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New Product

OMRON

Digital Temperature Controllers
E5□Z

1/16, 1/8, and 1/4 DIN Temperature Controllers Join the Best-selling E5□Z Series

- Models available with either temperature inputs or analog inputs.
- A wide range of functions, such as a loop break alarm (LBA), manual output, and transfer output.
- Easy-to-read 11-segment display.
- Faster sampling at 250 ms.
- Setting Tool port provided as a standard feature for easy connection to personal computers.
- New protocol called Modbus is installed in the models with communications.

E5□Z Series

Digital Position-proportional Controller

E5CZ	E5EZ	E5AZ	E5EZ-PRR
			
1/16 DIN	1/8 DIN	1/4 DIN	1/8 DIN
NEW	*NEW*	*NEW*	

Contents

Digital Temperature Controllers

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Common to Updated E5□Z Controllers

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- Precautions 33

E5EZ-PRR

- Operation 43
- Precautions 59

E5CZ/E5CZ-U (48 × 48 mm)

This Best-selling General-purpose 48×48-mm Temperature Controller Is Now Even Better.

- Controllers now available with analog inputs.
- Faster sampling at 250 ms.
- Transfer output provided for easy output to recorders.
- Models available with a loop break alarm (LBA) and heater short alarm (HS alarm).
- Easy setting with 11-segment displays.
- Setting protection indicator informs operator when protection is enabled.
- Manual output provided.
- New protocol called Modbus is installed in the models with communications.
- USB-Serial conversion cable is available.

Note: Refer to Precautions on page 33.

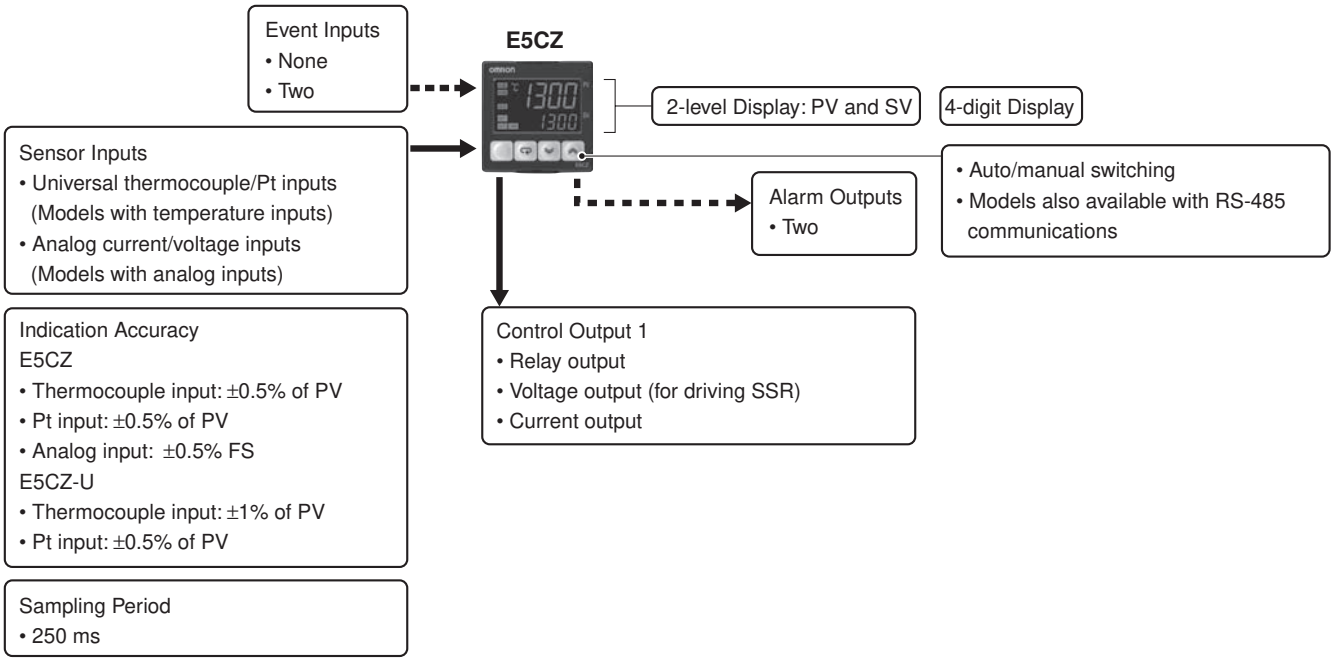
48 × 48 mm
E5CZ

48 × 48 mm
E5CZ-U

NEW

Note: Refer to page 30 for information on changes in comparison to previous models.

Main I/O Functions



This data sheet is provided as a guideline for selecting products. Be sure to refer to the following user manuals for application precautions and other information required for operation before attempting to use the product.

E5CZ/E5CZ-U/E5AZ/E5EZ Digital Temperature Controllers User's Manual (Cat. No. H207)

E5CZ/E5CZ-U/E5AZ/E5EZ Digital Temperature Controllers Communications Manual (Cat. No. H208)

Model Number Structure

Model Number Legend

Controllers

E5CZ-□2M□□
1 2 3 4 5

1. Control Output 1
R: Relay output
Q: Voltage output (for driving SSR)
C: Current output
2. Number of Alarms
2: Two alarms
3. Option
Blank: None
M: Option Unit can be mounted.
4. Input Type
T: Thermocouple, infrared sensor/platinum resistance thermometer
L: Analog current/voltage input
5. Power Supply Voltage
Blank: 100 to 240 VAC
D: 24 VAC/VDC

Option Units

E53-CZ□□
1 2 3

1. Applicable Controller
CZ: E5CZ
2. Function 1
Blank: None
H: Heater burnout/Heater short detection (CT1)
3. Function 2
B: Two event inputs
03: RS-485 communications

Note: Not all combinations of function 1 and function 2 specifications are possible for Option Units (E53-CZ□□).

Ordering Information

Controllers with Terminal Blocks

Size	Power supply voltage	Input type	Alarm output	Mounting option units	Control output	Previous model	New model
1/16 DIN 48 × 48 × 78 (W × H × D)	100 to 240 VAC	Thermocouple or Resistance thermometer	2	No	Relay output	E5CZ-R2	**E5CZ-R2T**
					Voltage output (for driving SSR)	E5CZ-Q2	**E5CZ-Q2T**
				Yes	Relay output	E5CZ-R2M	**E5CZ-R2MT**
					Voltage output (for driving SSR)	E5CZ-Q2M	**E5CZ-Q2MT**
					Current output	E5CZ-C2M	**E5CZ-C2MT**
		Analog (current/voltage)	2	Yes	Relay output	None	**E5CZ-R2ML**
					Voltage output (for driving SSR)	None	**E5CZ-Q2ML**
					Current output	None	**E5CZ-C2ML**
	24 VAC/VDC	Thermocouple or Resistance thermometer	2	Yes	Relay output	E5CZ-R2MD	**E5CZ-R2MTD**
					Voltage output (for driving SSR)	E5CZ-Q2MD	**E5CZ-Q2MTD**
					Current output	E5CZ-C2MD	**E5CZ-C2MTD**
		Analog (current/voltage)	2	Yes	Relay output	None	**E5CZ-R2MLD**
					Voltage output (for driving SSR)	None	**E5CZ-Q2MLD**
					Current output	None	**E5CZ-C2MLD**

Option Units

One of the following Option Units can be mounted to provide the E5CZ with additional functions.

Functions			Previous model	New model
Communications RS-485			E53-CN03N	**E53-CZ03**
Communications RS-485	Heater burnout		E53-CNH03N	**E53-CZH03**
		Event inputs	E53-CNBN	**E53-CZB**
	Heater burnout	Event inputs	E53-CNHBN	**E53-CZHB**

Note: Option Units cannot be used for plug-in models.
These Option Units are applicable only to models released after October 2008.

Model Number Structure

Model Number Legend (Plug-in-type Controllers)

E5CZ-□2T□U
1 2 3 4 5

1. Output Type
R: Relay
Q: Voltage output (for driving SSR)
2. Number of Alarms
2: Two alarms
3. Input Type
T: Thermocouple, infrared sensor/platinum resistance thermometer
4. Power Supply Voltage
Blank: 100 to 240 VAC
D: 24 VAC/VDC
5. Plug-in type
U: Plug-in type

Ordering Information (Plug-in-type Controllers)

Plug-in-Type Controllers

Size	Power supply voltage	Input type	Alarm output	Control output	Previous model	New model
1/16 DIN	100 to 240 VAC	Thermocouple or Resistance thermometer	2	Relay output	None	**E5CZ-R2TU**
				Voltage output (for driving SSR)	None	**E5CZ-Q2TU**
	24 VAC/VDC	Thermocouple or Resistance thermometer	2	Relay output	None	**E5CZ-R2TDU**
				Voltage output (for driving SSR)	None	**E5CZ-Q2TDU**

Accessories (Order Separately)

USB-Serial Conversion Cable

Model
E58-CIFQ1

Terminal Cover

Connectable models	Terminal block models
Model	**E53-COV17**

Waterproof Packing

Model
Y92S-29

Note: The Waterproof Packing is included with the Controller only for models with terminal blocks.

Current Transformers (CTs)

Hole diameter	Model
5.8 dia.	**E54-CT1**
12.0 dia.	**E54-CT3**

Adapter

Connectable models	Model
Terminal block models	**Y92F-45**

Note: Use this Adapter when the panel has been previously prepared for the E5B□.

Sockets (for Plug-in Models)

Type	Model
Front-connecting Socket	**P2CF-11**
Front-connecting Socket with Finger Protection	**P2CF-11-E**
Back-connecting Socket	**P3GA-11**
Terminal Cover for Back-connecting socket with Finger Protection	**Y92A-48G**

Specifications

Ratings

Power supply voltage		100 to 240 VAC, 50/60 Hz		24 VAC, 50/60 Hz or 24 VDC
Operating voltage range		85% to 110% of rated supply voltage		
Power consumption	E5CZ	7.5 VA		5.5 VA (24 VAC)/3.5 W (24 VDC)
	E5CZ-U	6 VA		4.5 VA (24 VAC)/2.5 W (24 VDC)
Sensor input		Models with temperature inputs Thermocouple: K, J, T, E, L, U, N, R, S, or B Platinum resistance thermometer: Pt100 or JPt100 Infrared temperature sensor: 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C Voltage input: 0 to 50 mV		
		Models with analog inputs Current input: 4 to 20 mA or 0 to 20 mA Voltage input: 1 to 5 V, 0 to 5 V, or 0 to 10 V		
Input impedance		Current input: 150 Ω, Voltage input: 1 MΩ (Use a 1:1 connection when connecting the ES2-HB.)		
Control output	Relay output	E5CZ	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA	
		E5CZ-U	SPDT, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA	
	Voltage output (for driving SSR)	E5CZ E5CZ-U	Output voltage: 12 VDC ±15% (PNP), max. load current: 21 mA, with short-circuit protection circuit	
	Current output	E5CZ	4 to 20 mA DC/0 to 20 mA DC, load: 600 Ω max., resolution: approx. 2,700	
Alarm output		SPST-NO, 250 VAC, 1 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA		
Event input	Contact input	ON: 1 kΩ max., OFF: 100 kΩ min.		
	Non-contact input	ON: Residual voltage: 1.5 V max., OFF: Leakage current: 0.1 mA max.		
		Outflow current: Approx. 7 mA per point		
Control method		ON/OFF control or 2-PID control (with auto-tuning)		
Setting method		Digital setting using front panel keys		
Indication method		11-segment digital display and individual indicators (7-segments displays also possible) Character height: PV: 11 mm, SV: 6.5 mm		
Other functions		Manual output, heating/cooling control, transfer output (on some models), loop break alarm, multi SP, MV limiter, input digital filter, self-tuning, temperature input shift, run/stop, protection functions, etc.		
Ambient operating temperature		−10 to 55°C (with no icing or condensation)		
Ambient operating humidity		25% to 85%		
Storage temperature		−25 to 65°C (with no icing or condensation)		

Input Ranges

Thermocouples/Platinum Resistance Thermometers (Universal Inputs)

Input Type	Platinum resistance thermometer					Thermocouple												Infrared temperature sensor				Analog input
Name	Pt100			JPt100		K		J		T		E	L	U		N	R	S	B	10 to 70°C	60 to 120°C	115 to 165°C	140 to 260°C	0 to 50 mV
Temperature range (°C)	850 / −200	500.0 / −199.9	100.0 / 0.0	500.0 / −199.9	100.0 / 0.0	1300 / −200	500.0 / −20.0	850 / −100	400.0 / −20.0	400 / −200	400.0 / −199.9	600 / 0	850 / −100	400 / −200	400.0 / −199.9	1300 / −200	1700 / 0	1700 / 0	1800 / 100	90 / 0	120 / 0	165 / 0	260 / 0	Usable in the following ranges by scaling: −1999 to 9999 or −199.9 to 999.9
Setting number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

The applicable standards for the input types are as follows:

K, J, T, E, N, R, S, B: IEC584-1

L: Fe-CuNi, DIN 43710-1985

U: Cu-CuNi, DIN 43710-1985

Pt100: IEC 751

JPt100: JIS C 1604-1989, JIS C 1606-1989

Shaded settings are the default settings.

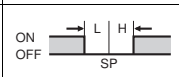
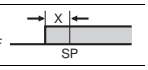
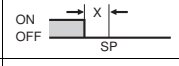
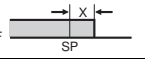
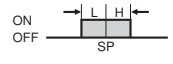
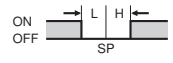
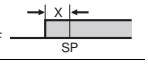
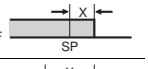
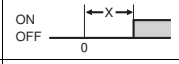
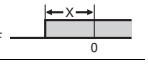
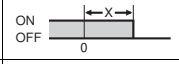
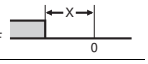
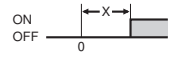
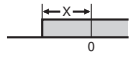
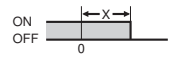
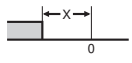
Models with Analog Inputs

Input Type	Current		Voltage		
Input specification	4 to 20mA	0 to 20 mA	1 to 5 V	0 to 5 V	0 to 10 V
Setting range	Usable in the following ranges by scaling: −1999 to 9999, −199.9 to 999.9, −19.99 to 99.99 or −1.999 to 9.999				
Setting number	0	1	2	3	4

Shaded settings are the default settings.

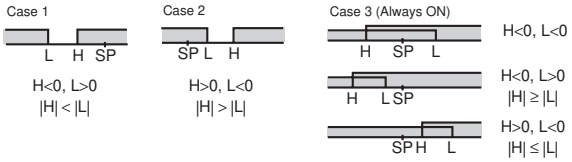
Alarm Types

Select alarm types out of the 12 alarm types listed in the following table.

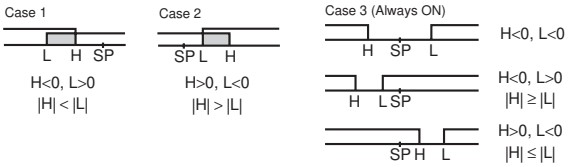
Set value	Alarm type	Alarm output operation	
		When X is positive	When X is negative
0	Alarm function OFF	Output OFF	
1 (See note 1.)	Upper- and lower-limit		(See note 2.)
2	Upper limit		
3	Lower limit		
4 (See note 1.)	Upper- and lower-limit range		(See note 3.)
5 (See note 1.)	Upper- and lower-limit with standby sequence	 (See note 5.)	(See note 4.)
6	Upper-limit with standby sequence		
7	Lower-limit with standby sequence		
8	Absolute-value upper-limit		
9	Absolute-value lower-limit		
10	Absolute-value upper-limit with standby sequence		
11	Absolute-value lower-limit with standby sequence		
12 (See note 6.)	LBA (for alarm 1 type only)	---	

Note: 1. With set values 1, 4 and 5, the upper and lower limit values can be set independently for each alarm type, and are expressed as “L” and “H.”

2. Set value: 1, Upper- and lower-limit alarm



3. Set value: 4, Upper- and lower-limit range



4. Set value: 5, Upper- and lower-limit with standby sequence
For Upper- and Lower-Limit Alarm Described Above
- Case 1 and 2
  Always OFF when the upper-limit and lower-limit hysteresis overlaps.
- Case 3: Always OFF

5. Set value: 5, Upper- and lower-limit with standby sequence
Always OFF when the upper-limit and lower-limit hysteresis overlaps.

6. Set value: 12, LBA (loop break alarm) can be set only for alarm 1 type.

Set the alarm types for alarms 1 to 3 independently in the initial setting level. The default setting is 2 (upper limit).

Characteristics

Indication accuracy		Thermocouple: (See note 1.) E5CZ: (±0.5% of indicated value or ±1°C, whichever is greater) ±1 digit max. E5CZ-U: (±1% of indicated value or ±2°C, whichever is greater) ±1 digit max. Platinum resistance thermometer: (±0.5% of indicated value or ±1°C, whichever is greater) ±1 digit max. Analog input: ±0.5% FS ±1 digit max. CT input: ±5% FS ±1 digit max.
Influence of temperature (See note 2.)		R, S, and B thermocouple inputs: (±1% of PV or ±10°C, whichever is greater) ±1 digit max. Other thermocouple inputs: (±1% of PV or ±4°C, whichever is greater) ±1 digit max. *±10°C for −100°C or less for K sensors Platinum resistance thermometer inputs: (±1% of PV or ±2°C, whichever is greater) ±1 digit max. Analog inputs: (±1% of FS) ±1 digit max.
Influence of voltage (See note 2.)		
Hysteresis		Models with thermocouple/platinum resistance thermometer input (universal input): 0.1 to 999.9 EU (in units of 0.1 EU) Models with analog input: 0.01 to 99.99% FS (in units of 0.01% FS)
Proportional band (P)		Models with thermocouple/platinum resistance thermometer input (universal input): 0.1 to 999.9 EU (in units of 0.1 EU) Models with analog input: 0.1 to 999.9% FS (in units of 0.1% FS)
Integral time (I)		0 to 3999 s (in units of 1 s)
Derivative time (D)		0 to 3999 s (in units of 1 s)
Control period		0.5, 1 to 99 s (in units of 1 s)
Manual reset value		0.0 to 100.0% (in units of 0.1%)
Alarm setting range		−1999 to 9999 (decimal point position depends on input type)
Sampling period		250 ms
Affect of signal source resistance		Thermocouple: 0.1°C/Ω max. (100 Ω max.) (See note 3.) Platinum resistance thermometer: 0.4°C/Ω max. (10 Ω max.)
Insulation resistance		20 MΩ min. (at 500 VDC)
Dielectric strength		2,000 VAC, 50 or 60 Hz for 1 min (between terminals with different charge)
Vibration resistance	**Malfunction**	10 to 55 Hz, 20 m/s^2 for 10 min each in X, Y, and Z directions
	Destruction	10 to 55 Hz, 0.75-mm single amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	**Malfunction**	100 m/s^2 min., 3 times each in X, Y, and Z directions
	Destruction	300 m/s^2 min., 3 times each in X, Y, and Z directions
Weight	**E5CZ**	Controller: Approx. 150 g, Mounting Bracket: Approx. 10 g
	E5CZ-U	Controller: Approx. 110 g, Mounting Bracket: Approx. 10 g
Degree of protection	**E5CZ**	Front panel: IP66 (indoor use) Rear case: IP20, Terminals: IP00
	E5CZ-U	Front panel: Equivalent to IP50, Rear case: IP20, Terminals: IP00 (See note 4.)
Memory protection		Non-volatile memory (number of writes: 1,000,000 times)
EMC		Emission Enclosure: EN55011 Group1 Class A Emission AC Mains: EN55011 Group1 Class A Immunity ESD: EN61000-4-2 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: EN61000-4-3 10 V/m (80-1000 MHz, 1.4-2.0 GHz amplitude modulated) (level 3) 10 V/m (900 MHz pulse modulated) Immunity Conducted Disturbance: EN61000-4-6 3 V (0.15 to 80 MHz) (level 2) Immunity Burst: EN61000-4-4 2 kV Power-line (level 3) 1 kV I/O signal-line (level 3) Immunity Surge: EN61000-4-5 1kV line to line Power line, output line (relay output) 2 kV line to ground Power line, output line (relay output) 1 kV line to ground Input line (communication) Immunity Voltage Dip/Interrupting: EN61000-4-11 0.5 cycle, 100% (rated voltage)
Approved standards		UL 61010C-1 CSA C22.2 No.1010.1
Conformed standards		EN61326, EN61010-1, IEC61010-1 VDE0106 Part 100 (Finger protection), when the terminal cover is mounted.

Note: 1. The indication accuracy of K thermocouples in the −200 to 1300°C range, T and N thermocouples at a temperature of −100°C max., and U and L thermocouples at any temperature is ±2°C ±1 digit maximum. The indication accuracy of the B thermocouple at a temperature of 400°C max. is not specified. The indication accuracy of the R and S thermocouples at a temperature of 200°C max. is ±3°C ±1 digit max.

2. "EU" stands for Engineering Unit and is used as the unit after scaling. For a temperature sensor, the EU is °C or °F.

3. B, R, and S sensors: 0.2°C/Ω max. (100 Ω max.)

4. There is no waterproof function for the E5CZ-U.

USB-Serial Conversion Cable

Applicable OS	Windows 2000/XP/Vista
Applicable software	Thermo Mini
Applicable models	E5CZ/E5CZ-U/E5AZ/E5EZ
USB interface standard	Conforms to USB Specification 1.1.
DTE speed	38400 bps
Connector specifications	Computer: USB (type A plug) Temperature Controller: Setup Tool port (on bottom of Controller)
Power supply	Bus power (Supplied from USB host controller.)
Power supply voltage	5 VDC
Current consumption	70 mA
Ambient operating temperature	0 to 55°C (with no condensation or icing)
Ambient operating humidity	10% to 80%
Storage temperature	−20 to 60°C (with no condensation or icing)
Storage humidity	10% to 80%
Altitude	2,000 m max.
Weight	Approx. 100 g

Note: A driver must be installed in the personal computer. Refer to installation information in the operation manual for the Conversion Cable.

Communications Specifications

Transmission line connection method	RS-485 multipoint
Communications	RS-485 (two-wire, half duplex)
Synchronization method	Start-stop synchronization
Baud rate	1200, 2400, 4800, 9600, 19200, or 38400 bps
Transmission code	ASCII
Data length	7 or 8 bits
Stop bits	1 or 2 bits
Error detection	Vertical parity (none, even, odd) Frame check sequence (FCS) with SYSWAY Block check character (BCC) with CompoWay/F or CRC-16 Modbus
Flow control	None
Interface	RS-485
Retry function	None
Communications buffer	40 bytes
Send data wait time	0 to 99 ms Default: 20 ms

Note: The baud rate, data length, stop bits, and vertical parity can be individually set using the Communications Setting Level.

Current Transformer (Order Separately)

Ratings

Dielectric strength	1,000 VAC for 1 min
Vibration resistance	50 Hz, 98 m/s^2
Weight	E54-CT1: Approx. 11.5 g, E54-CT3: Approx. 50 g
Accessories (E54-CT3 only)	Armatures (2) Plugs (2)

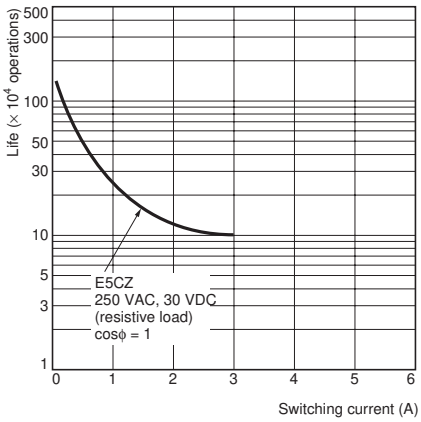
Heater Burnout and Heater Short Alarms

Maximum heater current	50 A AC
Input current indication accuracy	±5% FS ±1 digit max.
Heater burnout alarm setting range	0.1 to 49.9 A (in units of 0.1 A) 0.0 A: Heater burnout/Heater short alarm output turns OFF. 50.0 A: Heater burnout/Heater short alarm output turns ON. Minimum detection ON time: 190 ms (See note 1.)
Heater short alarm setting range	0.1 to 49.9 A (in units of 0.1 A) 0.0 A: Heater burnout/Heater short alarm output turns ON. 50.0 A: Heater burnout/Heater short alarm output turns OFF. Minimum detection OFF time: 190 ms (See note 2.)

Note: 1. If the ON time of control output 1 is less than 190 ms, heater burnout and the heater current will not be measured.

2. If the OFF time of control output 1 is less than 190 ms, heater short alarm and the heater current will not be measured.

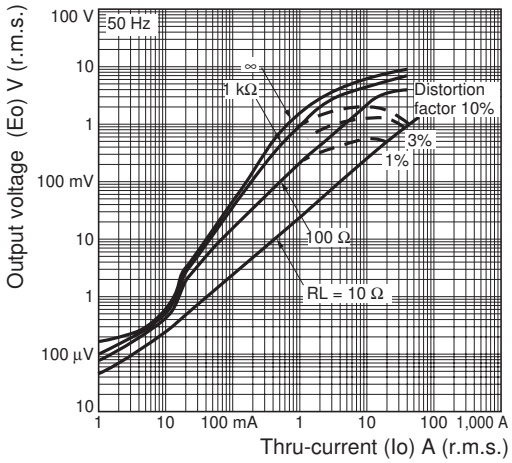
Electrical Life Expectancy Curve for Relays (Reference Values)



E54-CT1

Thru-current (Io) vs. Output Voltage (Eo) (Reference Values)

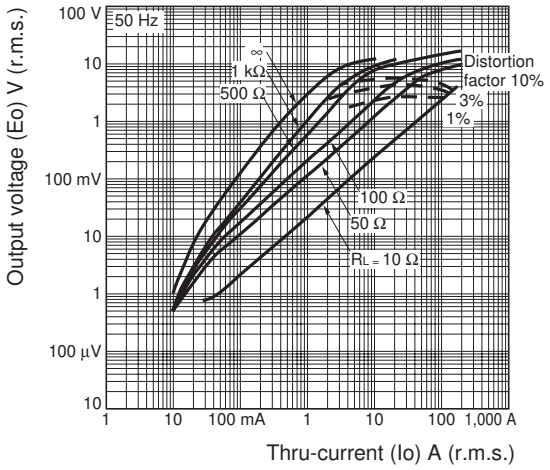
Maximum continuous heater current: 50 A (50/60 Hz)
Number of windings: 400±2
Winding resistance: 18±2 Ω



E54-CT3

Thru-current (Io) vs. Output Voltage (Eo) (Reference Values)

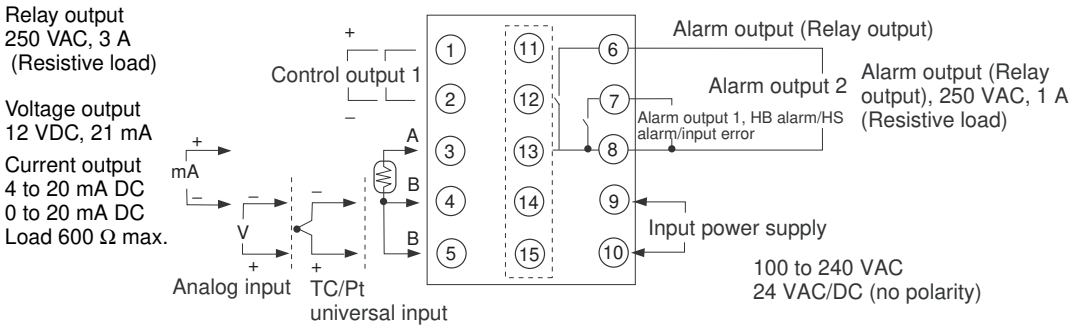
Maximum continuous heater current: 120 A (50/60 Hz)
(Maximum continuous heater current for an OMRON Temperature Controller is 50 A.)
Number of windings: 400±2
Winding resistance: 8±0.8 Ω



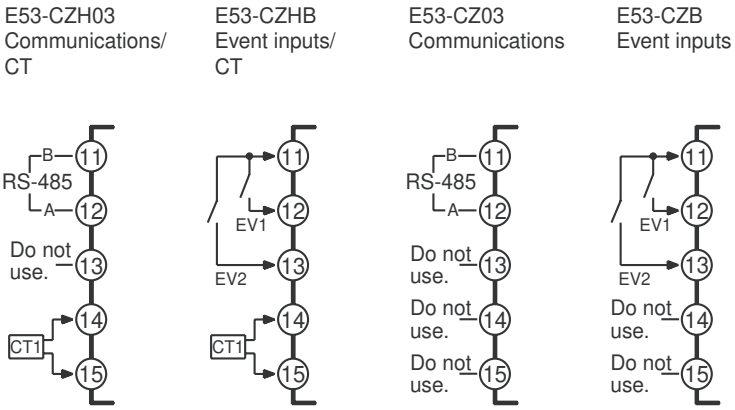
External Connections

- A voltage output (control output 1) is not electrically insulated from the internal circuits. When using a grounding thermocouple, do not connect any of the control output terminals to ground. If the control output terminals are connected to ground, errors will occur in the measured temperature values as a result of leakage current.

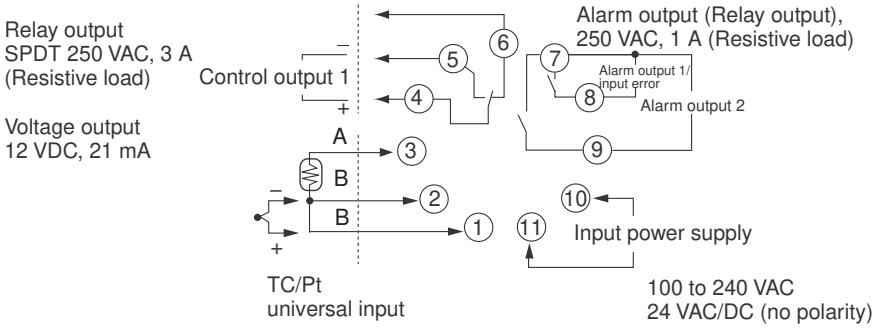
E5CZ



Option Units



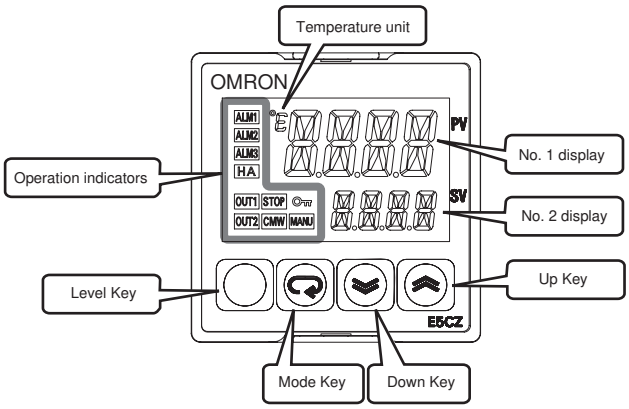
E5CZ-U



Note: For the Wiring Socket, purchase the P2CF-11 or PG3A-11 separately.

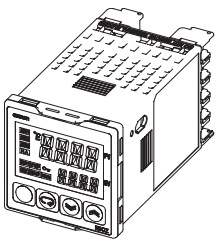
Nomenclature

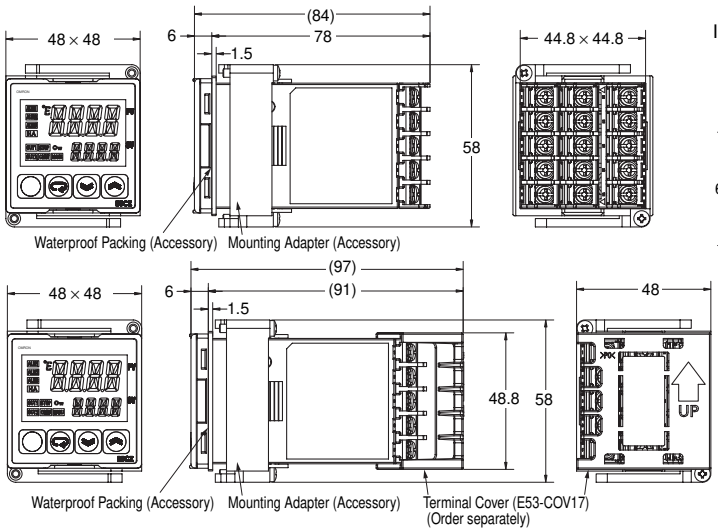
E5CZ
E5CZ-U
The front panel is the same for the E5CZ and E5CZ-U.



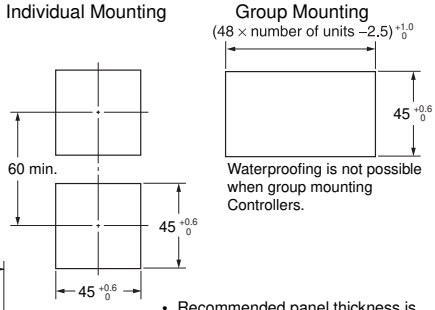
Dimensions

E5CZ
Terminal Models





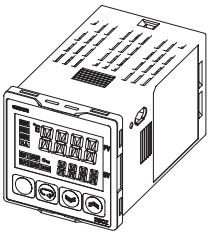
Panel Cutout

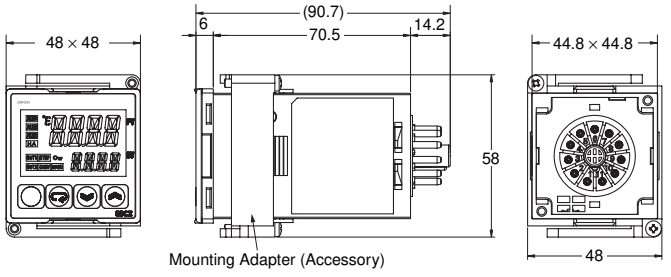


- Recommended panel thickness is 1 to 5 mm.
- Group mounting is not possible in the vertical direction. (Maintain the specified mounting space between Controllers.)
- To mount the Controller so that it is waterproof, insert the waterproof packing onto the Controller.
- When two or more Controllers are mounted, make sure that the surrounding temperature does not exceed the ambient operating temperature given in the specifications.

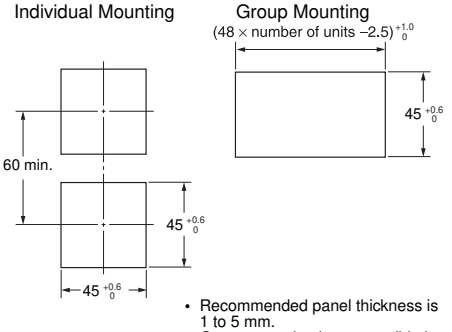
Note: The terminal block cannot be removed.

E5CZ-U
Plug-in Models





Panel Cutout



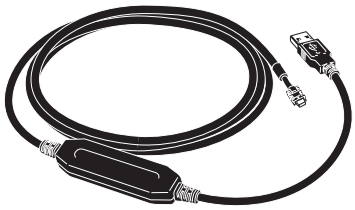
- Recommended panel thickness is 1 to 5 mm.
- Group mounting is not possible in the vertical direction. (Maintain the specified mounting space between Controllers.)
- When two or more Controllers are mounted, make sure that the surrounding temperature does not exceed the ambient operating temperature given in the specifications.

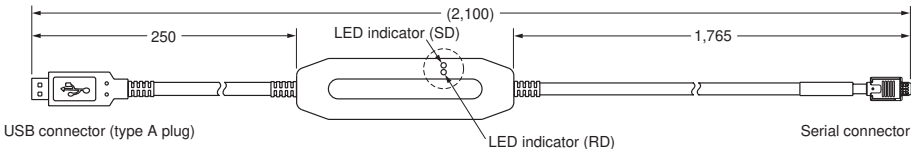
Note: There is no waterproof function for the E5CZ-U.

Accessories

USB-Serial Conversion Cable (Order Separately)

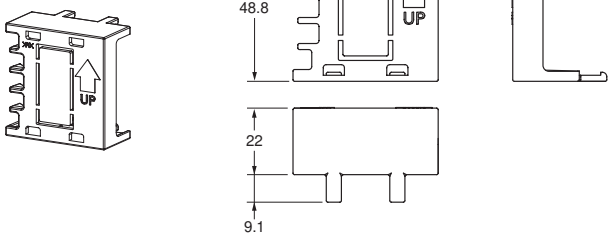
E58-CIFQ1





Terminal Cover (Order Separately)

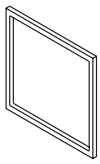
E53-COV17



Note: The E53-COV10 cannot be used.

Waterproof Packing

Y92S-29 (for DIN 48 × 48)



Order the Waterproof Packing separately if it becomes lost or damaged.

The Waterproof Packing can be used to achieve an IP66 (indoor use) degree of protection.

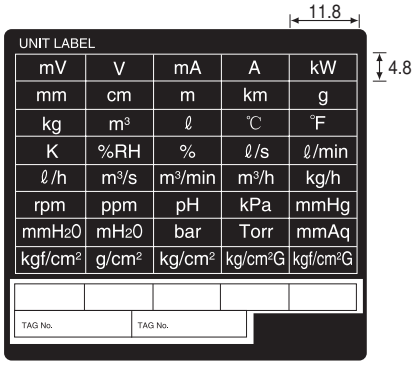
(Deterioration, shrinking, or hardening of the waterproof packing may occur depending on the operating environment. Therefore, periodic replacement is recommended to ensure the level of waterproofing specified in IP66 (indoor use). The time for periodic replacement depends on the operating environment. Be sure to confirm this point at your site. Consider one year a rough standard. OMRON shall not be liable for the level of water resistance if the customer does not perform periodic replacement.)

The Waterproof Packing does not need to be attached if a waterproof structure is not required.

Note: There is no waterproof function for the E5CZ-U.

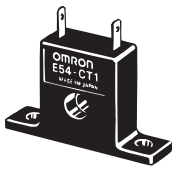
Unit Labels (Order Separately)

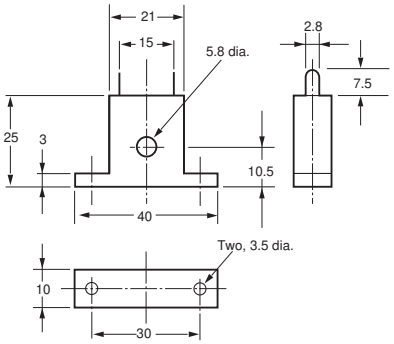
Y92S-L1 Type



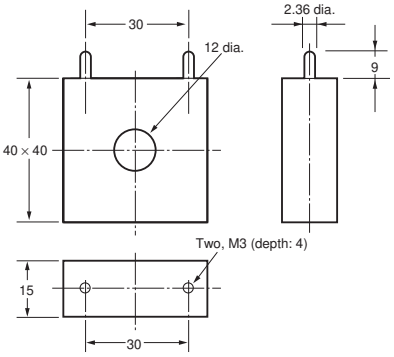
Current Transformers (Order Separately)

E54-CT1



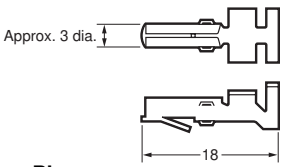


E54-CT3

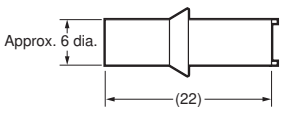


E54-CT3 Accessory

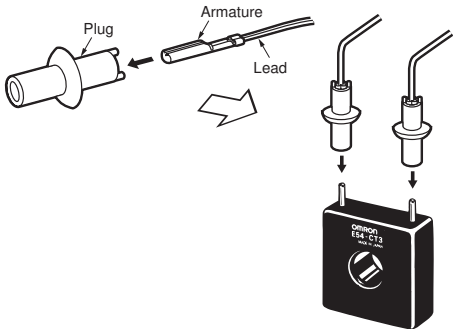
- **Armature**



- **Plug**



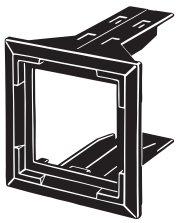
Connection Example

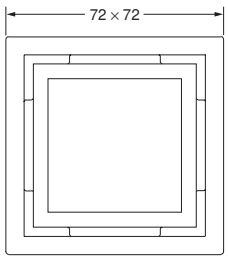


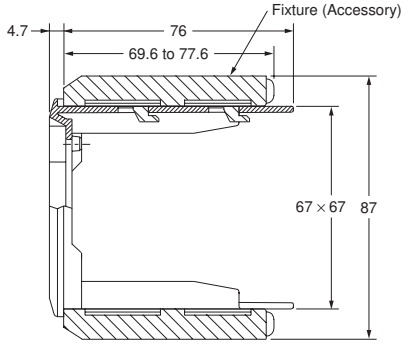
Adapter (Order Separately)

Note: 1. Use this Adapter when the panel has already been prepared for the E5B□.
2. Only black is available.

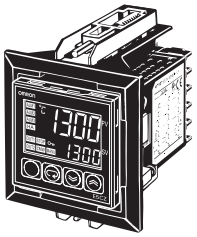
Y92F-45

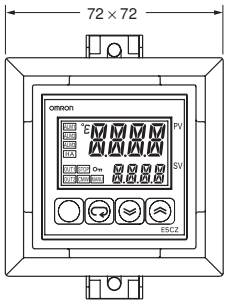


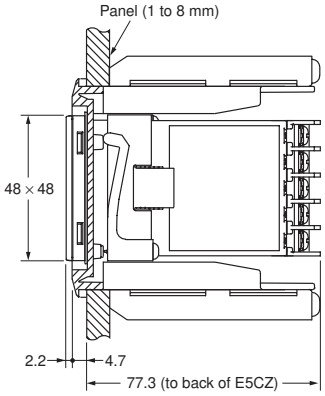




Mounted to E5CZ

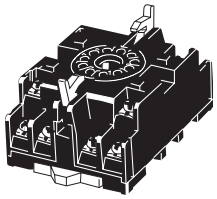


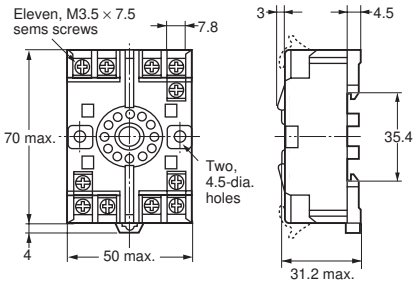




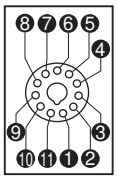
E5CZ-U Wiring Socket (Order Separately)

Front-connecting Socket
P2CF-11

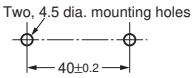




Terminal Layout/Internal Connections
(Top View)



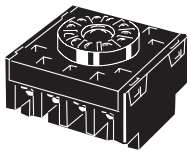
Mounting Holes

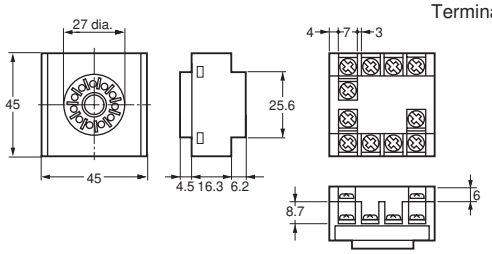


Note: Can also be mounted to a DIN track.

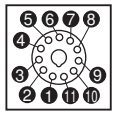
Note: A model with finger protection (P2CF-11-E) is also available.

Back-connecting Socket
P3GA-11





Terminal Layout/Internal Connections
(Bottom View)



Note: 1. Using any other sockets will adversely affect accuracy. Use only the specified sockets.
2. A Protective Cover for finger protection (Y92A-48G) is also available.

E5AZ/E5EZ (96 × 96 mm and 48 × 96 mm)

These Best-selling General-purpose Temperature Controllers Are Now Even Better.

- Controllers now available with analog inputs.
- Faster sampling at 250 ms.
- Transfer output provided for easy output to recorders.
- Models available with a loop break alarm (LBA) and heater short alarm (HS alarm).
- Manual output provided.
- Easy setting with 11-segment displays.
- New protocol called Modbus is installed in the models with communications.
- USB-Serial conversion cable is available.

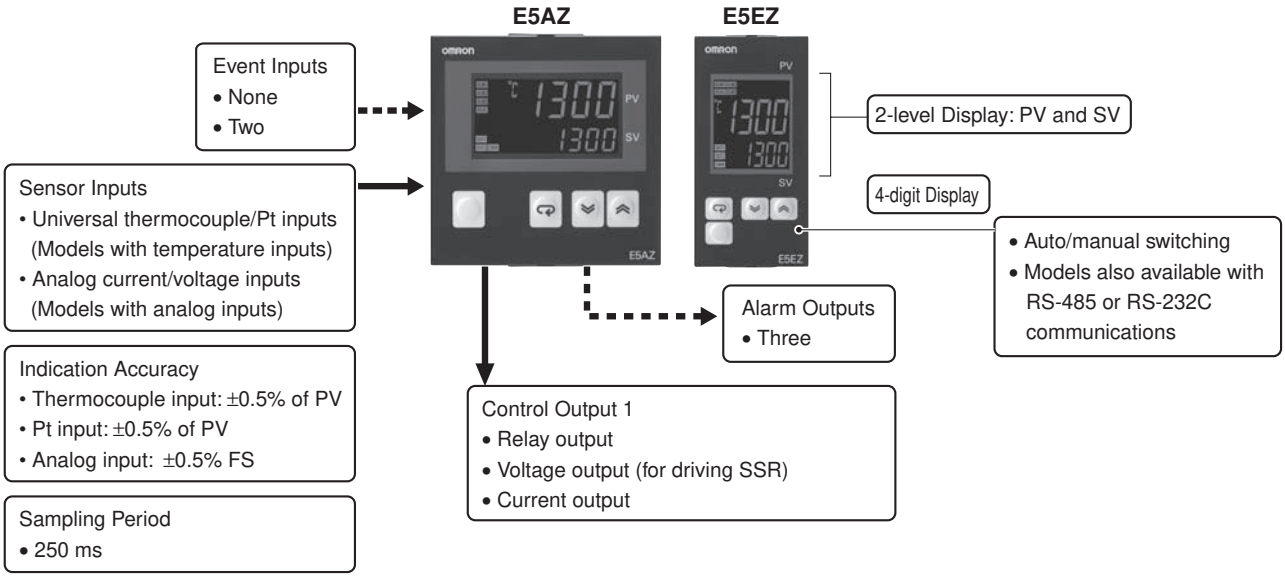
Note: Refer to Precautions on page 33.

96 × 96 mm
E5AZ

48 × 96 mm
E5EZ

Note: Refer to page 30 for information on changes in comparison to previous models.

Main I/O Functions



Model Number Structure

Model Number Legend

Controllers

E5AZ/EZ-□3□□□□
1 2 3 4 5 6

1. Control Output 1
R: Relay output
Q: Voltage output (for driving SSR)
C: Current output
2. Number of Alarms
3: Three alarms
3. Heater Burnout/Heater Short
Blank: None
H: Heater burnout/Heater short detection (CT1)
4. Option
Blank: None
M: Option Unit can be mounted.
5. Input Type
T: Thermocouple, infrared sensor/platinum resistance thermometer
L: Analog current/voltage input
6. Power Supply Voltage
Blank: 100 to 240 VAC
D: 24 VAC/VDC

Option Units

E53-AZ□
1 2

1. Applicable Controller
AZ: E5AZ/E5EZ
2. Function
01: RS-232C communications
03: RS-485 communications
B: Two event inputs

Ordering Information

Controllers with Terminal Blocks

Size	Power supply voltage	Input type	Alarm output	Control output	Functions		Previous model	New model
					Heater burnout	Mounting option units		
1/4 DIN 96 × 96 × 78 (W × H × D)	100 to 240 VAC	Thermocouple or Resistance thermometer	3	Relay output	No	No	E5AZ-R3 E5AZ-A3 + E53-AZR	**E5AZ-R3T**
				Voltage output (for driving SSR)	No	No	E5AZ-Q3 E5AZ-A3 + E53-AZQ	**E5AZ-Q3T**
				Current output	No	No	E5AZ-C3 E5AZ-A3 + E53-AZC	**E5AZ-C3T**
				Relay output	No	Yes	E5AZ-R3 + E53-AZM	**E5AZ-R3MT**
				Voltage output (for driving SSR)	No	Yes	E5AZ-Q3 + E53-AZM	**E5AZ-Q3MT**
				Current output	No	Yes	E5AZ-C3 + E53-AZM	**E5AZ-C3MT**
				Relay output	Yes (CT1)	Yes	E5AZ-R3 + E53-AZM + E53-AZH	**E5AZ-R3HMT**
				Voltage output (for driving SSR)	Yes (CT1)	Yes	E5AZ-Q3 + E53-AZM + E53-AZH	**E5AZ-Q3HMT**
		Analog (current/ voltage)	3	Relay output	Yes (CT1)	Yes	None	**E5AZ-R3HML**
				Voltage output (for driving SSR)	Yes (CT1)	Yes	None	**E5AZ-Q3HML**
				Current output	No	Yes	None	**E5AZ-C3ML**
	24 VAC/VDC	Thermocouple or Resistance thermometer	3	Relay output	No	Yes	None	**E5AZ-R3MTD**
				Voltage output (for driving SSR)	No	Yes	None	**E5AZ-Q3MTD**
				Current output	No	Yes	None	**E5AZ-C3MTD**
				Relay output	Yes (CT1)	Yes	None	**E5AZ-R3HMTD**
				Voltage output	Yes (CT1)	Yes	None	**E5AZ-Q3HMTD**
		Analog (current/ voltage)	3	Relay output	Yes (CT1)	Yes	None	**E5AZ-R3HMLD**
				Voltage output (for driving SSR)	Yes (CT1)	Yes	None	**E5AZ-Q3HMLD**
				Current output	---	Yes	None	**E5AZ-C3MLD**

Controllers with Terminal Blocks

Size	Power supply voltage	Input type	Alarm output	Control output	Functions		Previous model	New model
					Heater burnout	Mounting option units		
1/8 DIN 48 × 96 × 78 (W × H × D)	100 to 240 VAC	Thermocouple or Resistance thermometer	3	Relay output	No	No	E5EZ-R3 E5EZ-A3 + E53-AZR	**E5EZ-R3T**
				Voltage output (for driving SSR)	No	No	E5EZ-Q3 E5EZ-A3 + E53-AZQ	**E5EZ-Q3T**
				Current output	No	No	E5EZ-C3 E5EZ-A3 + E53-AZC	**E5EZ-C3T**
				Relay output	No	Yes	E5EZ-R3 + E53-AZM	**E5EZ-R3MT**
				Voltage output (for driving SSR)	No	Yes	E5EZ-Q3 + E53-AZM	**E5EZ-Q3MT**
				Current output	No	Yes	E5EZ-C3 + E53-AZM	**E5EZ-C3MT**
				Relay output	Yes (CT1)	Yes	E5EZ-R3 + E53-AZM + E53-AZH	**E5EZ-R3HMT**
				Voltage output (for driving SSR)	Yes (CT1)	Yes	E5EZ-Q3 + E53-AZM + E53-AZH	**E5EZ-Q3HMT**
		Analog (current/ voltage)	3	Relay output	Yes (CT1)	Yes	None	**E5EZ-R3HML**
				Voltage output (for driving SSR)	Yes (CT1)	Yes	None	**E5EZ-Q3HML**
				Current output	No	Yes	None	**E5EZ-C3ML**
	24 VAC/VDC	Thermocouple or Resistance thermometer	3	Relay output	No	Yes	None	**E5EZ-R3MTD**
				Voltage output (for driving SSR)	No	Yes	None	**E5EZ-Q3MTD**
				Current output	No	Yes	None	**E5EZ-C3MTD**
				Relay output	Yes (CT1)	Yes	None	**E5EZ-R3HMTD**
				Voltage output	Yes (CT1)	Yes	None	**E5EZ-Q3HMTD**
		Analog (current/ voltage)	3	Relay output	Yes (CT1)	Yes	None	**E5EZ-R3HMLD**
				Voltage output (for driving SSR)	Yes (CT1)	Yes	None	**E5EZ-Q3HMLD**
				Current output	-	Yes	None	**E5EZ-C3MLD**

Option Units

Name	Function	Model
Communications Unit	RS-232C Communications	**E53-AZ01**
	RS-485 Communications	**E53-AZ03**
Event Input Unit	Event input	**E53-AZB**

Accessories (Order Separately)

USB-Serial Conversion Cable

Model
E58-CIFQ1

Terminal Cover

Connectable models	Model
E5AZ	**E53-COV11**
E5EZ	

Waterproof Packing

Connectable models	Model
E5AZ	**Y92S-P4**
E5EZ	**Y92S-P5**

Current Transformers (CTs)

Hole diameter	Model
5.8 dia.	**E54-CT1**
12.0 dia.	**E54-CT3**

Specifications

Ratings

Power supply voltage		100 to 240 VAC, 50/60 Hz	24 VAC, 50/60 Hz or 24 VDC
Operating voltage range		85% to 110% of rated supply voltage	
Power consumption		8.5 VA	6 VA (24 VAC)/4 W (24 VDC)
Sensor input		Models with temperature inputs Thermocouple: K, J, T, E, L, U, N, R, S, or B Platinum resistance thermometer: Pt100 or JPt100 Infrared temperature sensor: 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C Voltage input: 0 to 50 mV	
		Models with analog inputs Current input: 4 to 20 mA or 0 to 20 mA Voltage input: 1 to 5 V, 0 to 5 V, or 0 to 10 V	
Input impedance		Current input: 150 Ω, Voltage input: 1 MΩ (Use a 1:1 connection when connecting the ES2-HB.)	
Control output	Relay output	SPST-NO, 250 VAC, 5 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA	
	Voltage output (for driving SSR)	Output voltage: 12 VDC +15%/–20% (PNP), max. load current: 40 mA, with short-circuit protection circuit	
	Current output	4 to 20 mA DC/0 to 20 mA DC, load: 600 Ω max., resolution: approx. 2,700	
Alarm output		SPST-NO, 250 VAC, 2 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA	
Event input	Contact input	ON: 1 kΩ max., OFF: 100 kΩ min.	
	Non-contact input	ON: Residual voltage: 1.5 V max., OFF: Leakage current: 0.1 mA max.	
		Outflow current: Approx. 7 mA per point	
Control method		ON/OFF control or 2-PID control (with auto-tuning)	
Setting method		Digital setting using front panel keys	
Indication method		11-segment digital display and individual indicators (7-segments displays also possible) Character height: E5AZ: PV: 15 mm, SV: 9.5 mm E5EZ: PV: 14 mm, SV: 9.5 mm	
Other functions		Manual output, heating/cooling control, transfer output (on some models), loop break alarm, multi SP, MV limiter, input digital filter, self-tuning, temperature input shift, run/stop, protection functions, etc.	
Ambient operating temperature		–10 to 55°C (with no icing or condensation)	
Ambient operating humidity		25% to 85%	
Storage temperature		–25 to 65°C (with no icing or condensation)	

Input Ranges

Thermocouples/Platinum Resistance Thermometers (Universal Inputs)

Input Type	Platinum resistance thermometer					Thermocouple												Infrared temperature sensor				Analog input
Name	Pt100			JPt100		K		J		T		E	L	U		N	R	S	B	10 to 70°C	60 to 120°C	115 to 165°C	140 to 260°C	0 to 50 mV
Temperature range (°C)	850	500.0	100.0	500.0	100.0	1300	500.0	850	400.0	400	400.0	600	850	400	400.0	1300	1700	1700	1800	90	120	165	260	Usable in the following ranges by scaling: −1999 to 9999 or −199.9 to 999.9
	0.0		0.0			−20.0		−100	−20.0	−200	−199.9	0	−100	−200	−199.9	−200	0	0	100	0	0	0	0	
	−200	−199.9		−199.9		−200																		
Setting number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

The applicable standards for the input types are as follows:

K, J, T, E, N, R, S, B: IEC 584-1

L: Fe-CuNi, DIN 43710-1985

U: Cu-CuNi, DIN 43710-1985

Pt100: IEC 751

JPt100: JIS C 1604-1989, JIS C 1606-1989

Shaded settings are the default settings.

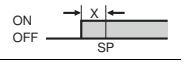
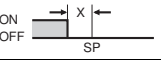
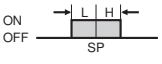
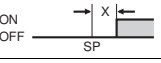
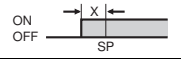
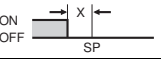
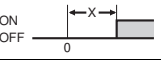
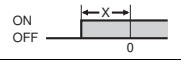
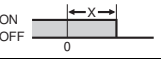
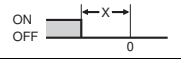
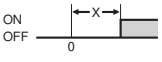
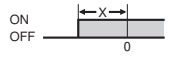
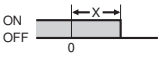
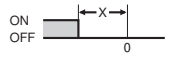
Models with Analog Inputs

Input Type	Current		Voltage		
Input specification	4 to 20mA	0 to 20 mA	1 to 5 V	0 to 5 V	0 to 10 V
Setting range	Usable in the following ranges by scaling: −1999 to 9999, −199.9 to 999.9, −19.99 to 99.99 or −1.999 to 9.999				
Setting number	0	1	2	3	4

Shaded settings are the default settings.

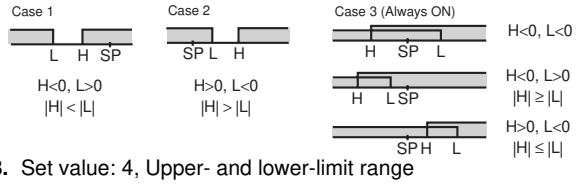
Alarm Types

Select alarm types out of the 12 alarm types listed in the following table.

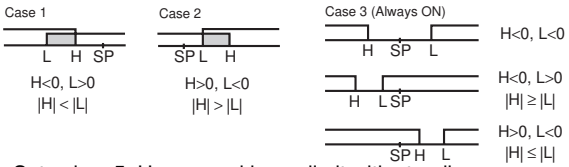
Set value	Alarm type	Alarm output operation	
		When X is positive	When X is negative
0	Alarm function OFF	Output OFF	
1 (See note 1.)	Upper- and lower-limit		(See note 2.)
2	Upper limit		
3	Lower limit		
4 (See note 1.)	Upper- and lower-limit range		(See note 3.)
5 (See note 1.)	Upper- and lower-limit with standby sequence	 (See note 5.)	(See note 4.)
6	Upper-limit with standby sequence		
7	Lower-limit with standby sequence		
8	Absolute-value upper-limit		
9	Absolute-value lower-limit		
10	Absolute-value upper-limit with standby sequence		
11	Absolute-value lower-limit with standby sequence		
12 (See note 6.)	LBA (for alarm 1 type only)	---	

Note: 1. With set values 1, 4 and 5, the upper and lower limit values can be set independently for each alarm type, and are expressed as “L” and “H.”

2. Set value: 1, Upper- and lower-limit alarm



3. Set value: 4, Upper- and lower-limit range



4. Set value: 5, Upper- and lower-limit with standby sequence
For Upper- and Lower-Limit Alarm Described Above

- Case 1 and 2
  Always OFF when the upper-limit and lower-limit hysteresis overlaps.
- Case 3: Always OFF

5. Set value: 5, Upper- and lower-limit with standby sequence
Always OFF when the upper-limit and lower-limit hysteresis overlaps.

6. Set value: 12, LBA (loop break alarm) can be set only for alarm 1 type.

Set the alarm types for alarms 1 to 3 independently in the initial setting level. The default setting is 2 (upper limit).

Characteristics

Indication accuracy		Thermocouple: (See note 1.) (±0.5% of indicated value or ±1°C, whichever is greater) ±1 digit max. Platinum resistance thermometer: (±0.5% of indicated value or ±1°C, whichever is greater) ±1 digit max. Analog input: ±0.5% FS ±1 digit max. CT input: ±5% FS ±1 digit max.
Influence of temperature (See note 2.)		R, S, and B thermocouple inputs: (±1% of PV or ±10°C, whichever is greater) ±1 digit max. Other thermocouple inputs: (±1% of PV or ±4°C, whichever is greater) ±1 digit max. *±10°C for −100°C or less for K sensors Platinum resistance thermometer inputs: (±1% of PV or ±2°C, whichever is greater) ±1 digit max. Analog inputs: (±1% of FS) ±1 digit max.
Influence of voltage (See note 2.)		
Hysteresis		Models with thermocouple/platinum resistance thermometer input (universal input): 0.1 to 999.9 EU (in units of 0.1 EU) (See note 3.) Models with analog input: 0.01 to 99.99% FS (in units of 0.01% FS)
Proportional band (P)		Models with thermocouple/platinum resistance thermometer input (universal input): 0.1 to 999.9 EU (in units of 0.1 EU) (See note 3.) Models with analog input: 0.1 to 999.9% FS (in units of 0.1% FS)
Integral time (I)		0 to 3999 s (in units of 1 s)
Derivative time (D)		0 to 3999 s (in units of 1 s)
Control period		0.5, 1 to 99 s (in units of 1 s)
Manual reset value		0.0 to 100.0% (in units of 0.1%)
Alarm setting range		−1999 to 9999 (decimal point position depends on input type)
Sampling period		250 ms
Affect of signal source resistance		Thermocouple: 0.1°C/Ω max. (100 Ω max.) (See note 4.) Platinum resistance thermometer: 0.4°C/Ω max. (10 Ω max.)
Insulation resistance		20 MΩ min. (at 500 VDC)
Dielectric strength		2,000 VAC, 50 or 60 Hz for 1 min (between terminals with different charge)
Vibration resistance	**Malfunction**	10 to 55 Hz, 20 m/s² for 10 min each in X, Y, and Z directions
	Destruction	10 to 55 Hz, 0.75-mm single amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance	**Malfunction**	100 m/s² min., 3 times each in X, Y, and Z directions
	Destruction	300 m/s² min., 3 times each in X, Y, and Z directions
Weight	**E5AZ**	Controller: Approx. 300 g, Mounting Bracket: Approx. 100 g
	E5EZ	Controller: Approx. 250 g, Mounting Bracket: Approx. 100 g
Degree of protection		Front panel: IP66 (indoor use), Rear case: IP20, Terminals: IP00
Memory protection		Non-volatile memory (number of writes: 1,000,000 times)
EMC		Emission Enclosure: EN55011 Group1 Class A Emission AC Mains: EN55011 Group1 Class A Immunity ESD: EN61000-4-2 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: EN61000-4-3 10 V/m (80-1000 MHz, 1.4-2.0 GHz amplitude modulated) (level 3) 10 V/m (900 MHz pulse modulated) Immunity Conducted Disturbance: EN61000-4-6 3 V (0.15 to 80 MHz) (level 2) Immunity Burst: EN61000-4-4 2 kV Power-line (level 3) 1 kV I/O signal-line (level 3) (See note 5.) Immunity Surge: EN61000-4-5 1kV line to line Power line, output line (relay output) 2 kV line to ground Power line, output line (relay output) 1 kV line to ground Input line (communication) Immunity Voltage Dip/Interrupting: EN61000-4-11 0.5 cycle, 100% (rated voltage)
Approved standards		UL 61010C-1 CSA C22.2 No.1010.1
Conformed standards		EN61326, EN61010-1, IEC61010-1 VDE0106 Part 100 (Finger protection), when the terminal cover is mounted.

Note: 1. The indication accuracy of K thermocouples in the −200 to 1300°C range, T and N thermocouples at a temperature of −100°C max., and U and L thermocouples at any temperature is ±2°C ±1 digit maximum. The indication accuracy of the B thermocouple at a temperature of 400°C max. is not specified. The indication accuracy of the R and S thermocouples at a temperature of 200°C max. is ±3°C ±1 digit max.

2. Conditions: Ambient temperature: −10°C to 23°C to 55°C, Voltage range: −15% to +10% of rated voltage

3. "EU" stands for Engineering Unit and is used as the unit after scaling. For a temperature sensor, the EU is °C or °F.

4. B, R, and S sensors: 0.2°C/Ω max. (100 Ω max.)

5. When using the E53-AZB, E53-AZ01, or E53-AZ03 Option Unit with the E5AZ-□3□M□□ to satisfy the immunity burst requirements in the EN 61326 standard, always connect a ZCAT2035-0930 Clamp Filter (manufactured by TDK) to the cable for terminals 11, 12, and 13.

USB-Serial Conversion Cable

Applicable OS	Windows 2000/XP/Vista
Applicable software	Thermo Mini
Applicable models	E5CZ/E5CZ-U/E5AZ/E5EZ
USB interface standard	Conforms to USB Specification 1.1.
DTE speed	38400 bps
Connector specifications	Computer: USB (type A plug) Temperature Controller: Setup Tool port (on bottom of Controller)
Power supply	Bus power (Supplied from USB host controller.)
Power supply voltage	5 VDC
Current consumption	70 mA
Ambient operating temperature	0 to 55°C (with no condensation or icing)
Ambient operating humidity	10% to 80%
Storage temperature	−20 to 60°C (with no condensation or icing)
Storage humidity	10% to 80%
Altitude	2,000 m max.
Weight	Approx. 100 g

Note: A driver must be installed in the personal computer. Refer to installation information in the operation manual for the Conversion Cable.

Communications Specifications

Transmission line connection method	RS-485 multipoint RS-232C
Communications	RS-485 (two-wire, half duplex), RS-232C
Synchronization method	Start-stop synchronization
Baud rate	1200, 2400, 4800, 9600, 19200, or 38400 bps
Transmission code	ASCII
Data length (See note.)	7 or 8 bits
Stop bits (See note.)	1 or 2 bits
Error detection	Vertical parity (none, even, odd) Frame check sequence (FCS) with SYSWAY Block check character (BCC) with CompoWay/F or CRC-16 Modbus
Flow control	None
Interface	RS-485, RS-232C
Retry function	None
Communications buffer	40 bytes
Send data wait time	0 to 99 ms Default: 20 ms

Note: The baud rate, data length, stop bits, and vertical parity can be individually set using the Communications Setting Level.

Current Transformer (Order Separately)

Ratings

Dielectric strength	1,000 VAC for 1 min
Vibration resistance	50 Hz, 98 m/s²
Weight	E54-CT1: Approx. 11.5 g, E54-CT3: Approx. 50 g
Accessories (E54-CT3 only)	Armatures (2) Plugs (2)

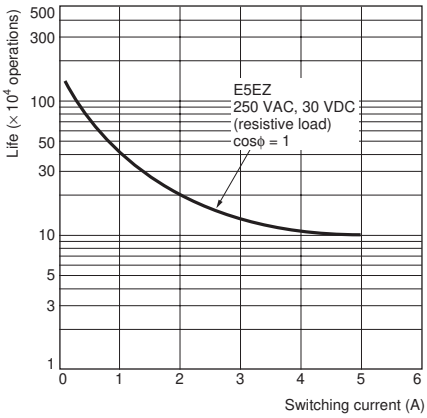
Heater Burnout and Heater Short Alarms

Maximum heater current	50 A AC
Input current indication accuracy	±5% FS ±1 digit max.
Heater burnout alarm setting range	0.1 to 49.9 A (in units of 0.1 A) 0.0 A: Heater burnout/Heater short alarm output turns OFF. 50.0 A: Heater burnout/Heater short alarm output turns ON. Minimum detection ON time: 190 ms (See note 1.)
Heater short alarm setting range	0.1 to 49.9 A (in units of 0.1 A) 0.0 A: Heater burnout/Heater short alarm output turns ON. 50.0 A: Heater burnout/Heater short alarm output turns OFF. Minimum detection OFF time: 190 ms (See note 2.)

Note: 1. If the ON time of control output 1 is less than 190 ms, heater burnout detection and the heater current will not be measured.

2. If the OFF time of control output 1 is less than 190 ms, heater short alarm and the heater current will not be measured.

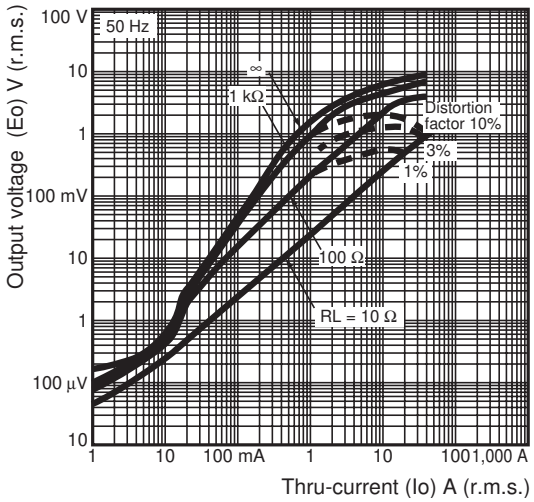
Electrical Life Expectancy Curve for Relays (Reference Values)



E54-CT1

Thru-current (Io) vs. Output Voltage (Eo) (Reference Values)

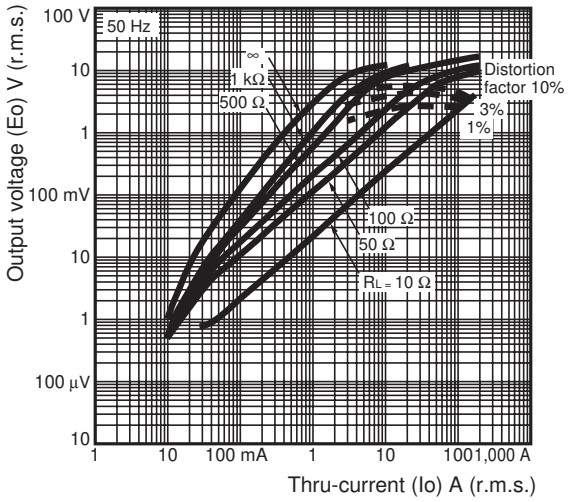
Maximum continuous heater current: 50 A (50/60 Hz)
Number of windings: 400±2
Winding resistance: 18±2 Ω



E54-CT3

Thru-current (Io) vs. Output Voltage (Eo) (Reference Values)

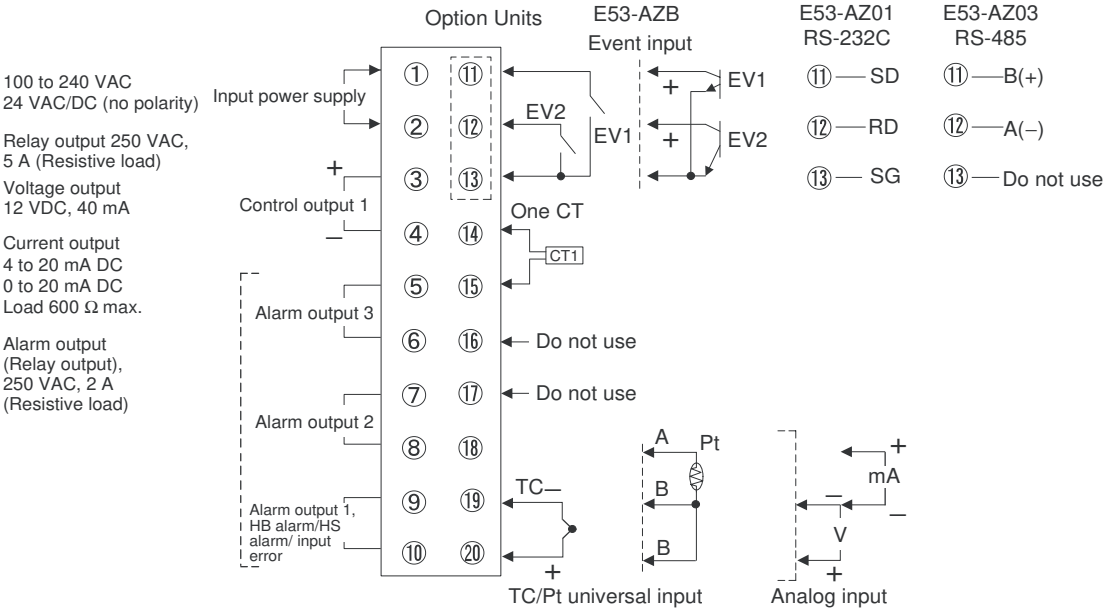
Maximum continuous heater current: 120 A (50/60 Hz)
(Maximum continuous heater current for an OMRON Temperature Controller is 50 A.)
Number of windings: 400±2
Winding resistance: 8±0.8 Ω



External Connections

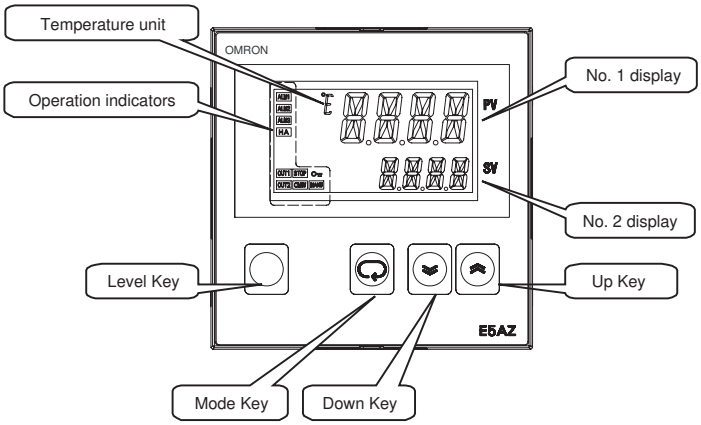
- The voltage output for control output 1 is not electrically insulated from the internal circuits. When using a grounding thermocouple, do not connect any of the control output terminals to ground. If the control output terminals are connected to ground, errors will occur in the measured temperature values as a result of leakage current.

E5AZ/E5EZ

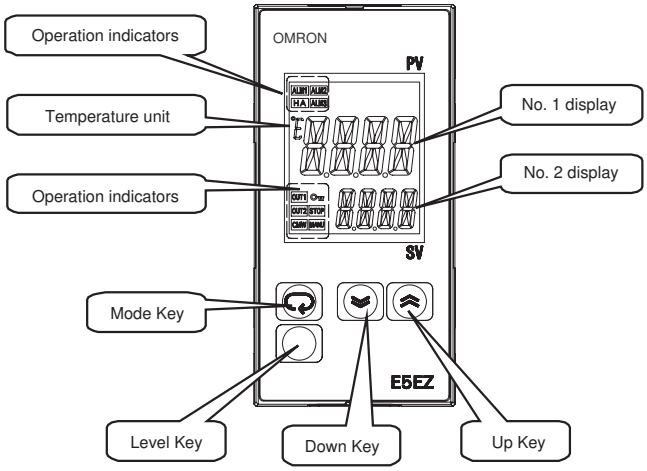


Nomenclature

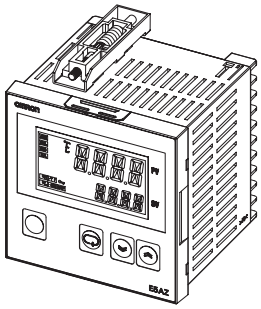
E5AZ

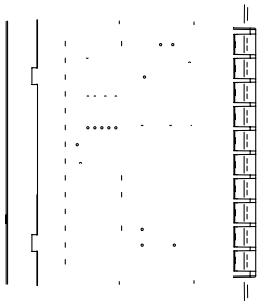


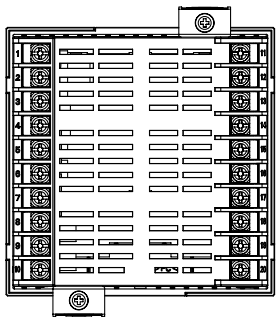
E5EZ

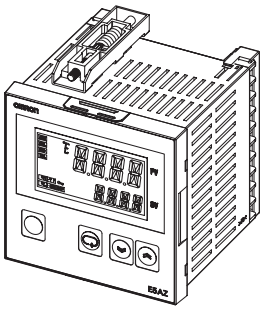


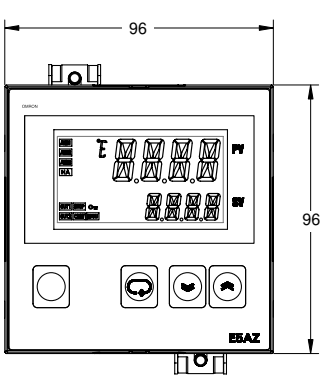
Dimensions

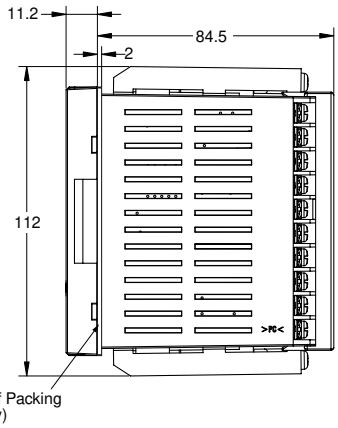


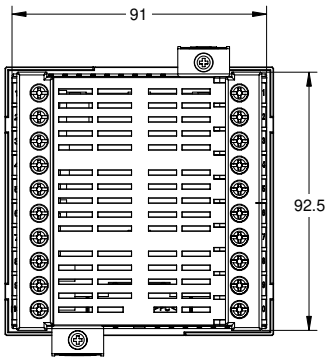




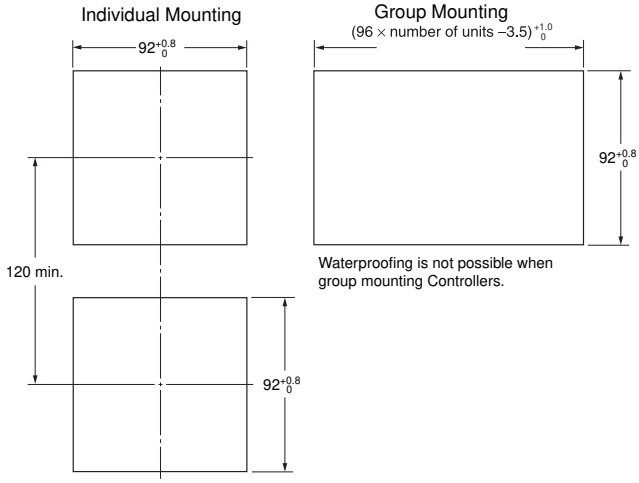






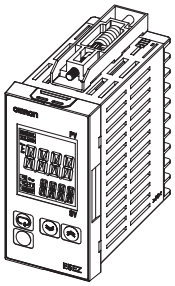


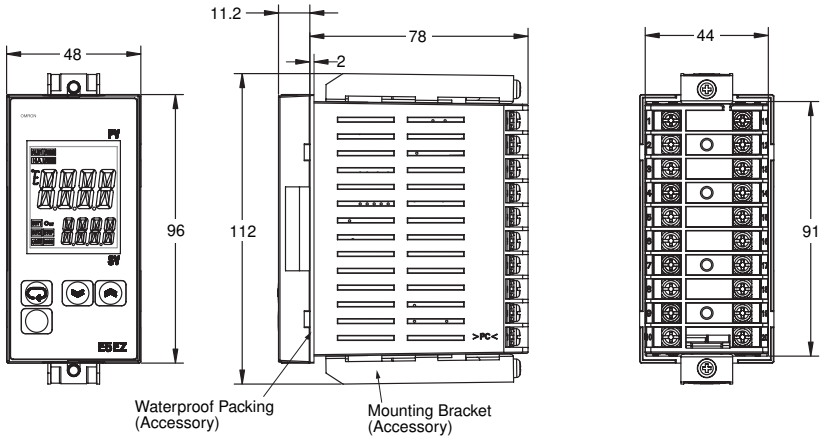
Panel Cutout

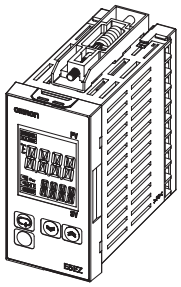


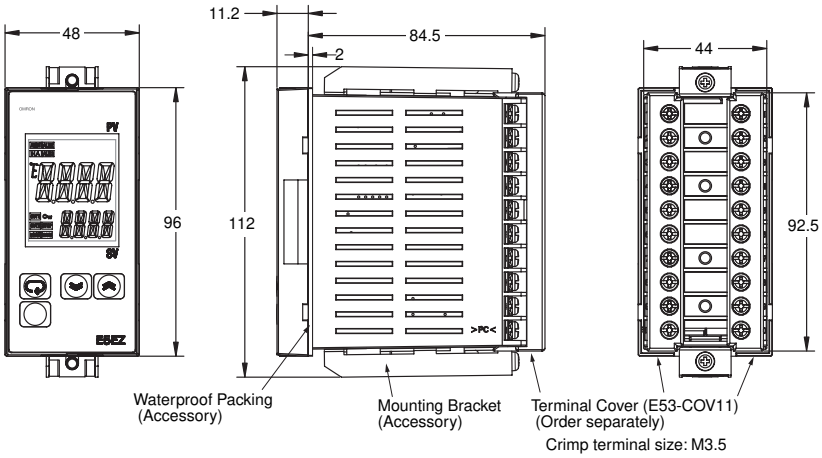
Waterproofing is not possible when group mounting Controllers.

E5EZ
Terminal Models



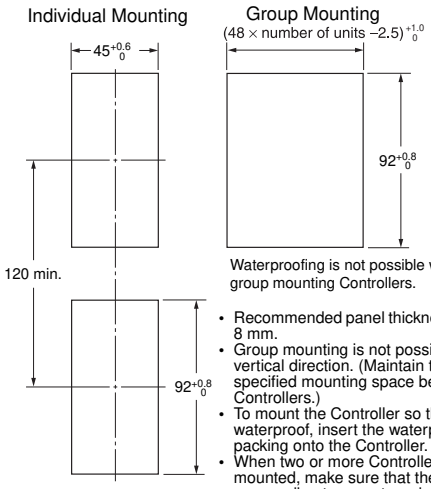






Note: To remove the Controller from the case, loosen the screw at the bottom of the front panel with a screwdriver while pressing down on the hook at the top of the front panel.

Panel Cutout



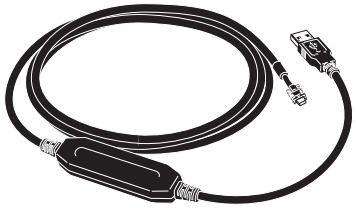
Waterproofing is not possible when group mounting Controllers.

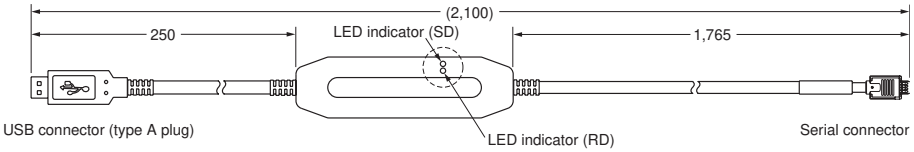
- Recommended panel thickness is 1 to 8 mm.
- Group mounting is not possible in the vertical direction. (Maintain the specified mounting space between Controllers.)
- To mount the Controller so that it is waterproof, insert the waterproof packing onto the Controller.
- When two or more Controllers are mounted, make sure that the surrounding temperature does not exceed the ambient operating temperature given in the specifications.

Accessories

USB-Serial Conversion Cable (Order Separately)

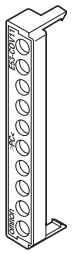
E58-CIFQ1

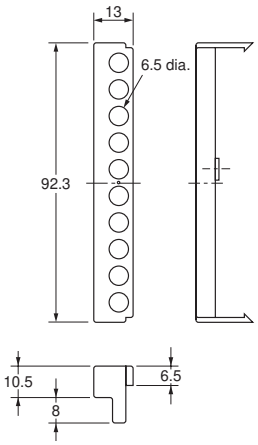




Terminal Covers

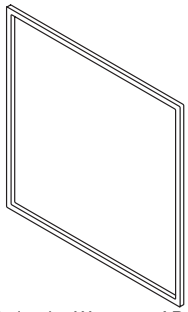
E53-COV11
(Two Covers provided.)
(Order Separately)



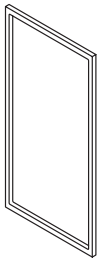


Waterproof Packing

Y92S-P4 (for DIN 96 × 96)



Y92S-P5 (for DIN 48 × 96)



Order the Waterproof Packing separately if it becomes lost or damaged.

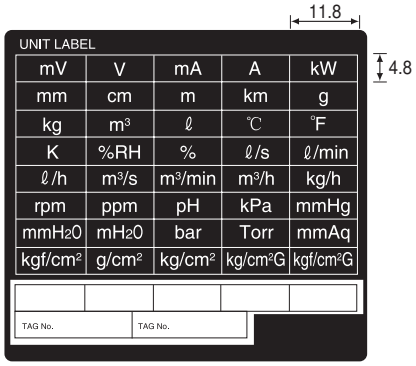
The Waterproof Packing can be used to achieve an IP66 (indoor use) degree of protection.

(Deterioration, shrinking, or hardening of the waterproof packing may occur depending on the operating environment. Therefore, periodic replacement is recommended to ensure the level of waterproofing specified in IP66 (indoor use). The time for periodic replacement depends on the operating environment. Be sure to confirm this point at your site. Consider one year a rough standard. OMRON shall not be liable for the level of water resistance if the customer does not perform periodic replacement.)

The Waterproof Packing does not need to be attached if a waterproof structure is not required.

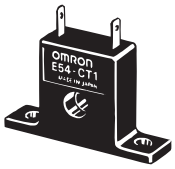
Unit Labels (Order Separately)

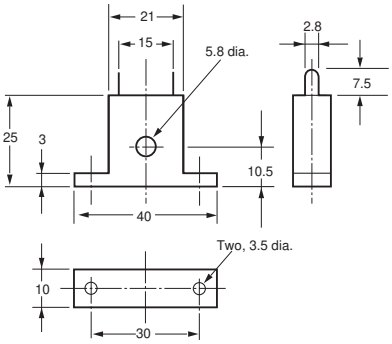
Y92S-L1 Type



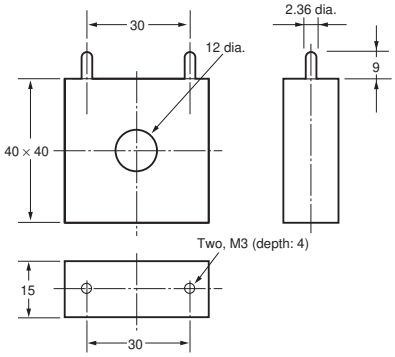
Current Transformers (Order Separately)

E54-CT1



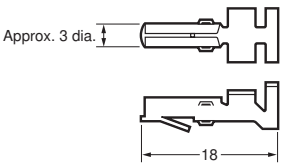


E54-CT3

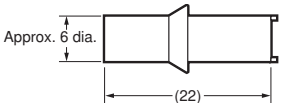


E54-CT3 Accessory

- **Armature**



- **Plug**



Connection Example