

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 |

- Note:**
1. A Current Transformer (CT) is not provided with the Unit. If using a heater burnout alarm, be sure to order one when ordering the E5AN.
 2. 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.
 3. 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 |
|-------|-----------|
|-------|-----------|

■ Input Ranges

Platinum Resistance Thermometer Input/Thermocouple Input

| Platinum resistance thermometer input | | | | | |
|---------------------------------------|--|------------------------------|-----------------------|-----------------------|--------------|
| Input type | Platinum resistance thermometer | | | | |
| Name | Pt100 | | JPt100 | | |
| Temperature rangentlp | 1800 1700 1600 1500 1400 1300 1200 1100 1000 900 800 700 600 500 400 300 200 100 0 -100 -200 | 850 500.0 100.0 0.0 | 500.0 100.0 0.0 | 500.0 100.0 0.0 | 100.0 0.0 |
| 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 rangentlp | 1800 | - | - | - | - | - | - | - | - | - | - | 1800 | - | - | - | - | Usable in the following ranges by scaling: -1999 to 9999 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 | -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

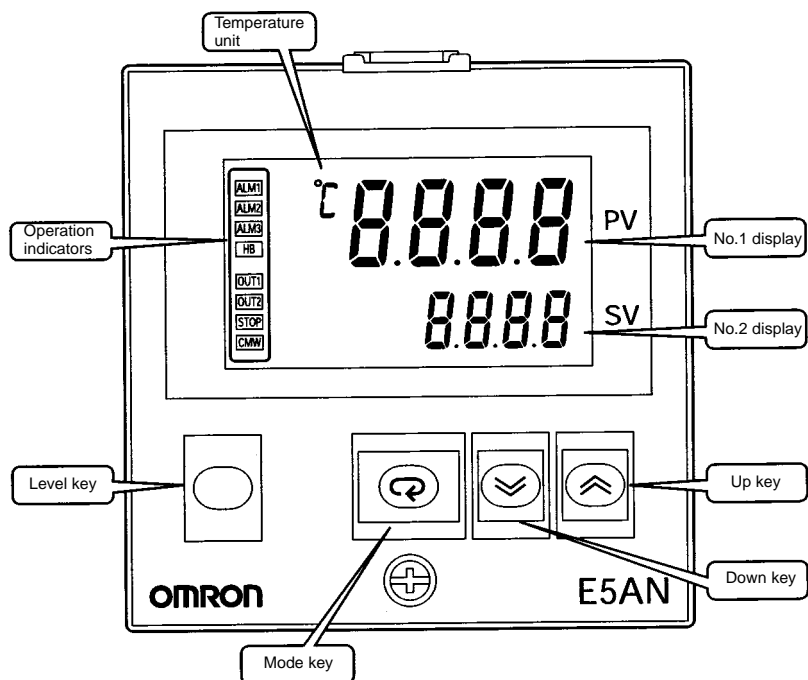
| | |
|----------------------------|--|
| Dielectric strength | 1,000 VAC (1 min) |
| Vibration resistance | 50 Hz 98 m/s ² |
| Weight | E54-CT1: Approx. 11.5 g E54-CT3: Approx. 50 g |
| Accessories (E54-CT3 only) | Armature (2) Plug (2) |

■ 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) |

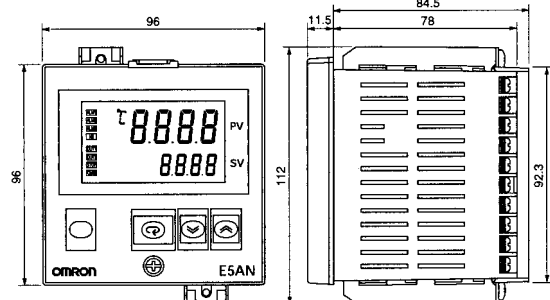
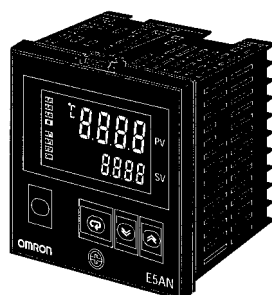
- Note:**
1. When heater burnout is detected on a 3-phase heater, use the K2CU-F□□A-□GS (with gate input terminal).
 2. When the set value is "00 A," the heater burnout alarm will always be OFF. When the set value is "50.0 A," the heater burnout alarm will always be ON.
 3. When the control output ON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

Nomenclature



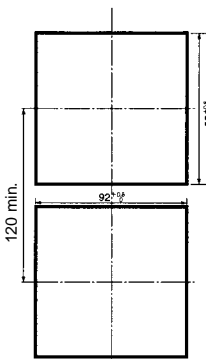
Dimensions

Note: All units are in millimeters unless otherwise indicated.



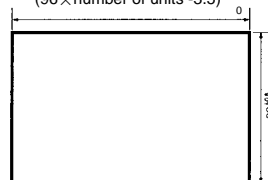
Panel Cutouts

Mounted Separately



Group Mounted

(96 × number of units - 3.5) ^{+1.0}₀

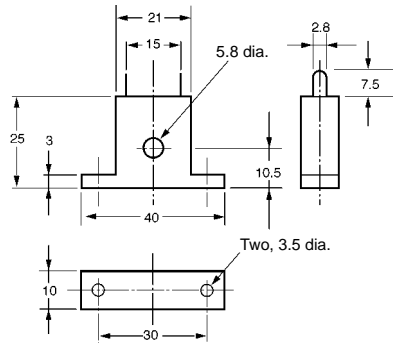
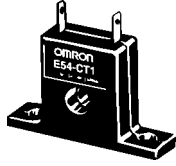


Group mounting does not allow waterproofing.

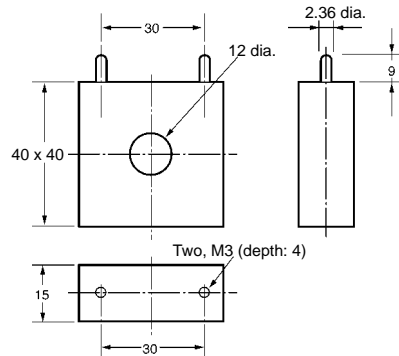
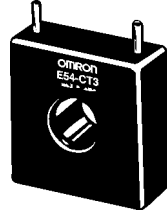
- Recommended panel thickness is 1 to 8 mm.
- Group mounting is not possible in the vertical direction. (Maintain the specified mounting space between Controllers when they are group mounted.)
- To mount the E5AN so that it is waterproof, apply the waterproof packing to the E5AN.
- When two or more E5ANs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

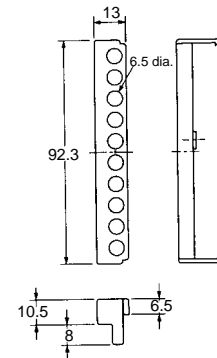
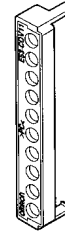


E54-CT3



Terminal Cover (Sold Separately)

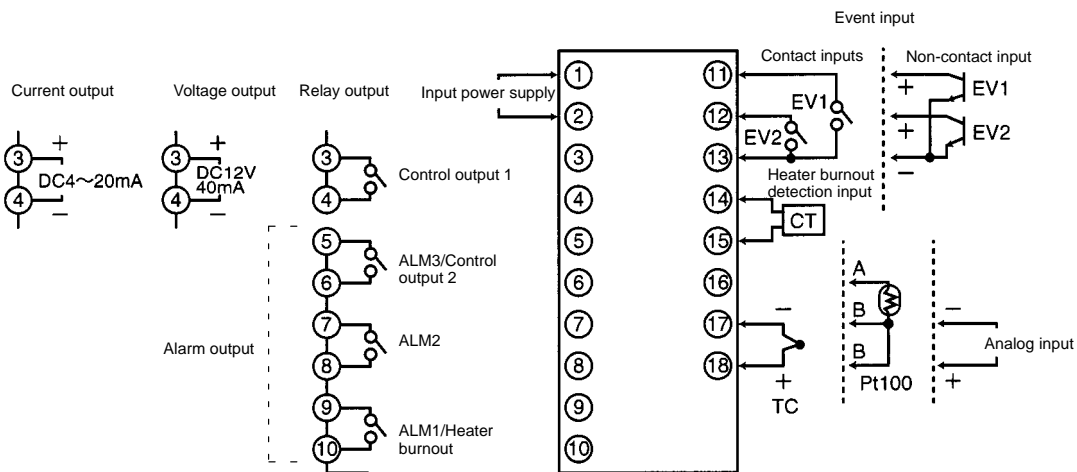
E53-COV11



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.