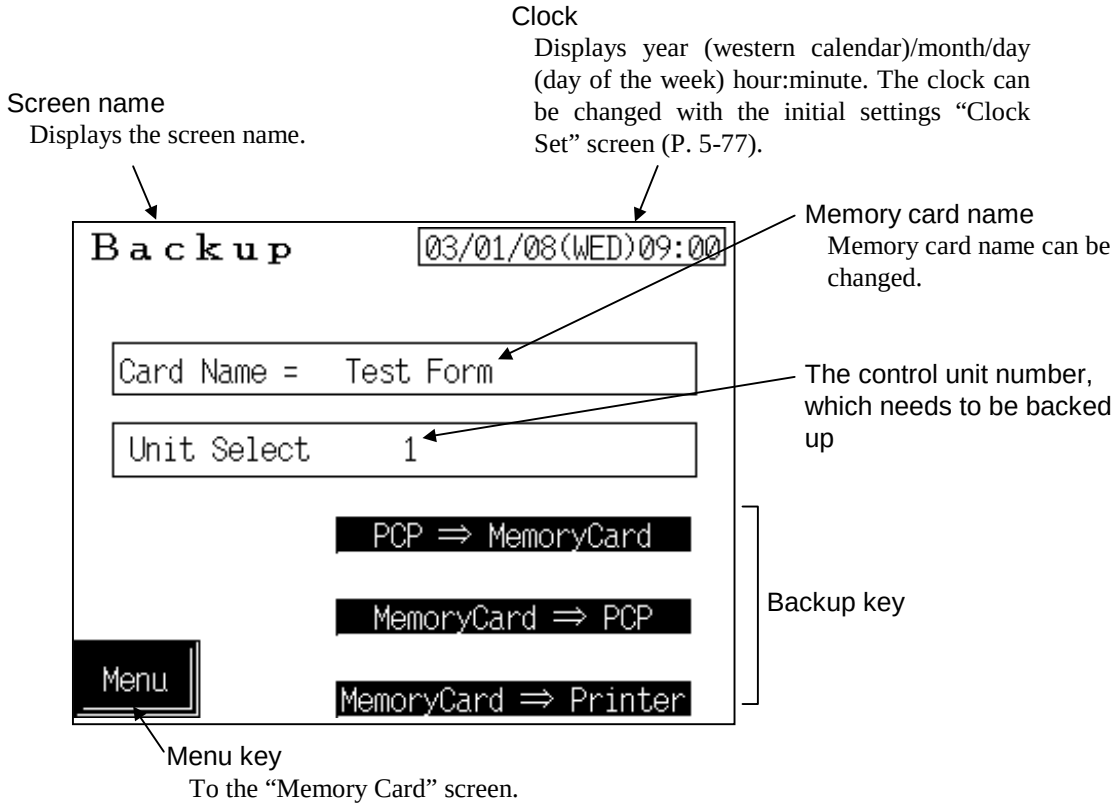
In order to prevent damage or deformation of a memory card or loss of the data it contains, observe the following and handle the memory card carefully.

- Do not bend or drop memory cards or subject them to strong mechanical shock.
- Protect memory cards from direct sunlight, high temperature, and high humidity.
  – Ambient temperature: 0 to 50 °C (32 to 122 °F)
  – Ambient humidity: 35 to 85 %RH (non-condensing)
- In order to avoid static electricity and dust, store the memory card in its case after use.
- Use only memory cards meeting the specifications for this device.
- do not touch the connector section of the memory card with your hands and keep out pins or other foreign objects.
- Be careful about the service life of the memory card (SRAM) battery. Environmental conditions can reduce the battery service life, so it is best to replace the battery a little earlier.

5.10.9 Backup screen

This screen is for backing up set data of control unit onto a memory card.

<Backup screen>



Card Name: Sets the memory card name.
When you touch the "Card Name" section on the screen, the text editing window appears. Sets the memory card name by referring to **5.2.2 Text editing (P. 5-11)**.
Setting range: Within 20 characters
Factory set value: Blank (No card name is set.)

Unit Select: Sets the control unit number.
Setting range: 1 to 16
Factory set value: 1

Menu key: Touching this key the display to the "Memory Card" screen.

<Procedure for storing control unit set value data into memory card>

If backed up with the job file data card inserted, the data is overwritten without a specific alarm message. Therefore, conduct backing up after the content is well confirmed.

A short period of time is required for executing data storage. As the message "Please wait for a while." appears during execution, do not pull out the memory card halfway.

1. Touch the "Unit Select" section, the numeric keypad window appears on the screen.
2. Enter the control unit number which needs to be backed up, and then touch the [ENT] key.
3. Touch the [PCP ⇒ MemoryCard] key.
4. Data is stored into memory card.

<Procedure for capturing memory card storage data into control unit>

The data in the following table is not captured from the memory card to the control unit even if the [MemoryCard ⇒ PCP] key is touched. Before touching the [MemoryCard ⇒ PCP] key, set the data in the following table from the operation panel by referring to the printed data by [MemoryCard ⇒ Printer]. If the data in the following table (input range number, etc.) is set after the [MemoryCard ⇒ PCP] key is touched, all of the set values are defaulted. Therefore, always set the data in the following table before touching the [MemoryCard ⇒ PCP] key.

Set value data which is not captured

Set value data	Screen name	Referring page
PID/AT transfer	Operation Mode: PID/AT	P. 5-62
Manual output value	Setting: Manual Output	P. 5-46
Manual positioning output value	Setting: Position Manual Output	P. 5-52
Input range number	Controller initial TIO Module Initial XI	See the **Initial Setting Manual (IMS01M04-E□)**.
Direct/reverse action selection	Controller initial TIO Module Initial XE	See the **Initial Setting Manual (IMS01M04-E□)**.
AO output value	Setting: AO_MV_SV	P. 5-54
TI input range number	Controller initial TI Module Initial XJ	See the **Initial Setting Manual (IMS01M04-E□)**.
AI full scale correction	Operation Mode: AI Adjustment	P. 5-71
AI zero point correction	Operation Mode: AI Adjustment	P. 5-71
AI input range number	Controller initial AI Module Initial VK	See the **Initial Setting Manual (IMS01M04-E□)**.

A short period of time is required for executing storing data capture. As the message "Please wait for a while." appears during execution, do not pull out the memory card halfway.

1. Touch the "Unit Select" section, the numeric keypad window appears on the screen.
2. Enter the control unit number which needs to be captured, and then touch the [ENT] key.
3. Connect the printer to the operation panel, and then touch the [MemoryCard ⇒ Printer] key.
4. Set value data which is not captured into the control unit is output to the printer.

   The AO output value is printed the data of 1 digit below decimal point regardless of the AO decimal point position selection.

5. Set the data from the operation panel by referring to the printed data.
6. Touch the [MemoryCard ⇒ PCP] key.
7. The memory card storage data is captured into the control unit.

6

IN CASE OF TROUBLE

This section lists some basic causes and solutions to be taken when any problem would arise in this instrument. If you can not solve a problem, please contact RKC sales office or the agent, on confirming the type name and specifications of the product.

If the instrument is necessary to be replaced, observe the following warning.

⚠ WARNING

- To prevent electric shock or instrument failure, always turn off the system power before replacing the instrument.
- To prevent electric shock or instrument failure, always turn off the power before mounting or removing the instrument.
- To prevent electric shock or instrument failure, do not turn on the power until all the wiring is completed.
- To prevent electric shock or instrument failure, do not touch the inside of the instrument.
- All wiring must be performed by authorized personnel with electrical experience in this type of work.

CAUTION

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.

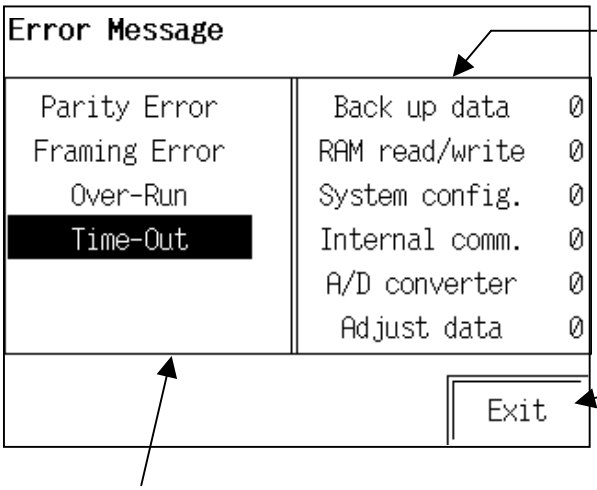
When replacing the module with a new one, always use the module with the same model code. In addition, when replacing the module with a new one of the different module type, please contact RKC sales office or the agent as it becomes necessary to initialize the module, etc.

As all data on PID constants, alarm set values, etc. is managed by the H-PCP-□ module, it is necessary to re-enter and re-set all data when the H-PCP-□ module is replaced.
However, re-entry and re-set are not required in the following cases.
- **When data backup software is operating in the module by the external host computer.**

6.1 Error Message Screen

If a system error occurs during operation or when the power is turned on, the error message screen will be displayed, and at the same time it will be possible to have confirmation of the contents of the error (Inversed display part).

<Error message screen>



Display of control unit error
When an error occurs, the error contents is shown in inversed display. The number of the abnormal unit is also displayed.

Exit key
By touching this key, the previous screen just before the error can be displayed. (If the error will occur when the power was turned on, the screen will return to the operation menu screen.)

Display of error details of the operation panel itself
When an error occurs, the error contents is shown in inversed display.

■ Operation panel OPC-V06 error messages

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 Problem with the taking-in of the received data		
Time-Out 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

Continued on the next page.

Continued from the previous page.

Error messages	Probable cause	Solution
Time-Out No response from the control unit	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 messages

Error messages	Probable cause	Solution
Back up data 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)
RAM read/write Problem with the system RAM	RAM is faulty	
System config. 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
Internal comm. 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)
A/D converter 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	
Adjust data 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)

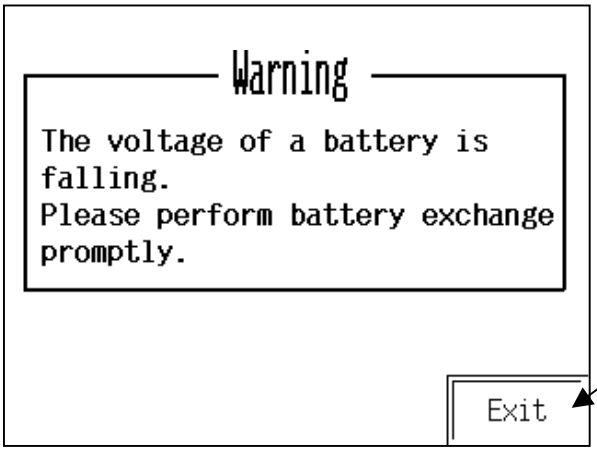
6.2 Warning (Replace the Battery) Screen

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: V6EM/RB

☞ For the replace the battery, see the **SRAM Cassette V6EM/Rsi Instruction Manual (IMS01M06-E□)**.

<Warning (Replace the battery) screen>



Exit 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:

Unit used/unused	Engineering unit setting
Screen saver setting	Computer/Local transfer
Option setting	Screen scan setting
PCP module type selection	Timer setting
Alarm message	Unit name
Temperature control CH name	TI_CH name
AI_CH name	AI_unit name
AO_CH name	AO_unit name
Extension alarm CH name	Trend graph
Job file data	

6.3 Troubleshooting

■ Operation panel OPC-V06

Problem	Probable cause	Solution
POWER lamp is not ON	Power not supplied	Check the external breaker, etc.
	Normal power voltage is not supplied	Confirm the supply power
	Power terminal contact defect	Tightening of the terminal
	Power part defect	Replace the operation panel
Screen is not ON	Screen saver is ON	Touch the screen
Screen display is abnormal	There is noise source nearby	Leave it away from the noise source
	Normal power voltage is not supplied	Confirm the specifications of the power
Memory card is abnormal	Insertion defect of the memory card	Reinsert the memory card
	Defect of the memory card interface	Replace the operation panel
	Defect of the memory card unit	Replace the memory card unit
	Running out of battery-life of the memory card (only in SRAM card)	Replace the lithium battery
	Connecting defect of the connection cable connector	Confirm the connection
	Defect of the connection cable	Replace the connection cable
	External storage function is not chosen as an optional function	Contact our company
Printer output failure	Connecting defect of the printer cable connector	Confirm the connection
	Defect of the printer cable	Replace the printer cable
	Paper running-out of the printer	Supply paper
	Printer is in OFF-line	Turn it ON-line
	Wrong choice of the printer model	Fit the setting to the printer model to be used Contact our company
Touch switch on the screen does not operate	Being in the computer mode	Change it to the local mode
	Touch switch defect	Replace the operation panel

Continued on the next page.

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Problem	Probable cause	Solution
"Error message" screen displayed	See **6.1 Error Message Screen (P. 6-3)**.	
"Warning (Replace the battery) " screen displayed	Battery voltage for SRAM cassette has dropped	Replace the battery for SRAM cassette

☞ For the replace the battery, see the **SRAM Cassette V6EM/Rsi Instruction Manual (IMS01M06-E□)**.

■ Host communication Modbus (Option)

Problem	Probable cause	Solution
No response	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 host	Confirm the settings and set them correctly
	Wrong address setting	
	A transmission error (overrun error, framing error, parity error or CRC-16 error) is found in the query message	Re-transmit after time-out occurs or verify communication program
	The time interval between adjacent data in the query message is too long, 24-bit time or more	Re-transmit after time-out occurs or verify communication program
Error code 1	Function cod error (Specifying nonexistent function code)	Confirm the function code
Error code 2	When written into read only (RO) data	Confirm the address of holding register
	When specifying any address without memory allocation as an address start number	
	When specifying any table number exceeding 0 to 52 and others	
Error code 3	When the data written exceeds the setting range	Confirm the setting data
	When the specified number of data items in the query message exceeds the maximum number of data items available	

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SPECIFICATIONS

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■ Display specifications

Display device:	OPC-V06-11: TFT color LCD OPC-V06-12: STN color LCD OPC-V06-13: STN monochrome LCD (blue mode) Specify when ordering
Display resolution:	320 (W) × 240 (H) dots
Effective display area:	115.2 (W) × 86.4 (H) mm (5.7 inches)
Back-light:	Cold cathode rectifier
Back-light average life:	Approx. 50,000 hours (When the normal temperature is 25 °C, and the surface luminance of the display is 50 % of the default.)
Contrast adjustment:	By function switches (only in case of STN type)
POWER lamp:	The lamp is lit when the power is supplied.

■ Display function specifications

Characters:	ANK code

■ Touch panel specifications

Form:	Analog type, Resistance film form
Life of touch panel:	Use of one million times or more

■ Function switch specifications

Number of switches:	6
Type of switch:	Pressure sensitive switches
Life of switch:	Use of one million times or more

■ Interface specifications

● **Control unit communication interface**

Interface: Based on RS-485, EIA standard

Synchronous method: Start/stop synchronous type

Data bit configuration:
Data bit: 7 or 8
(Factory set value: 8)
Parity bit: Without, Odd or Even
(Factory set value: Without)
Stop bit: 1 or 2
(Factory set value: 1)

Protocol:
- Based on ANSI X3.28 subcategory 2.5 B1 (H-PCP-A/B module)
  Error control: Vertical parity (when parity bit is selected)
  Horizontal parity
  Data types: ASCII 7-bit code
- Modbus protocol (H-PCP-J module)
  Signal transmission mode: Remote Terminal Unit (RTU) mode
  Function codes:
  03H Read holding registers
  06H Preset single register
  08H Diagnostics (loopback test)
  10H Preset multiple registers
  Error check method: CRC-16

Communication speed: 4800 bps, 9600 bps, 19200 bps and 38400 bps
(Factory set value: 9600 bps)

Connector: MJ2: Modular 8-pin

Connected equipment: H-PCP-A/B module or H-PCP-J module in control unit

Maximum connections: 16 units (Control unit)

● **Printer interface:**

Interface: Complies with centronics interface, half pitch 36 pins

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

● **Memory card unit interface (Option)** *:

Interface: Based on RS-232C, EIA standard
Based on RS-485, EIA standard

Connector: MJ1: Modular 8-pin (MJ2 cannot be used)

Connected equipment: Memory card unit CREC

- **Host communication interface (Option)** *:

Interface:	Based on RS-232C, EIA standard Based on RS-485, EIA standard Specify when ordering
Synchronous method:	Start/stop synchronous type
Data bit configuration:	Data bit: 8 Parity bit: Without, Odd or Even Stop bit: 1 or 2 Specify when ordering
Protocol:	Modbus protocol
Signal transmission mode:	Remote Terminal Unit (RTU) mode
Function codes:	03H Read holding registers 06H Preset single register 08H Diagnostics (loopback test) 10H Preset multiple registers
Error check method:	CRC-16
Communication speed:	4800 bps, 9600 bps and 19200 bps Specify when ordering
Connector:	MJ1: Modular 8-pin (MJ2 cannot be used)
Connected equipment:	Host computer
Maximum connections:	RS-232C: 1 units per communication port of host computer (Operation panel) RS-485: 31 units per communication port of host computer (Operation panel)

* Either the memory card unit interface or host communication interface can be selected, but not both.

■ General specifications

Power supply voltage: 24 V DC
Power supply voltage range: 24 V ± 10 % DC
Permissible momentary power failure:
10 ms or less
Power consumption: 10 W or less
leakage current: 1 mA or less
Surge current: 17A (1 ms)
Withstand voltage: Between power and ground terminals: 1 minute at 500 V AC
Insulation resistance: Between power and ground terminals: 10 MΩ or more at 500 V DC
Withstand noise: 1500 V (peak to peak)
Pulse width: 1 μs
Rise time: 1 ns
Withstand vibration: Vibration frequency: 10 to 150 Hz
Acceleration: 9.8 m/s^2 (1.0 G)
Vibration director: 3 directions of X, Y and Z
Vibration time: 1 hour, all direction
Amplitude: 0.075 mm
Dustproof and waterproof: IP65 (IEC standards)
Only the front section of the operation panel mounted on the control panel
Allowable ambient temperature:
0 to 50 °C
Allowable ambient humidity: 5 to 95 % RH
(Absolute humidity: MAX. W. C 29 g/m^3 dry air at 101.3 kPa)
Usage atmosphere: No corrosive gas
No corrosive dust
No cutting oil or no organic solvent to cling to the unit
Ambient temperature for storage:
−10 to +60 °C
Dimensions: 182.5 (W) × 138.8 (H) × 57.3 (D) mm
Including 4 mm in depth, the size of boss for communication unit.
Weight: Approx. 0.8 kg

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APPENDIX A

This section describes the internal initial settings (OPC-V initial settings and controller initial settings).
In normal daily use, almost none of these settings need to be changed. Also, making these settings incorrectly can cause this device to malfunction or break down, so do not change any of these settings unless necessary.

After changing the OPC-V initial settings or controller initial settings, you must switch the power OFF, then ON again to put the new settings into effect.

There is setting item (Release level 1) which is not explained with this chapter in a controller initial settings. For details, see the **OPC-V06 Initial Setting Manual (IMS01M04-E□)**.

CONTENTS

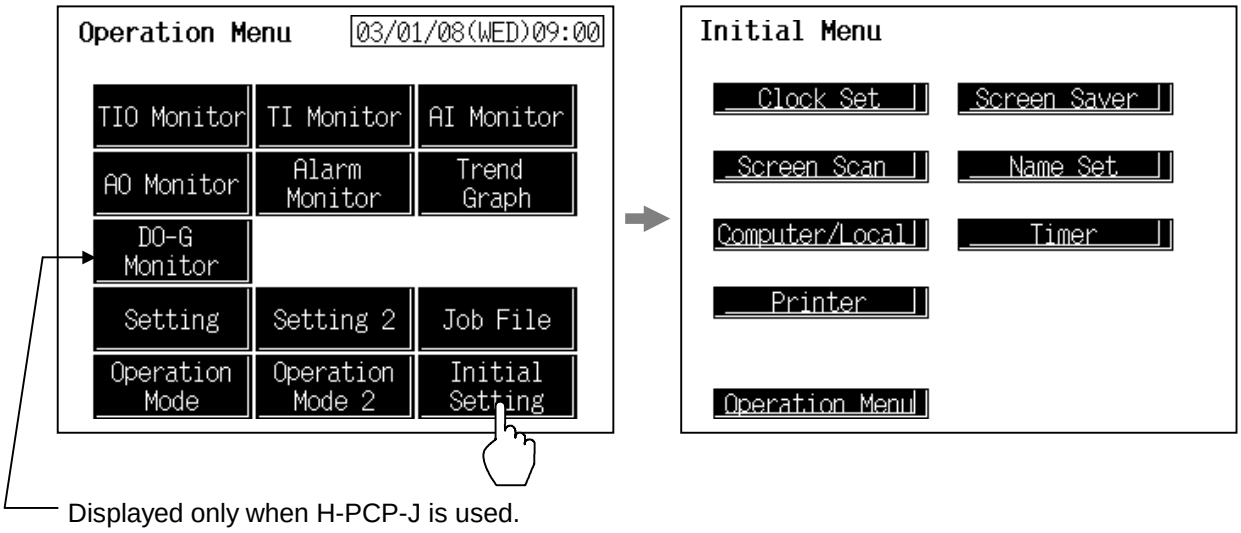
1. OPC-V Initial Settings

The OPC-V initial settings screen is the screen for making settings concerning the operation panel itself. The keys for changing the display to the OPC-V Initial Settings screens are protected, so you can not change to these screens without removing the protection.

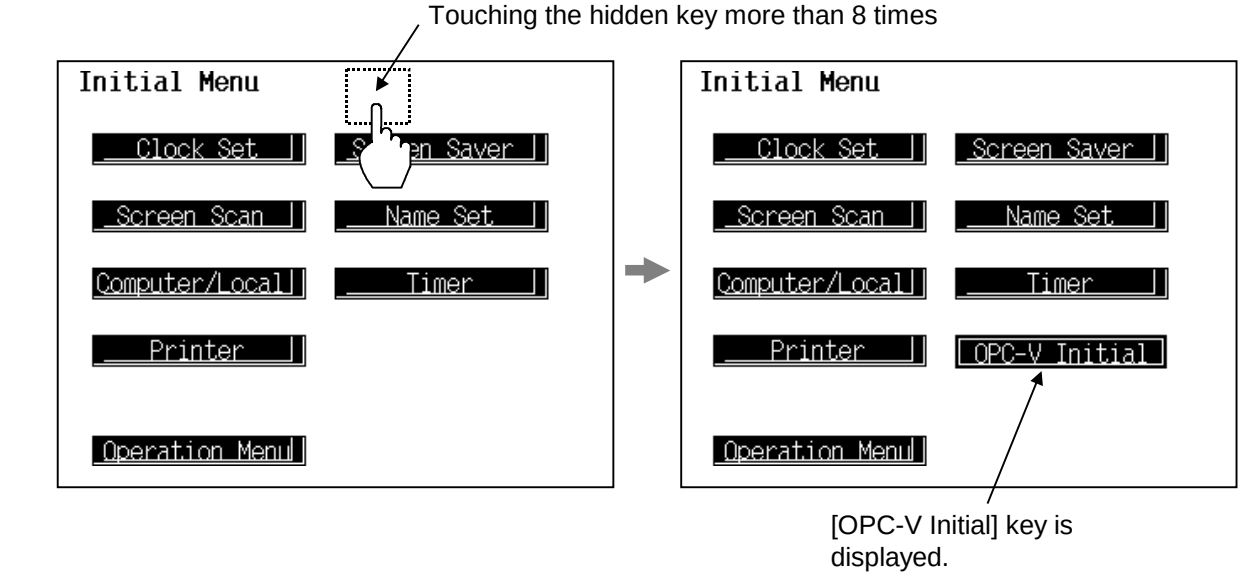
After changing the OPC-V initial settings, you must switch the power OFF, then ON again to put the new settings into effect.

1.1 Releasing OPC-V initial settings calling up key protect

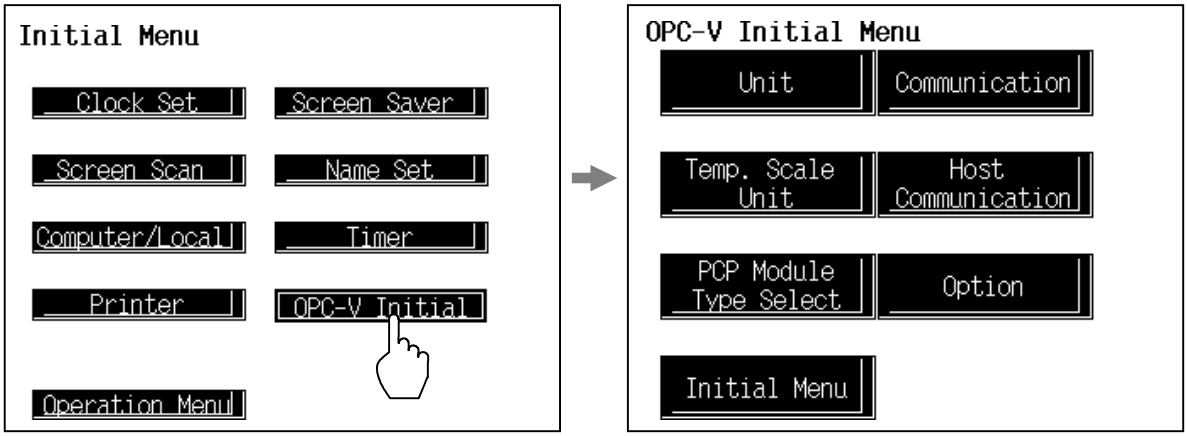
1. Touch the [Initial Setting] key on the "Operation Menu" screen to change the display to the "Initial Menu" screen.



2. Touching the OPC-V initial hidden key more than 8 times in succession displays the [OPC-V Initial] key to make key operation valid.



3. Touching the [OPC-V Initial] key displayed changes the “OPC-V Initial Menu” screen.



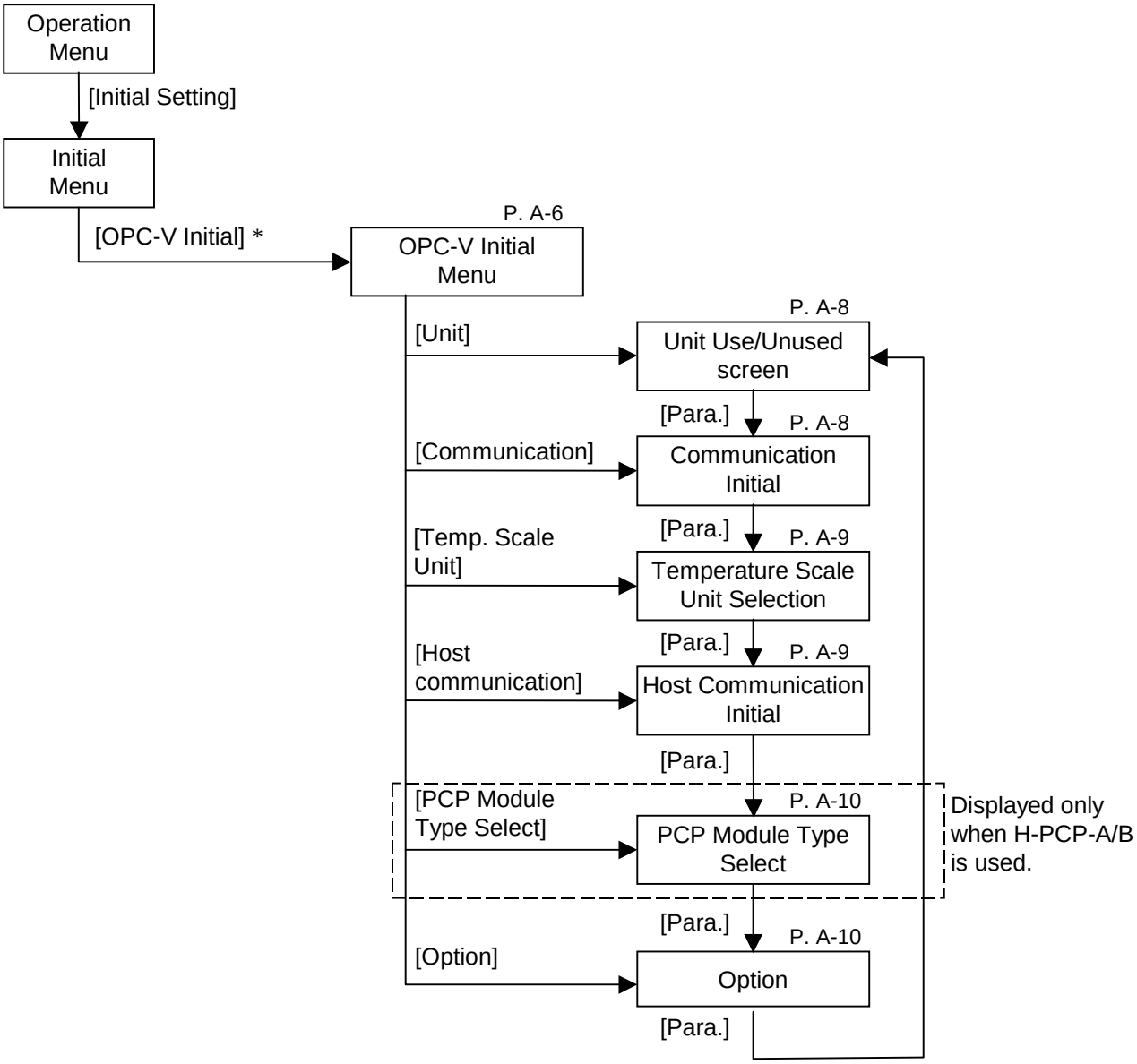
After the [OPC-V Initial] key is displayed, if any key other than the above key is touched, protect release is canceled. In this case, call up the “Initial Menu” screen again to perform the protect release operation.

As hidden key operation becomes invalid in computer mode, OPC-V initial settings cannot be executed. The above hidden key operation becomes valid in local mode.

1.2 Screen Configuration

[ ] : key name.

Screen configuration changes by PCP module (H-PCP-A/B or H-PCP-J) to use partly.

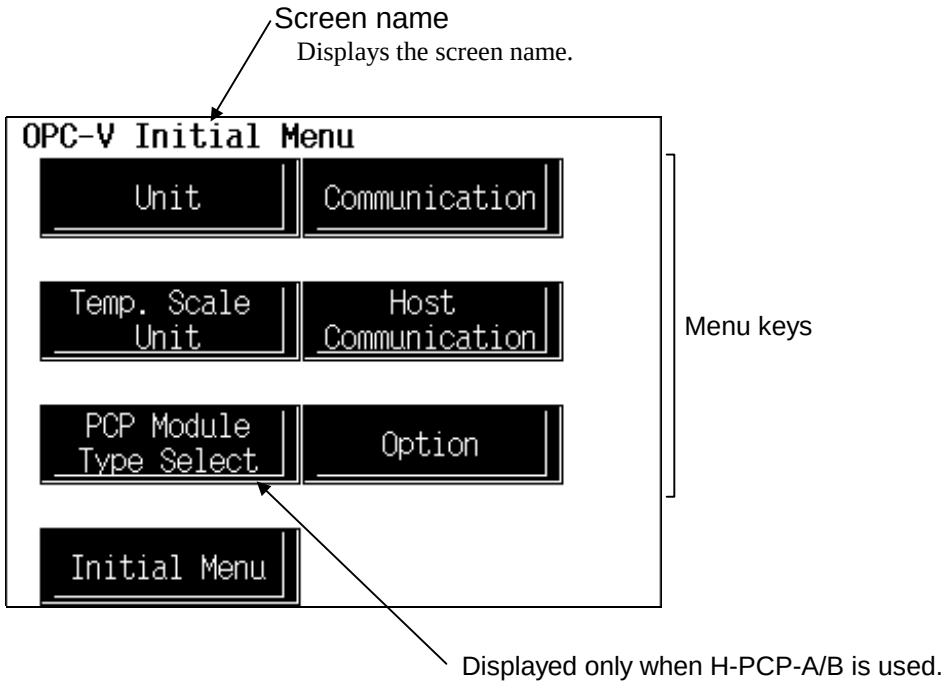


* In order to display the key, it is necessary to release "PROTECT."
For details, see the **1.1 Releasing OPC-V initial settings calling up key protect (P. A-3)**.

1.3 OPC-V Initial Menu screen

The OPC-V Initial Menu screen allows the selection of each of the OPC-V initial screens.

<OPC-V Initial Menu screen>



Menu keys: Touching this key, screen can be selected.

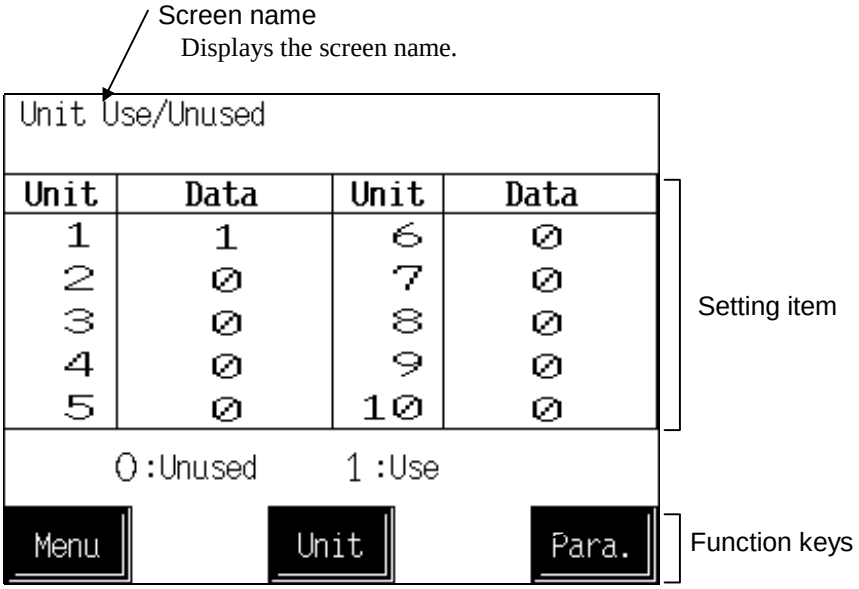
- **Unit:** "Unit Use/Unused" screen
- **Communication:** "Communication Initial" screen
- **Temp. Scale Unit:** "Temperature Scale Unit Selection" screen
- **Host communication:** "Host Communication Initial" screen
- **PCP Module Type Select:** "PCP Module Type Select" screen
- **Option:** "Option" screen

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

1.4 The Basic Configuration of OPC-V Initial screen

The basic configuration of each OPC-V initial screen is as shown below.

Example: Unit Use/Unused screen



Setting item: Displays the item and data. Details of display varies depending on the each OPC-V initial screen.

☞ For the details of setting, see the **1.5 Each OPC-V Initial screen (P. A-8)**.

Function keys: These key switches are assigned to match the contents of the screen.

Menu: Touching this key changes to the “OPC-V Initial Menu” screen.

Unit: Every time this key is touched, the control unit number changes. There is not it in “Communication Initial” screen, “Host Communication Initial” screen and “Option” screen.

Para.: Every time this key is touched, the OPC-V initial screen changes.

1.5 Each OPC-V Initial screen

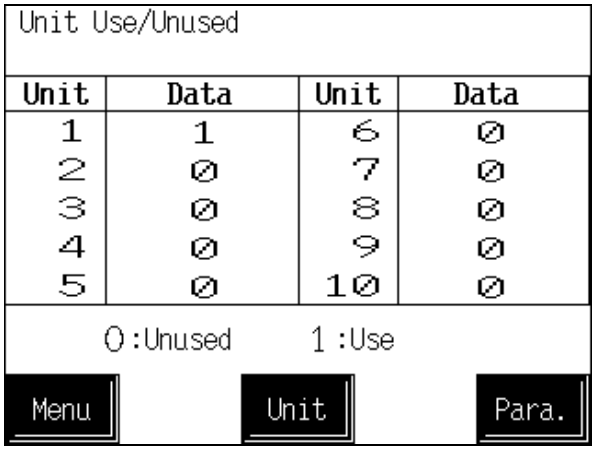
Change the screen by touching [Para.] key.

In computer mode, setting can not be made on the operation panel.

For the setting procedure, see the **5.2.1 Data settings (P. 5-7)**.

For the function keys and other items, see the **1.4 The Basic Configuration of OPC-V Initial screen (P. A-7)**.

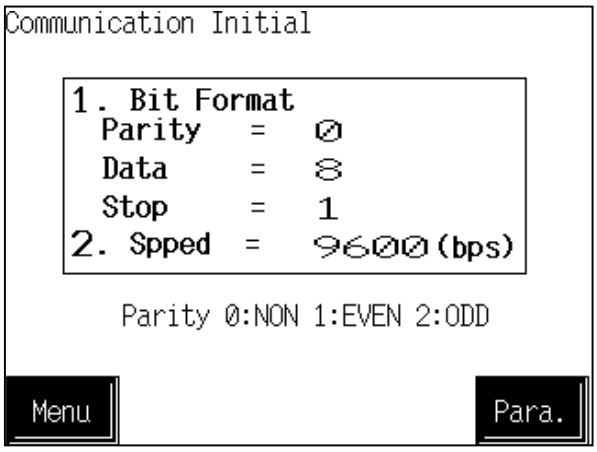
■ Unit Use/Unused screen



Unit:
Displays the control unit number.

Data:
Sets the use/unused of each control unit.
Setting range: 0: Unused
1: Used
Factory set value: 1 (Control unit 1)
0 (Control unit 2 to 16)

■ Communication Initial screen



The parameter for communication between the operation panel and control unit is displayed **but cannot be set.**

1. Bit Format

Parity:
Display range: 0: None 1: Even 2: Odd
Factory set value: 0

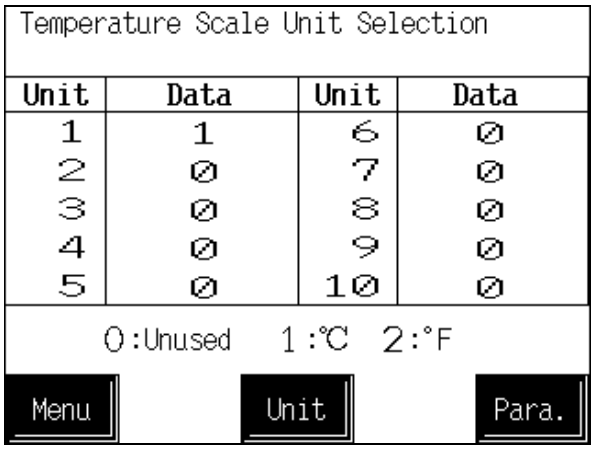
Data:
Display range: 7 or 8
Factory set value: 8

Stop:
Display range: 1 or 2
Factory set value: 1

2. Speed:
Display range: 4800, 9600, 19200, 38400 bps
Factory set value: 9600 bps

This is the communication parameter on the operation panel side. Set the control unit (H-PCP-A/B/J module) communication parameter so as to match this display.

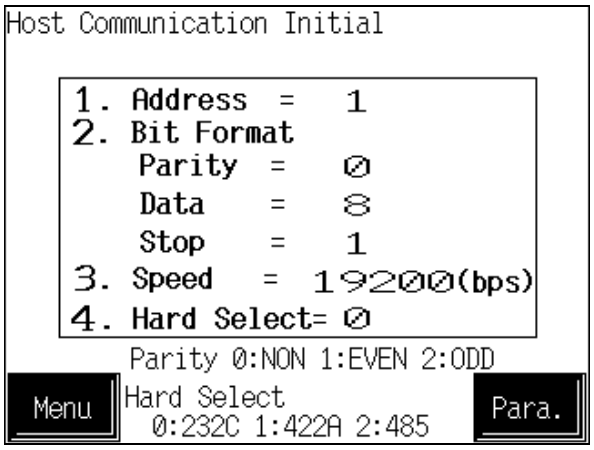
■ Temperature Scale Unit Selection screen



Unit:
Displays the control unit number.

Data:
Sets the TIO channel temperature unit.
Setting range: 0: Unused
1: ℃
2: °F
Factory set value 1

■ Host Communication Initial screen



This is the communication parameter on the operation panel side. Set the host computer communication parameter so as to match this display.

The parameter for communication between the operation panel and host computer is displayed but **cannot be set**.

1. Address:
Display range: 1 to 31
Factory set value: Varies depending on the specification when ordering.

2. Bit Format

Parity:
Display range: 0: None 1: Even 2: Odd
Factory set value: Varies depending on the specification when ordering.

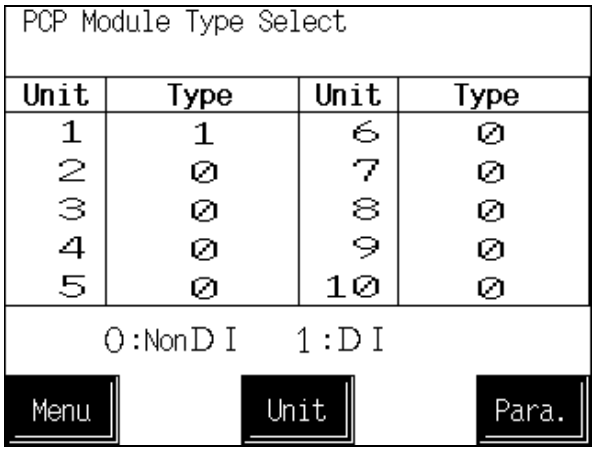
Data:
Display range: 8
Factory set value: 8

Stop:
Display range: 1 or 2
Factory set value: Varies depending on the specification when ordering.

3. Speed:
Display range: 4800, 9600, 19200 bps
Factory set value: Varies depending on the specification when ordering.

4. Hard Select:
Display range: 0: RS-232C 1: RS-485
Factory set value: Varies depending on the specification when ordering.

■ PCP Module Type Select screen



Unit:

Displays the control unit number.

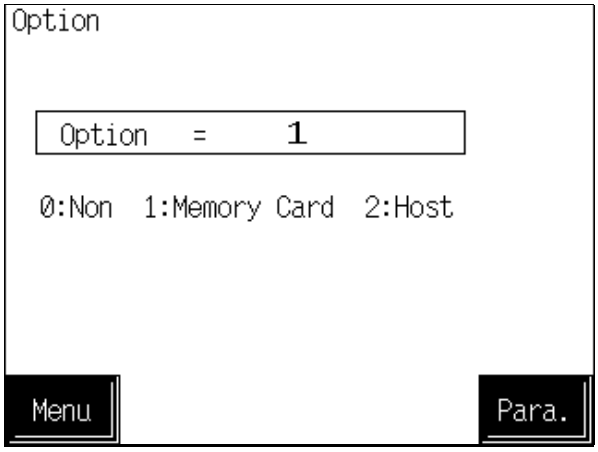
Type:

Sets the presence/absence of digital input (DI) in H-PCP-□ module.

Setting range: 0: Without digital input (DI) (H-PCP-A)
1: With digital input (DI) (H-PCP-B)

Factory set value: 0

■ Option screen



Option:

Displays the option function. But cannot be set.

Display range: 0: Non
1: Memory card interface
2: Host communication interface

Factory set value: 0

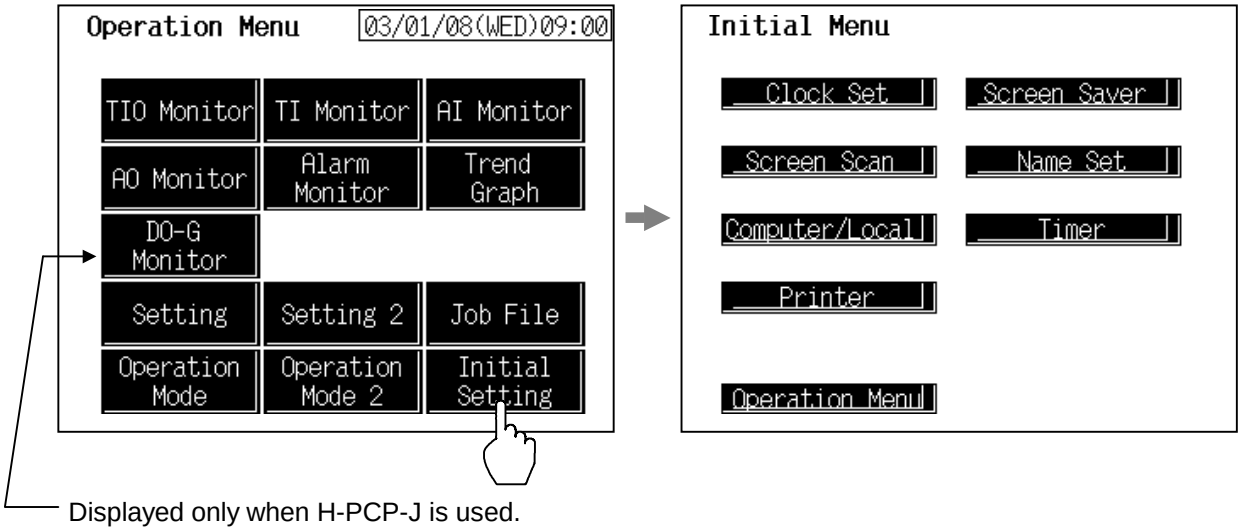
2. Controller Initial Settings

The controller initial settings screen is the screen for making settings concerning the control unit (Modules) itself. The keys for changing the display to the controller Initial Settings screens are protected, so you can not change to these screens without removing the protection.

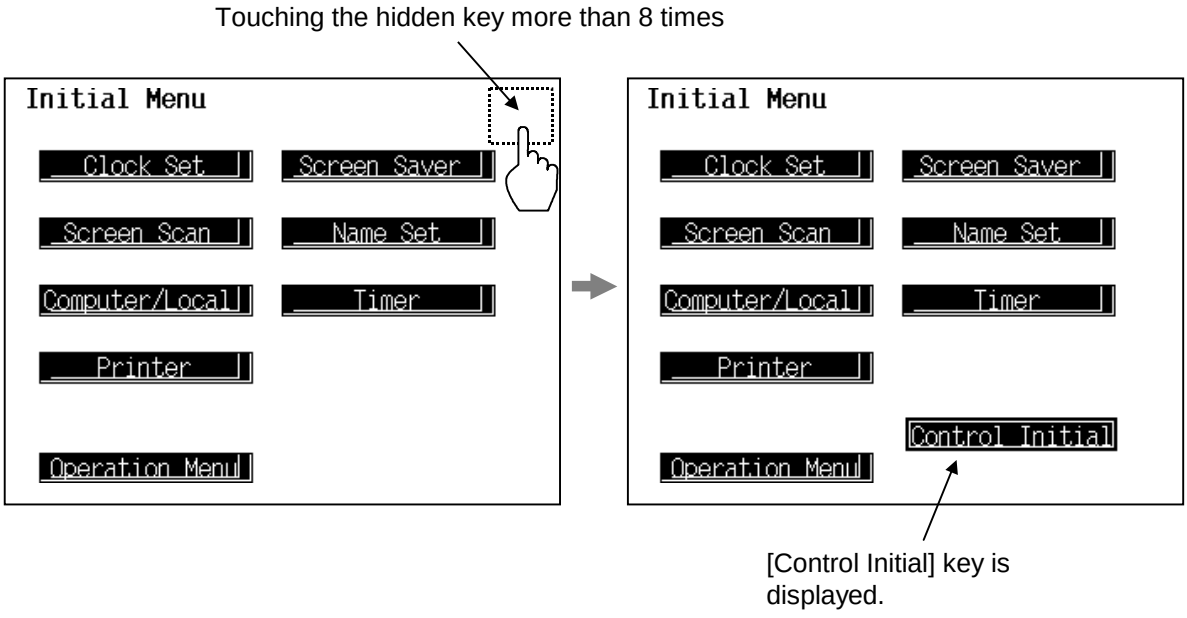
After changing the controller initial settings, you must switch the power OFF, then ON again to put the new settings into effect.

2.1 Procedure for changing to controller initial settings

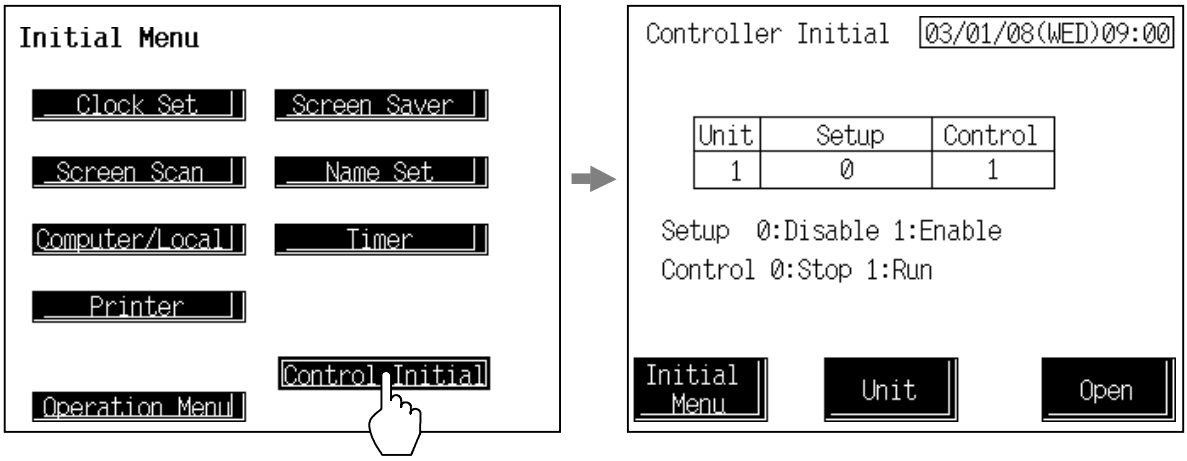
1. Touch the [Initial Setting] key on the "Operation Menu" screen to change the display to the "Initial Menu" screen.



2. Touching the controller initial hidden key more than 8 times in succession displays the [controller Initial] key to make key operation valid.



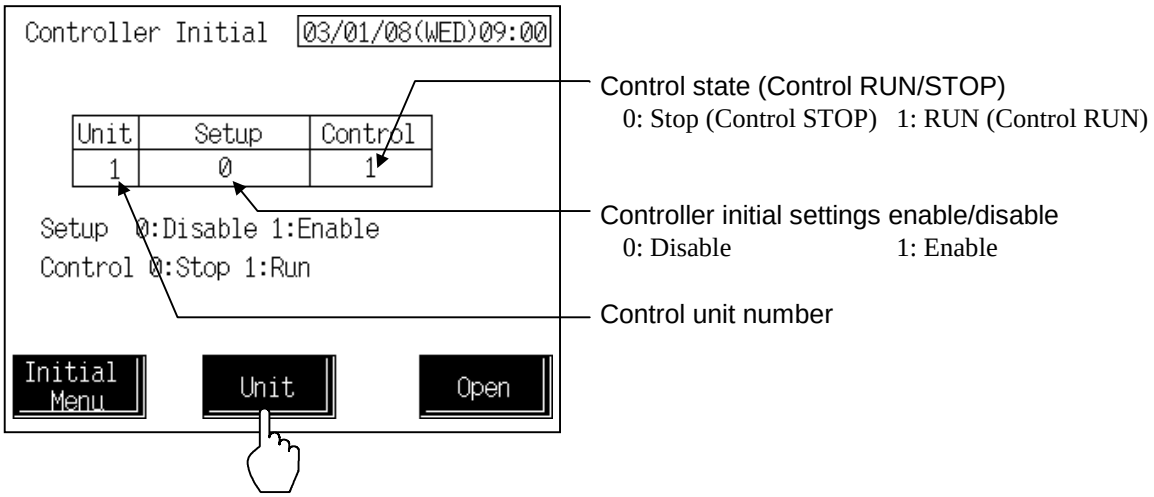
3. Touching the [Controller Initial] key displayed changes the “Controller Initial” screen.



After the [Control 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 Menu” screen again to perform the protect release operation.

As hidden key operation becomes invalid in computer mode, controller initial settings cannot be executed. The above hidden key operation becomes valid in local mode.

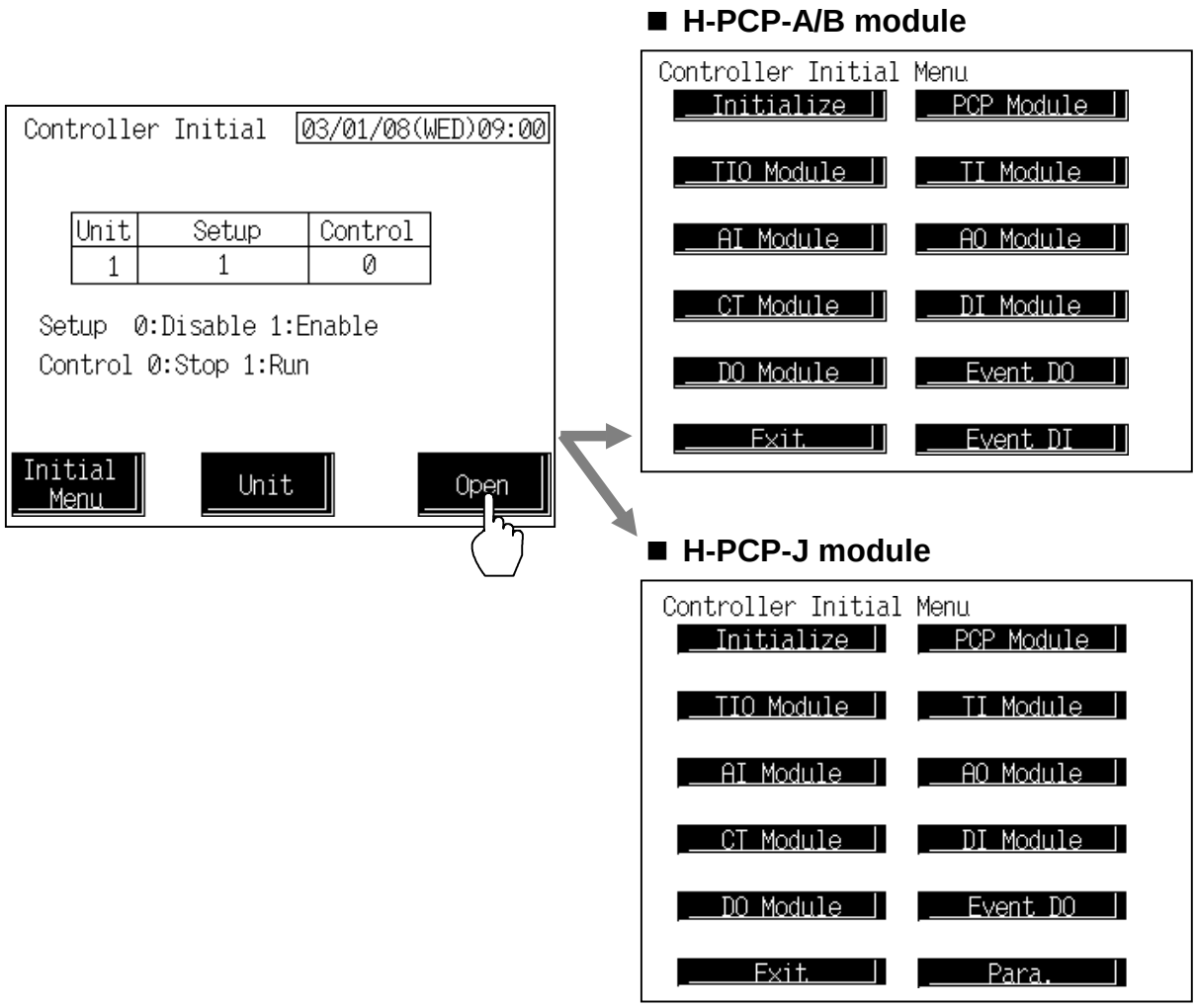
4. Touch the [Unit] key on the “Controller Initial” screen to select the control unit number which needs to be set.



5. Set “0: Stop” to control.

6. Set “1: Enable” to Setup.

7. Touch the [Open] key to change the display to the “Controller Initial Menu” screen.



2.2 End of Controller Initial Settings

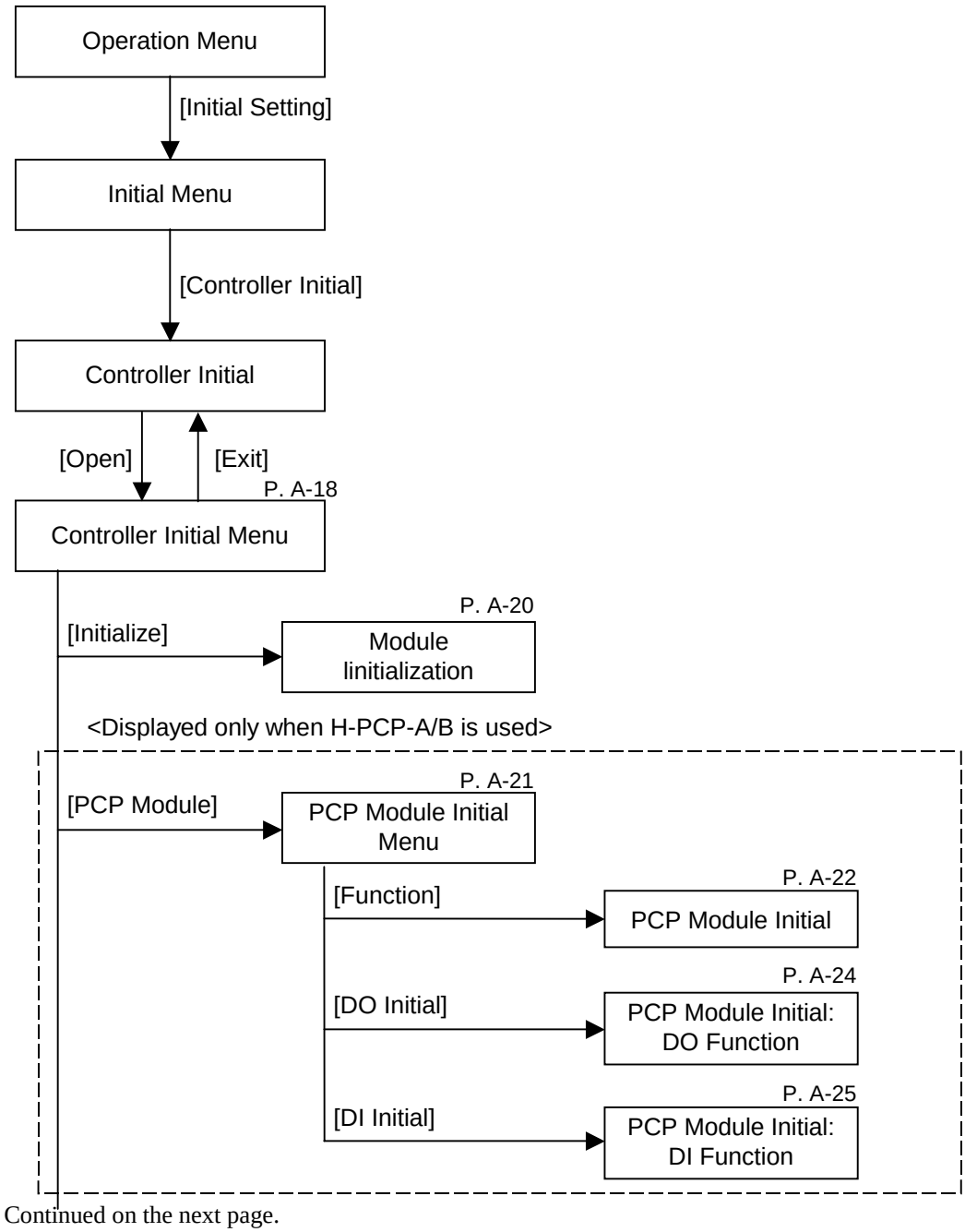
1. Set “0: Disable” to Setup on the “Controller Initial” screen.

2. Touch the [Initial Menu] key to change the display to the “Initial Menu” screen.

After changing the controller initial settings, you must switch the power OFF, then ON again to put the new settings into effect.

2.3 Screen Configuration

- Some screens may not be displayed depending on the specification.
- [ ] : key name.
- Screen configuration changes by PCP module (H-PCP-A/B or H-PCP-J) to use partly.
- ☞ For the changing to “Control Initial Menu” screen, see the **2.1 Procedure for changing to controller initial settings (P. A-11)**.



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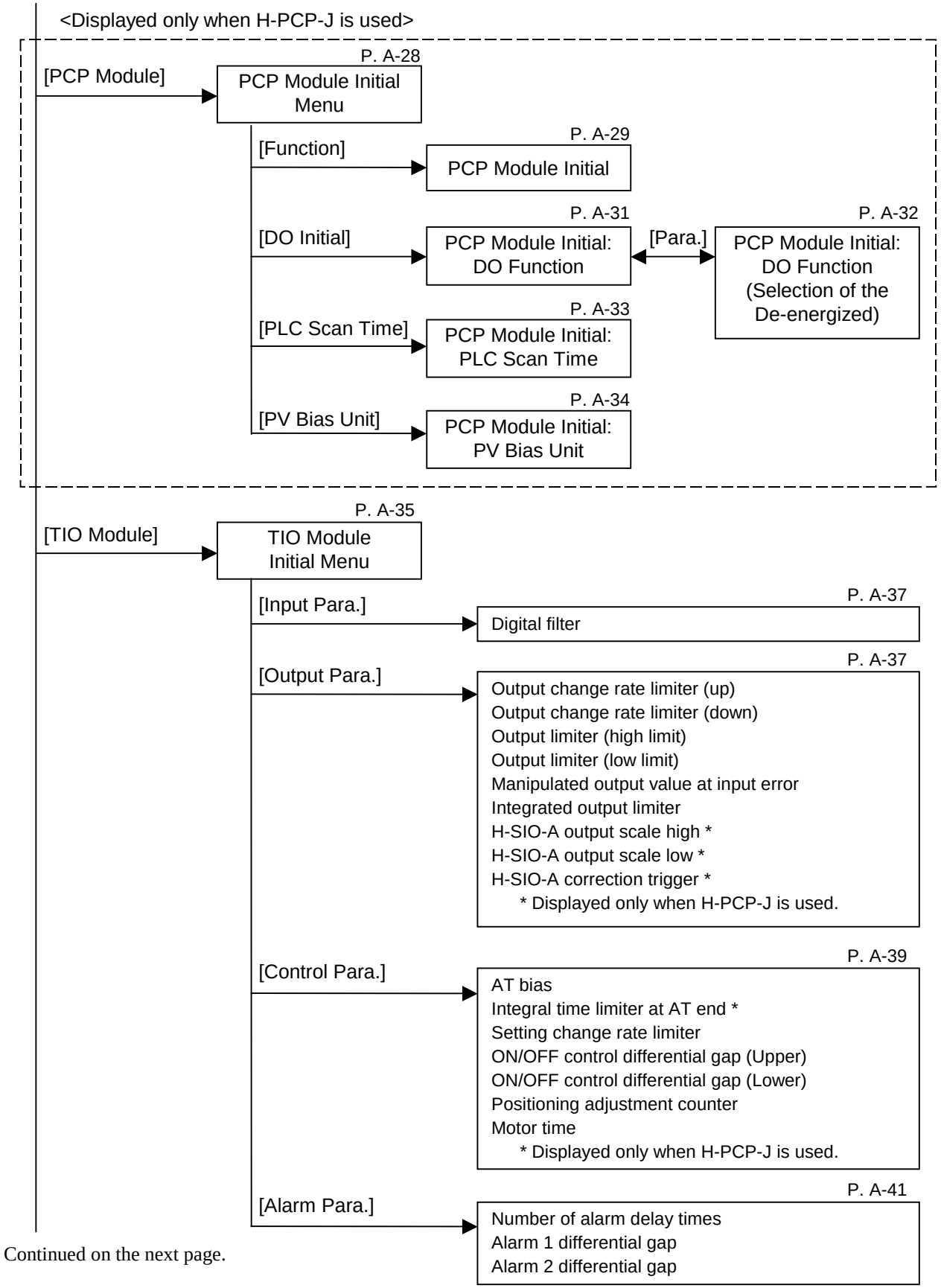

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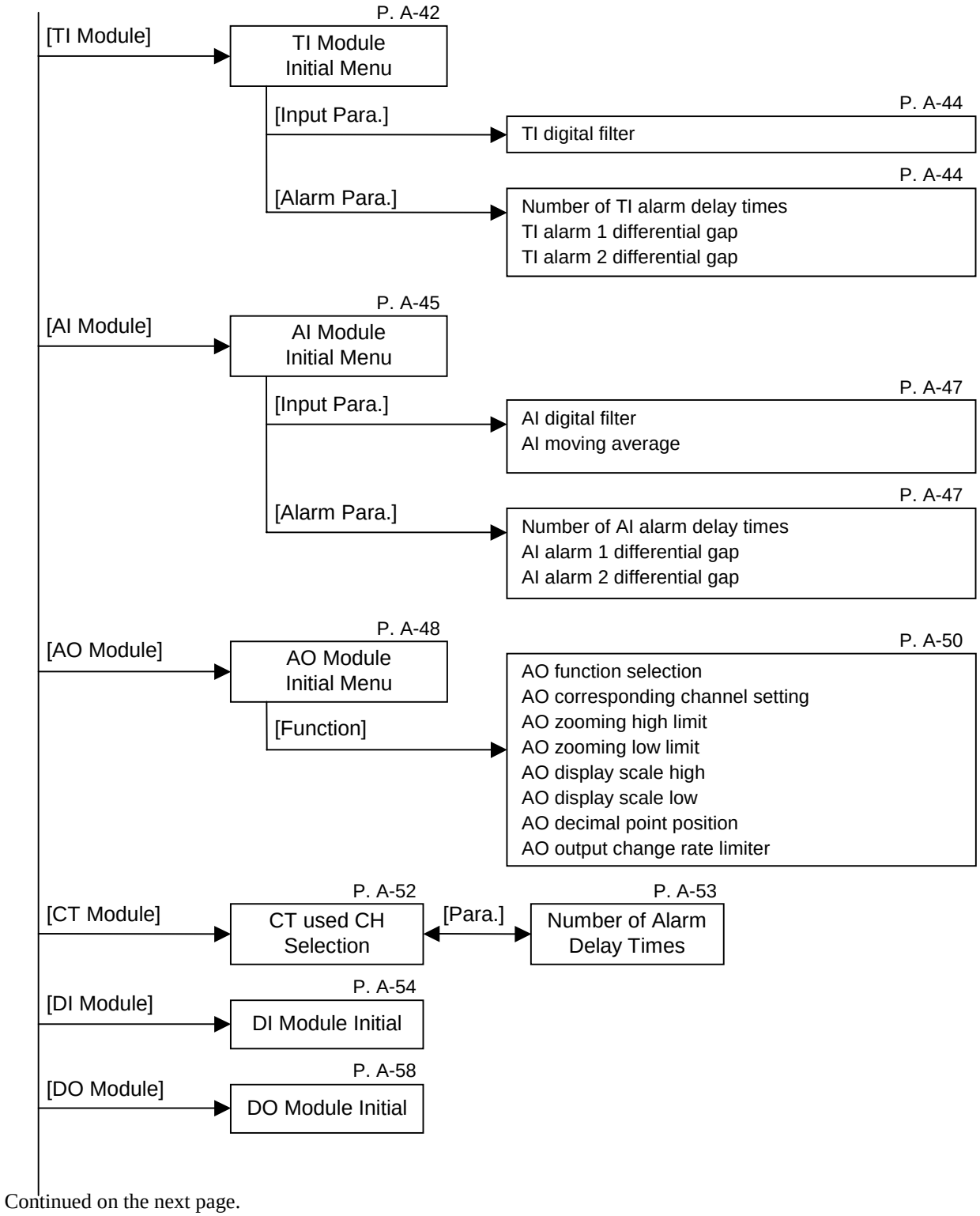

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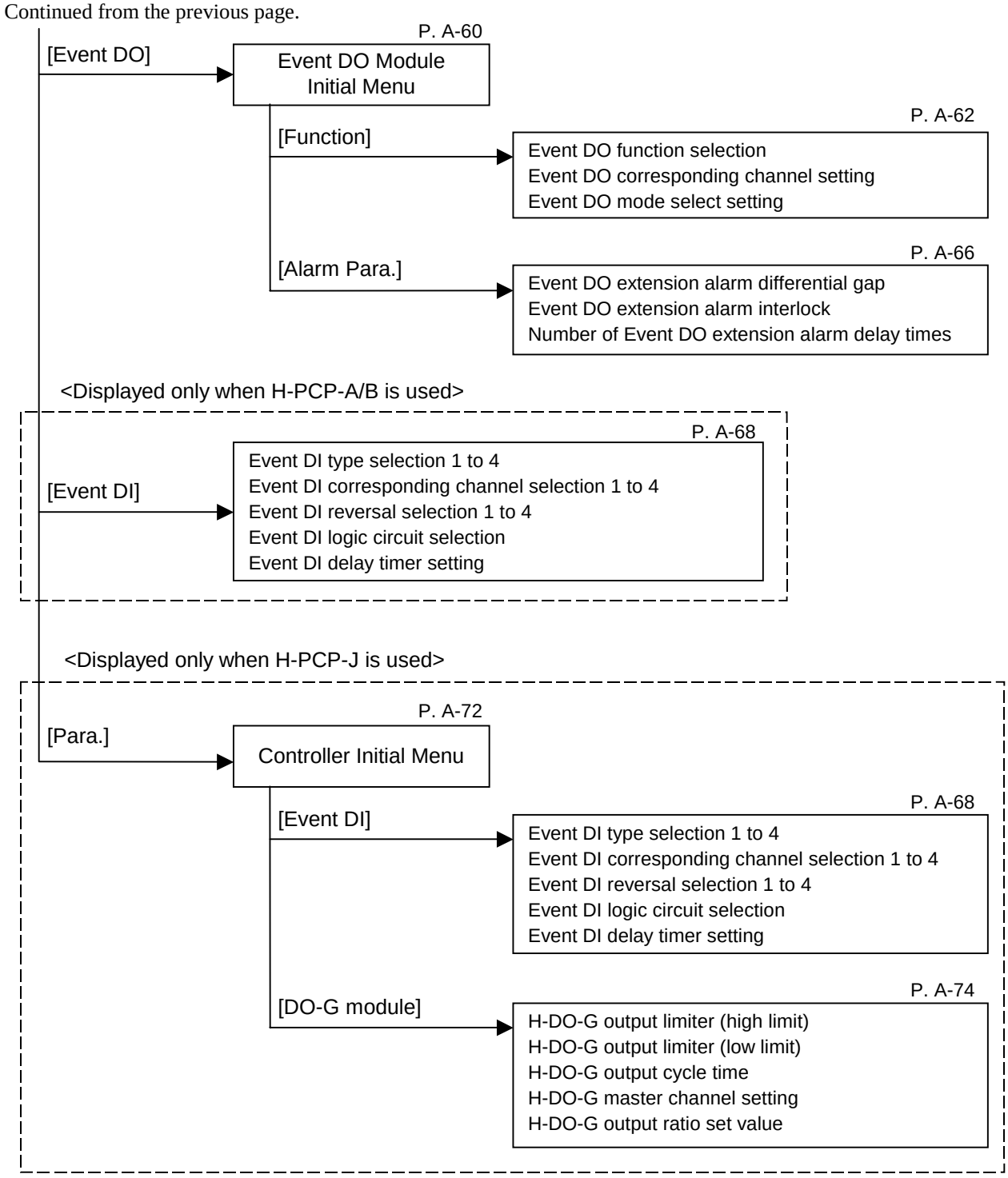
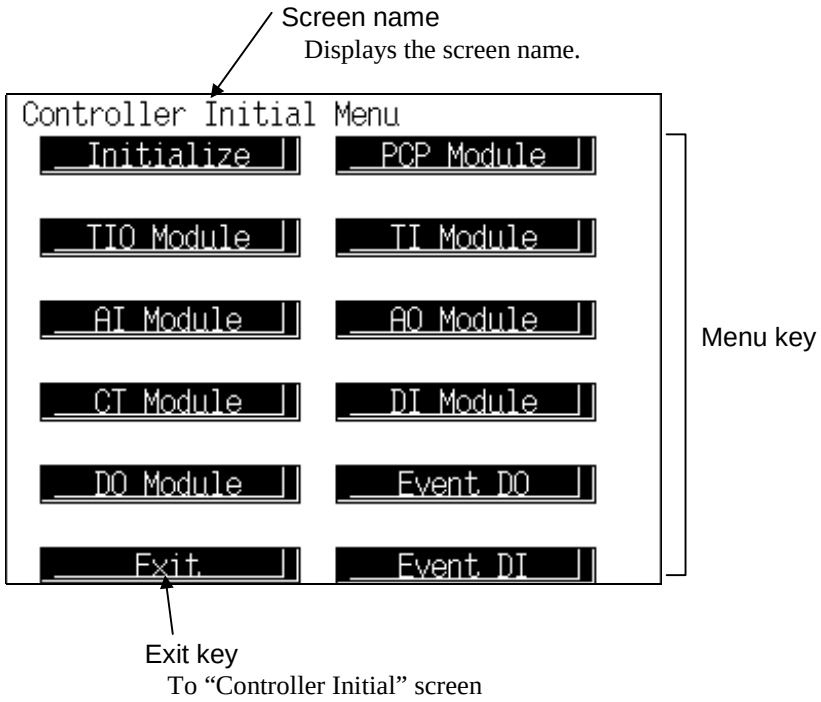


2.4 Controller Initial Menu

The Controller Initial Menu screen allows the selection of each of the controller initial screens.

■ H-PCP-A/B module

<Controller Initial Menu screen>



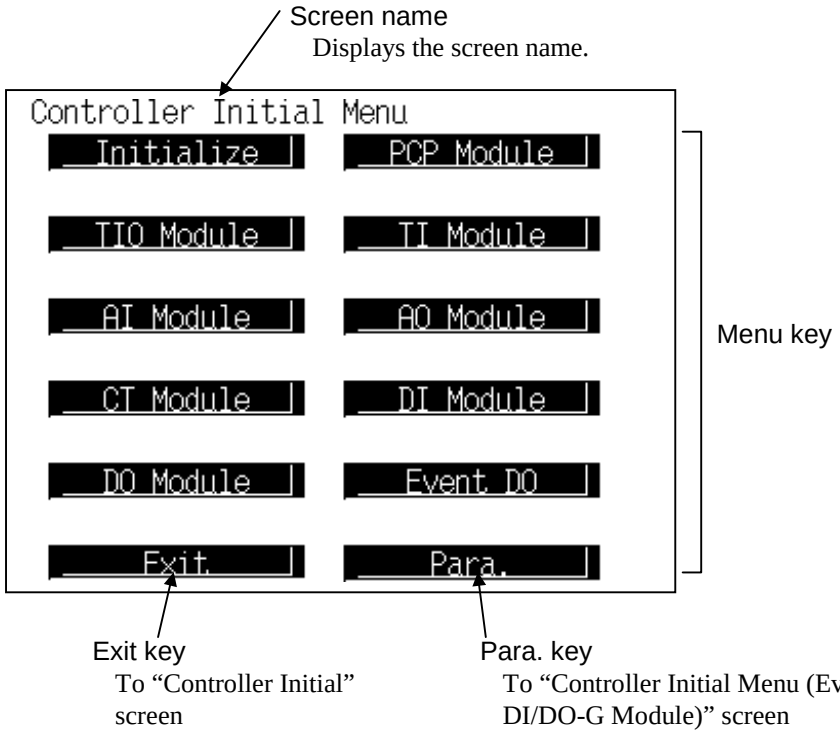
Menu key: Touching this key, screen can be selected.

Initialize:	“Module linitialization” screen
PCP Module:	“PCP Module Initial Menu” screen
TIO Module:	“TIO Module Initial Menu” screen
TI Module:	“TI Module Initial Menu” screen
AI Module:	“AI Module Initial Menu” screen
AO Module:	“AO Module Initial Menu” screen
CT Module:	“CT used CH Selection” screen
DI Module:	“DI Module Initial” screen
DO Module:	“DO Module Initial” screen
Event DO:	“Event DO Module Initial Menu” screen
Event DI:	“DI-B Module Initial: R1 (Event DI type selection 1)” screen

Exit key: Touching this key changes to the "Controller Initial" screen.

■ H-PCP-J module

<Controller Initial Menu screen>



Menu key: Touching this key, screen can be selected.

Initialize:	"Module linitialization" screen
PCP Module:	"PCP Module Initial Menu" screen
TIO Module:	"TIO Module Initial Menu" screen
TI Module:	"TI Module Initial Menu" screen
AI Module:	"AI Module Initial Menu" screen
AO Module:	"AO Module Initial Menu" screen
CT Module:	"CT used CH Selection" screen
DI Module:	"DI Module Initial" screen
DO Module:	"DO Module Initial" screen
Event DO:	"Event DO Module Initial Menu" screen

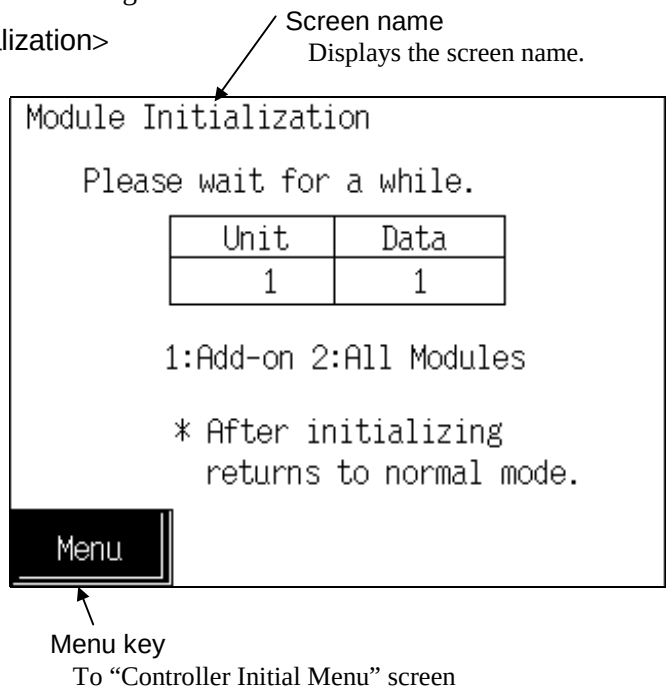
Exit key: Touching this key changes to the "Controller Initial" screen.

Para. key: Touching this key changes to the "Controller Initial Menu (Event DI/DO-G Module)" screen.

2.5 Module Initialization

This screen is used to store the new system in the H-PCP-☐ module when the module configuration of the control unit is changed.

<Module Initialization>



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.

Unit: Displays the control unit number.

Data: 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

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

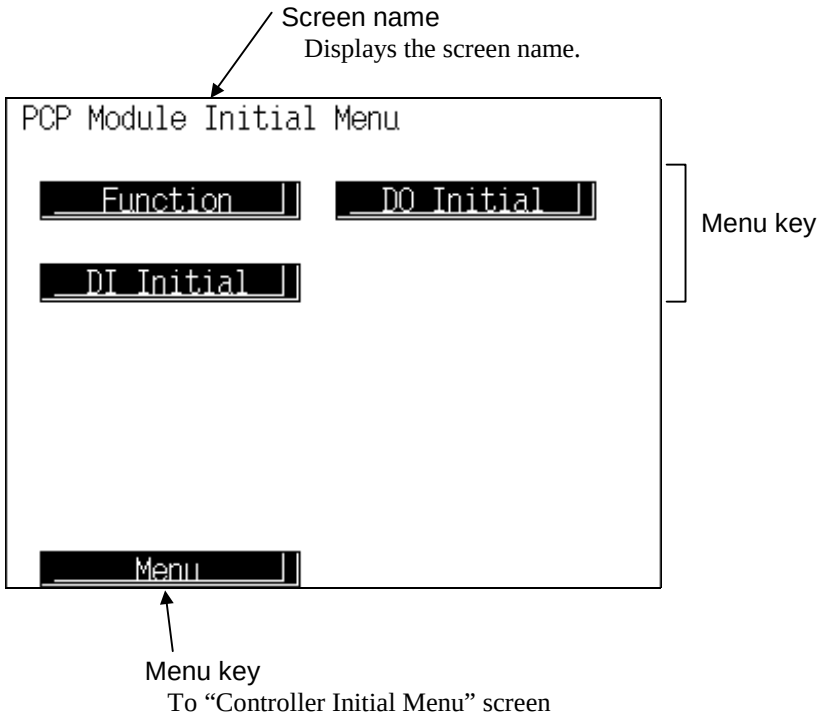
Menu key: Touching this key changes to the "Controller Initial Menu" screen.

For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.6 PCP (H-PCP-A/B) Module Initial Settings

2.6.1 PCP Module Initial Menu screen

<PCP Module Initial Menu screen>

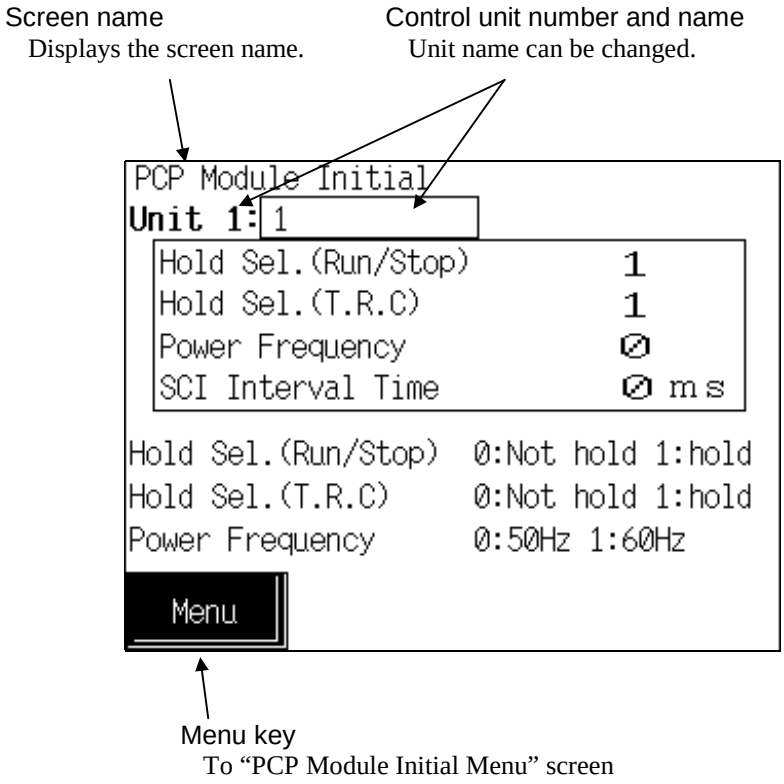


Menu key: Touching this key, screen can be selected.

Function: "PCP Module Initial" screen
DO Initial: "PCP Module Initial: DO Function" screen
DI Initial: "PCP Module Initial: DI Function" screen
Menu: "Controller Initial Menu" screen

2.6.2 PCP Module Initial screen

<PCP Module Initial 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 initialize "Unit Name Set" screen.

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

Power Frequency: Sets the power frequency of the H-PCP-□ module.
Setting range: 0: 50 Hz
1: 60 Hz
Factory set value: 0

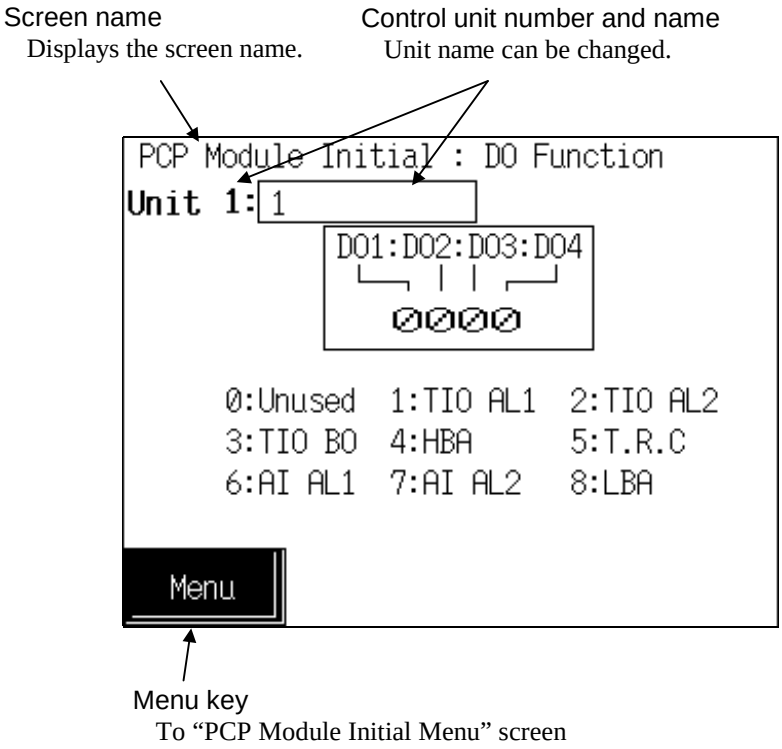
SCI interval time: Sets the interval time to keep the send/receive timing during RS-485 (2-wire system).
Setting range: 0 to 255 ms
Factory set value: 0

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

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.6.3 PCP Module Initial: DO Function screen

<PCP Module Initial: DO Function 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 initialize "Unit Name Set" screen.

DO1 (OUT1) : DO2 (OUT2) : DO3 (OUT3) : DO4 (OUT4):

Sets the function No. to be assigned to the digital output (DO) terminals of the H-PCP-A/B 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.

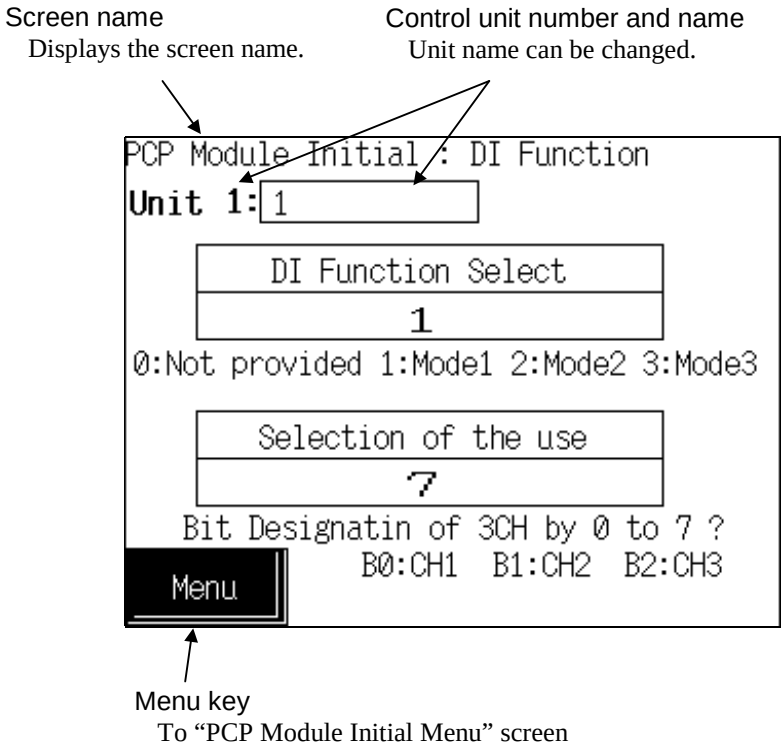
📖 Setting will be valid for only DO1 and DO2 in case of H-PCP-B module.

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

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.6.4 PCP Module Initial: DI Function screen

<PCP Module Initial: DI Function 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 initialize "Unit Name Set" screen.

DI function Select: Sets the function No. to be assigned to the digital input (DI) terminals of the H-PCP-B module.

Setting range:
- 0: Not provided
- 1: Mode 1
  Memory area selection (8 areas selection)
- 2: Mode 2
  Combination of control RUN/STOP selection and memory area selection (4 areas selection)
- 3: Mode 3
  Combination of control RUN/STOP selection, alarm interlock release and memory area selection (2 areas selection)

Factory set value: 0

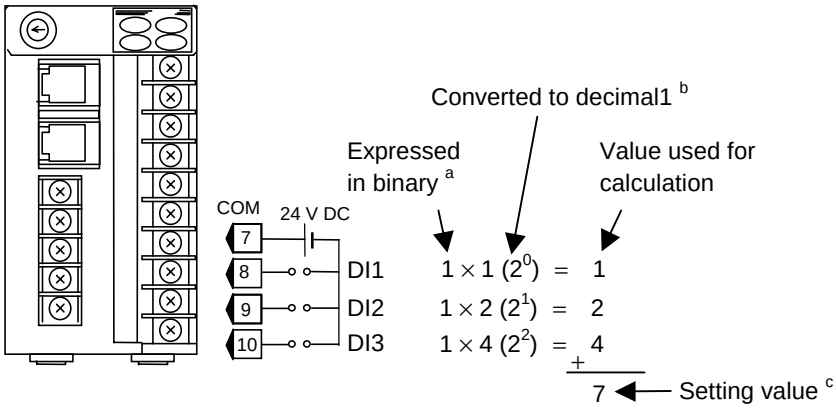
After the contact is closed, it takes a short time until the action of this device is actually selected. Therefore, pay attention to this delay time if the device is used together with a sequencer, etc.

External power (24 V DC) supply is required for digital input.

Selection of the use: 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.

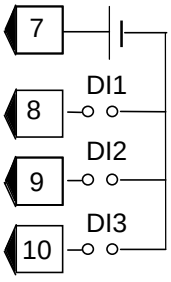
Menu key: Touching this key changes to the "PCP Module Initial Menu" screen.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

<Digital input (DI) function (H-PCP-B)>

Memory area selection (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.

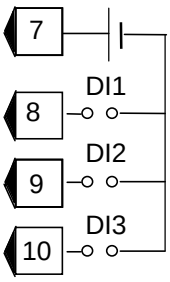


Control area / Terminal Nos.	1	2	3	4	5	6	7	8
7 - 8	–	×	–	×	–	×	–	×
7 - 9	–	–	×	×	–	–	×	×
7 - 10	–	–	–	–	×	×	×	×

–: Open ×: Close

Control RUN/STOP selection, memory area selection (Mode 2):

Selection can be performed depending on the open or close state of terminal numbers 7 to 10.



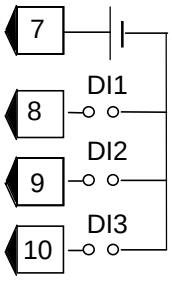
Control area / Terminal Nos.	1	2	3	4
7 - 8	–	×	–	×
7 - 9	–	–	×	×

–: Open ×: Close

Contact opened: Control STOP Contact closed: Control RUN

Control RUN/STOP selection, alarm interlock release specifying and memory area selection (Mode 3):

Selection or release specifying can be performed depending on the open or close state of terminal numbers 7 to 10.



Contact opened: Memory area No.1 Contact closed: Memory area No.2

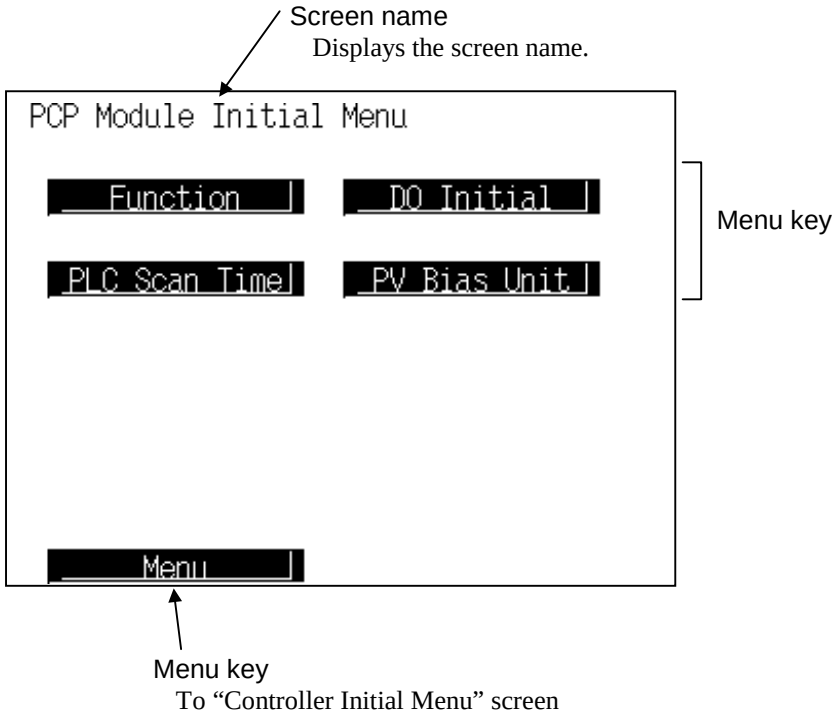
Contact closed: Alarm interlock released

Contact opened: Control STOP Contact closed: Control RUN

2.7 PCP (H-PCP-J) Module Initial Settings

2.7.1 PCP Module Initial Menu screen

<PCP Module Initial Menu screen>

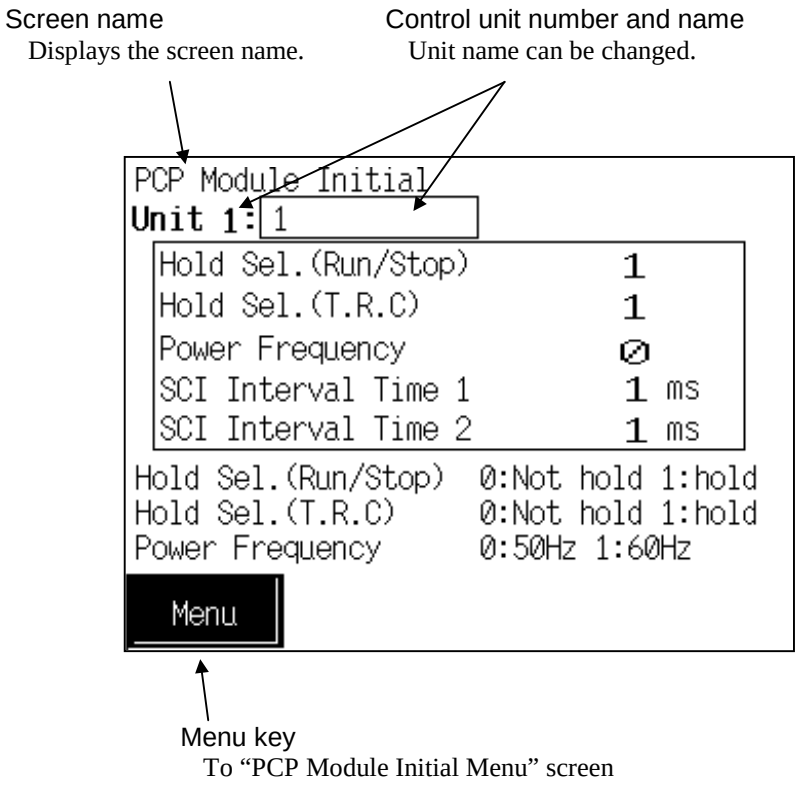


Menu key: Touching this key, screen can be selected.

Function:	"PCP Module Initial" screen
DO Initial:	"PCP Module Initial: DO Function" screen
PLC Scan Time:	"PLC Scan Time" screen
PV Bias Unit:	**"**PV Bias Unit" screen
Menu:	"Controller Initial Menu" screen

2.7.2 PCP Module Initial screen

<PCP Module Initial 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 initialize "Unit Name Set" screen.

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

Power Frequency: Sets the power frequency of the H-PCP-□ module.
Setting range: 0: 50 Hz
1: 60 Hz
Factory set value: 0

SCI Interval Time: Sets the interval time to keep the send/receive timing during RS-485 (2-wire system).

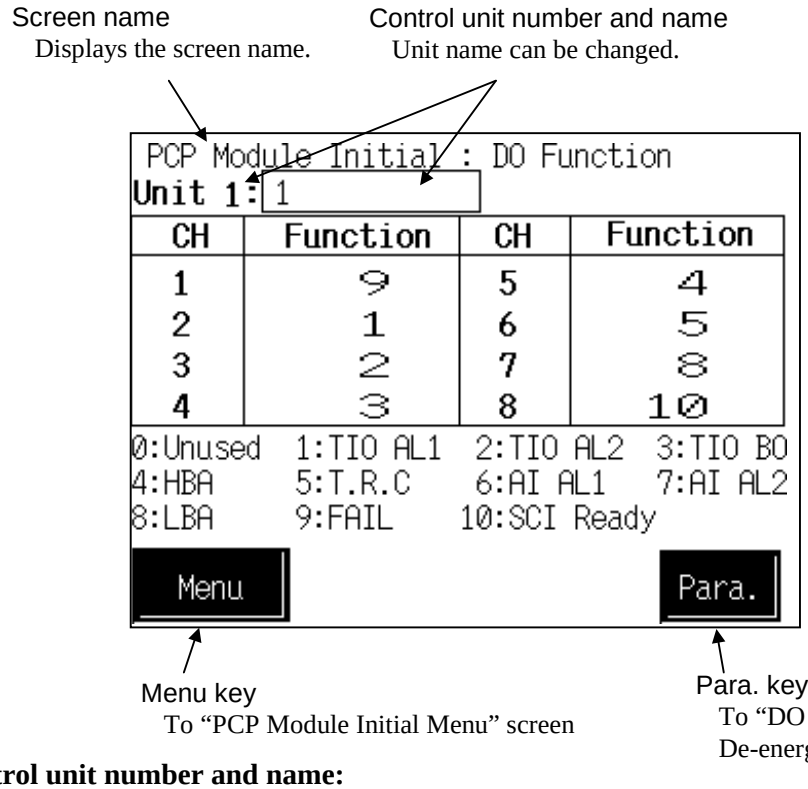
SCI Interval Time 1: For H-PCP-J module [COM.PORT1] and [COM.PORT2]
SCI Interval Time 2: H-PCP-J module [COM.PORT3]
Setting range: 0 to 100 ms
Factory set value: 1

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

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.7.3 PCP Module Initial: DO Function screen

<PCP Module Initial: DO Function 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 initialize "Unit Name Set" screen.

CH: Displayed the digital output (DO) channel number.

Function: Sets the function No. to be assigned to the digital output (DO) channels of the H-PCP-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)
- 9: Fail output
- 10: PLC communication status

Factory set value: CH1: 9, CH2: 1, CH3: 2, CH4: 3, CH5: 4, CH6: 5, CH7: 8, CH8: 10

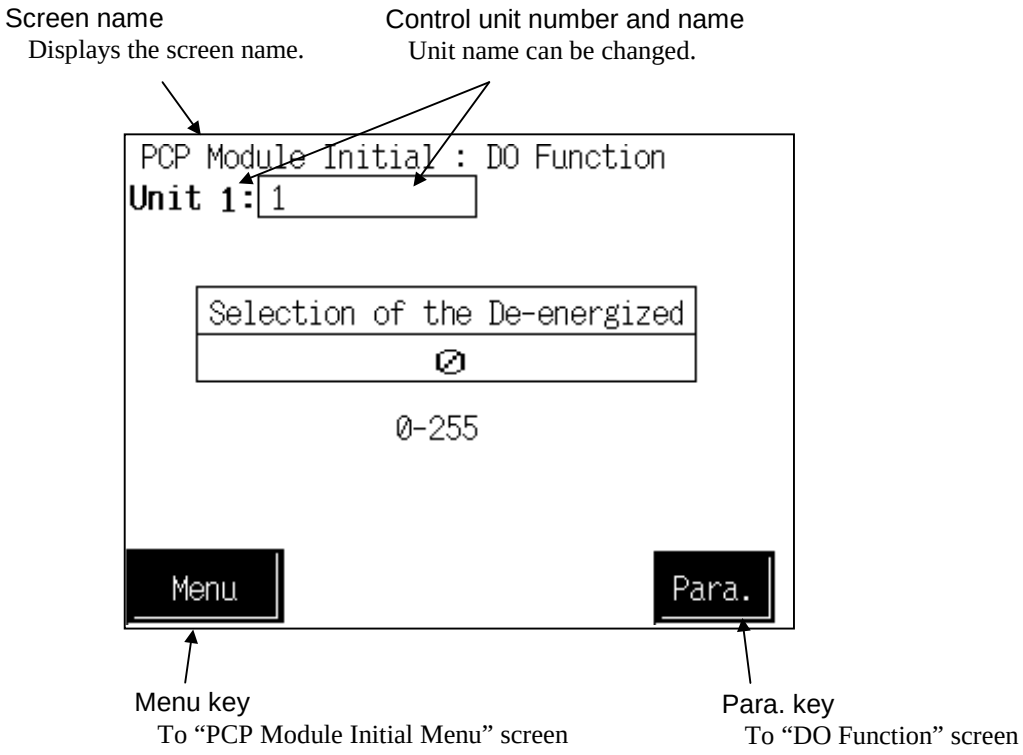
Menu key: Touching this key changes to the "PCP Module Initial Menu" screen.

Para. key: Touching this key changes to the "DO Function (Selection of the De-energized)" screen.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.7.4 PCP Module Initial: DO Function (Selection of the De-energized) screen

<PCP Module Initial: DO Function (Selection of the De-energized) 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 initialize "Unit Name Set" screen.

Selection of the De-energized:

Sets the digital output (DO) energized or de-energized of the H-PCP-J module.

Setting range: 0 to 255 (Each alarm etc. status is expressed as a bit image in decimal numbers.)

Bit data 0: Energized 1: De-energized

Bit 0: DO1	Bit 4: DO5
Bit 1: DO2	Bit 5: DO6
Bit 2: DO3	Bit 6: DO7
Bit 3: DO4	Bit 7: DO8

Factory set value: 0

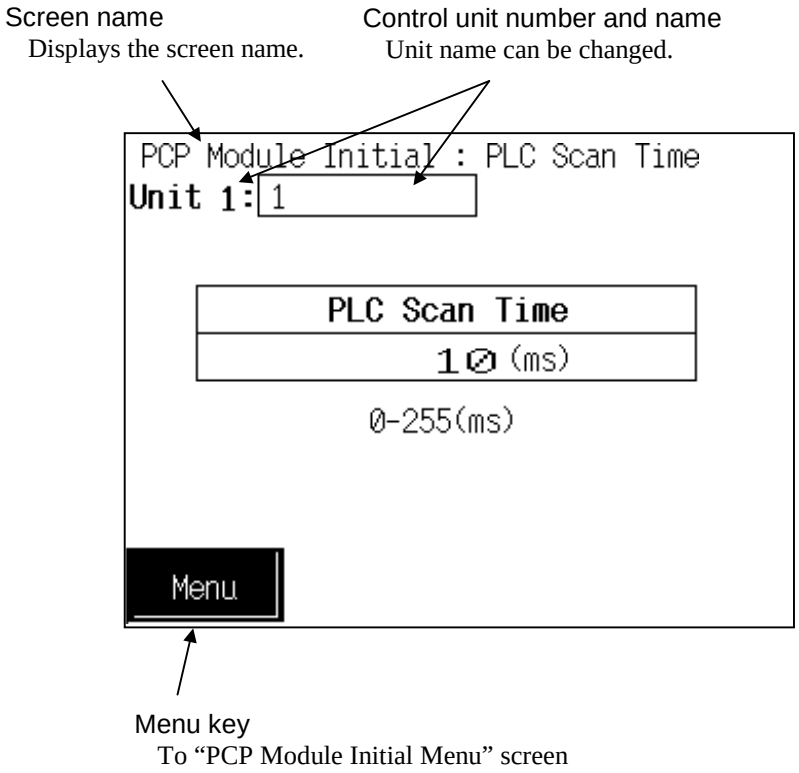
Menu key: Touching this key changes to the "PCP Module Initial Menu" screen.

Para. key: Touching this key changes to the "DO Function" screen.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.7.5 PCP Module Initial: PLC Scan Time screen

<PCP Module Initial: PLC Scan Time 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 initialize "Unit Name Set" screen.

PLC Scan Time: Set the PLC scanning time (time of waiting for a response from the PLC) so as to adapt to the environment used.

Setting range: 0 to 255 ms

In order to shorten the data updating period on the SR Mini HG SYSTEM side, the PLC scanning time (time of waiting for a response from the PLC) prior to factory shipment is set as short as 10 ms. If the PLC processing speed becomes slower according to the CPU processing speed, IO unit configuration and user program capacity of the PLC used, the communication response speed on the PLC side also becomes slower. As a result, the SR Mini HG SYSTEM will detect time-out and thus no communication processing may be normally made. If it does not normally operate, set the PLC scanning time to more than 50 ms.

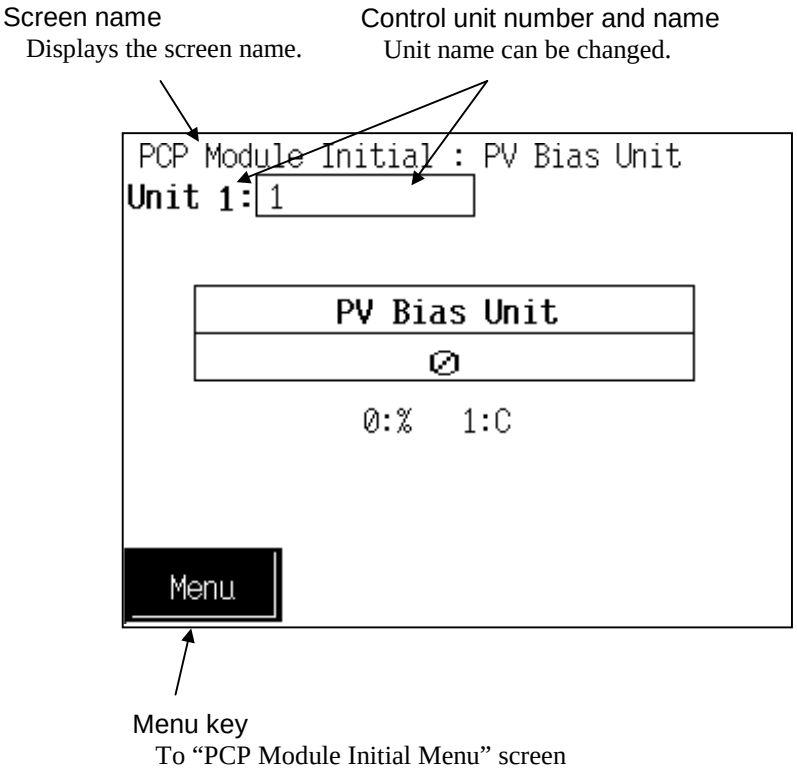
Factory set value: 10

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

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.7.6 PCP Module Initial: PV Bias Unit screen

<PCP Module Initial: PV Bias Unit 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 initialize "Unit Name Set" screen.

PV Bias Unit: Sets the unit of PV bias.

Setting range: 0: % (of span)
1: Unit of input range

Factory set value: 0 (ZK-1103 specification: 1)

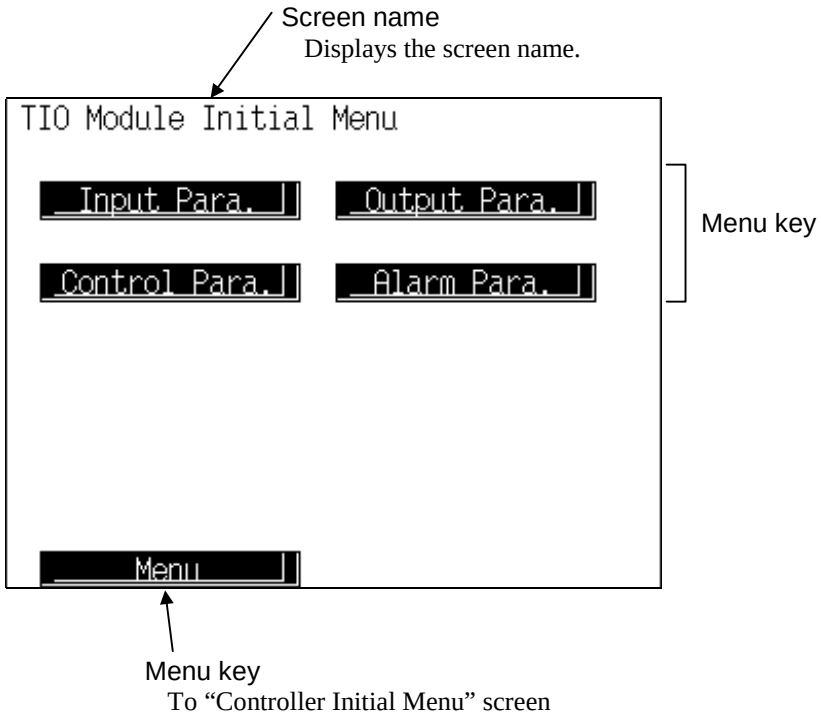
Menu key: Touching this key changes to the "PCP Module Initial Menu" screen.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.8 TIO Module Initial Settings

2.8.1 TIO Module Initial Menu screen

<TIO Module Initial Menu screen>



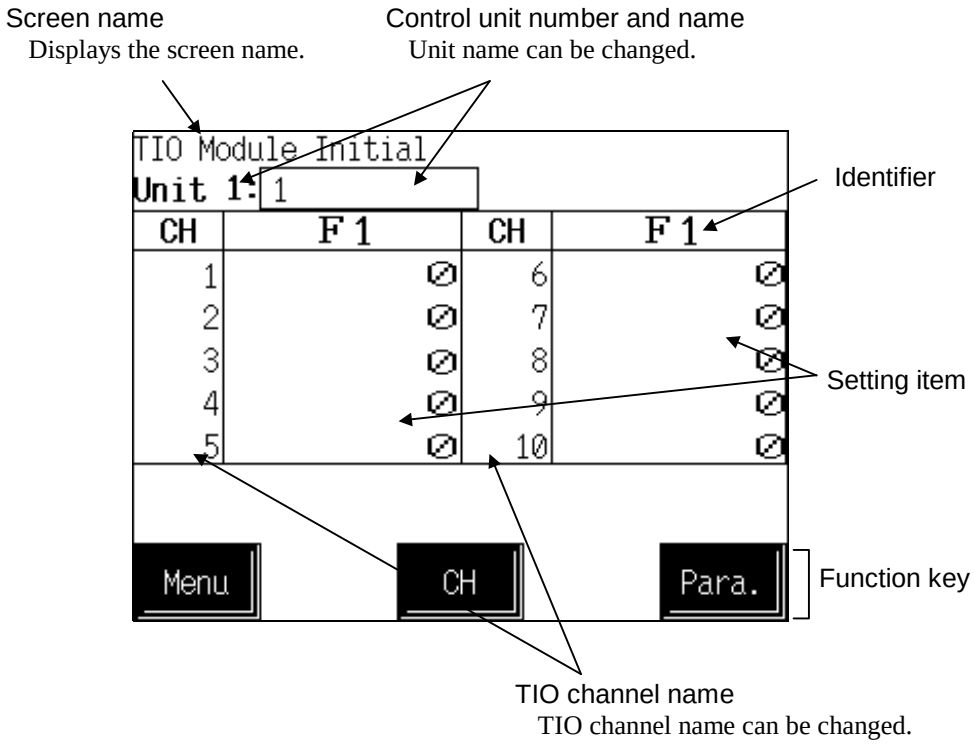
Menu key: Touching this key, screen can be selected.

Input Para.: "F1 (Digital filter)" screen
Output Para.: "PH (Output change rate limiter up)" screen
Control Para.: "GB (AT bias)" screen
Alarm Para.: "DF (Number of alarm delay times)" screen
Menu: "Controller Initial Menu" screen

2.8.2 The basic configuration of TIO module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: F1 (Digital filter) 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 initialize “Unit Name Set” screen.

TIO channel name: Displays the TIO channel name. The channel name can be changed with the initialize “TIO CH Name Set” screen.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the **2.8.3 TIO module parameter list (P. A-37)**.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

2.8.3 TIO module parameter list

📖 Some items may not be set depending on the specification.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

■ Input related parameter

📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
Digital filter	**F1**	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, H-SIO-A: 0.0 to 100.0 seconds (0.0: OFF)	Decreases noise contained sensor input by using a first-order lag filter with the preset time constant.	0 or 0.0

■ Output related parameter

📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
Output change rate limiter (up)	**PH**	0.0 to 100.0 %/second (0.0: OFF) Setting will be invalid in ON/OFF control.	When the output changes in the increasing direction, sets the gradient at which the outputs needs to be gradually increased.	0.0
Output change rate limiter (down)	**PL**	0.0 to 100.0 %/second (0.0: OFF) Setting will be invalid in ON/OFF control.	When the output changes in the decreasing direction, sets the gradient at which the outputs needs to be gradually decreased.	0.0
Output limiter (high limit)	**OH**	Output limiter (low limit) to 105.0 %	Sets the Output limiter (high limit).	100.0 or 100
Output limiter (low limit)	**OL**	–5.0 % to Output limiter (high limit)	Sets the Output limiter (low limit).	0.0 [a]

[a] Heat control (H-TIO-☐/H-CIO-A): 0.0
Position proportioning control (H-TIO-K): 0.0
Heat/cool contro (H-TIO-☐/H-CIO-A): 100.0
Speed control (H-SIO-A): 0

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Name	Iden-tifier	Data range	Discription	Factory set value
Manipulated output value at input error	**OE**	−5.0 to +105.0 % (Heat control, Position proportioning control, Speed control) −105.0 to +105.0 % (Heat/cool control)	Sets the manipulated output value (manual output value) to be output when temperature measured value exceeds the abnormal input trigger input.	0.0
Integrated output limiter	**OS**	100.0 to 200.0 % of motor time	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.	150.0
H-SIO-A output scale high	**SU**	H-SIO-A output scale low to 10000	Sets the value equivalent to display scale of control output high limit.	400
H-SIO-A output scale low	**SD**	−9999 to H-SIO-A output scale high	Sets the value equivalent to display scale of control output low limit.	0
H-SIO-A correction trigger	**SE**	0: Normal 1: Correction executed 2: Correction canceled Processing time of correction execution or cancel is about 1 second. Do not turn OFF the power during the processing time. In addition, maintain the setting more than 0.5 second in order to let it recognize modification in setting modification.	Sets whether correction is executed when the motor speed measured value differs from the actually measured value or motor speed set value differs from the actually measured value.	0

■ Control related parameter

📖 Change the identifier by touching [Para.] key.

● Release level 0

Name	Iden-tifier	Data range	Discription	Factory set value
AT bias	**GB**	Within ± input span range	Add the bias to the point (temperature set value) at which AT (autotuning) is executed and calculated.	0 [a]
Integral time limiter at AT end	**GY**	1 to 3600 seconds Setting will be valid in heat/cool control.	Limits the integral value in AT end at heat/cool control.	3600
Setting change rate limiter	**HH**	0.0 to 100.0 % of span/minute	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.	0.0
ON/OFF control differential gap (Upper)	**IV**	0.00 to 10.00 % of span	Sets the differential gap larger than the temperature set value in ON/OFF action.	0.02
ON/OFF control differential gap (Lower)	**IW**	0.00 to 10.00 % of span	Sets the differential gap smaller than the temperature set value in ON/OFF action.	0.02

[a] The position of the decimal point differs depending on the input range.

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Name	Iden-tifier	Data range	Discription	Factory set value
Positioning adjustment counter (H-TIO-K module)	**FV**	0 to 100 [a]	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)	0

[a] Positioning adjustment counter

Always adjust the opening first and capture the motor time after the adjustment is complete.

Motor time (Identifier TJ) → FBR opening adjustment → Capture the motor time → Setting to normal status

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."

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Name	Iden-tifier	Data range	Discription	Factory set value
Motor time	**TJ**	5 to 1000 seconds	Sets the time when the control motor changes from the close side to the open side. (Control output sets the motor time to 100 %.)	10

■ Alarm related parameter

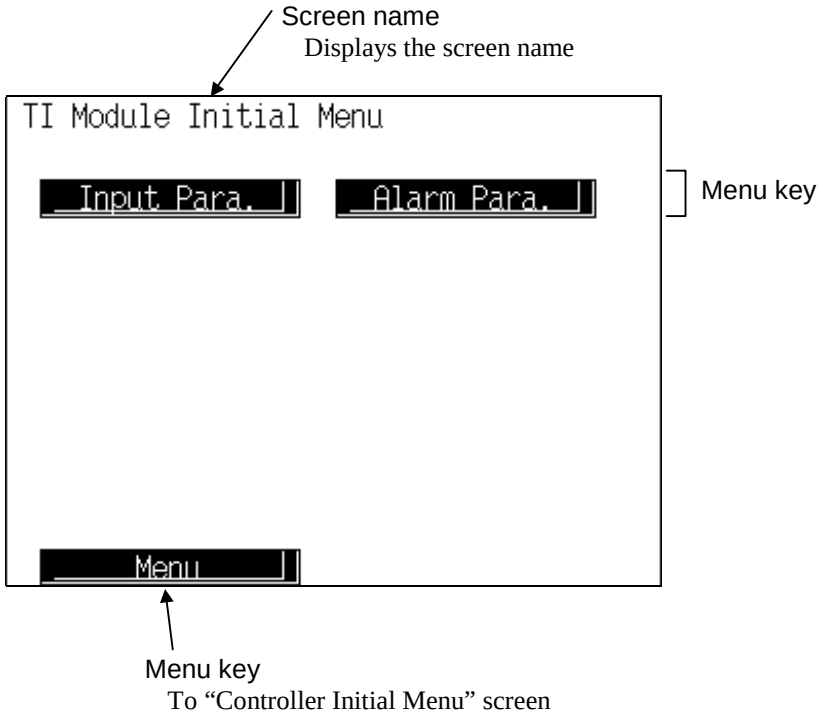
Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
Number of alarm delay times	**DF**	0 to 255 times	Sets the number of sampling period counting times until the alarm is turned ON after temperature measured value enters the alarm region.	0
Alarm 1 differential gap	**HA**	0.00 to 10.00 % of span	Sets the alarm 1 differential gap.	0.10
Alarm 2 differential gap	**HB**	0.00 to 10.00 % of span	Sets the alarm 2 differential gap.	0.10

2.9 TI Module Initial Settings

2.9.1 TI Module Initial Menu screen

<TI Module Initial Menu screen>



Menu key: Touching this key, screen can be selected.

Input Para.: "F3 (TI digital filter)" screen

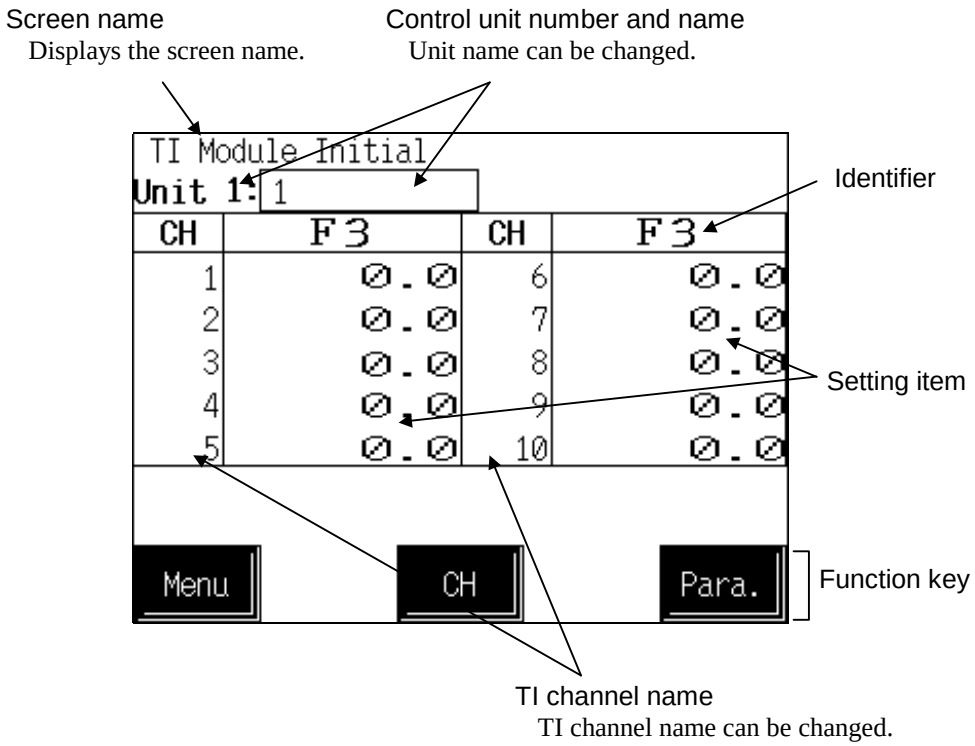
Alarm Para.: "DG (Number of TI alarm delay times)" screen

Menu: "Controller Initial Menu" screen

2.9.2 The basic configuration of TI module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: F3 (TI digital filter) 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 initialize "Unit Name Set" screen.

TI channel name: Displays the TI channel name. The channel name can be changed with the initialize "TI CH Name Set" screen.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the **2.9.3 TI module parameter list (P. A-44)**.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

2.9.3 TI module parameter list

📖 Some items may not be set depending on the specification.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

■ Input related parameter

📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
TI digital filter	**F3**	0.0 to 100.0 seconds (0.0: OFF)	Decreases noise contained sensor input by using a first-order lag filter with the preset time constant.	0.0

■ Alarm related parameter

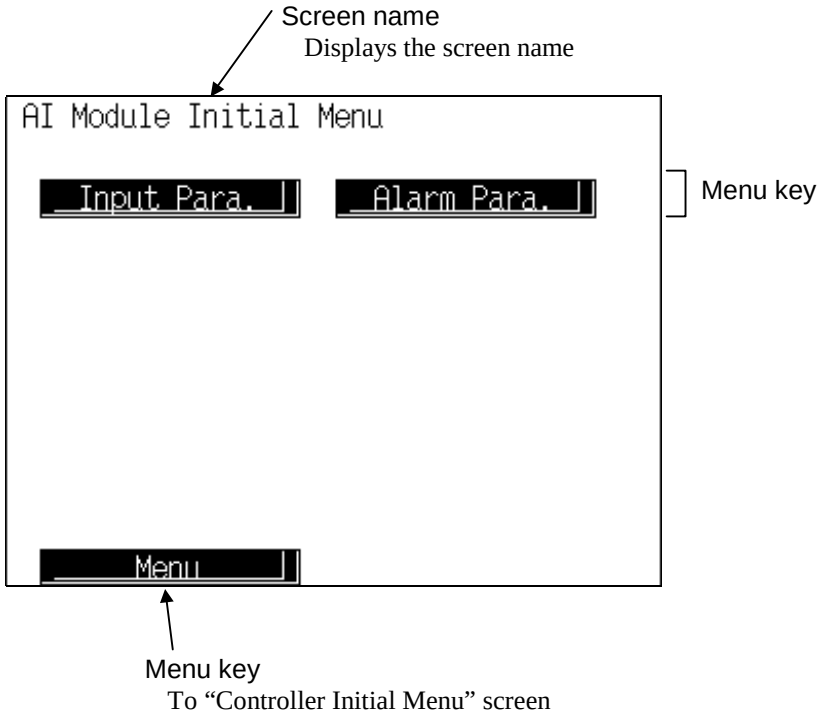
📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
Number of TI alarm delay times	**DG**	0 to 255 times	Sets the number of sampling period counting times until the alarm is turned ON after TI measured value enters the alarm region.	0
TI alarm 1 differential gap	**HI**	0.00 to 10.00 % of span	Sets the TI alarm 1 differential gap.	0.10
TI alarm 2 differential gap	**HJ**	0.00 to 10.00 % of span	Sets the TI alarm 2 differential gap.	0.10

2.10 AI Module Initial Settings

2.10.1 AI Module Initial Menu screen

<AI Module Initial Menu screen>



Menu key: Touching this key, screen can be selected.

Input Para.: "F2 (AI figital filter)" screen

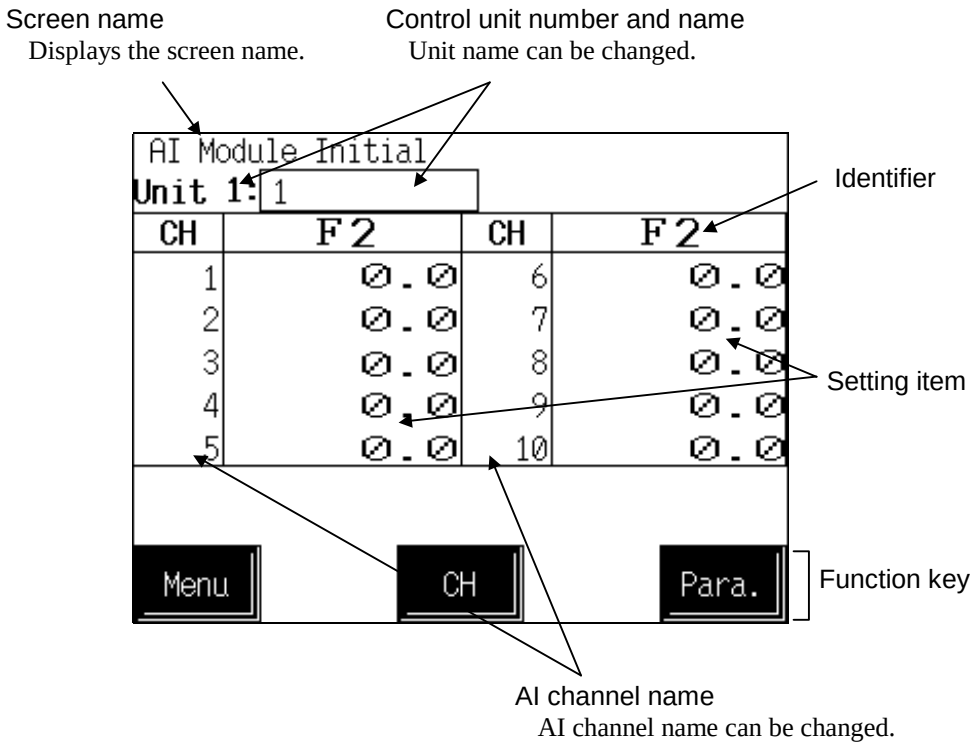
Alarm Para.: "TK (Number of AI alarm delay times)" screen

Menu: "Controller Initial Menu" screen

2.10.2 The basic configuration of AI module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: F2 (AI digital filter) 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 initialize "Unit Name Set" screen.

TI channel name: Displays the AI channel name. The channel name can be changed with the initialize "AI CH Name Set" screen.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the **2.10.3 AI module parameter list (P. A-39)**.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

2.10.3 AI module parameter list

📖 Some items may not be set depending on the specification.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

■ Input related parameter

📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
AI digital filter	**F2**	0.0 to 100.0 seconds (0.0: OFF)	Decreases noise contained sensor input by using a first-order lag filter with the preset time constant.	0.0
AI moving average	**VA**	0: Not provided 1: Provided	Sets the presence or absence of AI moving average. Gets the average of the sampling results corresponding to 4 times when “1” is set to decrease noise.	0

■ Alarm related parameter

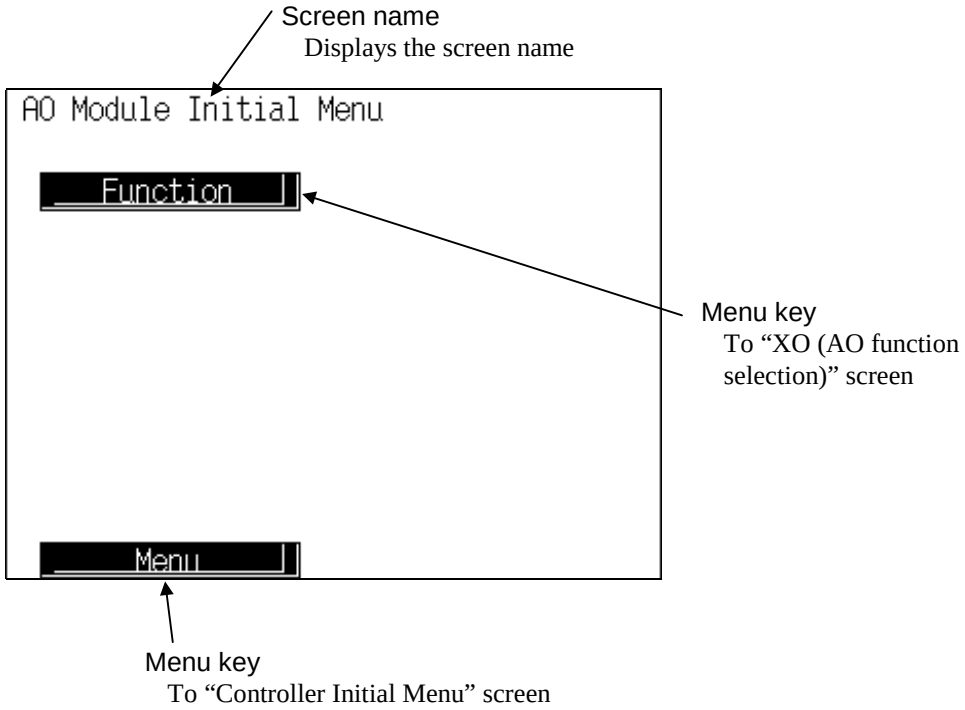
📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
Number of AI alarm delay times	**TK**	0 to 255 times	Sets the number of sampling period counting times until the alarm is turned ON after AI measured value enters the alarm region.	0
AI alarm 1 differential gap	**HC**	0.00 to 10.00 % of span	Sets the AI alarm 1 differential gap.	0.10
AI alarm 2 differential gap	**HF**	0.00 to 10.00 % of span	Sets the AI alarm 2 differential gap.	0.10

2.11 AO Module Initial Settings

2.11.1 AO Module Initial Menu screen

<AO Module Initial Menu screen>



Menu key: Touching this key, screen can be selected.

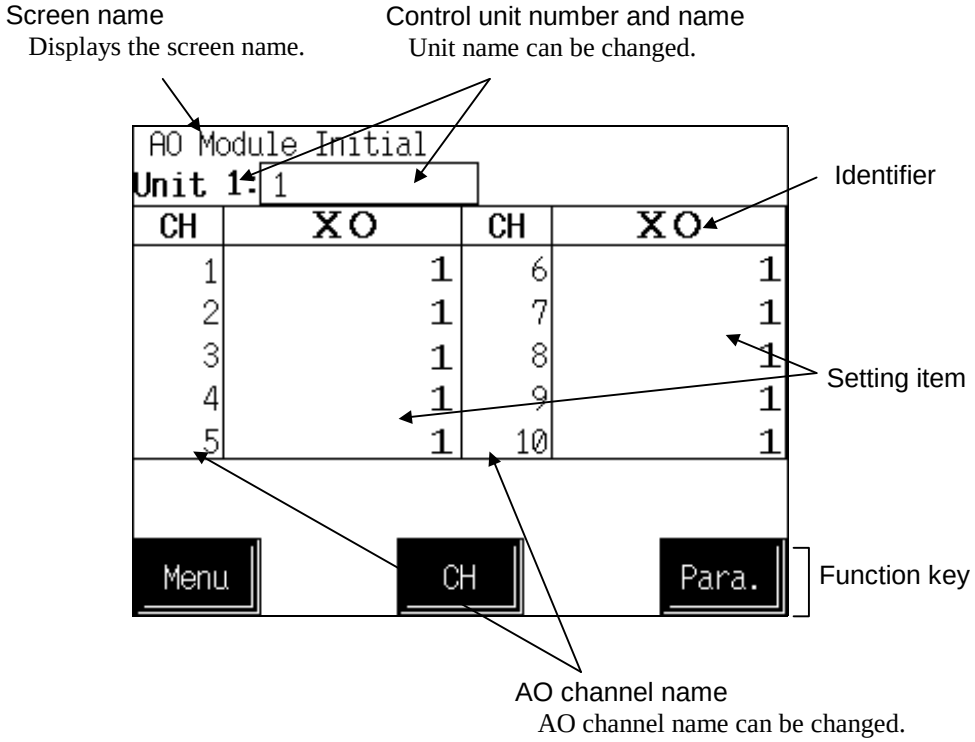
Function: "XO (AO function selection)" screen

Menu: "Controller Initial Menu" screen

2.11.2 The basic configuration of AO module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: XO (AO function selection) 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 initialize "Unit Name Set" screen.

AO channel name: Displays the AO channel name. The channel name can be changed with the initialize "AO CH Name Set" screen.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the **2.11.3 AO module parameter list (P. A-50)**.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

2.11.3 AO module parameter list

Some items may not be set depending on the specification.

For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

■ Function setting parameter

Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
AO function selection	**XO**	0: Unused 1: Manual mode (outputs 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)	Sets the data output from the H-AO-□ module.	1
AO corresponding channel setting	**OY**	1 to 20 (TIO channel) 1 to 40 (AI and TI channel) Setting will be valid in recorder output mode.	Sets channel number of data to output from the H-AO-□ module.	1
AO zooming high limit	**CV**	AO zooming low limit to 100.0 % Setting will be valid in recorder output mode.	Sets the AO range high limit as a percentage for the input span of the channel corresponding to AO.	100.0

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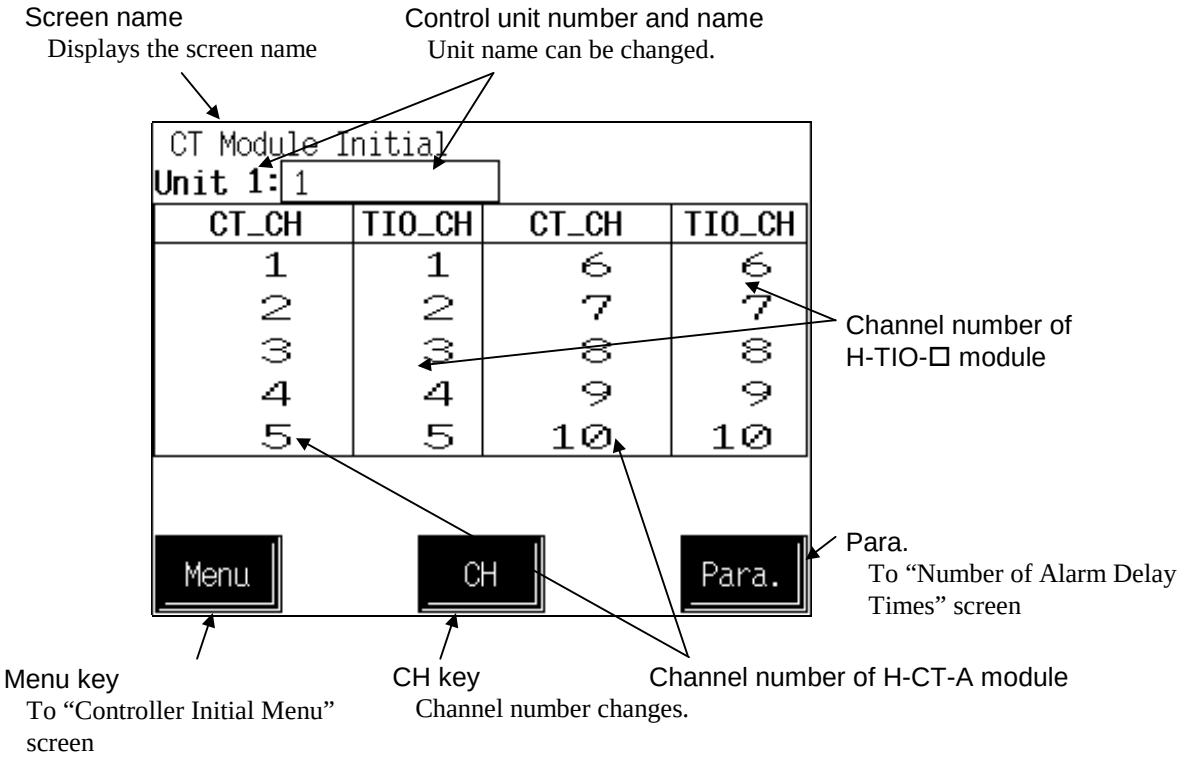
Name	Iden-tifier	Data range	Discription	Factory set value
AO zooming low limit	**CW**	0.0 % to AO zooming high limit Setting will be valid in recorder output mode.	Sets the AO range low limit as a percentage for the input span of the channel corresponding to AO.	0.0
AO display scale high	**HV**	Span 10000 or less (Within –9999 to +10000)	Sets the AO display scale high limit.	100.0
AO display scale low	**HW**	Span 10000 or less (Within –9999 to +10000)	Sets the AO display scale low limit.	0.0
AO decimal point position	**JR**	0: No digit below decimal point 1: 1 digit below decimal point 2: 2 digits below decimal point 3: 3 digits below decimal point	Sets the AO display decimal point position.	1
AO output change rate limiter	**PW**	0.0 to 100.0 %/second (0.0: OFF)	Sets the amount of analog output per time to restrict sudden analog output changes.	0.0

2.12 CT Module Initial Settings

As CT module initial setting screens, both CT input CH allocation screens and the number of CT alarm delay times setting screens are available. Change the screen by touching [Para.] key.

2.12.1 CT Module Initial CT used CH Selection screen

<CT Module Initial: CT used CH Selection 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 initialize "Unit Name Set" screen.

CT_CH: Display the channel number of H-CT-A module.

TIO_CH: 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.

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

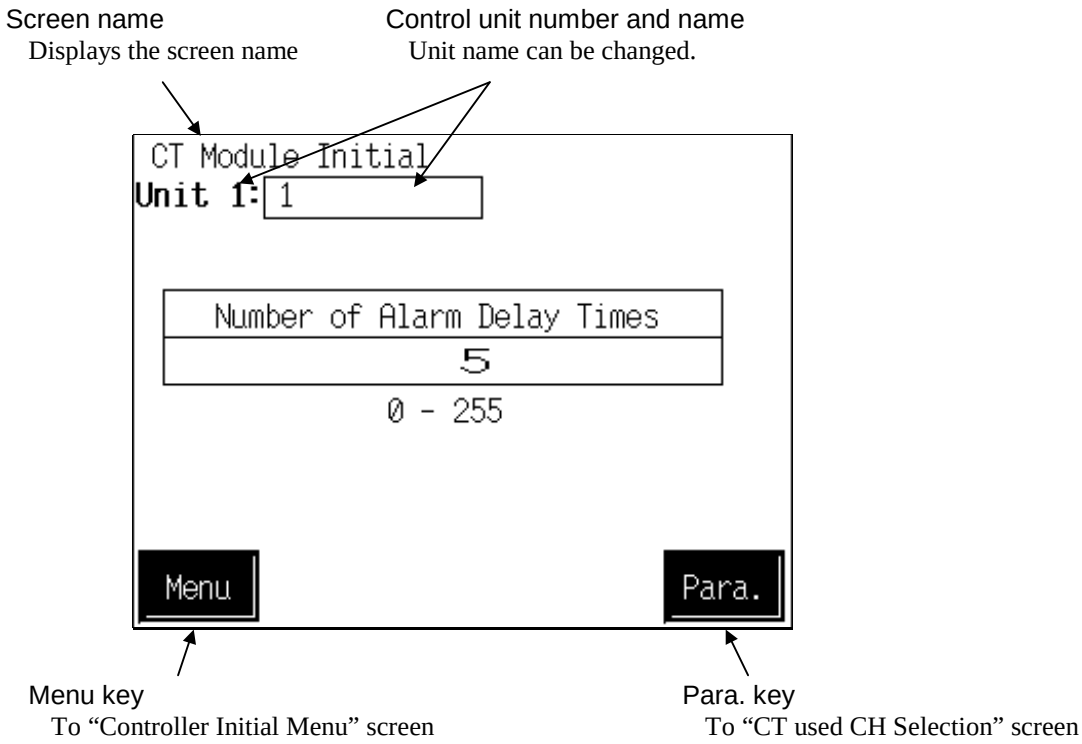
CH key: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Para. key: Touching this key changes to the "Number of Alarm Delay Times" screen.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.12.2 CT Module Initial Number of Alarm Delay Times screen

<CT Module Initial: Number of Alarm Delay Times 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 initialize "Unit Name Set" screen.

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

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

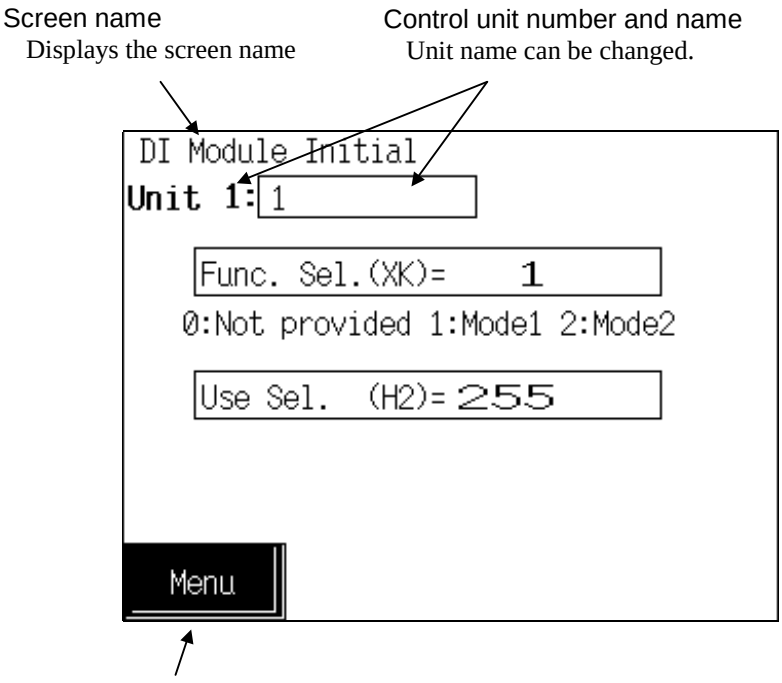
Para. key: Touching this key changes to the " CT used CH Selection screen" screen.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.13 DI Module Initial Settings

2.13.1 DI Module Initial screen

<DI Module Initial 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 initialize "Unit Name Set" 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

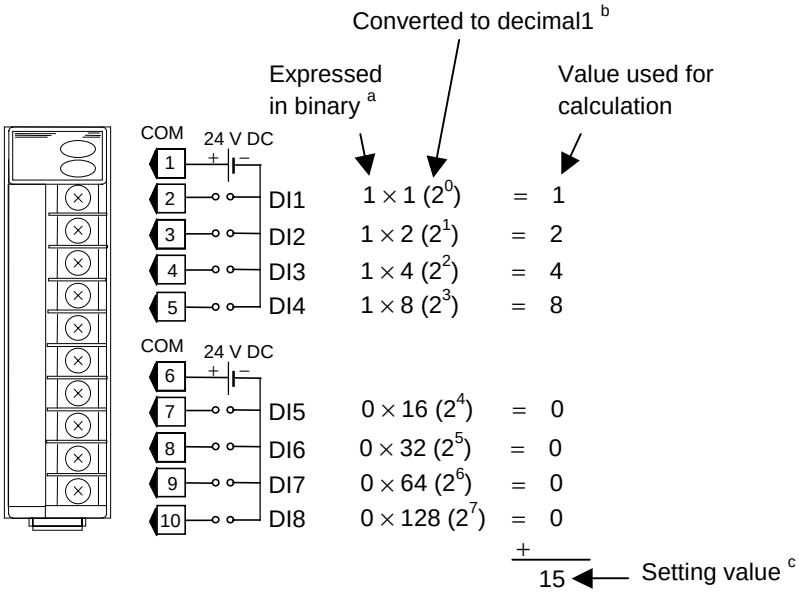
Factory set value: 255

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	–	–	–

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.

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

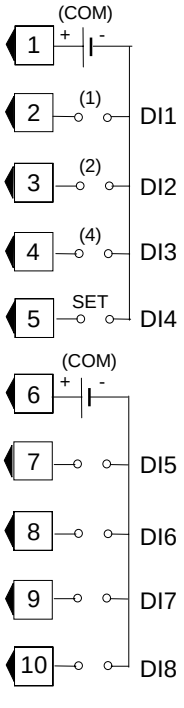
☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

<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.)

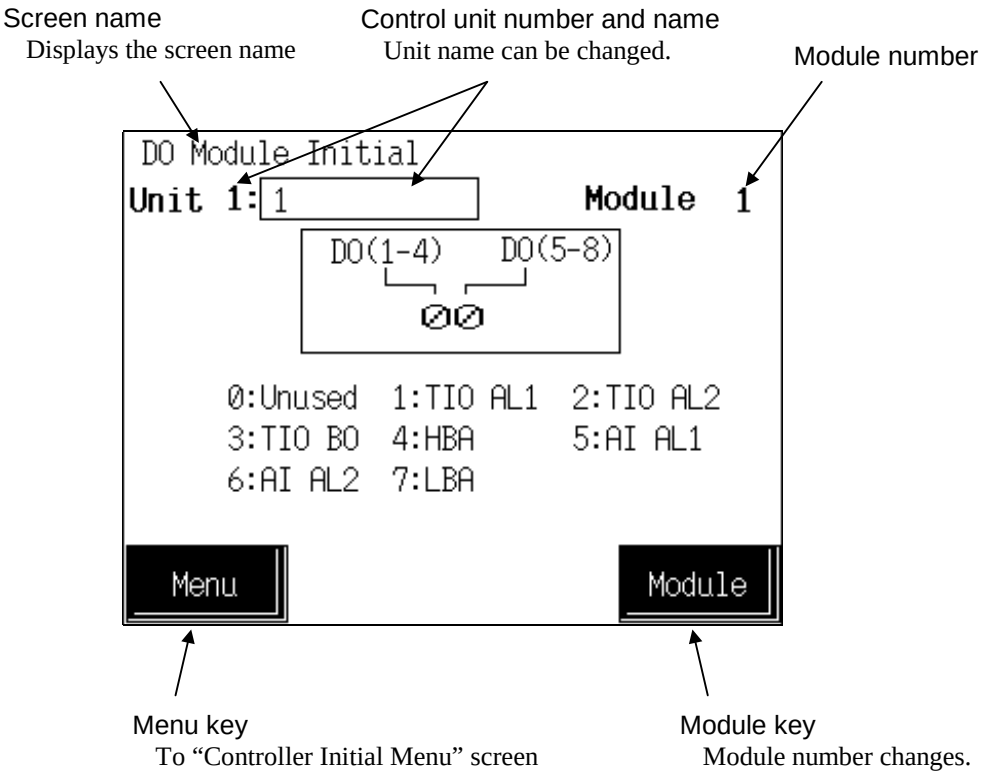
DI7, DI8 ← Unused

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 (+).

2.14 DO Module Initial Settings

2.14.1 DO Module Initial screen

<DO Module Initial 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 initialize "Unit Name Set" screen.

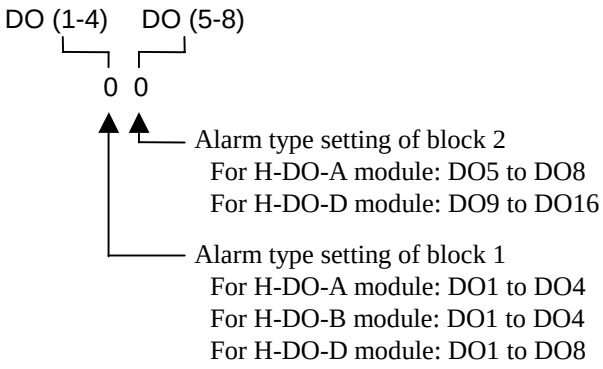
Module number: Displays the module number whose data is being displayed.

DO (1-4), DO (5-8): 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 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.

About block



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

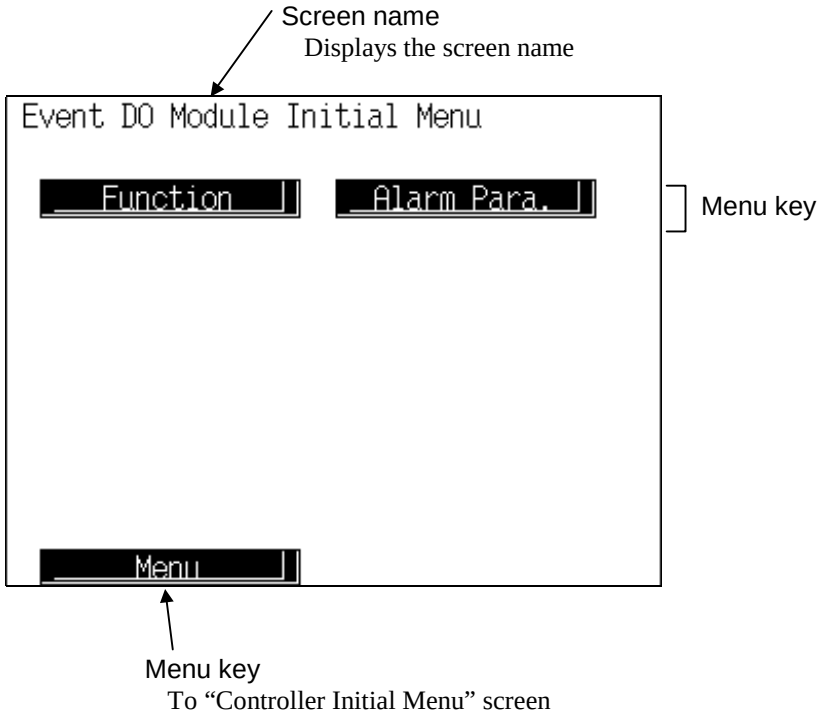
Module key: Every time this key is touched, the displayed module number changes.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

2.15 Event DO (H-DO-C) Module Initial Settings

2.15.1 Event DO Module Initial Menu screen

<Event DO Module Initial Menu screen>



Menu key: Touching this key, screen can be selected.

Function: "XF (Event DO function selection)" screen

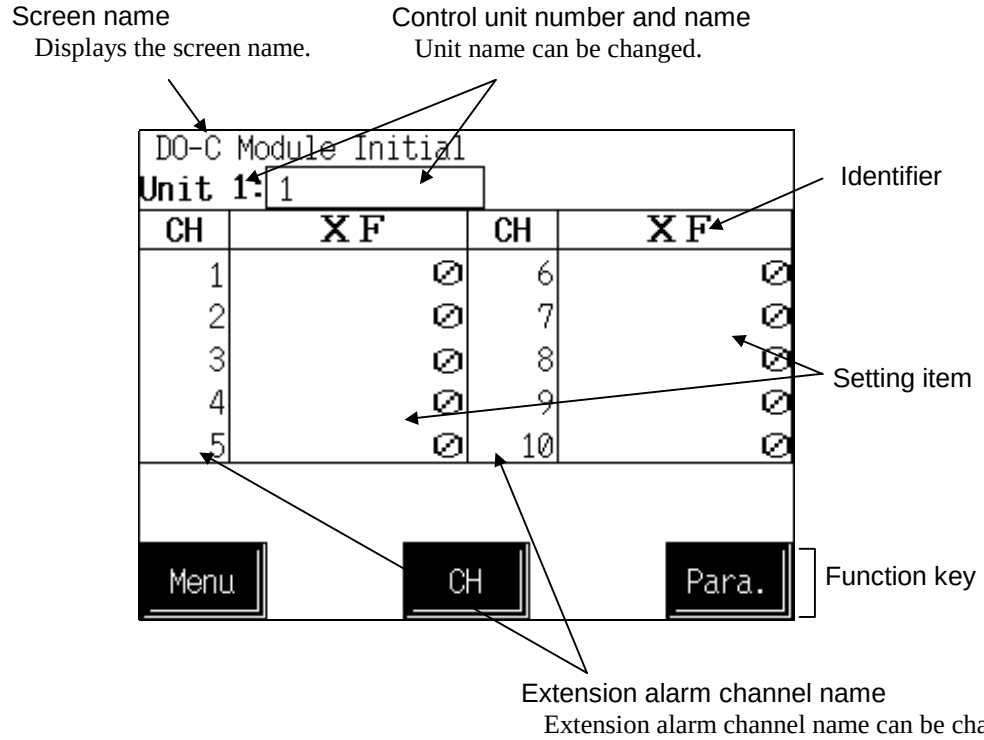
Alarm Para.: "HG (Event DO extension alarm differential gap)" screen

Menu: "Controller Initial Menu" screen

2.15.2 The basic configuration of event DO module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: XF (Event DO function selection) 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 initialize "Unit Name Set" screen.

Extension alarm channel name:

Displays the extension alarm channel name. The channel name can be changed with the initialize "EX-Alarm CH Name Set" screen.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the **2.15.3 Event DO module parameter list (P. A-62)**.

Function keys: These key switches are assigned to match the contents of the screen.

Menu: Touching this key changes to the "Event DO Module Initial Menu" screen.

CH: Every time this key is touched, the displayed channel number changes. If there is no channel to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

2.15.3 Event DO module parameter list

📖 Some items may not be set depending on the specification.

☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

■ Function setting parameter

📖 Change the identifier by touching [Para.] key.

Name	Iden-tifier	Data range	Discription	Factory set value
Event DO function selection	**XF**	0 to 30 See **Event output function (P. A-63)**.	Sets the event DO (H-DO-C) module event functions. Extension alarm output function: Sets the extension alarm type output. Status output function: Sets the output alarm type. Data comparison output function: Sets the comparison measured value type output.	0
Event DO corresponding channel setting	**XG**	1 to 40 See **Event output function (P. A-63)**.	Extension alarm output function, Status output function: Sets the number for the channel to output the alarm. Data comparison output function: Sets the number for the channel for the comparison data 1.	1
Event DO mode select setting	**XH**	0 to 40 See **Event output function (P. A-63)**.	Extension alarm output function: Sets the alarm action. Data comparison output function: Sets the number for the channel for the comparison data 2.	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.

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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	—	—

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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}

■ Alarm related parameter

📖 Change the identifier by touching [Para.] key.

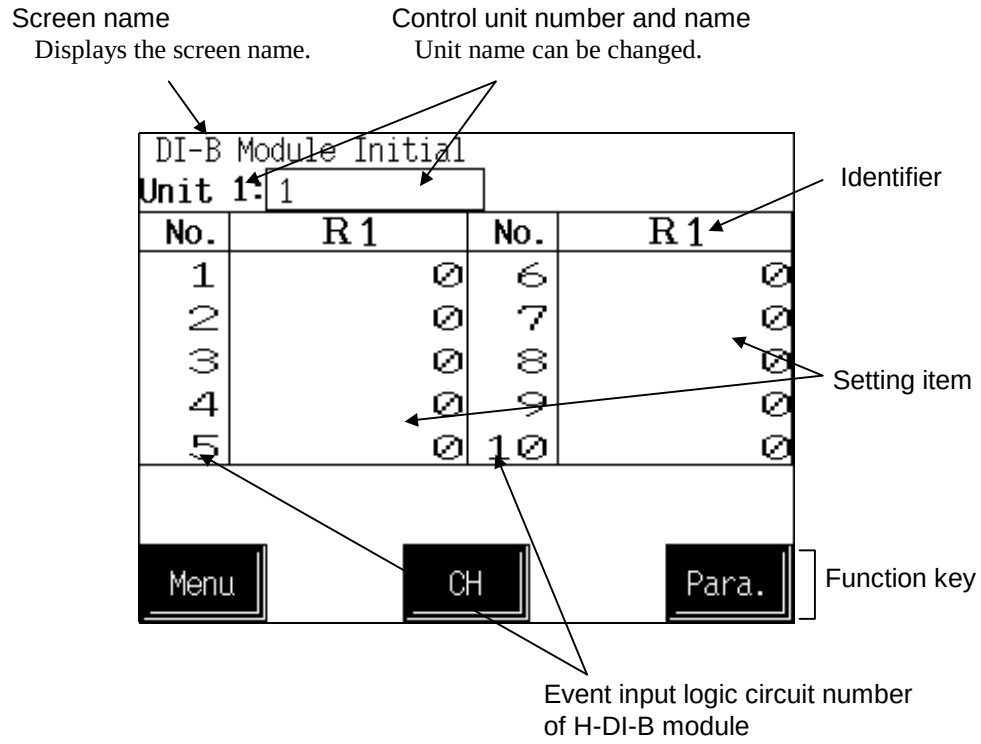
Name	Iden-tifier	Data range	Discription	Factory set value
Event DO extension alarm differential gap	**HG**	0.00 to 10.00 %	When the event DO function corresponds to the event DO extension alarm output function, sets the alarm differential gap.	0.10
Event DO extension alarm interlock	**LE**	0: Not provided 1: Provided	When the event DO function corresponds to the event DO extension alarm output function, sets the presence or absence of the alarm interlock function.	0
Number of Event DO extension alarm delay times	**TI**	0 to 255 times	When the event DO function corresponds to the event DO 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.	0

2.16 Event DI (H-DI-B) Module Initial Settings

2.16.1 The basic configuration of event DI module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: R1 (Event DI type selection 1) 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 initialize "Unit Name Set" screen.

No: Displays the event input logic circuit number of H-DI-B module.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the **2.16.2 Event DI module parameter list (P. A-68)**.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed event input logic circuit number changes. If there is no event input logic circuit to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

2.16.2 Event DI module parameter list

Some items may not be set depending on the specification.

Change the identifier by touching [Para.] key.

For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

Name	Iden-tifier	Data range	Discription	Factory set value
Event DI type selection 1	**R1**	0 to 30 [a] (17 to 30: Not settable)	Sets the type of logic input 1.	0
Event DI type selection 2	**R2**	0 to 30 [a] (17 to 30: Not settable)	Sets the type of logic input 2.	0
Event DI type selection 3	**R3**	0 to 30 [a] (17 to 30: Not settable)	Sets the type of logic input 3.	0
Event DI type selection 4	**R4**	0 to 30 [a] (17 to 30: Not settable)	Sets the type of logic input 4.	0
Event DI corresponding channel selection 1	**E1**	1 to 80 [a]	Sets the channel or logic number to be input to the logic input 1.	1
Event DI corresponding channel selection 2	**E2**	1 to 80 [a]	Sets the channel or logic number to be input to the logic input 2.	1
Event DI corresponding channel selection 3	**E3**	1 to 80 [a]	Sets the channel or logic number to be input to the logic input 3.	1
Event DI corresponding channel selection 4	**E4**	1 to 80 [a]	Sets the channel or logic number to be input to the logic input 4.	1
Event DI reversal selection 1	**W1**	0: Normal 1: Reversal	Sets whether the inverted logic input 1 is captured.	0
Event DI reversal selection 2	**W2**	0: Normal 1: Reversal	Sets whether the inverted logic input 2 is captured.	0

[a] Set the type and corresponding channel of Event DI. Event DI uses it with logic input function.

For the data , see the **Logic input function (P. A-70)**.

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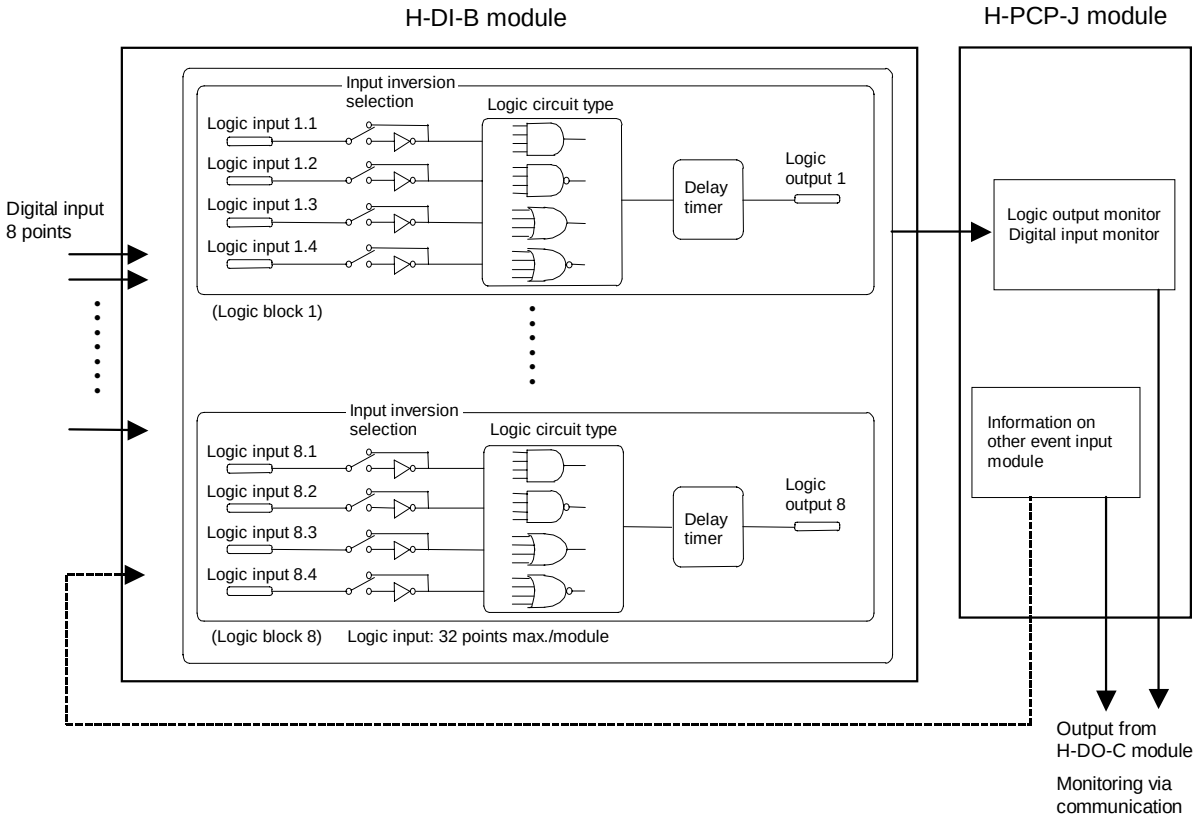
Name	Iden-tifier	Data range	Discription	Factory set value
Event DI reversal selection 3	**W3**	0: Normal 1: Reversal	Sets whether the inverted logic input 3 is captured.	0
Event DI reversal selection 4	**W4**	0: Normal 1: Reversal	Sets whether the inverted logic input 4 is captured.	0
Event DI logic circuit selection	**LU**	0: *AND* (1 active) 1: *NAND* (0 active) 2: *OR* (1 active) 3: *NOR* (0 active)	Sets the logic circuit type.	0
Event DI delay timer setting	**LW**	0 to 255 times	Set number of times to delays the logical output. A delay of 200 ms/time (only active side).	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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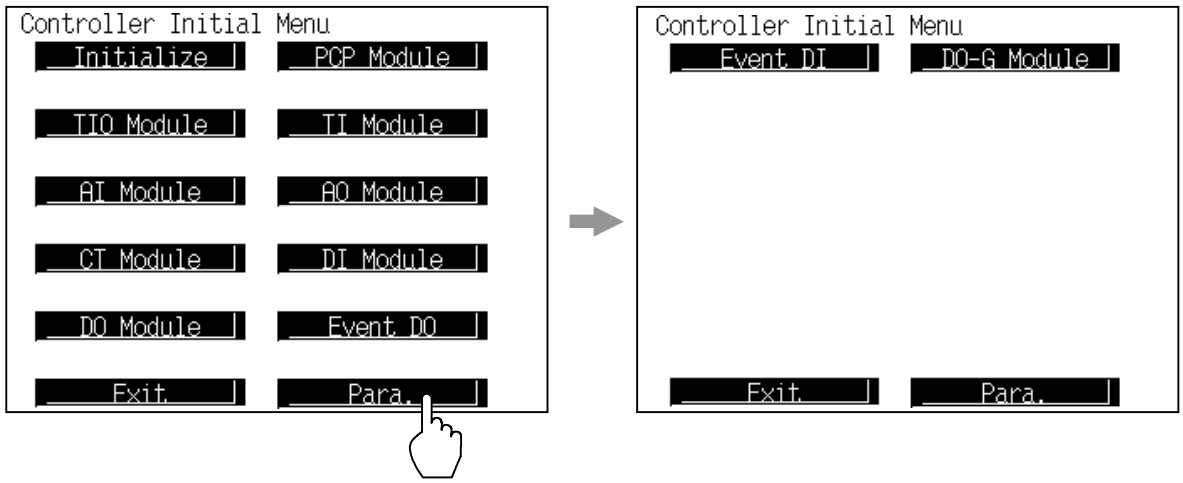
Event DI type selection (Identifier R1 to R4)		Event DI corresponding channel selection (Identifier E1 to E4)	Note
Setting data	Description		
0	Input always OFF	—	Always ON at "Reversal" selection
1	Event DI input	1 to 80	0: OFF 1: ON
2	Event DI logic output	1 to 80	0: OFF 1: ON
3	Event DO output	1 to 72	0: OFF 1: ON
4	PCP error code	—	0: Not provided 1: Provided
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 to18	0: OFF 1: ON
8	Alarm 2	1 to18	0: OFF 1: ON
9	Burnout	1 to18	0: OFF 1: ON
10	Heater break alarm (HBA)	1 to18	0: OFF 1: ON
11	Control loop break alarm (LBA)	1 to18	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	—	—

2.17 Event DI (H-DI-B)/DO-G Module Initial Settings

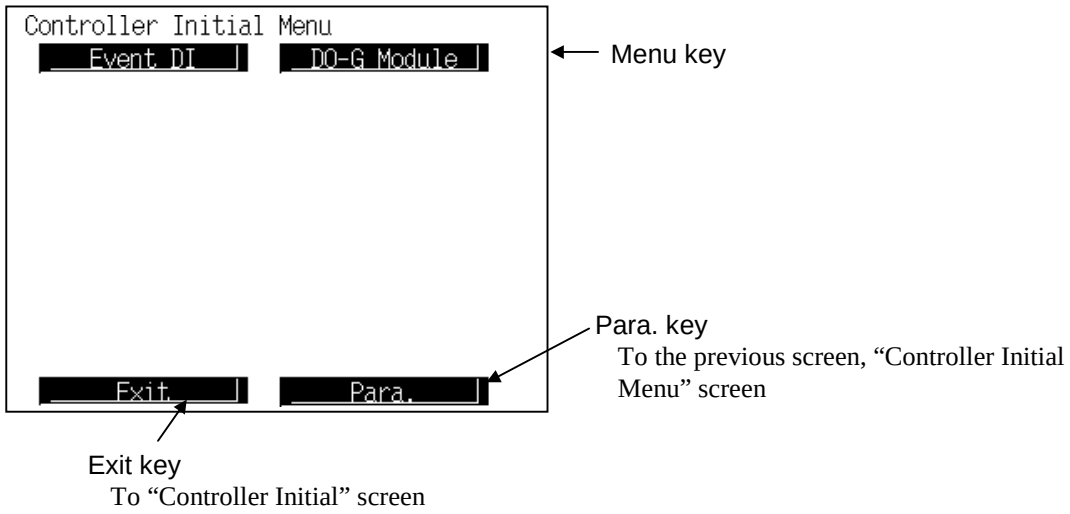
Displayed only when H-PCP-J is used.

2.17.1 Controller Initial Menu screen

Touch the [Para.] key on the “Controller Initial Menu” screen to change the display to the “Controller Initial Menu” screen of event DI module and DO-G module.



< Controller Initial Menu screen>



Menu key: Touching this key, screen can be selected.

Event DI:	“DI-B Module Initial: R1 (Event DI type selection 1)” screen
DO-G Module:	“DO-G Module Initial: D3 (H-DO-G output limiter high limit)” screen

2.17.2 Event DI (H-DI-B) module initial settings

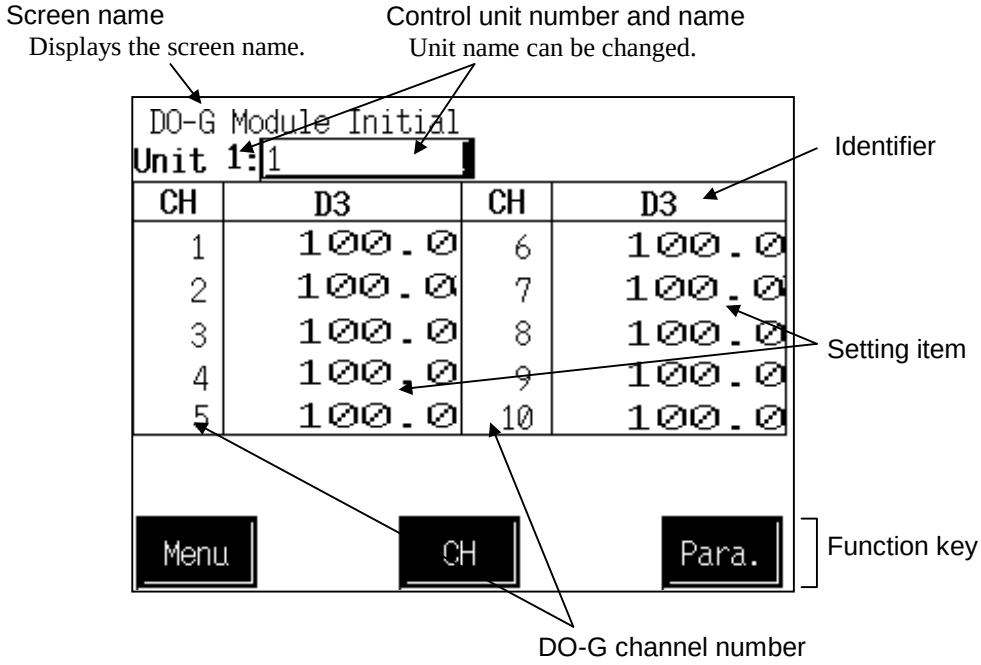
☞ For the setting item, see the **2.16 Event DI (H-DI-B) Module Initial Settings (P. A-67)**.

2.17.3 DO-G module initial settings

■ The basic configuration of event DO-G module parameter screen

The basic configuration of each parameter screen is as shown below.

Example: D3 (H-DO-G output limiter high limit) 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 initialize "Unit Name Set" screen.

CH: Displays the channel number of H-DO-G module.

Identifier (Setting item):

Displays the item and data. Details of display varies depending on the each screen. Change the identifier by touching [Para.] key.

☞ For the identifier, see the ■ **DO-G module parameter list (P. A-74)**.

Function keys: These key switches are assigned to match the contents of the screen.

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

CH: Every time this key is touched, the displayed event input logic circuit number changes. If there is no event input logic circuit to be selected, the [CH] key becomes invalid.

Para.: Every time this key is touched, the identifier (setting item) with the same related parameter group changes. If there in no item to be selected, the [Para.] key becomes invalid.

■ DO-G module parameter list

📖 Change the identifier by touching [Para.] key.

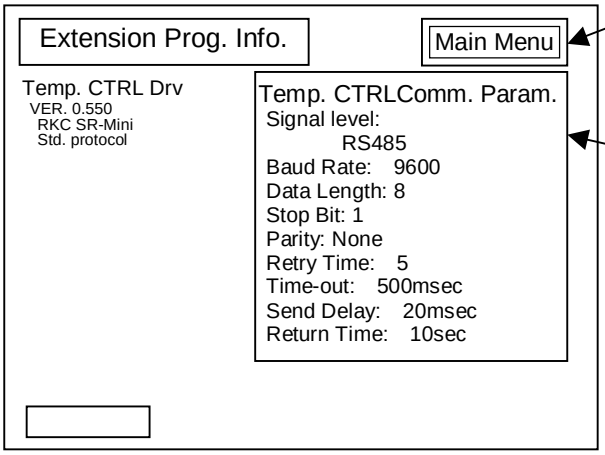
☞ For the data setting method, see the **5.2.1 Data settings (P. 5-7)**.

Name	Iden-tifier	Data range	Discription	Factory set value
H-DO-G output limiter (high limit)	**D3**	Output limiter (low limit) to 105.0 %	Sets the high limit of manipulated output.	100.0
H-DO-G output limiter (low limit)	**D4**	–5.0 % to Output limiter (high limit)	Sets the low limit of manipulated output.	0.0
H-DO-G output cycle time	**D5**	1 to 100 seconds	Sets the cycle time of manipulated output.	2
H-DO-G master channel setting	**D8**	0 to The number of H-TIO-□ module use channel (0: Unused)	Set the channel of temperature control module to make with a master.	0
H-DO-G output ratio set value	**D9**	0.001 to 9.999	Set the output ratio to keep gradient in output.	1.00

3. Check the Communication Parameter

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

<Extension Prog. Info. screen>



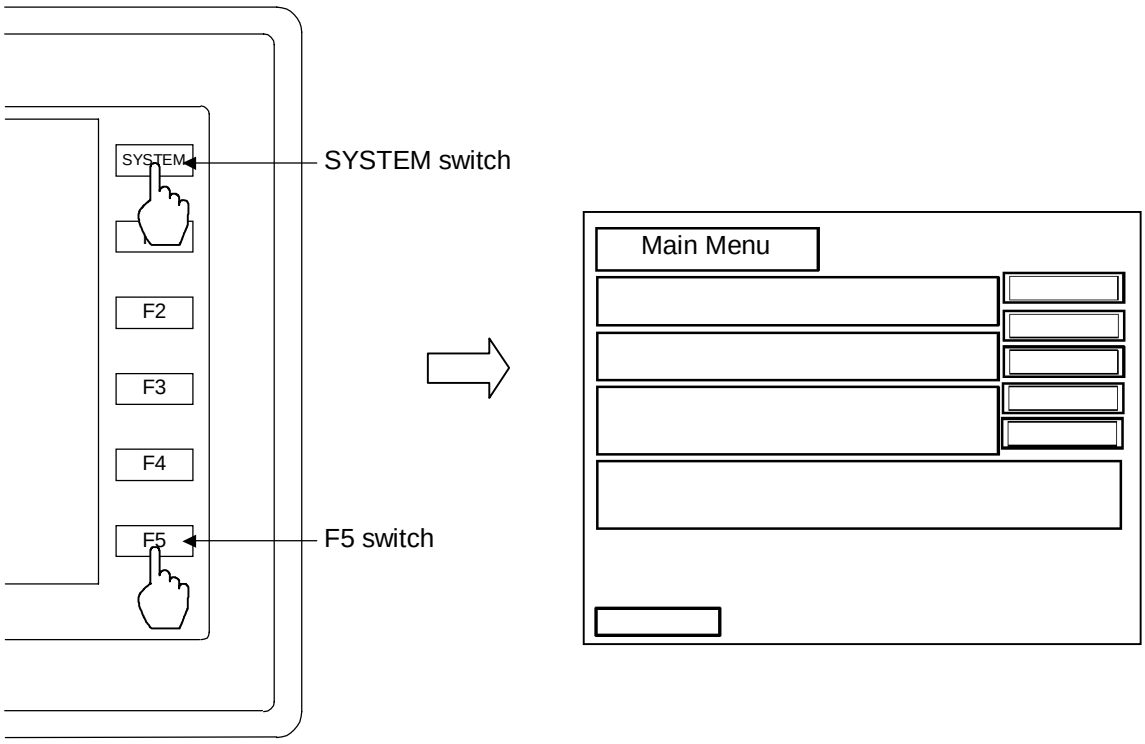
Main Menu
Touching this key change to the “Main Menu” screen.

Temperature control communication parameter
The parameter for communication between the operation panel and control unit is displayed but cannot be set.

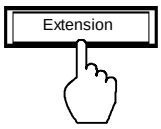
The parameter for communication on the operation panel side is changed by the panel editor V-SFTE. For the panel editor V-SFTE, please contact RKC sales office or the agent.

Operation procedures

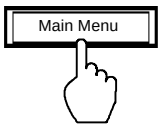
1. Press and hold the [SYSTEM] switch, and press the [F5] switch at the same time.
“Main Menu” screen is displayed. The “Main Menu” screen can be changed on any screen.



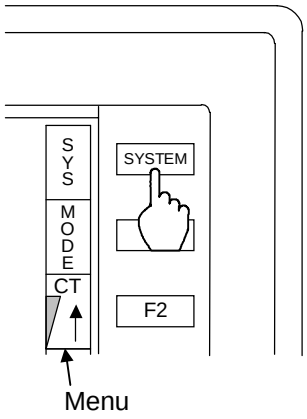
2. Touch the [Extension] key. “Extension Prog. Info.” screen is displayed.



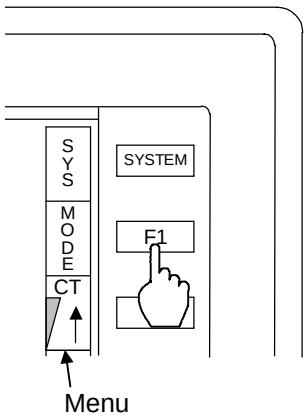
3. After the information is checked, touch the [Main Menu] key to call out the “Main Menu” screen.



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 “Operation Menu” screen after checking the error.



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

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