Digital Temperature Controller
E5□C/E5□C-T

E5□C Series That Pursues Greater Visibility with Large White PV Display. Introducing Models with Push-In Plus Terminal Blocks for Unified Panel Solutions. Reduce Required Wiring Work. A Wide Lineup of Models to Meet a Wide Range of User Needs.

Digital Temperature Controllers: E5□C Series

48 × 24 mm	Models with Screw Terminal Blocks/ Models with Screwless Clamp Terminal Blocks	E5GC 	page 2
48 × 48 mm	Models with Screw Terminal Blocks	E5CC 	page 18
	Models with Push-In Plus Terminal Blocks	E5CC-B 	page 18
	Plug-in Models	E5CC-U 	page 18
48 × 96 mm	Models with Screw Terminal Blocks	E5EC 	page 40
	Models with Push-In Plus Terminal Blocks	E5EC-B 	page 40
96 × 96 mm	Models with Screw Terminal Blocks	E5AC 	page 40
DIN 22.5-mm-wide Controllers That Mount to DIN Track	Models with Screw Terminal Blocks	E5DC 	page 58
	Models with Push-In Plus Terminal Blocks	E5DC-B 	page 58

Programmable Digital Temperature Controllers: E5□C-T Series

48 × 48 mm	Models with Screw Terminal Blocks	E5CC-T 	page 78
48 × 96 mm	Models with Screw Terminal Blocks	E5EC-T 	page 96
96 × 96 mm	Models with Screw Terminal Blocks	E5AC-T 	page 96

Digital Temperature Controller

E5GC (48 × 24 mm)

Easy Operation and High Performance of the E5□C Series in a Compact 48 × 24-mm Body

- A compact body of 48 × 24 × 90 mm (W × H × D) that is ideal for small equipment, laboratory instruments, and others.
- White PV display with a height of 10.5 mm for high visibility even with the compact body.
- Removable terminal block to simplify maintenance. Select from screw terminal blocks or screwless clamp terminal blocks for the wiring method.
- High-speed sampling at 50 ms.
- Easy connections to a PLC with programless communications.
- Set up the Controller without wiring the power supply by connecting to the computer with a Communications Conversion Cable (sold separately). Setup is easy with the CX-Thermo (sold separately).

✻CSA conformance evaluation by UL.

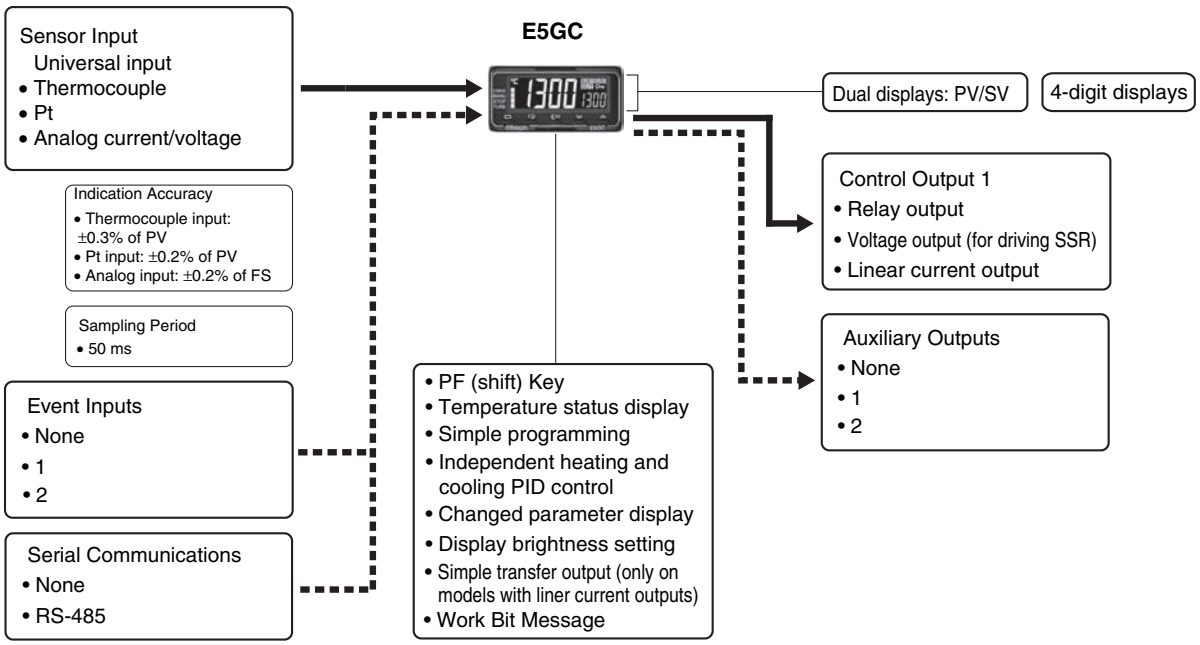
48 × 24 mm Models with Screw Terminal Blocks E5GC-□6

48 × 24 mm Models with Screwless Clamp Terminal Blocks E5GC-□C

Refer to your OMRON website for the most recent information on applicable safety standards.

⚠ **Refer to *Safety Precautions* on 122.**

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□C Digital Temperature Controllers User's Manual (Cat. No. H174)
E5□C Digital Temperature Controllers Communications Manual (Cat. No. H175)

Model Number Legend and Standard Models

Model Number Legend

E5GC-□□ □ □ □ M-□□□ (Example: E5GC-RX1A6M-015)

(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	
E5GC							48 × 24 mm	
							Control output 1	Control output 2
	RX						Relay output	None
	QX						Voltage output (for driving SSR)	None
✻1	CX						Linear current output	None
	✻2	0					None	
		1					1	
		2					2	
			A				100 to 240 VAC	
			D				24 VAC/DC	
				6			Screw terminal blocks (with cover)	
				C			Screwless clamp terminal blocks ✻6	
					M		Universal input	
							HB alarm and HS alarm	Communications / Event inputs
						000	---	--- / ---
						015	---	RS-485 / ---
					✻3	016	---	--- / 1
					✻3, ✻4	023	1	--- / ---
					✻5	024	---	--- / 2

✻1. The control output can be used as a simple transfer output.
✻2. Only option 000 can be selected if an auxiliary output is zero.
✻3. Option 016 and 023 can be selected only if two auxiliary outputs are selected.
✻4. Option with HB and HS alarms (023) cannot be selected if a linear current output is selected for the control output.
✻5. Option 024 can be selected only if one auxiliary output is selected.
✻6. The specifications are different for Temperature Controllers with Push-In Plus terminal blocks. Refer to *Precautions when Wiring* on page 131.

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.

Optional Products (Order Separately)

USB-Serial Conversion Cable

Model
E58-CIFQ2

Communications Conversion Cable

Model
E58-CIFQ2-E

Note: Always use this product together with the E58-CIFQ2. This Cable is used to connect to the bottom-panel Setup Tool port.

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.

Mounting Adapter

Model
Y92F-53 (2pcs)

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

Waterproof Packing

Model
Y92S-P12

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

Draw-out Jig

Model
Y92F-55

CX-Thermo Support Software

Model
EST2-2C-MV4

Note: CX-Thermo version 4.62 or higher is required for the E5GC. For the system requirements for the CX-Thermo, refer to information on the EST2-2C-MV4 on the OMRON website (www.ia.omron.com).

Terminal Covers (for E5GC-□6)

Model
E53-COV27

Note: This Terminal Covers is provided with the Digital Temperature Controller.

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		5.9 VA max. at 100 to 240 VAC, and 3.2 VA max. at 24 VAC or 1.8 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-N/THB-N.)
Control method		ON/OFF control or 2-PID control (with auto-tuning)
Control output	**Relay output**	SPST-NO, 250 VAC, 2 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 mA DC/0 to 20 mA DC, load: 500 Ω max., resolution: Approx. 10,000
Auxiliary output	**Number of outputs**	1 or 2 (depends on model)
	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 value)
Event input	**Number of inputs**	1 or 2 (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
Setting method		Digital setting using front panel keys
Indication method		11-segment digital displays and individual indicators Character height: PV: 10.5 mm, SV: 5.0 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		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, self tuning, 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, display brightness setting, simple transfer output, and work bit message
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 are up to four event inputs.

Input Ranges

Thermocouple/Platinum Resistance Thermometer (Universal inputs)

Sensor type	Platinum resistance thermometer					Thermocouple															Infrared temperature sensor			
Sensor specification	Pt100			JPt100		K		J		T		E	L	U		N	R	S	B	C/W	PLII	10 to 70°C	60 to 120°C	115 to 165°C	140 to 260°C
Temperature range (°C)	850	500.0	100.0 / 0.0	500.0	100.0 / 0.0	1300	500.0	850	400.0	400	400.0	600	850	400	400.0	1300	1700	1700	1800 / 100	2300	1300	90	120	165	260
	-200	-199.9		-199.9		-200	-20.0	-100	-20.0	-200	-199.9	-200	-100	-200	-199.9	-200	0	0		0	0	0	0	0	0
Set value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Shaded settings are the default settings.

The applicable standards for the input types are as follows:

K, J, T, E, N, R, S, B: JIS C 1602-2015, IEC 60584-1

L: Fe-CuNi, DIN 43710-1985

U: Cu-CuNi, DIN 43710-1985

C/W: W5Re/W26Re, JIS C 1602-2015, ASTM E988-1990

JPt100: JIS C 1604-1989, JIS C 1606-1989

Pt100: JIS C 1604-1997, IEC 60751

PL II: According to Platinel II electromotive force charts from BASF (previously Engelhard)

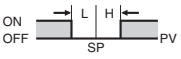
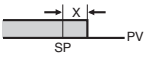
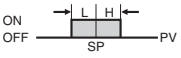
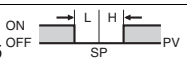
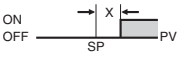
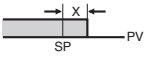
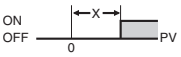
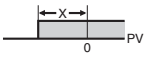
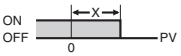
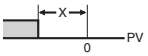
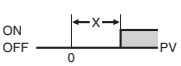
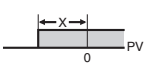
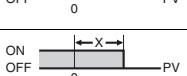
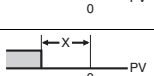
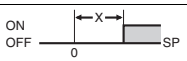
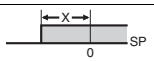
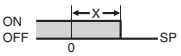
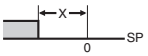
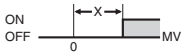
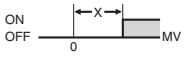
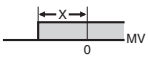
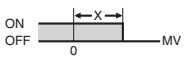
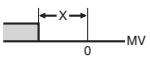
Analog input

Input type	Current		Voltage		
Input specification	4 to 20 mA	0 to 20 mA	1 to 5 V	0 to 5 V	0 to 10 V
Setting range	Usable in the following ranges by scaling: -1999 to 9999, -199.9 to 999.9, -19.99 to 99.99 or -1.999 to 9.999				
Set value	25	26	27	28	29

Alarm Types

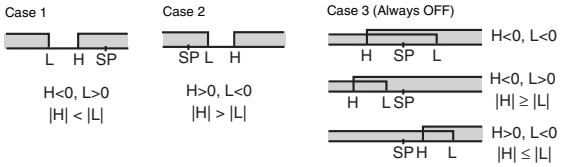
Each alarm can be independently set to one of the following 17 alarm types. The default is 2: Upper limit. (See note.)
Auxiliary outputs are allocated to alarms. ON delays and OFF delays (0 to 999 s) can also be specified.

Note: In the default settings for models with HB or HS alarms, alarm 1 is set to a heater alarm (HA) and the Alarm Type 1 parameter is not displayed. To use alarm 1, set the output assignment to alarm 1.

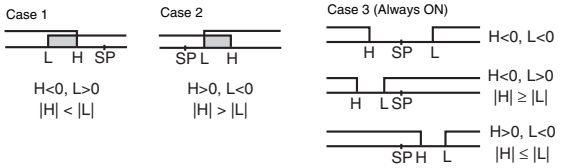
Set value	Alarm type	Alarm output operation		Description of function
		When alarm value X is positive	When alarm value X is negative	
0	Alarm function OFF	Output OFF		No alarm
1	Upper- and lower-limit ✻1		✻2	Set the upward deviation in the set point for the alarm upper limit (H) and the lower deviation in the set point for the alarm lower limit (L). The alarm is ON when the PV is outside this deviation range.
2 (default)	Upper-limit			Set the upward deviation in the set point by setting the alarm value (X). The alarm is ON when the PV is higher than the SP by the deviation or more.
3	Lower-limit			Set the downward deviation in the set point by setting the alarm value (X). The alarm is ON when the PV is lower than the SP by the deviation or more.
4	Upper- and lower-limit range ✻1		✻3	Set the upward deviation in the set point for the alarm upper limit (H) and the lower deviation in the set point for the alarm lower limit (L). The alarm is ON when the PV is inside this deviation range.
5	Upper- and lower-limit with standby sequence ✻1	 ✻5	✻4	A standby sequence is added to the upper- and lower-limit alarm (1). ✻6
6	Upper-limit with standby sequence			A standby sequence is added to the upper-limit alarm (2). ✻6
7	Lower-limit with standby sequence			A standby sequence is added to the lower-limit alarm (3). ✻6
8	Absolute-value upper-limit			The alarm will turn ON if the process value is larger than the alarm value (X) regardless of the set point.
9	Absolute-value lower-limit			The alarm will turn ON if the process value is smaller than the alarm value (X) regardless of the set point.
10	Absolute-value upper-limit with standby sequence			A standby sequence is added to the absolute-value upper-limit alarm (8). ✻6
11	Absolute-value lower-limit with standby sequence			A standby sequence is added to the absolute-value lower-limit alarm (9). ✻6
12	LBA (alarm 1 type only)	-		✻7
13	PV change rate alarm	-		✻8
14	SP absolute-value upper-limit alarm			This alarm type turns ON the alarm when the set point (SP) is higher than the alarm value (X).
15	SP absolute-value lower-limit alarm			This alarm type turns ON the alarm when the set point (SP) is lower than the alarm value (X).
16	MV absolute-value upper-limit alarm ✻9	Standard Control  Heating/Cooling Control (Heating MV) 	Standard Control  Heating/Cooling Control (Heating MV) Always ON	This alarm type turns ON the alarm when the manipulated variable (MV) is higher than the alarm value (X).
17	MV absolute-value lower-limit alarm ✻9	Standard Control  Heating/Cooling Control (Cooling MV) 	Standard Control  Heating/Cooling Control (Cooling MV) Always ON	This alarm type turns ON the alarm when the manipulated variable (MV) is lower than the alarm value (X).

∗1. With set values 1, 4, and 5, the upper- and lower-limit values can be set independently for each alarm type, and are expressed as “L” and “H.”

∗2. Set value: 1, Upper- and lower-limit alarm



∗3. Set value: 4, Upper- and lower-limit range



∗4. Set value: 5, Upper- and lower-limit with standby sequence
For Upper- and Lower-Limit Alarm Described Above at *2
- In cases 1 and 2 above, the alarm is always OFF if the upper- and lower-limit hysteresis overlaps.
- In case 3, the alarm is always OFF.

∗5. Set value: 5, Upper- and lower-limit alarm with standby sequence
The alarm is always OFF if upper- and lower-limit hysteresis overlaps.

∗6. Refer to the *E5□C Digital Temperature Controllers User’s Manual* (Cat. No. H174) for information on the operation of the standby sequence.

∗7. Refer to the *E5□C Digital Temperature Controllers User’s Manual* (Cat. No. H174) for information on the LBA.

∗8. Refer to the *E5□C Digital Temperature Controllers User’s Manual* (Cat. No. H174) for information on the PV change rate alarm.

∗9. When heating/cooling control is performed, the MV absolute-value upper-limit alarm functions only for the heating operation and the MV absolute-value lower-limit alarm functions only for the cooling operation.

Characteristics

Indication accuracy (at the temperature of 23°C)		Thermocouple: (±0.3 % of indication value or ±1°C, whichever is greater) ±1 digit max.✻1 Platinum resistance thermometer: (±0.2 % of indication value or ±0.8°C, whichever is greater) ±1 digit max. Analog input: ±0.2% FS ±1 digit max. CT input: ±5% FS ±1 digit max.
Simple transfer output accuracy		±0.3% FS max.✻2
Influence of temperature ✻3		Thermocouple input (R, S, B, C/W, PL II): (±1% of indication value or ±10°C, whichever is greater) ±1 digit max. Other thermocouple input: (±1% of indication value or ±4°C, whichever is greater) ±1 digit max. ✻4 Platinum resistance thermometer: (±1% of indication value or ±2°C, whichever is greater) ±1 digit max. Analog input: ±1% FS ±1 digit max. CT input: ±5% FS ±1 digit max.
Influence of voltage ✻3		
Influence of EMS. (at EN 61326-1)		
Input sampling period		50 ms
Hysteresis		Temperature input: 0.1 to 999.9°C or °F (in units of 0.1°C or °F) Analog input: 0.01% to 99.99% FS (in units of 0.01% FS)
Proportional band (P)		Temperature input: 0.1 to 999.9°C or °F (in units of 0.1°C or °F) Analog input: 0.1% to 999.9% FS (in units of 0.1% FS)
Integral time (I)		0 to 9999 s (in units of 1 s), 0.0 to 999.9 s (in units of 0.1 s) ✻5
Derivative time (D)		0 to 9999 s (in units of 1 s), 0.0 to 999.9 s (in units of 0.1 s) ✻5
Proportional band (P) for cooling		Temperature input: 0.1 to 999.9°C or °F (in units of 0.1°C or °F) Analog input: 0.1% to 999.9% FS (in units of 0.1% FS)
Integral time (I) for cooling		0 to 9999 s (in units of 1 s), 0.0 to 999.9 s (in units of 0.1 s) ✻5
Derivative time (D) for cooling		0 to 9999 s (in units of 1 s), 0.0 to 999.9 s (in units of 0.1 s) ✻5
Control period		0.1, 0.2, 0.5, 1 to 99 s (in units of 1 s)
Manual reset value		0.0% to 100.0% (in units of 0.1%)
Alarm setting range		−1,999 to 9,999 (decimal point position depends on input type)
Influence of signal source resistance		Thermocouple: 0.1°C/Ω max. (100 Ω max.), Platinum resistance thermometer: 0.1°C/Ω max. (10 Ω max.)
Insulation resistance		20 MΩ min. (at 500 VDC)
Dielectric strength		100 to 240 VAC: 3,000 VAC, 50/60 Hz for 1 min between terminals of different charge 24 VAC/DC: 2,300 VAC, 50/60 Hz for 1 min between terminals of different charge
Vibration	**Malfunction**	10 to 55 Hz, 20 m/s^2 for 10 min each in X, Y and Z directions
	Resistance	10 to 55 Hz, 20 m/s^2 for 2 hr each in X, Y, and Z directions
Shock	**Malfunction**	100 m/s^2, 3 times each in X, Y, and Z directions
	Resistance	300 m/s^2, 3 times each in X, Y, and Z directions
Weight		Controller: Approx. 80 g, Mounting Adapter: Approx. 4 g × 2
Degree of protection		Front panel: IP66, Rear case: IP20, Terminals: IP00
Memory protection		Non-volatile memory (number of writes: 1,000,000 times)
Setup Tool		CX-Thermo version 4.62 or higher
Setup Tool port		E5GC side panel: An E58-CIFQ2 USB-Serial Conversion Cable is used to connect a USB port on the computer. ✻6 E5GC bottom panel: An E58-CIFQ2 USB-Serial Conversion Cable and E58-CIFQ2-E Conversion Cable are used together to connect a USB port on the computer. ✻6
Standards	**Approved standards**	cULus: UL 61010-1/CSA C22.2 No.61010-1, Korean wireless regulations (Radio law: KC Mark) (Some models only.) ✻7
	Conformed standards	EN 61010-1 (IEC 61010-1), RCM
EMC		EMI: EN61326-1 ✻8 Radiated Interference Electromagnetic Field Strength: EN55011 Group 1, class A Noise Terminal Voltage: EN55011 Group 1, class A EMS: EN61326-1 ✻8 ESD Immunity: EN61000-4-2 Electromagnetic Field Immunity: EN61000-4-3 Burst Noise Immunity: EN61000-4-4 Conducted Disturbance Immunity: EN61000-4-6 Surge Immunity: EN61000-4-5 Voltage Dip/Interrupting Immunity: EN61000-4-11

✻1. The indication accuracy of K thermocouples in the −200 to 1,300°C range, T and N thermocouples at a temperature of −100°C max., and U and L thermocouples at any temperature is ±2°C ±1 digit max. The indication accuracy of B thermocouples at a temperature of 400°C max. is not specified. The indication accuracy of B thermocouples at a temperature of 400 to 800°C is ±3°C max.
The indication accuracy of R and S thermocouples at a temperature of 200°C max. is ±3°C ±1 digit max. The indication accuracy of C/W thermocouples is (±0.3% of PV or ±3°C, whichever is greater) ±1 digit max.
The indication accuracy of PLII thermocouples is (±0.3% of PV or ±2°C, whichever is greater) ±1 digit max.
✻2. However, the precision between 0 and 4 mA for a 0 to 20 mA output is ±1% FS max.
✻3. Ambient temperature: −10°C to 23°C to 55°C, Voltage range: −15% to 10% of rated voltage
✻4. K thermocouple at −100°C max.: ±10°C max.
✻5. The unit is determined by the setting of the Integral/Derivative Time Unit parameter.
✻6. External serial communications (RS-485) and USB-Serial Conversion Cable communications can be used at the same time.
✻7. Refer to your OMRON website for the most recent information on applicable models.
✻8. Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)

USB-Serial Conversion Cable

Applicable OS	Windows XP/Vista/7/8/8.1/10 ✻1
Applicable software	CX-Thermo version 4.62 or higher
Applicable models	E5□C-T Series, E5□C Series, and E5CB Series
USB interface standard	Conforms to USB Specification 2.0
DTE speed	38,400 bps
Connector specifications	Computer: USB (Type A plug) Digital Temperature Controller: Special serial connector
Power supply	Bus power (Supplied from the USB host controller) ✻2
Power supply voltage	5 VDC
Current consumption	450 mA max.
Output voltage	4.7±0.2 VDC (Supplied from USB-Serial Conversion Cable to the Digital Temperature Controller.)
Output current	250 mA max. (Supplied from USB-Serial Conversion Cable to the Digital Temperature Controller.)
Ambient operating temperature	0 to 55°C (with no condensation or icing)
Ambient operating humidity	10% to 80%
Storage temperature	−20 to 60°C (with no condensation or icing)
Storage humidity	10% to 80%
Altitude	2,000 m max.
Weight	Approx. 120 g

Windows is a registered trademark of Microsoft Corporation in the United States and or other countries.

✻**1.** CX-Thermo version 4.65 or higher runs on Windows 10.

✻**2.** Use a high-power port for the USB port.

Note: A driver must be installed on the computer. Refer to the *Instruction Manual* included with the Cable for the installation procedure.

Communications Specifications

Transmission line connection method	RS-485: Multidrop
Communications	RS-485 (two-wire, half duplex)
Synchronization method	Start-stop synchronization
Protocol	CompoWay/F, or Modbus
Baud rate ✻	9,600, 19,200, 38,400, or 57,600 bps
Transmission code	ASCII
Data bit length ✻	7 or 8 bits
Stop bit length ✻	1 or 2 bits
Error detection	Vertical parity (none, even, odd) Block check character (BCC) with CompoWay/F or CRC-16 with Modbus
Flow control	None
Interface	RS-485
Retry function	None
Communications buffer	217 bytes
Communications response wait time	0 to 99 ms Default: 20 ms

✻ The baud rate, data bit length, stop bit length, and vertical parity can be individually set using the Communications Setting Level.

Communications Functions

Programless communications	You can use the memory in the PLC to read and write E5□C parameters, start and stop operation, etc. The E5□C automatically performs communications with PLCs. No communications programming is required. Number of connected Digital Temperature Controllers: 32 max. (Up to 16 for the FX Series) Applicable PLCs OMRON PLCs: CS Series, CJ Series, CP Series, NJ Series, or NX1P Mitsubishi Electric PLCs: MELSEC Q Series, L Series, FX3 Series, or iQ-R Series KEYENCE PLCs: KEYENCE KV Series
Component Communications	When Digital Temperature Controllers are connected, set points and RUN/STOP commands can be sent from the Digital Temperature Controller that is set as the master to the Digital Temperature Controllers that are set as slaves. Slope and offsets can be set for the set point. Number of connected Digital Temperature Controllers: 32 max. (including master)
Copying ✻	When Digital Temperature Controllers are connected, the parameters can be copied from the Digital Temperature Controller that is set as the master to the Digital Temperature Controllers that are set as slaves.

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✻ Both the programless communications and the component communications support the copying.

Current Transformer (Order Separately) Ratings

	E54-CT1 E54-CT3	E54-CT1L E54-CT3L
Dielectric strength	1,000 VAC for 1 min	1,500 VAC for 1 min
Vibration resistance	50 Hz, 98 m/s^2	
Weight	E54-CT1: Approx. 11.5 g E54-CT3: Approx. 50 g	E54-CT1L: Approx. 14 g E54-CT3L: Approx. 57 g
Accessories	E54-CT3 Only Armatures (2) Plugs (2)	None

Heater Burnout Alarms and SSR Failure Alarms

CT input (for heater current detection)	Models with detection for single-phase heaters: One input
Maximum heater current	50 A AC
Input current indication accuracy	±5% FS ±1 digit max.
Heater burnout alarm setting range ✻1	0.1 to 49.9 A (in units of 0.1 A) Minimum detection ON time: 100 ms ✻3
SSR failure alarm setting range ✻2	0.1 to 49.9 A (in units of 0.1 A) Minimum detection OFF time: 100 ms ✻4

✻**1.** For heater burnout alarms, the heater current will be measured when the control output is ON, and the output will turn ON if the heater current is lower than the set value (i.e., heater burnout detection current value).

✻**2.** For SSR failure alarms, the heater current will be measured when the control output is OFF, and the output will turn ON if the heater current is higher than the set value (i.e., SSR failure detection current value).

✻**3.** The value is 30 ms for a control period of 0.1 s or 0.2 s.

✻**4.** The value is 35 ms for a control period of 0.1 s or 0.2 s.

Electrical Life Expectancy Curve for Control Output Relay (Reference Values)