Digital Temperature Controller
E5ED/E5ED-B (48 × 96 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)

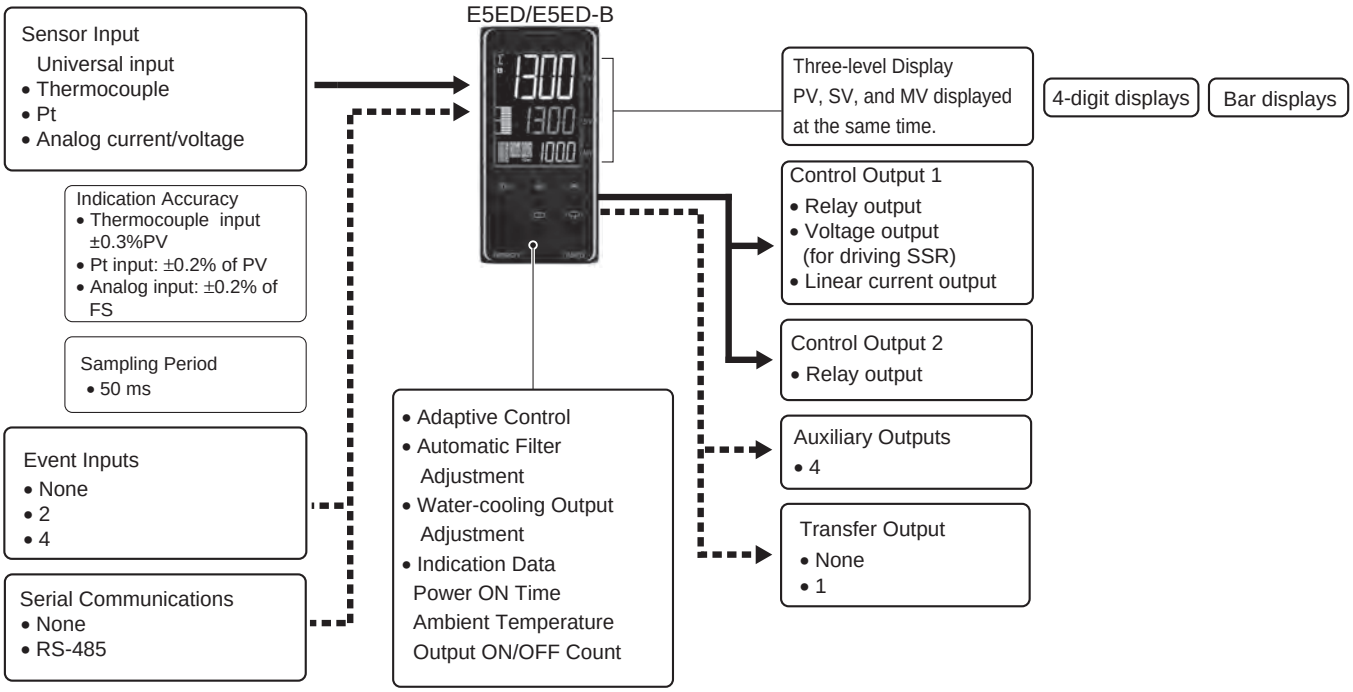
48 × 96 mm
Screw Terminal Blocks
E5ED

48 × 96 mm
Push-In Plus Terminal Blocks
E5ED-B

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

E5ED-□□ 4 □ 6 M-□□□ (Example: E5ED-RX4A6M-000)

①②③④⑤⑥

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	
E5ED							48 × 96 mm	
							Control output 1	Control output 2
	RX						Relay output	None
	QX						Voltage output (for driving SSR)	None
	CX						Linear current output	None
	QR						Voltage output (for driving SSR)	Relay output
	RR						Relay output	Relay output
		4					4 (auxiliary outputs 1 and 2 with same common and auxiliary outputs 3 and 4 with same common)	
			A				100 to 240 VAC	
			D				24 VAC/DC	
				6			Screw terminal blocks (with E53-COV24 Terminal Cover), draw-out structure	
					M		Universal input	

	⑥ Options	HB alarm and HS alarm	Communications	Event inputs	Transfer Output
	000	---	---	---	---
✻1	004	---	RS-485	2	---
✻2	008	1	RS-485	2	---
✻3	010	1	---	4	---
✻1	022	---	RS-485	4	Provided.

✻1. This option can be selected when the control output is CX.

✻2. This option can be selected when the control output is RX, QX, QR, or RR.

✻3. This option can be selected when the control output is RX or QX.

Heating and Cooling Control

Using Heating and Cooling Control

① Control Output Assignment

If there is no control output 2, an auxiliary output is used as the cooling control output.

If there is a control output 2, the two control outputs are used for heating and cooling. (It does not matter which output is used for heating and which output is used for cooling.)

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
E5ED-RX4A6M-000
E5ED-RX4D6M-000
E5ED-RX4A6M-008
E5ED-RX4D6M-008
E5ED-RX4A6M-010
E5ED-RX4D6M-010
E5ED-QX4A6M-000
E5ED-QX4D6M-000
E5ED-QX4A6M-008
E5ED-QX4D6M-008
E5ED-QX4A6M-010
E5ED-QX4D6M-010

Model
E5ED-CX4A6M-000
E5ED-CX4D6M-000
E5ED-CX4A6M-004
E5ED-CX4D6M-004
E5ED-CX4A6M-022
E5ED-CX4D6M-022
E5ED-RR4A6M-000
E5ED-RR4A6M-008
E5ED-QR4A6M-000
E5ED-QR4A6M-008

Model Number Legend

Models with Push-In Plus Terminal Blocks

E5ED-□□ 4 □ B M-□□□ (Example: E5ED-RX4ABM-000)

①②③④⑤⑥

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	
E5ED							48 × 96 mm	
							Control output 1	Control output 2
	RX						Relay output	None
	QX						Voltage output (for driving SSR)	None
	CX						Linear current output	None
	QR						Voltage output (for driving SSR)	Relay output
	RR						Relay output	Relay output
		4					4 (auxiliary outputs 1 and 2 with same common and auxiliary outputs 3 and 4 with same common)	
			A				100 to 240 VAC	
			D				24 VAC/DC	
				B			Push-In Plus terminal block	
					M		Universal input	

	⑥ Options	HB alarm and HS alarm	Communications	Event inputs	Transfer Output
	000	---	---	---	---
✻1	004	---	RS-485	2	---
✻2	008	1	RS-485	2	---
✻3	010	1	---	4	---
✻1	022	---	RS-485	4	Provided.

✻1. This option can be selected when the control output is CX.

✻2. This option can be selected when the control output is RX, QX, QR, or RR.

✻3. This option can be selected when the control output is RX or QX.

Heating and Cooling Control

Using Heating and Cooling Control

① Control Output Assignment

If there is no control output 2, an auxiliary output is used as the cooling control output.

If there is a control output 2, the two control outputs are used for heating and cooling. (It does not matter which output is used for heating and which output is used for cooling.)

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
E5ED-RX4ABM-000
E5ED-RX4DBM-000
E5ED-RX4ABM-008
E5ED-RX4DBM-008
E5ED-RX4ABM-010
E5ED-RX4DBM-010
E5ED-QX4ABM-000
E5ED-QX4DBM-000
E5ED-QX4ABM-008
E5ED-QX4DBM-008
E5ED-QX4ABM-010
E5ED-QX4DBM-010

Model
E5ED-CX4ABM-000
E5ED-CX4DBM-000
E5ED-CX4ABM-004
E5ED-CX4DBM-004
E5ED-CX4ABM-022
E5ED-CX4DBM-022
E5ED-RR4ABM-000
E5ED-RR4ABM-008
E5ED-QR4ABM-000
E5ED-QR4ABM-008

Optional Products (Order Separately)

USB-Serial Conversion Cable

Model
E58-CIFQ2

Communication Conversion Cable

Model
E58-CIFQ2-E

Note: Always use this product together with the E58-CIFQ2.

Terminal Covers

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

Model
E53-COV24 (3pcs)

Note: Terminal Covers are provided with the Digital Temperature Controller.

Waterproof Packing

Model
Y92S-P9

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

Waterproof Cover

Model
Y92A-49N

Front Port Cover

Model
Y92S-P7

Note: This Front Port Cover is provided with the Digital Controller.

Mounting Adapter

Model
Y92F-51 (2pcs)

Note: This Mounting Adapter 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.

Draw-out Jig

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

Model
Y92F-59

CX-Thermo Support Software

Model
EST2-2C-MV4

Note: CX-Thermo version 4.66 or higher is required for the E5ED. CX-Thermo version 4.67 or higher is required for the E5ED-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).

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: 6.6 VA max. at 100 to 240 VAC, and 4.1 VA max. at 24 VAC or 2.3 W max. at 24 VDC All other models: 8.3 VA max. at 100 to 240 VAC, and 5.5 VA max. at 24 VAC or 3.2 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, 5 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: 40 mA, with short-circuit protection circuit (The maximum load current is 21 mA for models with two control outputs.)
	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**	4
	Output specifications	SPST-NO relay outputs, 250 VAC, 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 or 4 (depends on model)
	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: 18.0 mm, SV: 11.0 mm, MV: 7.8 mm Three displays Contents: PV/SV/MV, PV/SV/Multi-SP, PV/SV/Remaining soak time, etc. Numbers of digits: 4 digits each for PV, SV, and MV displays
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)