E5CN/E5CN-U (48 x 48 mm)

CSM_E5CN_E5CN-U_DS_E_5_1

New 48 x 48-mm Basic Temperature Controller with Enhanced Functions and Performance. Improved Indication Accuracy and Preventive Maintenance Function.

Indication Accuracy
 Thermocouple input: ±0.3% of PV (previous models: ±0.5%)
 Pt input: ±0.2% of PV (previous models: ±0.5%)

Analog input: ±0.2% FS (previous models: ±0.5%)

- New E5CN-U Models (Plug-in Models) with analog inputs and current outputs.
- A PV/SV-status display function can be set to automatically alternate between displaying the status of the Temperature Controller (auto/manual, RUN/STOP, and alarms) and the PV or SV.
- Preventive maintenance for relays in the Temperature Controller using a Control Output ON/OFF Counter.

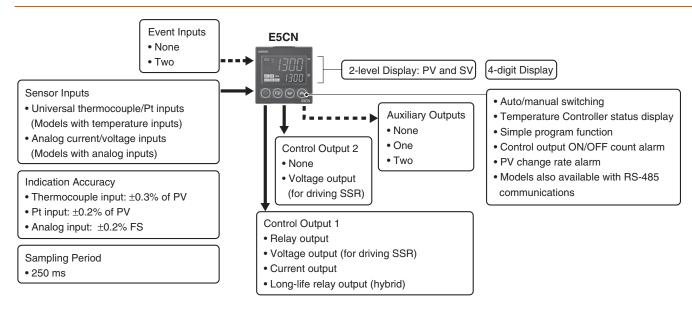




Refer to Safety Precautions for E5_N/E5_N-H.

Refer to *Operation for E5_N/E5_N-H* for operating procedures.

Main I/O Functions

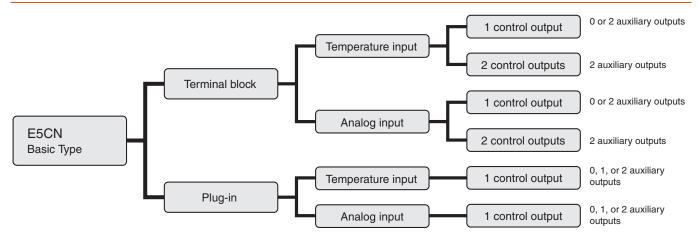


This data sheet is provided as a guideline for selecting products. Be sure to refer to the following user manuals for application precautions and other information required for operation before attempting to use the product.

E5CN/E5AN/E5EN/E5GN Digital Temperature Controllers User's Manual Basic Type (Cat. No. H156)

E5CN/E5AN/E5EN/E5GN Digital Temperature Controllers Communications Manual Basic Type (Cat. No. H158)

Lineup



Note: Models with one control output and one or two auxiliary outputs and models with two control outputs can be used for heating/cooling control.

Model Number Structure

Model Number Legend Controllers



1. Control Output 1

R: Relay output

Q: Voltage output (for driving SSR)

C: Current output

Y: Long-life relay output (hybrid) *1

2. Auxiliary Outputs *2

Blank: None 2: Two outputs

3. Option

M: Option Unit can be mounted.

4. Input Type

T: Universal thermocouple/platinum resistance thermometer

L: Analog current/voltage input

5. Power Supply Voltage

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

6. Case Color

Blank: Black W: Silver

7. Terminal Cover

-500: With terminal cover

Option Units



1. Applicable Controller

CN: E5CN or E5CN-H

2. Function 1

Blank: None

Q: Control output 2 (voltage for driving SSR)

P: Power supply for sensor

3. Function 2

Blank: None

H: Heater burnout/SSR failure/Heater overcurrent detection (CT1)

HH: Heater burnout/SSR failure/Heater overcurrent detection (CT2)

B: Two event inputs

03: RS-485 communications

H03: Heater burnout/SSR failure/Heater overcurrent detection (CT1) + RS-485 communications

HB: Heater burnout/SSR failure/Heater overcurrent detection (CT1) + Two event inputs

HH03: Heater burnout/SSR failure/Heater overcurrent detection (CT2) + RS-485 communications

4. Version

N2: Applicable only to models released after January 2008

Note: 1. Not all combinations of function 1 and function 2 specifications are possible for Option Units (E53-DDD).

2. Estimates can be provided for coatings and other specifications that are not given in the datasheet. Ask your OMRON representative for details.

*1. Always connect an AC load to a long-life relay output. The output will not turn OFF if a DC load is connected because a triac is used for switching the circuit. For details, check the conditions in *Ratings*.

*2. Auxiliary outputs are contact outputs that can be used to output alarms or results of logic operations.

Ordering Information

Controllers with Terminal Blocks

Size	Case color	Power supply voltage	Input type	Auxiliary outputs	Control output 1	Model
					Relay output	E5CN-RMT-500
				None	Voltage output (for driving SSR)	E5CN-QMT-500
			Thermocouple or		Current output	E5CN-CMT-500
		100 to 240 VAC	Resistance		Relay output	E5CN-R2MT-500
			thermometer	0	Voltage output (for driving SSR)	E5CN-Q2MT-500
				2	Current output	E5CN-C2MT-500
					Long-life relay output (hybrid)	E5CN-Y2MT-500
					Relay output	E5CN-RMTD-500
				None	Voltage output (for driving SSR)	E5CN-QMTD-500
		041/40/4/00	Thermocouple or		Current output	E5CN-CMTD-500
		24 VAC/VDC	Resistance thermometer		Relay output	E5CN-R2MTD-500
	Black		thermometer	2	Voltage output (for driving SSR)	E5CN-Q2MTD-500
					Current output	E5CN-C2MTD-500
					Relay output	E5CN-RML-500
				None	Voltage output (for driving SSR)	E5CN-QML-500
/16 DIN			Analog (current/voltage)		Current output	E5CN-CML-500
8 × 48 × 78		100 to 240 VAC		2	Relay output	E5CN-R2ML-500
$N \times H \times D$)					Voltage output (for driving SSR)	E5CN-Q2ML-500
					Current output	E5CN-C2ML-500
					Long-life relay output (hybrid)	E5CN-Y2ML-500
		24 VAC/VDC	Analog (current/voltage)	2	Relay output	E5CN-R2MLD-500
					Voltage output (for driving SSR)	E5CN-Q2MLD-500
					Current output	E5CN-C2MLD-500
				None	Relay output	E5CN-RMT-W-500
					Voltage output (for driving SSR)	E5CN-QMT-W-500
					Current output	E5CN-CMT-W-500
	Silver	100 to 240 VAC			Relay output	E5CN-R2MT-W-500
			Thermocouple or Resistance thermometer		Voltage output (for driving SSR)	E5CN-Q2MT-W-500
				2	Current output	E5CN-C2MT-W-500
					Long-life relay output (hybrid)	E5CN-Y2MT-W-500
		24 VAC/VDC			Relay output	E5CN-R2MTD-W-500
				2	Voltage output (for driving SSR)	E5CN-Q2MTD-W-500
					Current output	E5CN-C2MTD-W-500

Note: Models with analog inputs do not have temperature unit indicators.

Option Units

One of the following Option Units can be mounted to provide the E5CN with additional functions.

Functions					Model (See Note 2.)	
Communications RS-485	3-phase heater burnout/SSR failure/ Heater overcurrent detection				E53-CNHH03N2	
	Heater burnout/SSR failure/Heater overcurrent detection	Event inputs			E53-CNHBN2	
Communications RS-485			Control output 2 (Voltage for driving SSR)		E53-CNQ03N2	
		Event inputs		External power supply for ES1B	E53-CNPBN2	
	Heater burnout/SSR failure/Heater overcurrent detection			External power supply for ES1B	E53-CNPHN2	
Communications RS-485				External power supply for ES1B	E53-CNP03N2	
Communications RS-485	Heater burnout/SSR failure/Heater overcurrent detection				E53-CNH03N2	
Communications RS-485					E53-CN03N2	
		Event inputs			E53-CNBN2	
	Heater burnout/SSR failure/Heater overcurrent detection		Control output 2 (Voltage for driving SSR)		E53-CNQHN2	
	3-phase heater burnout/SSR failure/ Heater overcurrent detection		Control output 2 (Voltage for driving SSR)		E53-CNQHHN2	
		Event inputs	Control output 2 (Voltage for driving SSR)		E53-CNQBN2	

Note: 1. Option Units cannot be used for plug-in models.

These Option Units are applicable only to models released after January 2008.

2. If the E53-CNQHN2 or E53-CNQHHN2 Option Unit is used together with the E5CN-C□ Temperature Controller and control output 1 (current output) is assigned to the heating control output, heater burnout detection will be disabled.

Model Number Structure

Model Number Legend (Plug-in-type Controllers)

E5CN-1 2 3 4

1. Output Type

R: Relay output

Q: Voltage output (for driving SSR)

C: Current output

2. Number of Alarms

Blank: No alarm 1: One alarm

2: Two alarms

3. Input Type

T: Universal thermocouple/platinum resistance thermometer

L: Analog Input

4. Plug-in type

U: Plug-in type

Ordering Information

Plug-in-type Controllers

Size	Case color	Power supply voltage	Input type	Auxiliary outputs	Control output 1	Model
			Thermocouple or	None	Relay output	E5CN-RTU
					Voltage output (for driving SSR)	E5CN-QTU
					Current output	E5CN-CTU
				1	Relay output	E5CN-R1TU
			resistance		Voltage output (for driving SSR)	E5CN-Q1TU
			thermometer		Current output	E5CN-C1TU
		100 to 240 VAC			Relay output	E5CN-R2TU
				2	Voltage output (for driving SSR)	E5CN-Q2TU
					Current output	E5CN-C2TU
	Black		Analog (current/voltage)	1	Relay output	E5CN-R1LU
					Voltage output (for driving SSR)	E5CN-Q1LU
1/16 DIN					Current output	E5CN-C1LU
I/ IO DIN				2	Relay output	E5CN-R2LU
					Voltage output (for driving SSR)	E5CN-Q2LU
					Current output	E5CN-C2LU
					Relay output	E5CN-RTDU
		24 VAC/VDC		None	Voltage output (for driving SSR)	E5CN-QTDU
					Current output	E5CN-CTDU
			Thermocouple or	1	Relay output	E5CN-R1TDU
			resistance thermometer		Voltage output (for driving SSR)	E5CN-Q1TDU
					Current output	E5CN-C1TDU
				2	Relay output	E5CN-R2TDU
					Voltage output (for driving SSR)	E5CN-Q2TDU
					Current output	E5CN-C2TDU

Note: Models with analog inputs do not have temperature unit indicators.

Accessories (Order Separately)USB-Serial Conversion Cable

Model	
E58-CIFQ1	

Terminal Cover

Connectable models	Model
Terminal block models	E53-COV17

Note: The Terminal Cover comes with the E5CN
-500 models.

Waterproof Packing

Model
Y92S-29

Note: The Waterproof Packing is included with the Controller only for models with terminal blocks.

Current Transformers (CTs)

Hole diameter	Model
5.8 dia.	E54-CT1
12.0 dia.	E54-CT3

Adapter

Connectable models	Model
Terminal block models	Y92F-45

Note: Use this Adapter when the panel has been previously prepared for the E5B□.

Sockets (for Plug-in Models)

Туре	Model
Front-connecting Socket	P2CF-11
Front-connecting Socket with Finger Protection	P2CF-11-E
Back-connecting Socket	P3GA-11
Terminal Cover for Back-connecting socket with Finger Protection	Y92A-48G

Front cover

Туре	Model
Hard Front Cover	Y92A-48B
Soft Front Cover	Y92A-48D

CX-Thermo Support Software

Model
EST2-2C-MV4

Specifications

Ratings

Power supp	Power supply voltage		odel number: 100 to 240 VAC, 50/60 Hz Il number: 24 VAC, 50/60 Hz; 24 VDC		
Operating v	oltage range	85% to 110% of rated supply voltage			
Power consump-	E5CN		0 VAC: 7.5 VA (max.) (E5CN-R2T at 100 VAC: 3.0 VA) DC: 5 VA/3 W (max.) (E5CN-R2TD at 24 VAC: 2.7 VA)		
tion	E5CN-U	100 to 240 VAC: 6 VA (max.) 24 VAC/VDC: 3 VA/2 W (max.) (models with current output: 4 VA/2 W)			
Sensor input		Models with temperature inputs Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II Platinum resistance thermometer: Pt100 or JPt100 Infrared temperature sensor: 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C Voltage input: 0 to 50 mV			
		Models with analog inputs 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 imped	dance	Current in	put: 150 Ω max., Voltage input: 1 M Ω min. (Use a 1:1 connection when connecting the ES2-HB.)		
Control me	thod	ON/OFF o	control or 2-PID control (with auto-tuning)		
	Relay output	E5CN	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA		
	Relay output	E5CN-U	SPDT, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA		
Control outputs	Voltage output (for driving SSR)	E5CN E5CN-U	Output voltage: 12 VDC $\pm 15\%$ (PNP), max. load current: 21 mA, with short-circuit protection circuit		
	Current output	E5CN	4 to 20 mA DC/0 to 20 mA DC, load: 600 Ω max., resolution: approx. 10,000		
	Long-life relay output	E5CN	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 1,000,000 operations, load power supply voltage: 75 to 250 VAC (DC loads cannot be connected.), minimum applicable load: 5 V, 10 mA, leakage current: 5 mA max. (250 VAC, 60 Hz)		
Auvilians	Number of outputs	1 or 2 max. (Depends on the model.)			
outputs	Auxiliary outputs Output specifications		Relay output: SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA		
	Number of inputs	2			
Event	External contact	Contact input: ON: 1 k Ω max., OFF: 100 k Ω min.			
inputs	input	Non-contact input: ON: Residual voltage: 1.5 V max., OFF: Leakage current: 0.1 mA max.			
	specifications	Current flow: Approx. 7 mA per contact			
<u> </u>	wer supply for ES1B	3 12 VDC ±10%, 20 mA, short-circuit protection circuit provided			
Setting met	hod	Digital setting using front panel keys			
Indication r	nethod	11-segment digital display and individual indicators (7-segment display also possible) Character height: PV: 11 mm, SV: 6.5 mm			
Multi SP		Up to four set points (SP0 to SP3) can be saved and selected using event inputs, key operations, or serial communications.			
Bank switching		Not supported			
Other functions		Manual output, heating/cooling control, loop burnout alarm, SP ramp, other alarm functions, heater burnout detection (including SSR failure and heater overcurrent detection), 40% AT, 100% AT, MV limiter, input digital filter, self-tuning, temperature input shift, run/stop, protection functions, control output ON/OFF counter, extraction of square root, MV change rate limit, logic operations, PV/SV status display, simple program, automatic cooling coefficient adjustment			
Ambient operating temperature		-10 to 55°C (with no condensation or icing), for 3-year warranty: -10 to 50°C			
Ambient operating humidity		25% to 85%			
Storage temperature		-25 to 65°C (with no condensation or icing)			

Input Ranges

Thermocouple/Platinum Resistance Thermometer (Universal Inputs)

	put ype	P		m res	istan eter	ce							Tł	nermo	coup	le							Infra	red te	mpera	ature	Analog input
N	ame		Pt100)	JPt	100	ı	K	,	J	-	г	E	L	ι	J	N	R	s	В	w	PL II	10to 70°C	60to 120 °C	115 to 165 °C	140 to 260 °C	0 to 50 mV
	2300																				2300						
	1800																	4700	4700	1800							
	1700	-																1700	1700								
	1600	-																	-								·
	1500																										-
	1400						1300										1300					1300					1
$\widehat{\Omega}$	1300						1000										1000					1000					Usable
٥	1200	1					H																				in the
ge	1100																										following
Temperature range (°C)	1000 900	850							850					850													ranges by
ă.	800						H												\vdash			\vdash					scaling:
rat	700	-					H +		-				600	-			-	-	+			+					-1999 to
<u>B</u>	600	-	500.0		500.0		H	500.0	-				000						\vdash			\vdash					9999 or
e.	500		300.0		500.0		H	500.0		400.0	400	400.0	-		400	400.0	-										-199.9 to 999.9
-	400	-					H																			260	10 999.9
	300																							120	165		1
	200			100.0		100.0																	90				1
	100 0																			100							1
	–100.0			0.0		0.0												0	0		0	0	0	0	0	0	
	-200.0							-20.0	-100	-20.0				-100													
		-200	-199.9)	-199.9		-200				-200	–199.9	-200		-200	-199.9	-200										
	ting mber	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	24	25	19	20	21	22	23

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 1602-1995, IEC 584-1

L: Fe-CuNi, DIN 43710-1985

U: Cu-CuNi, DIN 43710-1985

W: W5Re/W26Re, ASTM E988-1990

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

Pt100: JIS C 1604-1997, IEC 751

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

Models with Analog Inputs

	-						
Input Type	Cur	rent	Voltage				
Input specification	4 to 20mA	20mA 0 to 20 mA 1 to 5 V		0 to 5 V	0 to 10 V		
Setting range			ges by scaling: 99.9, -19.99 to 99.99 or -1.999 to 9.999				
Setting number	0	1	2	3	4		

Shaded settings are the default settings.

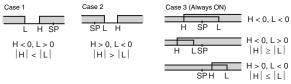
Alarm Outputs

Each alarm can be independently set to one of the following 13 alarm types. The default is 2: Upper limit. Auxiliary outputs are allocated for alarms. ON delays and OFF delays (0 to 999 s) can also be specified.

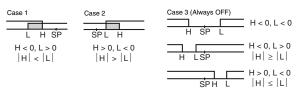
Note: For models with heater burnout, SSR failure, and heater overcurrent detection, alarm 1 will be an OR output of the alarm selected from the following alarm types and the alarms for heater burnout, SSR failure, and heater overcurrent. To output only a heater burnout alarm, SSR failure alarm, and heater overcurrent alarm for alarm 1, set the alarm type to 0 (i.e., no alarm function).

		Alarm outp	ut operation			
Set value	Alarm type	When alarm value X is positive	When alarm value X is negative	Description of function		
0	Alarm function OFF	Output OFF		No alarm		
1 *1	Upper- and lower-limit	ON OFF SP	*2	Set the deviation in the set point by setting the alarm upper limit (H) and alarm lower limit (L).		
2	Upper-limit	ON OFF SP ON OFF SP		Set the upward deviation in the set point by setting the alarm value (X).		
3	Lower-limit	ON X SP	ON X SP	Set the downward deviation in the set point by setting the alarm value (X).		
4 *1	Upper- and lower-limit range	ON OFF SP	*3	Set the deviation in the set point by setting the alarm upper limit (H) and alarm lower limit (L).		
5 *1	Upper- and lower-limit with standby sequence	ON DFF SP SP	*4	A standby sequence is added to the upper- and lower-limit alarm (1). *6		
6	Upper-limit with standby sequence	ON OFF SP	ON OFF SP	A standby sequence is added to the upper-limit alarm (2). *6		
7	Lower-limit with standby sequence	ON X SP	ON X SP	A standby sequence is added to the lower-limit alarm (3). *6		
8	Absolute-value upper-limit	ON ←X→ OFF 0	ON ←X→ O	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	ON →X→ OFF 0	ON OFF 0	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	ON OFF 0	ON ←X→ O	A standby sequence is added to the absolute-value upper-limit alarm (8). *6		
11	Absolute-value lower-limit with standby sequence	ON OFF 0	ON OFF 0	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		

- ***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
 - Case 1 and 2
 <u>Always OFF</u> when the upper-limit and lower-limit hysteresis overlaps.
 - Case 3: <u>Always OFF</u>

- *5. Set value: 5, Upper- and lower-limit with standby sequence <u>Always OFF</u> when the upper-limit and lower-limit hysteresis overlaps.
- *6. Refer to the E5CN/E5AN/E5EN/E5GN Digital Temperature Controllers User's Manual Basic Type (Cat. No. H156) for information on the operation of the standby sequence.
- *7. Refer to the E5CN/E5AN/E5EN/E5GN Digital Temperature Controllers User's Manual Basic Type (Cat. No. H156) for information on the loop burnout alarm (LBA).
- *8. Refer to the E5CN/E5AN/E5EN/E5GN Digital Temperature Controllers User's Manual Basic Type (Cat. No. H156) for information on the PV change rate alarm.

Characteristics

Indication acc	euracy	Thermocouple: \$1 Terminal block models (E5CN): (±0.3% of indicated value or ±1°C, whichever is greater) ±1 digit max. Plug-in models (E5CN-U): (±1% of indicated value or ±2°C, whichever is greater) ±1 digit max. Platinum resistance thermometer input: Terminal block models (E5CN) and plug-in models (E5CN-U): (±0.2% of indicated value or ±0.8°C, whichever is greater) ±1 digit max. Analog input: Terminal block models (E5CN) and plug-in models (E5CN-U): ±0.2% FS ±1 digit max. CT input: Terminal block models (E5CN): ±5% FS ±1 digit max.					
Influence of te	emperature *2	Thermocouple input (R, S, B, W, PL II): Terminal block models (E5CN): (±1% of PV or ±10°C, whichever is greater) ±1 digit max. Plug-in models (E5CN-U): (±2% of PV or ±10°C, whichever is greater) ±1 digit max. Other thermocouple input: *3 Terminal block models (E5CN): (±1% of PV or ±4°C, whichever is greater) ±1 digit max.					
Influence of v	oltage *2	Plug-in models (E5CN-U): (±2% of PV or ±4°C, whichever is greater) ±1 digit max. Platinum resistance thermometer input: Terminal block models (E5CN) and plug-in models (E5CN-U): (±1% of PV or ±2°C, whichever is greater) ±1 digit max. Analog input: Terminal block models (E5CN) and plug-in models (E5CN-U): (±1%FS) ±1 digit max.					
Input samplin	g period	250 ms					
Hysteresis		Models with thermocouple/platinum resistance thermometer input (universal input): 0.1 to 999.9 EU (in units of 0.1 EU) *4 Models with analog input: 0.01 to 99.99% FS (in units of 0.01% FS)					
Proportional I	oand (P)	Models with thermocouple/platinum resistance thermometer input (universal input): 0.1 to 999.9 EU (in units of 0.1 EU) *4 Models with analog input: 0.1 to 999.9% FS (in units of 0.1% FS)					
Integral time (1)	0 to 3999 s (in units of 1 s)					
Derivative tim	e (D)	0 to 3999 s (in units of 1 s) *5					
Control period	d	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		-1999 to 9999 (decimal point position depends on input type)					
Affect of signaresistance	al source	Thermocouple: $0.1^{\circ}\text{C}/\Omega$ max. (100 Ω max.) Platinum resistance thermometer: $0.1^{\circ}\text{C}/\Omega$ max. (10 Ω max.)					
Insulation resistance		20 M Ω min. (at 500 VDC)					
Dielectric strength		2,300 VAC, 50 or 60 Hz for 1 min (between terminals with different charge)					
Vibration	Malfunction	10 to 55 Hz, 20 m/s ² for 10 min each in X, Y, and Z directions					
resistance	Destruction	10 to 55 Hz, 0.75-mm single amplitude for 2 hrs each in X, Y, and Z directions					
Shock	Malfunction	100 m/s², 3 times each in X, Y, and Z directions					
resistance	Destruction	300 m/s², 3 times each in X, Y, and Z directions					
Weight	E5CN	Controller: Approx. 150 g, Mounting Bracket: Approx. 10 g					
Weight	E5CN-U	Controller: Approx. 110 g, Mounting Bracket: Approx. 10 g					
Degree of	E5CN	Front panel: IP66, Rear case: IP20, Terminals: IP00					
protection	E5CN-U	Front panel: IP50, Rear case: IP20, Terminals: IP00					
Memory prote	ection	Non-volatile memory (number of writes: 1,000,000 times)					
Setup Tool		CX-Thermo version 4.0 or higher					
Setup Tool port		Provided on the bottom of the E5CN. Use this port to connect a computer to the E5CN when using the Setup Tool. An E58-CIFQ1 USB-Serial Conversion Cable is required to connect the computer to the E5CN. *6					
Standards	Approved standards *7	UL 61010-1, CSA C22.2 No. 1010-1, KOSHA certified (some models) *8					
Standards	Conformed standards	EN 61010-1 (IEC 61010-1): Pollution level 2, overcurrent category II, Lloyd's standards *9					
ЕМС		EMI: Radiated Interference Electromagnetic Field Strength: EN 55011 Group 1, class A Noise Terminal Voltage: EN 55011 Group 1, class A EMS: EN 61326 ESD Immunity: EN 61000-4-2 Electromagnetic Field Immunity: EN 61000-4-3 Burst Noise Immunity: EN 61000-4-4 Conducted Disturbance Immunity: EN 61000-4-6 Surge Immunity: EN 61000-4-5 Power Frequency Magnetic Field Immunity: EN 61000-4-8 Voltage Dip/Interrupting Immunity: EN 61000-4-11					

- *1. The indication accuracy of K thermocouples in the -200 to 1300°C range, T and N thermocouples at a temperature of -100°C max., and U and L thermocouples at any temperatures is $\pm 2^{\circ}$ C ± 1 digit max. The indication accuracy of the B thermocouple at a temperature of 400°C max. is not specified. The indication accuracy of B thermocouples in the 400 to 800°C range is ±3°C max. The indication accuracy of the R and S thermocouples at a temperature of 200°C max. is ± 3 °C ± 1 digit max. The indication accuracy of W thermocouples is ± 0.3 of PV or ± 3 °C, whichever is greater, ± 1 digit max. The indication accuracy of PL II thermocouples is ± 0.3 of PV or ± 2 °C, whichever is greater, ± 1 digit max.
- *2. Ambient temperature: -10°C to 23°C to 55°C, Voltage range: -15% to 10% of rated voltage
- *3. K thermocouple at -100°C max.: ±10° max.
- *4. "EU" stands for Engineering Unit and is used as the unit after scaling. For a temperature sensor, the EU is °C or °F.
- *5. When robust tuning (RT) is ON, the differential time is 0.0 to 999.9 (in units of 0.1 s).

 *6. External communications (RS-485) and cable communications for the Setup Tool can be used at the same time.
- *7. The E5CN-U plug-in model is certified for UL listing only when used together with the OMRON P2CF-11 or P2CF-11-E Socket. The P3GA-11 is not certified for UL listing.
- *8. Access the following website for information on certified models. http://www.ia.omron.com/support/models/index.html
- *9. Refer to information on maritime standards in Safety Precautions for E5_N/E5_N-H for compliance with Lloyd's Standards.

USB-Serial Conversion Cable

Applicable OS	Windows 2000, XP, or Vista
Applicable software	CX-Thermo version 4 or higher
Applicable models	E5AN/E5EN/E5CN/E5CN-U/E5AN-H/ E5EN-H/E5CN-H/E5GN
USB interface standard	Conforms to USB Specification 1.1.
DTE speed	38400 bps
Connector specifications	Computer: USB (type A plug) Temperature Controller: Setup Tool port (on bottom of Controller)
Power supply	Bus power (Supplied from USB host controller.)
Power supply voltage	5 VDC
Current consumption	70 mA
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. 100 g

Note: A driver must be installed in the personal computer. Refer to installation information in the operation manual for the Conversion Cable.

Communications Specifications

	<u>-</u>				
Transmission line connection method	RS-485: Multipoint				
Communications	RS-485 (two-wire, half duplex)				
Synchronization method	Start-stop synchronization				
Protocol	CompoWay/F, SYSWAY, or Modbus				
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, or 57600 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) Frame check sequence (FCS) with SYSWAY Block check character (BCC) with CompoWay/F or CRC-16 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.

Current Transformer (Order Separately) Ratings

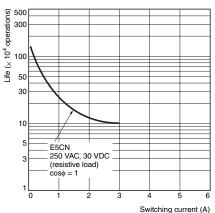
Dielectric strength	1,000 VAC for 1 min
Vibration resistance	50 Hz, 98 m/s ²
Weight	E54-CT1: Approx. 11.5 g, E54-CT3: Approx. 50 g
Accessories (E54-CT3 only)	Armatures (2) Plugs (2)

Heater Burnout Alarms, SSR Failure Alarms, and Heater Overcurrent Alarms

	•
CT input (for heater current detection)	Models with detection for single-phase heaters: One input Models with detection for single-phase or three-phase heaters: Two inputs
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
SSR failure alarm setting range *2	0.1 to 49.9 A (in units of 0.1 A) Minimum detection OFF time: 100 ms
Heater overcurrent alarm setting range *3	0.1 to 49.9 A (in units of 0.1 A) Minimum detection ON time: 100 ms

- *1. For heater burnout alarms, the heater current will be measured when the control output is ON, and the output assigned to the alarm 1 function 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 assigned to the alarm 1 function will turn ON if the heater current is higher than the set value (i.e., SSR failure detection current value).
- *3. For heater overcurrent alarms, the heater current will be measured when the control output is ON, and the output assigned to the alarm 1 function will turn ON if the heater current is higher than the set value (i.e., heater overcurrent detection current value).

Electrical Life Expectancy Curve for Relays (Reference Values)



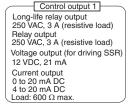
Note: Do not connect a DC load to a Controller with a Long-life Relay Output.

External Connections

- A voltage output (control output, for driving SSR) is not electrically insulated from the internal circuits. When using a grounding thermocouple, do not connect any of the control output terminals to ground. (If the control output terminals are connected to ground, errors will occur in the measured temperature values as a result of leakage current.)
- Consult with your OMRON representative before using the external power supply for the ES1B for any other purpose.

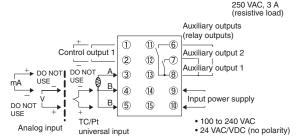
E5CN

Controllers





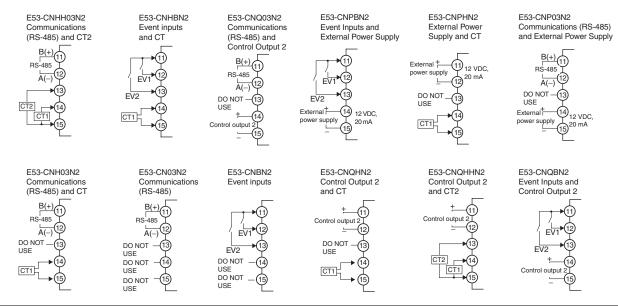
The E5□N-□□T□ is set for a K-type thermocouple (input type = 5) by default. An input error (5.EPP) will occur if the input type setting does not agree with the temperature sensor. Check the input type.



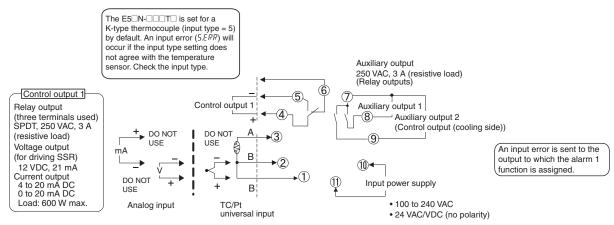
A heater burnout alarm, heater short alarm, heater overcurrent alarm, or input alarm is sent to the output to which the alarm 1 function is assigned.

Auxiliary outputs (relay outputs)

Option Units



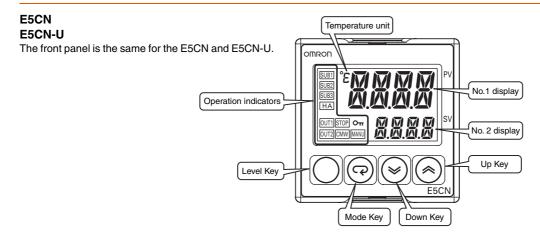
E5CN-U



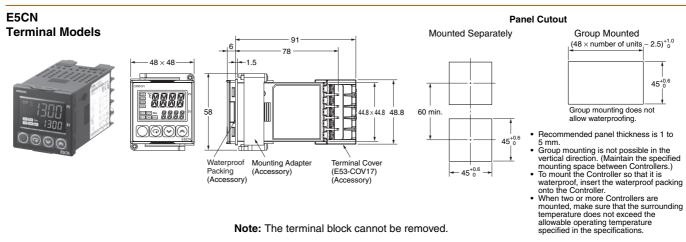
Note: For the Wiring Socket, purchase the P2CF-11 or PG3A-11 separately.

45^{+0.6}

Nomenclature



Dimensions (Unit: mm)



Note: The terminal block cannot be removed.

14.2

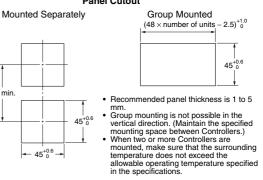
 44.8×44.8

(84.7)

70.5

Mounting Adapte

Panel Cutout



Accessories (Order Separately)

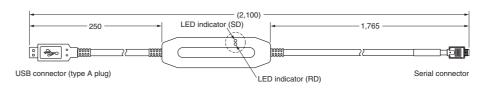
48 × 48

USB-Serial Conversion Cable E58-CIFQ1

E5CN-U

Plug-in Models



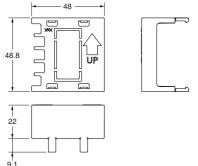


45^{+0.6} →

60 min

Terminal Cover E53-COV17





Waterproof Packing Y92S-29 (for DIN 48 × 48)



Order the Waterproof Packing separately if it becomes lost or damaged.

The Waterproof Packing can be used to achieve an IP66 degree of protection.

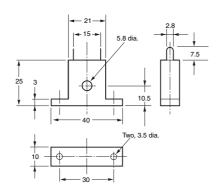
(Deterioration, shrinking, or hardening of the waterproof packing may occur depending on the operating environment. Therefore, periodic replacement is recommended to ensure the level of waterproofing specified in IP66. The time for periodic replacement depends on the operating environment. Be sure to confirm this point at your site. Consider one year a rough standard. OMRON shall not be liable for the level of water resistance if the customer does not perform periodic replacement.)

The Waterproof Packing does not need to be attached if a waterproof structure is not required.

Current Transformers

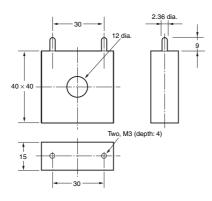
E54-CT1





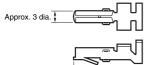
E54-CT3



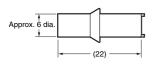


E54-CT3 Accessory

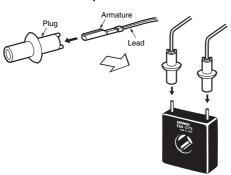
Armature



• Plug



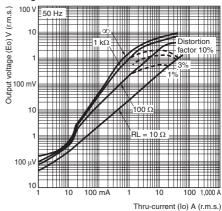
Connection Example



E54-CT1

Thru-current (Io) vs. Output Voltage (Eo) (Reference Values)

Maximum continuous heater current: 50 A (50/60 Hz) Number of windings: 400±2 Winding resistance: 18±2 Ω

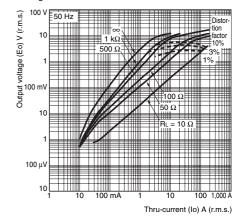


E54-CT3

Thru-current (Io) vs. Output Voltage (Eo) (Reference Values)

Maximum continuous heater current: 120 A (50/60 Hz) (Maximum continuous heater current for the Temperature Controller is 50 A.) Number of windings: 400+2

Number of windings: 400 ± 2 Winding resistance: $8\pm0.8~\Omega$

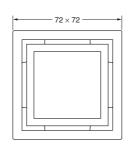


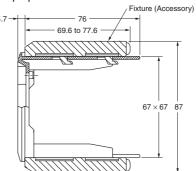
Adapter

Y92F-45 Note: 1. Note: 1. Use this Adapter when the panel has already been prepared for the E5B.

2. The Adapter is available only in black.

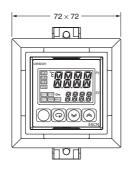


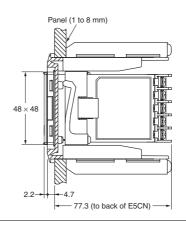




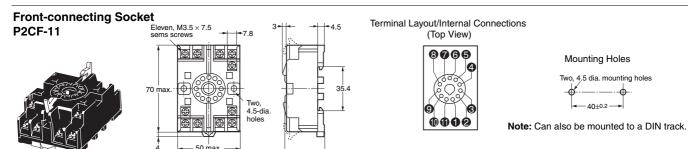
Mounted to E5CN





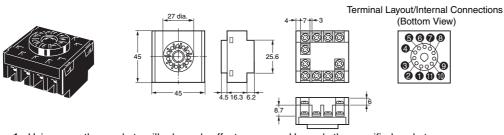


E5CN-U Wiring Socket



31.2 max Note: A model with finger protection (P2CF-11-E) is also available.

Back-connecting Socket P3GA-11



Note: 1. Using any other sockets will adversely affect accuracy. Use only the specified sockets.

2. A Protective Cover for finger protection (Y92A-48G) is also available.

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

2011.1

In the interest of product improvement, specifications are subject to change without notice.



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Omron:

E5CN-RMT-500-AC100-240 E5CN-Q2MT-500-AC100-240 E5CN-R2MTD-500-AC/DC24 E5CN-CMT500 AC100240 E5CNQMT500AC100240 E5CN-Q2M-TD-500 ACDC24 E5CN-C2MLD-500 AC/DC24 E5CN-FR2MT-500 AC100-240 E5CN-FRMT-500 AC100-240 E5CN-HV2M-500 AC100-240 E5CN-Q2ML-500 AC100-240 E5CN-QMTD-500 AC/DC24 E5CN-R1TU AC100-240 E5CN-R2HBT AC100-240 E5CN-QMT-500 AC100-240 E5CN-CMT-500 AC100-240



OOO «ЛайфЭлектроникс" "LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 P/C 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 3010181090000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный) Email: org@lifeelectronics.ru