Operation Panel

OPC-TS2060

[For SRZ]

Operation Manual

RKC INSTRUMENT INC.

IMS01T37-E1

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

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

SYMBOLS

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

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

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

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

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

 : This mark indicates where additional information may be located.

⚠ WARNING

- To prevent injury to persons, damage to the instrument and the equipment, a suitable external protection device shall be required.
- All wiring must be completed before power is turned on to prevent electric shock, fire or damage to the instrument and equipment.
- This instrument must be used in accordance with the specifications to prevent fire or damage to the 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 may occur and warranty is void under these conditions.

Safety Precautions

This product consists of the Operation Panel (TECHNOSHOT TS2060 manufactured by Hakko Electronics Co., Ltd,) and our application software for the SRZ series.
For safety precautions, refer to the relevant instruction manuals of Hakko. The manuals can be downloaded from the website of Hakko.

URL (Hakko Electronics Co.,Ltd): http://monitouch.fujielectric.com/

- MONITOUCH TECHNOSHOT TS2060 OPERATING INSTRUCTIONS
- MONITOUCH Hardware Specifications TECHNOSHOT TS2060

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 explanation purpose.
- 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 is not responsible for any damage and/or injury resulting from the use of instruments made by imitating this instrument.
- 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 for module type controller SRZ. Through connection with the SRZ, various data monitoring and setting, operation and alarm monitoring, etc. can be carried out.

This manual describes the connection with the SRZ and screen operations of the OPC-TS2060.
For the mounting, power supply wiring and battery replacement of OPC-TS2060, refer to the instruction manual of Hakko Electronics Co., Ltd.

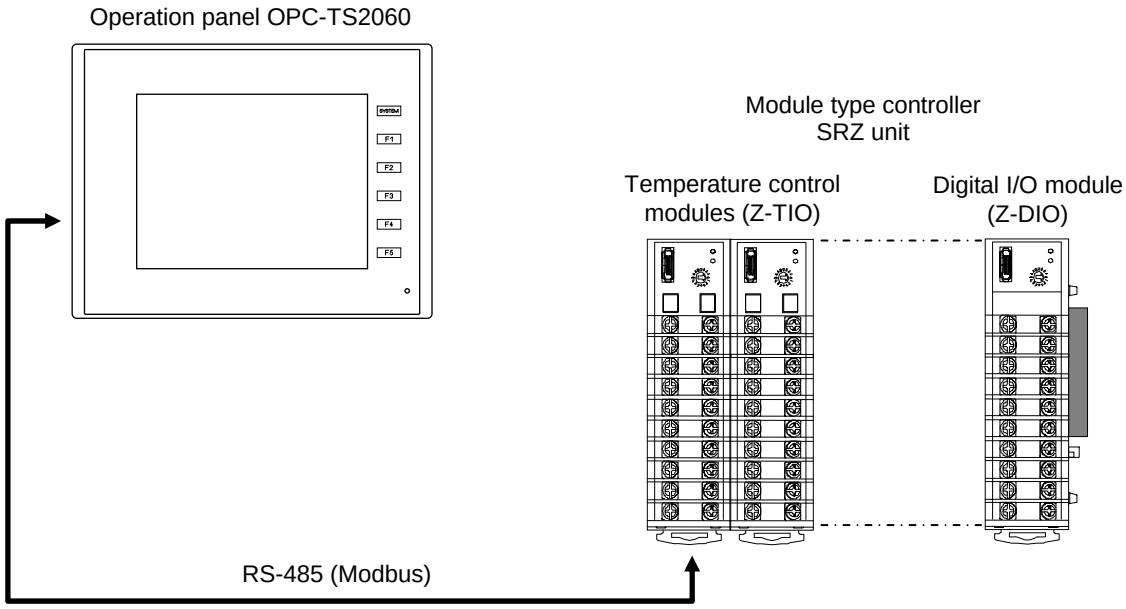
URL: http://monitouch.fujielectric.com/

In addition, the Model code of the MONITOUCH TS2060 series of operation panels (made by Hakko Electronics Co., Ltd.) corresponding to our OPC-TS2060 operation panels is as listed below.

Model code correspondence list

Model code of RKC operation panel	Model code of MONITOUCH (Hakko Electronics Co., Ltd.)	Specifications
OPC-TS2060-15/□	TS2060	TFT color, 320 × 240 dots, 5.7 inches, 24 V DC

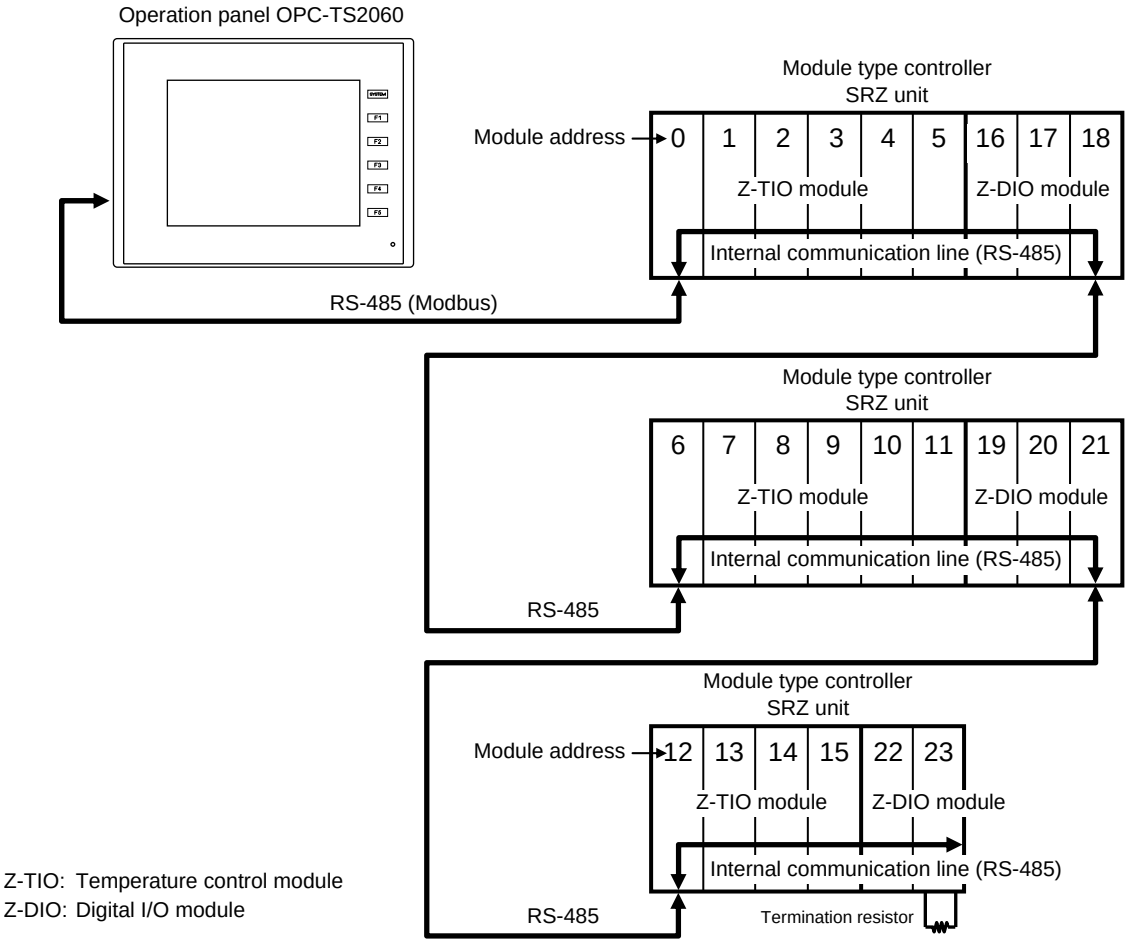
■ System configuration example



[Usable SRZ modules]
- Temperature control module: Z-TIO-A (4-channel type), Z-TIO-B (2-channel type)
- Digital I/O module: Z-DIO-A (Digital input: 8 channels, Digital output: 8 channels)

[Maximum number of connected SRZ modules]
The maximum number of SRZ modules (including Z-DIO modules) on the same communication line is 31.
- Temperature control module (Z-TIO): 1 to 16 modules (Temperature control: 2 to 64 channels)
- Digital I/O module (Z-DIO): 0 to 16 modules (Digital input: 0 to 128 channels, Digital output: 0 to 128 channels)

● **When two or more SRZ units are connected**



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■ Easy operation using the transparent touch panel

By touching the transparent touch panel on the display of this operation panel OPC-TS2060 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-TS2060 has a dustproof, splashproof construction equivalent to **IP65*** (IEC standards). (Only the front section of the OPC-TS2060 mounted on the control panel.)

* When gasket is installed.

1.2 Checking the Products

Before using this product, check each of the following:

- Model code
- Check that all of the items delivered are complete.
- Check that there are no scratch or breakage in external appearance (case, front panel, 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 – TS2060 – 1 5 / □
(1) (2) (3)

(1) Display method
1: TFT color LCD

(2) Connected equipment
5: SRZ (Modbus protcol)

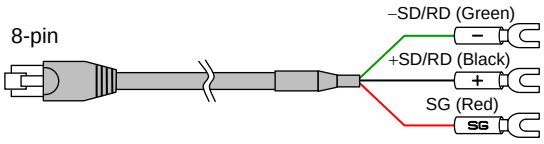
(3) Language
J: Japanese
E: English

■ Accessories

- Mounting brackets 4
- MONITOUCH TECHNOSHOT TS2060 OPERATING INSTRUCTIONS [multilingual manuals] 3
- Operation panel OPC-TS2060 [For SRZ] Operation Manual (IMS01T37-E1) 1

■ Peripheral equipment (Sold separately)

- Cable for SRZ connection Type: V6-MLT
  Used for the connection of the OPC-TS2060 and the SRZ.
  Cable length: 3 m



2 PREPARATIONS

2.1 Connections

⚠ WARNING

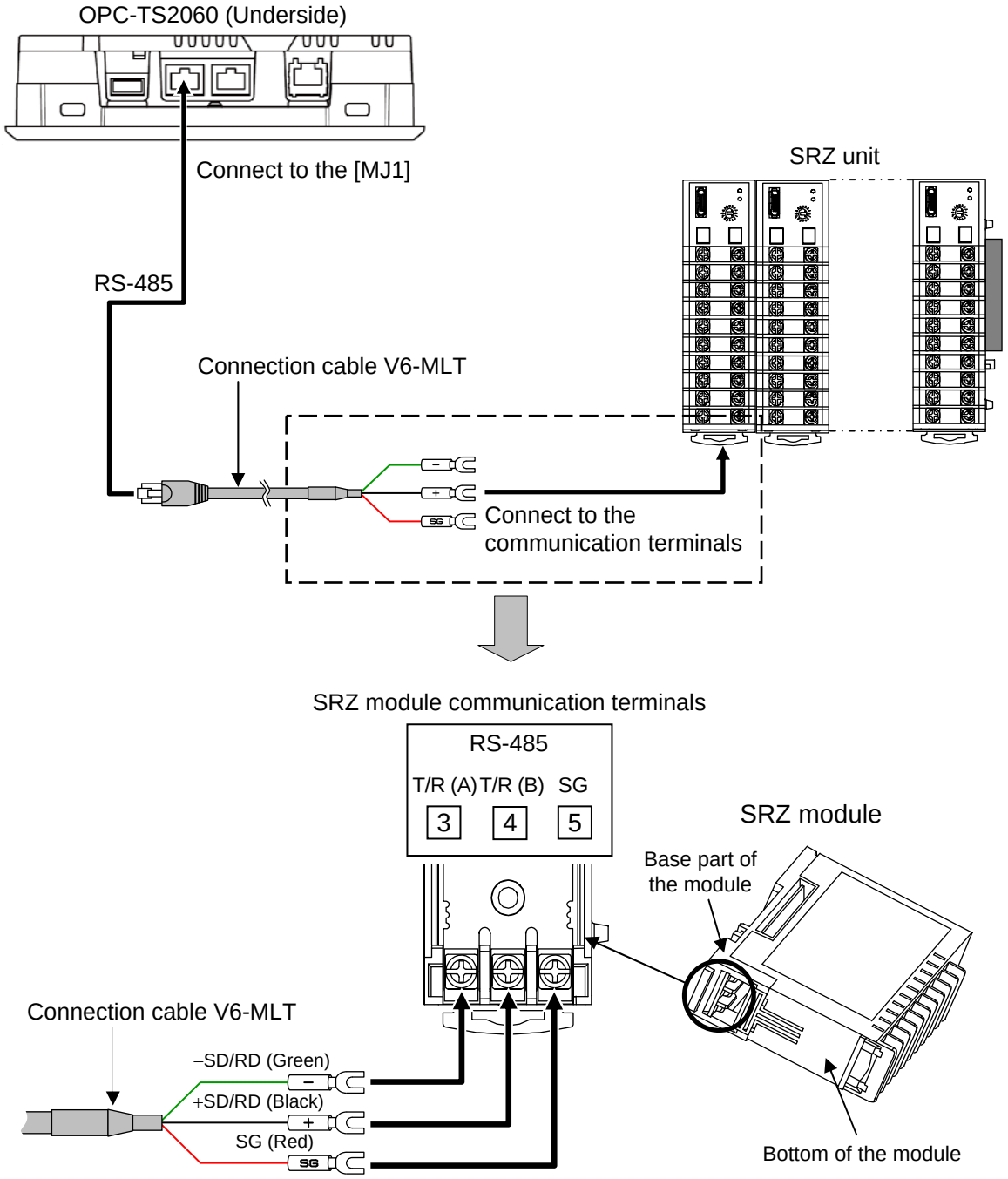
To prevent electric shock or instrument failure, turn off the power before connecting or disconnecting the instrument and peripheral equipment.

CAUTION

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

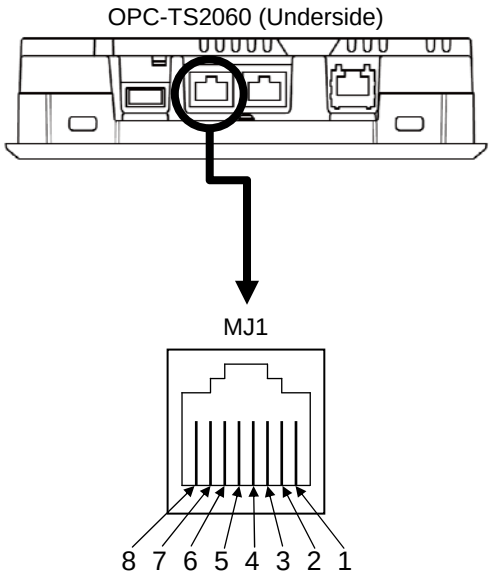
2.1.1 Connection to the SRZ

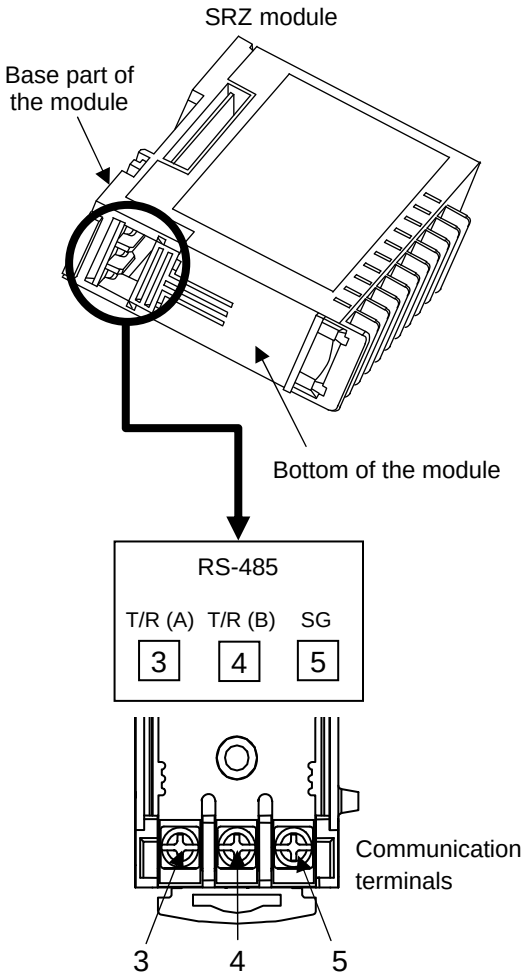
Use connection cable V6-MLT (Sold separately, Cable length: 3 m) to connect the OPC-TS2060 and the SRZ.



For removing the base of the SRZ module, refer to the **Z-TIO Instruction Manual (IMS01T01-E□)**.

- **Pin layout of connector (OPC-TS2060)/Terminal configuration (SRZ)**





- **Signal details**

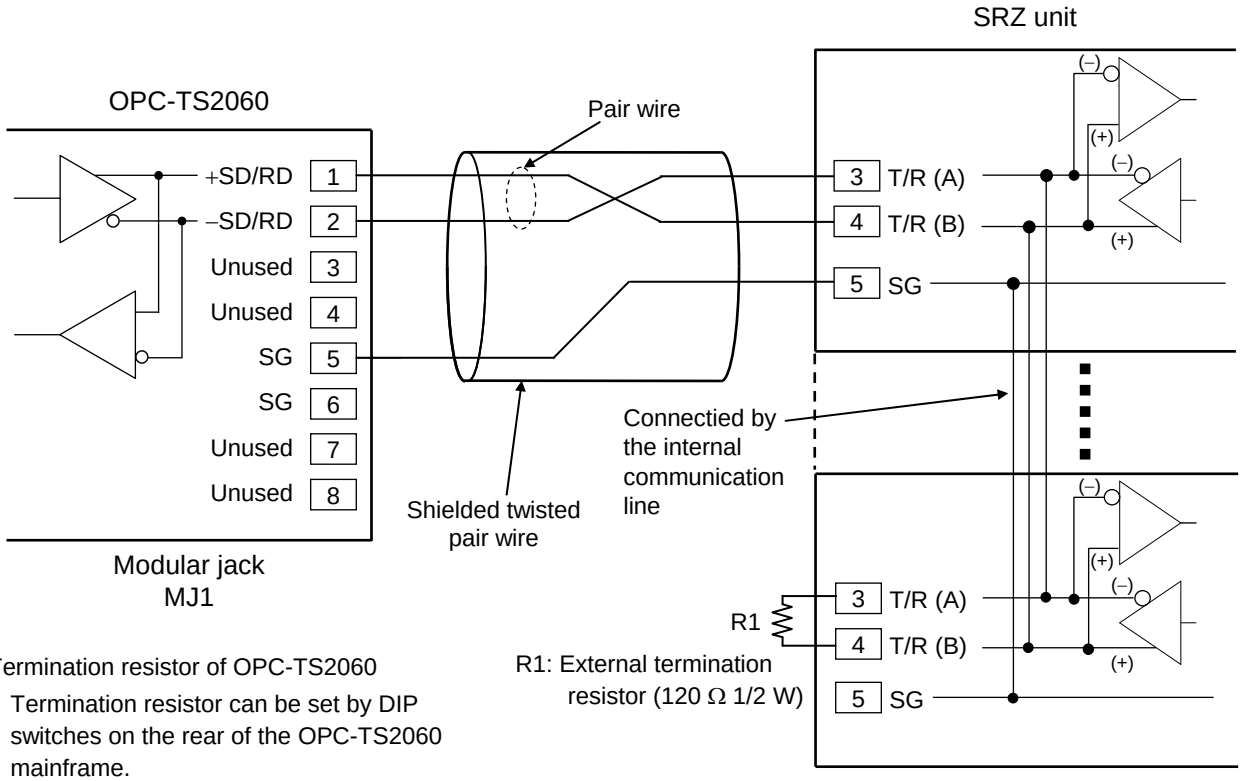
OPC-TS2060 modular jack 1 [MJ1]

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

SRZ module [Communication terminals]

Terminal No.	Signal name	Symbol
3	RS-485 send/receive data	T/R (A)
4	RS-485 send/receive data	T/R (B)
5	Signal ground	SG

- **Wiring contents**



Termination resistor of OPC-TS2060

Termination resistor can be set by DIP switches on the rear of the OPC-TS2060 mainframe.
Turn on the DIP switch No.6 for the termination resistor MJ1 (modular jack 1)
[Factory set value: ON]
(Refer to P. 2-8)

Maximum number of connected SRZ module: 31 modules
Temperatur control module (Z-TIO): 1 to 16 modules
Digital I/O module (Z-DIO): 0 to 16 modules

Recommended modular connector
Modular connector for connect to operation panel OPC-TS2060:
TM10P-88P (Manufactured by HIROSE ELECTRIC CO., LTD.)

For installation of termination resistor, refer to the **2.1.2 Installation of termination resistor (P. 2-6)**.

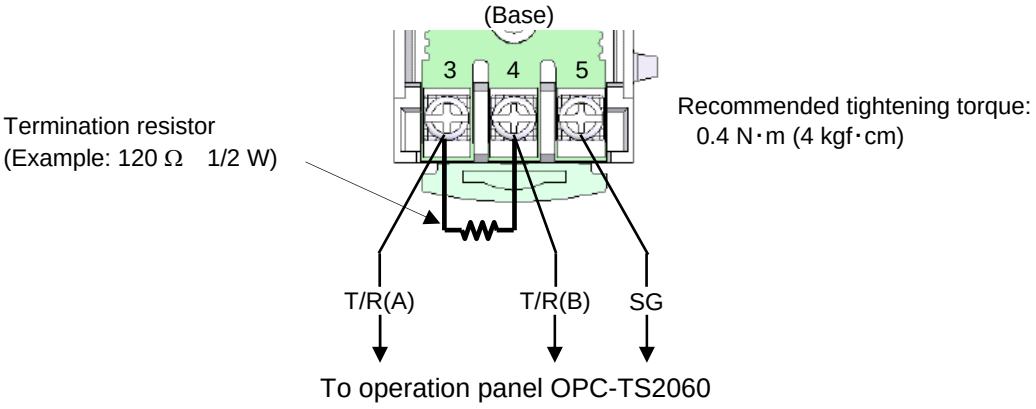
2.1.2 Installation of termination resistor

Install terminating resistors to both ends of the RS-485 communication line.

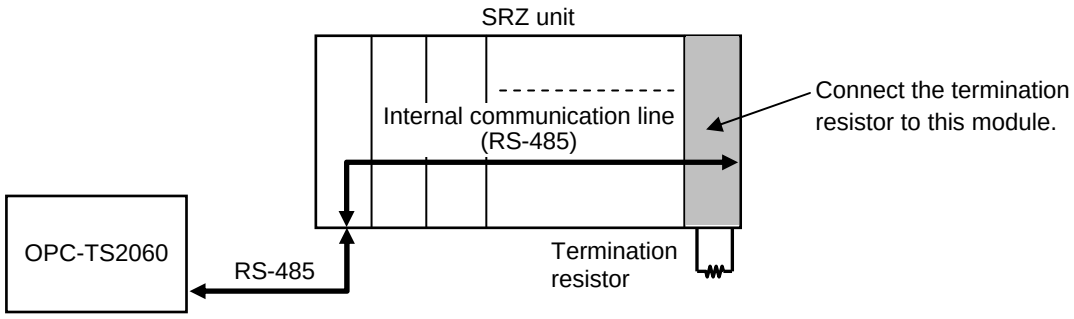
■ Installation of termination resistor for SRZ

- **Mounting position**

Connect a termination resistor between the communication terminals (No.3 and 4) of the module at the end of the communication line from the host computer.



- **When two or more module are connected**



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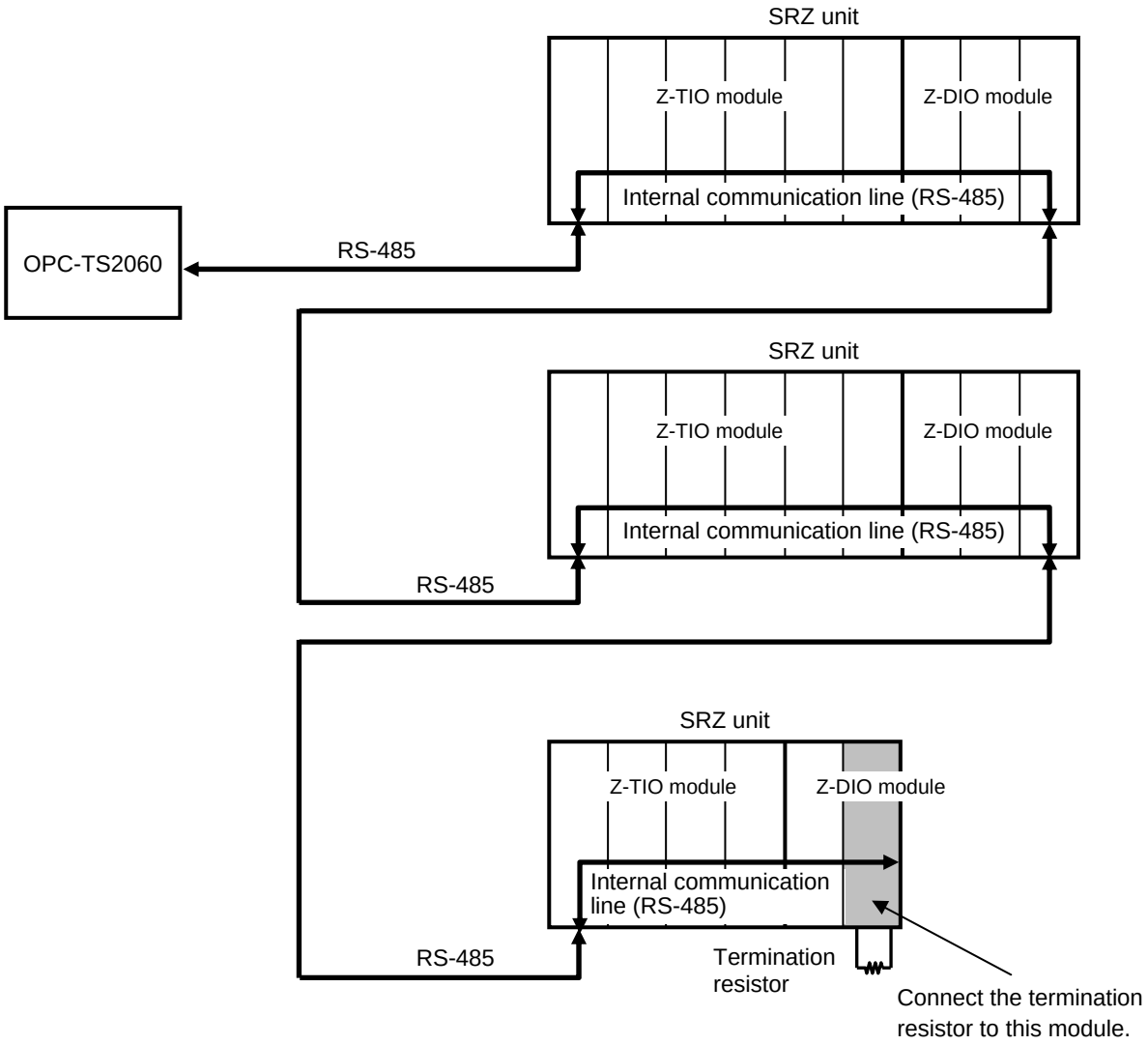
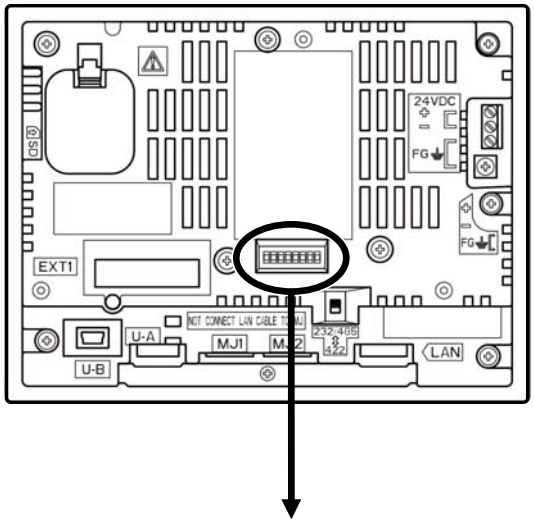
- **When two or more SRZ units are connected**



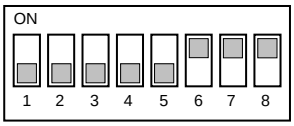
■ Installation of termination resistor for OPC-TS2060

Set the termination resistor of MJ1 (modular jack 1) with DIP switches No. 6.
The DIP switch is set to ON by factory default. Use the instrument without any changes.

OPC-TS2060 (Rear)



DIP switch



■ No. 7, No. 8
Switch No. 7 and 8 must be always ON. Do not set to OFF.
Factory set value: ON

■ No. 6
MJ1 (modular jack 1) terminating resistance
Switch No. 6 must be always ON. Do not set to OFF.
Factory set value: ON

■ No. 1 to No. 5
Switch No.1 to 5 must be always OFF. Do not set to ON.
Factory set value: OFF

2.2 Communication 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.

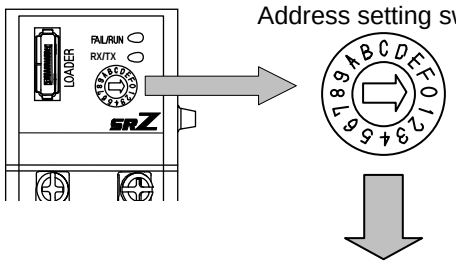
Set the communication parameter for communication between the operation panel OPC-TS2060 and the SRZ.

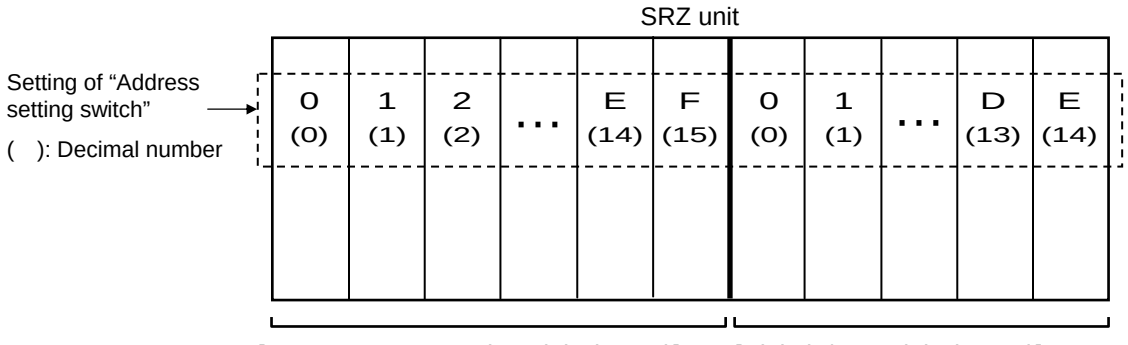
2.2.1 Module address setting

When using two or more modules, set the desired address to each module.
Set the module address by address setting switches of front of module. For this setting, use a small blade screwdriver.

To avoid problems or malfunction, do not duplicate an address on the same communication line.

Set the module addresses in order from "0" without skipping any numbers. If a number is skipped, "no response" will occur.





[Temperature control module (Z-TIO)]
Set address number from the "0" sequentially. The value obtained by adding "1" to the set address corresponds to the address used for the actual communication.

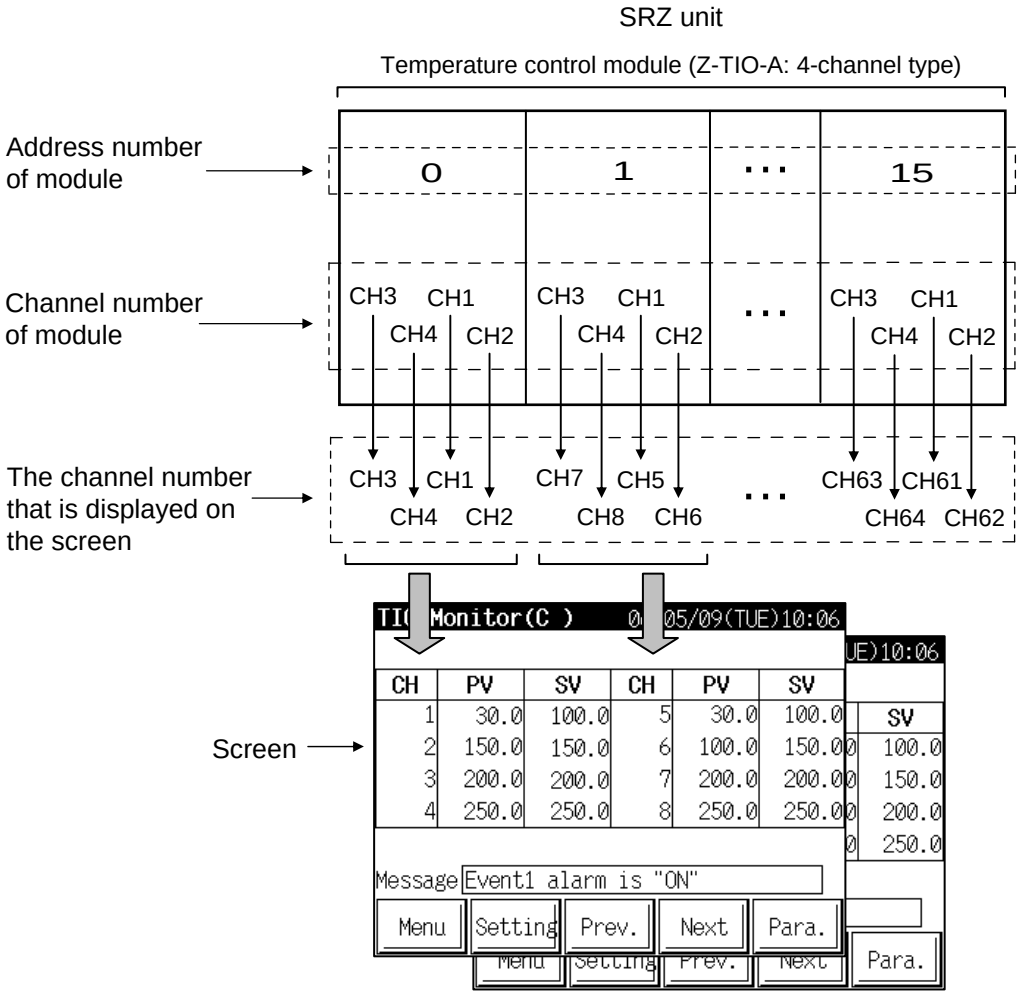
[Digital I/O module (Z-DIO)]
Set address number from the "0" sequentially. The value obtained by adding "17" to the set address corresponds to the address used for the actual communication.

Maximum number of connected SRZ module: 31 modules
- Temperatur control module (Z-TIO): 1 to 16 modules
- Digital I/O module (Z-DIO): 0 to 16 modules

■ Relation of module address and display channel number

Channel numbers displayed on the OPC-TS2060 operation panel screen are determined in order from the "0" module address number.

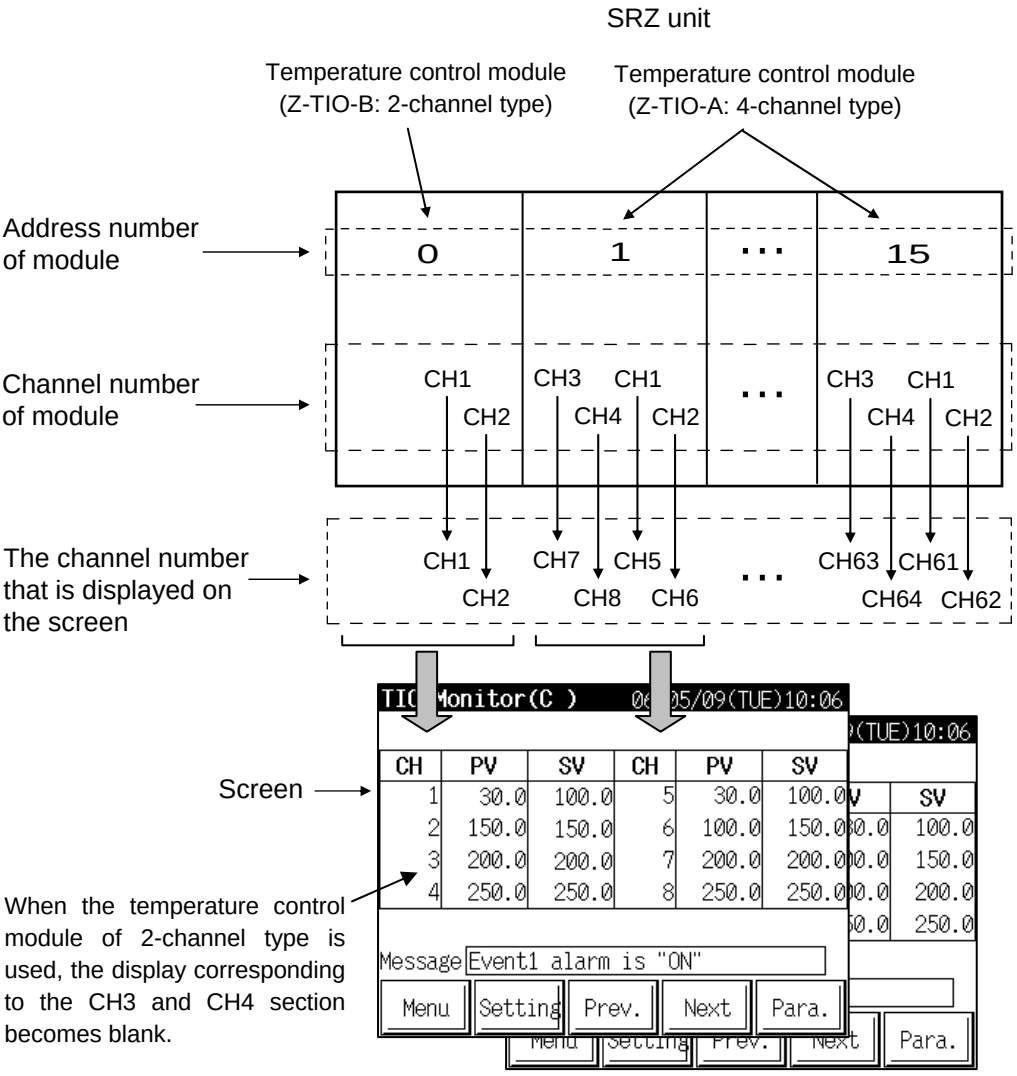
[Example 1: When constructed unit with the temperature control module of 4-channel type.]



The number of channels displayed on the screen is in accordance with the OPC-TS2060 initial setting: "Number of modules set." If "Number of modules set" is at "1" in the above system configuration, no data on and after CH5 is displayed.

For details of number of module setting, refer to the **2.4 Set the Number of Connection Modules (P. 2-14).**

[Example 2: When constructed unit with the temperature control module of 2-channel type and 4-channel type.]



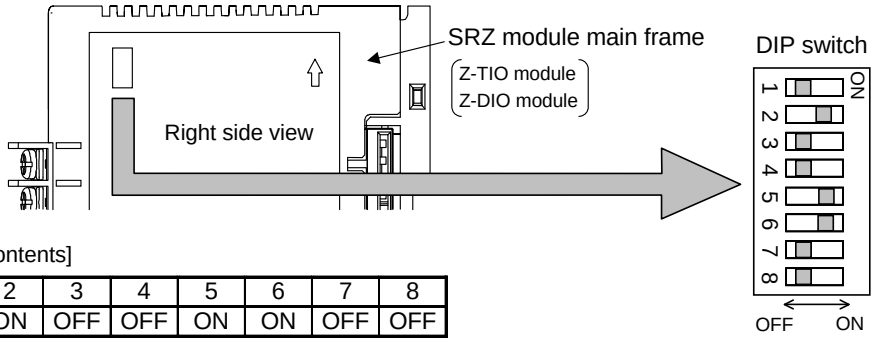
2.2.2 Communication speed, data bit configuration and protocol setting

With the DIP switch which there is on the right side of SRZ module, select communication speed, data bit configuration and protocol. Always make the same communication settings on the OPC-TS2060 and SRZ. The data changes become valid when the power is turned on again or when changed to RUN with "RUN/STOP transfer" of operation mode.

When two or more modules are connected on the same line, turn each switch in the DIP switches of all of the modules to the same position. Otherwise the module may fail or malfunction.

Set the DIP switches of SRZ unit as follows.

[Factory set value of operation panel OPC-TS2060]
- Communication speed (baud rate) 19200 bps
- Data 8-bit, without parity, stop 1-bit
- Modbus protocol .



[Setting contents]

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

1	2	Communication speed
OFF	OFF	4800 bps
ON	OFF	9600 bps
OFF	**ON**	**19200 bps**
ON	ON	38400 bps

← Set to 19200 bps

Factory set value: 19200 bps

3	4	5	Data bit configuration
OFF	OFF	OFF	Data 7-bit, without parity, Stop 1-bit *
OFF	OFF	ON	Data 7-bit, Even parity, Stop 1-bit *
OFF	ON	ON	Data 7-bit, Odd parity, Stop 1-bit *
OFF	**OFF**	**ON**	**Data 8-bit, without parity, Stop 1-bit**
OFF	ON	ON	Data 8-bit, Even parity, Stop 1-bit
ON	ON	ON	Data 8-bit, Odd parity, Stop 1-bit

← Set to data 8-bit, without parity and stop 1-bit

* When the Modbus communication protocol is selected, this setting becomes invalid.

Factory set value: Data 8-bit, without parity, Stop 1-bit

6	7	Protocol
OFF	OFF	RKC communication
ON	**OFF**	**Modbus**

← Set to Modbus

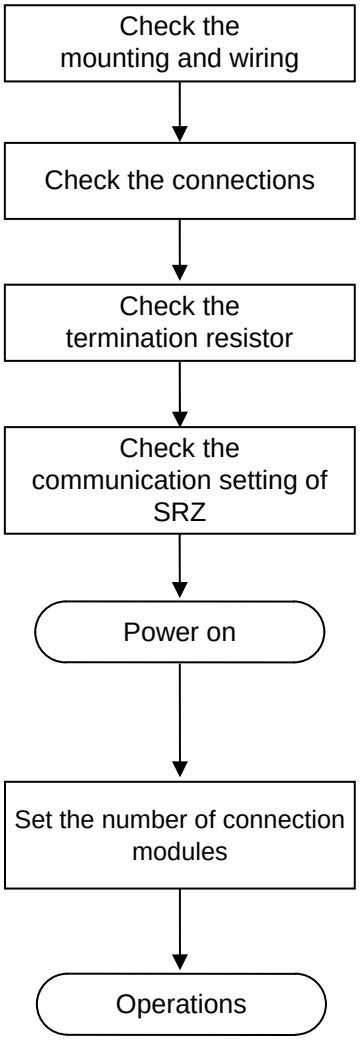
Factory set value: RKC communication

Switch No. 8: OFF fixed (Do not change this one)

2.3 Start-up Procedures

■ Check prior to power on

Check the following items before turning on the power to the operation panel OPC-TS2060.



Confirms the mounting and wiring.

☞ Refer to the instruction manual of Hakko Electronics Co., Ltd.

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

Termination resistor setting conforms to **2.1.2 Installation of termination resistor (P. 2-6)**.

Communication setting conforms to **2.2 Communication Setting (P. 2-9)**.

📖 **First, turn on the power for module type controller SRZ, then for operation panel OPC-TS2060.**

Set the number of the SRZ modules connected to an operation panel.

☞ For the number of module connection, refer to the **2.4 Set the Number of Connection Modules (P. 2-14)**.

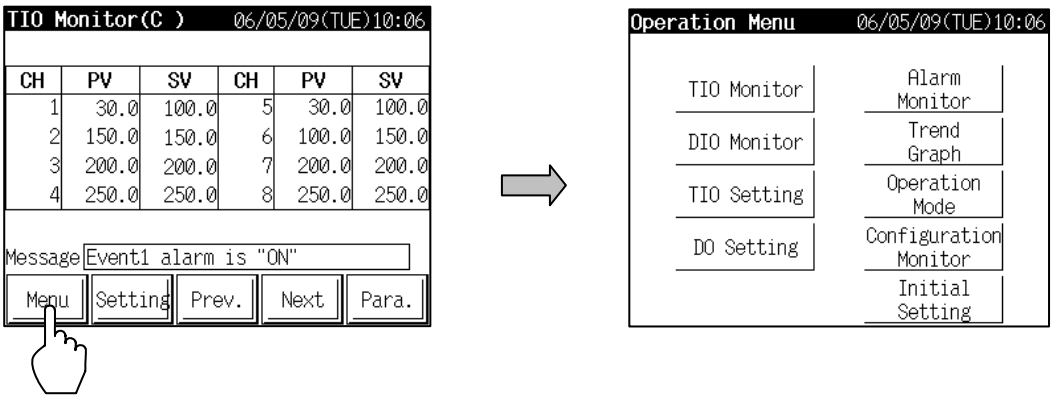
📖 **If you changed the SRZ initial data in SRZ loader communication, turn off the power of the OPC-TS2060 and then turn it back on (power reset). The initial data will be effective after the power reset.**

2.4 Set the Number of Connection Modules

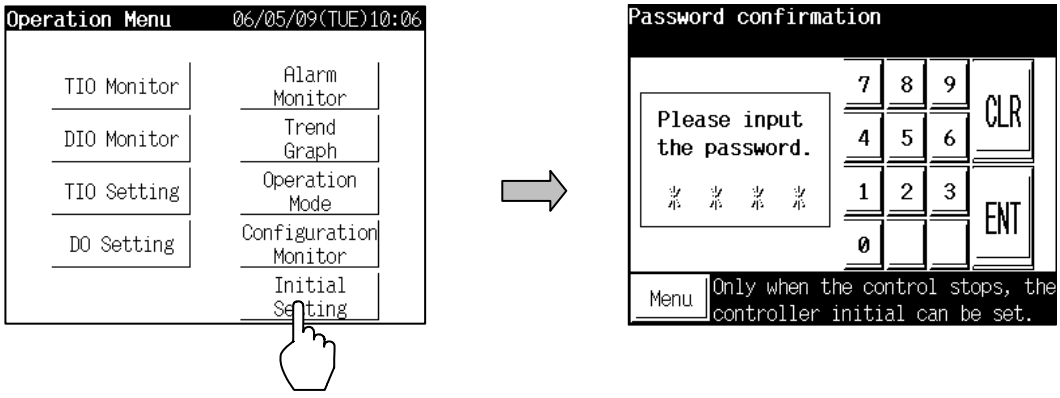
The number of the module connection sets it after releasing an initial setting the key protection.

- **Operation procedures**

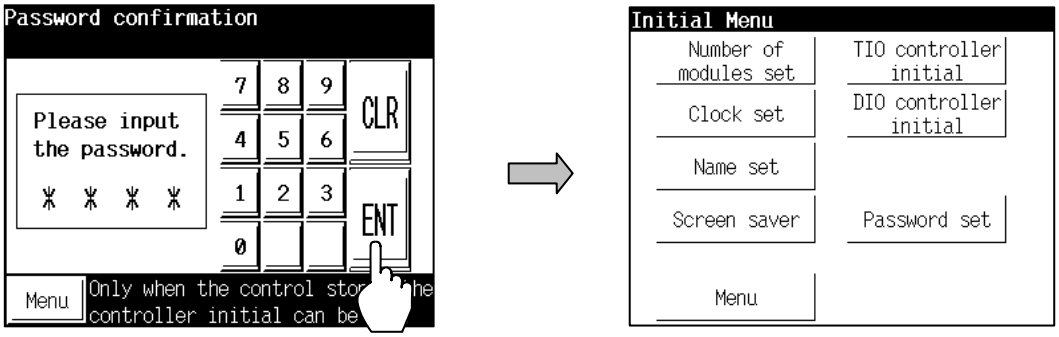
1. Touch the [Menu] key on the “TIO Monitor” screen, to switch to the “Operation Menu” screen.



2. Touch the [Initial Setting] key on the “Operation Menu” screen, to switch to the “Password confirmation” screen.



3. Enter the password “0000” and touch the [ENT] key.
If the password is correct, the screen will change to the “Initial Menu” screen.



The password in shipment becomes “0000.”
When changes the password, refer to the **3.10.16 Password set screen (P. 3-88)**.

Continued on the next page.

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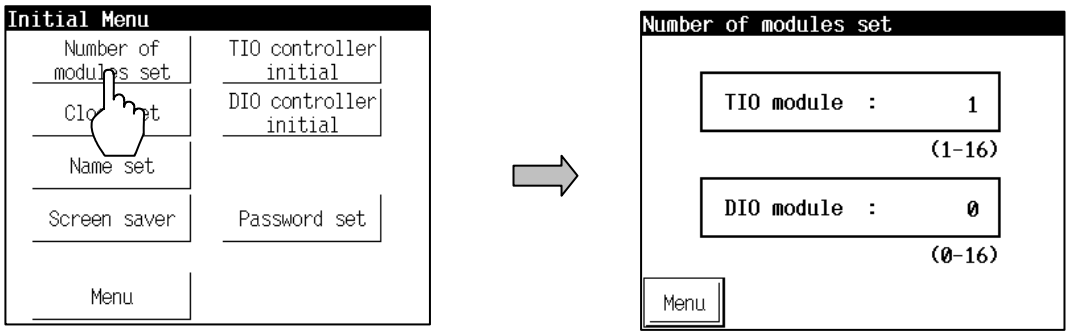
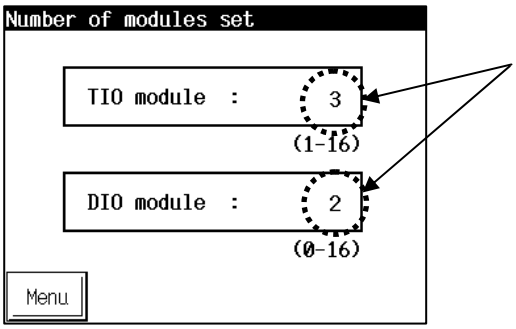
4. Touch the [Number of modules set] key on the “Initial Menu” screen, to switch to the “Number of modules set” screen.



5. Set the number of the connection of the Z-TIO modules and Z-DIO modules.



Set the number of the SRZ modules connected to an operation panel OPC-TS2060.

Setting range:

Number of Z-TIO modules: 1 to 16 (Factory set value: 1)

Number of Z-DIO modules: 0 to 16 (Factory set value: 0)

Up to 31 modules including both Z-TIO module and Z-DIO module.

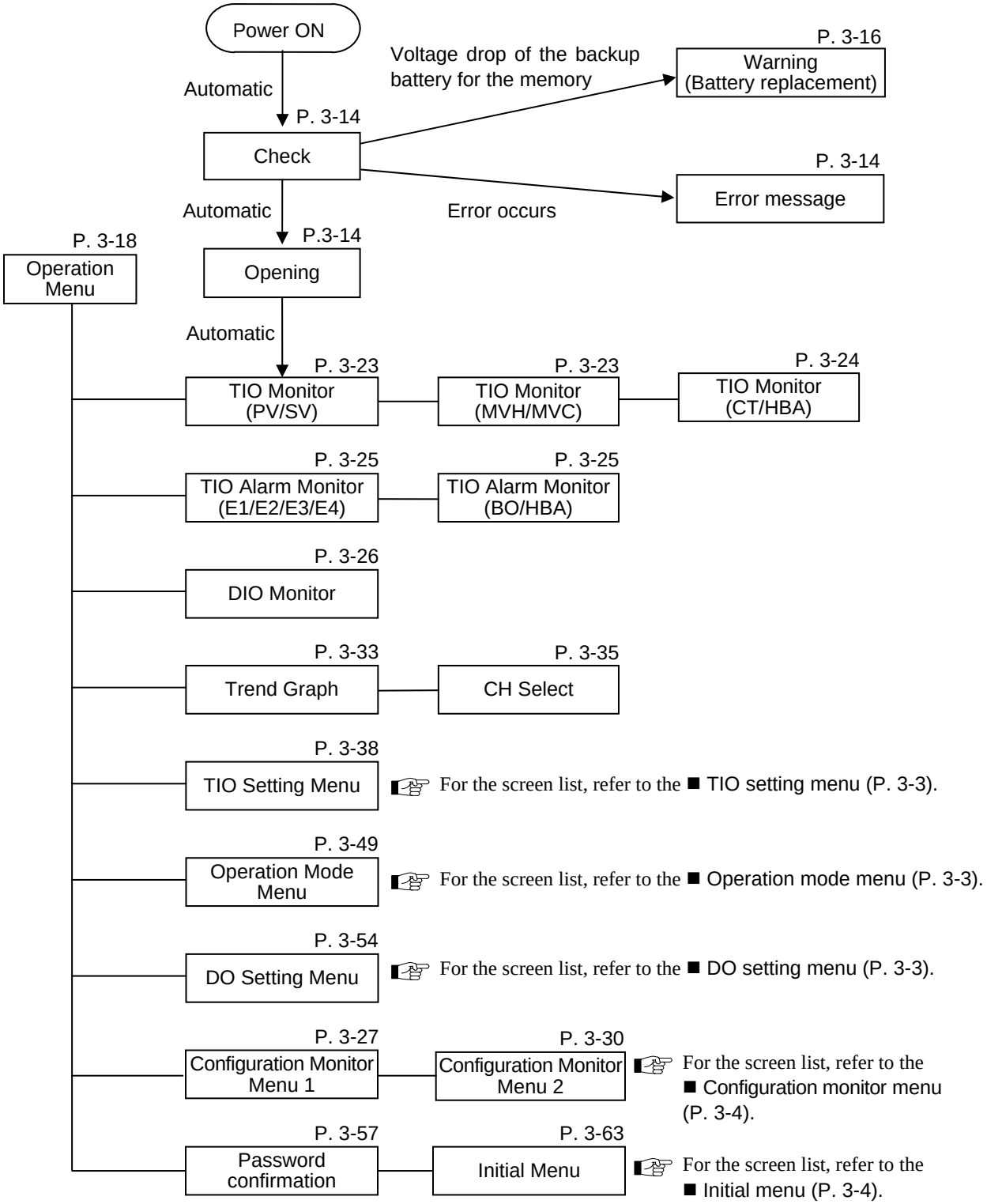
6. When the number of connecting modules is changed, always reset the OPC-TS2060 in accordance with any of the following procedures. The number of modules thus changed becomes valid after the OPC-TS2060 is reset.

- Reset with power
  Turn off the power once and then turn it on again.
- Reset with switch operations
  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.
  3. Press the [F1] switch with the menu being displayed.
  Pressing the [F1] switch displays the “Opening” screen after an error is checked and then displays the “TIO Monitor” screen.

MEMO

3 SCREEN DESCRIPTIONS

3.1 Screen Configuration



Always set the number of modules when the power was turned on for the first time is started after the connectable number of modules changed. If no number of modules is set, the screen may not be correctly displayed to cause malfunction. The number of modules is set on the "Number of modules set" screen (P. 3-64).

If you changed the SRZ initial data in SRZ loader communication, turn off the power of the OPC-TS2060 and then turn it back on (power reset). The initial data will be effective after the power reset.

■ TIO setting menu

Screen name		Page
Set value (SV)		3-44
Manual Output		3-44
Event Setting Menu	Event 1 set value	3-44
	Event 2 set value	3-44
	Event 3 set value	3-44
	Event 4 set value	3-44
PID Setting Menu	Proportional band	3-45
	Integral Time	3-45
	Derivative Time	3-45
	Proportional band [cool-side]	3-45
	Integral Time [cool-side]	3-45
	Derivative Time [cool-side]	3-45
	Overlap/Deadband	3-45
	Control response parameter	3-45
Other Setting 1 Menu	HBA set value	3-46
	Heater break determination point	3-46
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	Proportional cycle time	3-46
	Minimum ON/OFF time of proportioning cycle	3-46
	LBA time	3-46
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Other Setting 2 Menu	PV bias	3-47
	PV digital filter	3-47
	PV ratio	3-47
	PV low input cut-off	3-47
	Setting change rate limiter (up)	3-47
	Setting change rate limiter (down)	3-47
	Startup tuning (ST)	3-47
	Communication switch for logic	3-47

■ Operation mode menu

Screen name		Page
Operation Mode Menu	Operation mode	3-52
	PID/AT transfer	3-52
	Auto/Manual transfer	3-52
	RUN/STOP transfer	3-52
	Interlock release	3-52
	Remote/Local transfer	3-52

■ DO setting menu

Screen name		Page
DO Setting Menu	RUN/STOP transfer	3-56
	Manual output	3-56
	Output distribution selection	3-56

■ Configuration monitor menu

Screen name		Page
Configuration Monitor Menu 1	Control action	3-28
	Address of interacting modules	3-28
	Channel selection of interacting modules	3-29
	Selection switch of interacting modules	3-29
Configuration Monitor Menu 2	DO output assignment 1	3-31
	DO output assignment 2	3-31
	DO signal assignment module address 1	3-31
	DO signal assignment module address 2	3-32
	DI function assignment	3-32

■ Initial menu

Protection release is necessary to display each initial screen.

For details, refer to the **3.10.1 Releasing procedure of the initial setting key protect (P. 3-57)**.

Screen name			Page
Number of modules set			3-64
Clock set			3-65
Name Setting Menu	Alarm Message Set		3-67
	TIO CH name set		3-68
Screen Saver Set			3-69
TIO controller initial menu	Input parameter menu	Input type	3-73
		Decimal point position	3-73
		Input scale high	3-73
		Input scale low	3-73
		Display unit	3-73
	Control parameter menu	Control action	3-74
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	Event parameter menu	Event 1 type	3-74
		Event 1 channel setting	3-75
		Event 1 hold action	3-75
		Event 1 interlock	3-75
		Event 1 differential gap	3-75
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		Force ON of Event 1 action	3-75
		Event 2 type	3-74
		Event 2 channel setting	3-75
		Event 2 hold action	3-75
		Event 2 interlock	3-75
		Event 2 differential gap	3-75
		Event 2 delay timer	3-75
		Force ON of Event 2 action	3-75

Continued on the next page.

Continued from the previous page.

Screen name			Page
TIO controller initial menu	Event parameter menu	Event 3 type	3-74
		Event 3 channel setting	3-75
		Event 3 hold action	3-75
		Event 3 interlock	3-75
		Event 3 differential gap	3-75
		Event 3 delay timer	3-75
		Force ON of Event 3 action	3-75
		Event 4 type	3-74
		Event 4 channel setting	3-75
		Event 4 hold action	3-75
		Event 4 interlock	3-75
		Event 4 differential gap	3-75
		Event 4 delay timer	3-75
		Force ON of Event 4 action	3-75
	Output parameter menu	Output limiter (high) [heat-side]	3-76
		Output limiter (low) [heat-side]	3-76
		Output limiter (high) [cool-side]	3-76
		Output limiter (low) [cool-side]	3-76
	CT parameter menu	CT ratio	3-76
		CT assignment	3-76
		Heater break alarm (HBA) type	3-76
		Number of HBA delay times	3-76
	Interacting parameter menu	Address of interacting modules	3-77
		Channel selection of interacting modules	3-77
		Selection switch of interacting modules	3-77
	ST parameter menu	ST start condition	3-77
	AT parameter menu	AT bias	3-78
		AT differential gap time	3-78
		AT cycles	3-78
		Output value with AT turned on	3-78
		Output value with AT turned off	3-78
	Communication parameter menu	Interval time	3-78
	Input error parameter menu	Input error determination point (high)	3-79
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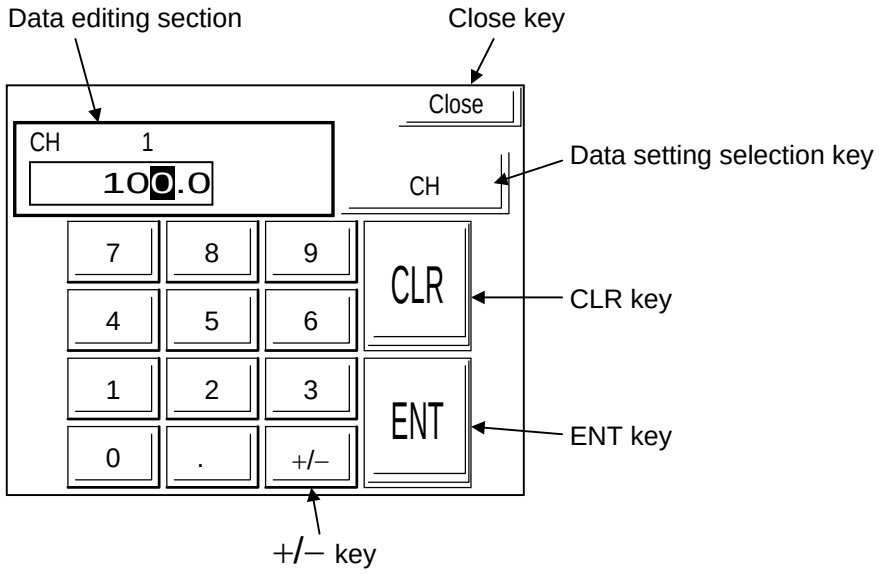
DIO controller initial menu	DO output assignment 1 [DO1 to 4]		3-84
	DO output assignment 2 [DO5 to 8]		3-84
	DO signal assignment module address 1		3-84
	DO signal assignment module address 2		3-84
	DO energized/de-energized		3-85
	Interval time		3-85
	DI function assignment		3-85
	Memory area setting signal		3-85
Password set	Password set		3-88

3.2 Basic Operations

3.2.1 Data settings

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

< Numeric keypad window >



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.

Close key: Disappearing the numeric keypad window

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.

All CH: Setting for all channels
The same items related to all channels 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.

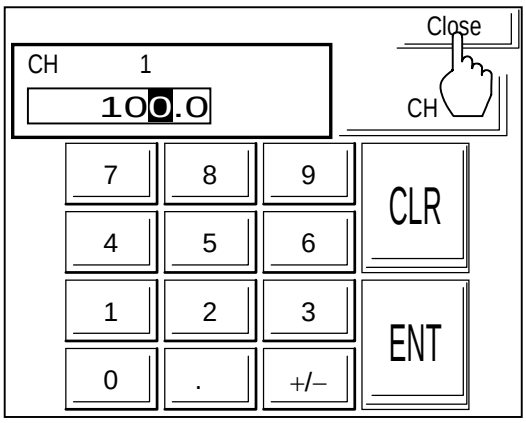
CLR key: Erases the input data. If you input the wrong number, touching this key.

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

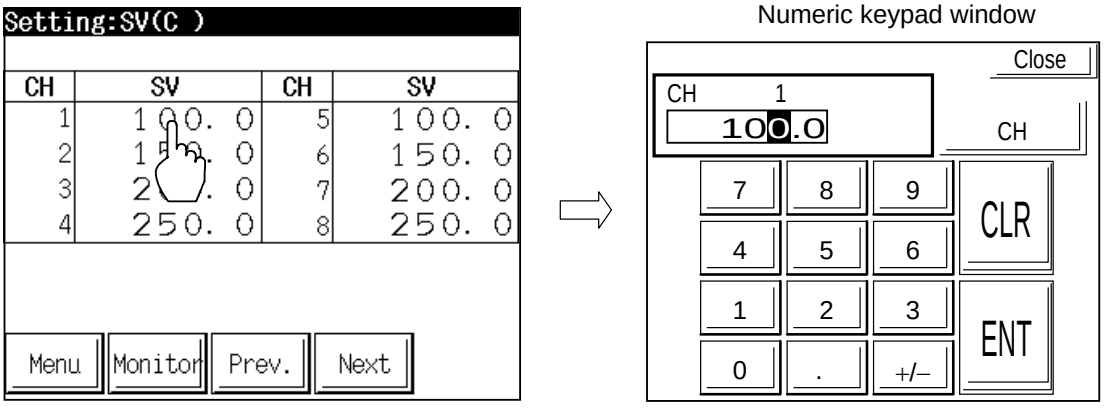
If you accidentally touch a setting part that you do not need to change and the numeric keypad window appears, either just press the [ENT] key without inputting a number or touch the top left section of the numeric keypad window twice in a row to put out the numeric keypad window without changing the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



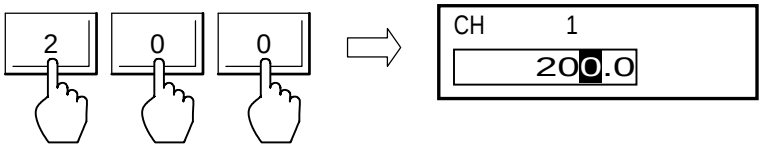
■ Setting for each channel

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

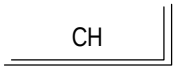
1. Touch the [TIO Setting] key on the “Operation Menu” screen (**P. 3-18**), to switch to the “TIO Setting Menu” screen (**P. 3-38**).
2. Touch the [SV] key on the “TIO Setting Menu” screen, to switch to the “Setting: SV” screen.
3. From the “Setting: SV” screen, directly touch the part you want to setting (CH1 SV). The numeric keypad window appears on the screen.



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

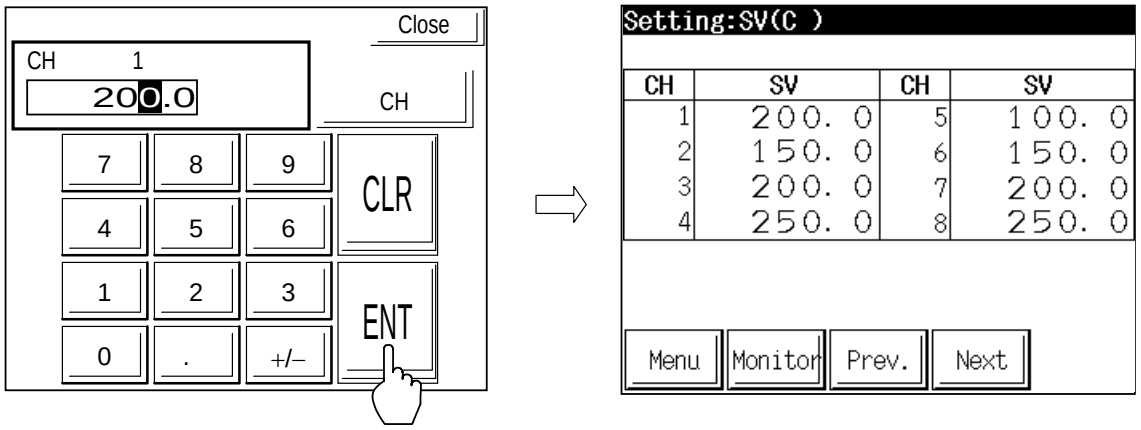


5. Check that the data setting selection key is [CH].



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.

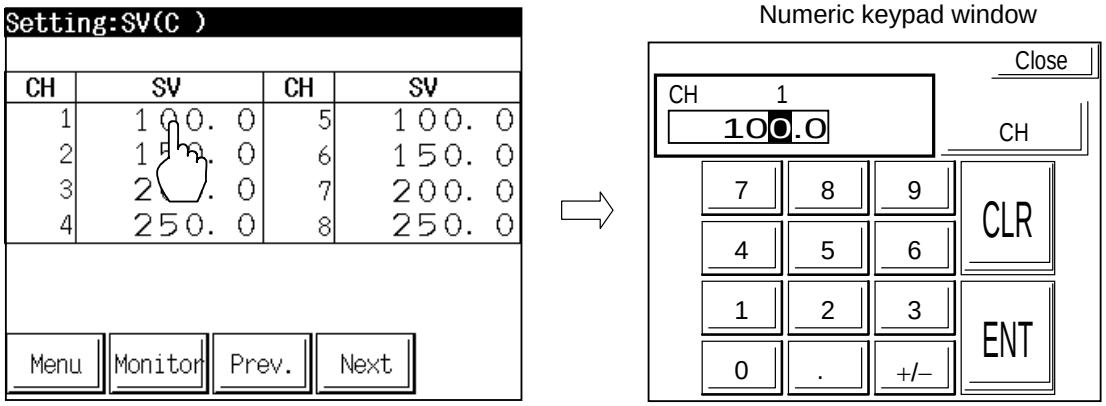
■ Setting for all channels (Batch setting)

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

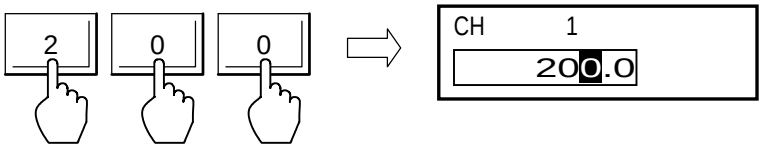
1. Touch the [TIO Setting] key on the “Operation Menu” screen (**P. 3-18**), to switch to the “TIO Setting Menu” screen (**P. 3-38**).

2. Touch the [SV] key on the “TIO Setting Menu” screen, to switch to the “Setting: SV” screen.

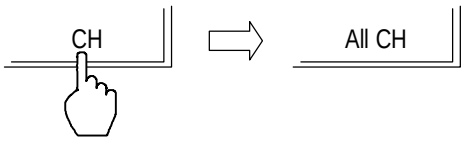
3. From the “Setting: SV” screen, directly touch the part you want to setting (anywhere within the SV). The numeric keypad window appears on the screen.



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

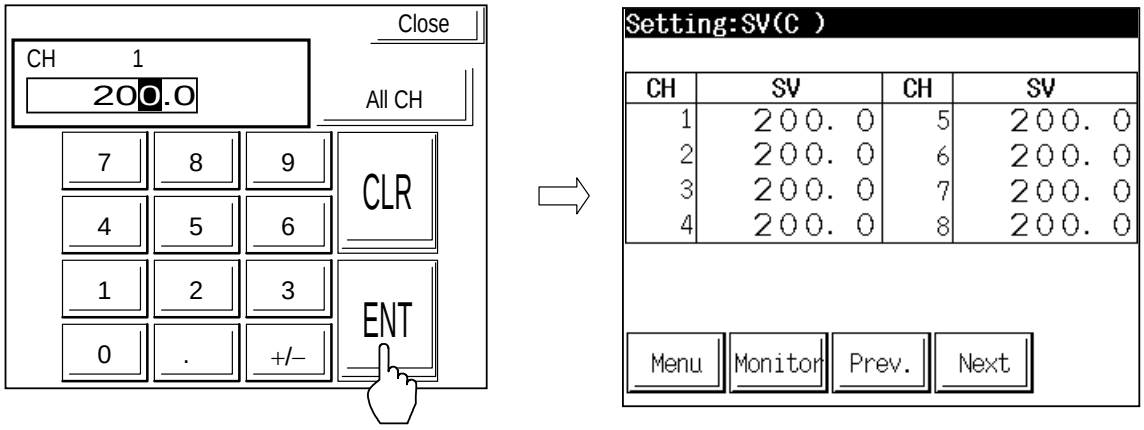


5. Touch the data setting selection key to change the display to the [All CH].



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

Numeric keypad window

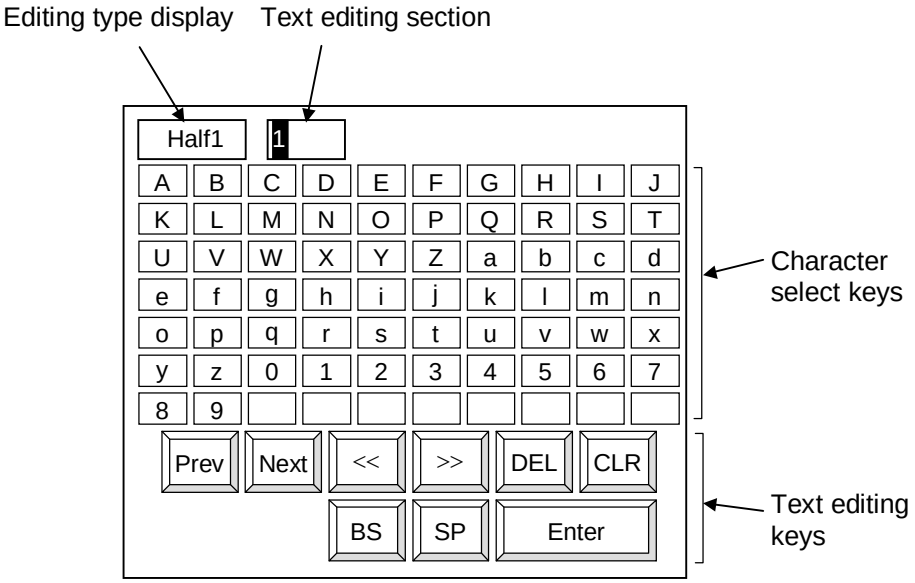


If you input a number outside the valid range, when you touch the [ENT] key, the numeric keypad window does disappear, but the value is not changed.

3.2.2 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.

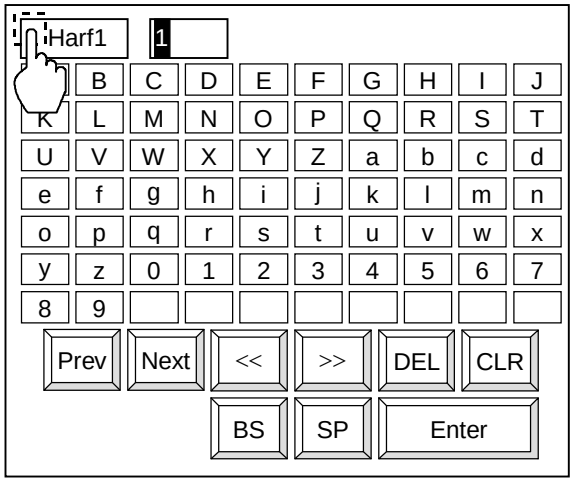
Text editing keys

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



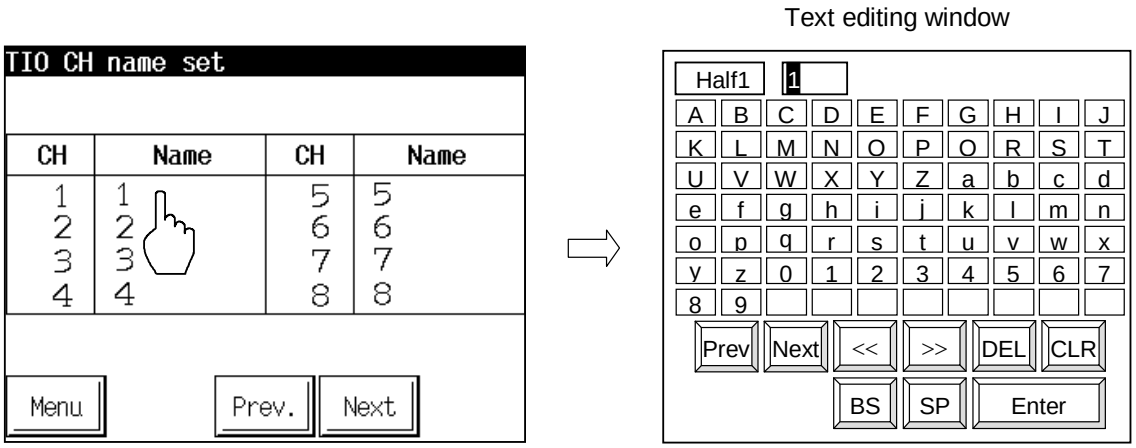
■ Text editing

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

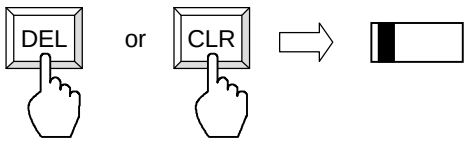
1. Calling the “TIO CH name set” screen.

☞ For the details of calling procedure, refer to the **3.10.2 Calling procedure of the initial setting screen (P. 3-59)**.

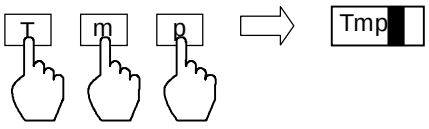
2. Touch the section for setting the TIO CH 1 name, the text editing window appears.



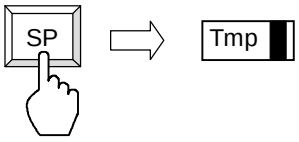
3. Touch the [DEL] key or the [CLR] key to erase the text now displayed in the text editing section.



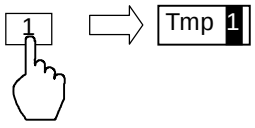
4. Touch the [T], [m], [p] keys to input “Tmp.”



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

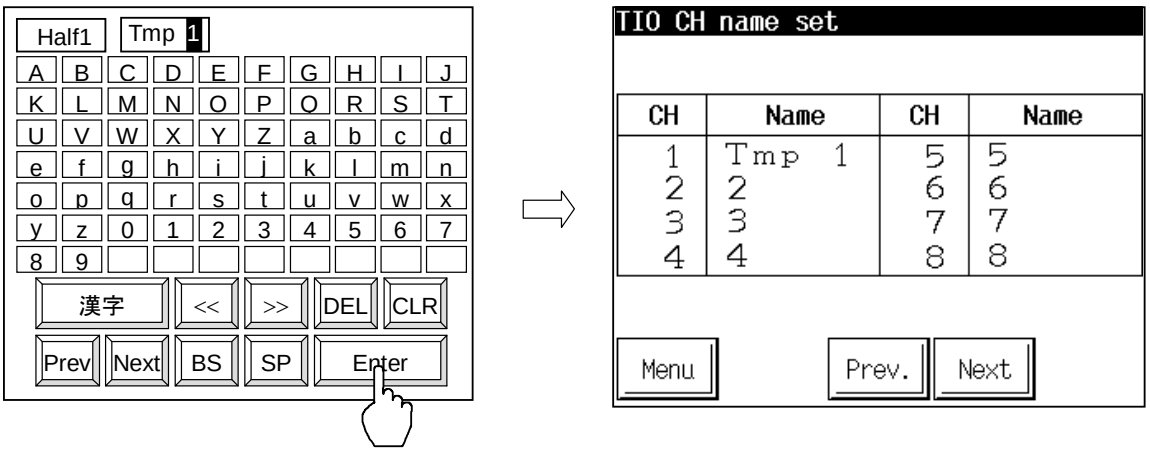


6. Touch the [1] key to input “1.”



7. 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.”

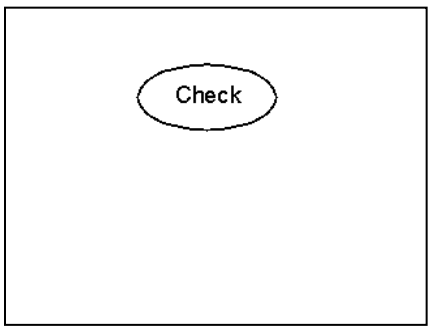
Text editing window



3.3 Start-up Screen

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

<Check screen>



Automatic

<Opening screen>

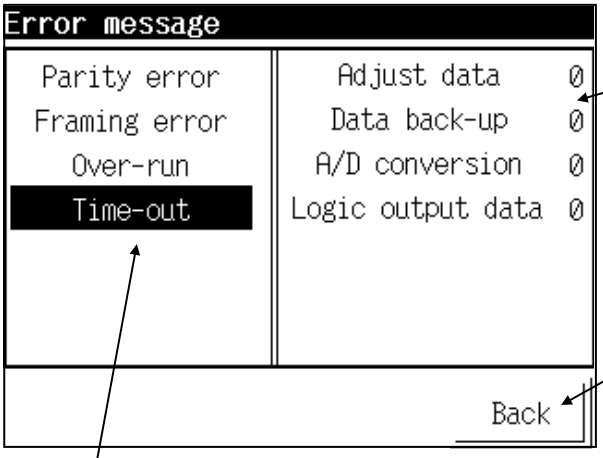
Automatic

To the TIO Monitor screen

The operation panel checks whether there is an error in the SRZ 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 memory backup battery. If the battery voltage decreases, the “Warning (battery replacement)” screen is displayed.

- **When an error occurs**

<Error message screen>



Display of SRZ error

When an error occurs, the error contents are shown in inversed display. The number of the abnormal module is also displayed.

Back 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 TIO Monitor screen.)

Display of error details of the operation panel itself

When an error occurs, the error contents are shown in inversed display.

■ Operation panel OPC-TS2060 error messages

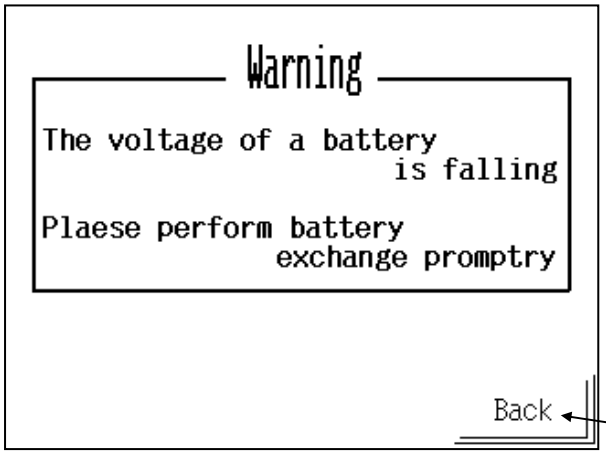
Error messages	Probable cause	Solution
Parity Error During communication, the data has been wrongly written	Too much noise or surge might be applied to the connecting cable with SRZ.	Investigate the wiring condition of the connecting cable and whether there is a noise generating source nearby, then switch 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 SRZ	Power supply defect of SRZ	Confirm the power supply to the SRZ
	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 SRZ	Confirm the settings of SRZ and set them correctly
	Wrong address setting	
	Wrong module configuration setting	Configure the correct setting in the "Number of modules set" screen of the OPC-TS2060 initial settings.

■ SRZ error messages

Error messages	Probable cause	Solution
Adjust data error • Adjustment data range is abnormal.	The excessive noise, surge or strong impact might be added to the SRZ	Replace the defective SRZ module (The module whose FAIL green lamp flashes)
Data back-up error • Back-up action is abnormal. • Data write failure	RAM is faulty	
A/D conversion • Response signal from A/D converter is abnormal.	A/D converter is faulty	
	The excessive noise, surge or strong impact might be added to the SRZ	
Custom data error • There is an abnormality on logic output data and it cannot execute.	The excessive noise, surge or strong impact might be added to the SRZ	

- **When the memory backup battery voltage drops low**

< Warning (battery replacement) screen >



When OPC-TS2060 is powered up, if the voltage of the backup battery for the memory (SRAM) is low, a warning screen (as shown left) will appear.
The content of the SRAM user memory will not be retained if power is not supplied to the SRAM user memory.
(When this screen appears)
replace the battery immediately.

Replace battery: TS-BT

Back key
Touching this key will switch the screen to the "TIO Monitor" screen.
If changed to the "TIO Monitor" screen, no "Warning screen (replace battery)" will not be displayed until the power is turned on again.

Data stored in the user memory area (SRAM):

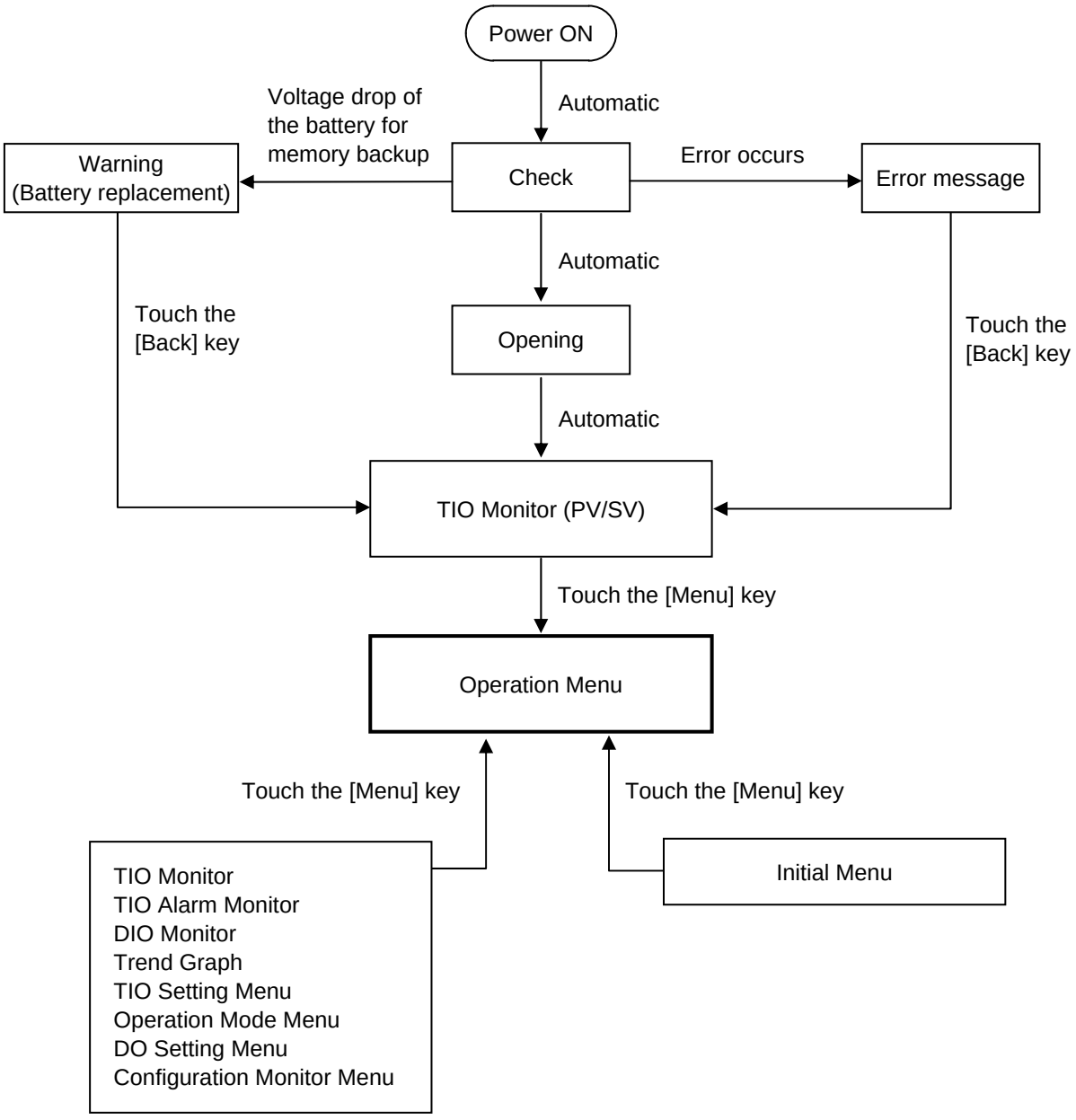
Number of TIO modules
Number of DIO modules
Screen saver setting
Alarm message
TIO CH name
Trend graph (channel number, display scale high limit, display scale low limit)
Password

☞ For the battery replacement, refer to the **instruction manual of Hakko Electronics Co., Ltd.**

3.4 Operation Menu Screen

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

3.4.1 Calling procedure of the operation menu screen

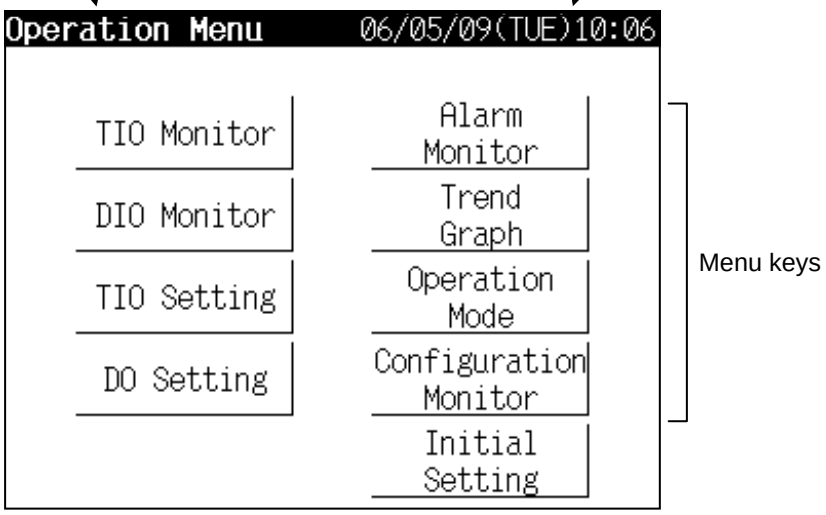


3.4.2 Operation menu screen

< Operation 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. 3-65).**

Screen name
Displays the screen name.



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

TIO Monitor: "TIO Monitor (PV/SV)" screen
Alarm Monitor: "TIO Alarm Monitor (E1/E2/E3/E4)" screen
DIO Monitor: "DIO Monitor" screen
Trend Graph: "Trend Graph" screen
TIO Setting: "TIO Setting Menu" screen
Operation Mode: "Operation Mode Menu" screen
DO Setting: "DO Setting Menu" screen
Configuration Monitor: "Configuration Monitor Menu" screen
Initial Setting: "Initial Menu" screen

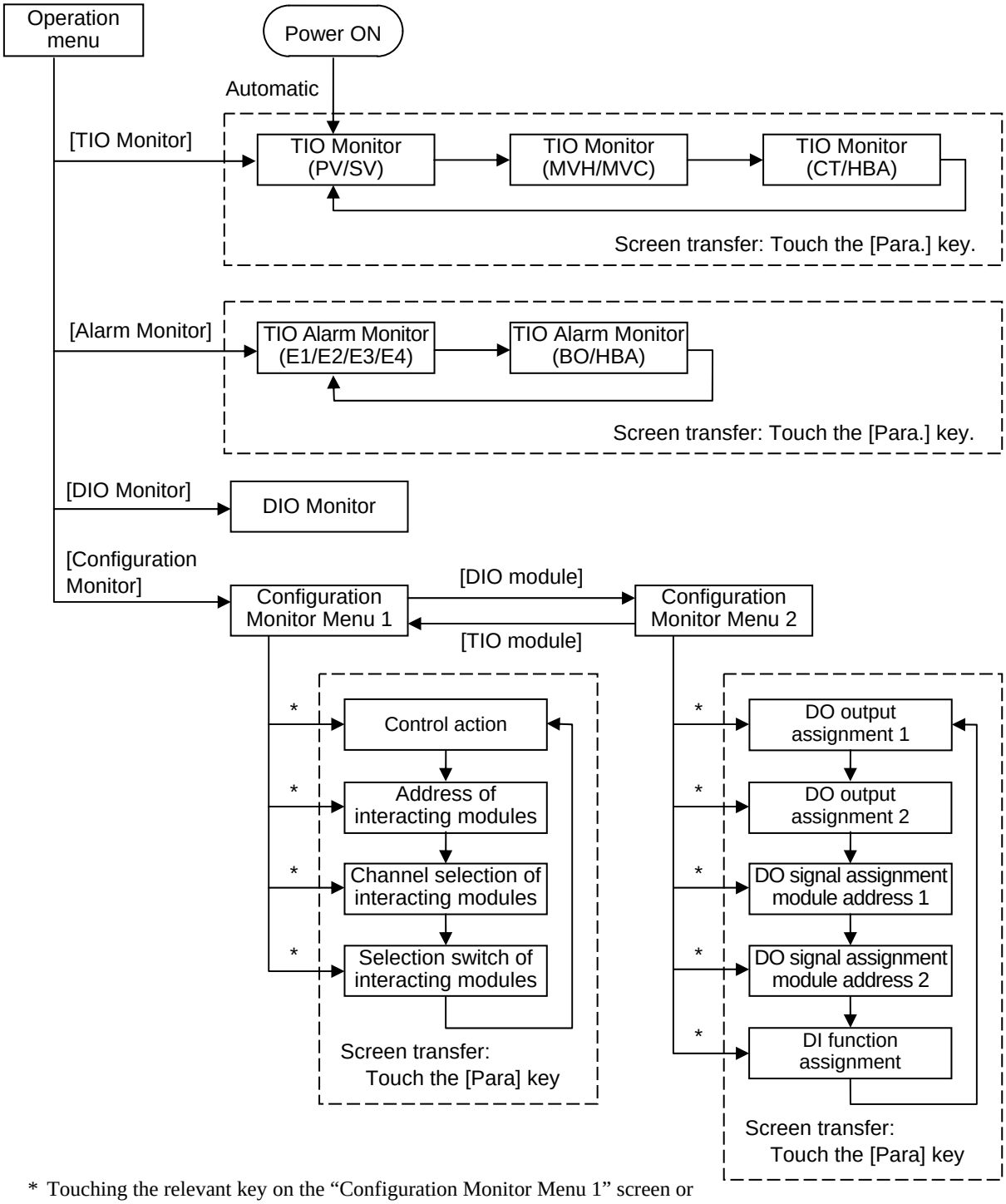
☞ This key is not displayed normally. Protection release is necessary to display the key.
For details, refer to the **3.10.1 Releasing procedure of the initial setting key protect (P. 3-57)**.

3.5 Monitor Screen

Monitor screens are used to monitor the set value, measured value, control output value, alarm output, etc. There are temperature control, alarm, DIO and configuration monitor screens.

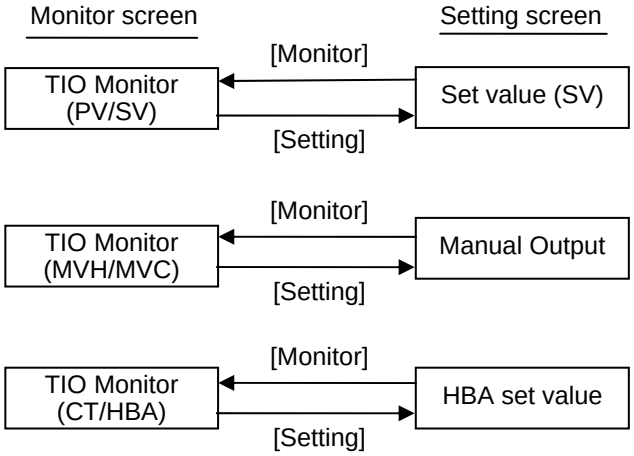
3.5.1 Calling procedure of the monitor screen

[ ]: Key name.



* Touching the relevant key on the "Configuration Monitor Menu 1" screen or "Configuration Monitor Menu 2" thus displayed calls up the setting screen. For details, refer to the **3.5.6 Configuration monitor menu 1 screen (P. 3-27)** or **3.5.7 Configuration monitor menu 2 screen (P. 3-30)**.

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

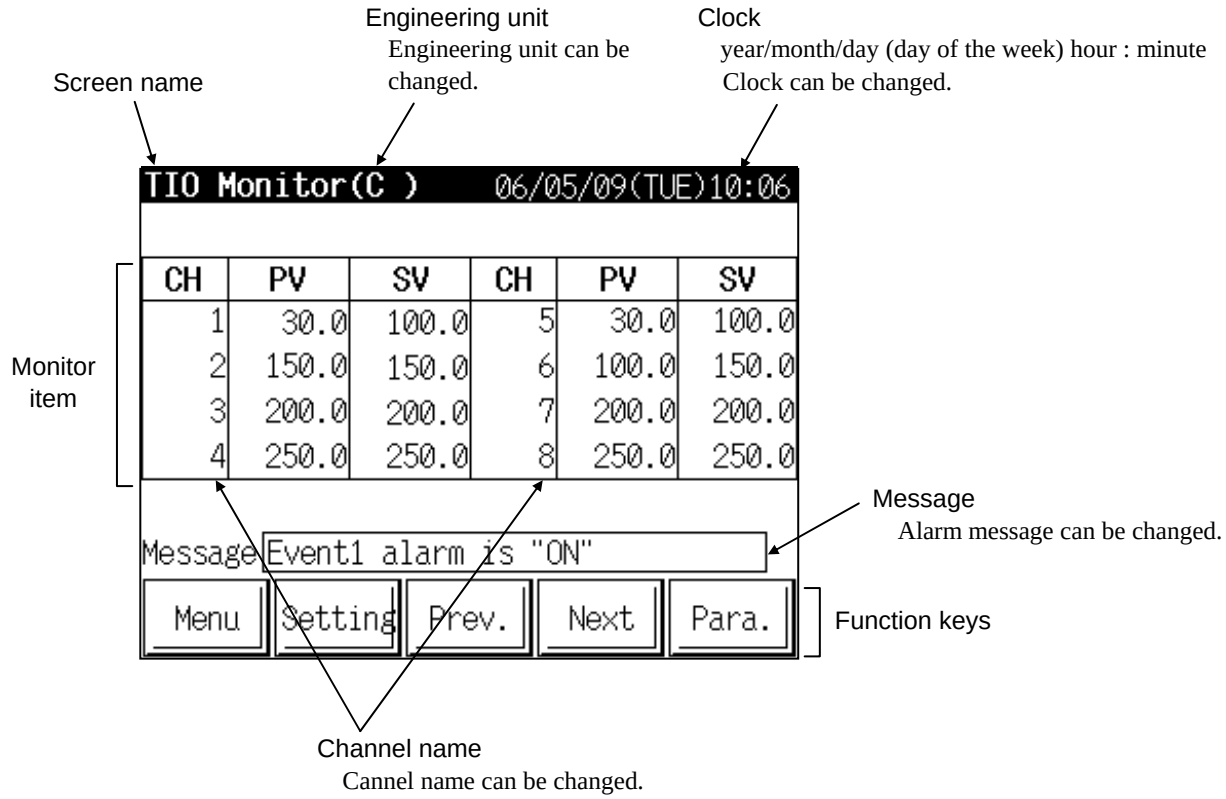


3.5.2 Basic configuration of monitor screen

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

On a temperature control 2-channel type Z-TIO module, the CH3 and CH4 displays are blank.

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 TIO controller initialize **"Display unit" screen (P. 3-73).**

Clock: Displays year/month/day (day of the week) hour : minute. The clock can be changed with the initial menu **"Clock set" screen (P. 3-65).**

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

For the details of display, refer to the **3.5.3 TIO monitor screen (P. 3-23)**, **3.5.4 TIO alarm monitor screen (P. 3-25), 3.5.5 DIO monitor screen (P. 3-26), 3.5.6 Configuration monitor menu 1 screen (P. 3-27)** and **3.5.7 Configuration monitor menu 2 screen (P. 3-30)**.

Channel name: Displays the TIO channel name. The channel name can be changed with the initialize **"TIO CH name set" screen (P. 3-68).**

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 channel Nos. can be checked.

Alarm message list (Factory set value)

Item	Message	Priority order
BO: Burnout	Burnout alarm is “ON”	High
HBA: Heater break alarm	Heater break alarm is “ON”	↕
E1: Event 1	Event 1 alarm is “ON”	
E2: Event 2	Event 2 alarm is “ON”	
E3: Event 3	Event 3 alarm is “ON”	
E4: Event 4	Event 4 alarm is “ON”	
Temp.rise	Temperature rise completion	Low

The message of the burnout, heater break alarm, Event 1 alarm, Event 2 alarm, Event 3 alarm, Event 4 alarm and Temperature rise completion 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 Event 1 alarm occur simultaneously, the burnout alarm message is displayed.

The alarm message can be changed with the initialize **“Alarm Message Set” screen (P. 3-67).**

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 (HBA)

Prev.: Touching this key the display to the screen for the channel (CH) before the current one. If there is no channel to be selected, the [Prev.] key becomes invalid.

Next: Touching this key the display to the screen for the channel (CH) after the current one. If there is no channel to be selected, the [Next] key becomes invalid.

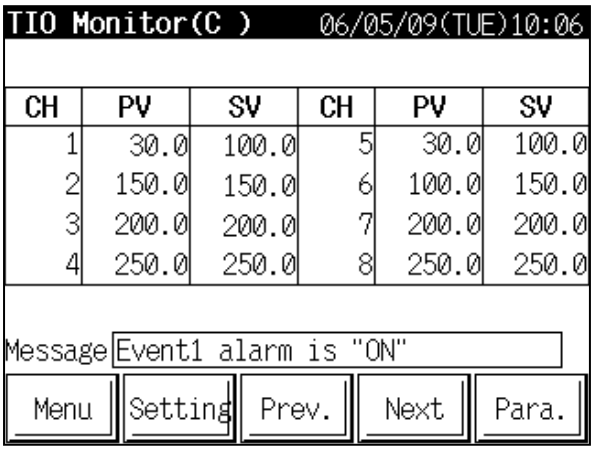
Para.: Every time this key is touched, the monitor screen changes. There is no this key on the “DIO Monitor” screen.

3.5.3 TIO monitor screen

There are PV/SV (Temperature measured value/temperature set value), MVH/MVC (Heat-side/cool-side manipulated output value) and CT/HBA (Current transformer input measured value/heater break alarm set value) in the TIO monitor screen. Changes the screen by touching [Para.] key.

☞ For the function keys and other items, refer to the **3.5.2 Basic configuration of monitor screen (P. 3-21)**.

■ TIO monitor (PV/SV)



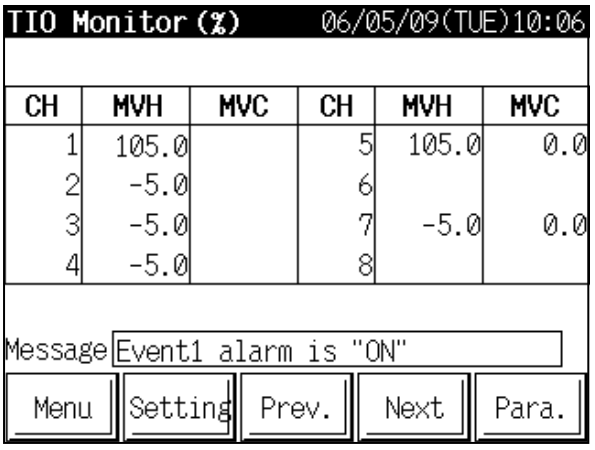
CH: Displays the TIO channel name.

PV: Displays the temperature measured value (PV).
Display range:
Input scale low to input scale high

SV: Displays the temperature set value (SV).
Display range:
Setting limit (low) to setting limit (high)

Touching [Setting] key changes to the “Setting: SV” screen.

■ TIO monitor (MVH/MVC)



CH: Displays the TIO channel name.

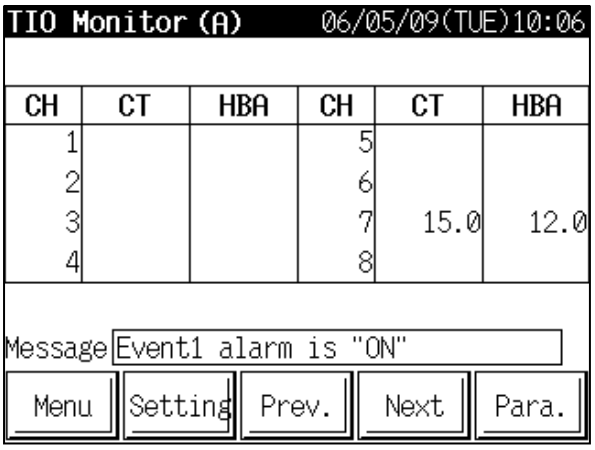
MVH: Displays the heat-side manipulated output value.
Display range: –5.0 to +105.0 %

MVC: Displays the cool-side manipulated output value.
Display range: –5.0 to +105.0 %
Heating control makes the display blank.

Touching [Setting] key changes to the “Setting: Manual Output” screen.

In heat/cool PID control, the displays of even-numbered channels are blank.

■ TIO monitor (CT/HBA)



CH: Displays the TIO channel name.

CT: Displays the current transformer (CT) input measured value.
Display range: 0.0 to 100.0 A
(CTL-12-S56-10L-N) or
0.0 to 30.0 A (CTL-6-P-N)

HBA: Displays the heater break alarm set value corresponding to current transformer (CT) input.
Display range: 0.0 to 100.0 A
(CTL-12-S56-10L-N) or
0.0 to 30.0 A (CTL-6-P-N)

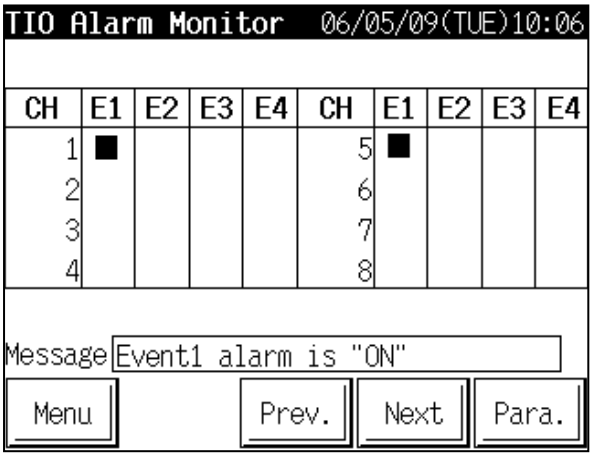
Touching [Setting] key changes to the “Setting: HBA set value” screen.

3.5.4 TIO alarm monitor screen

There are E1/E2/E3/E4 (Event status) and BO/HBA (Burnout/heater break alarm status) screens in the TIO alarm monitor screen. Changes the screen by touching [Para.] key.

☞ For the function keys and other items, refer to the **3.5.2 Basic configuration of monitor screen (P. 3-21)**.

■ TIO alarm monitor (E1/E2/E3/E4)



CH: Displays the TIO channel name.

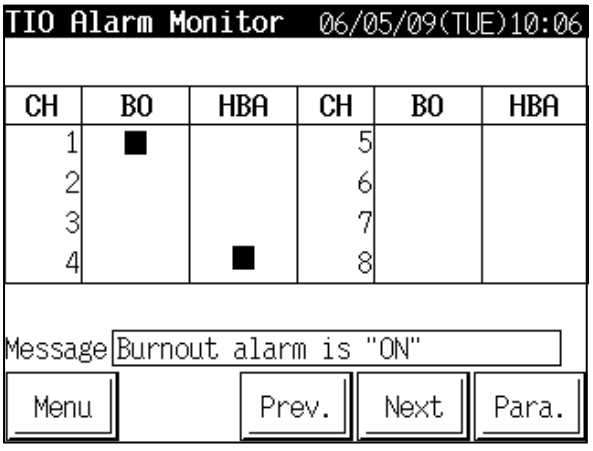
E1: Displays the event 1 status.
Alarm occurrence: Flashes the "■"

E2: Displays the event 2 status.
Alarm occurrence: Flashes the "■"

E3: Displays the event 3 status.
Alarm occurrence: Flashes the "■"

E4: Displays the event 4 status.
Alarm occurrence: Flashes the "■"

■ TIO alarm monitor (BO/HBA)



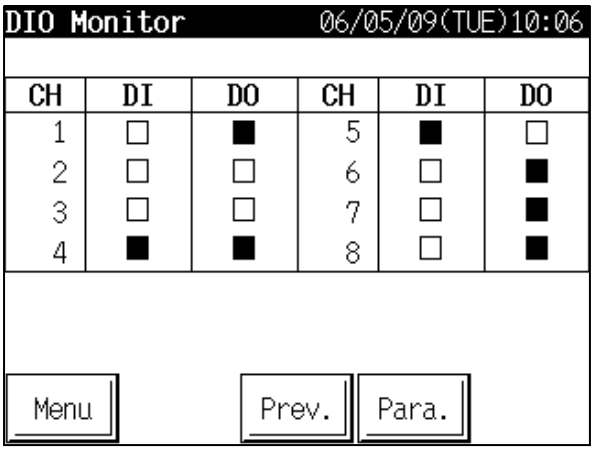
CH: Displays the TIO channel name.

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

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

3.5.5 DIO monitor screen

☞ For the function keys and other items, refer to the **3.5.2 Basic configuration of monitor screen (P. 3-21)**.



CH: Displays the DIO channel number of Z-DIO module.

DI: Displays the contact status of digital input.
Contact closed status: Displays the "■"
Contact open status: Displays the "□"

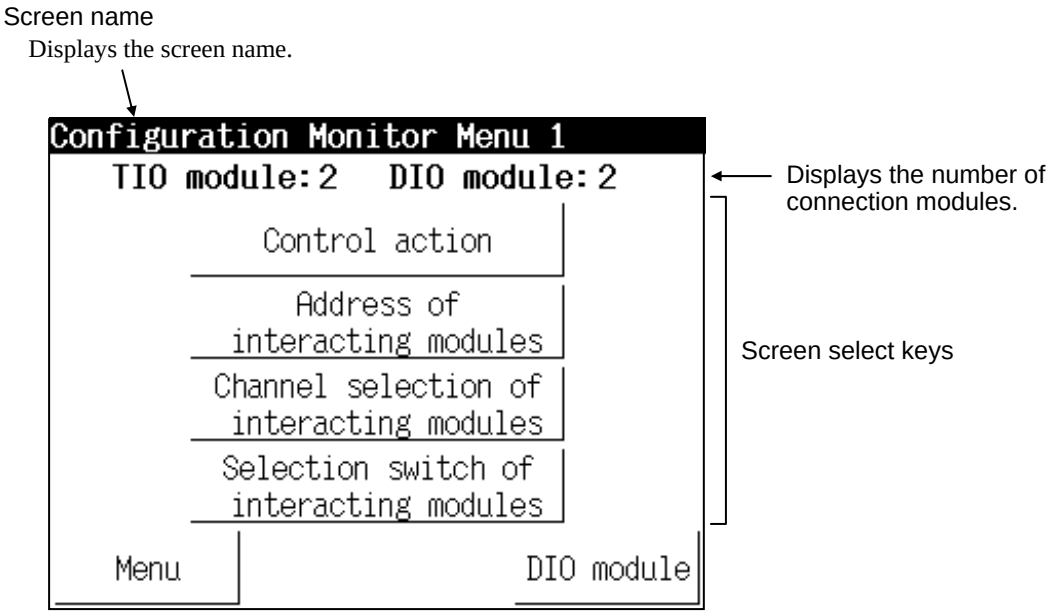
DO: Displays the contact status of digital output.
Output ON: Displays the "■"
Output OFF: Displays the "□"

3.5.6 Configuration monitor menu 1 screen

There are Control action, Address of interacting module, Cannel selection of interacting module and Selection switch of interacting module screen in the Configuration monitor menu 1 screen. Changes the screen by touching [Para.] key.

☞ For the function keys and other items, refer to the **3.5.2 Basic configuration of monitor screen (P. 3-21)**.

< Configuration Monitor Menu 1 screen >



TIO module: Displays the number of Z-TIO modules connected to the OPC-TS2060.

DIO module: Displays the number of Z-DIO modules connected to the OPC-TS2060.

📖 The number of modules displayed on the screen depends on the “Number of modules set” in the initial settings.

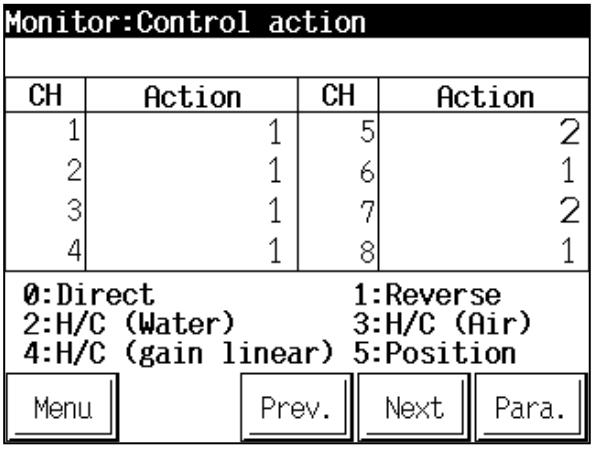
☞ For the number of module connection, refer to the **2.4 Set the Number of Connection Modules (P. 2-14)**.

Screen select keys: Touching this key, screen can be selected.
- **Control action:** “Control action” screen
- **Address of interacting modules:** “Address of interacting modules” screen
- **Channel selection of interacting modules:** “Channel selection of interacting modules” screen
- **Selection switch of interacting modules:** “Selection switch of interacting modules” screen

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

DIO module: Touching this key changes to the “Configuration Monitor Menu 2” screen.

■ Control action



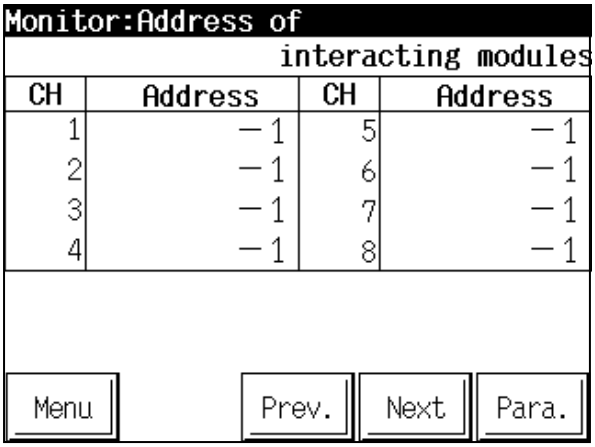
CH: Displays the TIO channel name.

Action: Displays the control action.
- 0: Brilliant II PID control (Direct action)
- 1: Brilliant II PID control (Reverse action)
- 2: Brilliant II Heat/Cool PID control [Water cooling type]
- 3: Brilliant II Heat/Cool PID control [Air cooling type]
- 4: Brilliant II Heat/Cool PID control [Cooling gain linear type]
- 5: Brilliant II position proportioning PID control

Odd channel: 0 to 5
Even channel *: 0 or 1

* In heat/cool control and position proportioning PID control, control action is not performed.
Only monitor and event action is performed.

■ Address of interacting modules

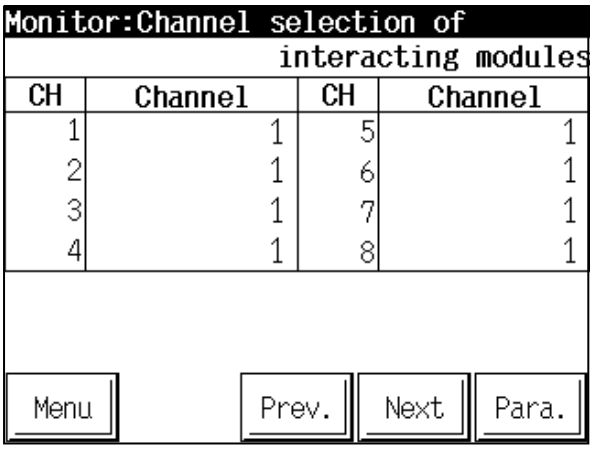


CH: Displays the TIO channel name.

Address: Displays the module address number of the module that specifies the channel which is to interact at the Z-TIO module.
Display range:
- −1: Interact with its own module address
- 0 to 99: Interact with the addresses of other modules

For Z-TIO module:
Displays the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15).
For Z-DIO module:
Displays the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15) with “16” added.

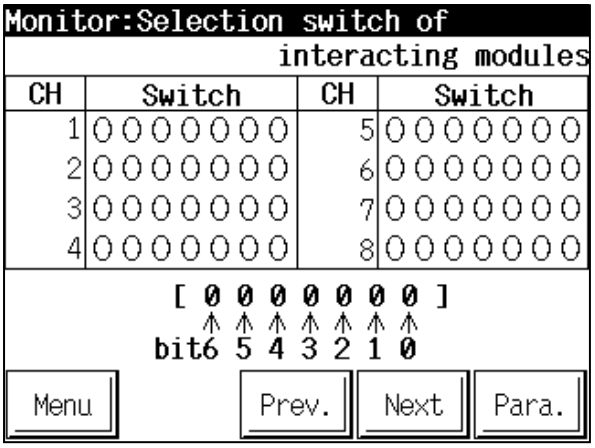
■ Channel selection of interacting modules



CH: Displays the TIO channel name.

Channel: Displays the channel of interacting modules.
Display range: 1 to 99

■ Selection switch of interacting modules



CH: Displays the TIO channel name.

Switch: Displays the selection switch of interacting modules.

Bit image: 0000000

bit 6 ·····bit 0

Bit data
bit 0: Memory area number
bit 1: Operation mode
bit 2: Auto/Manual
bit 3: Remote/Local
bit 4: EDS start signal
bit 5: Interlock release
bit 6: Suspension of area soak time
bit 7 to bit 15: Unused

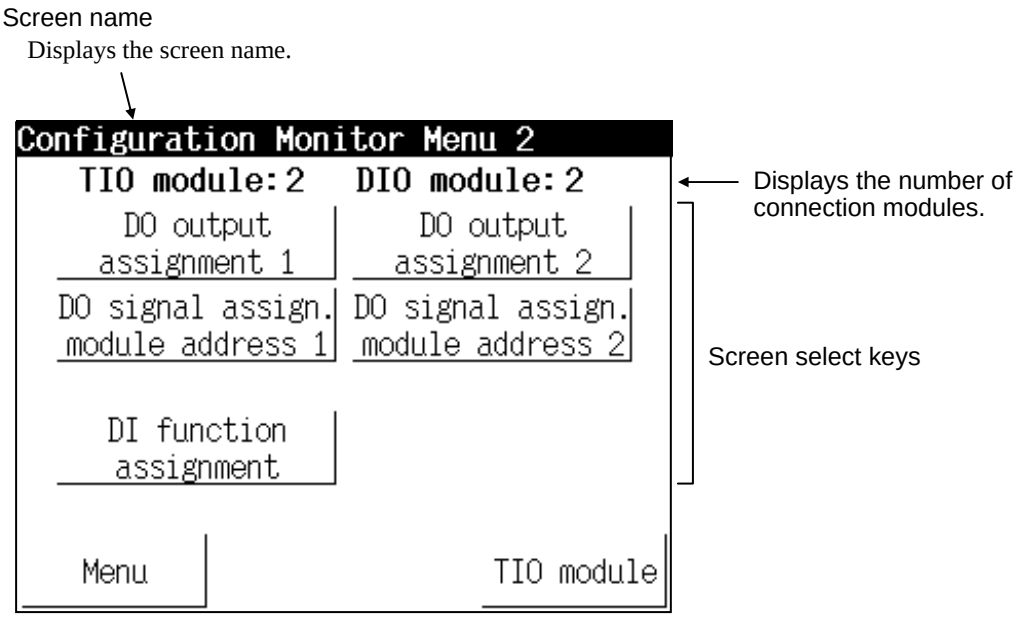
Data 0: No interaction
1: Interact with other channels

3.5.7 Configuration monitor menu 2 screen

There are DO output assignment 1, DO output assignment 2, DO signal assignment Module address 1, DO signal assignment Module address 2 and DI function assignment screen in the Configuration monitor menu 2 screen. Changes the screen by touching [Para.] key.

☞ For the function keys and other items, refer to the **3.5.2 Basic configuration of monitor screen (P. 3-21)**.

< Configuration Monitor Menu 2 screen >



TIO module: Displays the number of Z-TIO modules connected to the OPC-TS2060.

DIO module: Displays the number of Z-DIO modules connected to the OPC-TS2060.

The number of modules displayed on the screen depends on the “Number of modules set” in the initial settings.

☞ For the number of module connection, refer to the **2.4 Set the Number of Connection Modules (P. 2-14)**.

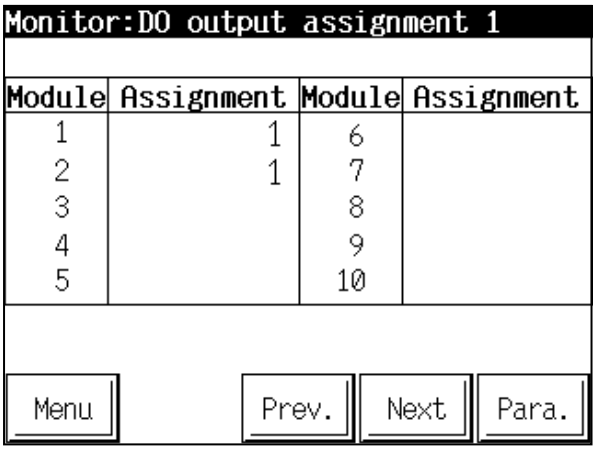
Screen select keys: Touching this key, screen can be selected.

- **DO output assignment 1:** “DO output assignment 1” screen
- **DO output assignment 2:** “DO output assignment 2” screen
- **DO signal assign. module address 1:** “DO signal assignment module address 1” screen
- **DO signal assign. module address 2:** “DO signal assignment module address 2” screen
- **DI function assignment:** “DI function assignment” screen

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

TIO module: Touching this key changes to the “Configuration Monitor Menu 1” screen.

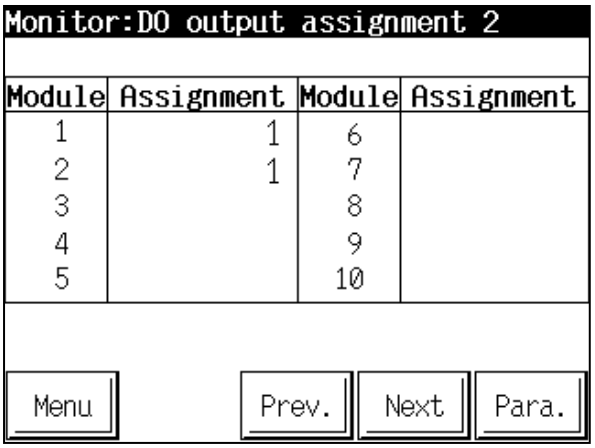
■ DO output assignment 1



Module: Displays the module number.

Assignment:
Displays the DO output assignment 1 (DO1 to DO4).
Display range: 0 to 13
Refer to the **DO assignment code table (P. 3-86)**.

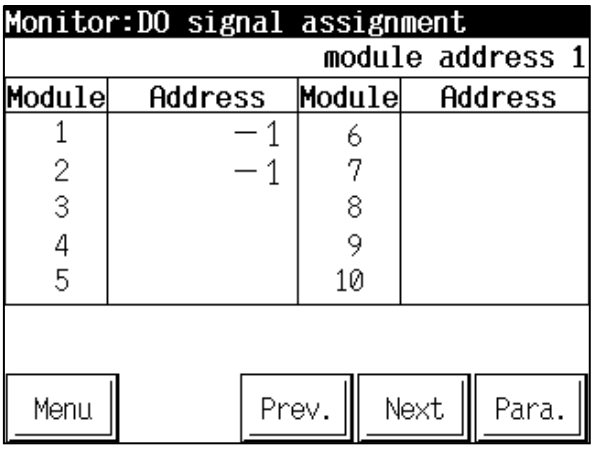
■ DO output assignment 2



Module: Displays the module number.

Assignment:
Displays the DO output assignment 2 (DO5 to DO8).
Display range: 0 to 13
Refer to the **DO assignment code table (P. 3-86)**.

■ DO signal assignment Module address 1

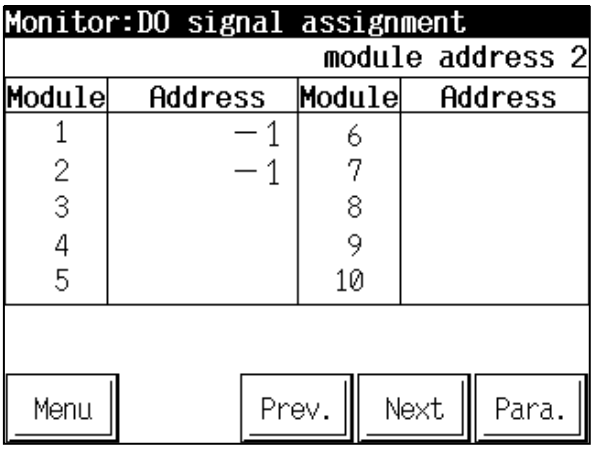


Module: Displays the module number.

Address: Displays the module address number of the module used for the DO signal (DO1 to DO4) selected in the DO output assignment.
Display range: –1, 0 to 99
When "–1" is selected, all of the signals of the same type (except temperature rise completion and DO manual output value) are *OR*-operated and produced as outputs from DO.

For Z-TIO module:
Displays the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15).
For Z-DIO module:
Displays the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15) with "16" added.

■ DO signal assignment Module address 2

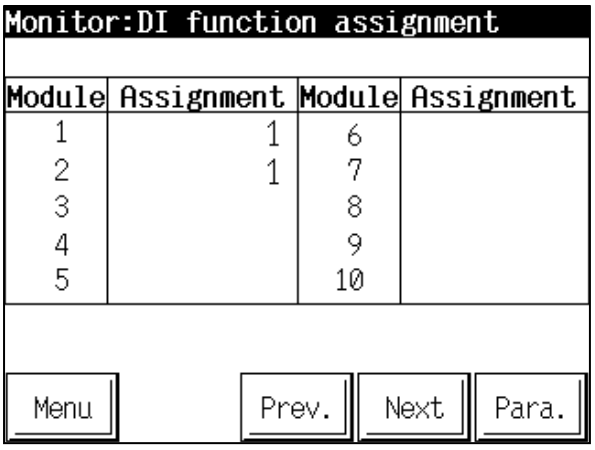


Module: Displays the module number.

Address: Displays the module address number of the module used for the DO signal (DO5 to DO8) selected in the DO output assignment.
Display range: –1, 0 to 99
When "–1" is selected, all of the signals of the same type (except temperature rise completion and DO manual output value) are *OR*-operated and produced as outputs from DO.

For Z-TIO module:
Displays the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15).
For Z-DIO module:
Displays the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15) with "16" added.

■ DI function assignment



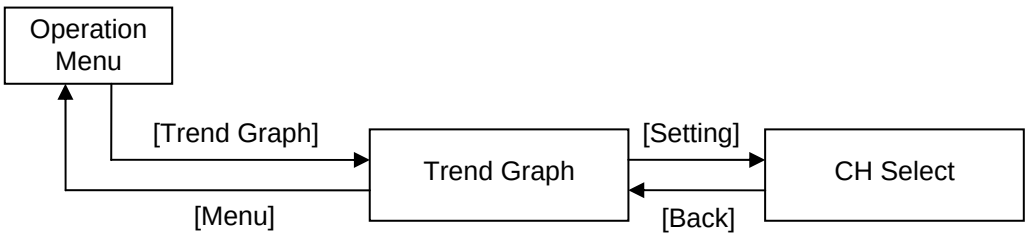
Module: Displays the module number.

Address: Displays the DI function assignment.
Display range: 0 to 29
Refer to the **DI assignment code table (P. 3-87)**.

3.6 Trend Graph Screen

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

3.6.1 Calling procedure of the trend graph screen



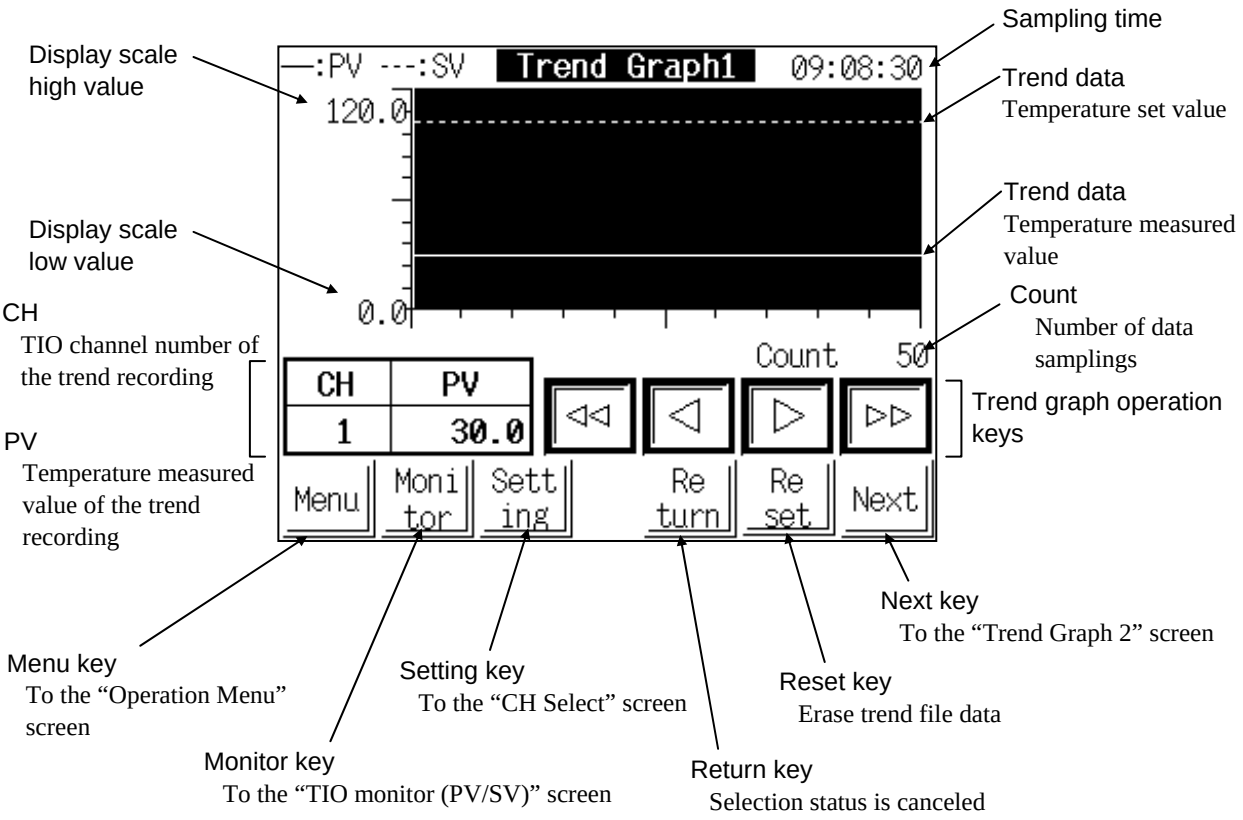
[ ]: Key name.

3.6.2 Trend graph screen

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

1 channel/screen (number of screen: 5)

< Trend graph 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 2730 data in the trend file.
——— : Temperature measured value
– – – – – : Temperature 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 number during trend recording is displayed. Any channel whose trend recording is made is selected on the **"CH Select" screen (P. 3-35)**.

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

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

Monitor key: Touching this key changes to the "TIO Monitor (PV/SV)" screen.

Setting key: Touching this key changes to the "CH Select" 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. Touch the [Reset] key once. The frame of the [Reset] key will start flashing. 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.

Next key: Every time this key is touched, the trend graph number changes.

< 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.

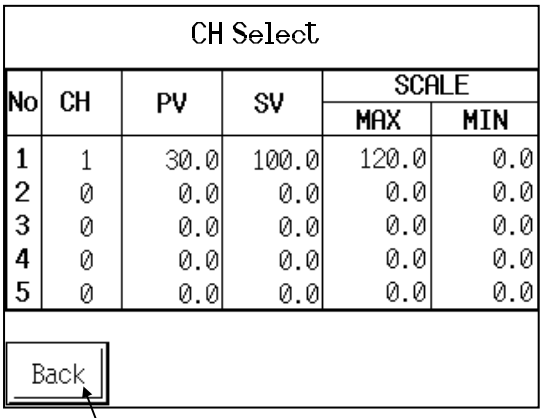
Return key: Touch the flashing [Return] key in selection status to return to the latest trend sampling display. Selection status is then canceled and the [Return] key stops flashing.

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.

3.6.3 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.

< CH Select screen >



No: Displays the trend graph number.

CH: Set the TIO channel number to record the trend data.
Setting range: 0 to 64 CH (0: Unused)
Factory set value: 0

PV: Displays the temperature measured value (PV).
Display range: Input scale low to input scale high

SV: Displays the temperature set value (SV).
Display range: Setting limit (low) to setting limit (high)

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)
–3.0000 to +3.0000 (Four 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)
–3.0000 to +3.0000 (Four decimal places)
The position of the decimal point varies depending on the selected TIO channel.
Factory set value: 0

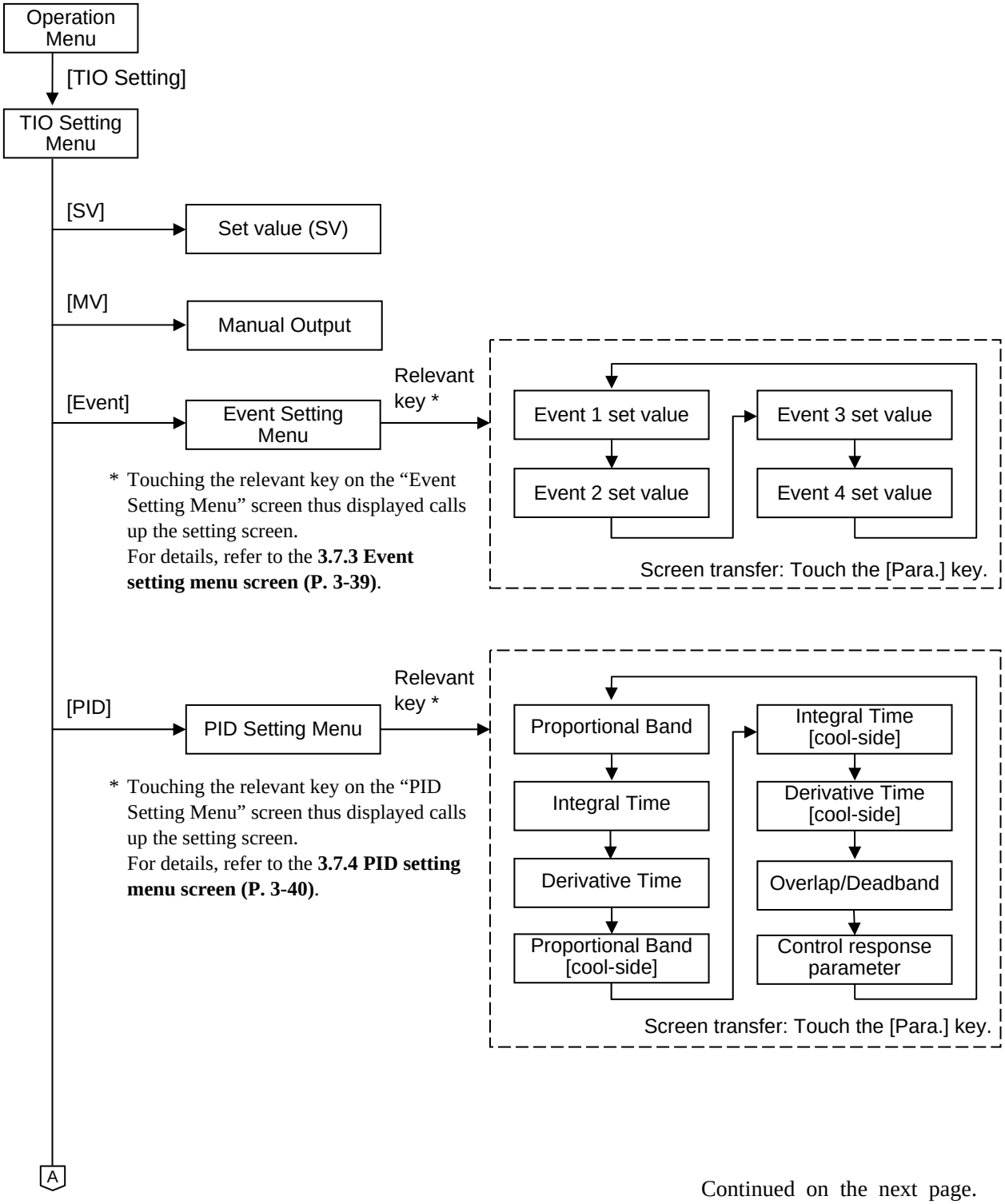
Back key: Touching this key changes to the "Trend Graph" screen.

3.7 Setting Screen

The setting screen is used to set the temperature set value, manual output value, event set value, PID set value or control related set values.

3.7.1 Calling procedure of the setting screen

[ ]: Key name.

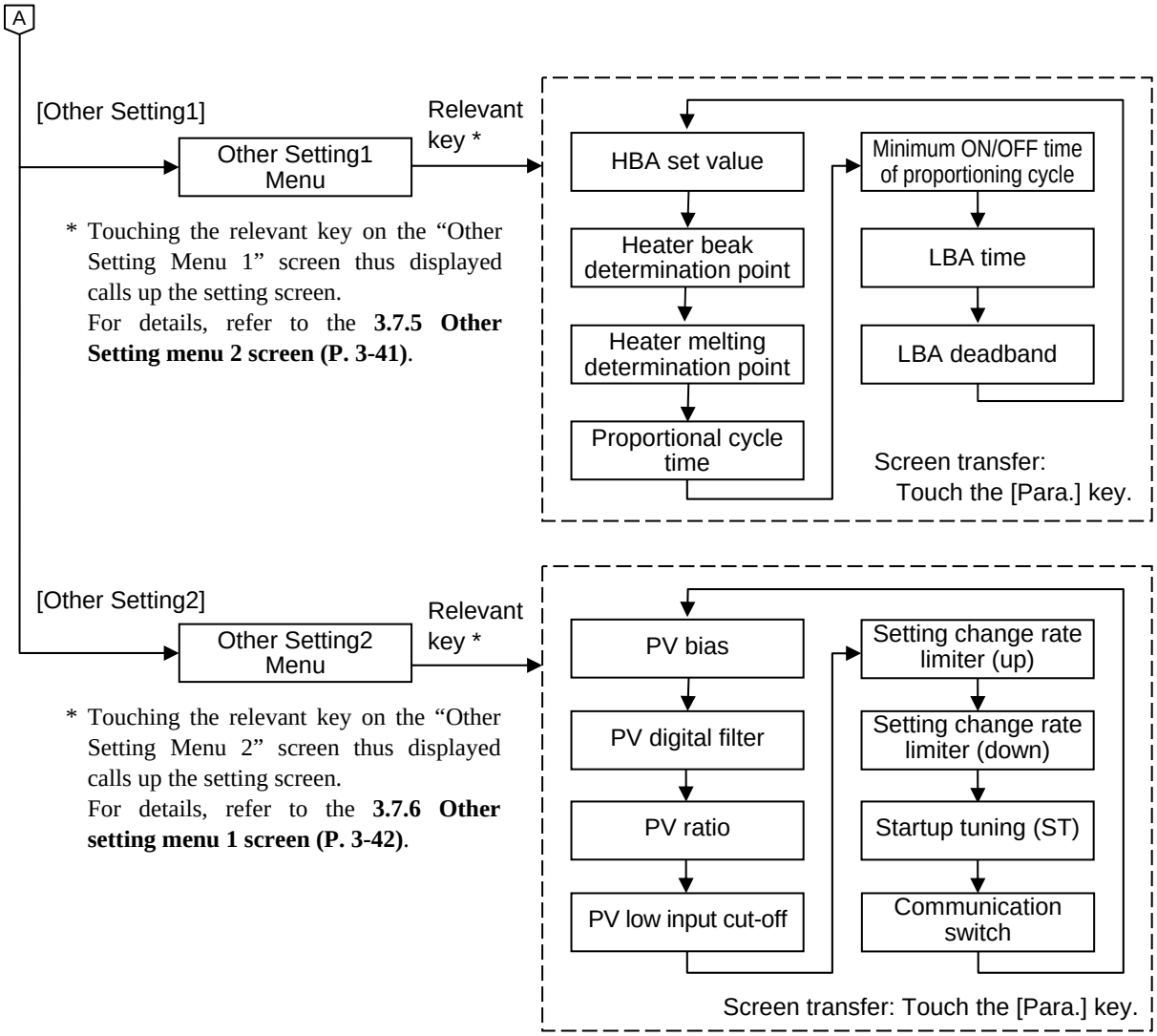


* Touching the relevant key on the "Event Setting Menu" screen thus displayed calls up the setting screen.
For details, refer to the **3.7.3 Event setting menu screen (P. 3-39)**.

* Touching the relevant key on the "PID Setting Menu" screen thus displayed calls up the setting screen.
For details, refer to the **3.7.4 PID setting menu screen (P. 3-40)**.

Continued on the next page.

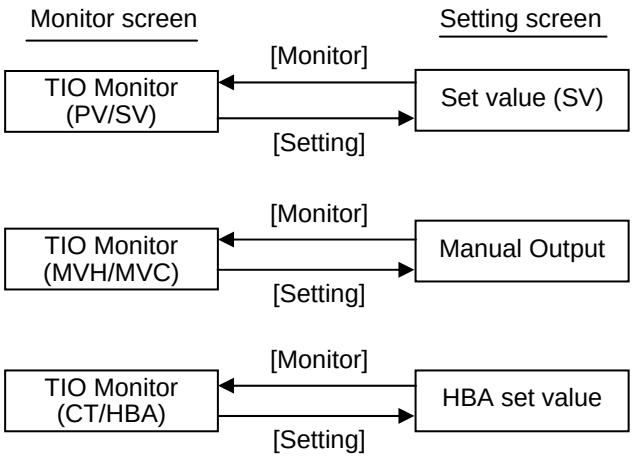
Continued from the previous page.



* Touching the relevant key on the "Other Setting Menu 1" screen thus displayed calls up the setting screen.
For details, refer to the **3.7.5 Other Setting menu 2 screen (P. 3-41)**.

* Touching the relevant key on the "Other Setting Menu 2" screen thus displayed calls up the setting screen.
For details, refer to the **3.7.6 Other setting menu 1 screen (P. 3-42)**.

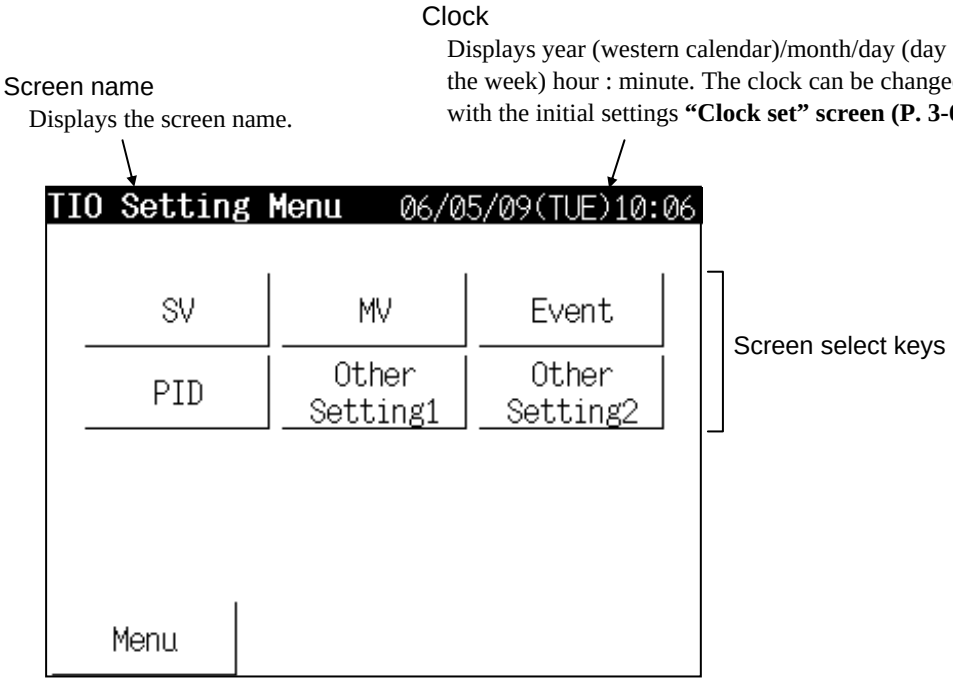
Touching the [Setting] key on the monitor screen displays the respective setting screen. In addition, touching the [Monitor] key on the setting screen displays the respective monitor screen.



3.7.2 TIO setting menu screen

The TIO setting menu screen is for selecting setting items relating to the control.

< TIO Setting Menu screen >



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

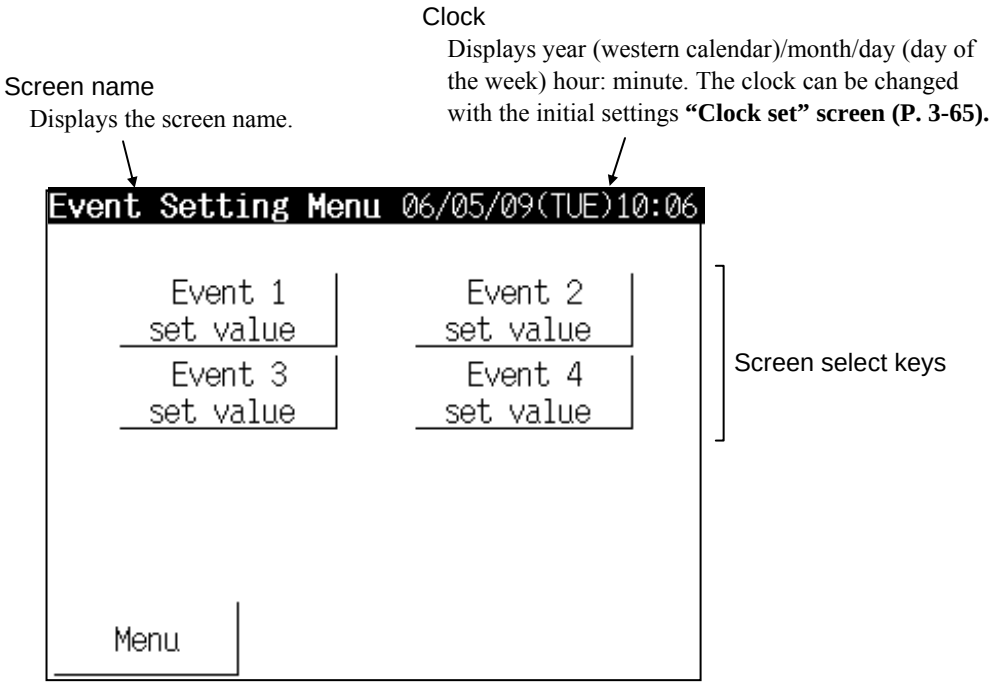
- **SV:** "Setting: SV" screen
- **MV:** "Setting: Manual Output" screen
- **Event:** "Event Setting Menu" screen
- **PID:** "PID Setting Menu" screen
- **Other Setting 1:** "Other Setting 1 Menu" screen
- **Other Setting 2:** "Other Setting 2 Menu" screen

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

3.7.3 Event setting menu screen

The event setting menu screen is for selecting setting items relating to the event.

< Event Setting Menu screen >



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

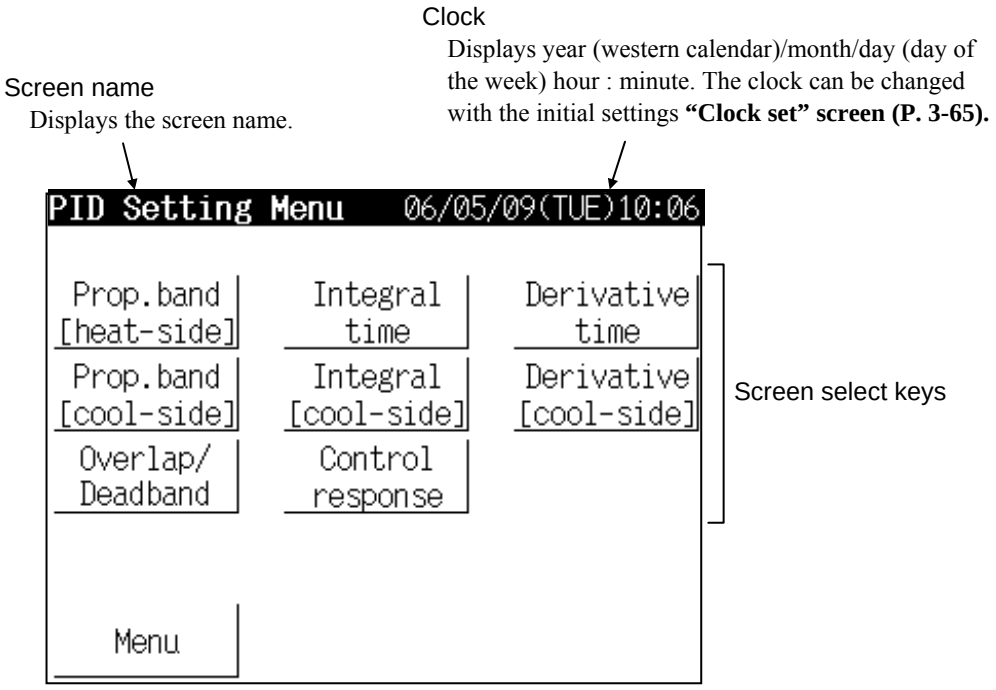
- **Event 1 set value:** "Setting: Event 1 set value" screen
- **Event 2 set value:** "Setting: Event 2 set value" screen
- **Event 3 set value:** "Setting: Event 3 set value" screen
- **Event 4 set value:** "Setting: Event 4 set value" screen

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

3.7.4 PID setting menu screen

The PID setting menu screen is for selecting setting items relating to the PID.

< PID Setting Menu screen >



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

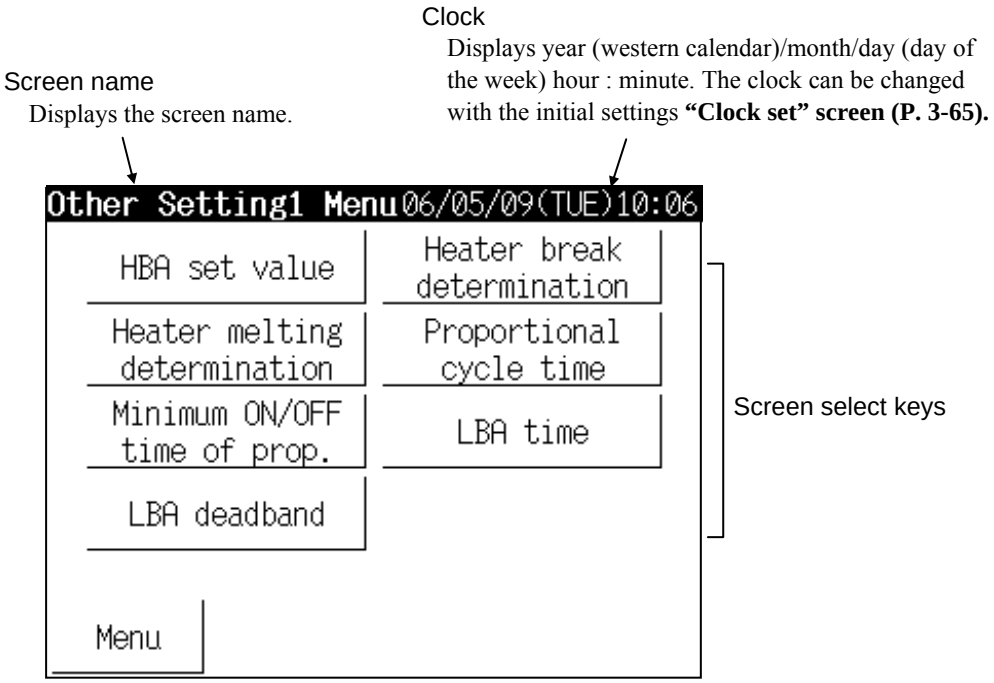
Prop. band [heat-side]:	"Setting: Proportional band [heat-side]" screen
Integral time:	"Setting: Integral Time [heat-side]" screen
Derivative time:	"Setting: Derivative Time [heat-side]" screen
Prop. band [cool-side]:	"Setting: Proportional band [cool-side]" screen
Integral time [cool-side]:	"Setting: Integral Time [cool-side]" screen
Derivative time[cool-side] :	"Setting: Derivative Time [cool-side]" screen
Overlap/Deadband:	"Setting: Overlap/Deadband" screen
Control response:	"Setting: Control response parameter" screen

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

3.7.5 Other setting 1 menu screen

The other setting 1 menu screen is for selecting setting items relating to the control.

< Other Setting 1 Menu screen >



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

HBA set value: "Setting: HBA set value" screen

Heater break determination:
"Setting: Heater break determination point" screen

Heater melting determination:
"Setting: Heater melting determination point" screen

Proportional cycle time:
"Setting: Proportional cycle time" screen

Minimum ON/OFF time of prop.:
"Setting: Minimum ON/OFF time of proportioning cycle" screen

LBA time: "Setting: LBA time" screen

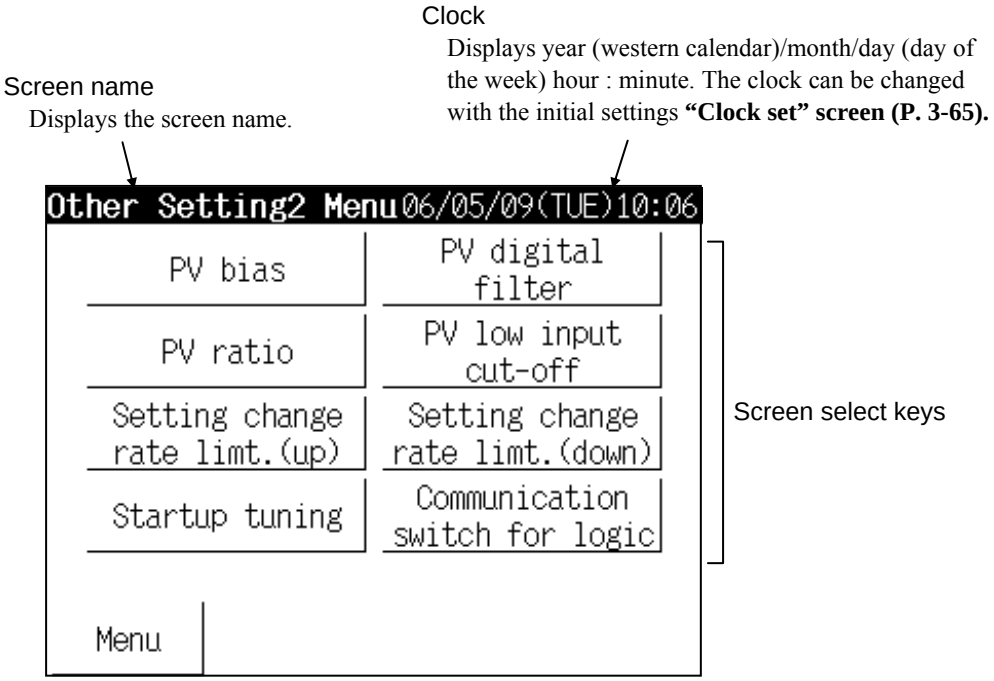
LBA deadband: "Setting: LBA deadband" screen

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

3.7.6 Other setting 2 menu screen

The other setting 2 menu screen is for selecting setting items relating to the control.

< Other Setting 2 Menu screen >



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

- **PV bias:** "Setting: PV bias" screen
- **PV digital filter:** "Setting: PV digital filter" screen
- **PV ratio:** "Setting: PV ratio" screen
- **PV low input cut-off:** "Setting: PV low input cut-off" screen
- **Setting change rate limt. (up):** "Setting: Setting change rate limiter (up)" screen
- **Setting change rate limt. (down):** "Setting: Setting change rate limiter (down)" screen
- **Startup tuning:** "Setting: Startup tuning (ST)" screen
- **Communication switch for logic:** "Setting: Communication switch for logic" screen

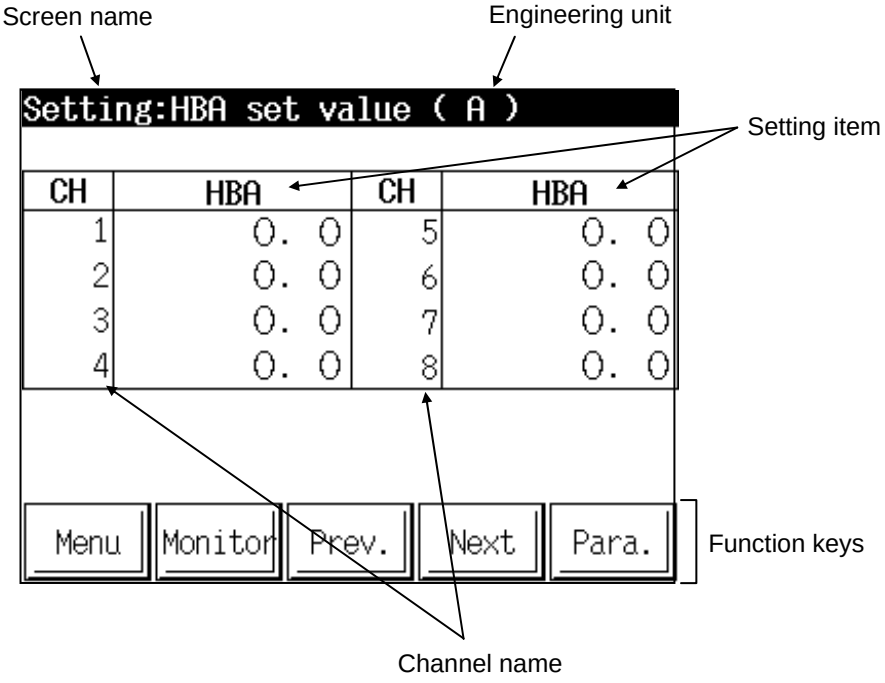
Menu key: Touching this key changes to the "TIO Setting Menu" screen.

3.7.7 Basic configuration of setting screen

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

On a temperature control 2-channel type Z-TIO module, the CH3 and CH4 displays are blank.

Example: HBA set value screen



Channel name can be changed.

Screen name: Displays the screen name.

Engineering unit: Displays the engineering unit.

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

For the details of setting, refer to the **3.7.8 Setting item list (P. 3-44)**.

Channel name: Displays the TIO channel name. The channel name can be changed with the initialize **"TIO CH name set" screen (P. 3-68).**

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

- **Menu:** Touching this key changes to the "TIO Setting Menu" "Event Setting Menu" screen, "PID Setting Menu" screen, "Other Setting 1 Menu" screen or "Other Setting 2 Menu" screen.
- **Monitor:** Touching this key changes from the settings screen to the monitor screen.
- **Prev.:** Touching this key the display to the screen for the channel (CH) before the current one. If there is no channel to be selected, the [Prev.] key becomes invalid.
- **Next:** Touching this key the display to the screen for the channel (CH) after the current one. If there is no channel to be selected, the [Next] key becomes invalid.
- **Para.:** Every time this key is touched, the setting screen (setting item) changes. There is no this key on the "Set value (SV)" screen and "Manual Output" screen.

3.7.8 Setting item list

Some items may not be displayed depending on the specification.

Each setting item is selected by touching the [Para.] key on the relevant screen.

For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

For the function keys and other items, refer to the **3.7.7 Basic configuration of setting screen (P. 3-43)**.

For the function description of each data, refer to the **SRZ Instruction Manual (IMS01T04-E□)**.

■ TIO setting menu

Name	Data range	Description	Factory set value
Set value (SV)	Setting limiter (low) to setting limiter (high)	Sets the temperature set value (SV).	TC/RTD input: 0 °C [°F] V/I input: 0.0 %
Manual Output	PID control: Output limiter (low) to Output limiter (high) Heat/cool PID control: −Cool-side output limiter (high) to +Heat-side output limiter (high) Position proportioning PID control: When there is feedback resistance (FBR) input and it does not break: Output limiter (low) to Output limiter (high) When there is no feedback resistance (FBR) input or the feedback resistance (FBR) input is disconnected: 0: Close-side output OFF, Open-side output OFF 1: Close-side output ON, Open-side output OFF 2: Close-side output OFF, Open-side output ON	Sets the manipulated output value (MV) in Manual mode. In heat/cool PID control, the displays of even-numbered channels are blank.	0.0

■ Event setting menu

Name	Data range	Description	Factory set value
Event 1 set value	Deviation action[1], Deviation action between channels[1], Temperature rise completion range[3]: −Input span to +Input span Process action[2], SV action[2]: Input scale low to Input scale high MV action[2]: −5.0 to +105.0 % [1] Deviation high, deviation low, deviation high/low, band [2] High-limit, low-limit [3] When temperature rise completion is selected at Event 3 action type.	Sets the Event 1 set value.	50 (50.0)
Event 2 set value		Sets the Event 2 set value.	50 (50.0)
Event 3 set value		Sets the Event 3 set value.	50 (50.0)
Event 4 set value		Sets the Event 4 set value.	50 (50.0)

When "9: Temperature rise completion" is selected for the Event 3 type, the Event 3 setting will be the range for determining temperature rise completion.

When "9: Control loop break alarm (LBA)" is selected for the Event 4 type, the Event 4 setting will be monitor only.

■ PID setting menu

Name	Data range	Description	Factory set value
Proportional band	TC/RTD inputs: 0 to Input span (Unit: °C [°F]) Varies with the setting of the decimal point position. Voltage (V)/current (I) inputs: 0.0 to 1000.0 % of Input span 0 (0.0): ON/OFF action * * Heat/Cool PID control: heat-side and cool-side are both ON/OFF action	Sets the heat-side proportional band for P, PI, PD, PID control.	TC/RTD input: 30 (30.0) V/I input: 30.0
Integral Time	PID control or heat/cool PID control: 0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PD action) Position proportioning PID control: 1 to 3600 seconds or 0.1 to 1999.9 seconds	Sets the heat-side integral time to eliminate the offset produced in proportional control.	240
Derivative Time	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PI action)	Sets the heat-side derivative time to prevent ripples by predicting output changes and thus to improve control stability.	60
Proportional band [cool-side]	TC/RTD inputs: 1 (0.1) to Input span (Unit: °C [°F]) Voltage (V)/current (I) inputs: 0.1 to 1000.0 % of Input span	Sets the cool-side proportional band for heat/cool PID control. Heating control makes the display blank.	TC/RTD input: 30 (30.0) V/I input: 30.0
Integral Time [cool-side]	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PD action)	Sets the heat-side integral time to eliminate the offset produced in proportional control. Heating control makes the display blank.	240
Derivative Time [cool-side]	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PI action)	Sets the heat-side derivative time to prevent ripples by predicting output changes and thus to improve control stability. Heating control makes the display blank.	60
Overlap/Deadband	TC/RTD inputs: −Input span to +Input span (Unit:°C [°F]) Voltage (V)/current (I) inputs: −100.0 to +100.0 % of Input span	Sets the control deadband between heat-side and cool-side proportional bands in heat/cool PID control. Minus (−) setting results is overlap. However, the overlapping range is limited to the proportional band [heat-side] set range or the proportional band [cool-side] set range, whichever is smaller. Heating control makes the display blank.	0 (0.0)
Control response parameter	0: Slow 1: Medium 2: Fast When the P or PD action is selected, this setting becomes invalid.	Sets the response resulting from a temperature set value change in PID control.	PID control, Position proportioning PID control: 0 Heat/cool PID control: 2

■ Other setting 1 menu

Name	Data range	Description	Factory set value
Heater break alarm (HBA) set value	When CT is CTL-6-P-N: 0.0 to 30.0 A (0.0: Not used) When CT is CTL-12-S56-10L-N: 0.0 to 100.0 A (0.0: Not used)	Sets the set value for the heater break alarm (HBA). Two types of heater break alarms, TYPE "A" and TYPE "B" (factory set value: TYPE "B"), are available. These parameters, HBA set values are used for both types. However, each type has different function and care must be used to set an appropriate set value.	0.0
Heater break determination point	0.0 to 100.0 % of HBA set value (0.0: Heater break determination is invalid)	Sets the heater break determination point for the heater break alarm (HBA) type B.	30.0
Heater melting determination point	0.0 to 100.0 % of HBA set value (0.0: Heater melting determination is invalid)	Sets the heater melting determination point for the heater break alarm (HBA) type B.	30.0
Proportional cycle time	0.1 to 100.0 seconds M: Relay contact output T: Triac output V: Voltage pulse output D: Open collector output	Sets the proportioning cycle time on the control channel. The invalidity in case of the voltage/current outputs.	M output: 20.0 V, T, D output: 2.0
Minimum ON/OFF time of proportioning cycle	0 to 1000 ms	Sets the minimum ON/OFF time of proportioning cycle	0
Control loop break alarm (LBA) time	0 to 7200 seconds (0: Unused)	Sets the measuring time of detection a control loop error by monitoring the variation of measured value (PV). 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.	480
LBA deadband	0 to Input span Varies with the setting of the decimal point position.	Control loop break alarm (LBA) deadband gives a neutral zone to prevent the control loop break alarm (LBA) from malfunctioning caused by disturbance.	0 (0.0)

■ Other setting 2 menu

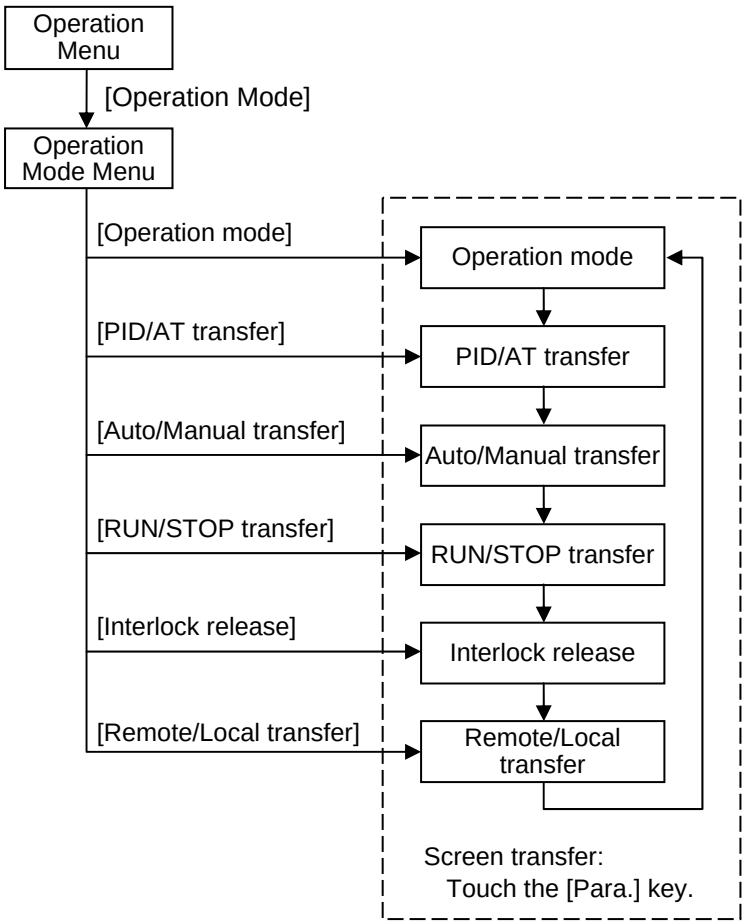
Name	Data range	Description	Factory set value
PV bias	− Input span to + Input span	Sets the bias added to the measured value (PV) for sensor correction. The PV bias is used to compensate the individual variations of the sensors or correct the difference between the measured value (PV) of other instruments.	0 (0.0)
PV digital filter	0.0 to 100.0 seconds (0.0: Unused)	This parameter is the time of the first-order lag to eliminate noise against the measured input.	0.0
PV ratio	0.500 to 1.500	Sets the ratio (multiplier) added to the measured value (PV) for sensor correction. The PV ratio is used to compensate the individual variations of the sensors or correct the difference between the measured value (PV) of other instruments.	1.000
PV low input cut-off	0.00 to 25.00 % of Input span	PV low input cut-off is used with Square Root Extraction function. The measured value less than the PV low input cut-off is ignored to prevent control disturbance caused by input variation at low measured value range.	0.00
Setting change rate limiter (up)	0 to Input span/unit time * [0: Unused] Varies with the setting of the decimal point position. * Unit time: 60 seconds (factory set value)	This function is to allow the set value (SV) to be automatically changed at specific rates when a new set value (SV).	0 (0.0)
Setting change rate limiter (down)			0 (0.0)
Startup tuning (ST) ON/OFF	0: ST unused 1: Execute once 2: Execute always	Sets the number of execution times of Startup tuning (ST).	0
Communication switch for logic	Bit image: 0000 bit 3 ·····bit 0 Bit data bit 0: Communication switch 1 bit 1: Communication switch 2 bit 2: Communication switch 3 bit 3: Communication switch 4 Data: 0: OFF 1: ON	ON/OFF signal that applies the signal of event information occurring in the higher system as input to a logic calculation result (logic output).	0000

3.8 Operation Mode Screen

The operation mode screen is used to transfer or specify operation mode (status) relating to control and temperature control.

3.8.1 Calling procedure of the operation mode screen

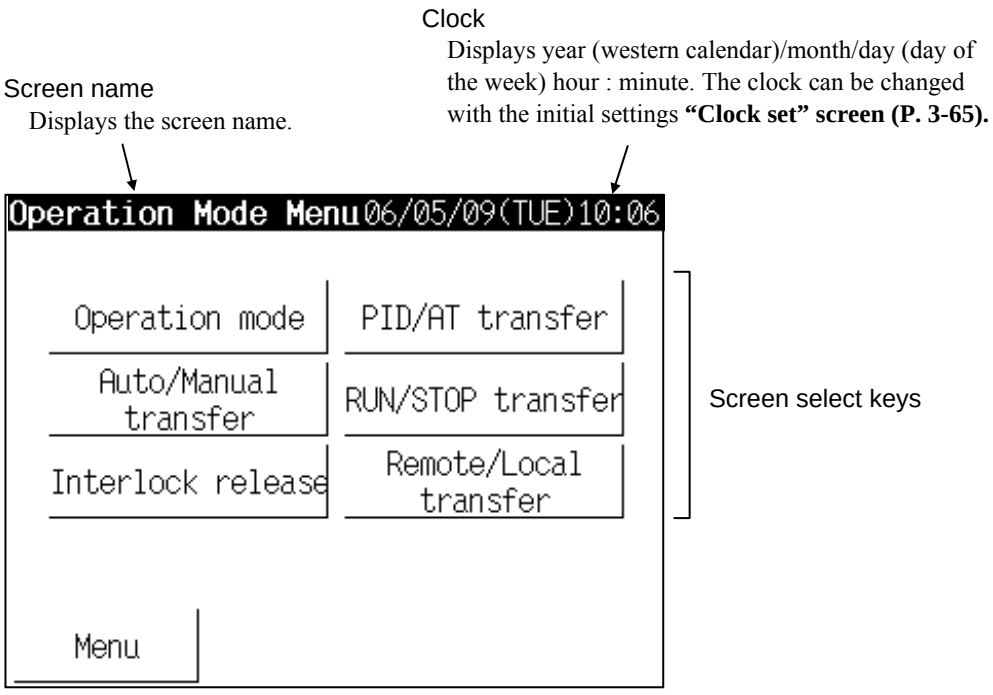
[ ]: Key name



3.8.2 Operation mode menu screen

The operation mode menu screen is for selecting operation mode screens.

< Operation Mode Menu screen >



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

Operation mode:	"Setting: Operation mode" screen
PID/AT transfer:	"Setting: PID/AT transfer" screen
Auto/Manual transfer:	"Setting: Auto/Manual transfer" screen
RUN/STOP transfer:	"Setting: RUN/STOP transfer" screen
Interlock release:	"Setting: Interlock release" screen
Remote/Local transfer:	"Setting: Remote/Local transfer" screen

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

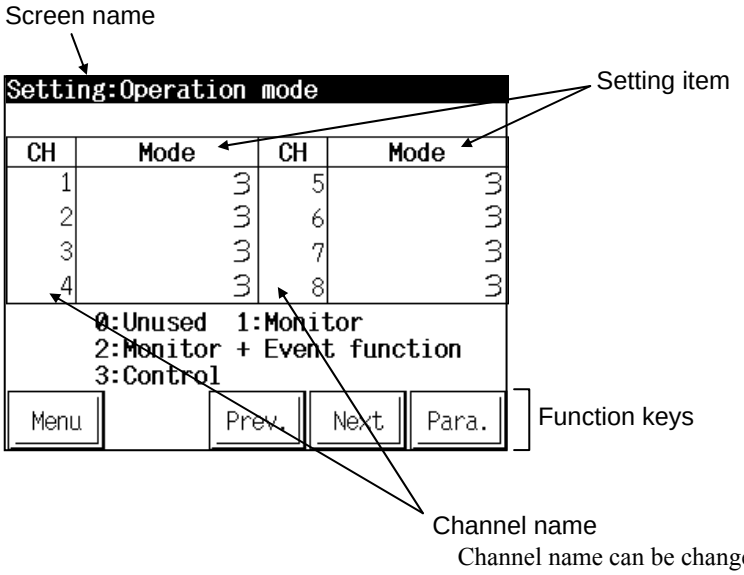
3.8.3 Basic configuration of operation mode screen

The basic configuration of each operation mode screen is as shown below.

On a temperature control 2-channel type Z-TIO module, the CH3 and CH4 displays are blank.

■ Data for each channel

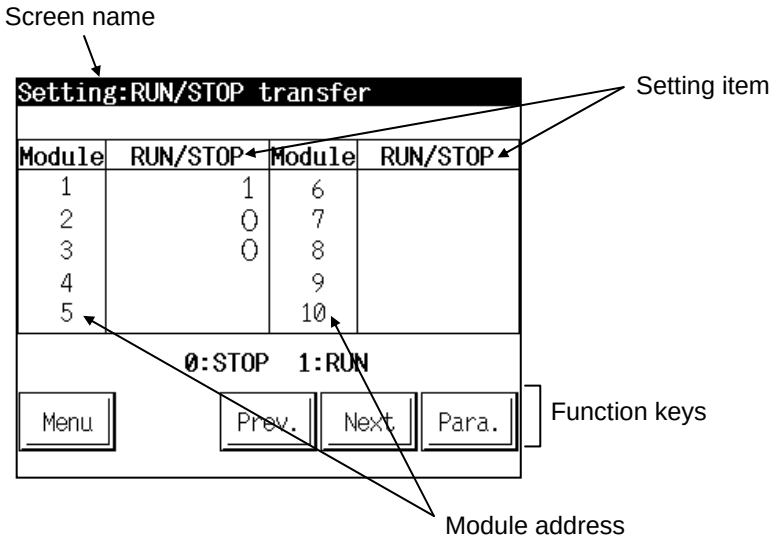
Example: Operation mode screen



Object screens: "Setting: Operation mode" screen, "Setting: PID/AT transfer" screen, "Setting: Auto/Manual transfer" screen, "Setting: Interlock release" screen, "Setting: Remote/Local transfer" screen

■ Data for each module

Example: Setting: RUN/STOP transfer



Object screens: "Setting: RUN/STOP transfer" screen

Screen name: Displays the screen name.

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

☞ For the details of setting, refer to the **3.8.4 Operation mode item list (P. 3-52)**.

Channel name: Displays the TIO channel name. The channel name can be changed with the initialize **"TIO CH name Set" screen (P. 3-68).**

Module address: Displays the module address. The module address is "1" added to the decimal value (0 to 15) of the number set using the address setting switch (0 to F) on the front of the module.

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.

Prev.: Touching this key the display to the screen for the channel (CH) or module address screen before the current one. If there is no channel or module to be selected, the [Prev.] key becomes invalid.

Next: Touching this key the display to the screen for the channel (CH) or module address screen after the current one. If there is no channel or module to be selected, the [Next] key becomes invalid.

Para.: Every time this key is touched, the operation mode screen (Setting item) changes.

3.8.4 Operation mode item list

Changes the item by touching [Para.] key.

For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

For the function keys and other items, refer to the **3.8.3 Basic configuration of operation mode screen (P. 3-50)**.

For the function description of each data, refer to the **SRZ Instruction Manual (IMS01T04-E□)**.

Name	Data range	Description	Factory set value
Operation mode transfer	0: Unused Execute neither monitor nor the control 1: Monitor Execute only data monitor 2: Monitor + Event function Execute data monitor and an event action (include temperature rise completion and LBA) 3: Control Execute the control	Use to selects “Unused”, “Monitor”, “Monitor + Event function” or “Control” for each channel.	3
PID/AT transfer	0: PID control 1: Autotuning (AT)	Sets whether to use PID control or autotuning (AT).	0
Auto/Manual transfer	0: Auto mode 1: Manual mode	Sets whether to perform control with Auto mode or Manual mode.	0
RUN/STOP transfer	0: STOP (Control Stop) 1: RUN (Control Run)	Use to transfers RUN and STOP of the control.	0
Interlock release	0: Normal state 1: Interlock release execution	The event state is turned OFF when the event ON state is continued by the event interlock function.	0
Remote/Local transfer	0: Local mode 1: Remote mode	Sets whether to perform control with Remote mode or Local mode.	0

- **Caution for using the autotuning (AT)**
  - When a temperature change (UP and/or Down) is 1 °C or less per minute during autotuning (AT), autotuning (AT) 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.
  - If the manipulated output may be limited by the output limiter setting, the optimum PID values may not be calculated by autotuning (AT).
  - If the output change rate limiter is set, the optimum PID values may not be calculated by autotuning (AT).
  - When the cascade control is activated, the AT function cannot be turned on.

Continued on the next page.

● Requirements for autotuning (AT) start

Start the autotuning (AT) when all following conditions are satisfied:
The autotuning (AT) function can start from any state after power on, during arise in temperature or in stable control.

Operation mode state	RUN/STOP transfer	RUN
	PID/AT transfer	PID control
	Auto/Manual transfer	Auto mode
	Remote/Local transfer	Local mode
Parameter setting		Output limiter (high) ≥ 0.1 %, Output limiter (low) ≤ 99.9 %
Input value state		The measured value (PV) is not underscale or overscale.
		Input error determination point (high) ≥ Measured value (PV) ≥ Input error determination point (low)
Operation mode		Control

● Requirements for autotuning (AT) cancellation

If the autotuning (AT) is canceled according to any of the following conditions, the controller immediately changes to PID control. The PID values will be the same as before autotuning (AT) was activated.

When the Operation mode is transferred	When the RUN/STOP mode is changed to the STOP mode.
	When the PID/AT transfer is changed to the PID control.
	When the Auto/Manual mode is changed to the Manual mode.
	When the Remote/Local mode is changed to the Remote mode.
Operation mode	When changed to unused, monitor, or the monitor + event function.
When the parameter is changed	When the temperature set value (SV) is changed.
	When the PV bias, the PV digital filter, or the PV ratio is changed.
	When the AT bias is changed.
	When the control area is changed.
When the input value becomes abnormal	When the measured value (PV) goes to underscale or overscale.
	When the measured value (PV) goes to input error range. (Measured value (PV) ≥ Input error determination point (high) or Input error determination point (low) ≥ Measured value (PV))
When the AT exceeded the execution time	When the AT does not end in two hours after AT started
Power failure	When the power failure of more than 4 ms occurs.
Instrument error	When the instrument is in the FAIL state.

Parameters for autotuning (AT) are provided to compute the PID values suitable for various controlled systems and control actions. Set them, as required.

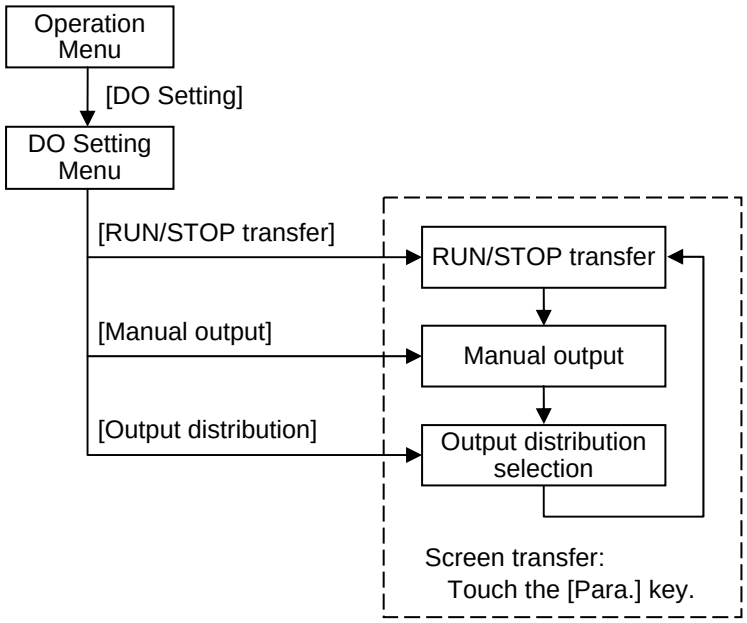
Example: When you want to limit on/off output only at autotuning (AT)
Autotuning (AT) that limits the ON/OFF output values only at autotuning (AT) can be executed by setting the output value with AT turned on and the output value with AT turned off.

Only when the feedback resistance (FBR) input is connected in the position proportioning PID control, the “Output value with AT turned on” and “Output value with AT turned off” setting becomes valid.

3.9 DO Setting Screen

3.9.1 Calling procedure of the DO setting screen

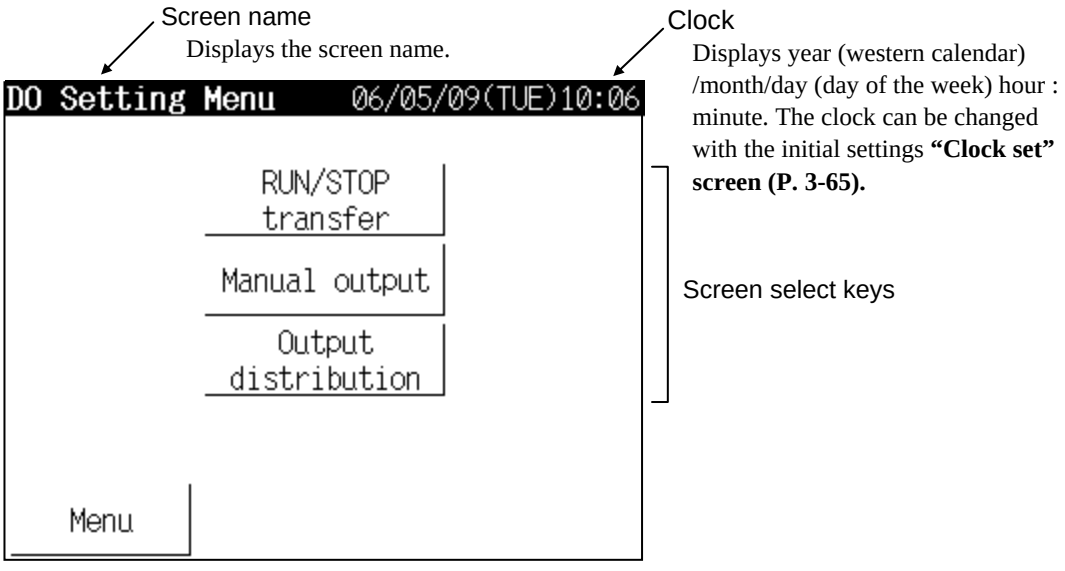
[ ]: Key name



3.9.2 DO setting menu screen

The DO setting menu screen is for selecting setting items relating to the DO.

< DO Setting Menu screen >



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

RUN/STOP transfer: "Setting: RUN/STOP transfer" screen

Manual output: "Setting: Manual output" screen

Output distribution: "Setting: Output distribution selection" screen

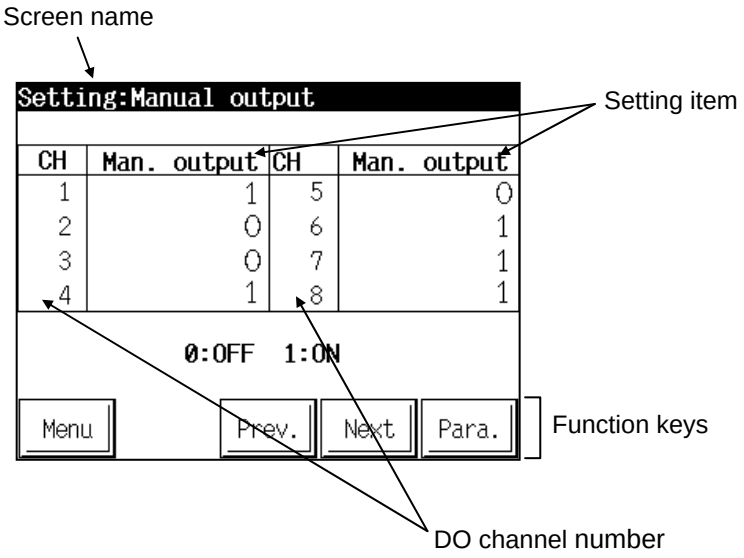
Menu key: Touching this key changes to the "Operation Menu" screen.

3.9.3 Basic configuration of DO setting screen

The basic configuration of each DO setting screen is as shown below.

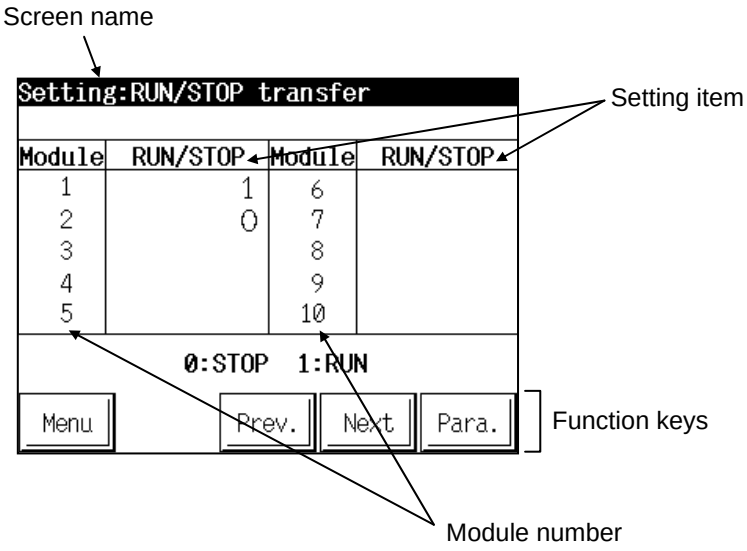
■ Data for each channel

Example: Manual output screen



Object screens: “Setting: Manual output” screen, “Setting: Output distribution selection” screen

■ Data for each module



Object screens: “Setting: RUN/STOP transfer” screen

Screen name: Displays the screen name.

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

☞ For the details of setting, refer to the **3.9.4 DO setting item list (P. 3-56)**.

DO channel number: Displays the DO channel number.

Module number: Displays the module number. The module number is "1" added to the decimal value (0 to 15) of the number set using the address setting switch (0 to F) on the front of the module.

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

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

Prev.: Touching this key the display to the screen for the channel (CH) or module number screen before the current one. If there is no channel or module to be selected, the [Prev.] key becomes invalid.

Next: Touching this key the display to the screen for the channel (CH) or module number screen after the current one. If there is no channel or module to be selected, the [Next] key becomes invalid.

Para.: Every time this key is touched, the DO setting menu screen (Setting item) changes.

3.9.4 DO setting item list

📖 Changes the item by touching [Para.] key.

☞ For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

☞ For the function keys and other items, refer to the **3.9.3 Basic configuration of DO setting screen (P. 3-55)**.

☞ For the function description of each data, refer to the **SRZ Instruction Manual (IMS01T04-E□)**.

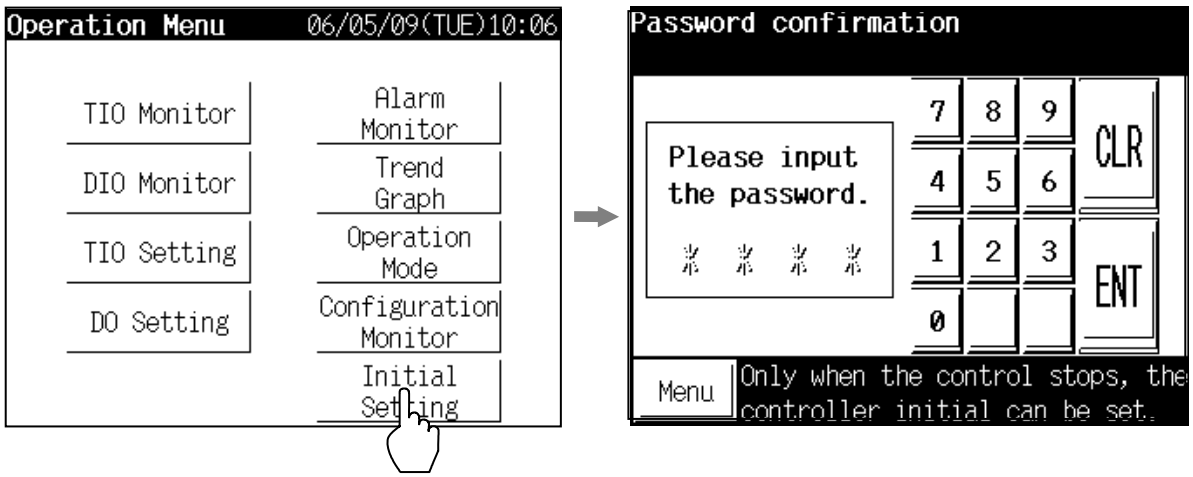
Name	Data range	Description	Factory set value
DO RUN/STOP transfer	0 STOP (DO Stop) 1 RUN (DO Run)	Use to transfers RUN and STOP of the DO.	0
DO manual output	0: OFF 1: ON	ON/OFF signal for each digital output (DO1 to DO8).	0
DO output distribution selection	0 DO output 1 Distribution output (Manipulated output value of the specified master channel)	Select whether or not the manipulated output value of the specified master channel is output from DO. The output distribution function outputs the manipulated output value calculated for the master channel as a manipulated output value from DO of the slave channels.	0

3.10 Initial Setting Screen

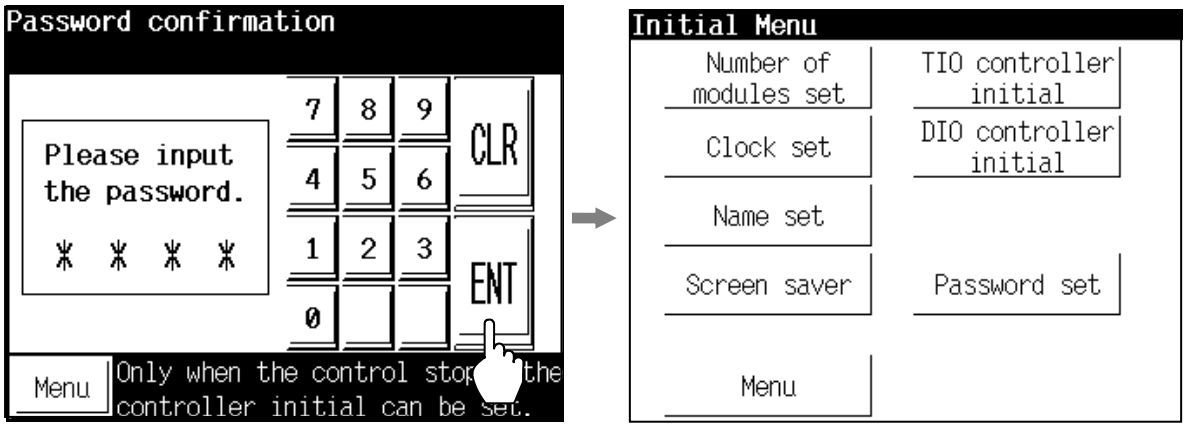
The initialize screen is used to display and set data items which are not usually set such as number of connection modules, clock setting, name setting, screen saver, TIO controller initial, DIO controller initial, password setting etc.
The keys for changing the display to the initial setting screens are protected, so you cannot change to these screens without releasing the protection.

3.10.1 Releasing procedure of the initial setting key protect

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



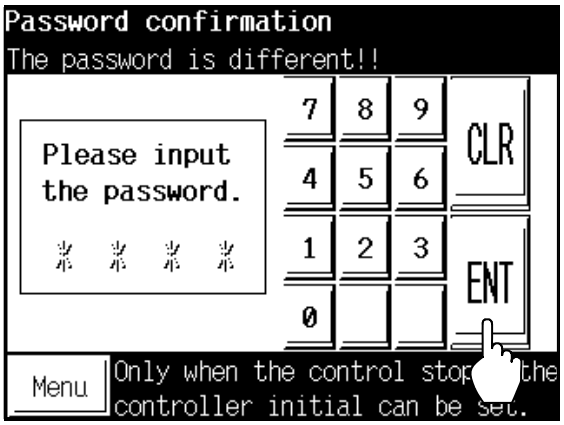
2. Enter the password "0000" and touch the [ENT] key.
If the password is correct, the screen will change to the "Initial Menu" screen.



The factory default password is "0000."
To change the password, refer to the **3.10.16 Password set screen (P. 3-88).**

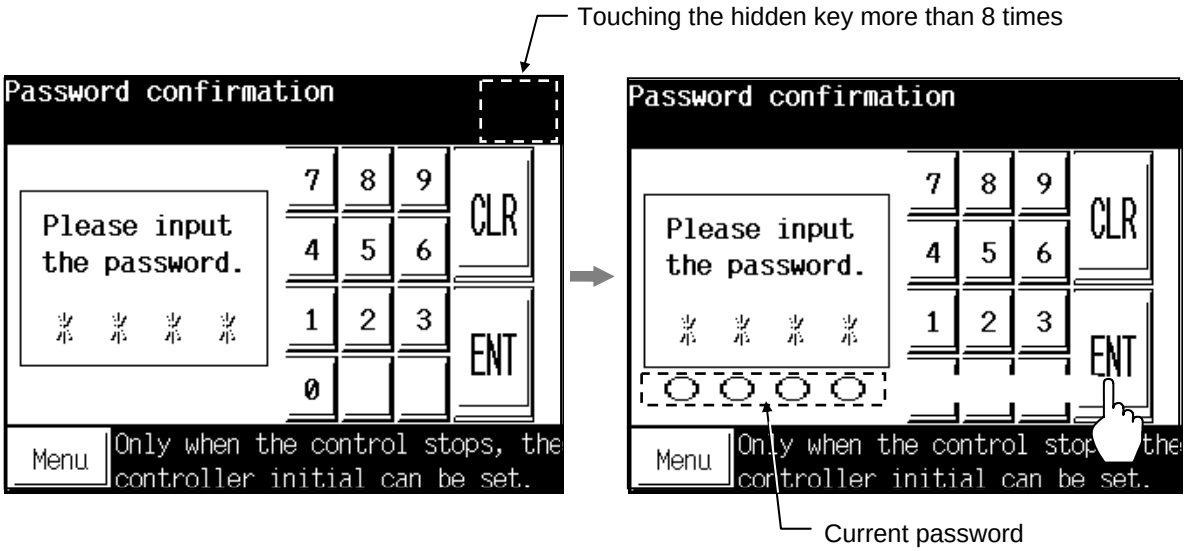
- **If the password is not entered correctly**

The message “The password is different!!” will appear.
Re-enter the correct password and touch the [ENT] key.



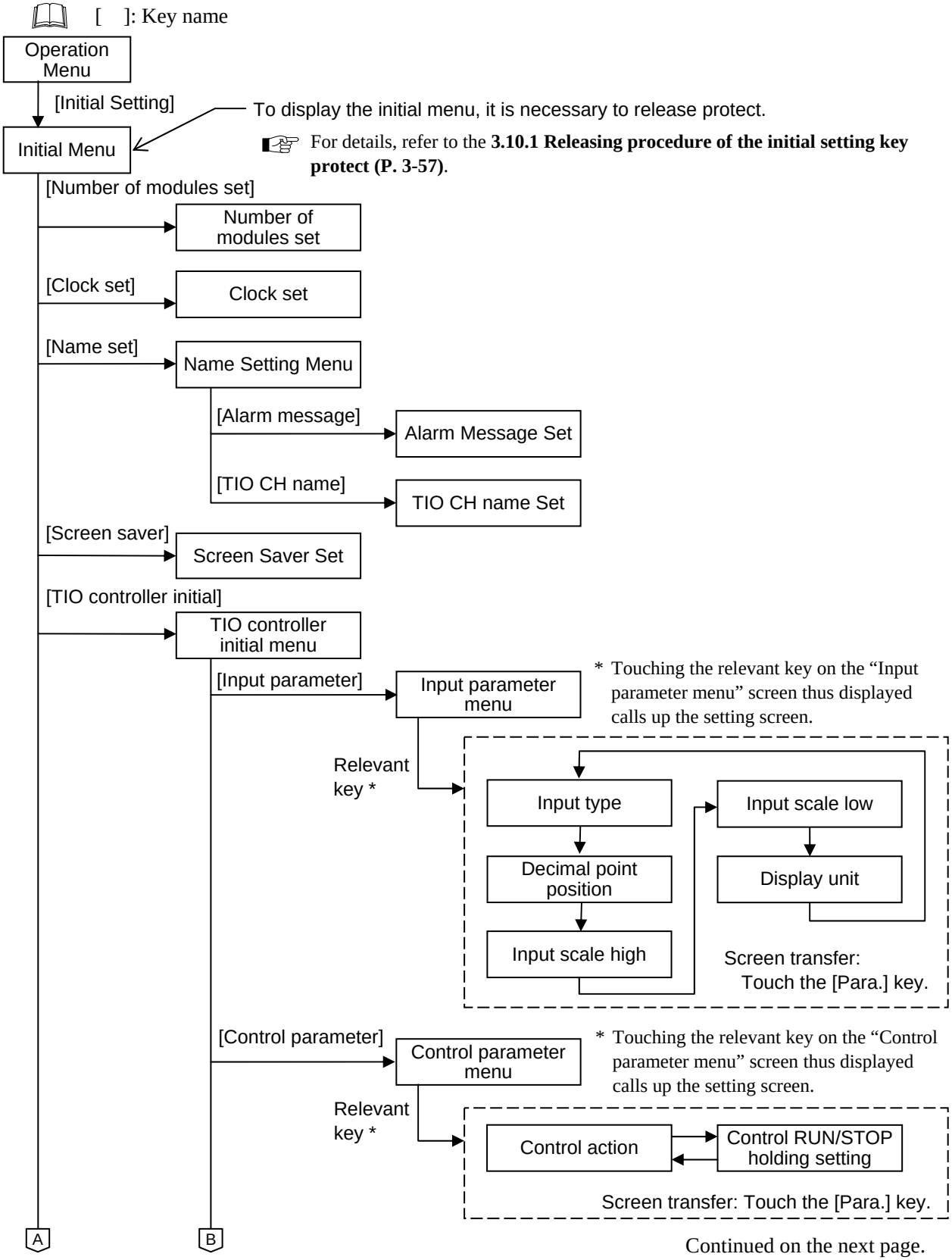
- **If you forget the password**

Touch the hidden key in the “Password confirmation” screen repeatedly at least 8 times. The current password will appear.
Enter the displayed password and touch the [ENT] key. The screen will change to the “Initial Menu” screen.



When you return to the “Operation Menu” screen after displaying the “Initial Menu” screen, the protect release will be canceled. Touch the [Initial Setting] key and re-enter the password.

3.10.2 Calling procedure of the initial setting screen



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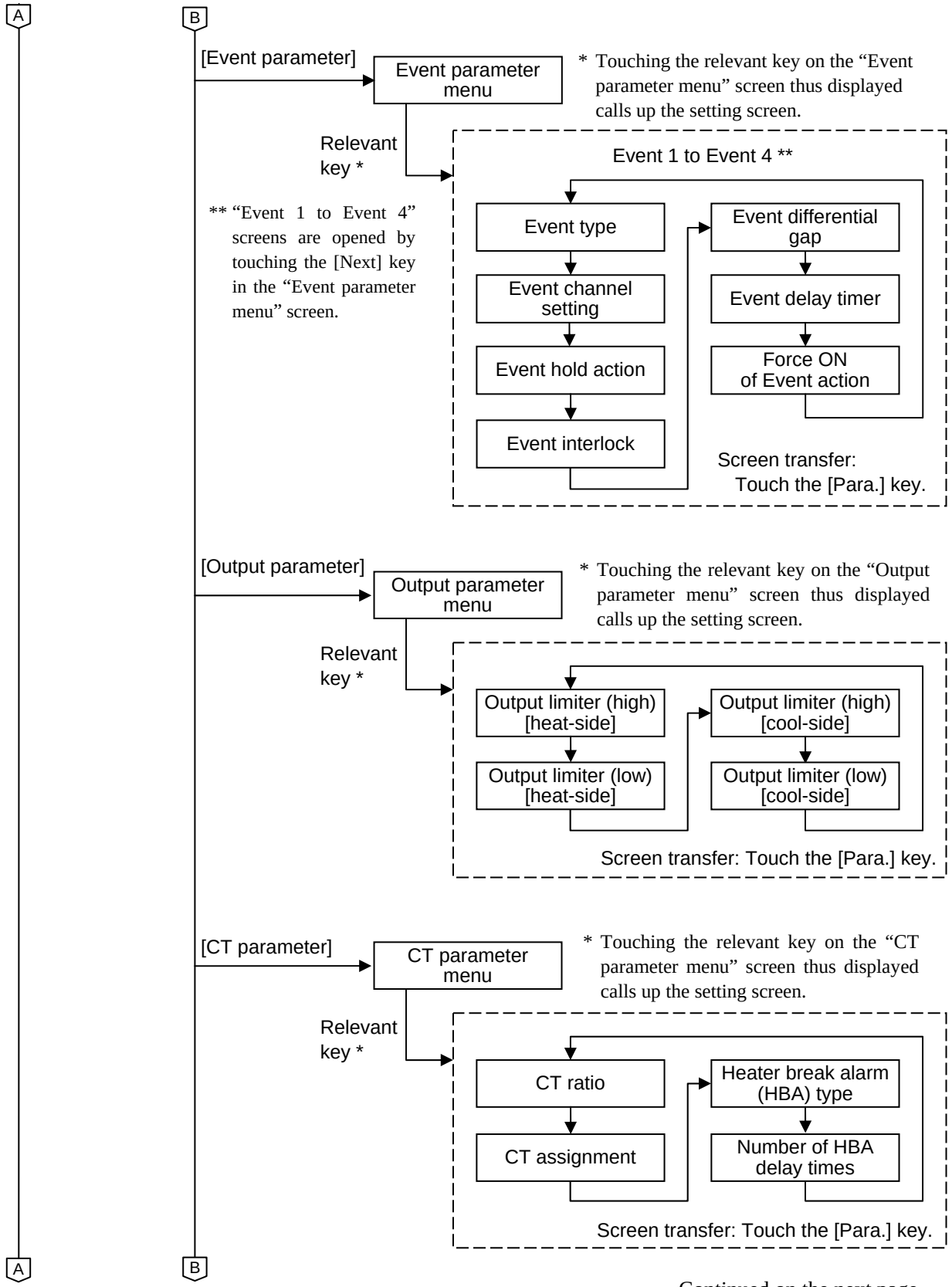

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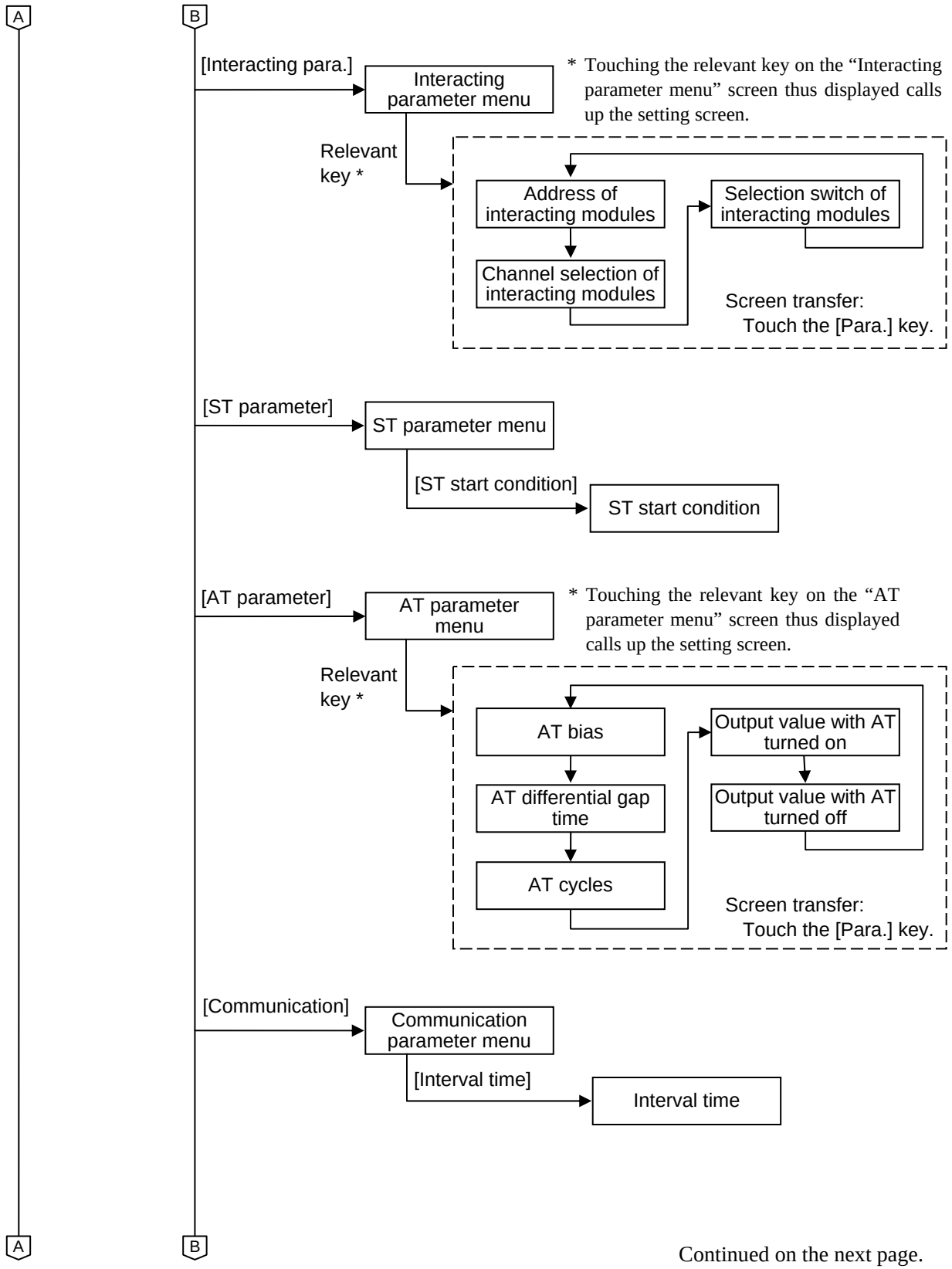

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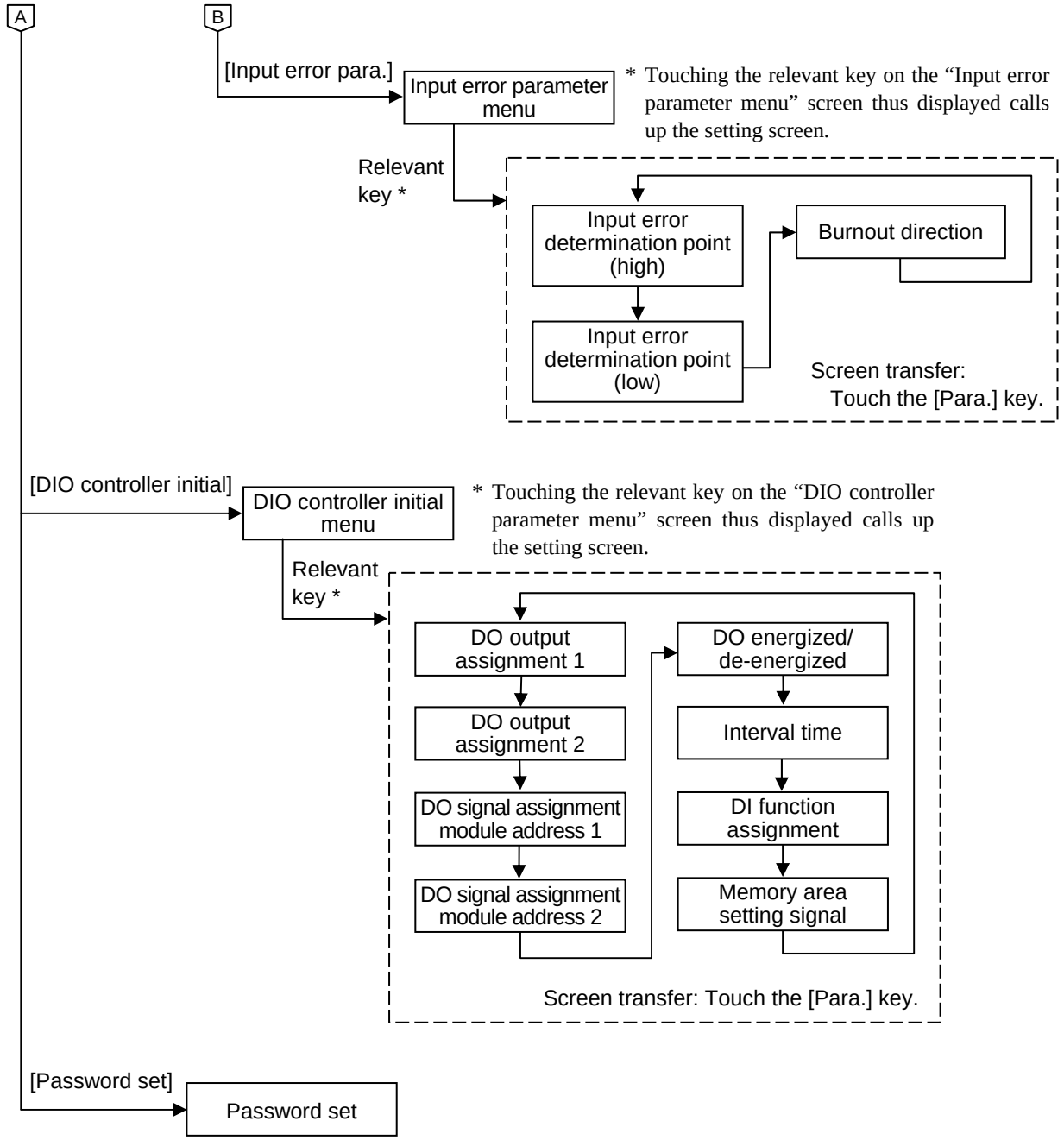
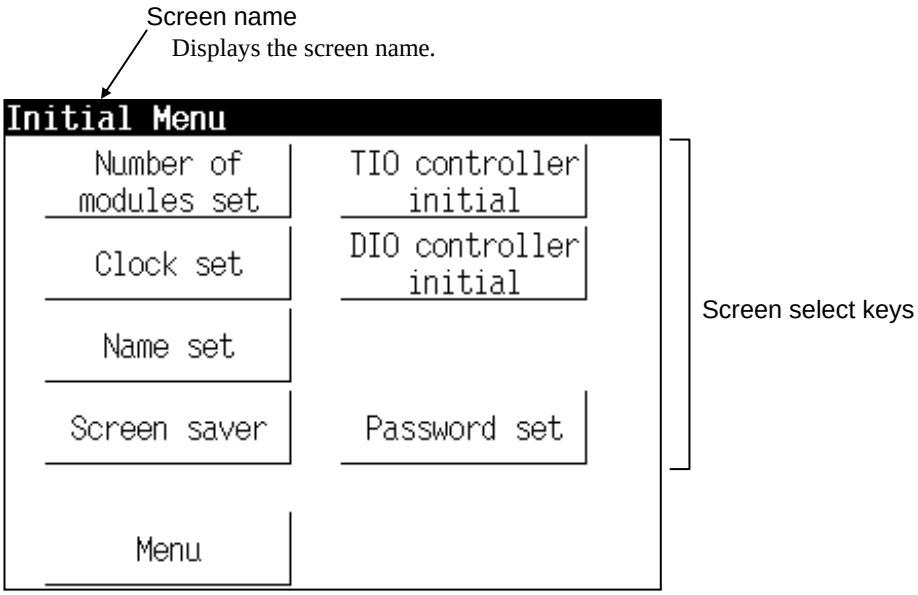


3.10.3 Initial menu screen

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

< Initial Menu screen >



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

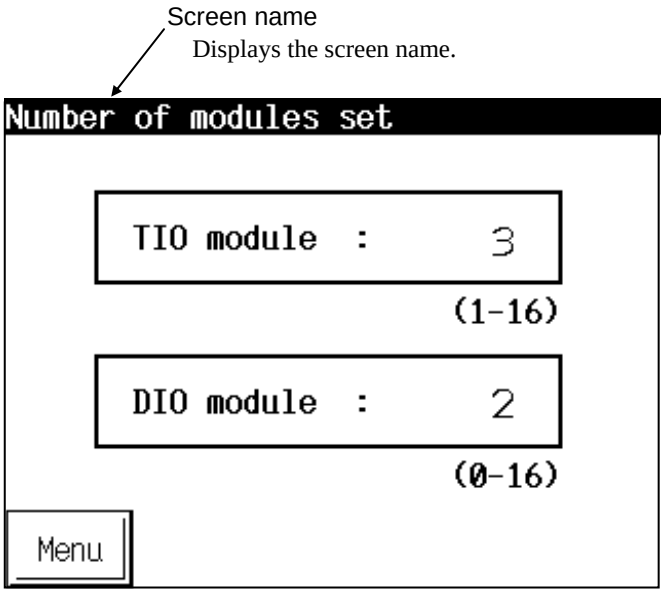
- **Number of modules set:** "Number of modules set" screen
- **Clock set:** "Clock Set" screen
- **Name set:** "Name Setting Menu" screen
- **Screen saver:** "Screen Saver Set" screen
- **TIO controller initial:** "TIO controller initial menu" screen
- **DIO controller initial:** "DIO controller initial menu" screen
- **Password set:** "Password set" screen

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

3.10.4 Number of modules set screen

When the power is turned on for the first time after the number of connecting modules is changed, check that the number of connecting modules is correctly set. If the number of connecting modules is not set, the screen may not appear correctly and incorrect operation may result.

< Number of modules set screen>
Set the number of connection modules.



TIO module: Set the number of Z-TIO modules connected to the OPC-TS2060.
Setting range: 1 to 16
Factory set value: 1
☞ For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

DIO module: Set the number of Z-DIO modules connected to the OPC-TS2060.
Setting range: 0 to 16
Factory set value: 0
☞ For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

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

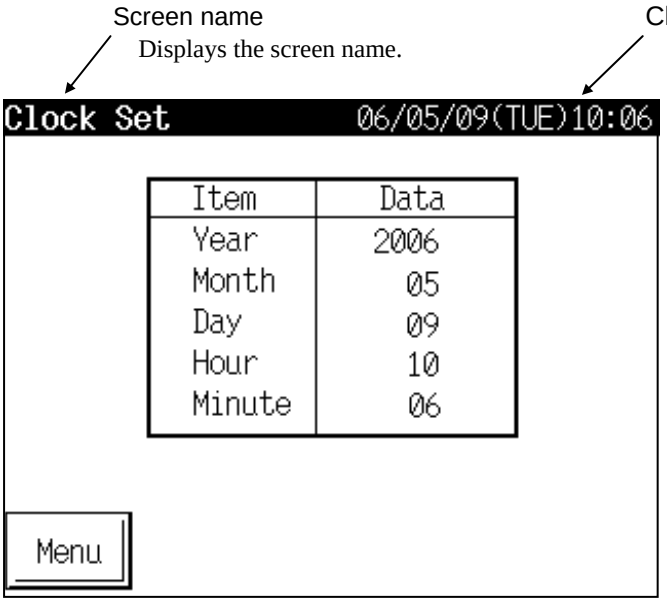
When the number of connecting modules is changed, always reset the OPC-TS2060 in accordance with any of the following procedures. The number of modules thus changed becomes valid after the OPC-TS2060 is reset.

- **Reset with power**
  Turn off the power once and then turn it on again.
- **Reset with switch operations**

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.
3. Press the [F1] switch with the menu being displayed.
Pressing the [F1] switch displays the “Opening” screen after an error is checked and then displays the “TIO Monitor” screen.

3.10.5 Clock set screen

< Clock Set screen >



Item: Displays the setting item.

Data: 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)

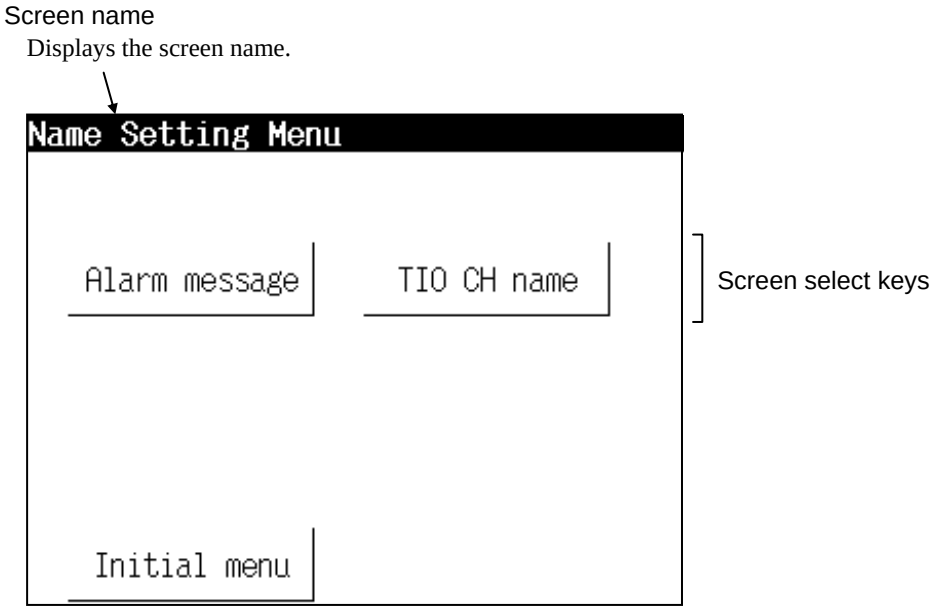
For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

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

3.10.6 Name setting menu screen

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

< Name Setting Menu screen >

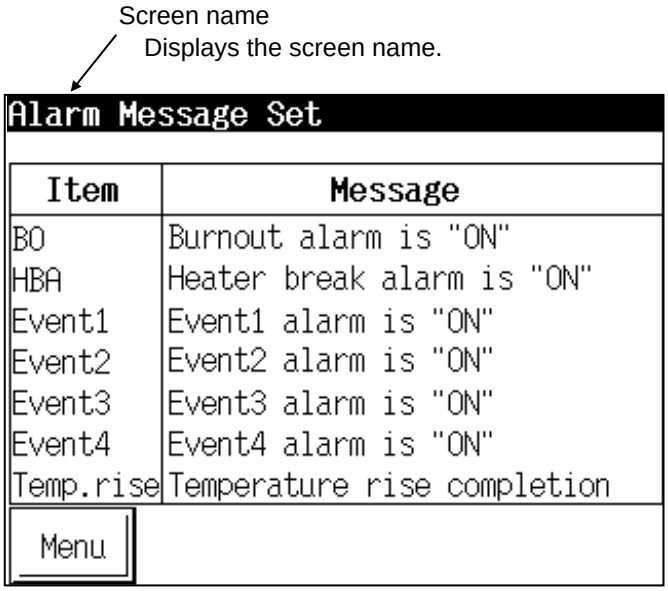


Screen select keys: Touching this key, screen can be selected.
Alarm message: "Alarm Message Set" screen
TIO CH name: "TIO CH name set" screen

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

3.10.7 Alarm message set screen

< Alarm Message Set screen >



Item: Displays the alarm items.

Message: The contents of messages corresponding to alarms occurring during monitor are set.

Setting range: 30 characters
Factory set value: Refer to the **alarm message list.**

Alarm message list (Factory set value)

Item	Message	Priority order
BO: Burnout	Burnout alarm is “ON”	High
HBA: Heater break alarm	Heater break alarm is “ON”	
E1: Event 1	Event 1 alarm is “ON”	
E2: Event 2	Event 2 alarm is “ON”	
E3: Event 3	Event 3 alarm is “ON”	
E4: Event 4	Event 4 alarm is “ON”	
Temp.rise	Temperature rise completion	Low

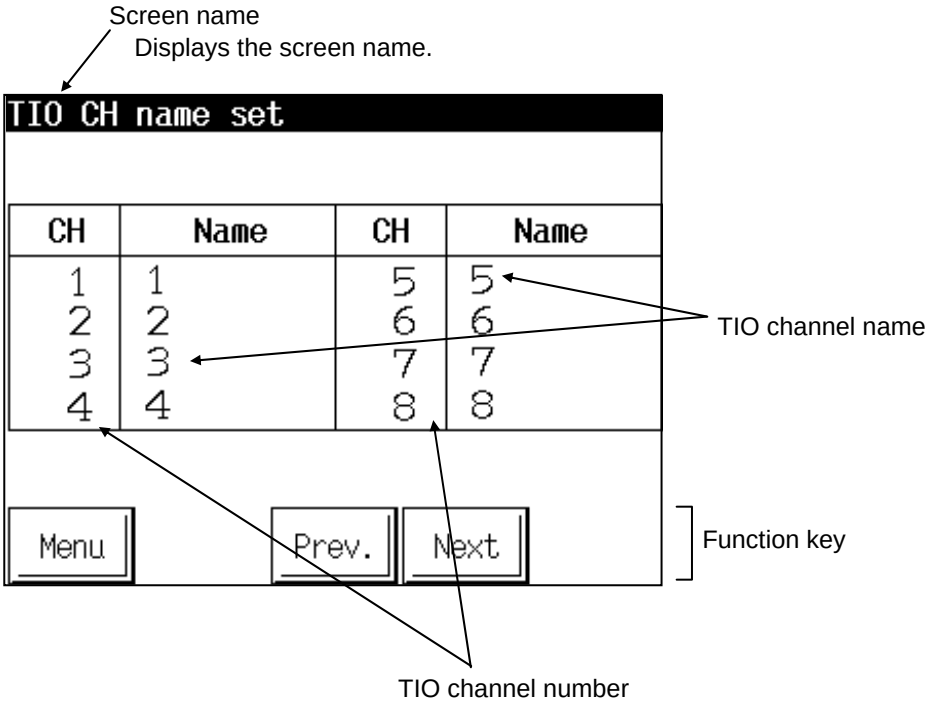
Even if module do not exist, name setting is possible.

For the details of data setting, refer to the **3.2.2 Text editing (P. 3-10)**.

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

3.10.8 TIO CH name set screen

< TIO CH name set screen >



CH: Displays the TIO channel number.

Name: Sets the TIO channel name (Channel name of Z-TIO-□ module).
Setting range: 5 characters
Factory set value: Numeral (TIO channel number)

Even if module do not exist, name setting is possible.

For the details of data setting, refer to the **3.2.2 Text editing (P. 3-10)**.

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

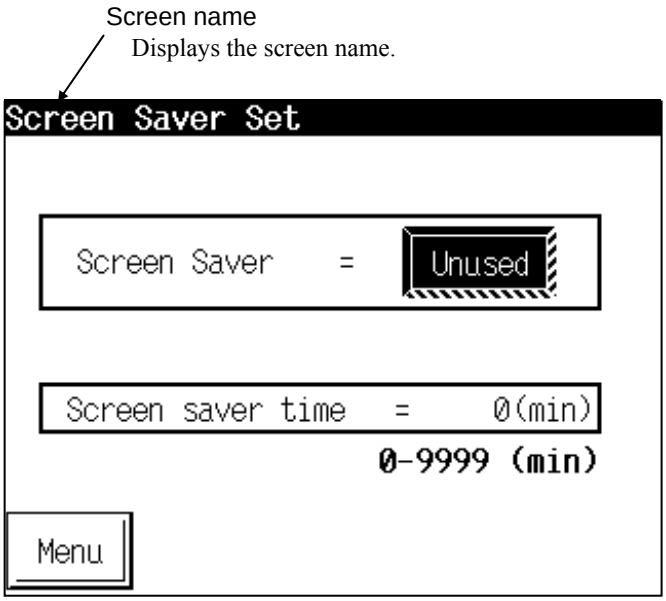
Menu: Touching this key changes to the “Name Setting Menu” screen.

Prev.: Touching this key the display to the screen for the channel (CH) or module address screen before the current one. If there is no channel or module to be selected, the [Prev.] key becomes invalid.

Next: Touching this key the display to the screen for the channel (CH) or module address screen after the current one. If there is no channel or module to be selected, the [Next] key becomes invalid.

3.10.9 Screen saver set screen

< Screen Saver Set screen >



Screen Saver: If key operation is not performed for a specified period of time, 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: Unused
Used
Factory set value: Unused

Touch the "Unused/Used" key to switch between "Unused" and "Used."

Screen saver time: Set the time after which the display automatically turns off.
Setting range: 0 to 9999 minutes
Factory set value: 0

☞ For the details of setting, refer to the **3.2.1 Data settings (P. 3-6)**.

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

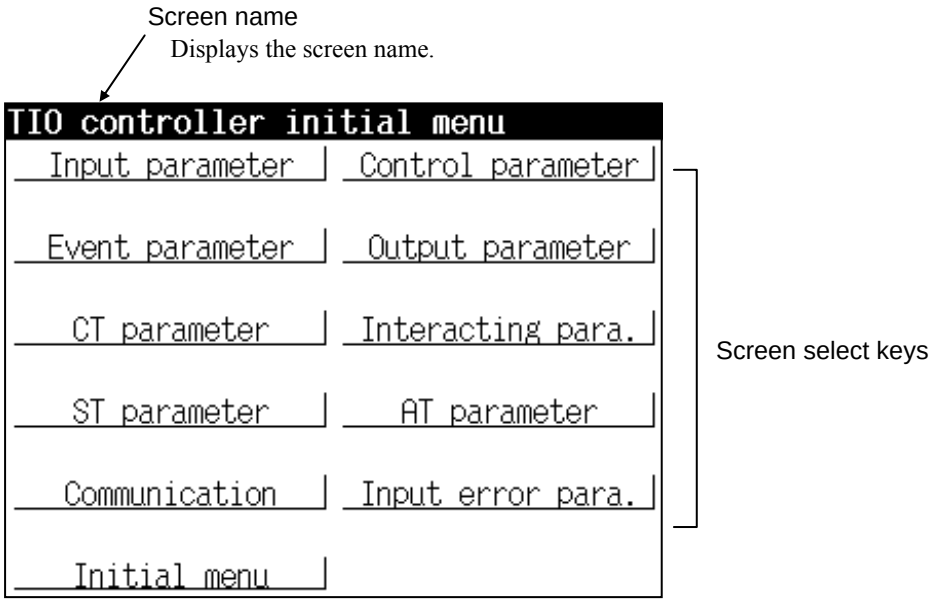
3.10.10 TIO controller initial menu screen

The TIO controller initial settings screen is the screen for making settings concerning the SRZ (Z-TIO modules) itself.

WARNING

The Initial setting data should be set according to the application before setting any parameter related to operation. Once the Initial setting data is set correctly, those data is not necessary to be changed for the same application under normal conditions. If they are changed unnecessarily, it may result in malfunction or failure of the instrument. RKC will not bear any responsibility for malfunction or failure as a result of improper changes in the Initial setting.

< TIO controller initial menu screen >



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

Input parameter:	"Input parameter menu" screen
Control parameter:	"Control parameter menu" screen
Event parameter:	"Event parameter menu" screen
Output parameter:	"Output parameter menu" screen
CT parameter:	"CT parameter menu" screen
Interacting para.:	"Interacting parameter menu" screen
ST parameter:	"ST parameter menu" screen
AT parameter:	"AT parameter menu" screen
Communication:	"Communication parameter menu" screen
Input error para.:	"Input error parameter menu" screen

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

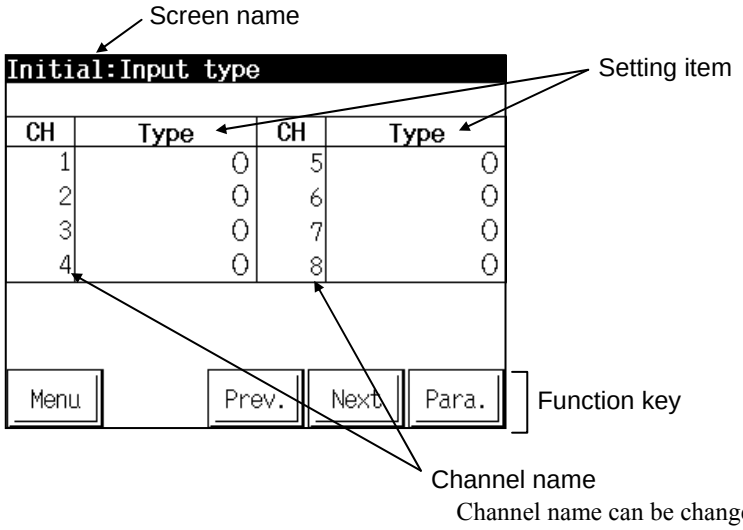
3.10.11 Basic configuration of TIO controller initial screen

The basic configuration of each TIO controller initial screen is as shown below.

On a temperature control 2-channel type Z-TIO module, the CH3 and CH4 displays are blank.

■ Data for each channel

Example: Input type screen



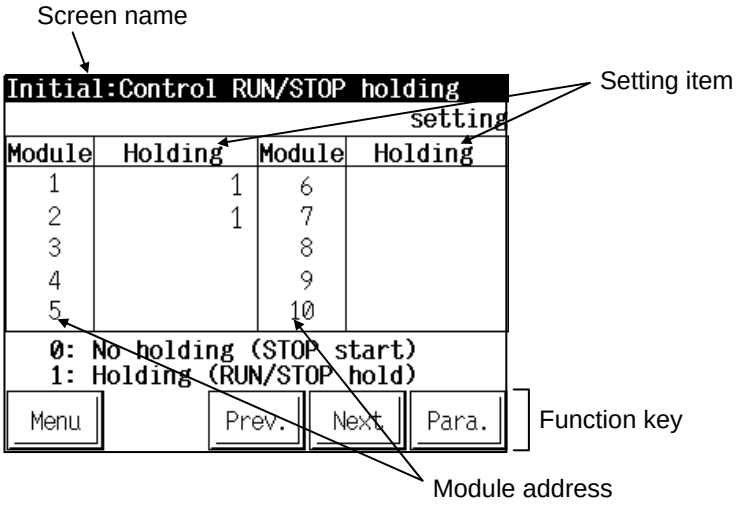
Channel name can be changed.

Object screens:

"Initial: Input type" screen
"Initial: Decimal point position" screen
"Initial: Input scale high" screen
"Initial: Input scale low" screen
"Initial: Display unit" screen
"Initial: Control action" screen
"Initial: Event 1 type" screen
"Initial: Event 1 channel setting" screen
"Initial: Event 1 hold action" screen
"Initial: Event 1 interlock" screen
"Initial: Event 1 differential gap" screen
"Initial: Event 1 delay timer" screen
"Initial: Force ON of Event 1 action" screen
"Initial: Event 2 type" screen
"Initial: Event 2 channel setting" screen
"Initial: Event 2 hold action" screen
"Initial: Event 2 interlock" screen
"Initial: Event 2 differential gap" screen
"Initial: Event 2 delay timer" screen
"Initial: Force ON of Event 2 action" screen
"Initial: Event 3 type" screen
"Initial: Event 3 channel setting" screen
"Initial: Event 3 hold action" screen
"Initial: Event 3 interlock" screen
"Initial: Event 3 differential gap" screen
"Initial: Event 3 delay timer" screen
"Initial: Force ON of Event 3 action" screen
"Initial: Event 4 type" screen
"Initial: Event 4 channel setting" screen
"Initial: Event 4 hold action" screen
"Initial: Event 4 interlock" screen
"Initial: Event 4 differential gap" screen
"Initial: Event 4 delay timer" screen
"Initial: Force ON of Event 4 action" screen
"Initial: Output limiter (high) [heat-side]" screen
"Initial: Output limiter (low) [heat-side]" screen
"Initial: Output limiter (high) [cool-side]" screen
"Initial: Output limiter (low) [cool-side]" screen
"Initial: CT ratio" screen
"Initial: CT assignment" screen
"Initial: Heater break alarm (HBA) type" screen
"Initial: Number of HBA delay times" screen
"Initial: Address of interacting modules" screen
"Initial: Channel selection of interacting modules" screen
"Initial: Selection switch of interacting modules" screen
"Initial: ST start condition" screen
"Initial: AT bias" screen
"Initial: AT differential gap time" screen
"Initial: AT cycles" screen
"Initial: Output value with AT turned on" screen
"Initial: Output value with AT turned off" screen
"Initial: Input error determination point (high)" screen
"Initial: Input error determination point (low)" screen
"Initial: Burnout direction" screen

■ Data for each module

Example: Control RUN/STOP holding setting screen



Object screens:
"Initial: Control RUN/STOP holding setting" screen, "Initial: Interval time" screen

Screen name: Displays the screen name.

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

☞ For the details of setting, refer to the **3.10.12 TIO controller initial item list (P. 3-73)**.

Channel name: Displays the TIO channel name. The channel name can be changed with the initialize **"TIO CH name set" screen (P. 3-68).**

Module address: Displays the module address. The module address is "1" added to the decimal value (0 to 15) of the number set using the address setting switch (0 to F) on the front of the module.

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

Menu: Touching this key changes to each parameter menu screen.

Prev.: Touching this key the display to the screen for the channel (CH) or module address screen before the current one. If there is no channel or module to be selected, the [Prev.] key becomes invalid.

Next: Touching this key the display to the screen for the channel (CH) or module address screen after the current one. If there is no channel or module to be selected, the [Next] key becomes invalid.

Para.: Every time this key is touched, the TIO controller initial screen (setting item) changes.
There is no this key on the "ST start condition" screen and "Interval time" screen.

3.10.12 TIO controller initial item list

Each setting item is selected by touching the [Para.] key on the relevant screen.

☞ For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

☞ For the function keys and other items, refer to the **3.10.11 Basic configuration of TIO controller initial screen (P. 3-71)**.

☞ For the function description of each data, refer to the **SRZ Instruction Manual (IMS01T04-E□)**.

■ Input parameter menu

Name	Data range	Description	Factory set value
Input type	TC input: 0 to 9 RTD input: 12 to 13 Current input: 14 to 15 Voltage (high) input: 16 to 18 Voltage (low) input 19 to 21 Feedback resistance input: 22 to 23 Refer to the **Input range table (P. 3-80)**	Use to set the input range number. As the decimal point position, input scale high and input scale low are initialized if the input type is changed, it is necessary to conduct the re-setting. A value of "equivalent to 3 % of input span" is automatically set at the start determination point.	Based on model code When not specifying: 0
Decimal point position	0: No decimal place 1: One decimal place 2: Two decimal places 3: Three decimal places 4: Four decimal places TC input: • K, J, T and E: Only 0 or 1 can be set. • Other TC input: Only 0 can be set. RTD input: Only 0 or 1 can be set. V/I input: From 0 to 4 can be set.	Use to select the decimal point position of input range.	Based on model code If input range code is not specified: 1
Input scale high	TC/RTD inputs: Input scale low to Maximum value of the selected input range Voltage (V)/current (I) inputs: −19999 to +19999 (However, a span is 20000 or less.) Varies with the setting of the decimal point position	Use to set the high limit value of input scale range.	TC/RTD: Maximum value of the selected input range V/I: 100.0 If input range code is not specified: 1372.0
Input scale low	TC/RTD inputs: Minimum value of the selected input range to Input scale high Voltage (V)/current (I) inputs: −19999 to +19999 (However, a span is 20000 or less.) Varies with the setting of the decimal point position	Use to set the low limit value of input scale range.	TC/RTD: Minimum value of the selected input range V/I: 0.0 If input range code is not specified: −200.0
Display unit	0: °C 1: °F 2: Display off * * Display unit of screen only.	Set the display unit of screen or each channel.	0

■ Control parameter menu

Name	Data range	Description	Factory set value
Control action	0: Brilliant II PID control (Direct action) 1: Brilliant II PID control (Reverse action) 2: Brilliant II Heat/Cool PID control [Water cooling type] 3: Brilliant II Heat/Cool PID control [Air cooling type] 4: Brilliant II Heat/Cool PID control [Cooling gain linear type] 5: Brilliant II Position proportioning PID control Odd channel: 0 to 5 Even channel: 0 or 1 * * In heat/cool PID control and position proportioning PID control, control action is not performed. Only PV monitor and event action is performed.	Use to select control action.	Based on model code When not specifying: 1
Control RUN/STOP holding setting	0: No holding (STOP start) 1: Holding (RUN/STOP hold)	It is set whether or not the operation mode before the power supply is turned off is held when the power supply is turned on or power failure recovers.	1

■ Event parameter menu

Name	Data range	Description	Factory set value
Event 1 type Event 2 type Event 3 type Event 4 type	0: None 1: Deviation high (Using SV monitor value) [1] 2: Deviation low (Using SV monitor value) [1] 3: Deviation high/low (Using SV monitor value) [1] 4: Band (Using SV monitor value) [1] 5: Process high [1] 6: Process low [1] 7: SV high 8: SV low 9: Unused (Only for Event 1 and 2) [3] 10: MV high [heat-side] [1, 2] 11: MV low [heat-side] [1, 2] 12: MV high [cool-side] [1] 13: MV low [cool-side] [1] 14: Deviation high (Using local SV) [1] 15: Deviation low (Using local SV) [1] 16: Deviation high/low (Using local SV) [1] 17: Deviation (Using local SV) [1] 18: Deviation between channels high [1] 19: Deviation between channels low [1] 20: Deviation between channels high/low [1] 21: Deviation between channels band [1] [1] Event hold action is available. [2] If there is feedback resistance (FBR) input in position proportioning PID control, set to the feedback resistance (FBR) input value. [3] Temperature rise completion (Only for Event 3), Control loop break alarm (LBA) (Only for Event 4)	Use to select the event type. Four events (Event 1 to Event 4) can be set separately for each channel.	Based on model code When not specifying: 0

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Name	Data range	Description	Factory set value
Event 1 channel setting Event 2 channel setting Event 3 channel setting Event 4 channel setting	1: Channel 1 2: Channel 2 3: Channel 3 4: Channel 4 This function is valid when "deviation between channels" is selected	Select the channel number for "PV of comparison channel" when "Deviation between channels" is selected for the event action type.	1
Event 1 hold action Event 2 hold action Event 3 hold action Event 4 hold action	0: OFF 1: Hold action ON (When power turned on) • Validate the hold action when the power is turned on. • Validate the hold action when transferred from STOP (control STOP) to RUN (control RUN). 2: Re-hold action ON (When power turned on and SV changed) • Validate the hold action when the power is turned on. • Validate the hold action when transferred from STOP (control STOP) to RUN (control RUN). • Validate the re-hold action when the Set value (SV) is changed. However, if the rate of setting change limiter is set to any function other than "OFF (Unused)" or in the remote mode, the re-hold action becomes invalid. This function is valid when input value, deviation or manipulated value action has been selected. In case of a deviation action, this function is not available while in remote mode and while setting changing rate limiter is working.	Use to set a event hold action for the Event.	Based on model code When not specifying: 0
Event 1 interlock Event 2 interlock Event 3 interlock Event 4 interlock	0: Unused 1: Used	Use to select the interlock function for the Event.	0
Event 1 differential gap Event 2 differential gap Event 3 differential gap Event 4 differential gap	① Deviation, Process, Set value, Deviation action between channels, or Temperature rise completion *: 0 to Input span (Unit: °C [°F]) ② MV: 0.0 to 110.0 % * Temperature rise completion: Event 3 only	Use to set a differential gap of the Event. It prevents chattering of event output due to the measured value fluctuation around the event set value.	①: TC/RTD: 1 (1.0) °C [°F] V/I: 1.0 % ②: 1.0 %
Event 1 delay timer Event 2 delay timer Event 3 delay timer Event 4 delay timer	0 to 18000 seconds When the Event 3 type is "9: Temperature rise completion", the Event 3 delay timer will be the temperature rise completion soak time.	Event delay timer is to set an output delay time for event outputs.	0
Force ON of Event 1 action Force ON of Event 2 action Force ON of Event 3 action Force ON of Event 4 action	Bit image: 0000 bit 3 ···· bit 0 bit 0: Event output turned on at input error occurrence bit 1: Event output turned on in manual mode bit 2: Event output turned on during the autotuning (AT) function is being executed bit 3: Event output turned on during the setting change rate limiter is being operated Bit data: 0: Invalid 1: Valid	Select the operation state that is output (force ON) as the event action.	0000

■ Output parameter menu

Name	Data range	Description	Factory set value
Output limiter (high) [heat-side]	Output limiter (low) to 105.0 % Position proportioning PID control: Becomes valid only when there is feedback resistance (FBR) input and it does not break.	Use to set the high limit value of heat-side manipulated output (MV).	105.0
Output limiter (low) [heat-side]	−5.0 % to Output limiter (high) Position proportioning PID control: Becomes valid only when there is feedback resistance (FBR) input and it does not break.	Use to set the low limit value of heat-side manipulated output (MV).	−5.0
Output limiter (high) [cool-side]	Output limiter (low) [cool-side] to 105.0 %	Use to set the high limit value of cool-side manipulated output (MV).	105.0
Output limiter (low) [cool-side]	−5.0 % to Output limiter (high) [cool-side]	Use to set the low limit value of cool-side manipulated output (MV).	−5.0

■ CT parameter menu

Name	Data range	Description	Factory set value
CT ratio	0 to 9999	Use to set the number of turns (ratio) of the current transformer that is used with the heater break alarm (HBA).	CTL-6-P-N: 800 CTL-12-S56-10L-N: 1000
CT assignment	0: None 1: OUT1 2: OUT2 3: OUT3 4: OUT4	Use to assign the heater break (HBA) function to an output. It is possible to detect three-phase heater breaks by assigning the same output number to the outputs for CT determination.	CH1: 1 CH2: 2 CH3: 3 CH4: 4
Heater break alarm (HBA) type	0: Heater break alarm (HBA) type A (Time-proportional control output) 1: Heater break alarm (HBA) type B (Continuous control output)	Use to select the heater break alarm (HBA) type.	Set value is based on the Output type specified at ordering.
Number of HBA delay times	0 to 255 times Number of HBA delay times = Delay times × Sampling time	To prevent producing a false alarm, the alarm function waits to produce an alarm status until the measured CT input value is in an alarm range for the preset number of consecutive sampling cycles.	5

■ Interacting parameter menu

Name	Data range	Description	Factory set value
Address of interacting modules	−1: Interact with its own module address 0 to 99: Interact with the addresses of other modules	In the Z-TIO module, set the module address number of the module with the channel that you wish to link. To specify the address number of a Z-TIO module, set the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15). To specify the address number of a Z-DIO module, set the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15) with "16" added.	−1
Channel selection of interacting modules	1 to 99 Becomes valid when the selected module is "Z-TIO module."	In the Z-TIO module, select the interacting channel number of the module to be linked for interaction.	1
Selection switch of interacting modules	Bit image: 0000000 bit 6 ····· bit 0 bit 0: Memory area number bit 1: Operation mode bit 2: Auto/Manual bit 3: Remote/Local bit 4: EDS start signal bit 5: Interlock release bit 6: Suspension of area soak time Bit data: 0: No interaction 1: Interact with other channels	Select the action that you wish to link.	0000000

☞ For the details of Master-slave Mode, refer to the **3.11 Screen Setting Examples When Using DIO (P. 3-89).**

■ ST parameter menu

Name	Data range	Description	Factory set value
ST start condition	0: Activate the startup tuning (ST) function when the power is turned on; when transferred from STOP to RUN; or when the set value (SV) is changed. 1: Activate the startup tuning (ST) function when the power is turned on; or when transferred from STOP to RUN. 2: Activate the startup tuning (ST) function when the set value (SV) is changed.	Timing (starting condition) to activate the startup tuning (ST) function is selected.	0

■ AT parameter menu

Name	Data range	Description	Factory set value
AT bias	–Input span to +Input span	Use to set a bias to move the set value only when autotuning is activated.	0 (0.0)
AT differential gap time	0.0 to 50.0 seconds	Use to set an ON/OFF action differential gap time for autotuning. This function prevents the AT function from malfunctioning caused by noise.	10.0
AT cycles	0: 1.5 cycles 1: 2.0 cycles 2: 2.5 cycles 3: 3.0 cycles	The number of ON/OFF cycles is selected when the autotuning (AT) function is executed.	1
Output value with AT turned on *	Output value with AT turned off to 105.0 % Actual output values become those restricted by the output limiter. Position proportioning PID control: Becomes valid only when there is feedback resistance (FBR) input and it does not break (high limit of feedback resistance input at AT).	This parameter is for limiting the manipulated output value (ON side) while the autotuning (AT) function is being executed.	+105.0
Output value with AT turned off *	–105.0 % to Output value with AT turned on Actual output values become those restricted by the output limiter. Position proportioning PID control: Becomes valid only when there is feedback resistance (FBR) input and it does not break (low limit of feedback resistance input at AT).	This parameter is for limiting the manipulated output value (OFF side) while the autotuning (AT) function is being executed.	–105.0

*** Plus (+)/minus (–) setting when in heat/cool PID control**

Set the output value with AT turned on to a plus (+) value.	Output value with the heat-side turned on = Output value with AT turned on Output value with the heat-side turned off = Output limiter low [heat-side]
Set the output value with AT turned off to a minus (–) value.	Output value with the cool-side turned on = Output value with AT turned off Output value with the cool-side turned off = Output limiter low [cool-side]
Set the output values with AT turned on and off to plus (+) values.	The autotuning (AT) function is executed only on the heat-side. Output value with the heat-side turned on = Output value with AT turned on Output value with the heat-side turned off = Output value with AT turned off (Output value with AT turned on > Output value with AT turned off)
Set the output values with AT turned on and off to minus (–) values.	The autotuning (AT) function is executed only on the cool-side. Output value with the cool-side turned on = Output value with AT turned off Output value with the cool-side turned off = Output value with AT turned on (Output value with AT turned on > Output value with AT turned off)

■ Communication parameter menu

Name	Data range	Description	Factory set value
Interval time	0 to 250 ms	RS-485 sets the transmission transfer time to accurately assure the sending/receiving selection timing. The controller's interval time must match the specifications of the host computer.	10

■ Input error parameter menu

Name	Data range	Description	Factory set value
Input error determination point (high)	Input error determination point (low limit) to (Input range high + 5 % of Input span)	Use to set Input Error Determination Point (high/low). Input Error Determination function is activated when a measured value reaches the limit, and control output value selected by Action at input error will be output.	Input range high + (5 % of Input span)
Input error determination point (low)	(Input range low – 5 % of Input span) to Input error determination point (high limit)		Input range low – (5 % of Input span)
Burnout direction	0: Upscale 1: Downscale Valid only when the TC input and voltage (low) input are selected. For the following types of input, the action when an input break occurs is fixed, regardless of the burnout direction setting. RTD input: Upscale Voltage (high) input: Downscale (display of about 0 V) Current input: Downscale (display of about 0 mA) Feedback resistance input: Upscale	Use to select Burnout Direction in input break.	0

■ Input range table

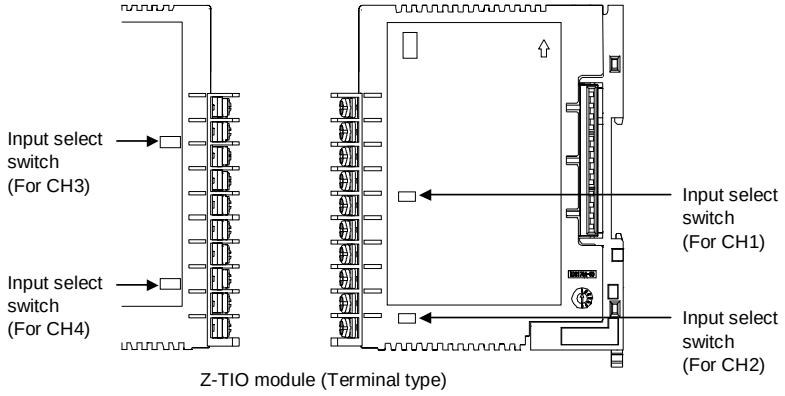
A measured input is a universal input but requires hardware selection (of a voltage (low) or (high) input group). The input select switch enables hardware selection.

Input type		Data range	Number	Hardware
TC input	K	–200.0 to +1372.0 °C (–328 to +2501 °F, 0.0 to 800.0 °F)	0	Voltage (low) input group
	J	–200.0 to +1200.0 °C (–328 to +2192 °F, 0.0 to 800.0 °F)	1	
	R	–50 to +1768 °C (–58 to +3214°F)	2	
	S	–50 to +1768 °C (–58 to +3214°F)	3	
	B	0 to 1800 °C (0 to 3272 °F)	4	
	E	–200.0 to +1000.0 °C (–328 to +1832 °F, 0.0 to 800.0 °F)	5	
	N	–200 to 1300 °C (0 to 2372 °F)	6	
	T	–200.0 to +400.0 °C (–328 to +752 °F, 0.0 to 752.0 °F)	7	
	W5Re/W26Re	0 to 2320 °C (0 to 4208 °F)	8	
	PLII	0 to 1390 °C (0 to 2534 °F)	9	
RTD input	Pt100	–200.0 to +850.0 °C (–328 to +1562 °F, –328.0 to +752.0 °F)	12	
	JPt100	–200.0 to +640.0 °C (–328 to +1184 °F, –328.0 to +752.0 °F)	13	
Current input	0 to 20 mA DC	Programmable range –19999 to +19999 (The decimal point position of the input range is selectable.)	14	
	4 to 20 mA DC		15	
Voltage (low) input	0 to 1 V DC		19	
	0 to 100 mV DC		20	
	0 to 10 mV DC		21	
Feedback resistance input		100 to 150 Ω	22	
		151 Ω to 6 kΩ	23	
Voltage (high) input	0 to 10 V DC	Programmable range –19999 to +19999 (The decimal point position of the input range is selectable.)	16	Voltage (high) input group
	0 to 5 V DC		17	
	1 to 5 V DC		18	

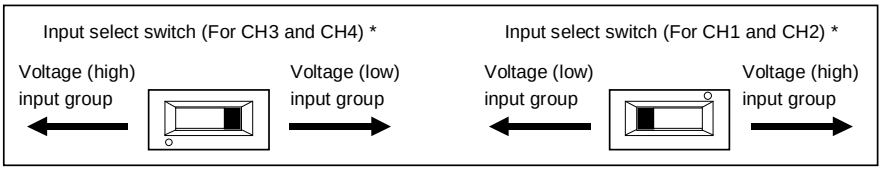
Do not set to any number (including 10 and 11) which is not described in the input range table above. This may cause malfunctioning.

● Hardware selection

The voltage (low) or (high) input group is selected by the input select switch at the side of the module. Turn the measured value input switch by a small screwdriver.



Z-TIO module (Terminal type)



* The switch position is the same on the Z-TIO module (connector type).

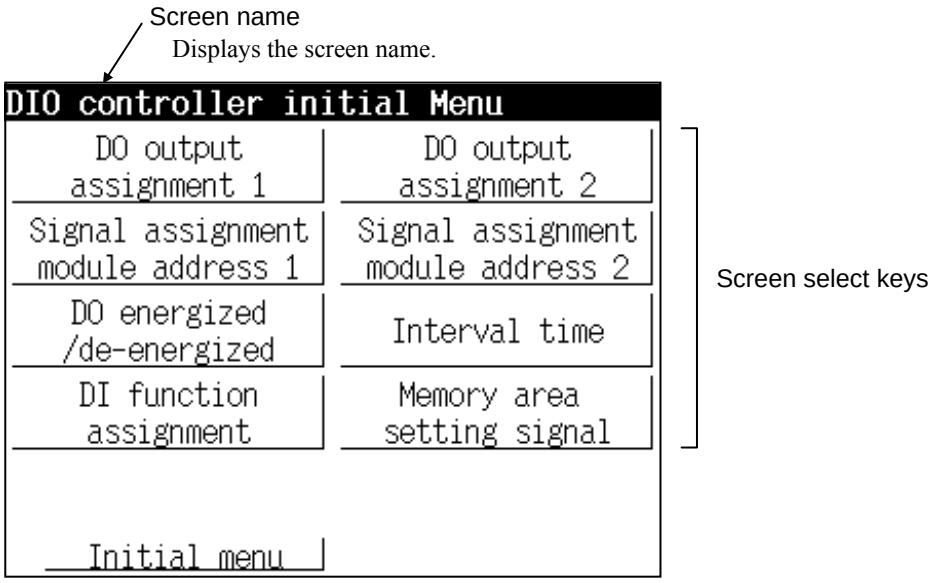
3.10.13 DIO controller initial menu screen

The DIO controller initial settings screen is the screen for making settings concerning the SRZ (Z-DIO modules) itself.

WARNING

The Initial setting data should be set according to the application before setting any parameter related to operation. Once the Initial setting data is set correctly, those data is not necessary to be changed for the same application under normal conditions. If they are changed unnecessarily, it may result in malfunction or failure of the instrument. RKC will not bear any responsibility for malfunction or failure as a result of improper changes in the Initial setting.

< DIO controller initial Menu screen >



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

- **DO output assignment 1:** "Initial: DO output assignment 1 [DO1 to 4]" screen
- **DO output assignment 2:** "Initial: DO output assignment 2 [DO5 to 8]" screen
- **Signal assignment module address 1:** "Initial: DO signal assignment module address 1" screen
- **Signal assignment module address 2:** "Initial: DO signal assignment module address 2" screen
- **DO energized/de-energized:** "Initial: DO energized/de-energized" screen
- **Interval time:** "Initial: Interval time" screen
- **DI function assignment:** "Initial: DI function assignment" screen
- **Memory area setting signal:** "Initial: Memory area setting signal" screen

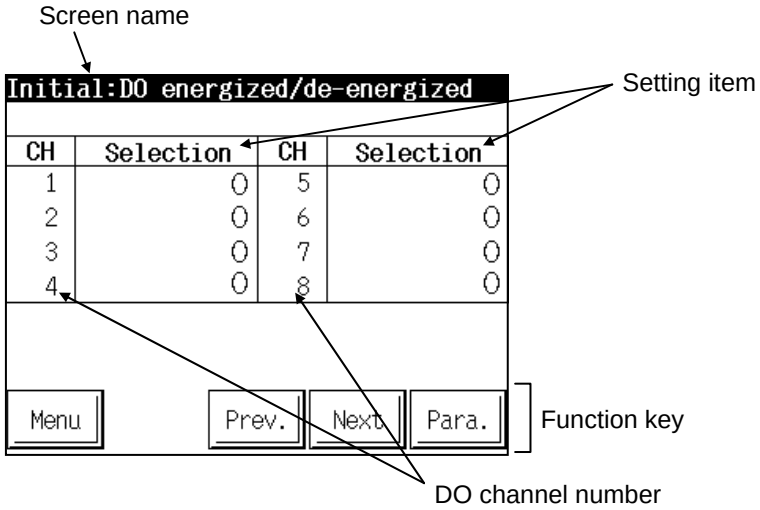
Initial Menu key: Touching this key changes to the "Initial Menu" screen

3.10.14 Basic configuration of DIO controller initial screen

The basic configuration of each DIO controller initial screen is as shown below.

■ Data for each channel

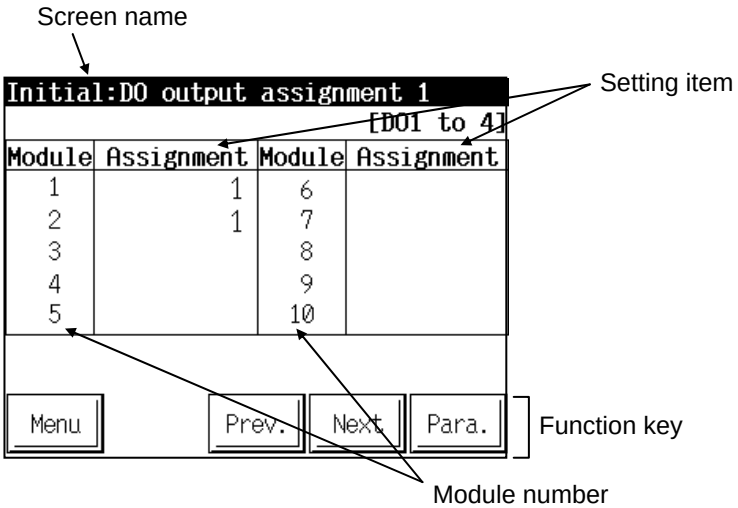
Example: DO energized/de-energized



Object screens: "Initial: DO energized/de-energized" screen

■ Data for each module

Example: Do output assignment 1 [DO1 to DO4]



Object screens:

"Initial: DO output assignment 1 [DO1 to 4]" screen
"Initial: DO output assignment 2 [DO5 to 8]" screen
"Initial: DO signal assignment module address 1" screen
"Initial: DO signal assignment module address 2" screen
"Initial: Interval time" screen
"Initial: DI function assignment" screen
"Initial: Memory area setting signal" screen

Screen name: Displays the screen name.

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

☞ For the details of setting, refer to the **3.10.15 DIO controller initial item list (P. 3-84)**.

DO channel number: Displays the DO channel number.

Module number: Displays the module number. The module number is "1" added to the decimal value (0 to 15) of the number set using the address setting switch (0 to F) on the front of the module.

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

Menu: Touching this key changes to "DIO controller initial Menu" screen.

Prev.: Touching this key the display to the screen for the channel (CH) or module number screen before the current one. If there is no channel or module to be selected, the [Prev.] key becomes invalid.

Next: Touching this key the display to the screen for the channel (CH) or module number screen after the current one. If there is no channel or module to be selected, the [Next] key becomes invalid.

Para.: Every time this key is touched, the DIO controller initial menu screen (setting item) changes.

3.10.15 DIO controller initial item list

Each setting item is selected by touching the [Para.] key on the relevant screen.

☞ For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

☞ For the function keys and other items, refer to the **3.10.14 Basic configuration of DIO controller initial screen (P. 3-82)**.

☞ For the function description of each data, refer to the **SRZ Instruction Manual (IMS01T04-E□)**.

Name	Data range	Description	Factory set value
DO output assignment 1 [DO1 to 4]	0 to 13 Refer to the **DO assignment table (P. 3-86)**	Assignments to digital outputs (DO1 to DO4) for output of event results of the Z-TIO module and DO manual output states of the Z-DIO module.	Based on model code When not specifying: 0
DO output assignment 2 [DO5 to 8]	0 to 13 Refer to the **DO assignment table (P. 3-86)**	Assignments to digital outputs (DO5 to DO8) for output of event results of the Z-TIO module and DO manual output states of the Z-DIO module.	Based on model code When not specifying: 0
DO signal assignment module address 1	–1, 0 to 99 When "–1" is selected, all of the signals of the same type (except temperature rise completion and DO manual output value) are *OR*-operated and produced as outputs from DO.	Specify the module to be used at the DO signal (DO1 to DO4) selected by DO output assignment. To specify the address number of a Z-TIO module, set the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15). To specify the address number of a Z-DIO module, set the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15) with "16" added.	–1
DO signal assignment module address 2	–1, 0 to 99 When "–1" is selected, all of the signals of the same type (except temperature rise completion and DO manual output value) are *OR*-operated and produced as outputs from DO.	Specify the module to be used at the DO signal (DO5 to DO8) selected by DO output assignment. To specify the address number of a Z-TIO module, set the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15). To specify the address number of a Z-DIO module, set the number that is set in the address setting switch (0 to F) as a decimal number (0 to 15) with "16" added.	–1

☞ For the details of DO output assignment, refer to **3.11 Screen Setting Examples When Using DIO (P. 3-89).**

Name	Data range	Description	Factory set value
DO energized/de-energized	0: Energized (Relay contact is closed under the event or alarm status.) 1: De-energized (Relay contact is opens under the event or alarm status.)	Energized/de-energized can be selected for digital outputs DO1 to DO8.	0
Interval time	0 to 250 ms	RS-485 sets the transmission transfer time to accurately assure the sending/receiving selection timing. The controller's interval time must match the specifications of the host computer.	10
DI function assignment	0 to 29 Refer to the **DI assignment table (P. 3-87)**	This item is used to assign functions (memory areas, operation modes, etc.) to digital inputs DI1 to DI8. Switching of Z-TIO module functions using DI of a Z-DIO module applies to the entire SRZ unit (multiple Z-TIO or Z-DIO modules connected together).	Based on model code When not specifying: 0
Memory area setting signal	0: Valid 1: Invalid	Use to select the memory area setting signal for memory area transfer.	1

☞ For the DI function assignment, refer to **3.11 Screen Setting Examples When Using DIO (P. 3-89).**

● DO assignment table

DO output assignment 1 [DO1 to DO4]

Set value	DO1	DO2	DO3	DO4
0	No assignment			
1	DO1 manual output	DO2 manual output	DO3 manual output	DO4 manual output
2	Event 1 comprehensive output [1]	Event 2 comprehensive output [2]	Event 3 comprehensive output [3]	Event 4 comprehensive output [4]
3	Event 1 (CH1)	Event 2 (CH1)	Event 3 (CH1)	Event 4 (CH1)
4	Event 1 (CH2)	Event 2 (CH2)	Event 3 (CH2)	Event 4 (CH2)
5	Event 1 (CH3)	Event 2 (CH3)	Event 3 (CH3)	Event 4 (CH3)
6	Event 1 (CH4)	Event 2 (CH4)	Event 3 (CH4)	Event 4 (CH4)
7	Event 1 (CH1)	Event 1 (CH2)	Event 1 (CH3)	Event 1 (CH4)
8	Event 2 (CH1)	Event 2 (CH2)	Event 2 (CH3)	Event 2 (CH4)
9	Event 3 (CH1)	Event 3 (CH2)	Event 3 (CH3)	Event 3 (CH4)
10	Event 4 (CH1)	Event 4 (CH2)	Event 4 (CH3)	Event 4 (CH4)
11	HBA (CH1)	HBA (CH2)	HBA (CH3)	HBA (CH4)
12	Burnout status (CH1)	Burnout status (CH2)	Burnout status (CH3)	Burnout status (CH4)
13	Temperature rise completion [5]	HBA comprehensive output [6]	Burnout state comprehensive output [7]	DO4 manual output

DO output assignment 2 [DO5 to DO8]

Set value	DO5	DO6	DO7	DO8
0	No assignment			
1	DO5 manual output	DO6 manual output	DO7 manual output	DO8 manual output
2	Event 1 comprehensive output [1]	Event 2 comprehensive output [2]	Event 3 comprehensive output [3]	Event 4 comprehensive output [4]
3	Event 1 (CH1)	Event 2 (CH1)	Event 3 (CH1)	Event 4 (CH1)
4	Event 1 (CH2)	Event 2 (CH2)	Event 3 (CH2)	Event 4 (CH2)
5	Event 1 (CH3)	Event 2 (CH3)	Event 3 (CH3)	Event 4 (CH3)
6	Event 1 (CH4)	Event 2 (CH4)	Event 3 (CH4)	Event 4 (CH4)
7	Event 1 (CH1)	Event 1 (CH2)	Event 1 (CH3)	Event 1 (CH4)
8	Event 2 (CH1)	Event 2 (CH2)	Event 2 (CH3)	Event 2 (CH4)
9	Event 3 (CH1)	Event 3 (CH2)	Event 3 (CH3)	Event 3 (CH4)
10	Event 4 (CH1)	Event 4 (CH2)	Event 4 (CH3)	Event 4 (CH4)
11	HBA (CH1)	HBA (CH2)	HBA (CH3)	HBA (CH4)
12	Burnout status (CH1)	Burnout status (CH2)	Burnout status (CH3)	Burnout status (CH4)
13	Temperature rise completion [5]	HBA comprehensive output [6]	Burnout state comprehensive output [7]	DO8 manual output

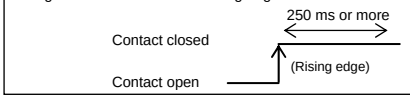
[1] Logical *OR* of Event 1 (ch1 to ch4)
[2] Logical OR of Event 2 (ch1 to ch4)
[3] Logical OR of Event 3 (ch1 to ch4)
[4] Logical OR of Event 4 (ch1 to ch4)
[5] Temperature rise completion status (ON when temperature rise completion occurs for all channels for which event 3 is set to temperature rise completion.)
[6] Logical OR of HBA (ch1 to ch4)
[7] Logical *OR* of burnout state (ch1 to ch4)

● DI assignment table

Set value	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8
0	No assignment							
1	Memory area transfer (1 to 8) [1]			Area set [2]	Operation mode [3]		Interlock release	AUTO/MAN [4]
2								REM/LOC [4]
3								EDS start signal 1
4								Soak stop
5								RUN/STOP [4]
6							AUTO/MAN [4]	REM/LOC [4]
7								EDS start signal 1
8								Soak stop
9								RUN/STOP [4]
10							REM/LOC [4]	EDS start signal 1
11								Soak stop
12								RUN/STOP [4]
13							EDS start signal 1	Soak stop
14								RUN/STOP [4]
15							Soak stop	
16					Interlock release	AUTO/MAN [4]	REM/LOC [4]	EDS start signal 1
17								Soak stop
18								RUN/STOP [4]
19							EDS start signal 1	Soak stop
20								RUN/STOP [4]
21							Soak stop	
22					AUTO/MAN	REM/LOC	EDS start signal 1	Soak stop
23								RUN/STOP [4]
24							Soak stop	
25					REM/LOC	EDS start signal 1		
26	Memory area transfer (1, 2) [1]	Area set [2]	Interlock release	RUN/STOP [4]	AUTO/MAN [4]	REM/LOC [4]	Operation mode [3]	
27	Memory area transfer (1 to 8) [1]			Area set [2]	Operation mode [3]		EDS start signal 1	EDS start signal 2
28	Memory area transfer (1, 2) [1]	Area set [2]	Interlock release	RUN/STOP [4]	AUTO/MAN [4]	REM/LOC [4]		
29	EDS start signal 1	EDS start signal 2					Operation mode [3]	

RUN/STOP: RUN/STOP transfer (Contact closed: RUN)
AUTO/MAN: Auto/Manual transfer (Contact closed: Manual mode)
REM/LOC: Remote/Local transfer (Contact closed: Remote mode)
Interlock release (Contact closed: Interlock release)
EDS start signal 1 (Contact closed: EDS start signal ON [for disturbance 1])
EDS start signal 2 (Contact closed: EDS start signal ON [for disturbance 2])
Soak stop (Contact closed: Soak stop)

DI signal will become valid at rising edge after the closed contact is held for 250ms.



[1] Memory area transfer

(×:Contact open –: Contact closed)

	Memory area number							
	1	2	3	4	5	6	7	8
DI1	×	–	×	–	×	–	×	–
DI2	×	×	–	–	×	×	–	–
DI3	×	×	×	×	–	–	–	–

[2] Area set becomes invalid prior to factory shipment.

[3] Operation mode transfer

(×:Contact open –: Contact closed)

	Operation mode			
	Unused	Monitor	Monitor + Event function	Control
DI5 (DI7)	×	–	×	–
DI6 (DI8)	×	×	–	–

[4] Actual device states (AUTO/MAN, REM/LOC, RUN/STOP)

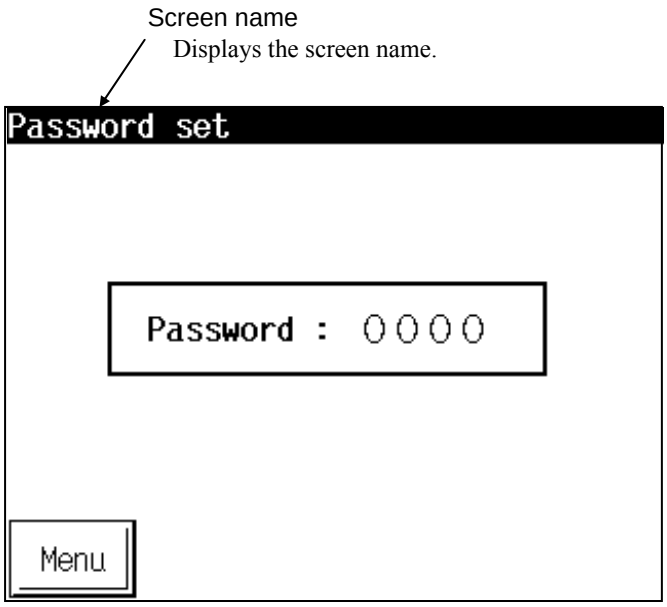
	DI-switched state	Screen-switched state	Actual device state
Auto/Manual transfer [a] (AUTO/MAN)	Manual (Contact closed)	Auto	Manual mode
		Manual	
	Auto (Contact open)	Auto	Auto mode
		Manual	
Remote/Local transfer [a] (REM/LOC)	Remote (Contact closed)	Local	Remote mode
		Remote	
	Local (Contact open)	Local	Local mode
		Remote	
RUN/STOP [b]	RUN (Contact closed)	RUN	RUN
		STOP	STOP
	STOP (Contact open)	RUN	STOP

[a] Device state when AUTO/MAN or REM/LOC assigned to DI is set so that the Z-TIO module and Z-DIO module are linked using the Master-slave mode of the Z-TIO module.
[b] STOP of RUN/STOP switching is given priority regardless of screen or DI switching.

3.10.16 Password set screen

The password set screen is used to set the password required to release initial setting key protect.

< Password set screen >



Password: Set the password. Set a 4-digit number.
Factory set value: 0000

☞ For the setting procedure, refer to the **3.2.1 Data settings (P. 3-6)**.

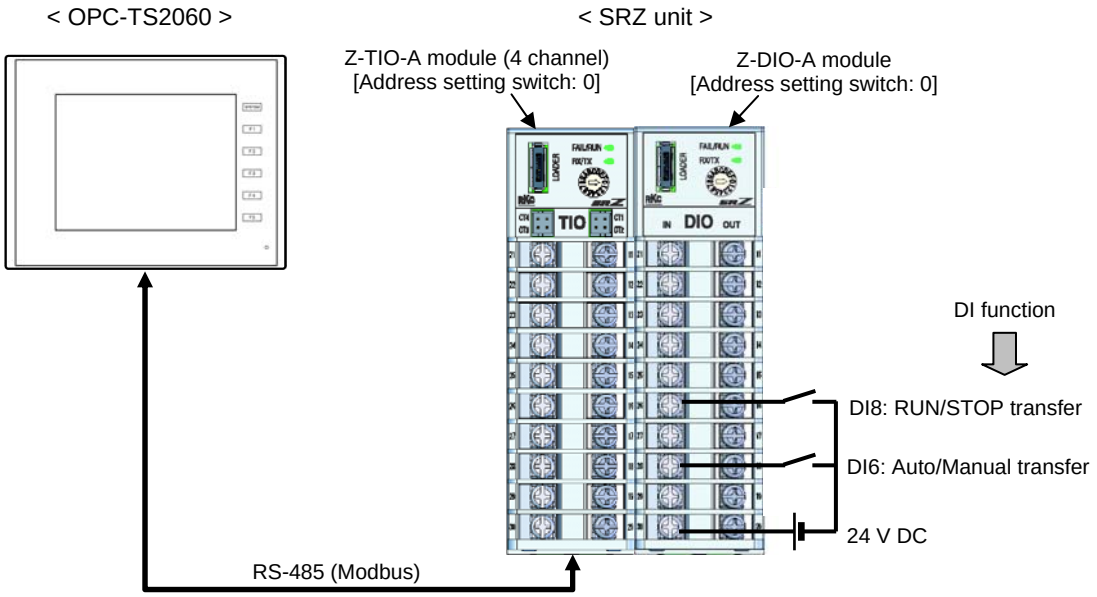
Menu key: Touching this key changes to “Initial Menu” screen.

3.11 Screen Setting Examples When Using DIO

3.11.1 Example of the using DI

A screen setting example is shown below for performing “RUN/STOP transfer” and “Auto/Manual transfer” of the Z-TIO module by DI operation (Z-DIO module).

■ Configuration



- **DI action**

Function	DI No.	DI contact state	
		Open	Closed
RUN/STOP transfer	DI8	STOP (control STOP)	RUN (Control RUN)
Auto/Manual transfer	DI6	Auto mode	Manual mode

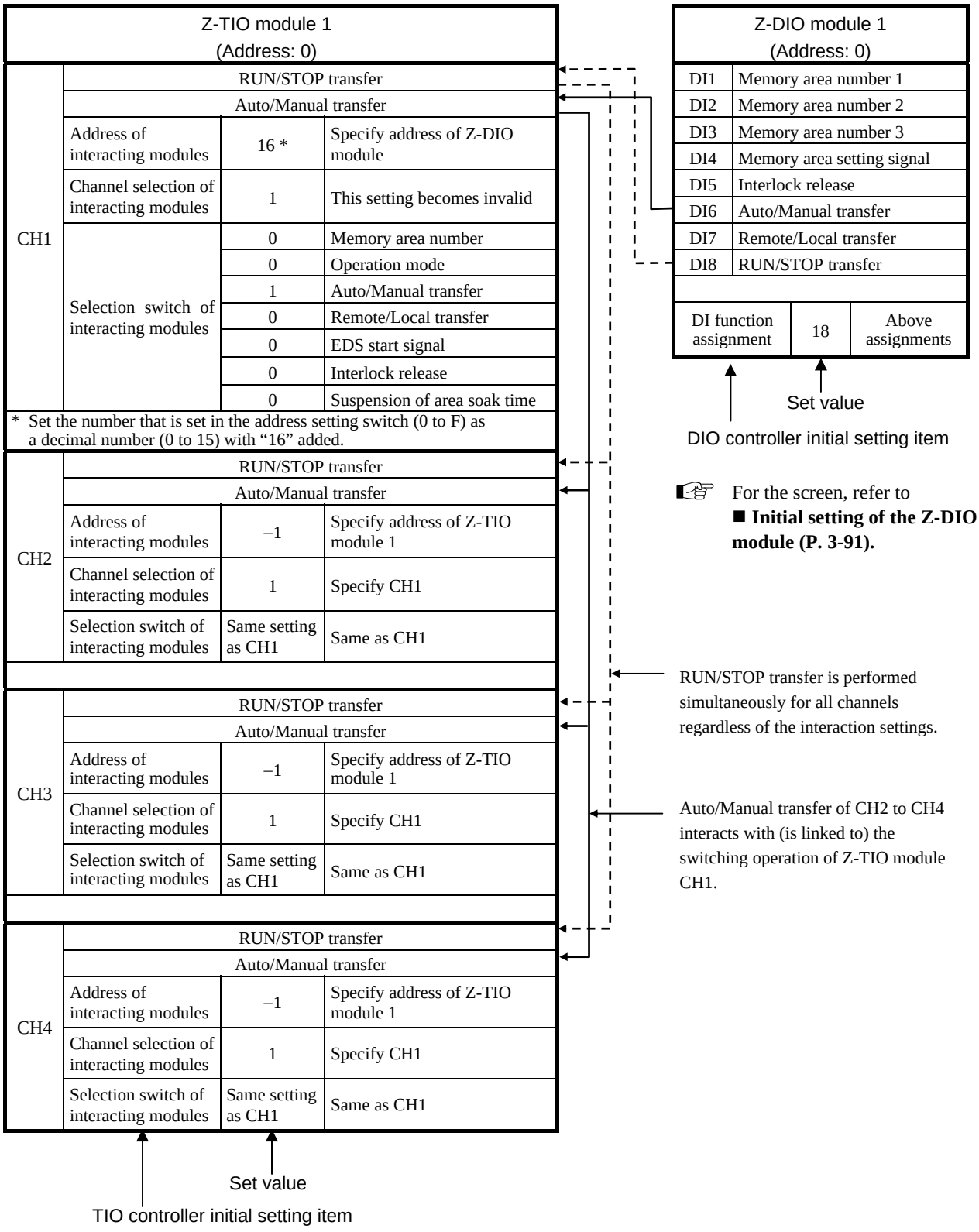
RUN/STOP transfer is accomplished by performing RUN/STOP operation for each SRZ unit (RUN/STOP by DI for each module is not possible).

When using RUN/STOP transfer by DI, RUN/STOP transfer from the operation panel is effective when the contact is closed (RUN) [STOP has priority].

When using Auto/Manual transfer by DI, Auto/Manual transfer from the operation panel is not effective.

For the wiring of DI, refer to the **Z-DIO Instruction Manual (IMS01T03-E□).**

● Settings related to interaction



☞ For the screen, refer to ■ **Initial setting of the Z-TIO module (P. 3-92).**

■ Precaution before setting

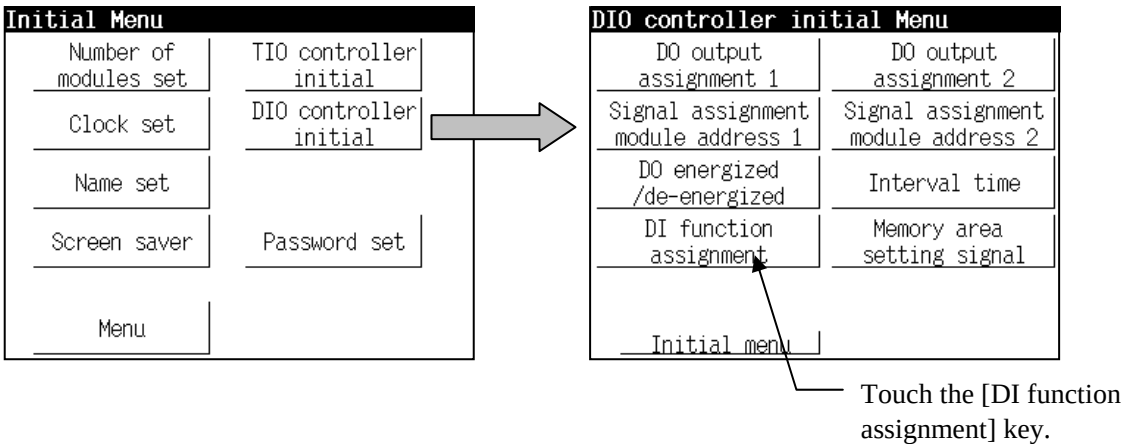
Before configuring initial settings, STOP control with “RUN/STOP transfer” of operation mode.

☞ For information on switching to the initial settings screen, refer to the **3.10.1. Releasing procedure of the initial setting key protect (P. 3-57).**

■ Initial setting of the Z-DIO module

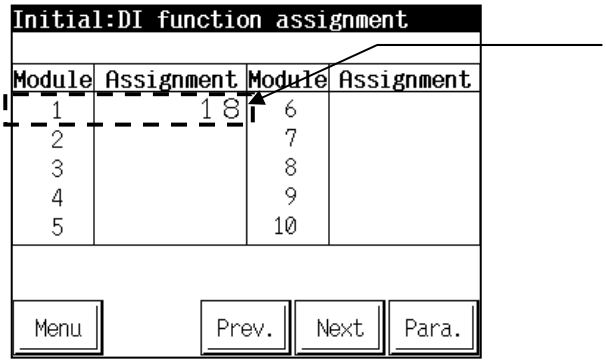
1. Displaying the DIO controller initial menu screen

Display the DIO controller initial menu screen and touch the [DI function assignment] key to display the “Initial: DI function assignment” screen.



2. Set the DI function assignment

Set the DI function assignment of the Z-DIO module to “18.”



Set the function assignment of the module 1 (address setting switch: 0) to “18.”

Assignment contents

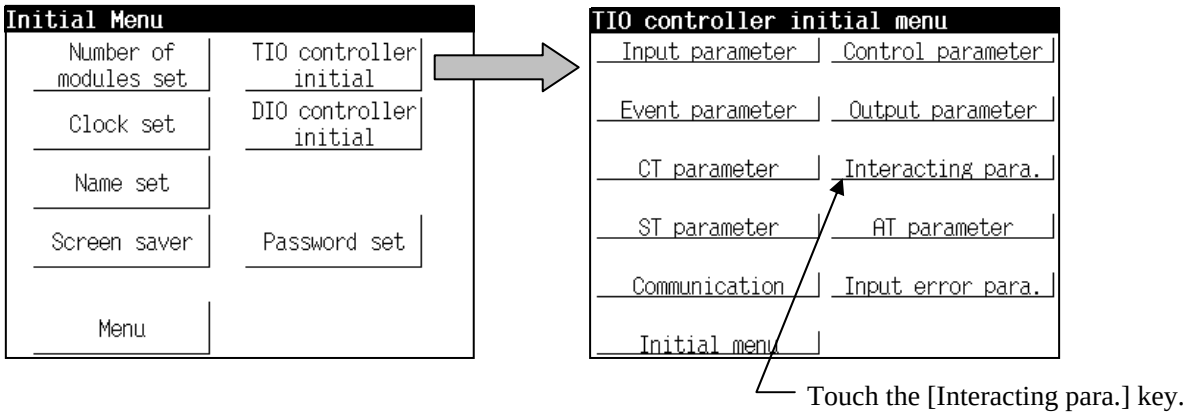
DI1: Memory area number 1
DI2: Memory area number 2
D13: Memory area number 3
DI4: Memory area setting signal
DI5: Interlock release
DI6: Auto/Manual transfer ·····Select
DI7: Remote/Local transfer
DI8: RUN/STOP transfer ·····Select

☞ Refer to **DI assignment table (P. 3-87).**

■ Initial setting of the Z-TIO module

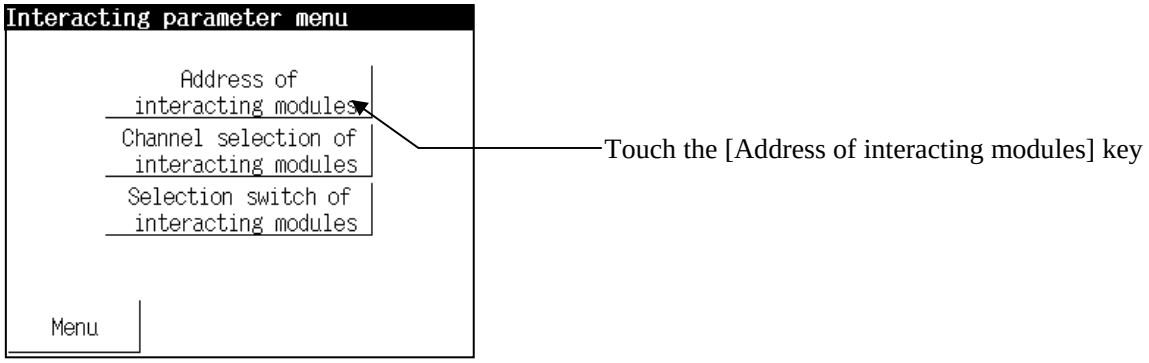
1. Displaying the TIO controller initial menu screen

Display the TIO controller initial menu screen and touch the [Interacting para.] key to display the "Interacting parameter menu" screen.



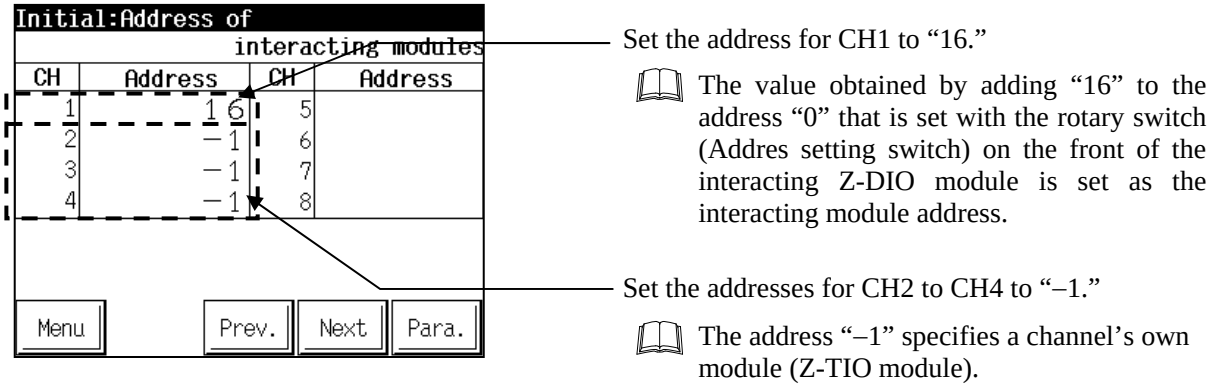
2. Displaying the Address of interacting modules screen

Touch the [Address of interacting modules] key in the interacting parameter menu to display the "Initial: Address of Interacting modules" screen.



3. Set the interacting module address

Set the address of the module that will interact. In this example, the address for CH1 (Z-TIO module) is set to "16," and the addresses for CH2 to CH4 are set to "–1."



4. Displaying the Channel selection of interacting modules screen

Touch the [Para.] key to display the "Initial: Channel selection of interacting modules" screen.

Continued on the next page.

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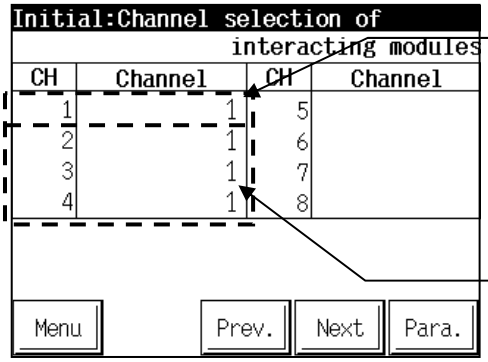
5. Set the interacting module channel selection

Set the number of the channel that will interact within the Z-TIO module. In this example, the channels of CH1 to CH4 are set to "1."



Setting no necessary

For CH1, the Z-DIO module is specified in the "interacting module address" setting, and thus this setting is not effective.
(This setting is effective when the Z-TIO module is specified.)

Set the addresses for CH2 to CH4 to "1."

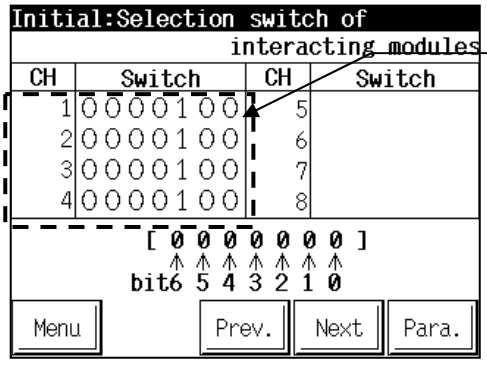
CH2 to CH4 will interact with CH1 (channel 1) of Z-TIO module 1.

6. Displaying the Selection switch of interacting modules

Touch the [Para.] key to display the "Initial: Selection switch of interacting modules" screen.

7. Set the interacting module selection switch

For each channel of the Z-TIO module, specify whether or not the assigned DI functions interact with other channels. In this example, the switches of CH1 to CH4 are set to "0000100."



Set the switches of CH1 to CH4 to "0000100."

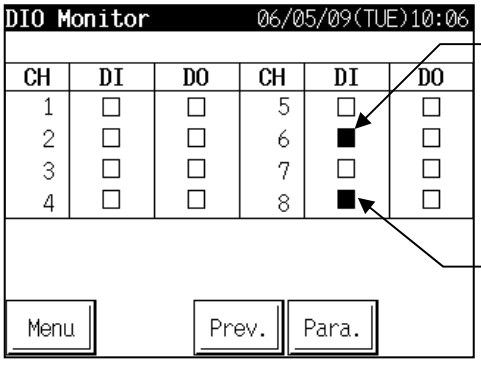
0: No interaction 1: Interact with other channels

0 0 0 0 1 0 0

- Memory area number
- Operation mode
- Auto/Manual transfer ← Interact with other channels
- Remote/Local transfer
- EDS start signal
- Interlock release
- Suspension of area soak time

8. Quit the initial settings ·····Return to the operation screen

The DI operation state can be checked on the "DIO Monitor" screen. Return to the "Operation Menu" and touch the "DIO Monitor" key to show the "DIO Monitor" screen.



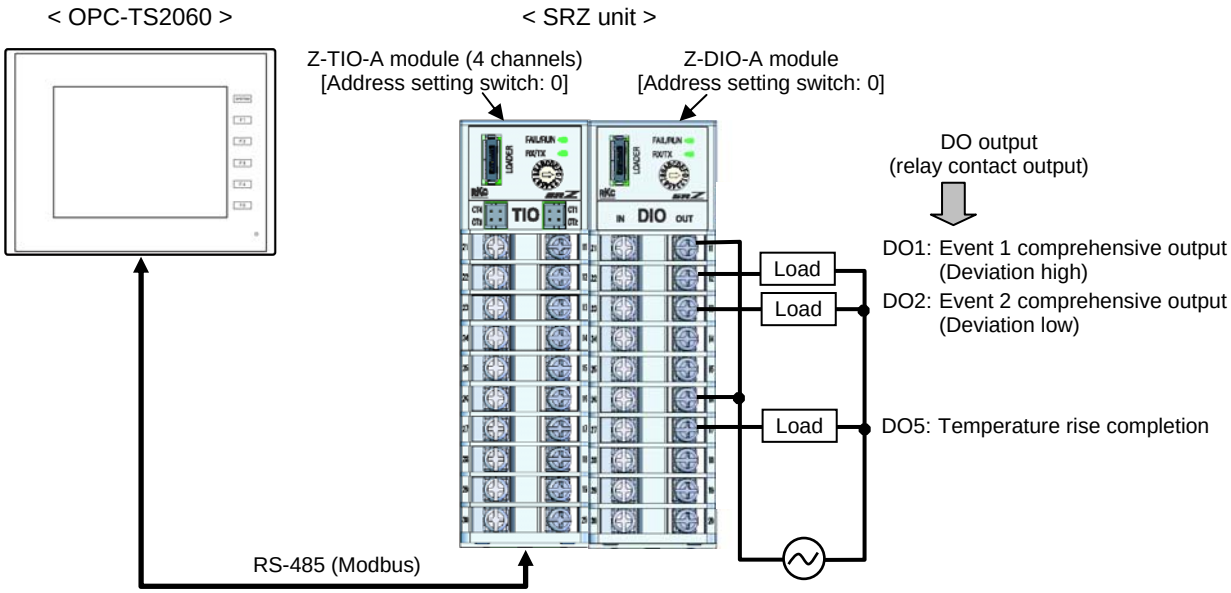
DI6: Auto/Manual transfer
■: Contact closed (Manual mode)
□: Contact open (Auto mode)

DI8: RUN/STOP transfer
■: Contact closed (RUN)
□: Contact open (STOP)

3.11.2 Example of the using DO

Example screen settings are shown below for output from DO (Z-DIO module) of "Event output" and "Temperature rise completion output" of the Z-TIO module.

■ Configuration

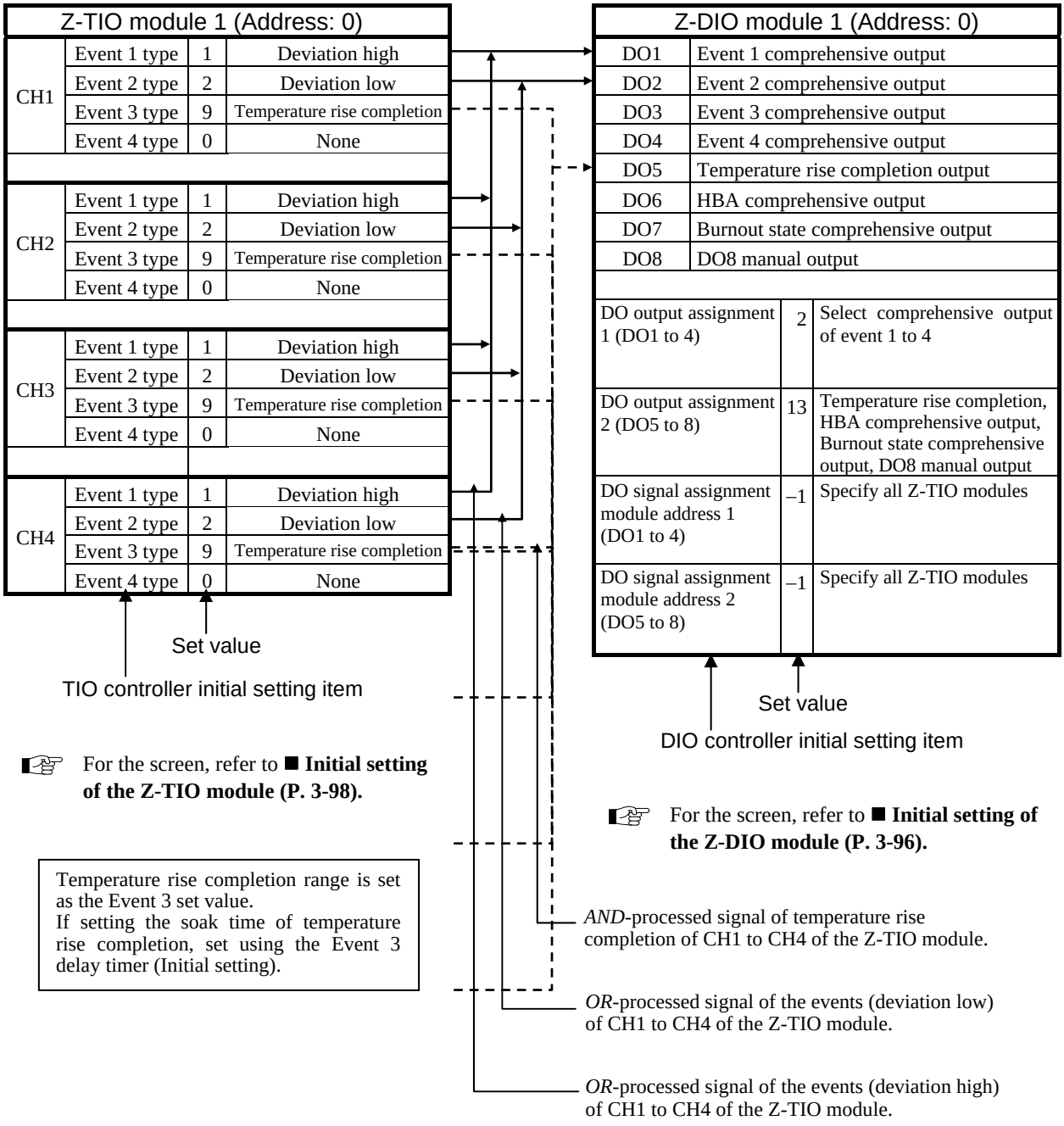


- **DO output assignment**

Output assignment	DO No.	Description
Event 1 comprehensive output	DO1	*OR* output of the event (deviation high) of CH1 to CH4 of the Z-TIO module.
Event 2 comprehensive output	DO2	*OR* output of the event (deviation low) of CH1 to CH4 of the Z-TIO module.
Temperature rise completion	DO5	*AND* output of temperature rise completion of CH1 to CH4 of the Z-TIO module.

☞ For the wiring of DO, refer to the **Z-DIO Instruction Manual (IMS01T03-E□).**

- **Settings related to interaction**



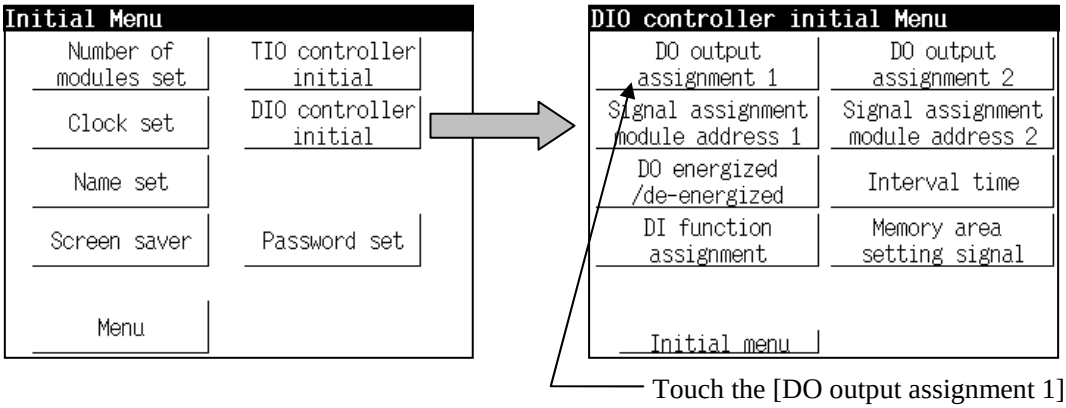
■ Precaution before setting

1. Before configuring initial settings, STOP control with “RUN/STOP transfer” of operation mode.
2. Before configuring the initial settings, set “RUN/STOP transfer” to STOP in the DO settings.

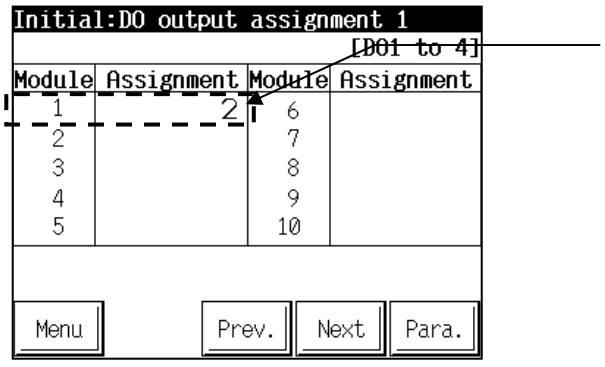
☞ For information on switching to the initial settings screen, refer to the **3.10.1. Releasing procedure of the initial setting key protect (P. 3-57).**

■ Initial setting of the Z-DIO module

1. Displaying the DIO controller initial menu screen
Display the DIO controller initial menu screen and touch the [DO output assignment 1] key to display the “Initial: DO output assignment 1” screen.



2. Set the DO output assignment 1
Set the DO output assignment 1 (DO1 to DO4) of the Z-DIO module to “2.”



Set the output assignment 1 of the module 1 (address setting switch: 0) to “2.”
Assignment contents
DO1: Event 1 comprehensive output···· Select
DO2: Event 2 comprehensive output···· Select
DO3: Event 3 comprehensive output
DO4: Event 4 comprehensive output

☞ Refer to **DO assignment table (P. 3-86).**

3. Displaying the DO output assignment 2
Touch the [Para.] key to display the “Initial: DO output assignment 2” screen.

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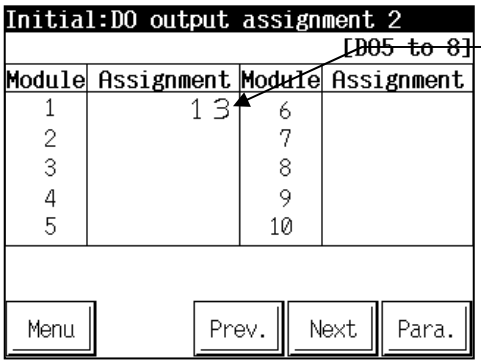
4. Set the DO output assignment 2

Set the DO output assignment 2 (DO5 to DO8) of the Z-DIO module to “13.”



Set the output assignment 2 of the module 1 to “13.”

Assignment contents

DO5: Temperature rise completion ·· Select
DO6: HBA comprehensive output
DO7: Burnout state comprehensive output
DO8: DO8 manual output

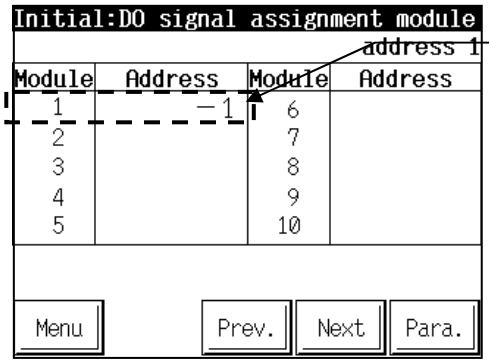
☞ Refer to **DO assignment table (P. 3-86).**

5. Displaying the DO signal assignment module address 1

Touch the [Para.] key to display the “Initial: DO signal assignment module address 1” screen.

6. Set the DO signal assignment module address 1

Set the address of the Z-TIO module for which signals are assigned to the Z-DIO module. In this example, “–1” is set to specify all connected Z-TIO modules.



Set “Address 1” of module 1 to “–1”

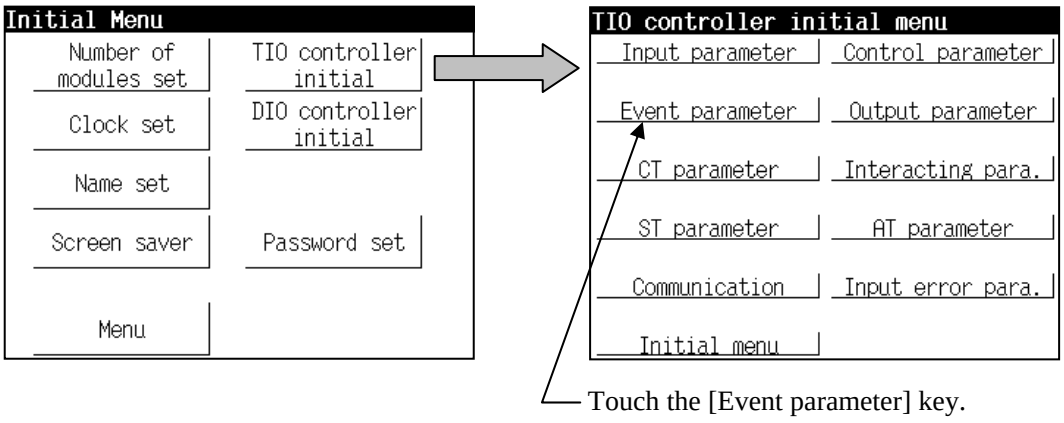
7. Displaying the DO signal assignment module address 2

Touch the [Para.] key to display the “Initial: DO signal assignment module address 2” screen.
Set address 2 to “–1” using the same procedure as “6” above.

■ Initial setting of the Z-TIO module

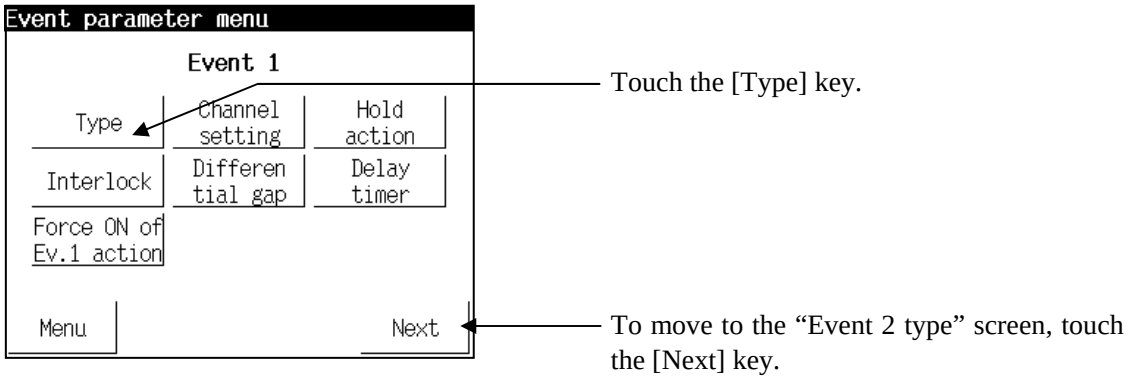
1. Displaying the TIO controller initial menu screen

Display the TIO controller initial menu screen and touch the [Event parameter] key to display the "Event parameter menu" screen.



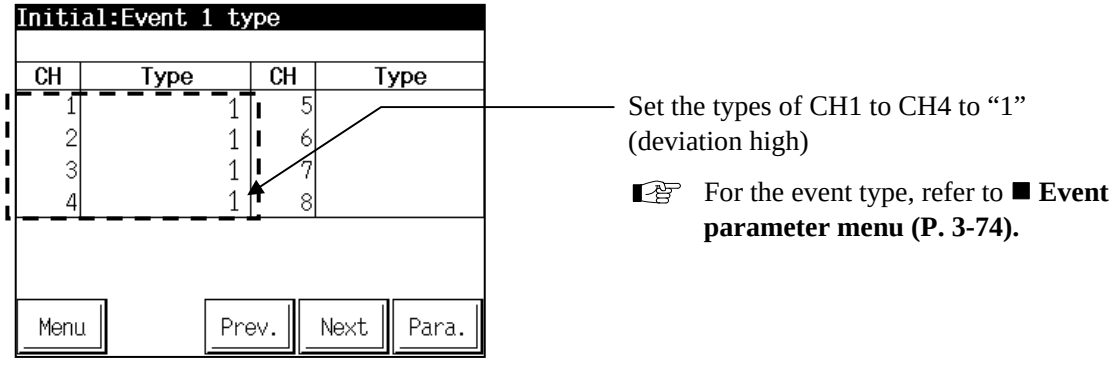
2. Displaying the Event 1 type

Touch the [Type] key in the event parameter menu to display the "Initial: Event 1 type" screen.



3. Set the Event 1 type

Set the Event 1 type. In this example, the types of CH1 to CH4 are set to "1" (deviation high).



☞ For the event type, refer to **■ Event parameter menu (P. 3-74).**

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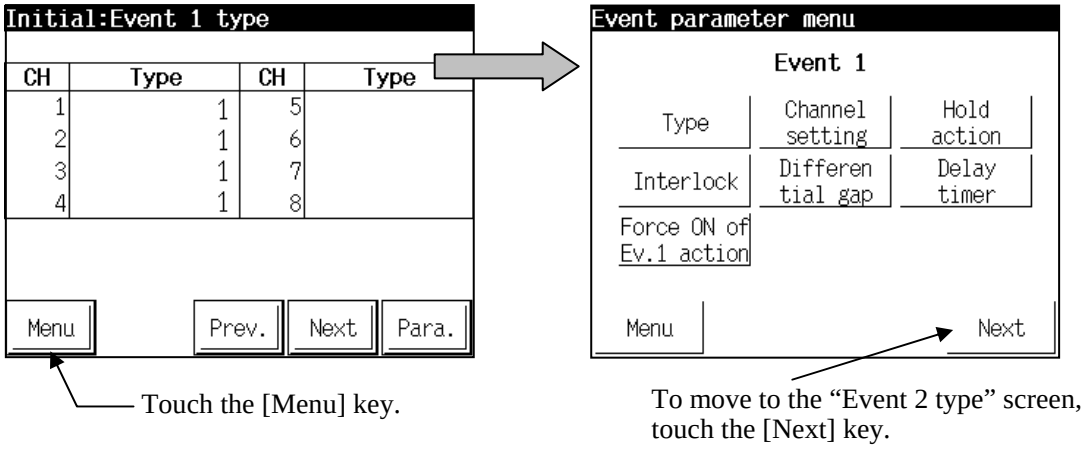
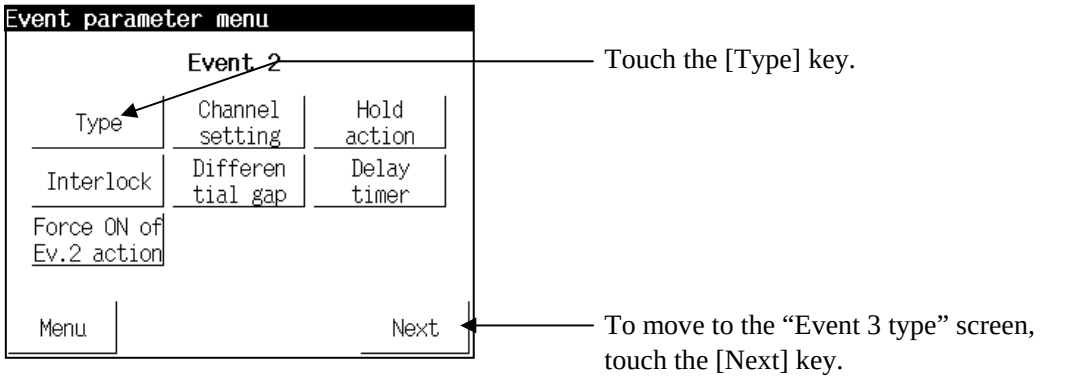
4. Displaying the Event parameter menu

Touch the [Menu] key to display the “Event parameter menu” screen.
Touch the [Next] key to display the Event 2 screen of the “Event parameter menu.”



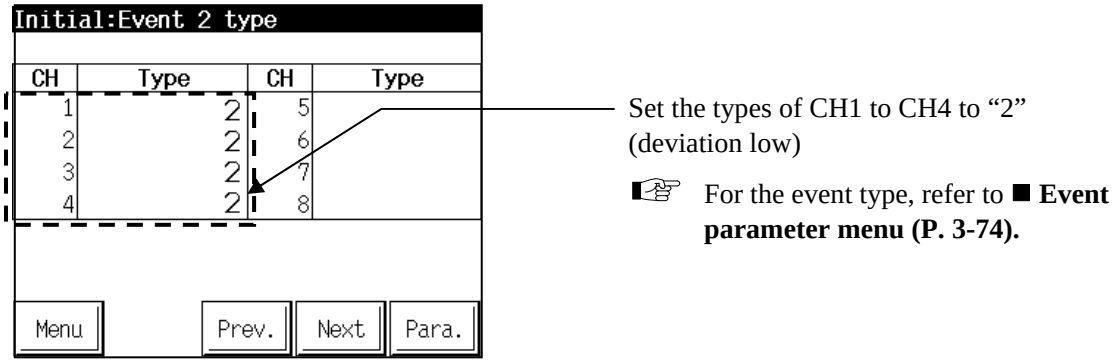
5. Displaying the Event 2 type

Touch the [Type] key in the event parameter menu to display the “Initial: Event 2 type” screen.



6. Set the Event 2 type

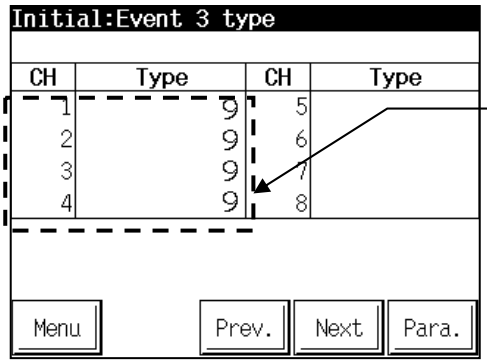
Set the Event 2 type. In this example, the types of CH1 to CH4 are set to “2” (deviation low).



☞ For the event type, refer to ■ **Event parameter menu (P. 3-74).**

7. Set the Event 3 type

Follow the procedure in “4” and “5” above to display the “Initial: Event 3 type” screen and set the event 3 types. In this example, the types of CH1 to CH4 are set to “9” (temperature rise completion).



Set the types of CH1 to CH4 to “9” (temperature rise completion)

☞ For the event type, refer to ■ **Event parameter menu (P. 3-74).**

If setting the soak time of temperature rise completion, set using the Event 3 delay timer (Initial setting).

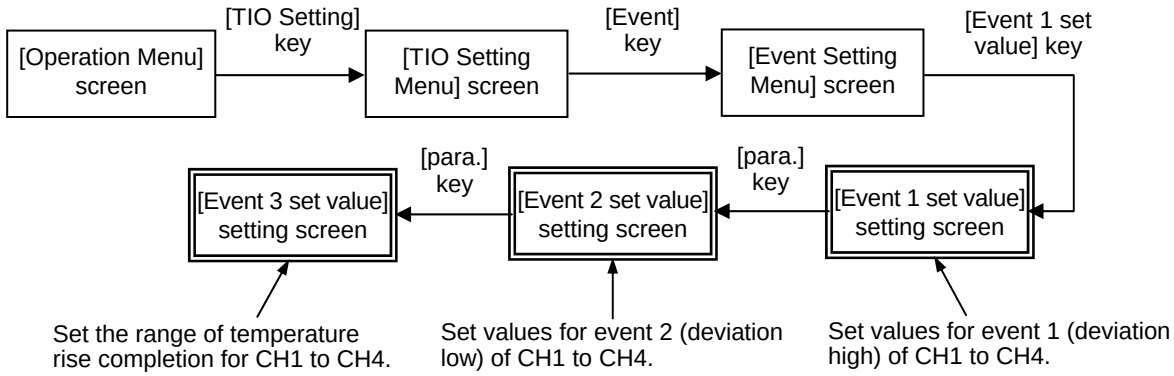
8. Quit the initial settings ·····Return to the operation screen

To return to the Operation Menu screen, do as follows.

- Touch the [Menu] key until the [Initial menu] key appears. Then, touch the [Initial menu] key to show the [Menu] key and press the [Menu] key to switch the screen to the Operation Menu screen, or
- Power off the OPC-TS2060 and power it up again. The Operation Menu screen appears.

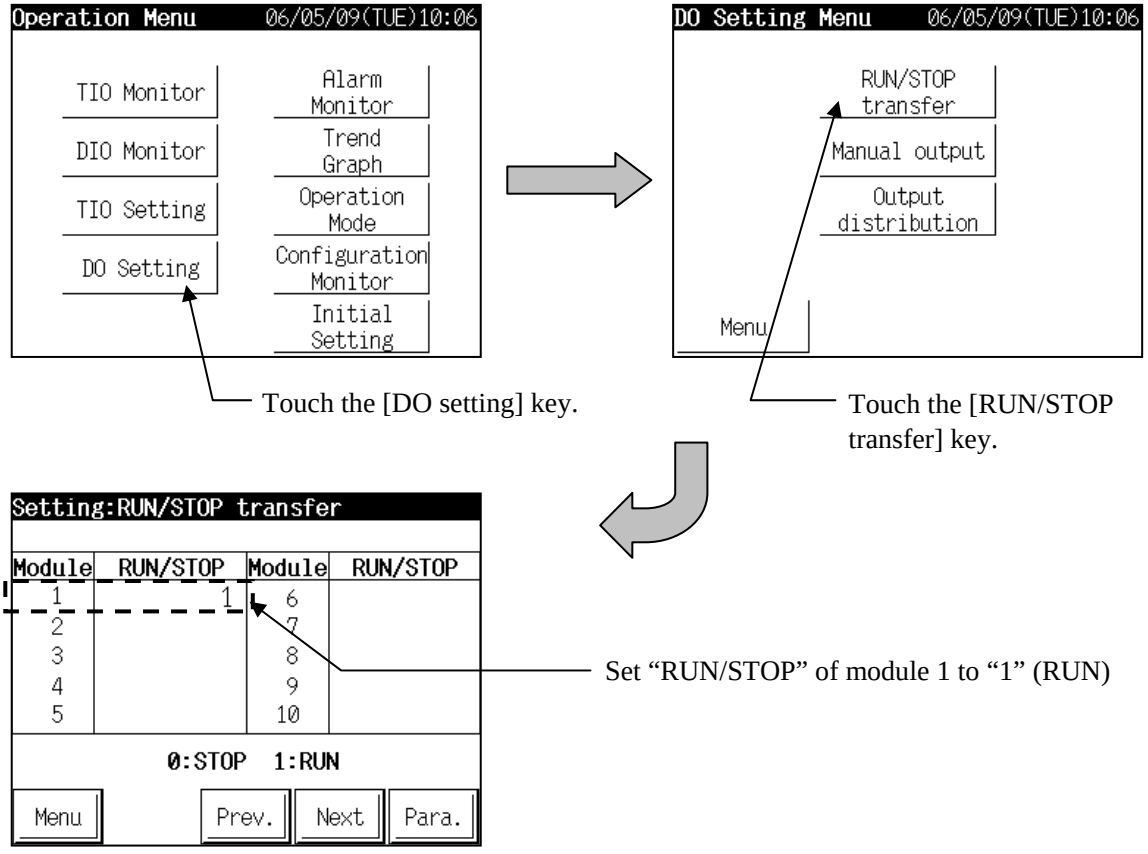
■ Settings and monitoring during operation

1. Set values for events 1 to 3.



2. Set DO to RUN.

Touch the [RUN/STOP transfer] key in the DO Setting Menu and set “RUN/STOP” to “1” (RUN) in the “Setting: RUN/STOP transfer” screen.



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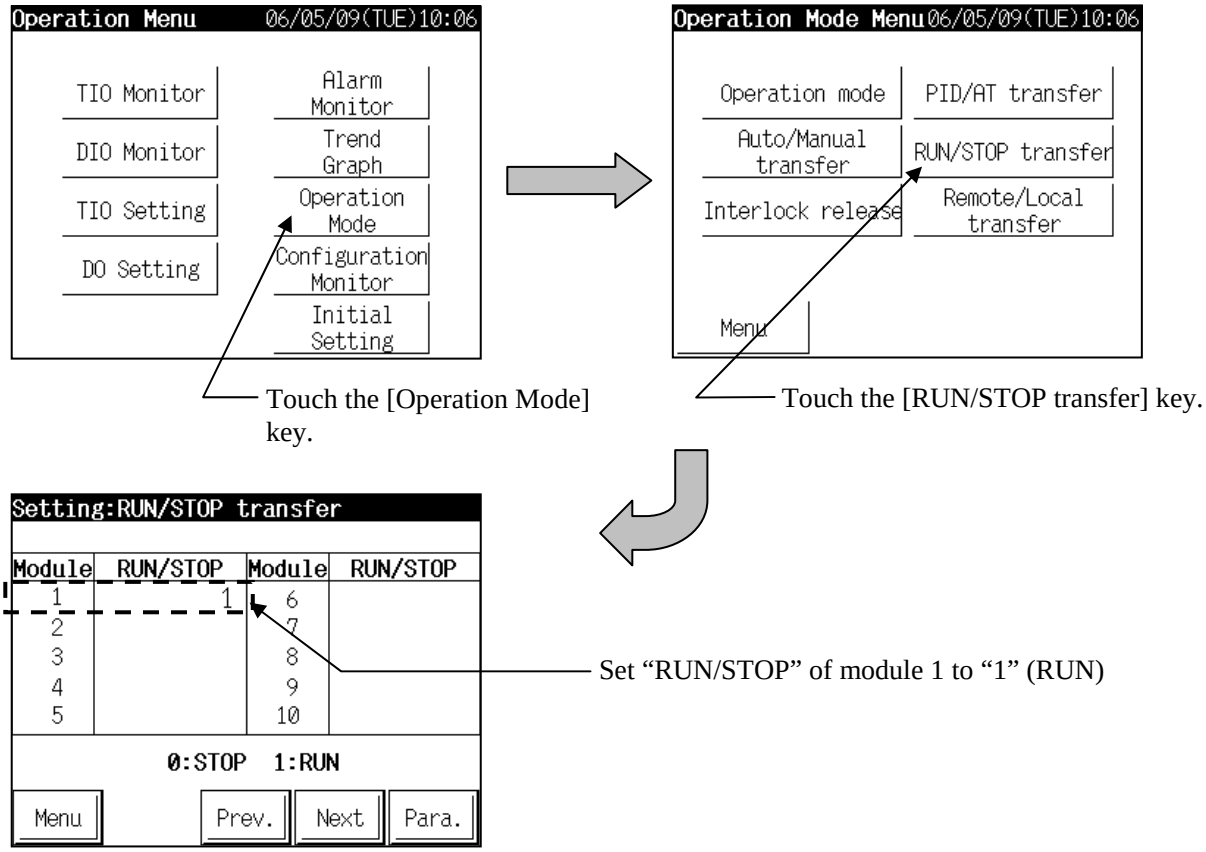
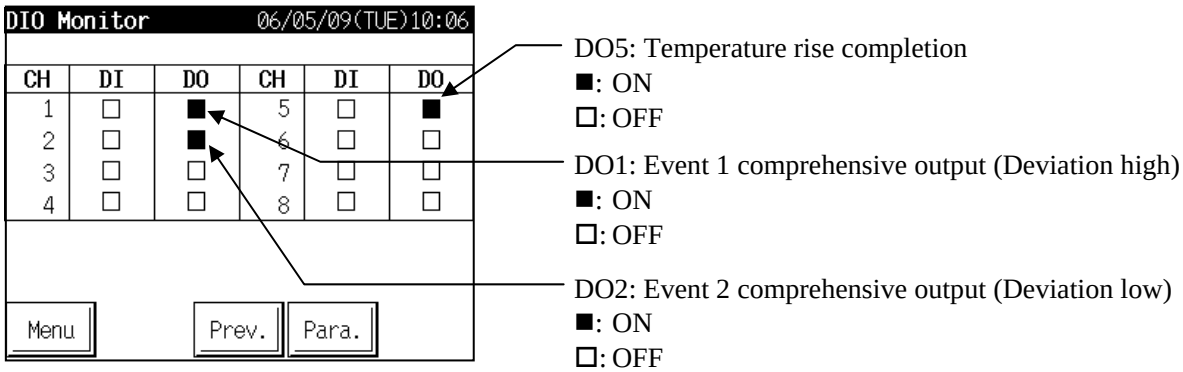
3. Set the Z-TIO module to control RUN.

Touch the [RUN/STOP transfer] key in the Operation Mode Menu and set "RUN/STOP" to "1" (RUN) in the "Setting: RUN/STOP transfer" screen.



4. Check the status of DO output.

The status of DO output can be checked in the "DIO Monitor" screen.



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