

## Digital Temperature Controllers

## E5AN

### Compact and Intelligent Temperature Controllers

- Depth of only 78 mm.
- Various temperature inputs: thermocouple, platinum resistance thermometer, non-contact temperature sensor, and analog inputs.
- Auto-tuning and self-tuning available. Auto-tuning is possible even while self-tuning is being executed.
- Heating or heating/cooling control is available.
- Event input allows multiple SP selection and run/stop function.
- Water-resistant construction (NEMA4X: equivalent to IP66).
- Conforms to UL, CSA, and IEC safety standards as well as CE marking.



96(W) x 96(H) x 78(D) mm

### Ordering Information

#### ■ E5AN Standard Models

Size	Power supply voltage	No. of alarm points	Output	Heater burnout alarm	Thermocouple model	Platinum resistance thermometer model
1/4 DIN 96(W) x 96(H) x 78(D) mm	100 to 240 VAC	3	Relay	No	E5AN-R3MTC-500	E5AN-R3MP-500
				Yes	E5AN-R3HMTC-500	E5AN-R3HMP-500
			Voltage output (for driving SSR)	No	E5AN-Q3MTC-500	E5AN-Q3MP-500
				Yes	E5AN-Q3HMTC-500	E5AN-Q3HMP-500
			Current	No	E5AN-C3MTC-500	E5AN-C3MP-500
				Yes	E5AN-C3HMTC-500	E5AN-C3HMP-500
	24 VAC/VDC	3	Relay	No	E5AN-R3MTC-500	E5AN-R3MP-500
				Yes	E5AN-R3HMTC-500	E5AN-R3HMP-500
			Voltage output (for driving SSR)	No	E5AN-Q3MTC-500	E5AN-Q3MP-500
				Yes	E5AN-Q3HMTC-500	E5AN-Q3HMP-500
			Current	No	E5AN-C3MTC-500	E5AN-C3MP-500
				Yes	E5AN-C3HMTC-500	E5AN-C3HMP-500

- Note:**
1. A Current Transformer (CT) is not provided with the Unit. Be sure to order one when ordering the E5AN.
  2. When the heating and cooling function is used, the number of alarm outputs will be reduced to 2.
  3. When the heating and cooling function or the heater burnout alarm is used, one of the alarm outputs will be disabled for each function used.
  4. Specify the power supply specifications when ordering.

#### ■ E5AN Option Units

The E5AN provides communication or event input functionality when mounted with one of the following Option Units.

Name	Model	Function
Communication Unit	E53-AK01	RS-232C communication
	E53-AK03	RS-485 communication
Event Input Unit	E53-AKB	Event input

#### ■ Current Transformer (Sold Separately)

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

#### ■ Terminal Cover (Sold Separately)

Model	E53-COV11
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## ■ Input Ranges

### Platinum Resistance Thermometer Input/Thermocouple Input

Platinum resistance thermometer input					
Input type	Platinum resistance thermometer				
Name	Pt100		JPt100		
Temperature range (°C)	-200 to 850	-199.9 to 500.0	-199.9 to 500.0	-199.9 to 100.0	-199.9 to 100.0
Set value	0	1	2	3	4

	Thermocouple input																	
Input type	Thermocouple											ES1A Non-contact Temperature Sensor				Analog input		
Name	K		J		T	E	L	U	N	R	S	B	K10 to 70°C	K60 to 120°C	K115 to 165°C	K160 to 260°C	0 to 50 mV	
Temperature range (°C)	1800	-	-	-	-	-	-	-	-	-	-	1800	-	-	-	-	Usable in the following ranges by scaling: -199.9 to 999.9 or -199.9 to 999.9	
	1700	-	-	-	-	-	-	-	-	1700	1700	-	-	-	-	-		
	1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	1500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	1400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	1300	1300	-	-	-	-	-	-	-	1300	-	-	-	-	-	-		-
	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
	900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
800	-	-	850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
500	-	500.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-100	-	-20.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-200	-200	-	-100	-	-200	-	-	-100	-200	-	-	100	-	-	-	-	-	
Set value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	

Applicable standards by input type are as follows:

K, J, T, E, N, R, S, B: JIS C1602-1995

L: Fe-CuNi, DIN 43710-1985

U: Cu-CuNi, DIN 43710-1985

JPt100: JIS C1604-1989, JIS C1606-1989

Pt100: JIS C1604-1997, IEC751

Shaded ranges indicate default settings.

## ■ Ratings

### ■ Characteristics

**Note:** The indication of K thermocouples in the -200 to 1300°C range, and T and N thermocouples at a temperature of -100°C or less, and U and L thermocouples at any temperature is  $\pm 2^{\circ}\text{C} \pm 1$  digit maximum. The indication of B thermocouples at a temperature of 400°C or less is unrestricted.  
The indication of R and S thermocouples at a temperature of 200°C or less is  $\pm 3^{\circ}\text{C} \pm 1$  digit maximum.

## ■ Communications Specifications

Transmission path connection	Multiple points
Communications method (see note 1)	RS-485 (two-wire, half duplex)/RS-232C
Synchronization method	Start-stop synchronization
Baud rate	1,200/2,400/4,800/9,600/19,200 bps
Transmission code	ASCII
Data bit length (see note 2)	7 or 8 bits
Stop bit length (see note 2)	1 or 2 bits
Error detection	Vertical parity (none, even, odd) Frame check sequence (FCS): with SYSMAC WAY Block check character (BCC): with CompoWay/F
Flow control	Not available
Interface (see note 1)	RS-485/RS-232C
Retry function	Not available
Communications buffer	40 bytes

- Note:**
1. RS-232C communications are only supported for the E5AN and E5EN models.
  2. The baud rate, data bit length, stop bit length, or vertical parity can be individually set using the communications setting level.

## ■ Current Transformer (Sold Separately) Ratings

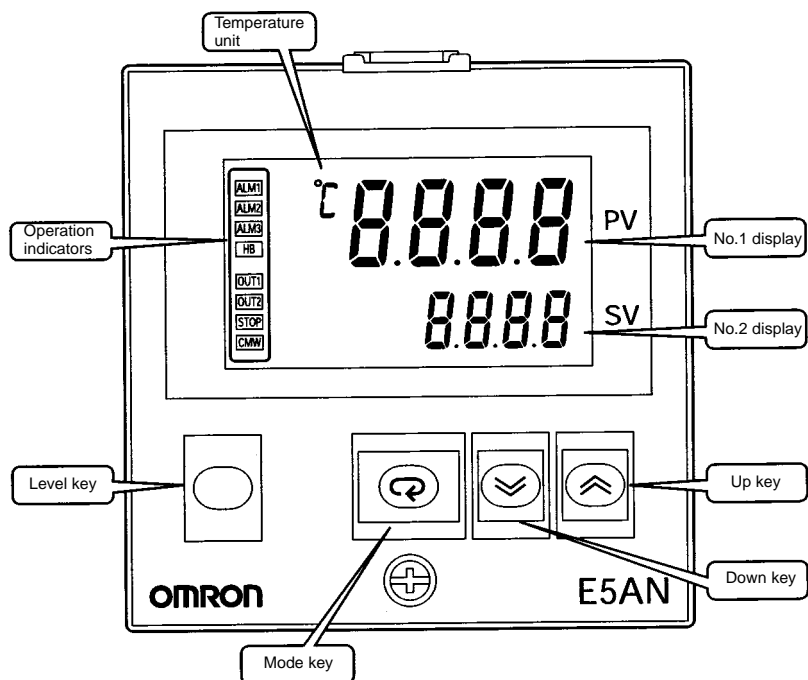
Dielectric strength	1,000 VAC (1 min)
Vibration resistance	50 Hz 98 m/s <sup>2</sup>
Weight	E54-CT1: Approx. 11.5 g E54-CT3: Approx. 50 g
Accessories (E54-CT3 only)	Armature (2) Plug (2)

## ■ Heater Burnout Alarm Specifications

Max. heater current	Single-phase AC: 50 A (see note 1)
Input current readout accuracy	±5%FS±1 digit max.
Heater burnout alarm setting range	0.0 to 50.0 A (0.1 A units) (see note 2)
Min. detection ON time	190 ms (see note 3)

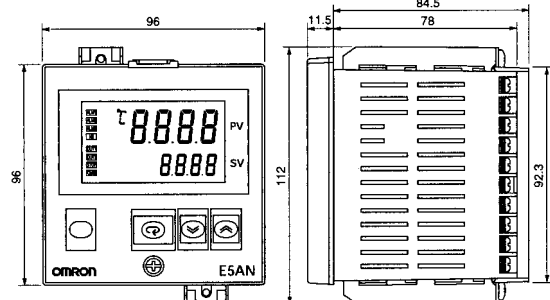
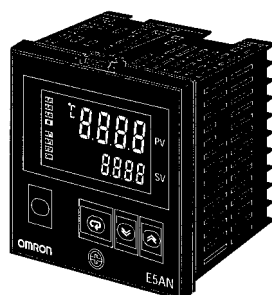
- Note:**
1. When heater burnout is detected on a 3-phase heater, use the K2CU-F□□A-□GS (with gate input terminal).
  2. When the set value is "00 A," the heater burnout alarm will always be OFF. When the set value is "50.0 A," the heater burnout alarm will always be ON.
  3. When the control output ON time is less than 190 ms, heater burnout detection and heater current measurement will not be carried out.

## Nomenclature



## Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

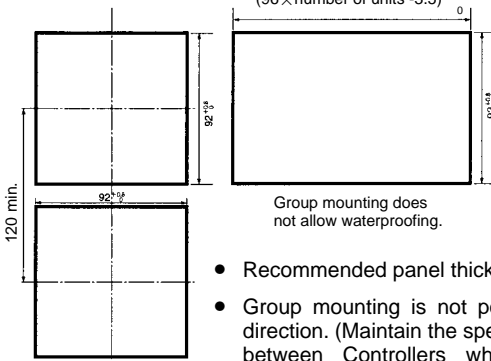


### Panel Cutouts

Mounted Separately

Group Mounted

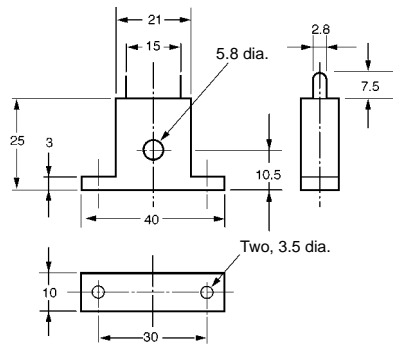
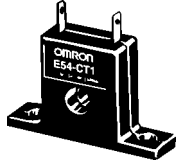
(96 × number of units - 3.5) <sup>+1.0</sup><sub>0</sub>



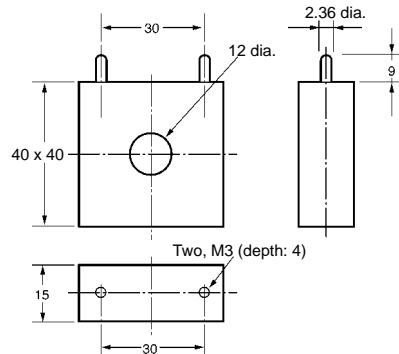
- Recommended panel thickness is 1 to 8 mm.
- Group mounting is not possible in the vertical direction. (Maintain the specified mounting space between Controllers when they are group mounted.)
- To mount the E5AN so that it is waterproof, apply the waterproof packing to the E5AN.
- When two or more E5ANs are mounted, make sure that the surrounding temperature does not exceed the allowable operating temperature specified in the specifications.

## Current Transformer (Sold Separately)

E54-CT1

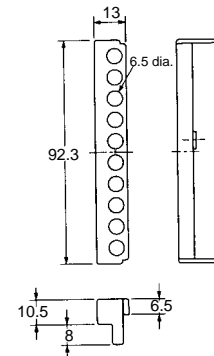
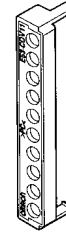


E54-CT3



## Terminal Cover (Sold Separately)

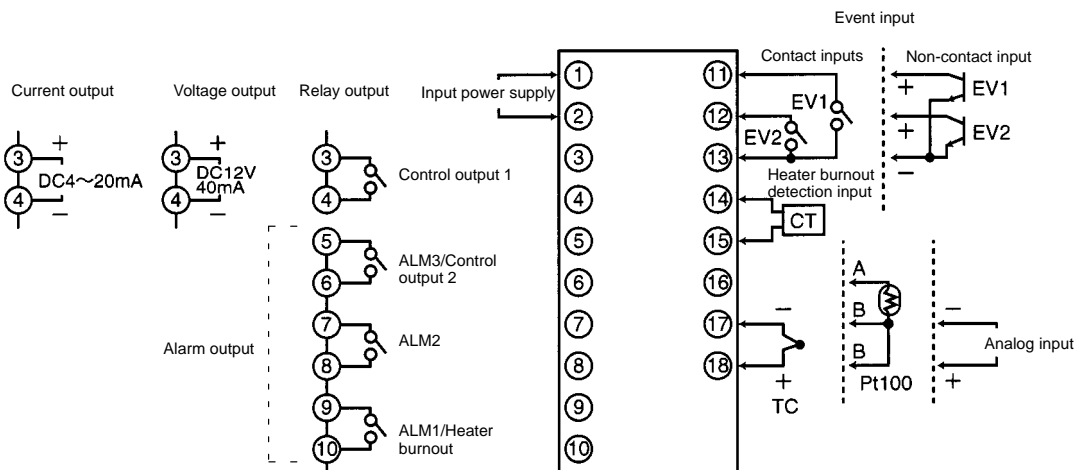
E53-COV11



## Wiring Terminals

- The voltage output (control output) is not electrically insulated from the internal circuits. When using a grounding thermocouple, do not connect the control output terminals to the ground. If the control output terminals are connected to the ground, errors will occur in the measured temperature values as a result of leakage current.
- Standard insulation is applied to the power supply I/O sections. If reinforced insulation is required, connect the input and output terminals to a device without any exposed current-carrying parts or to a device with standard insulation suitable for the maximum operating voltage of the power supply I/O section.

## ■ E5AN



**Note:** Two input power supplies are available: 100 to 240 VAC or 24 VDC.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.