

Digital Temperature Controller E5CD/E5CD-B (48 × 48 mm)

Optimize Control by Detecting Status Changes.

Easily Satisfy Both Productivity and Quality.

Models with Push-In Plus technology Added to Lineup.

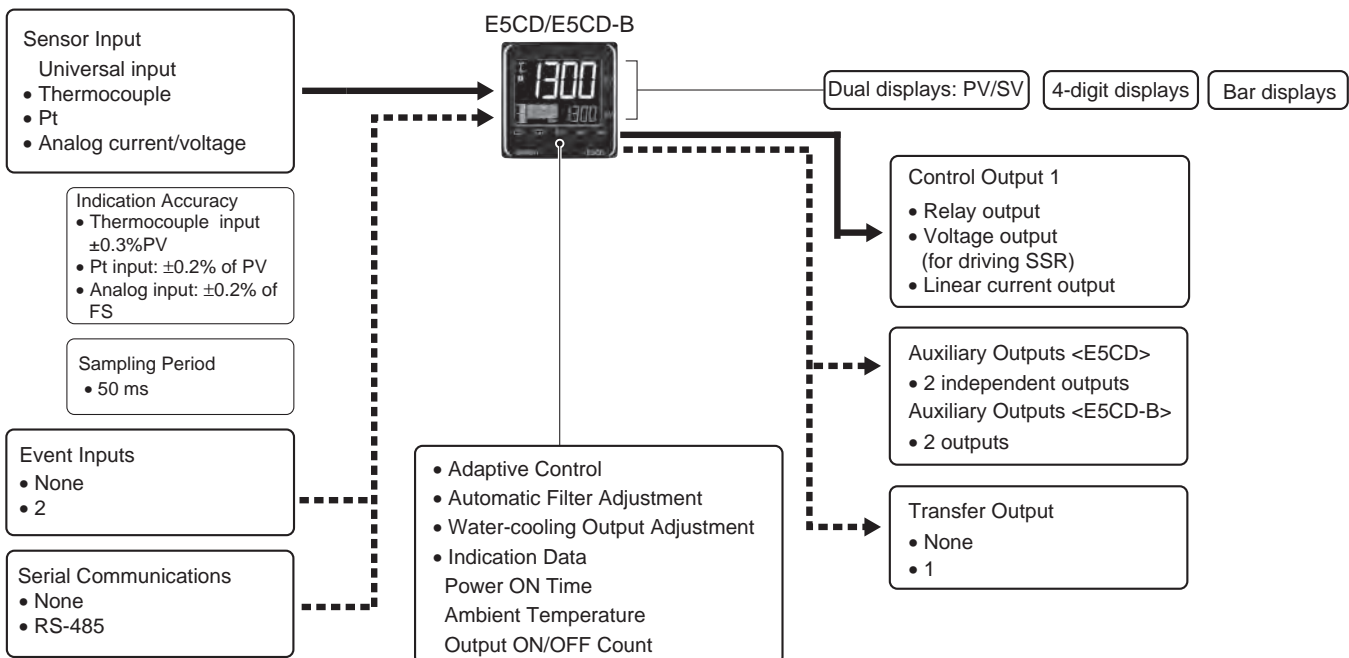
- Automatic optimization of control for changes in systems (Adaptive Control).
- Functions specialized for packaging machines (Temperature Sensors for Packaging Machines and Automatic Filter Adjustment).
- Function specialized for water-cooled extruders (Water-cooling Output Adjustment).
- Indication data (Power ON Time, Ambient Temperature, and Output ON/OFF Count).
- Basic performance is same as the E5□C standard models.
- Draw-out structure for easy maintenance. (Screw terminal blocks only)



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Refer to Safety Precautions on 43.

Main I/O Functions



This datasheet is provided as a guideline for selecting products.

Be sure to refer to the following manuals for application precautions and other information required for operation before attempting to use the product.

E5□D Digital Temperature Controllers User's Manual (Cat. No. H224)

E5□D Digital Temperature Controllers Communications Manual (Cat. No. H225)

Model Number Legend and Standard Models

Model Number Legend

Models with Screw Terminal Blocks

E5CD-□□ 2 □ 6 M-□□□ (Example: E5CD-RX2A6M-000)

① ② ③ ④ ⑤ ⑥

Model	①	②	③	④	⑤	⑥	Meaning				
	Control outputs 1 and 2	No. of auxiliary outputs	Power supply voltage	Terminal type	Input type	Options					
E5CD							48 × 48 mm				
							Control output 1		Control output 2		
	RX						Relay output		None		
	QX						Voltage output (for driving SSR)		None		
	CX						Linear current output		None		
		2					2 independent outputs				
			A				100 to 240 VAC				
			D				24 VAC/DC				
				6			Screw terminal blocks (with E53-COV23 Terminal Cover), draw-out structure				
					M		Universal input				
								HB alarm and HS alarm	Communications	Event inputs	Transfer Output
							000	---	---	---	---
					*1		001	1	---	2	---
					*1		002	1	RS-485	---	---
					*2		004	---	RS-485	2	---
					*2		006	---	---	2	Provided.

*1. This option can be selected when the control output is RX or QX.

*2. This option can be selected when the control output is CX.

Heating and Cooling Control

Using Heating and Cooling Control

① Control Output Assignment

An auxiliary output is used as the cooling control output.

② Control

If PID control is used, you can set PID control separately for heating and cooling.

This allows you to handle control systems with different heating and cooling response characteristics.

List of Models

Model	Model
E5CD-RX2A6M-000	E5CD-CX2A6M-000
E5CD-RX2D6M-000	E5CD-CX2D6M-000
E5CD-RX2A6M-001	E5CD-CX2A6M-004
E5CD-RX2D6M-001	E5CD-CX2D6M-004
E5CD-RX2A6M-002	E5CD-CX2A6M-006
E5CD-RX2D6M-002	E5CD-CX2D6M-006
E5CD-QX2A6M-000	
E5CD-QX2D6M-000	
E5CD-QX2A6M-001	
E5CD-QX2D6M-001	
E5CD-QX2A6M-002	
E5CD-QX2D6M-002	

Model Number Legend

Models with Push-In Plus Terminal Blocks

E5CD-□□ 2 □ B M -□□□ (Example: E5CD-RX2ABM-000)

① ② ③ ④ ⑤ ⑥

Model	① Control outputs 1 and 2	② No. of auxiliary outputs	③ Power supply voltage	④ Terminal type	⑤ Input type	⑥ Options	Meaning				
E5CD							48 × 48 mm				
							Control output 1		Control output 2		
	RX						Relay output		None		
	QX						Voltage output (for driving SSR)		None		
	CX						Linear current output		None		
		2					2 independent outputs				
			A				100 to 240 VAC				
			D				24 VAC/DC				
				B			Push-In Plus terminal block				
					M		Universal input				
								HB alarm and HS alarm	Communications	Event inputs	Transfer Output
							000	---	---	---	---
						*1	001	1	---	2	---
						*1	002	1	RS-485	---	---
						*2	004	---	RS-485	2	---
						*2	006	---	---	2	Provided.

*1. This option can be selected when the control output is RX or QX.

*2. This option can be selected when the control output is CX.

Heating and Cooling Control

Using Heating and Cooling Control

① Control Output Assignment

An auxiliary output is used as the cooling control output.

② Control

If PID control is used, you can set PID control separately for heating and cooling.

This allows you to handle control systems with different heating and cooling response characteristics.

List of Models

Model	Model
E5CD-RX2ABM-000	E5CD-CX2ABM-000
E5CD-RX2DBM-000	E5CD-CX2DBM-000
E5CD-RX2ABM-001	E5CD-CX2ABM-004
E5CD-RX2DBM-001	E5CD-CX2DBM-004
E5CD-RX2ABM-002	E5CD-CX2ABM-006
E5CD-RX2DBM-002	E5CD-CX2DBM-006
E5CD-QX2ABM-000	
E5CD-QX2DBM-000	
E5CD-QX2ABM-001	
E5CD-QX2DBM-001	
E5CD-QX2ABM-002	
E5CD-QX2DBM-002	

Optional Products (Order Separately)

USB-Serial Conversion Cable

Model
E58-CIFQ2

Terminal Covers

(Cannot be used on a Push-In Plus terminal block type)

Model
E53-COV17
E53-COV23 (3pcs) *

Note: The E53-COV10 cannot be used.

Refer to page 14 for the mounted dimensions.

* E53-COV23 are provided with the Digital Temperature Controller.

Waterproof Packing

Model
Y92S-P8

Note: This Waterproof Packing is provided with the Digital Temperature Controller.

Current Transformers (CTs)

Hole diameter	Model
5.8 mm	E54-CT1
5.8 mm	E54-CT1L*
12.0 mm	E54-CT3
12.0 mm	E54-CT3L*

*Lead wires are included with these CTs. If UL certification is required, use these CTs.

Adapter

Model
Y92F-45

Note: Use this Adapter when the panel has already been prepared for an E5B□ Controller.

Waterproof Cover

Model
Y92A-48N

Mounting Adapter

Model
Y92F-49

Note: This Mounting Adapter is provided with the Digital Temperature Controller.

DIN Track Mounting Adapter

(Cannot be used on a Push-In Plus terminal block type)

Model
Y92F-52

Front Covers

Type	Model
Hard Front Cover	Y92A-48H
Soft Front Cover	Y92A-48D

Draw-out Jig

(Cannot be used on a Push-In Plus terminal block type)

Model
Y92F-58

CX-Thermo Support Software

Model
EST2-2C-MV4

Note: CX-Thermo version 4.66 or higher is required for the E5CD.
CX-Thermo version 4.67 or higher is required for the E5CD-B.
For the system requirements for the CX-Thermo, refer to information on the EST2-2C-MV4 on the OMRON website (www.ia.omron.com).

E5CD/E5CD-B

Specifications

Ratings

Power supply voltage	A in model number: 100 to 240 VAC, 50/60 Hz D in model number: 24 VAC, 50/60 Hz; 24 VDC	
Operating voltage range	85% to 110% of rated supply voltage	
Power consumption	Models with option selection of 000:5.2 VA max. at 100 to 240 VAC, and 3.1 VA max. at 24 VAC or 1.6 W max. at 24 VDC All other models: 6.5 VA max. at 100 to 240 VAC, and 4.1 VA max. at 24 VAC or 2.3 W max. at 24 VDC	
Sensor input	Temperature input Thermocouple: K, J, T, E, L, U, N, R, S, B, C/W, or PL II Platinum resistance thermometer: Pt100 or JPt100 Infrared temperature sensor (ES1B): 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C Analog input 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 max., Voltage input: 1 MΩ min. (Use a 1:1 connection when connecting the ES2-HB/THB.)	
Control method	ON/OFF control or 2-PID control (with auto-tuning)	
Control output	Relay output	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA (reference value)
	Voltage output (for driving SSR)	Output voltage: 12 VDC ±20% (PNP), max. load current: 21 mA, with short-circuit protection circuit
	Linear current output	4 to 20 or 0 to 20 mA DC, Load: 500 Ω max., Resolution: Approx. 10,000
Auxiliary output	Number of outputs	2
	Output specifications	SPST-NO relay outputs: 250 VAC, E5CD: 3 A (resistive load), E5CD-B: 2 A (resistive load) Electrical life: 100,000 operations, Minimum applicable load: 10 mA at 5 V (reference values)
Event input	Number of inputs	2
	External contact input specifications	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. Current flow: Approx. 7 mA per contact
Transfer Output	Number of outputs	1 (depends on model): Transfer output type
	Output specifications	Current output: 4 to 20 mA DC, Load: 500 Ω, Resolution: Approx. 10,000 Linear voltage output: 1 to 5 V DC, Load: 1 kΩ min., Resolution: Approx. 10,000
Setting method	Digital setting using front panel keys	
Indication method	11-segment digital display, individual indicators, and bar display Character height: PV: 14.9 mm, SV: 7.1 mm	
Multi SP *	Up to eight set points (SP0 to SP7) can be saved and selected using the event inputs, key operations, or serial communications.	
Bank switching	None	
Other functions	Adaptive control, automatic filter adjustment, water-cooling output adjustment, indication data (power ON time monitor, ambient temperature monitor, and control output ON/OFF count monitors), parameter masking, operation after power ON, manual output, heating/cooling control, loop burnout alarm, SP ramp, other alarm functions, heater burnout (HB) alarm (including SSR failure (HS) alarm), 40% AT, 100% AT, MV limiter, input digital filter, robust tuning, PV input shift, run/stop, protection functions, extraction of square root, MV change rate limit, logic operations, temperature status display, simple programming, moving average of input value, and display brightness setting	
Ambient operating temperature	-10 to 55°C (with no condensation or icing), For 3-year warranty: -10 to 50°C with standard mounting (with no condensation or icing)	
Ambient operating humidity	25% to 85%	
Storage temperature	-25 to 65°C (with no condensation or icing)	
Altitude	2,000 m max.	
Recommended fuse	T2A, 250 VAC, time-lag, low-breaking capacity	
Installation environment	Overvoltage category II, Pollution Degree 2 (EN/IEC/UL 61010-1)	

*There can be up to four set points if event inputs are used to select them.