



Operation Manual

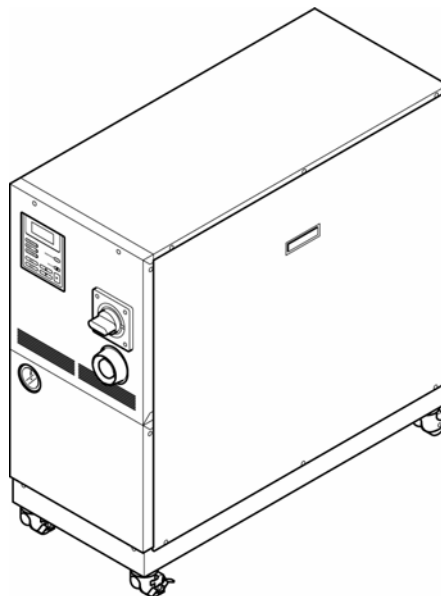
Supplementary Manual

HRZ * * * - * * - C

HRZ * * * - * * - X002

This supplementary manual explains the functions limited to the options “-C” and “-X002” for the Thermo-chiller HRZ series.
Please read the separated Operation Manual (HRX-OM-I051) as well.

| | | | |
|-------------------------|--------------------------|--------------------------|-------------------------|
| <i>HRZ001-L</i> | <i>HRZ002-L</i> | <i>HRZ004-L</i> | <i>HRZ008-L</i> |
| <i>HRZ001-L1</i> | <i>HRZ002-L1</i> | <i>HRZ004-L1</i> | <i>HRZ008-L1</i> |
| <i>HRZ001-L2</i> | <i>HRZ002-L2</i> | <i>HRZ004-L2</i> | <i>HRZ008-L2</i> |
| <i>HRZ001-H</i> | <i>HRZ002-H</i> | <i>HRZ004-H</i> | <i>HRZ008-H</i> |
| <i>HRZ001-H1</i> | <i>HRZ002-H1</i> | <i>HRZ004-H1</i> | <i>HRZ008-H1</i> |
| <i>HRZ002-W</i> | <i>HRZ008-W</i> | <i>HRZ002-W1</i> | <i>HRZ008-W1</i> |
| <i>HRZ010-WS</i> | <i>HRZ010-W1S</i> | <i>HRZ010-W2S</i> | |



Save This Manual Carefully for Use at Any Time

Customers

Thank you for purchasing SMC Thermo-chiller, HRZ series (hereinafter “this product”.)

To use this product longer and in safe, be sure to read and understand this supplementary manual (hereinafter “this document”) and the separated Operation Manual (HRX-OM-I051) before operating this product.

This document is a supplementary manual for explaining the functions limited to the options “-C” and “-X002” for this product. Refer to the separated Operation Manual (HRX-OM-I051) for the warning, precautions, installation, and basic operation of this product.

This document adds/ amends the following sections of the separated Operation Manual (HRX-OM-I051).

- Chapter 5 System operation: Adding how to operate the function to change communication specification of “contact I/O analogue communication”
- Chapter 8 Appendix, 8.1.2 Communication specification: Change of “contact signal”

Refer to the Communication Specifications (HRZ-PS-J010) for the details of the function of “contact I/O analogue communication.”

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Note: This document is subject to change without prior notice.

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1. Outline of HRZ***-**-C and -X002

The Thermo-chiller HRZ series with options “-C” or “-X002” include “analog communication.” With the “changing communication specifications” function, the specifications of contact I/O analogue communication can be changed arbitrarily.

1.1 Analogue Communication

Inputting analogue voltage can change the value of TEMP SP. The values of TEMP PV and DI PV^{*1} are output and transmitted in analogue voltage. However, changing the value of TEMP SP by inputting analogue voltage is available only with the communication mode of DIO REMOTE.

*1: The value of DI PV is only shown when the optional DI circuit is used.

1.2 Changing communication specifications

The specifications of contact I/O analogue communication can be changed with the change communication specifications function. This function is available by turning on the “CUSTOM DIO” shown on the “Option Screen.” If this function is not used (i.e., “CUSTOM DIO” shown on the “Option Screen” is turned off), the specifications of the contact I/O analogue communication remain at the setting input before factory shipment.

With this function, the following items (1) - (3) can be changed.

(1) The input signal type of the operation/stop signal of the contact I/O communication and of the DIO REMOTE signal can be changed alternately or momentarily.

(2) The output signal of the contact I/O communication can be changed. (Example: The output signal 3 is turned on when the fault alarm occurs.)

(3) The scaling used for “transforming analogue voltage to the value of TEMP SP” and “transforming the value of TEMP PV to analogue voltage” can be changed.

Refer to “3. Appendix” at the end of this document for the difference between the specification of the contact I/O analogue communication when the “changing communication specifications” function is in use and when it is not.

Refer to the Communication Specification (HRX-PS-J010) for details on the “analogue communication” and “change communication specifications” function

2. Operation Screen

This document only describes the operation method using the function to change communication specifications. The function to change communication specifications works with the “Option Screen” and “CUSTOM DIO Screen 1- 4” as shown in Figure 2-1.

Refer to the separated Operation Manual (HRX-OM-I051) for the other operation.

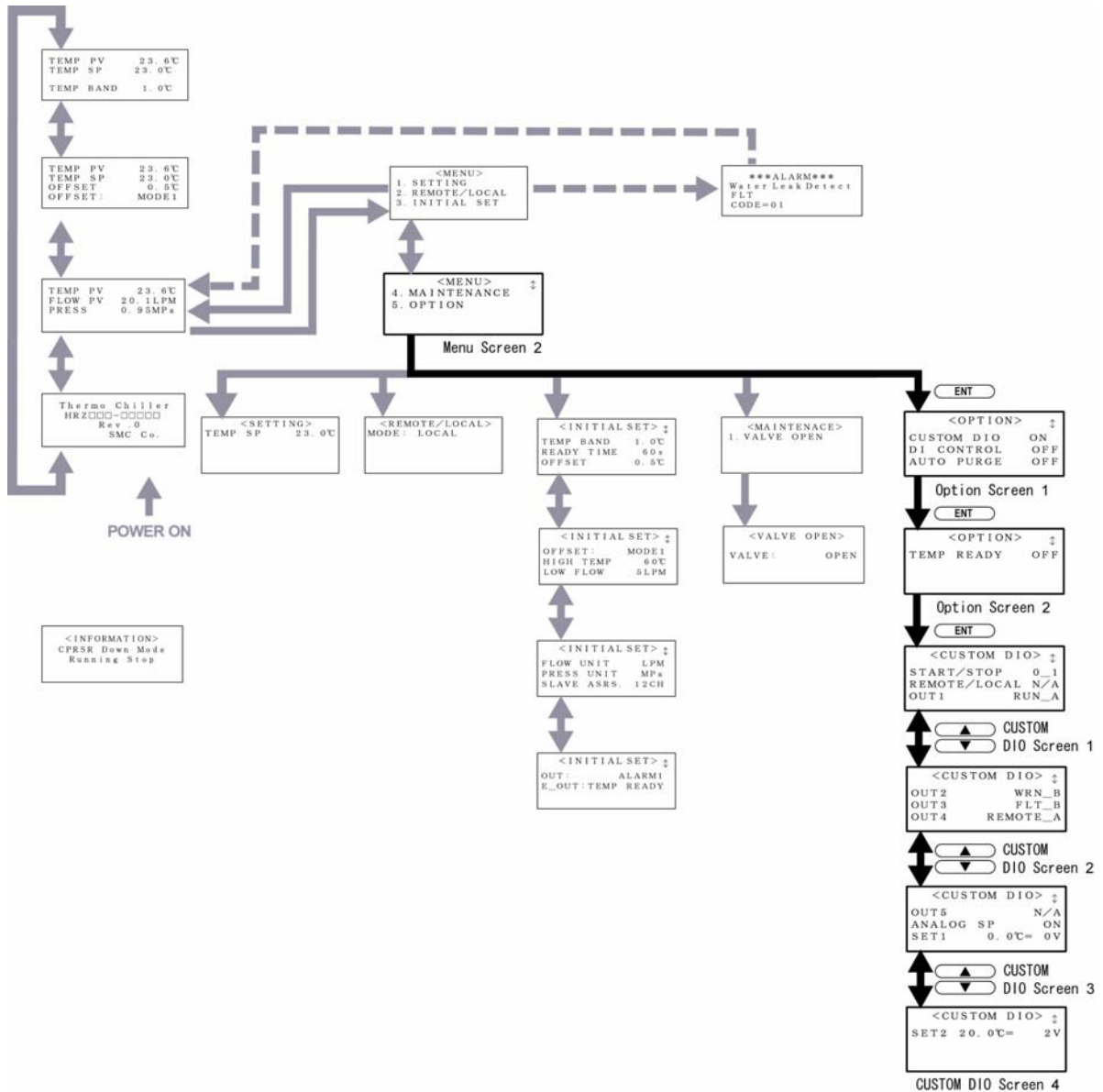


Figure 2-1 Flow chart of Operation Screen

2.1 Operation Screen Description

2.1.1 Menu Screen 2

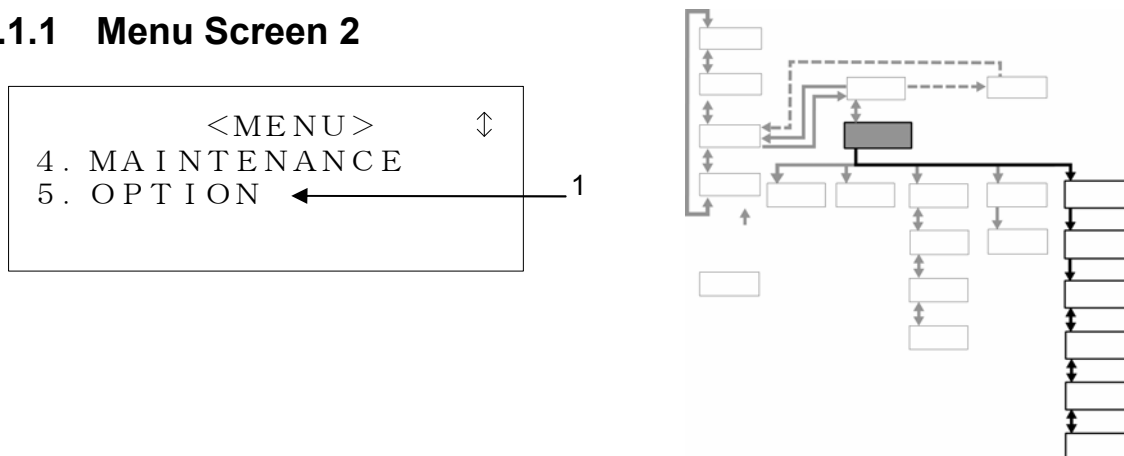


Figure 2-2 “Menu Screen 2”

Table 2-1 “Menu Screen 2”

| No. | Item | Description |
|-----|--------|--|
| 1 | OPTION | Pressing the [ENT] key to go to the “Option Screen”. |

2.1.2 Option Screen

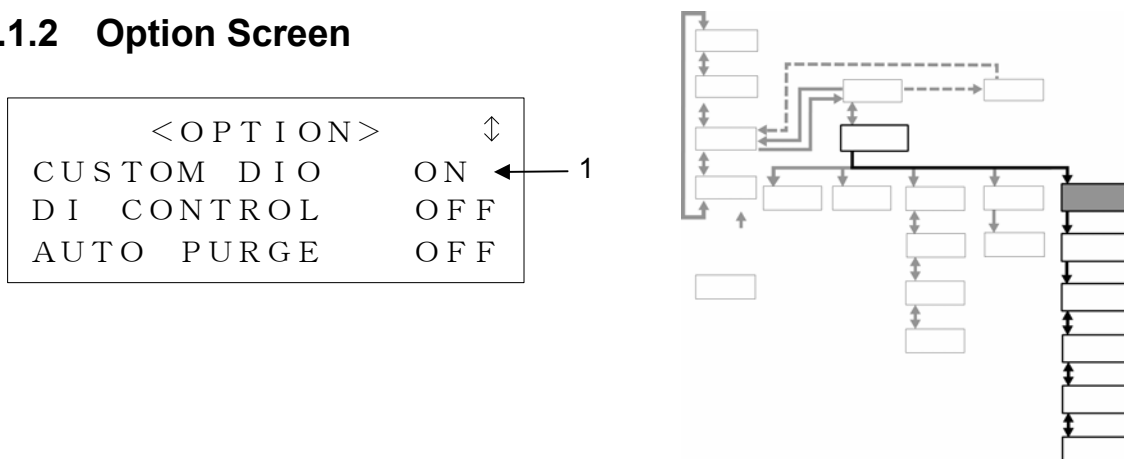


Figure 2-3 “Option Screen”

Table 2-2 “Option Screen”

| No | Item | Setting | Description |
|----|------------|---------|--|
| 1 | CUSTOM DIO | ON | The function to change communication specifications becomes valid. |
| | | OFF | The function to change communication specifications becomes invalid. |

2.1.3 CUSTOM DIO Screen

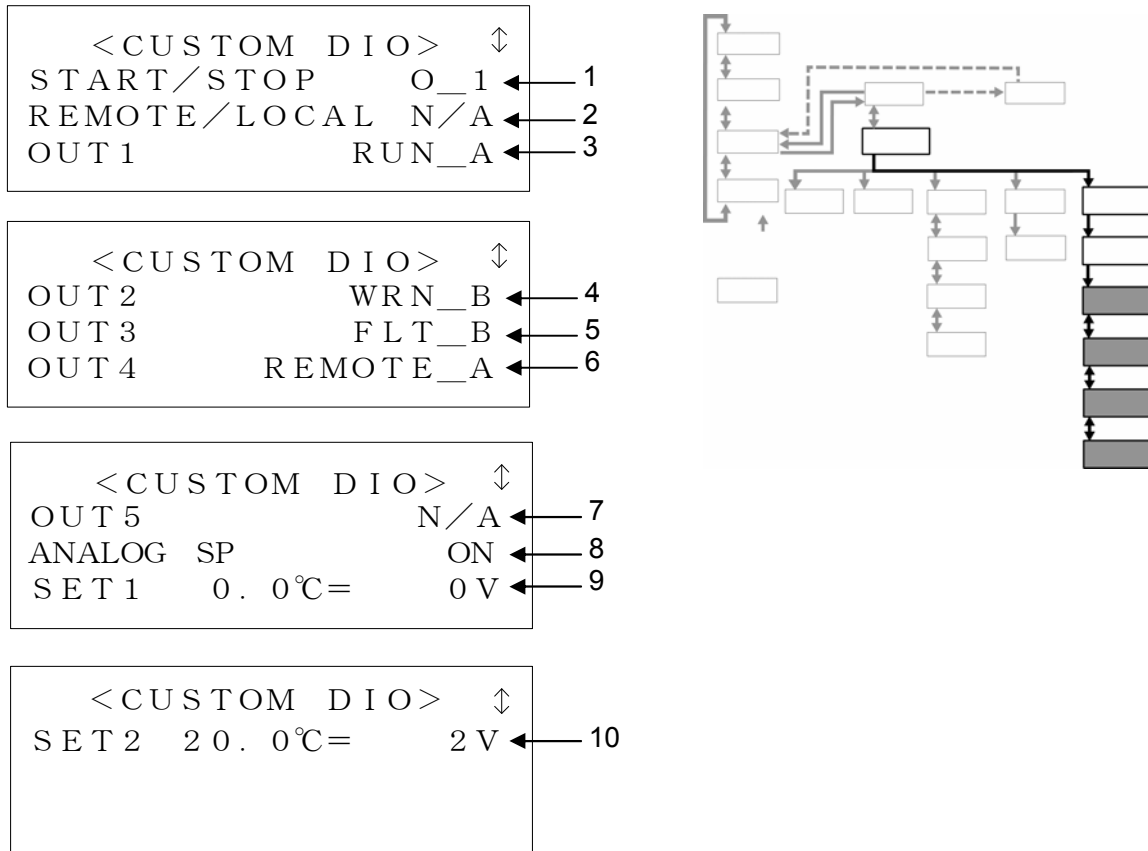


Figure 2-4 “CUSTOM DIO Screen”

Table 2-3 “CUSTOM DIO Screen”

| No | Item | Description |
|------|----------------------------|--|
| 1 | START/STOP | The operation/stop signal types can be changed. |
| 2 | REMOTE/LOCAL | The DIO REMOTE signal types 1 and 2 can be changed. |
| 3-7 | OUT1-5 | Functions can be assigned to the output signals 1 to 5. |
| 8 | ANALOG SP | The validity of the value of TEMP SP by analogue voltage input can be changed. |
| 9-10 | SET1 0.0°C, SET2 20.0°C | The scaling of TEMP PV and TEMP SP (analogue signal) can be changed. |

The set values listed in 1 to 10 shown in Figure 2-4 are the settings input before before the factory shipment. Refer to Table 2-4 on the next page for details on those set values. Refer to 3. Appendix and the Communication Specification (HRX-PS-J010) for the description of each signal shown on Table 2-3 “CUSTOM DIO Screen”.

Table 2-4 shows the settings with “CUSTOM DIO Screen”.

Table 2-4 Settings with “CUSTOM DIO Screen”

| No | Item | Setting | Description |
|--------------------------|--|--------------------------|--|
| 1 | START/ STOP | O_1 | This product is started and stopped with the operation/stop signal 1. The signal type is alternate. |
| | | M_1 | This product is started and stopped with the operation/stop signal 1. The signal type is momentary. |
| | | M_2 | This product is started with the operation/stop signal1and stopped with the operation/stop signal 2. The signal type is momentary. |
| | | N/A | The operation/stop signal 1 and 2 cannot start or stop this product. (The operation can only be done with the Operation Screen.) |
| 2 | REMOTE/ LOCAL | O_1 | The communication mode becomes DIO REMOTE or LOCAL with the DIO REMOTE signal 1. The signal type is alternate. |
| | | M_1 | The DIO REMOTE signal 1 makes the communication mode DIO REMOTE or LOCAL. The signal type is momentary. |
| | | M_2 | The DIO REMOTE signal 1 makes the communication mode DIO REMOTE, and the DIO REMOTE 2 makes the communication mode LOCAL. The signal type is momentary. |
| | | N/A | The DIO REMOTE signal 1 and 2 cannot switch the communication mode. (Switching can only be done with the operation Screen.) |
| 3-7 | OUT1-5 | RUN_A | When this product starts operating, the contact closes (ON). |
| | | RUN_B | When this product starts operating, the contact opens (OFF). |
| | | REMOTE_A | When the communication mode becomes DIO REMOTE, the contact closes (ON). |
| | | REMOTE_B | When the communication mode becomes DIO REMOTE, the contact opens (OFF). |
| | | WRN_A | When the warning alarm occurs, the contact closes (ON). |
| | | WRN_B | When the warning alarm occurs, the contact opens (OFF). |
| | | FLT_A | When the fault alarm occurs, the contact closes (ON). |
| | | FLT_B | When the fault alarm occurs, the contact opens (OFF). |
| | | W&F_A | When the warning alarm or fault alarm occurs, the contact closes (ON). |
| | | W&F_B | When the warning alarm or fault alarm occurs, the contact opens (OFF). |
| | | AUTO_A ^{Note 1} | When the automatic circulating fluid collecting function works, the contact closes (ON). |
| | | AUTO_B ^{Note 1} | When the automatic circulating fluid collecting function works, the contact opens (OFF). |
| | | TEMP_A ^{Note 2} | When the requirements of the BAND/ READY function are satisfied, the contact closes (ON). |
| TEMP_B ^{Note 2} | When the requirements of the BAND/ READY function are satisfied, the contact opens (OFF). | | |
| N/A | The contact is always open (OFF). | | |
| 8 | ANALOG SP | ON | Input of the value of TEMP SP by analogue voltage becomes valid. |
| | | OFF | Input of the value of TEMP SP by analogue voltage becomes invalid. (The value of TEMP SP can only be input by the Operation panel display.) |
| 9-10 | SET1 0.0°C | -3-3V | The scaling of the analogue signal is changed. |
| | SET2 20.0°C | -1-5V | |

Note 1) It becomes valid when the optional “automatic collecting function” is selected.

Note 2) It becomes valid when the BAND/READY function of this product is set.

Examples of operation

2.2.1 Example 1: Turns on output signal 3 of the contact I/O communication when the fault alarm occurs. (Set OUT3 to FLT_A.)

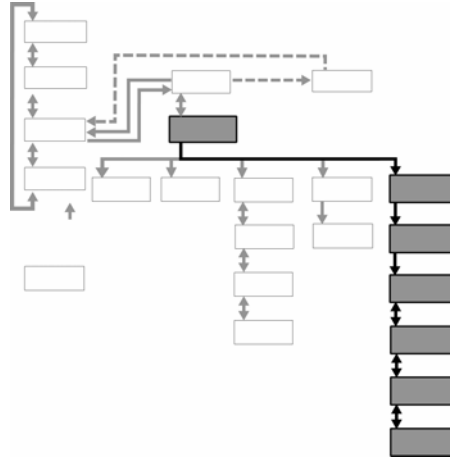


Figure 2-5 Set OUT3 to FLT_A.

1. Press the [SEL] key to show "Menu Screen 1".



Figure 2-6 "Menu Screen 1"

2. Move the cursor with the [] or [] key to choose the "5. OPTION" on the "Menu Screen 2".



Figure 2-7 "Menu Screen 2"

3. Press the [ENT] key.
The "Option Screen" is shown.



Figure 2-8 "Option Screen"

- 4.** Press the [ENT] key.
The current setting blinks.



Figure 2-9 "Option Screen" OFF

- 5.** Change the setting to ON with the [] or [] key.



Figure 2-10 "Option Screen" ON

【Note】

Press the [SEL] key, not the [ENT] key, to cancel the change. When the [SEL] key is pressed, the changed setting is canceled, and the display shows the "Menu Screen 1".

- 6.** Press the [ENT] key.
The "CUSTOM DIO Screen 1" is shown.



Figure 2-11 "CUSTOM DIO Screen 1"

- 7.** Show "CUSTOM DIO Screen 2" with the [] or [] key, and make OUT 4 blink.
The current setting also blinks.

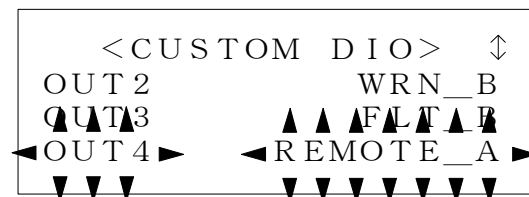


Figure 2-12 "CUSTOM DIO Screen 2"

- 8.** Press the [ENT] key.
 Only the current setting blinks.

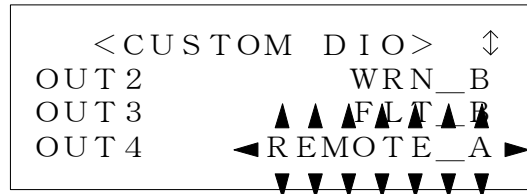


Figure 2-13 "CUSTOM DIO Screen 2" REMOTE_A

- 9.** Choose the FLT_A setting with the [] or [] key.

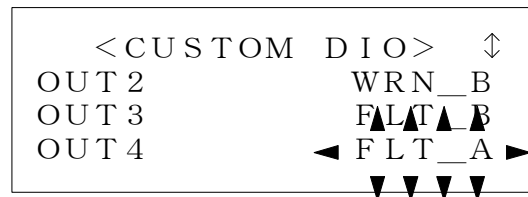


Figure 2-14 "CUSTOM DIO Screen 2" FLT_A

- 10.** Press the [ENT] key.
 The current setting stops blinking, and the setting of OUT 4 is established.

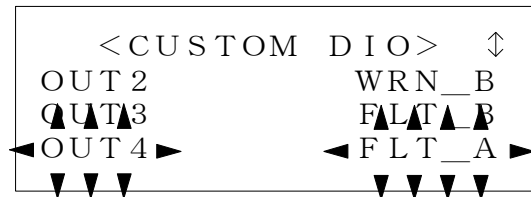


Figure 2-15 "CUSTOM DIO Screen 2" FLT_A setting established

【Note】

Press the [SEL] key, not the [ENT] key, to cancel the change. When the [SEL] key is pressed, the changed setting is canceled, and the display shows the "Menu Screen 1."

- 11.** Press the [SEL] key to show the "Menu Screen 1".

2.2.2 Example 2: Making the scaling of TEMP PV and PV of the analog communication -20 to 40°C/0 to +6 V (Set “SET1 0.0°C” 2 V and “SET2 20.0°C” 4V.)

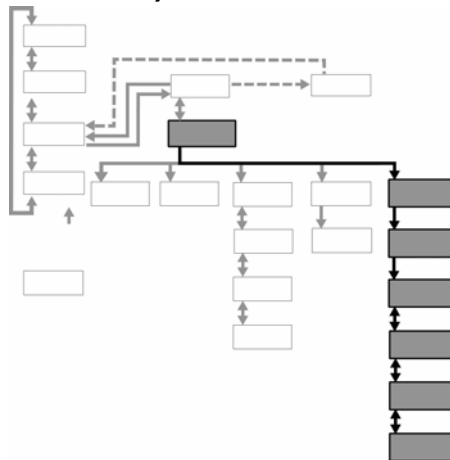


Figure 2-16 Set “SET1 0.0°C” 2 V and “SET2 20.0°C” 4 V.

1. Press the [SEL] key to show the “Menu Screen 1”.



Figure 2-17 “Menu Screen 1”

2. Move the cursor with the [] or [] key to choose the “5. OPTION” shown on the “Menu Screen 2”.



Figure 2-18 “Menu Screen 2”

3. Press the [ENT] key.
The “Option Screen” is shown.



Figure 2-19 “Option Screen”

- 4.** Press the [ENT] key.
The current setting blinks.



Figure 2-20 "Option Screen" OFF

- 5.** Change the setting to ON with [] or [] key.



Figure 2-21 "Option Screen" ON

【Note】

Press the [SEL] key, not the [ENT] key, to cancel the change. When the [SEL] key is pressed, the changed setting is canceled, and the display shows the "Menu Screen 1."

- 6.** Press the [ENT] key.
The "CUSTOM DIO Screen 1" is shown.



Figure 2-22 "CUSTOM DIO Screen 1"

- 7.** Show the "CUSTOM DIO Screen 3" with the [] or [] key to make the SET1 0.0°C blink.

The current set value also blinks.

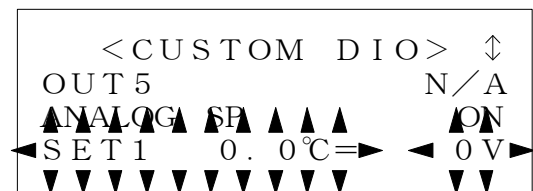


Figure 2-23 "CUSTOM DIO Screen 3" SET1 0.0 °C

8. Press the [ENT] key.

The cursor appears at the set value of SET1 0.0 °C, and the value can be changed.

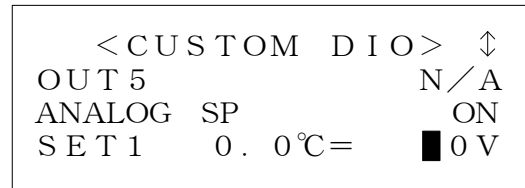


Figure 2-24 "CUSTOM DIO Screen 3" SET1 0.0 °C

9. Change SET1 0.0 °C to 2 V with the [] or [] key and [▶] key.

- [] key: The value at the cursor is added by 1.
- [] key: The value at the cursor is reduced by 1.
- [▶] key: The cursor moves to right.

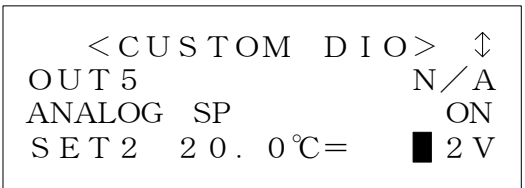


Figure 2-25 "CUSTOM DIO Screen 3" SET1 0.0 °C

【Note】

Press the [SEL] key, not the [ENT] key, to cancel the change. When the [SEL] key is pressed, the changed setting is canceled, and the display shows the "Menu Screen 1."

10. Press the [ENT] key after SET1 0.0 °C is changed to 2 V.

The cursor disappears, and the set value is established at 2 V.

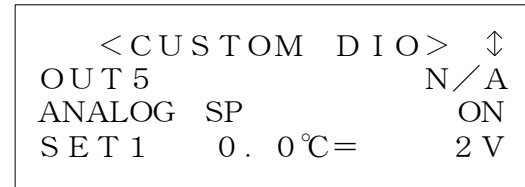


Figure 2-26 "CUSTOM DIO Screen 3" SET1 0.0 SET1 0.0 °C is established.

【Note】

If the changed value is larger than the value of SET2 20.0 °C, the value will not be established even if the [ENT] key is pressed. The changed value should be the value of SET2 20.0 °C or less. Refer to the Communication Specifications (HRX-PS-J010) for detail.

11. Mke SET2 20.0 °C blink with the [] or [] key.

The current set value blinks.

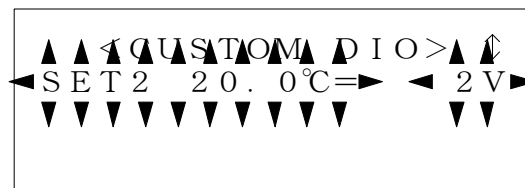


Figure 2-27 "CUSTOM DIO Screen 4" SET2 20.0 °C

12. Press the [ENT] key.

The cursor appears at the set value of SET2 20.0 °C, and the set value can be changed.

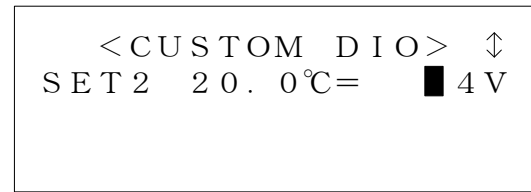


Figure 2-28 "CUSTOM DIO Screen 4" SET2 20.0 °C

13. Change SET2 20.0 °C to 4 V with the [] or [] key and the [▶] key.

[] key: The value at the cursor is added by 1.

[] key: The value at the cursor is reduced by 1.

[▶] key: The cursor moves to right.

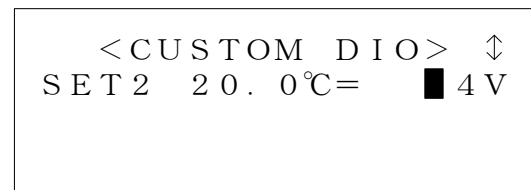


Figure 2-29 "CUSTOM DIO Screen 4" SET2 20.0 °C

【Note】

Press the [SEL] key, not the [ENT] key, to cancel the change. When the [SEL] key is pressed, the changed setting is canceled, and the display shows the "Menu Screen 1."

14. Press the [ENT] key after SET2 20.0 °C is changed to 4 V.

The cursor disappears, and the set value is established at 4 V.

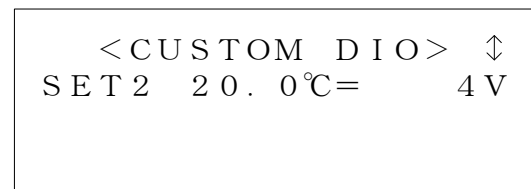


Figure 2-30 "CUSTOM DIO Screen 4" SET2 20.0 °C is established

【Note】

If the changed value is smaller than the value of SET1 0.0 °C, the value will not be established even if the [ENT] key is pressed. The changed value should be the value of SET1 0.0 °C or more. Refer to the Communication Specifications (HRX-PS-J010) for detail

15. Press the [SEL] key to show the "Menu Screen 1".

3. Appendix

Figure 3-1 shows the difference of the contact I/O analogue communication when the function to change communication specifications is used and not used. Figure 3-1 should be referred to instead of the circuit diagram shown in "Chapter 8 8.1.2 Communication specification Contact I/O" in the separate Operation Manual (HRX-OM-I051).

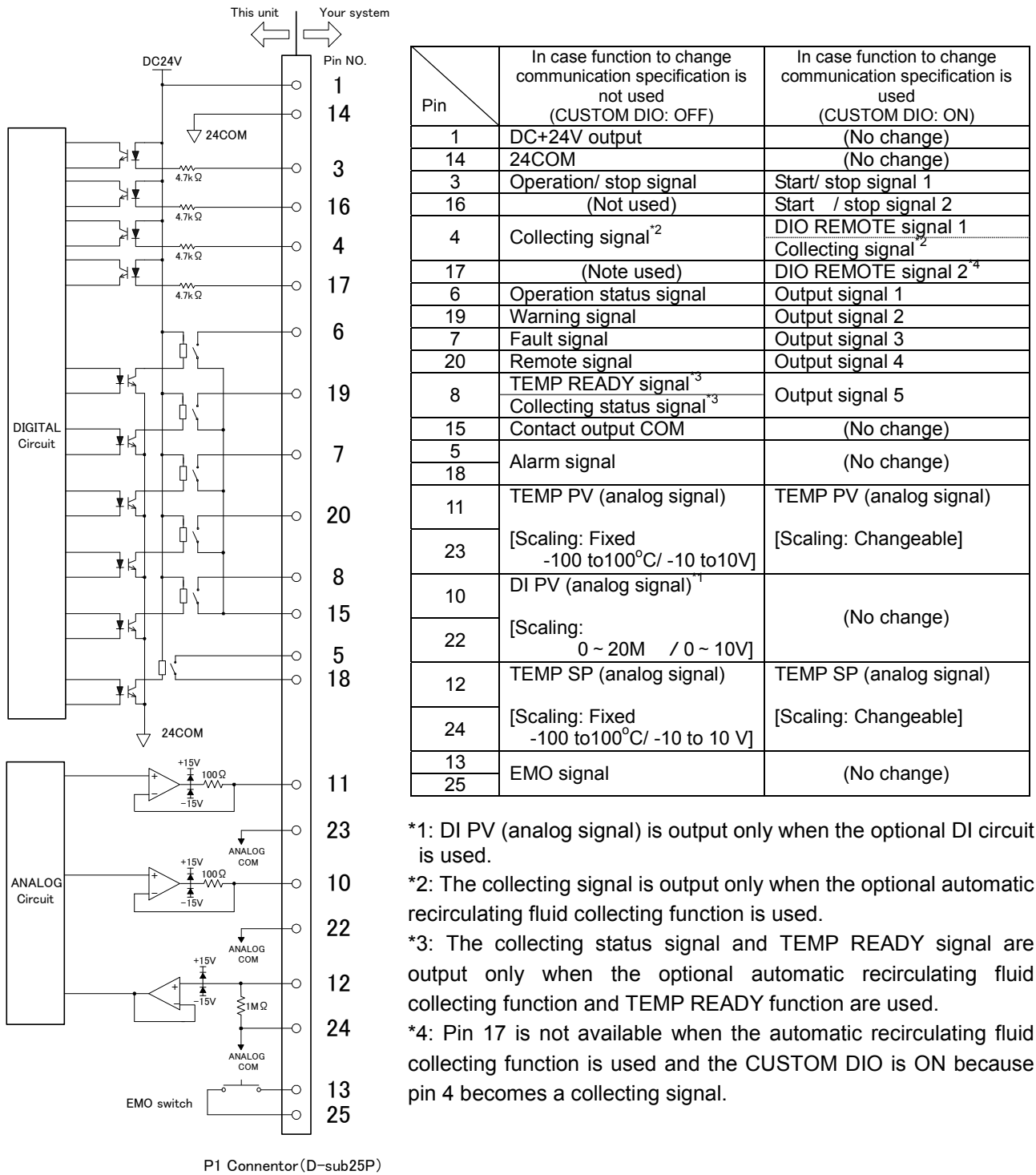


Figure 3-1 Difference due to the setting of CUSTOM DIO