

Model E5ZE

Multipoint Temperature Controller

INSTRUCTION MANUAL

Thank you for purchasing this OMRON product.

This manual primarily describes precautions required in installing and wiring the temperature controller. Before operating the product, read this manual thoroughly to acquire sufficient knowledge of the controller.

Keep this manual for future reference.

This instruction manual describes setup of E5ZE. Please refer to E5ZE User's Manual and E5ZE User's Manual(Communication) for the actual operations. If they are not available, please contact the OMRON sales office. Keep these User's Manuals to ensure the correct use of the controller as well as this instruction manual.



Covered model

Contents in the box

For Covered model

- | | |
|------------------------------------|--------------|
| (1) E5ZE Temperature Controller | 1 pc. |
| (2) Instruction Manual | 1 copy |
| (3) Identification label for cable | 1 set |
| (4) Mounting Bracket | 2 pcs. |
| (5) Mounting Bracket Fixing Screw | 4 pcs. |

For Uncovered model

- | | |
|------------------------------------|--------------|
| (1) E5ZE Temperature Controller | 1 pc. |
| (2) Instruction Manual | 1 copy |
| (3) Identification label for cable | 1 set |

Karasuma Nanajo, Shimogyo-ku
Kyoto 600, Japan

OMRON Corporation

E5ZE:0682259-7C

Precautions on Safety

● Safety indications and definitions for safe usage

This instruction manual describes precautions required in using the E5ZE safely.

Precautions described here are very serious.

Make sure that you obey them.

Precautions are described by indications and symbols shown below.

WARNING

Incorrect product handling may cause serious injury or death.

CAUTION

Incorrect product handling may cause injury or material (property) damage.

● Explanation of graphic symbols



Explosion Hazard

To signify the danger of explosion under certain circumstances.

● Safety Indications

WARNING

Never disassemble, deform, subject to heat over 100°C or dispose in fire.

The product has a built-in lithium battery.

Fire, Explosion and Burn Hazard.



CAUTION

During the hardware test, the status of the control outputs and alarm outputs are determined by the switch settings. (See page 18 or later pages for details.) Make sure that equipments connected to the E5ZE during the hardware test is safe. For example, make sure that a heater connected to a control output should not be burnt out.

Turn off the E5ZE power supply immediately when any equipments are thought to be in danger.

● CT Input Test

- Check heater current flow status for any control channel.
- The flowing heater current when the control output is ON and the leakage current when the control output is OFF are measured.
- The current value is displayed as a bar graph on the status indicators. Bar graph on the type without heater burnout detection function is not lit.
- The above tests check the CT input, Control output and Heater wiring.

【Operation Procedure】

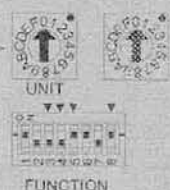
Heater current measurement

- (1) Set the UNIT switch from 0 to 7 (See table 2).
- (2) The "Memory Bank Designation Input (2¹)" status indicator when the FUNCTION switches No. 3 and 4 are turned OFF and No. 5 is turned ON.
- (3) The designated control output turns ON for 0.2 second in each 5 seconds and the flowing current is displayed on bar graph. Check the wiring if the measured value differs significantly from the rated value. (See fig. 1 for the bar graph.)

Leakage current measurement

- (1) Set the UNIT switch from 8 to F (See table 2).
- (2) The "Memory Bank Designation Input (2²)" status indicator lights when the FUNCTION switches No. 3 and 4 are turned OFF and No. 5 is turned ON.
- (3) The leakage current of the designated control channel is displayed. Check the wiring when the bar graph is lit.

Sets control channel
and measurement current
type
(See table 2)



FUNCTION
switch
setting

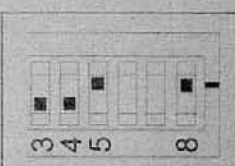
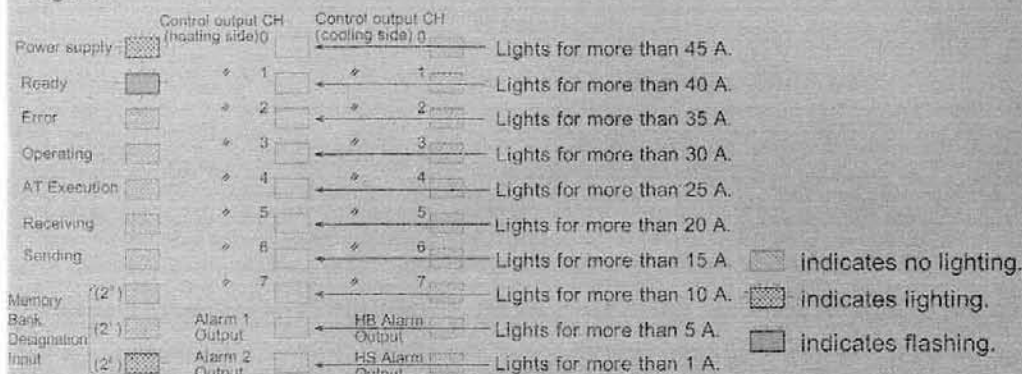


Table 2

- Turn the FUNCTION switch No. 3 OFF and change the control channel.
- Reset the UNIT switch after the test is completed.

UNIT setting switch	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Control channel	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
Measurement current type	Heater current								Leakage current							

Figure 1



Notice

- Items shown below are necessary for safe usage. Please note them carefully.

- To avoid electric shocks, do not touch the ESZE when power is supplied or a grounded thermocouple is connected.
- Do not use the product in places where explosive or flammable gases may be present.
- Never disassemble, repair or modify the product.
- Tighten the terminal screws properly.
- Use the specified size solderless terminals for wiring.
- Use the product within the rated supply voltage.
- Use the product within the rated load.

- (1) All rights reserved. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form, or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of OMRON.
- (2) Since OMRON is constantly striving to improve its high-quality products, the information in this manual is subject to change without notice.
- (3) Every precaution has been taken in the preparation of this manual. Nevertheless, OMRON assumes no responsibility for errors or omissions.
- (4) Please refer to each instruction manual for options.
- (5) All products described in this manual are OMRON products.

For Correct Use

● Handling (See page 1 or later pages for details.)

- E5ZE is a precision unit. Please handle it with care. In particular, hold the uncovered type at the edges of the PCB and take care not to touch the copper foil or any mounted components.
- To protect the E5ZE from static electricity damage, handle it in an environment where anti-static electricity countermeasures have been taken and wear a grounded wristband.

● Applicable Power Supply

- Use an insulated and stabilized DC power supply to apply voltage from 24 V DC to the E5ZE power input terminals.
- The E5ZE may not operate correctly if the power supply voltage drops below 20.4 V DC. Use a power supply and wiring able to handle a capacity of at least 2 A per Unit.
- The operation of some internal circuits is audible. This is normal and does not indicate a problem.

● Connections (See page 9 or later pages for details.)

- The polarity of the E5ZE power input terminals is important. Make sure they are connected correctly before turning the power ON.
- In this manual, some of the terminals are labelled with DON'T USE. Do not use these terminals under any circumstances. Otherwise, it damages the E5ZE.
- Avoid wiring near high voltage sources and power lines carrying large currents.
- Be sure to wire properly with correct polarity of terminals.

● Setting the Switches (See page 6 or later pages for details of functions.)

- Set the switches before turning the power ON, except during the hardware test.

● For correct use, do not subject the temperature controller to the following conditions.

- Places subjects to direct sunlight.
- Places where humidity is high and condensation may occur.
- Places where corrosive gas may be present.
- Places where severe vibration and shock may occur.
- Places where there is danger of splashing of water, oil or any chemicals.

● Cleaning

- The exterior of the temperature controller must not be exposed to paint thinner or the equivalent.
- Use standard grade alcohol to clean the product.

Table 1-1

- The following table shows the control output (heating side).
- Alarm 1, Alarm 2, HB, HS and temperature controller error in the table are the alarm outputs.
- Reset the UNIT switch when the test is completed.

UNIT switch	0	1	2	3	4	5	6	7	8	9	A	B	C	D to F
Output to be turned ON	0	1	2	3	4	5	6	7	Alarm1	Alarm2	HB	HS	Error	Not available
	Control output (channel No.)							Alarm output (names)						

Table 1-2

- The following table shows the control output (cooling side).
- This function is available for the heating/cooling output type only.
- Reset the INPUT switch to the type of temperature sensor used when the test is completed.

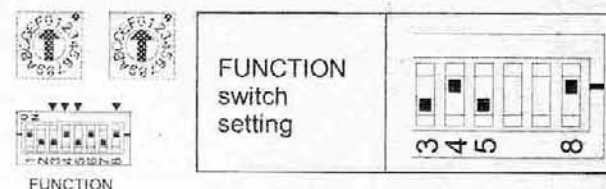
INPUT switch	0	1	2	3	4	5	6	7	8	9	A	B	C	D to F
Output to be turned ON	0	1	2	3	4	5	6	7	Not available					
	Control output (channel No.)													

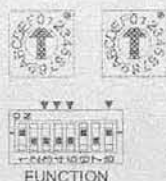
● Temperature Sensor Input Test

- Check the Temperature Sensor input status using the status display indicators.
- For a Thermocouple input type, this test can detect burnout but cannot detect short-circuit.
- For a Platinum Resistance Thermometer input type, this test can detect short-circuit (except for across BB) and burnout.

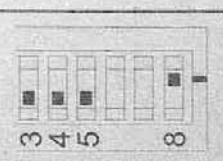
【Operation Procedure】

- (1) The "Memory Bank Designation Input (2')" status indicator lights when the FUNCTION switches No. 3 and 5 are turned OFF and No. 4 is turned ON.
- (2) An error has occurred on the control channel which the control output (heating side) status indicator is not lit.





FUNCTION
switch
setting



Communications

- (1) • On an RS-232C communications connector, short between pins No. 2 and 3.
• On an RS-422 communications terminal, short between pins No. 1 and 4, and pins No. 2 and 5.
• If these pins are not shorted together, even when the ESZE is normal, the "ERROR" status indicator lights and the temperature controller alarm output is turned ON. However, these have no effect on other tests and may be ignored. It is not necessary to short pins on the RS-485 communications terminal block.
- (2) • Make sure that "Sending" and "Receiving" status indicators are lit.
• Neither indicator lit indicates that an error has occurred in the ESZE.
• If "Receiving" indicator is not lit, an error has occurred in the ESZE or in the shorted part.
• The ESZE detects errors by communicating the character string "E5ZE Copyright 1995 OMRON Corporation"+CR.

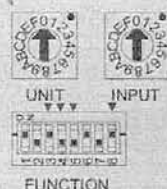
● Control Output (heating/cooling side) and Alarm Output Test

- The control output (heating side) and alarm output can be set ON as required using the UNIT switch.
- The control output (cooling side) can be set ON as required using the INPUT switch. (Heating/cooling output type only)
- Set the UNIT switch to either of D to F when the control output and alarm output (heating side) are not set ON. (Heating/cooling output type only)
- Set the INPUT switch to either of 8 to F when the control output (cooling side) is not set ON. (Heating/cooling output type only)
- Note that the controlled device is activated forcibly under this Test.

【Operation Procedure】

- (1) Turn the FUNCTION switch No. 3 OFF before setting the UNIT and INPUT switches. (See table 1-1 and 1-2)
- (2) The "Memory Bank Designation Input (2°)" status indicator lights when the FUNCTION switches No. 4 and 5 are turned OFF and No. 3 is turned ON.
- (3) Check the lighting status of the status indicators and the operation of the equipment connected to the ESZE. For the current-output type, the control output (heating side) indicator lights and 20 mA is output.

Sets the control channel or alarm output of the control output (heating side).
(See table 1-1)



Sets control channel of the control output (cooling side).
(See table 1-2)

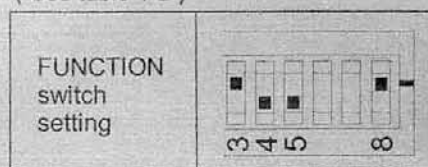
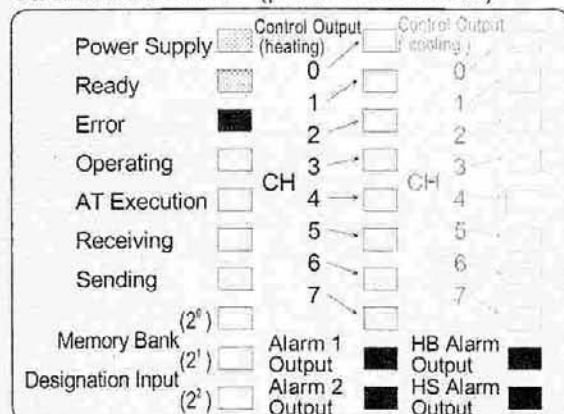


Table of Contents

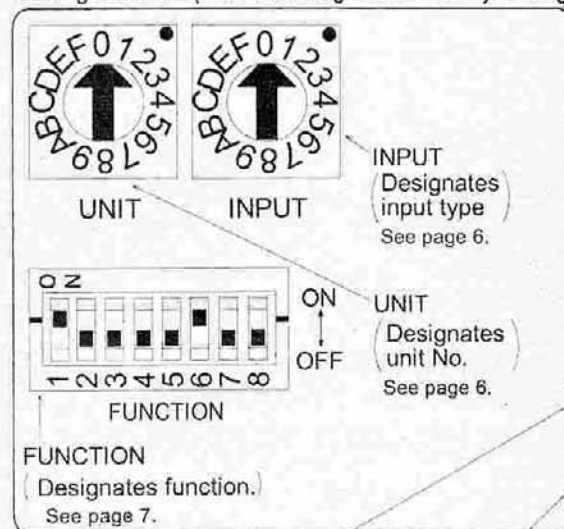
1	Description and Function of Each Part	1
2	I/O Units	2
3	Mounting the Units	3
4	Mounting the E5ZE	
4-1	Covered Model	4
4-2	Uncovered Model	5
5	Setting the Specifications	6
6	Wiring	
6-1	Temperature Sensor Input and Power Supply	9
6-2	Communication	10
6-3	Connector Terminal Block Converter Unit	11
6-4	Control Output (heating side) and Memory Bank Designation Input	12
6-5	CT Input	13
6-6	Alarm Output and Control Output (cooling side)	14
7	Ratings	17
8	Hardware Test	18

1 Description and Function of Each Part

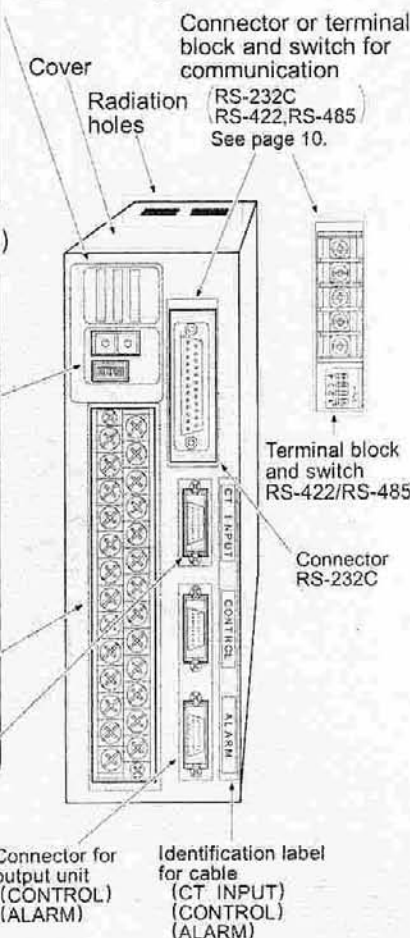
Status indicator LED (position and name)



Setting switches (The following shows factory setting.)



- For Memory Bank input, figures in parentheses show the weight.
- The HB alarm is the heater burnout alarm.
- The HS alarm is the SSR or relay output short-circuit alarm.
- In the diagram, the indicator colors are represented as for green, for orange and for red.



- The covered model is shown in the diagram. The positional relationships of the terminal block, connectors, LED indicators, and switches are the same for the uncovered model.
- CH 0 to 7 control output (cooling side) status indicators are available on the heating/cooling output type only.
- I/O units (communication, CT input, output) are sold separately.
- CT input unit cannot be used with current output unit.

8 Hardware Test

What is the Hardware Test Function ?

- The hardware test identifies the equipment connected to the E5ZE. Host communications equipment is not required.
- (1) The control output and auxiliary output are operated by switches ("UNIT" , "INPUT" , "FUNCTION").
- (2) All inputs can be checked on the LED indicator display.
 - In the hardware test mode, test types are displayed by "Memory Bank Designation Input (2⁰ to 2⁷)" status LED indicator.
 - In the hardware test mode, Memory Bank Designation Input status can be displayed only when "Communication and Memory Bank Designation Input Test" is selected.

Types of Test

Select one of the four types of test using FUNCTION switches No. 3 to 5.

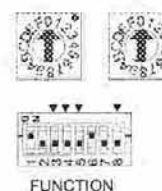
- (1) Communications and Memory Bank Designation Input Test
- (2) Control Output (heating/cooling) and Alarm Output Test
- (3) Temperature Sensor Input Test
- (4) CT Input Test

Selecting the Hardware Test Mode

【Operation Procedure】

- (1) Before turning on the power, turn ON the FUNCTION switches No. 3, 4, 5 and 8.
- (2) Turn on the E5ZE power .
- (3) Check that the operating status indicator is lit.
- (4) Turn OFF the FUNCTION switch No. 3.
- (5) Wait at least 1 second.
- (6) Turn OFF the FUNCTION switch No. 4.
- (7) Wait at least 1 second.
- (8) Turn OFF the FUNCTION switch No. 5.

The operating status indicator flashes to indicate the hardware test mode. Repeat the entire procedure if the operating status indicator does not flash.



E5ZE operating status	Operation as a temperature controller	Hardware test mode
FUNCTION switch setting before power ON		

▲ indicates the factory setting.

Communications and Memory Bank Designation Input Test

- This is the basic status of the hardware test mode.
- The test checks the Memory Bank Designation Input wiring.
- Runs the E5ZE communications circuit self-diagnosis.

【Operation Procedure】

Memory Bank Designation Input

- (1) Turn OFF the FUNCTION switches No. 3, 4 and 5.
- (2) Make sure that the "Memory Bank Designation Input (2⁰ to 2⁷)" status indicators display the Memory Bank Designation Input status.

7 The Ratings

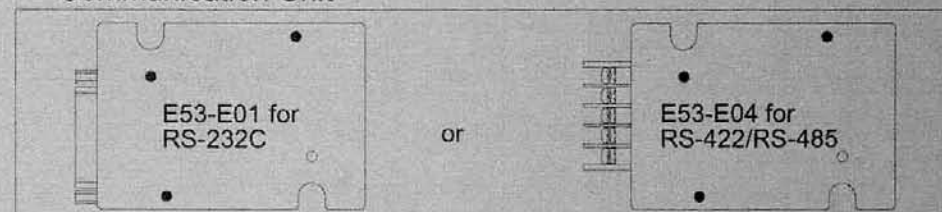
Item		Specification
Input points	Temperature sensor	: 8 points
	Memory Bank	: 3 bits
	CT	: 8 points
Output points	Control	Heating : 8 points Cooling : 8 points(Heating/cooling output type only)
	Alarm	: 5 points(3 points for the type without HB/HS alarm)
Maximum heater current		55.0 A (50/60 Hz, single-phase sinusoidal alternating current)
Heater burnout monitoring range		0.0 to 50.0 A, When set to 50.0 A : HB alarm output is turned ON forcibly. When set to 0.0 A : HB alarm output is turned OFF forcibly.
Insulation resistance		20 MΩ min. (500 V DC) Between the case and sensor input terminals. (Covered model only)
Dielectric strength		500 V AC, 50 or 60 Hz, 1 minute
Vibration resistance	Malfunction	10 to 55 Hz, 9.8 m/s ² , X, Y and Z directions, 10 minutes each
	Endurance	10 to 55 Hz, 19.6 m/s ² , X, Y and Z directions, 2 hours each
Shock resistance	Malfunction	150 m/s ² , 3 times each in all 6 directions
	Endurance	200 m/s ² , 3 times each in all 6 directions
Control outputs	Voltage output or Current output :	
	Heating	Voltage output : 12±1.2 V DC, 30 mA max. Current output : 4% to 20% mA (load resistance : 600 Ω max.)
	Exclusive for Heating / Cooling output type	
	Cooling	Open-collector output : 30 V DC, 50 mA max. ON residual voltage : 2 V DC max. OFF leakage current : 1 mA max.
Alarm outputs		Transistor output : 30 V DC, 50 mA max. ON residual voltage : 2 V DC max. OFF leakage current : 1 mA max.
Memory Bank Designation Inputs	Non-voltage contact signal input	
	ON contact resistance	: 1 kΩ max.
	OFF contact resistance	: 100 kΩ min.
	Transistor (open-collector) input	
	ON residual voltage	: 2 V DC max.
	OFF leakage current	: 1 mA max.
Power supply voltage		24 V DC (20.4 to 26.4 V DC)
Power consumption		15 W + 20 % max.
Ambient operating temperature		-10 to 55 °C (with no icing)
Ambient operating humidity		35 to 85 % (with no condensation)
Storage temperature		-25 to 65 °C (with no icing nor condensation)
Weight	Covered model	: 1.7 kg max.
	Uncovered model	: 0.9 kg max.
Memory protection		Lithium battery backup (10 years or more at room temperature)
Wait time for starting at power-ON		5 seconds max.

2 I/O Units

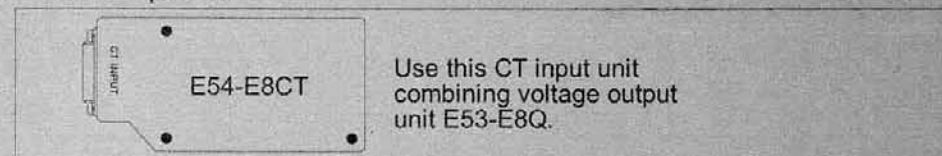
- I/O units are not mounted on the E5ZE.
- Mount the appropriate I/O units for the specification of the E5ZE.
- The below diagram is the view from the back of component side.

● Type of I/O Unit

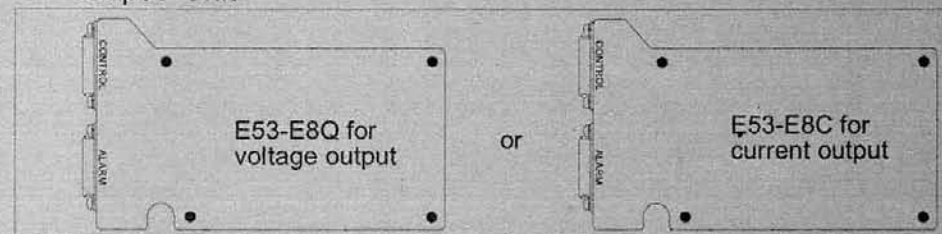
• Communication Unit



• CT Input Unit

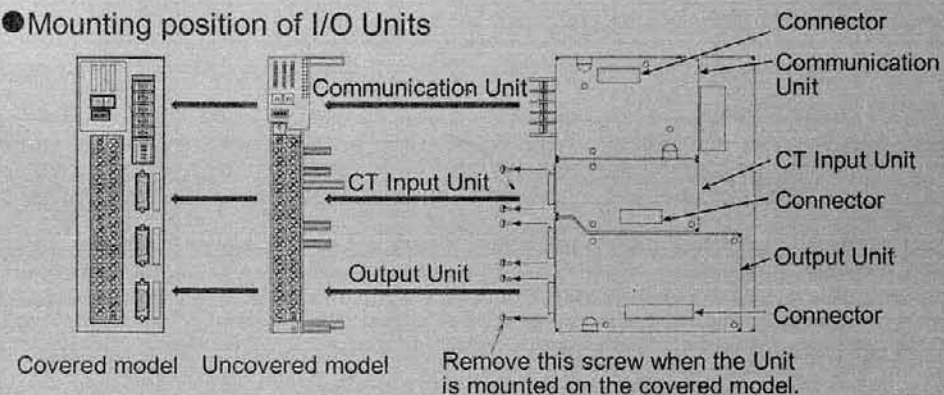


• Output Unit



Tighten the screws through the holes marked with a black dot (●) to the fixing studs of the E5ZE.

● Mounting position of I/O Units

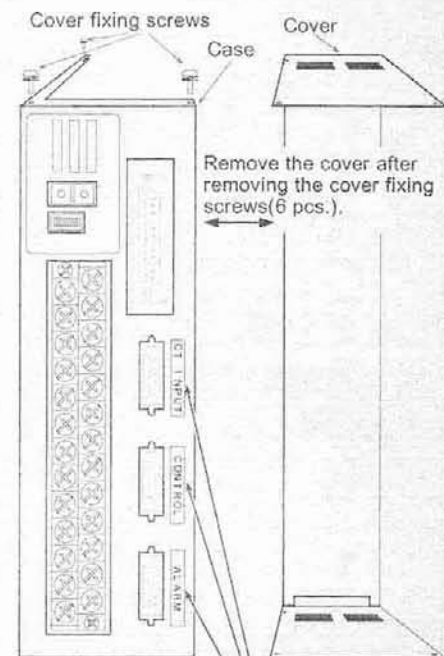


3 Mounting the Units

- Use appropriate plus screwdriver for the screws. Use of inappropriate screwdriver may damage the screws and cause insufficient tightening.
- Mount the units in an environment where anti-static electricity countermeasures have been taken.
- Store the removed screws carefully and use them again when required.

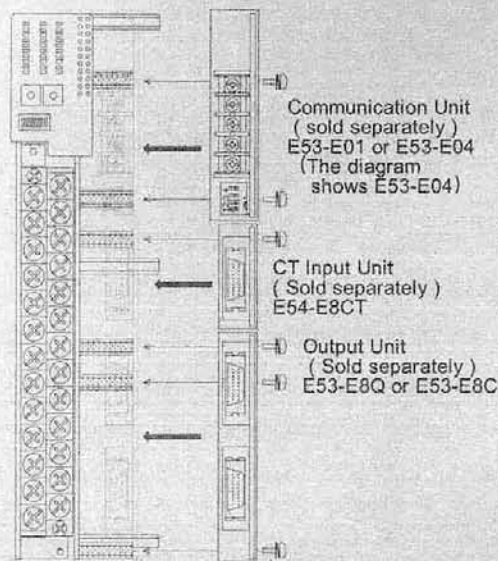
● Covered model

- (1) Remove the connector fixing screws (2 pcs. each for a connector) of the units. (except for communication unit)
- (2) Remove the cover fixing screws (6 pcs.).
- (3) Remove the cover.
- (4) Mount the units in the same manner as the uncovered model.
- (5) Fix the connector to the case using the connector fixing screws with a torque of 0.34 to 0.39 N·m.
- (6) Replace the cover in its original position using six cover fixing screws.



● Uncovered model

- (1) Remove the unit fixing screws. When CT input unit is not required, do not touch the corresponding screws. To prevent the studs from loosening, use a spanner to fix the studs.
- (2) Fix the units in designated position. Connect the units and the E5ZE connector properly.
- (3) Fix the units to the studs with fixing screws with a torque of 0.43 to 0.58 N·m.



Identification label for connector
(CT INPUT
CONTROL
ALARM)

Cover fixing screws

Fixing studs for the units
Communication Unit : 3 pcs.
CT Input Unit : 3 pcs.
Output Unit : 4 pcs.

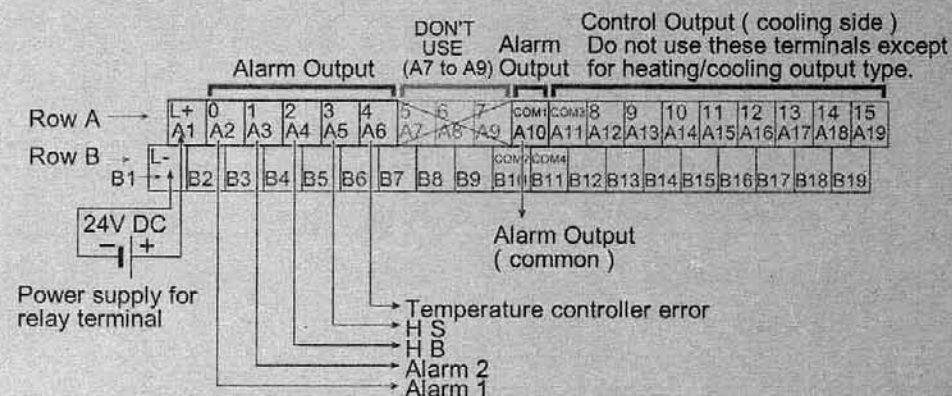
The unit fixing screws are mounted on the fixing studs at the factory.

Connection Method 13

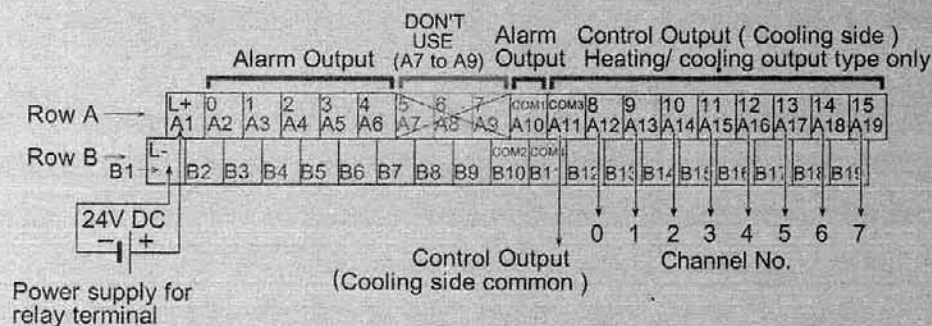
(for G7VC-OC16/G7VC-OA16/G7VC-OD16 I/O relay terminal)

- Outputs are not insulated from each other.
- Read the supplied instruction manual thoroughly before using the relay terminal.
- See the instruction manual for information in connecting Row B.
- The names of terminals in Row A apply to G7VC-OA16/G7VC-OD16. For G7VC-OC16, 0,1,2,etc., shown in the diagram, become 0/13, 1/13, 2/13 and etc.

● Alarm Output (Alarm 1/Alarm 2/HB/HS/Temperature controller error)



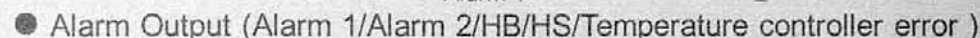
● Control Output (Cooling Side) Heating/cooling output type only



(for G7TC-OC08/G7TC-OC16 I/O relay terminal)

- Alarm Output (Alarm 1/Alarm 2/HB/HS/Temperature controller error)

- Use G7TC-OC16 for heating/cooling output type.



● Control Output (cooling side)

Power supply for driving relay

24 or 12 V DC

Alarm Output

DON'T USE

Channel No.

Control Output (cooling side)

Technical drawing of the front view of the ECU-1000 unit. The drawing shows a rectangular unit with a control panel on the left and a connector strip on the right. Dimensions are provided in millimeters.

Overall dimensions:

- Width: 173.5 mm
- Height: 230 mm

Control panel features (left side):

- Display: 2- $\phi 5$
- Buttons: 6 buttons (2 small, 4 large)
- Connectors: G.T. I/INPUT, CONTROL, ALARM

Connector strip (right side): 16 pins, 131.1 mm height.

Mounting dimensions:

- Distance between mounting holes: 40 ± 0.2 mm
- Mounting holes: 4-M3
- Thickness: $t = 1.6$ mm

Other dimensions:

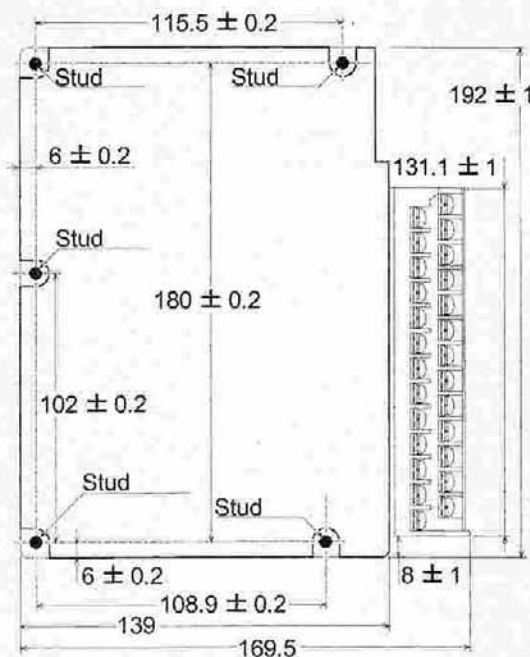
- 85.5 mm (distance from left edge to first mounting hole)
- 145 mm (distance between mounting holes)
- 11 mm (distance from bottom edge to mounting holes)
- 200 mm (main body width)
- 4.6 mm (mounting hole diameter)

4-2 Uncovered Model

Drill holes in the mounting board to match the stud positions shown in the diagram below.

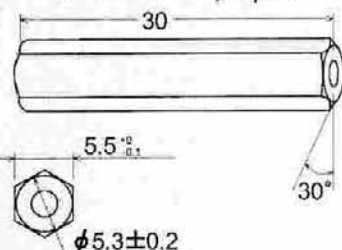
● External Dimensions and Hole Positions(from inserting direction)

- All dimensions in millimeters.
- Five studs are fastened with fixing screws to the positions marked with a black dot (●) as shown below. Do not loosen or remove anything except these studs or fixing screws.
- Tighten the mounting screws and the fixing screws to a torque of 0.43 to 0.58 N·m.
- Use only the studs and fixing screws provided.
- Keep at least a 5-mm space free around the perimeter.

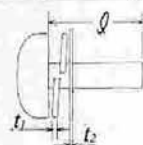


Dimension of five studs

2 X M 3 screw, depth 8



Prepare the following screws separately.



Material : Iron or stainless

Size : M 3

Use spring washers and flat washers to prevent the screws from working loose.

$$l > (t + t_1 + t_2 + 2.5)$$

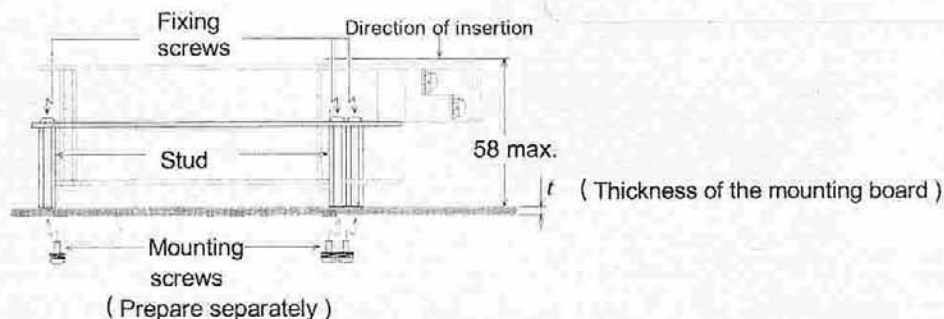
$$J < (t + t_1 + t_2 + 7.8)$$

 l = Thickness of the mounting board

t_f = Thickness of spring washer

t_2 = Thickness of flat washer

- Mounting condition



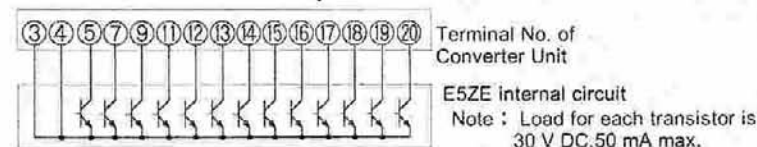
6-6 Alarm Output and Control Output (Cooling Side)

An alarm is output in the Converter Unit, Relay Terminal or I/O Relay Terminal connected to the E5ZE ALARM connector.

Connection Method 1 (for connector terminal block converter unit)

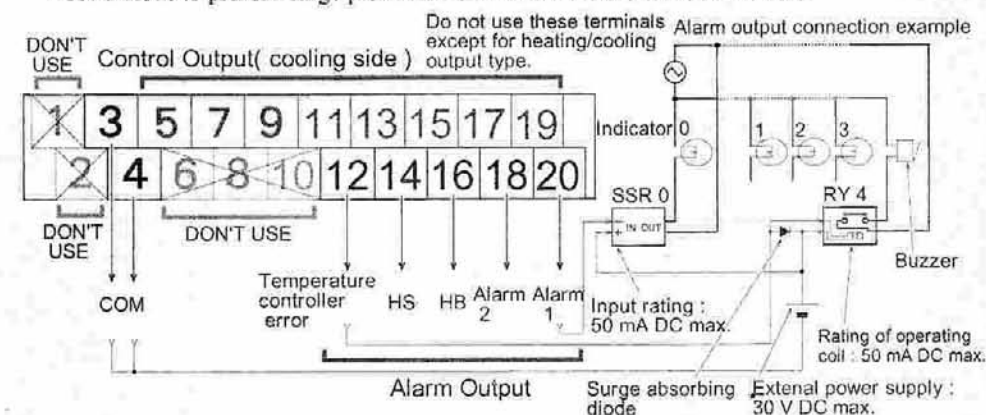
● Internal Circuit (E5ZE internal circuit viewed from terminal block)

- All open-collector output with common terminals No. 3 and 4.



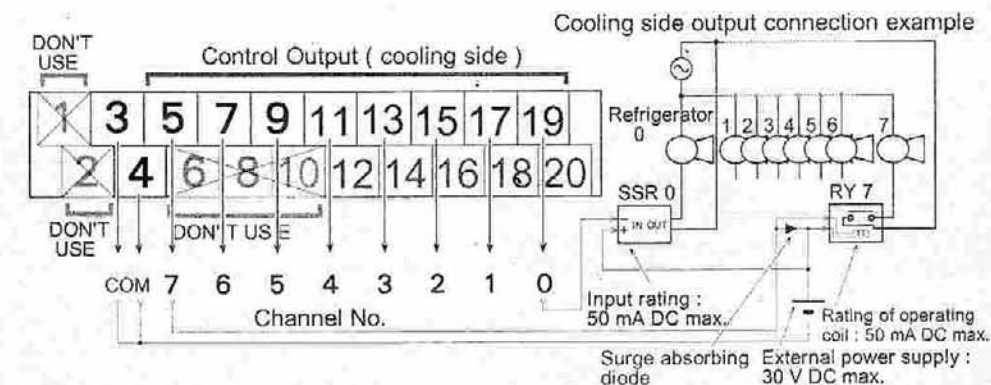
● Alarm Output (Alarm 1/Alarm 2/HB/HS/Temperature controller error)

- Output terminals are No. 20,18,16,14 and 12.
- Use a diode to provide surge protection when an inductive load is connected.



● Control Output (cooling side) Heating /cooling output type only

- Output terminals are No. 19,17,15,13,11,9,7 and 5.
- Use a diode to provide surge protection when an inductive load is connected.
- Alarm outputs and DON'T USE terminals are as shown in the diagram above.



6-5 Current Transformer (CT) Input

CT is connected to the Converter Unit which is connected to the E5ZE CT INPUT connector.

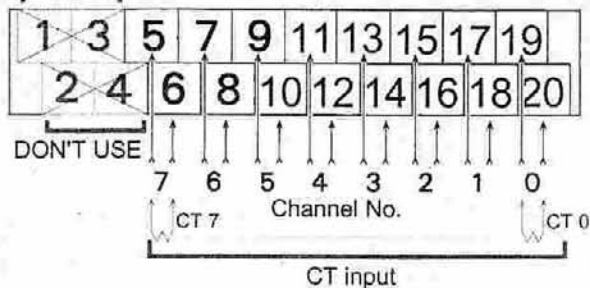
● Before Using CT

- The appropriate quantity of E54-CT1 or E54-CT3 must be obtained before using CT. A 50 or 60 Hz, 50.0 A (effective value), single-phase sinusoidal alternating current can be input.

● Terminal Block Connections and Control Channels

- Do not use terminals No. 1 to 4.
- CT has no polarity.
- Pass the wires connected to the heater through the CT hole.

DON'T USE



5 Setting the Specifications

Set the switches to match your system.

● Switch Operation

- Move the switches with a flat-blade screwdriver.
- Do not allow the screwdriver to contact any part except for the switches.
- The switch settings are enabled by the power-ON after setting. (except in hardware test mode).
- Refer to page 18 or later pages about the hardware test mode.

● Input Type Setting

Set the switch to match the used temperature sensor.



Setting	0	1	2	3	4	5	6	7	8	9	A	B	C to F
Temperature sensor type	Thermocouple K	Thermocouple J	Thermocouple R	Thermocouple S	Thermocouple T	Thermocouple E	Thermocouple B	Thermocouple N	Thermocouple L	Thermocouple U	Thermocouple W	PL- II	Not allowable
	Pt	JPt	Not allowable										

▲ indicates the factory setting.

● Unit Number Setting

Setting range of switch is from 0 to F but unit number is from 00 to 0F.
(Superior digit "0" is fixed.)

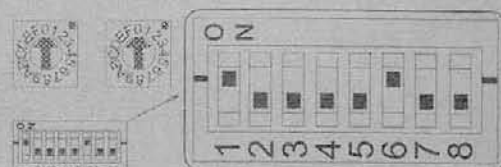


Setting	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Unit Number	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F

▲ indicates the factory setting.

● Setting the Functions

There are switches 1 to 8 for each function.

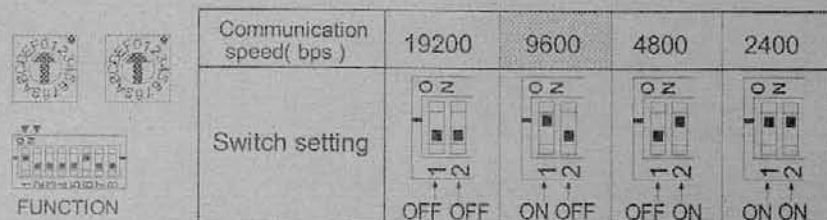


FUNCTION

- 1: Communication speed (bps)
- 2: Memory Bank Designation Method
- 3: Connection with E5ZD-SDL
- 4: Operation Status at Power-ON
- 5: Temperature Specification Unit
- 6: Unused (Be sure to set always to OFF.)
- 7: Hardware Test Mode
- 8: (Usually set to OFF and use.)

• Communication Speed (SW1 and SW2)

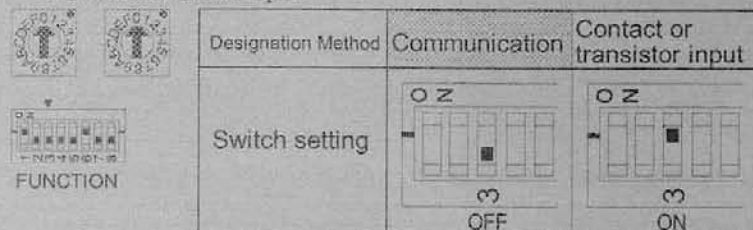
Set the switches to match the selected communication speed.



▲ indicates the factory setting.

• Memory Bank Designation Method (SW3)

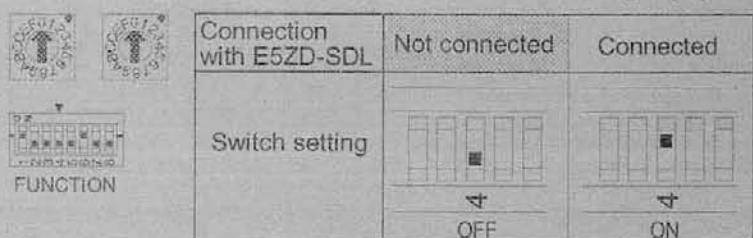
Set the SW3 to OFF for designation by communication and set it to ON for designation by contact or transistor input.



▲ indicates the factory setting.

• Connection with E5ZD-SDL (SW4)

Set SW4 to ON when the controller is connected with setting display E5ZD-SDL.



▲ indicates the factory setting.

6-4 Control Output (heating side) and Memory Bank Designation Input

Connect the load and Memory Bank Designation Input to the converter unit which is connected to the E5ZE CONTROL connector.

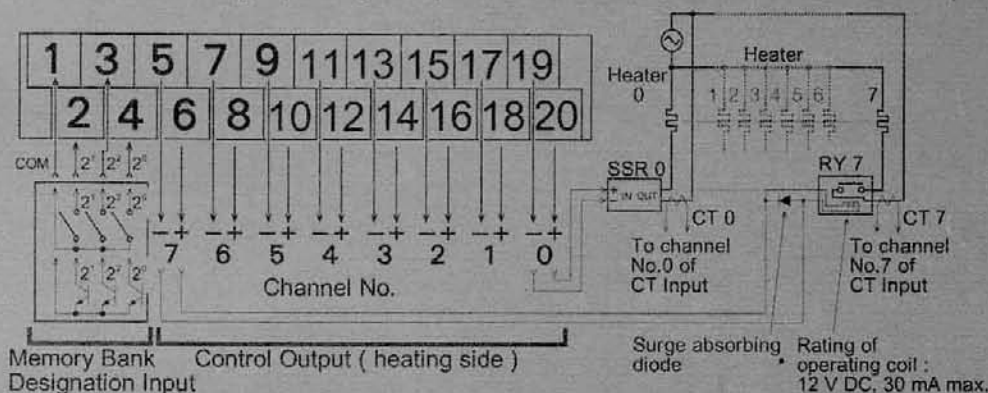
● Control Output (Heating Side)

- Two versions are available: voltage output and current output.
- Note the polarity of terminals (the polarity of even-numbered terminals is positive.).
- Use diodes to provide surge protection when an inductive load is connected.

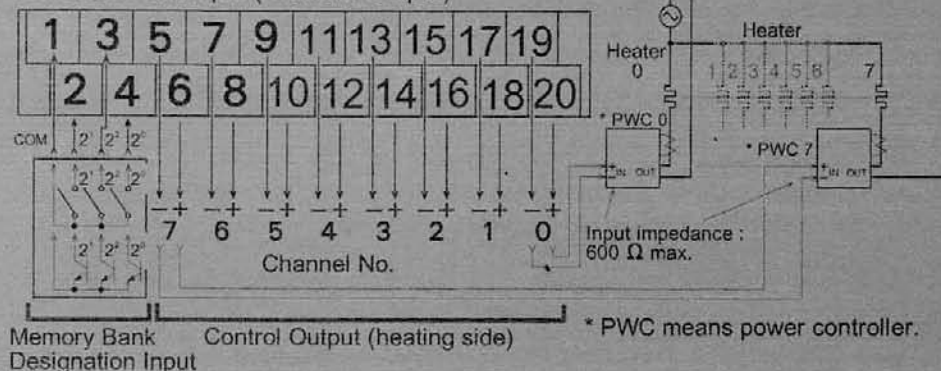
● Memory Bank Designation Input

- The memory bank is designated by the contacts or transistors connected between terminals No.2 (Memory Bank 2¹), No.3 (Memory Bank 2²), No.4 (Memory Bank 2³) and No.1 (Memory Bank COM).
- Contacts used should have 1 kΩ max. ON resistance and 100 kΩ min. OFF resistance.
- Transistors used should be NPN open-collector type with 2 V max. ON residual voltage and 1 mA max. OFF leakage current.

Connection Example (Voltage Output / with Heater Burnout Detection Function)



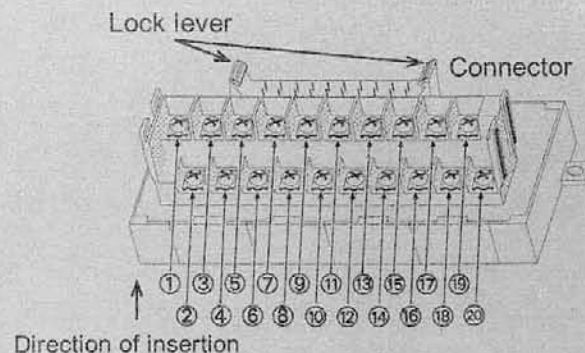
Connection Example (Current Output)



* PWC means power controller.

6-3 Connector Terminal Converter Unit

● Construction



Using Terminal Block with Unit

(1) Selection

- Use either XW2B-20G5(M3.5 terminal screws) or XW2B-20G4 (M2.4 terminal screws).
- "ALARM" can be used with the G7TC-OC16/G7TC-OC08 I/O Block and G7VC-OC16/G7VC-OA16/ G7VC-OD16 I/O Block as well as the Converter Unit. Refer to page 15 or later pages for details.
- Connecting non-approved equipment may damage the E5ZE.

(2) Handling

- Read the catalogue or instruction manual thoroughly before handling the connector terminal converter unit.
- Follow the cautions and information on handling described in the catalogue.

(3) Connection to the Unit

- Use the exclusive E5ZE-CBL□□□ connector cable.
- Push the connector in fully until the lock engages.
- Different shaped connectors are fitted at each end of the connector cable.

(4) Procedure of Unused Terminals

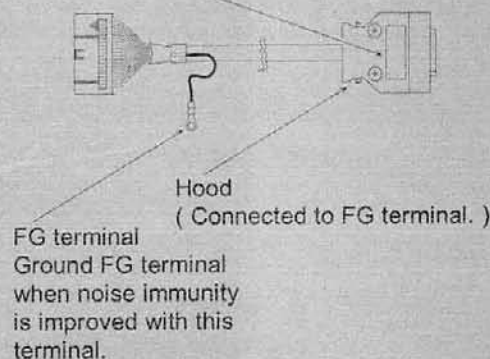
- Never connect anything except for terminal labelled DON'T USE in this manual.

(5) For Correct Connection

- The same connector cable is used for the CT INPUT, CONTROL and ALARM connector.
- To prevent problems due to incorrect connection, stick the identification label as shown below.

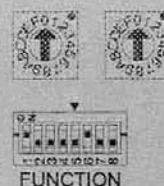
E5ZE-CBL□□□

Stick identification label here.



• Operation Status at Power-ON (SW5)

If startup should be made at operation stop status when power is turned ON, set SW5 to OFF. If startup should be made at status prior power-off, set SW5 to ON.

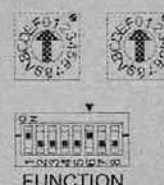


E5ZE operation status	Operation stop	Status prior power-off
Switch setting		
	OFF	ON

▲ indicates the factory setting.

• Temperature Specification Unit (SW6)

Set SW6 to OFF for °C and ON for °F.

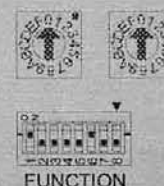


E5ZE temperature specification unit	°C	°F
Switch setting		
	OFF	ON

▲ indicates the factory setting.

• Hardware Test Mode Selection (SW8)

Set SW8 to OFF for normal operation (temperature control).
Set SW8 to ON when wiring is checked without using host system (hardware test mode).



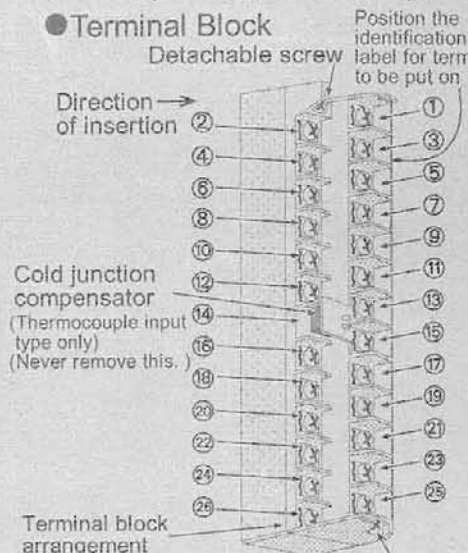
E5ZE operation status	Operation as temperature controller	Hardware test mode
Switch setting		
	OFF	ON

▲ indicates the factory setting.

6 Wiring

6-1 Temperature Sensor Input and Power Supply

Terminal Block



Handling

- The terminal block is attached and removed using the two mounting screws. Fasten the wiring near the terminal block to prevent the wires applying a force to the terminal block.
- Tighten the terminal screws to a torque of 0.82 N·m. A torque of 0.98 N·m or more may damage the terminal block.
- After all wires are connected, replace the terminal cover in its original position.
- In this manual, some of the terminals are labelled with DON'T USE. Do not use these terminals under any circumstances. Otherwise, it damages the ESZE.

Procedure for Unused Channel

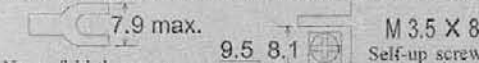
- Follow the procedures below to ensure stable operation of the ESZE.
- Short the positive and negative terminals of the thermocouple input. The input becomes the temperature of the terminal block.
- For the platinum resistance thermometer input, short across the two BB terminals and connect a approx. 100 to 220 Ω resistor across the AB terminals. The input depends on the value of the connected resistor.

Power Supply

- The DC+ and DC- terminals are the power input terminals.
- Connect a 24 V DC power supply.

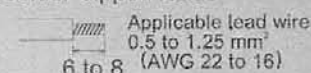
Finishing Procedure and Size

Solderless terminal and dimension of screw



Never fold the screw after tightening

Solder-dipped leads

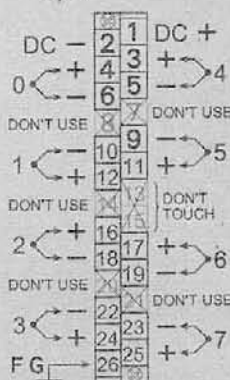


Note that arrangement of polarity varies according to each channel.

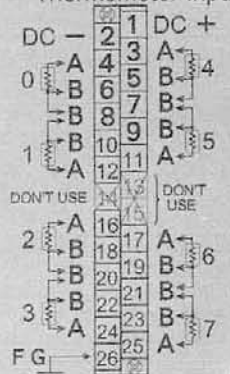
Wiring the Terminal Block

- The temperature sensor symbol marked in the diagram represents the channel numbers.

Thermocouple Input



Platinum Resistance Thermometer Input



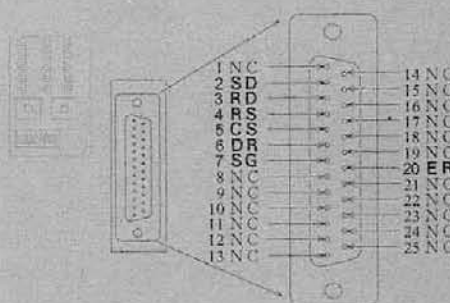
- Connect the appropriate compensating conductor for the temperature sensor, taking care that the polarity is correct.
- The terminal blocks are not interchangeable. Replace the removed terminal block making sure that Lot No. and Ser No. of the ESZE match those marked on the label for terminal.
- Do not touch the cold junction compensator.

- Make sure that each of three leads from temperature sensor have the same resistance.

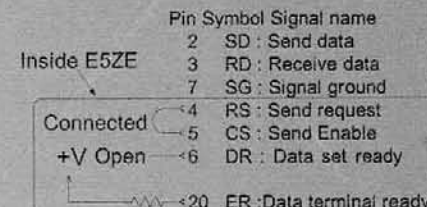
6-2 Communication

RS-232C

Connector Pin Arrangement



- The XM3B-2522-111, D-sub connector or the equivalent should be used for communication connector.
- The XM2A-2501, D-sub connector and exclusive hood XM2S-2511 or the equivalent should be used for communication cable.



Pin Symbol Signal name
2 SD : Send data
3 RD : Receive data
7 SG : Signal ground

Connected +V Open -6 DR : Data set ready
+20 ER : Data terminal ready

Others : NC is not allowed to use.

RS-422 and RS-485

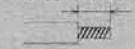


	RS-422	Remarks	RS-485	Remarks
①	RDB	Receive data B	—	DON'T USE
②	RDA	Receive data A	—	DON'T USE
③	SG	Signal ground	SG	Signal ground
④	SDB	Send data B	B(+)	Data B
⑤	SDA	Send data A	A(-)	Data A
Termination resistance	Yes	SW4 ON SW3 ON	SW4 OFF SW3 ON	
	No	SW4 OFF SW3 OFF	SW4 OFF SW3 OFF	
Setting the specifications		SW2 OFF SW1 OFF	SW2 ON SW1 ON	

- Each switch for specification setting and terminal resistance is set to OFF at the factory.
- Tighten the terminal screws using a torque of 0.43 to 0.58 N·m. Take care not to tighten the terminal screws too tightly.
- Enable termination resistance only for the devices connected on the both end of the communication cable. (Regardless of the ESZE and the host device.)

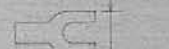
Solder-dipped leads Solderless terminals Dimension of terminal screw

6 to 7 mm



Applicable lead wire
AWG 14 to 20

(M 3)
6.25 mm max.



Never fold solderless terminals after tightening.

10.4 mm



6.25 mm
M 3 X 7.2
Use square washers.