

Temperature Controllers

E5CSV

Simple to Set and Operate 1/16 DIN Size Controllers

- Easy setting using internal DIP and rotary switches
- ON/OFF or PID control (with on-demand auto-tuning) selectable
- Clearly visible digital display with character height of 13.5 mm
- Deviation indicator makes monitoring more effective
- Multiple temperature sensor input (thermocouple/platinum resistance thermometer) models stocked; thermocouple input only and platinum RTD input only models available
- Models with two alarms are ideal for temperature alarm applications
- Setting change protection prohibits tampering
- Sampling rate (500 ms) and selectable control period (2 and 20 s) improves response
- 8-mode alarm output and sensor error detection
- "Input shift" function adjusts display to reflect known sensor offsets



NEW

- °C or °F field selectable
- Black or white cases available to match panel aesthetics
- RoHS compliant
- Water-resistant front panel rated NEMA 4X/IP66
- Compact: measures 48 H x 48 W x 78 D mm
- Accuracy $\pm 0.5\%$ of value

Model Number Structure

■ Model Number Legend

Models with Terminal Blocks

E5CSV-
1 2 3 4 5 6

1. Output type

- R: Relay
- Q: Voltage for driving SSR

2. Number of alarms

- Blank: No alarm
- 1: 1 alarm
- 2: 2 alarms

3. Input type

- T: Thermocouple/platinum resistance thermometer (multi-input)
- KJ: Thermocouple
- P: Platinum resistance thermometer

4. Power supply voltage

- Blank: 100 to 240 VAC
- D: 24 VAC/VDC

5. Case color / Display scale

- Blank: Black
- W: Light gray
- F: Scale marked in °F (Black case only)

6. Power supply voltage

- AC100-240: 100 to 240 VAC
- AC/DC24: 24 VAC/VDC

Note: A functional explanation is provided here for illustration, but models are not necessarily available for all possible combinations. Please refer to *Ordering Information* when ordering.

Examples

- Voltage control output, without alarm, multi-input, light gray case: 115 VAC: E5CSV-QT-W AC100-240
- Relay control output, one alarm output, multi-input, black case: 24 VDC: E5CSV-R1TD AC/DC24

Ordering Information

List of Models

Size	Power supply voltage	Number of alarm points	Control output	TC/Pt multi-input Case color: Black Scale marked in °C	TC input Case color: Light gray Scale marked in °C	Pt input Case color: Light gray Scale marked in °C	TC/Pt multi-input Case color: Black Scale marked in °F
1/16 DIN 48 × 48 × 78 mm (W × H × D)	100 to 240 VAC	0	Relay	E5CSV-RT AC100-240			E5CSV-RT-F AC100-240
			Voltage (for driving SSR)	E5CSV-QT AC100-240			E5CSV-QT-F AC100-240
		1	Relay	E5CSV-R1T AC100-240	E5CSV-R1KJ-W	E5CSV-R1P-W	E5CSV-R1T-F AC100-240
			Voltage (for driving SSR)	E5CSV-Q1T AC100-240	E5CSV-Q1KJ-W	E5CSV-Q1P-W	E5CSV-Q1T-F AC100-240
		2 (See note)	Relay	E5CSV-R2T AC100-240			E5CSV-R2T-F AC100-240
			Voltage (for driving SSR)	E5CSV-Q2T AC100-240			E5CSV-Q2T-F AC100-240
	24 VAC/ VDC	0	Relay	E5CSV-RTD AC/DC24			
			Voltage (for driving SSR)	E5CSV-QTD AC/DC24			
		1	Relay	E5CSV-R1TD AC/DC24			E5CSV-R1TD-F AC/DC24
			Voltage (for driving SSR)	E5CSV-Q1TD AC/DC24			E5CSV-Q1TD-F AC/DC24
		2 (See note)	Relay	E5CSV-R2TD AC/DC24			
			Voltage (for driving SSR)	E5CSV-Q2TD AC/DC24			

Note: Models with two alarm outputs always use the upper limit alarm mode for the alarm 2 output.

Accessories (Order Separately)

Protective Cover

Type	Model
Hard Protective Cover	Y92A-48B

Terminal Cover

Model
E53-COV10

Specifications

Ratings

Supply voltage		100 to 240 VAC, 50/60 Hz	24 VAC/VDC, 50/60 Hz
Operating voltage range		85% to 110% of rated supply voltage	
Power consumption		5 VA	3 VA/2 W
Sensor input		Thermocouple input type: Platinum resistance thermometer input type: Multi-input (thermocouple/platinum resistance thermometer) type:	K, J, L Pt100, JPt100 K, J, L, T, U, N, R, Pt100, JPt100
Control output	Relay output	SPST-NO, 250 VAC, 3A (resistive load)	
	Voltage output (for driving the SSR)	12 VDC, 21 mA (with short-circuit protection circuit)3	
Control method		ON/OFF or 2-PID (with auto-tuning)	
Alarm output		SPST-NO, 250 VAC, 1A (resistive load)	
Setting method		Digital setting using front panel keys	
Indication method		3.5 digit, 7-segment digital display (character height: 13.5 mm) and deviation indicators	
Other functions		- Setting change prohibit (key protection) - Input shift - Temperature unit change (°C/°F) - Direct/reverse operation - Temperature range, Sensor switching (K/J/L, Pt100/JPt100) - Switching is performed between a thermocouple and platinum resistance thermometer for multi-input models. - Control period switching 8-mode alarm output - Sensor error detection	
Ambient temperature		-10 to 55°C (with no condensation or icing)	
Ambient humidity		25% to 85%	
Storage temperature		-25 to 65°C (with no condensation or icing)	

■ Characteristics

Setting accuracy		Thermocouple (See note 1.):	(±0.5% of indication value or ±1°C, whichever is greater) ±1 digit max.
Indication accuracy (ambient temperature of 23°C)		Platinum resistance thermometer (See note 2.):	(±0.5% of indication value or ±1°C, whichever is greater) ±1 digit max.
Influence of temperature		R thermocouple inputs:	(±1% of PV or ±10°C, whichever is greater) ±1 digit max.
Influence of voltage		Other thermocouple inputs:	(±1% of PV or ±4°C, whichever is greater) ±1 digit max.
		Platinum resistance thermometer inputs:	(±1% of PV or ±2°C, whichever is greater) ±1 digit max.
Hysteresis (for ON/OFF control)		0.2% FS (0.1% FS for multi-input (thermocouple/platinum resistance thermometer) models)	
Proportional band (P)		1 to 999°C (automatic adjustment using auto-tuning/self-tuning)	
Integral time (I)		1 to 1,999 s (automatic adjustment using auto-tuning/self-tuning)	
Derivative time (D)		1 to 1,999 s (automatic adjustment using auto-tuning/self-tuning)	
Alarm output range		Absolute-value alarm:	Same as the control range
		Other:	0% to 100% FS
		Alarm hysteresis:	0.2°C or °F (fixed)
Control period		2/20 s	
Sampling period		500 ms	
Insulation resistance		20 MΩ min. (at 500 VDC)	
Dielectric strength		2,000 VAC, 50/60 Hz for 1 min between current-carrying terminals of different polarity	
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 hr each in X, Y, and Z directions	
Shock resistance	Malfunction	100 m/s² min., 3 times each in 6 directions	
	Destruction	300 m/s² min., 3 times each in 6 directions	
Life expectancy	Electrical	100,000 operations min. (relay output models)	
Weight		Approx. 120 g (Controller only)	
Degree of protection		Front panel: Equivalent to IP66; Rear case: IP20; Terminals: IP00	
Memory protection		EEPROM (non-volatile memory) (number of writes: 1,000,000)	
EMC		EMI Radiated:	EN 55011 Group 1 Class A
		EMI Conducted:	EN 55011 Group 1 Class A
		ESD Immunity:	EN 61000-4-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3)
		Radiated Electromagnetic Field Immunity:	EN 61000-4-3: 10 V/m (80-1000 MHz, 1.4-2.0 GHz amplitude modulated) (level 3) 10 V/m (900 MHz pulse modulated)
		Conducted Disturbance Immunity:	EN 61000-4-6: 3 V (0.15 to 80 MHz) (level 2)
		Noise Immunity (First Transient Burst Noise):	EN 61000-4-4
		Burst Immunity:	2 kV power-line (level 3), 1 kV I/O signal-line (level 3)
		Surge Immunity:	EN 61000-4-5: Power line: Normal mode 1 kV; Common mode 2 kV Output line (relay output): Normal mode 1 kV; Common mode 2 kV
		Voltage Dip/Interrupting Immunity:	EN 61000-4-11 0.5 cycle, 100% (rated voltage)
Approved standards		UL 61010C-1 (listing) CSA C22.2 No.1010-1	
Conformed standards		EN 61326, EN 61010-1, IEC 61010-1 VDE 0106 Part 100 (finger protection), when the terminal cover is mounted.	

Note: 1. The following exceptions apply to thermocouples.

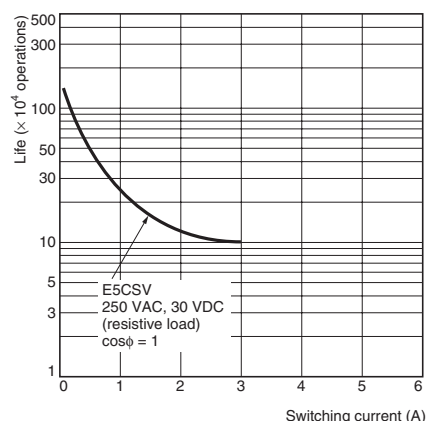
- U, L: $\pm 2^{\circ}\text{C} \pm 1$ digit max.
- R: $\pm 3^{\circ}\text{C} \pm 1$ digit max. at 200°C or less

2. The following exceptions apply to platinum resistance thermometers.

Input set values 0, 1, 2, 3 for E5CSV: 0.5% FS ± 1 digit max.

Input set value 1 for E5CSV: 0.5% FS ± 1 digit max.

■ Electrical Life Expectancy Curve for Relays (Reference Values)

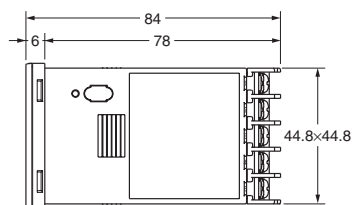
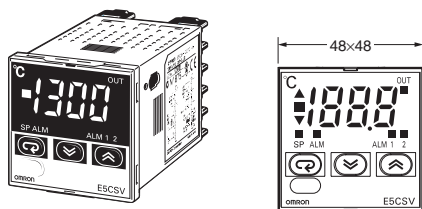


Dimensions

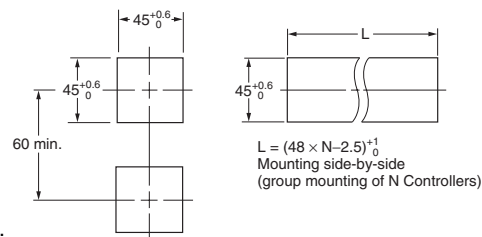
Note: All units are in millimeters unless otherwise indicated.

Controller

E5CSV

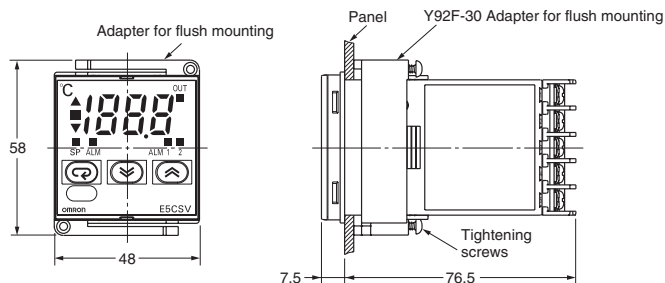
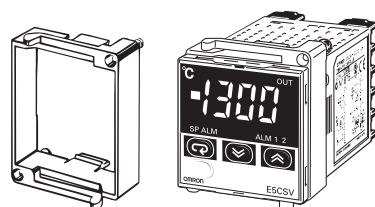


Panel Cutout Dimensions



Note: Terminals cannot be removed.

E5CSV + Adapter for Flush Mounting (Provided)

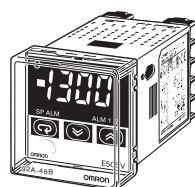


- Note:** 1. The recommended panel thickness is 1 to 4 mm.
2. Group mounting is possible in one direction only.

Hard Protective Cover

The Y92A-48B Protective Cover (hard type) is available for the following applications.

- To protect the set from dust and dirt.
- To prevent the panel from being accidentally touched causing displacement of set values.
- To provide effective protection against water droplets.



Terminal Cover

E53-COV10

