

## E5\_C TEMPERATURE CONTROLLER

A Full Lineup of Next-generation Temperature Controllers



- » Contribute to Machine Downsizing
- » High-contrast display
- » Easy set-up and operation with a Special Software

# The new standard in temperature control...

*Omron has been an active innovator in temperature control since introducing its first temperature controller in 1967. Now temperature control has taken a giant leap forward with Omron's next generation of controllers – the E5\_C, which set new global standards in the crucial areas of precision, user friendliness and control performance. The E5\_C series will save you time and effort in set-up and operation, while enabling faster and more accurate monitoring/control of your process. The high-visibility display of the new series is also extremely easy to read and virtually eliminates any possibility for human error.*

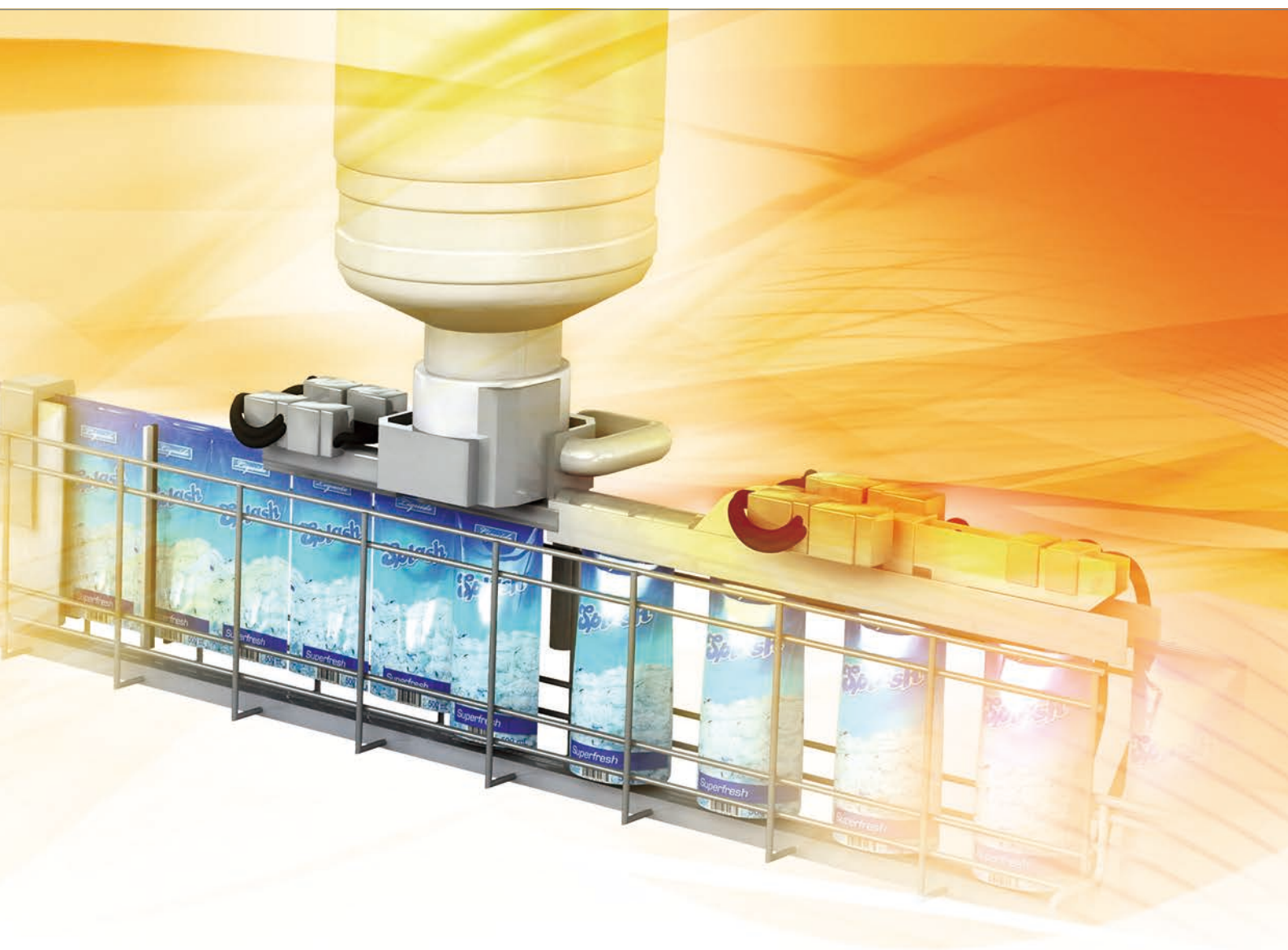
## Key features

- High-contrast, white LCD display visible from large distances and from any angle
- Easy to set up, and operate intuitively via CX-Thermo without power supply
- 50 ms sampling period for fast and precise regulation
- Functions for diagnosis for secure operations (see note 1)
- Useful timer and logic operation functions eliminating the need of a PLC



**NEW GENERATION**

Note 1: Alarm for loop break or PV change rate, heater burnout or sensor burnout detection



## ...is higher in every respect

### Clearer LCD display

The large, high-contrast, white LCD display contributes to the exceptional clarity and therefore readability of the E5\_C series. The display can be read unambiguously from greater distances and from much wider viewing angles than normal.

### Easy set-up and operation

Coupled with the autotuning algorithms, which greatly reduce set-up and commissioning time, Omron's CX-Thermo support software has been specially developed for use with the E5\_C series. This enables faster parameter set-up, easier device adjustment and simpler maintenance.

### Unique performance

Although intrinsic high sampling speed and high precision are built into the E5\_C series, Omron's 2-PID control is a key factor behind the advantage it offers over standard controllers. Using a powerful algorithm, it makes all the difference to control stability and thus the quality of your products.

# High-contrast display

## Easy-to-read White Characters with Large Display Size\*1

Big white characters on a black background achieve superior visibility. You can quickly and reliably check the PV from wide viewing angles, with natural light or in the subdued lighting conditions.

|                                  |
|----------------------------------|
| Character Height*1<br>(White PV) |
| E5GC : 10.5 mm                   |
| E5CC : 15.2 mm                   |
| E5EC : 18 mm                     |
| E5AC : 25 mm                     |

Life Size  
E5CC



The display remains easy to read even from wide viewing angles.

## Save space!

The compact and space-saving design of the new E5\_C controller generation requires less panel depth (60 mm)\*2, allowing quick snap-mounting and easy installation even under very cramped conditions. \*2 Excluding E5GC/E5DC/E5CC-U



Thanks to the IP66 protection\*3 of the front cover, the E5\_C can withstand humid environments and also be cleaned with non-aggressive fluids. \*3 Excluding E5DC/E5CC-U

## Shift Key to Reduce the Setting Work Required to Enter Values

For example, to set 100°C, it was previously necessary to increment one degree at a time with a key, but with the shift key (<<PF), you can instantly change the digit. This simplifies numeric entry at worksite.



Just press the shift key to move the digit.

# Easy to connect, set-up and operate

## USB Bus Power Eliminates the Need for a Power Supply

Even if you don't connect a power supply to the Controller, power is supplied from the computer.



USB-Serial  
Conversion Cable\*4  
E58-CIFQ2

\*4 The E58-CIFQ2-E  
Communications Conversion  
Cable is also required to  
supply power to the E5EC/  
E5AC/E5DC from the front  
panel.

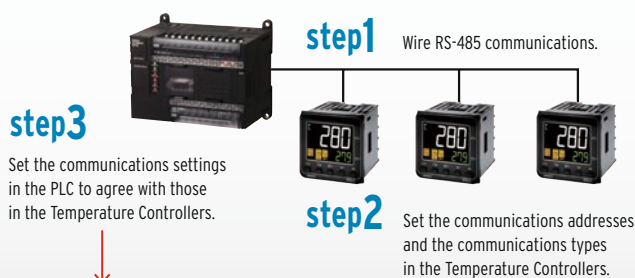
## CX-Thermo Special Setup Software for Easy Setup

Just use computer key  
operations to easily achieve  
complex setups.  
You can greatly reduce the  
required setup work.

**Installation**  
(CD sold separately.)



## Easy connections to a PLC with programless communications.



**Communications start.**

**More Convenient  
Operations**

The parameters can be copied from the master Temperature Controller to slave Temperature Controllers.

Master Temperature Controller can share RUN/STOP commands and set points with slave Temperature Controllers. Slope and offsets can be set for the set point.

### Advantages

- The amount of work to set up the system is greatly reduced.
- PLC programming and memory are not required for communications.
- Communications even with multiple Temperature Controllers are automatically executed by the Temperature Controllers.
- Interface converters are not required, which reduces costs.
- Number of connected Digital Temperature Controllers: 32 max. (Up to 16 for the FX Series)



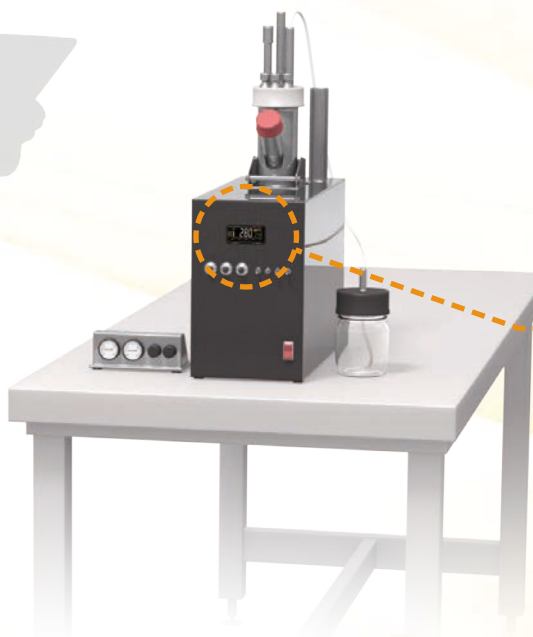
# Easy-to-read Display in the Compact Body (48 x 24 mm) with a Stylish Panel-mounting Design

## Easy-to-read: White Characters and Dual Displays with the Largest Character Height in the Industry.\*<sup>1</sup>

The 48 x 24 mm size compact body inherits the high-visibility, big white characters from the E5\_C series.

With the dual, side-by-side displays (PV and green SV), there is no need to switch the display.

\*<sup>1</sup> According to OMRON investigation, March 2014.

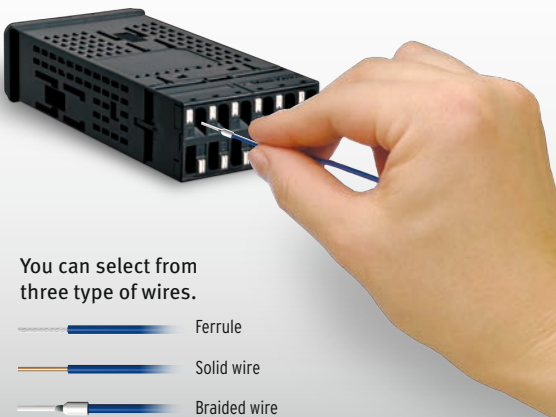


Life Size




10.5 mm

## Controllers with Screwless Clamp Terminal Blocks for Easy Wiring

In addition to the models with screw terminal blocks, models with screwless clamp terminal blocks are also available. Easy wiring by inserting wires simplifies the wiring work.



You can select from three type of wires.

-  Ferrule
-  Solid wire
-  Braided wire

## Group mounting Horizontally or Vertically further downsizes machines

The E5GC allows group mounting not only horizontally, but also vertically. This helps reduce machine size even further when more than one Temperature Controller is used.\*<sup>2</sup>

\*<sup>2</sup> The ambient operating temperature must not exceed given below.

Horizontal group mounting: 55°C

Vertical group mounting of two Temperature Controllers: 45°C

Vertical group mounting of three or more Temperature Controllers: 40°C

\*<sup>3</sup> Use Temperature Controllers with Screwless Clamp Terminal Blocks for vertical group mounting.



\*<sup>3</sup>  
Vertical group mounting is possible!

# A 22.5-mm Width Body and DIN-Track Mounting capability Allow Installation in Limited Space of Control Panels

## Good Visibility and Operability equivalent to On-panel Models.

The unified design of the E5\_C Series has been inherited along with the functions, performance, and operability. We've achieved the equal operability as the on-panel models.

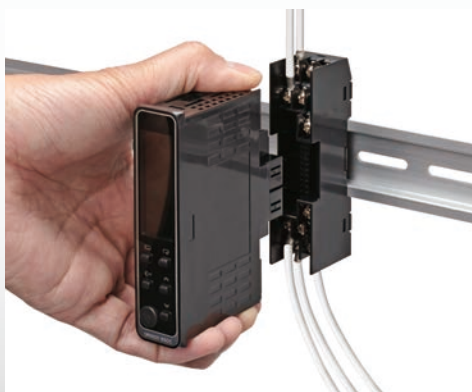
On-panel mounting is also possible.\*4

\*4 Mounting Adapter required; sold separately.

Life Size



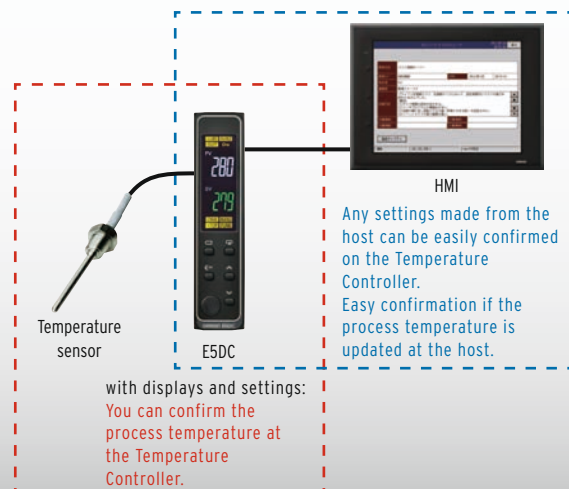
### Removable Terminal Block for Easy Mounting and Replacement.



Removing from the Terminal Block  
The image is for illustration purpose only.

\* Hooks must be pressed to remove from the terminal block.

### Reduce Confirmation Work with Front-panel Display and Front-panel Key Settings



## Unique performance with simplicity...

### ...and more control functionality

With key features like simplicity in operation, Omron's patented PID control, 50ms sampling period and the ability to handle multi-functional input and output types, the E5\_C sets a new standard in fast and precise temperature regulation. It has all the familiar functionality available from existing Omron temperature controllers to cover virtually any general-purpose demand. And naturally, the versatile E5\_C series is available with input/output combinations to perfectly match all of your requirements.

#### Extended inputs & outputs

- Remote SP input\*<sup>1</sup>
- Transfer output\*<sup>1</sup>  
(voltage 1-5 V output) added
- Event input\*<sup>2</sup>
- Auxiliary output

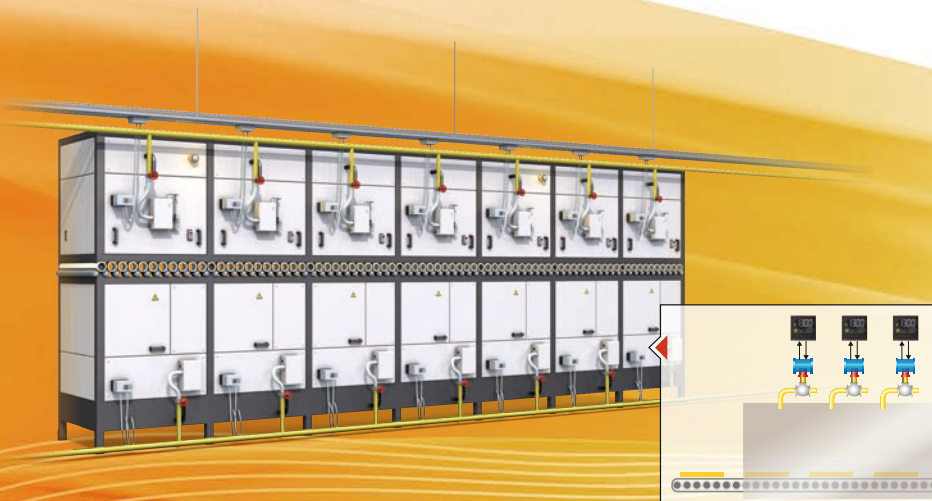
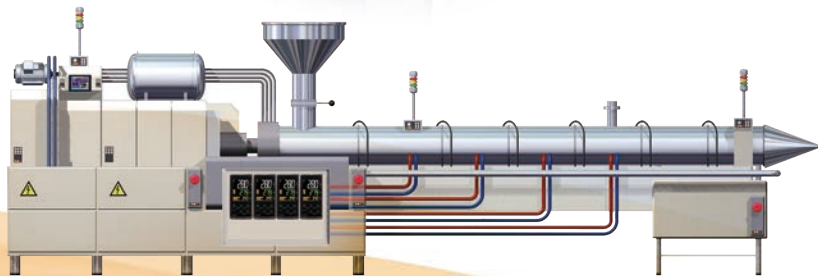
\*<sup>1</sup> Excluding E5GC/E5DC/E5CC-U

\*<sup>2</sup> Excluding E5CC-U

#### New feature

- Program-less communication
- Position-proportional control\*<sup>3</sup>

\*<sup>3</sup> Only for E5EC/E5AC







## Global availability, support and network

### Providing you with the support you need to operate globally

Whether you want to take your existing products into new industrial sectors, or whether you want to expand your business into entirely new geographical markets, Omron can help. We aim to offer the same level of support globally, without forgetting local needs.

We have production facilities on every continent.

Our smart communications network and seamless global support means we can provide you with parts and technical support wherever you sell your machines. And all of our components comply with major international standards, to ensure problem-free integration. It's all there for you.

### Facts and figures

- Over 35,000 employees
- Almost 200 locations
- Presence in every continent
- Knowledge-sharing through our global infrastructure
- Local R&D facilities synchronised to local needs
- Local factories to ensure quick response
- Global pricing terms
- Global support

# E5GC Model list (Models 0,1 or 2 auxiliary outputs)

| Output                    | Terminal type                   | Option No.* | Order code<br>AC100-240V | Order code<br>AC/DC24V |
|---------------------------|---------------------------------|-------------|--------------------------|------------------------|
| Out 1: Relay              | Screw terminals<br>(with cover) | 015         | E5GC-RX0A6M-000          | E5GC-RX0D6M-000        |
|                           |                                 |             | E5GC-RX1A6M-000          | E5GC-RX1D6M-000        |
|                           |                                 |             | E5GC-RX2A6M-000          | E5GC-RX2D6M-000        |
|                           |                                 |             | E5GC-RX1A6M-015          | E5GC-RX1D6M-015        |
|                           |                                 |             | E5GC-RX2A6M-015          | E5GC-RX2D6M-015        |
|                           |                                 |             | E5GC-RX2A6M-016          | E5GC-RX2D6M-016        |
|                           | Screwless Clamp<br>Terminal     | 015         | E5GC-RX0ACM-000          | E5GC-RX0DCM-000        |
|                           |                                 |             | E5GC-RX1ACM-000          | E5GC-RX1DCM-000        |
|                           |                                 |             | E5GC-RX2ACM-000          | E5GC-RX2DCM-000        |
|                           |                                 |             | E5GC-RX1ACM-015          | E5GC-RX1DCM-015        |
|                           |                                 |             | E5GC-RX2ACM-015          | E5GC-RX2DCM-015        |
|                           |                                 |             | E5GC-RX2ACM-016          | E5GC-RX2DCM-016        |
| Out 1: Voltage<br>(pulse) | Screw terminals<br>(with cover) | 015         | E5GC-QX0A6M-000          | E5GC-QX0D6M-000        |
|                           |                                 |             | E5GC-QX1A6M-000          | E5GC-QX1D6M-000        |
|                           |                                 |             | E5GC-QX2A6M-000          | E5GC-QX2D6M-000        |
|                           |                                 |             | E5GC-QX1A6M-015          | E5GC-QX1D6M-015        |
|                           |                                 |             | E5GC-QX2A6M-015          | E5GC-QX2D6M-015        |
|                           |                                 |             | E5GC-QX2A6M-016          | E5GC-QX2D6M-016        |
|                           | Screwless Clamp<br>Terminal     | 015         | E5GC-QX0ACM-000          | E5GC-QX0DCM-000        |
|                           |                                 |             | E5GC-QX1ACM-000          | E5GC-QX1DCM-000        |
|                           |                                 |             | E5GC-QX2ACM-000          | E5GC-QX2DCM-000        |
|                           |                                 |             | E5GC-QX1ACM-015          | E5GC-QX1DCM-015        |
|                           |                                 |             | E5GC-QX2ACM-015          | E5GC-QX2DCM-015        |
|                           |                                 |             | E5GC-QX2ACM-016          | E5GC-QX2DCM-016        |
| Out 1: Linear<br>current  | Screw terminals<br>(with cover) | 015         | E5GC-CX0A6M-000          | E5GC-CX0D6M-000        |
|                           |                                 |             | E5GC-CX1A6M-000          | E5GC-CX1D6M-000        |
|                           |                                 |             | E5GC-CX2A6M-000          | E5GC-CX2D6M-000        |
|                           |                                 |             | E5GC-CX1A6M-015          | E5GC-CX1D6M-015        |
|                           |                                 |             | E5GC-CX2A6M-015          | E5GC-CX2D6M-015        |
|                           |                                 |             | E5GC-CX2A6M-016          | E5GC-CX2D6M-016        |
|                           | Screwless Clamp<br>Terminal     | 015         | E5GC-CX0ACM-000          | E5GC-CX0DCM-000        |
|                           |                                 |             | E5GC-CX1ACM-000          | E5GC-CX1DCM-000        |
|                           |                                 |             | E5GC-CX2ACM-000          | E5GC-CX2DCM-000        |
|                           |                                 |             | E5GC-CX1ACM-015          | E5GC-CX1DCM-015        |
|                           |                                 |             | E5GC-CX2ACM-015          | E5GC-CX2DCM-015        |
|                           |                                 |             | E5GC-CX2ACM-016          | E5GC-CX2DCM-016        |
|                           |                                 | 024         | E5GC-CX1A6M-024          | E5GC-CX1D6M-024        |
|                           |                                 | 024         | E5GC-CX1ACM-024          | E5GC-CX1DCM-024        |

\* Option No.:

**015**  
Communication

**016**  
Event Input 1

**023**  
Heater Burnout SSR  
defect detection

**024**  
Event Input 2

## E5CC model list (all models 3 auxiliary outputs)

| Output   | Option No.* | Order code<br>AC100-240V | Order code<br>AC/DC24V |
|--|-------------|--------------------------|------------------------|
| Out 1: Relay<br>Out 2: non                       | 001         | E5CC-RX3A5M-000          | E5CC-RX3D5M-000        |
|  | 003         | E5CC-RX3A5M-001          | E5CC-RX3D5M-001        |
|  | 005         | E5CC-RX3A5M-003          | E5CC-RX3D5M-003        |
|  | 006         | E5CC-RX3A5M-005          | E5CC-RX3D5M-005        |
|  | 007         | E5CC-RX3A5M-006          | E5CC-RX3D5M-006        |
|  | 007         | E5CC-RX3A5M-007          | E5CC-RX3D5M-007        |
| Out 1: Voltage (pulse)<br>Out 2: non             | 001         | E5CC-QX3A5M-000          | E5CC-QX3D5M-000        |
|  | 003         | E5CC-QX3A5M-001          | E5CC-QX3D5M-001        |
|  | 005         | E5CC-QX3A5M-003          | E5CC-QX3D5M-003        |
|  | 006         | E5CC-QX3A5M-005          | E5CC-QX3D5M-005        |
|  | 007         | E5CC-QX3A5M-006          | E5CC-QX3D5M-006        |
|  | 007         | E5CC-QX3A5M-007          | E5CC-QX3D5M-007        |
| Out 1: Voltage (pulse)<br>Out 2: Voltage (pulse) | 001         | E5CC-QQ3A5M-000          | E5CC-QQ3D5M-000        |
|  | 003         | E5CC-QQ3A5M-001          | E5CC-QQ3D5M-001        |
|  | 005         | E5CC-QQ3A5M-003          | E5CC-QQ3D5M-003        |
|  | 006         | E5CC-QQ3A5M-005          | E5CC-QQ3D5M-005        |
|  | 007         | E5CC-QQ3A5M-006          | E5CC-QQ3D5M-006        |
|  | 007         | E5CC-QQ3A5M-007          | E5CC-QQ3D5M-007        |
| Out 1: Linear current<br>Out 2: non              | 004         | E5CC-CX3A5M-000          | E5CC-CX3D5M-000        |
|  | 005         | E5CC-CX3A5M-004          | E5CC-CX3D5M-004        |
|  | 006         | E5CC-CX3A5M-005          | E5CC-CX3D5M-005        |
|  | 007         | E5CC-CX3A5M-006          | E5CC-CX3D5M-006        |
|  | 007         | E5CC-CX3A5M-007          | E5CC-CX3D5M-007        |
| Out 1: Linear current<br>Out 2: Voltage (pulse)  | 001         | E5CC-CQ3A5M-000          | E5CC-CQ3D5M-000        |
|  | 003         | E5CC-CQ3A5M-001          | E5CC-CQ3D5M-001        |
|  | 005         | E5CC-CQ3A5M-003          | E5CC-CQ3D5M-003        |
|  | 006         | E5CC-CQ3A5M-005          | E5CC-CQ3D5M-005        |
|  | 007         | E5CC-CQ3A5M-006          | E5CC-CQ3D5M-006        |
|  | 007         | E5CC-CQ3A5M-007          | E5CC-CQ3D5M-007        |

As well as these models, other models are available on request. Please contact the local sales office for special requests.

### \* Option No.:

#### 001

Event Input 2,  
Heater Burnout SSR  
defect detection

#### 003

Communication  
3-phase heater  
alarm

#### 004

Event Input 2,  
Communication

#### 005

Event Input 4

#### 006

Event Input 2,  
Transfer output

#### 007

Event Input 2,  
Remote SP

# E5EC/E5AC Model list (all models 4 auxiliary outputs)

| Output   | Option No.* | Order code<br>AC100-240V | Order code<br>AC/DC24V |
|--|-------------|--------------------------|------------------------|
| Out 1: Relay<br>Out 2: non                       | 009         | E5_C-RX4A5M-000          | E5_C-RX4D5M-000        |
|  | 010         | E5_C-RX4A5M-009          | E5_C-RX4D5M-009        |
|  | 011         | E5_C-RX4A5M-010          | E5_C-RX4D5M-010        |
| Out 1: Voltage (pulse)<br>Out 2: non             | 009         | E5_C-QX4A5M-000          | E5_C-QX4D5M-000        |
|  | 010         | E5_C-QX4A5M-009          | E5_C-QX4D5M-009        |
|  | 011         | E5_C-QX4A5M-010          | E5_C-QX4D5M-010        |
| Out 1: Relay<br>Out 2: Relay                     | 009         | E5_C-RR4A5M-000          | E5_C-RR4D5M-000        |
|  | 010         | E5_C-RR4A5M-009          | E5_C-RR4D5M-009        |
|  | 011         | E5_C-RR4A5M-010          | E5_C-RR4D5M-010        |
| Out 1: Voltage (pulse)<br>Out 2: Voltage (pulse) | 009         | E5_C-QQ4A5M-000          | E5_C-QQ4D5M-000        |
|  | 010         | E5_C-QQ4A5M-009          | E5_C-QQ4D5M-009        |
|  | 011         | E5_C-QQ4A5M-010          | E5_C-QQ4D5M-010        |
| Out 1: Voltage (pulse)<br>Out 2: Relay           | 009         | E5_C-QR4A5M-000          | E5_C-QR4D5M-000        |
|  | 010         | E5_C-QR4A5M-009          | E5_C-QR4D5M-009        |
|  | 011         | E5_C-QR4A5M-010          | E5_C-QR4D5M-010        |
| Out 1: Linear current<br>Out 2: non              | 004         | E5_C-CX4A5M-000          | E5_C-CX4D5M-000        |
|  | 005         | E5_C-CX4A5M-004          | E5_C-CX4D5M-004        |
|  | 013         | E5_C-CX4A5M-005          | E5_C-CX4D5M-005        |
|  | 014         | E5_C-CX4A5M-013          | E5_C-CX4D5M-013        |
| Out 1: Linear current<br>Out 2: Linear current   | 004         | E5_C-CX4A5M-014          | E5_C-CX4D5M-014        |
|  | 004         | E5_C-CC4A5M-000          | E5_C-CC4D5M-000        |
|  | 005         | E5_C-CC4A5M-004          | E5_C-CC4D5M-004        |
|  | 013         | E5_C-CC4A5M-005          | E5_C-CC4D5M-005        |
| Out 1: Linear current<br>Out 2: Voltage (pulse)  | 014         | E5_C-CC4A5M-013          | E5_C-CC4D5M-013        |
|  | 009         | E5_C-CC4A5M-014          | E5_C-CC4D5M-014        |
|  | 009         | E5_C-CQ4A5M-000          | E5_C-CQ4D5M-000        |
|  | 010         | E5_C-CQ4A5M-009          | E5_C-CQ4D5M-009        |
| Out 1: Relay*<br>Out 2: Relay*                   | 011         | E5_C-CQ4A5M-010          | E5_C-CQ4D5M-010        |
|  | 011         | E5_C-CQ4A5M-011          | E5_C-CQ4D5M-011        |
|  | 004         | E5_C-PR4A5M-000          | E5_C-PR4D5M-000        |
|  | 014         | E5_C-PR4A5M-004          | E5_C-PR4D5M-004        |
|  | 014         | E5_C-PR4A5M-014          | E5_C-PR4D5M-014        |

\* Position proportional control model

## \* Option No.:

|   |  |  |  |  |
|---|--|--|--|--|
| <b>004</b><br>Event Input 2,<br>Communication                 | <b>005</b><br>Event Input 4  | <b>009</b><br>Event Input 2,<br>Communication<br>3-phase heater<br>alarm | <b>010</b><br>Event Input 4,<br>Heater Burnout SSR<br>defect detection | <b>011</b><br>Event Input 6,<br>Remote SP,<br>Heater Burnout SSR<br>defect detection,<br>Transfer output |
| <b>013</b><br>Event Input 6,<br>Remote SP,<br>Transfer output | <b>014</b><br>Event Input 4,<br>Communication<br>Remote SP,<br>Transfer output |  |  |  |

## E5CC-U model list (models 0, 1 or 2 auxiliary outputs)

| Output                 | Order code<br>AC100-240V | Order code<br>AC/DC24V |
|------------------------|--------------------------|------------------------|
| Out 1: Relay           | E5CC-RW0AUM-000          | E5CC-RW0DUM-000        |
|                        | E5CC-RW1AUM-000          | E5CC-RW1DUM-000        |
|                        | E5CC-RW2AUM-000          | E5CC-RW2DUM-000        |
| Out 1: Voltage (pulse) | E5CC-QX0AUM-000          | E5CC-QX0DUM-000        |
|                        | E5CC-QX1AUM-000          | E5CC-QX1DUM-000        |
|                        | E5CC-QX2AUM-000          | E5CC-QX2DUM-000        |
| Out 1: current         | E5CC-CX0AUM-000          | E5CC-CX0DUM-000        |
|                        | E5CC-CX1AUM-000          | E5CC-CX1DUM-000        |
|                        | E5CC-CX2AUM-000          | E5CC-CX2DUM-000        |

## E5DC model list (models 0 or 2 auxiliary outputs)

| Output                 | Option No.* <sup>1</sup> | Order code<br>AC100-240V      | Order code<br>AC/DC24V        |
|------------------------|--------------------------|-------------------------------|-------------------------------|
| Out 1: Relay           |                          | E5DC-RX2ASM-000               | E5DC-RX2DSM-000               |
|                        | 002                      | E5DC-RX2ASM-002               | E5DC-RX2DSM-002               |
|                        | 015                      | E5DC-RX0ASM-015* <sup>2</sup> | E5DC-RX0DSM-015* <sup>2</sup> |
|                        | 017                      | E5DC-RX2ASM-017               | E5DC-RX2DSM-017               |
| Out 1: Voltage (pulse) |                          | E5DC-QX2ASM-000               | E5DC-QX2DSM-000               |
|                        | 002                      | E5DC-QX2ASM-002               | E5DC-QX2DSM-002               |
|                        | 015                      | E5DC-QX0ASM-015* <sup>2</sup> | E5DC-QX0DSM-015* <sup>2</sup> |
|                        | 017                      | E5DC-QX2ASM-017               | E5DC-QX2DSM-017               |
| Out 1: Liner current   |                          | E5DC-CX2ASM-000               | E5DC-CX2DSM-000               |
|                        | 015                      | E5DC-CX0ASM-015* <sup>2</sup> | E5DC-CX0DSM-015* <sup>2</sup> |
|                        | 015                      | E5DC-CX2ASM-015               | E5DC-CX2DSM-015               |
|                        | 016                      | E5DC-CX2ASM-016               | E5DC-CX2DSM-016               |

\*<sup>1</sup>Option No.:

**002**

Communication,  
Heater Burnout SSR  
defect detection

**015**

Communication

**016**

Event Input 1

**017**

Event Input 1,  
Heater Burnout SSR  
defect detection

\*<sup>2</sup> Auxiliary outputs are not possible for these models.



## High performance & simplicity

The next generation E5\_C temperature controller is setting a new global standard in terms of precision and user-friendly design. Best control performance, easy set-up and outstanding visibility of the white IP66 LCD display have been integrated into a space-saving housing with only 60 mm\* of depth. \* Excluding E5GC

- Fast and precise regulation: 50ms sampling loop period time
- Easy to set up, and operate intuitively via CX-Thermo without power supply
- Best contrast display using white LCD technology which is visible from a far distance and from any angle
- Useful alarm and diagnosis functions for secure operation

## Specifications

|   | E5GC  | E5CC   | E5EC   | E5AC   |  |
|---|---|--|--|--|--|
| <b>Power supply voltage</b>                                     | A in model number: 100 to 240 VAC, 50/60 Hz D in model number: 24 VAC, 50/60 Hz; 24 VDC   |  |  |  |  |
| <b>Operating voltage range</b>                                  | 85% to 110% of rated supply voltage   |  |  |  |  |
| <b>Power consumption</b>  | 5.9VA max. at 100 to 240 VAC, and 3.2VA max. at 24 VAC or 1.8W max. at 24 VDC   | 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 | 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   | Models with option selection of 000: 7.0 VA max. at 100 to 240 VAC, and 4.2 VA max. at 24 VAC or 2.4 W max. at 24 VDC All other models: 9.0 VA max. at 100 to 240 VAC, and 5.6 VA max. at 24 VAC or 3.4 W max. at 24 VDC |  |
| <b>Sensor input</b>   | <ul style="list-style-type: none"> <li>– Temperature input<br/>Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II<br/>Platinum resistance thermometer: Pt100 or JPt100<br/>Infrared temperature sensor (ES1B): 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C</li> <li>– Analog input<br/>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</li> </ul>   |  |  |  |  |
| <b>Input impedance</b>  | Current input: 150 Ω max., Voltage input: 1 MΩ min. (Use a 1:1 connection when connecting the ES2-HB/THB.)  |  |  |  |  |
| <b>Control method</b>   | ON/OFF control or 2-PID control (with auto-tuning)  |  |  |  |  |
| <b>Indication accuracy (at the ambient temperature of 23°C)</b> | Thermocouple: (±0.3% of indication value or ±1°C, whichever is greater) ±1 digit max. <sup>*1</sup><br>Platinum resistance thermometer: (±0.2% of indication value or ±0.8°C, whichever is greater) ±1 digit max.<br>Analog input: ±0.2% FS ±1 digit max.<br>CT input: ±5% FS ±1 digit max.   |  | Thermocouple: (±0.3% of indication value or ±1°C, whichever is greater) ±1 digit max. <sup>*1</sup><br>Platinum resistance thermometer: (±0.2% of indication value or ±0.8°C, whichever is greater) ±1 digit max.<br>Analog input: ±0.2% FS ±1 digit max.<br>CT input: ±5% FS ±1 digit max.<br>Potentiometer input: ±5% FS ±1 digit max. |  |  |
| <b>Auto-Tuning</b>  | Yes, 40%/100% MV output limit selection. When using Heat/Cool: Independent Heat & cool PID can be set by Auto-tuning.   |  |  |  |  |
| <b>Self-Tuning</b>  | Yes   |  |  |  |  |
| <b>Control output</b>   | <b>Relay output</b>   | SPST-NO, 250 VAC, 2 A (resistive load), electrical life; 100,000 operations, minimum applicable load: 5 V, 10 mA (reference value)   | SPST-NO, 250 VAC, 3 A (resistive load), electrical life; 100,000 operations, minimum applicable load: 5 V, 10 mA (reference value)   | SPST-NO, 250 VAC, 5 A (resistive load), electrical life; 100,000 operations, minimum applicable load: 5 V, 10 mA (reference value)   |  |
|   | <b>Voltage output (for driving SSR)</b>   | Output voltage: 12 VDC ±20% (PNP), max. load current: 21 mA, with short-circuit protection circuit   |  | 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.)  |  |
|   | <b>Linear current output</b>  | 4 to 20 mA DC/0 to 20 mA DC, load: 500 Ω max., resolution: approx. 10,000  |  |  |  |
| <b>Auxiliary output</b>   | <b>Number of outputs</b>  | 1 or 2 (depends on model)  | 3  | 4  |  |
|   | <b>Output specifications</b>  | 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)   | SPST-NO relay outputs, 250 VAC, Models with 1 or 2 outputs: 3 A (resistive load), or Models with 3 outputs: 2 A (resistive load), Electrical life: 100,000 operations, Minimum applicable load: 10 mA at 5 V (reference value)   | SPST-NO. relay outputs, 250 VAC, Models with 4 outputs: 2 A (resistive load), Electrical life: 100,000 operations, Minimum applicable load: 10 mA at 5 V (reference value)   |  |
| <b>Event input</b>  | <b>Number of inputs</b>   | 1 or 2 (depends on model)  | 2 or 4 (depends on model)  | 2, 4 or 6 (depends on model)   |  |
|   | <b>External contact input specifications</b>  | 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.<br>Current flow: Approx. 7 mA per contact   |  |  |  |
| <b>Setting method</b>   | Digital setting using front panel keys  |  |  |  |  |
| <b>Indication method</b>  | 11-segment digital display and individual indicators  |  |  |  |  |
| <b>Multi SP</b>   | Up to eight set points (SP0 to SP7) can be saved and selected using the event inputs, key operations, or serial communications. <sup>*2</sup>   |  | Up to eight set points (SP0 to SP7) can be saved and selected using the event inputs, key operations, or serial communications.  |  |  |
| <b>Other functions</b>  | 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 <sup>*3</sup> |  |  |  |  |
| <b>Ambient operating temperature</b>                            | -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)  |  |  |  |  |
| <b>Ambient operating humidity</b>                               | 25% to 85%  |  |  |  |  |
| <b>Storage temperature</b>                                      | -25 to 65°C (with no condensation or icing)   |  |  |  |  |
| <b>Degree of protection</b>                                     | Front panel: IP66, Rear case: IP20, Terminals: IP00   |  |  |  |  |
| <b>Input sampling period</b>                                    | 50 ms   |  |  |  |  |
| <b>Size in mm (HxWxD)</b>                                       | 24×48×90 (Models with Screw Terminal Blocks)/ 24×48×93(Models with Screwless Clamp Terminal Blocks)   | 48×48×64   | 48×96×64   | 96×96×64   |  |

**Note:** \*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 temperatures is ±2°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 at a temperature of 400 to 800°C 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. Only four set points are selectable for event inputs.

\*3. Simple transfer output, and work bit message are only for E5GC.



## High performance & DIN-Track Mounting

The next generation E5\_C temperature controller is setting a new global standard in terms of precision and user-friendly design. Best control performance, easy set-up and outstanding visibility of the white LCD display have been integrated into a space-saving housing.

- Fast and precise regulation: 50ms sampling loop period time
- Easy to set up, and operate intuitively via CX-Thermo without power supply
- Removable terminal block for easy mounting and replacement.\*
- Useful alarm and diagnosis functions for secure operation

\* Only for E5DC

## Specifications

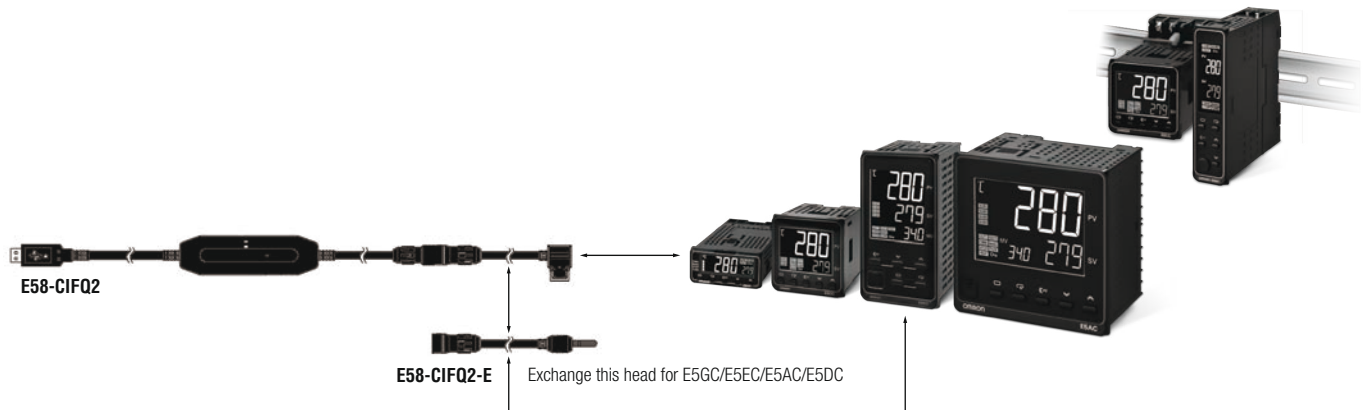
|  |  | E5CC-U   | E5DC   |
|--|--|--|--|
| <b>Power supply voltage</b>  |  | A in model number: 100 to 240 VAC, 50/60 Hz D in model number: 24 VAC, 50/60 Hz; 24 VDC  |  |
| <b>Operating voltage range</b>   |  | 85% to 110% of rated supply voltage  |  |
| <b>Power consumption</b>   |  | Models with option 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<br>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  | 4.9 VA max. at 100 to 240 VAC, and 2.8 VA max. at 24 VDC or 1.5 W max. at 24 VDC   |
| <b>Sensor input</b>  |  | <ul style="list-style-type: none"> <li>– Temperature input<br/>Thermocouple: K, J, T, E, L, U, N, R, S, B, W, or PL II<br/>Platinum resistance thermometer: Pt100 or JPt100<br/>Infrared temperature sensor (ES1B): 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C</li> <li>– Analog input<br/>Current input: 4 to 20 mA or 0 to 20 mA<br/>Voltage input: 1 to 5 V, 0 to 5 V, 0 to 10 V, or 0 to 50 mV<br/>(The 0 to 50 mV range applies to the E5CC-U only for those manufactured in May 2014 or later.)</li> </ul> |  |
| <b>Input impedance</b>   |  | Current input: 150 Ω max., Voltage input: 1 MΩ min. (Use a 1:1 connection when connecting the ES2-HB/THB.)   |  |
| <b>Control method</b>  |  | ON/OFF control or 2-PID control (with auto-tuning)   |  |
| <b>Indication accuracy (at the ambient temperature of 23°C) (When mounted individually for E5DC)</b> |  | Thermocouple:<br>(±1% of indication value or ±2°C, whichever is greater) ±1 digit max. <sup>1</sup><br>Platinum resistance thermometer:<br>(±0.2% of indication value or ±0.8°C, whichever is greater) ±1 digit max.<br>Analog input: ±0.2% FS ±1 digit max.   | Thermocouple:<br>(±0.3% of indication value or ±1°C, whichever is greater) ±1 digit max. <sup>1</sup><br>Platinum resistance thermometer:<br>(±0.2% of indication value or ±0.8°C, whichever is greater) ±1 digit max.<br>Analog input: ±0.2% FS ±1 digit max.<br>CT input: ±5% FS ±1 digit max. |
| <b>Auto-Tuning</b>   |  | Yes, 40%/100% MV output limit selection. When using Heat/Cool: Independent Heat & cool PID can be set by Auto-tuning.  |  |
| <b>Self-Tuning</b>   |  | Yes  |  |
| <b>Control output</b>  | <b>Relay output</b>                          | SPDT, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA (reference value)  | SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations minimum applicable load: 5 V, 10 mA (reference value)  |
|  | <b>Voltage output (for driving SSR)</b>      | Output voltage 12 VDC ±20% (PNP), max. load current: 21 mA, with short-circuit protection circuit  |  |
|  | <b>Linear current output</b>                 | 4 to 20 mA DC/0 to 20 mA DC, load: 500 Ω max., resolution: approx. 10,000  |  |
| <b>Auxiliary output</b>  | <b>Number of outputs</b>                     | 1 or 2 (depends on model)  | 2 (depends on model)   |
|  | <b>Output specifications</b>                 | SPST-NO relay outputs, 250 VAC, Models with 1 or 2 outputs: 3 A (resistive load), or Models with 3 outputs: 2 A (resistive load), Electrical life: 100,000 operations, Minimum applicable load: 10 mA at 5 V (reference value)   | SPST-NO relay outputs, 250 VAC, 2 A (resistive load), Electrical life: 100,000 operations, Minimum applicable load: 10mA at 5V (reference value)   |
| <b>Event input</b>   | <b>Number of inputs</b>                      | -  | 1 (depends on model)   |
|  | <b>External contact input specifications</b> | -  | Contact input: ON: 1 kΩ max., OFF: 100 kΩ min.   |
|  |  | -  | Non-contact input:<br>ON: Residual voltage: 1.5 V max., OFF: Leakage current: 0.1 mA max.  |
|  |  | -  | Current flow: Approx. 7 mA per contact   |
| <b>Setting method</b>  |  | Digital setting using front panel keys   |  |
| <b>Indication method</b>   |  | 11-segment digital display and individual indicators   |  |
| <b>Multi SP</b>  |  | Up to eight set points (SP0 to SP7) can be saved and selected using the event inputs, key operations, or serial communications.  | Up to eight set points (SP0 to SP7) can be saved and selected using the event inputs, key operations, or serial communications. <sup>2</sup>   |
| <b>Other functions</b>   |  | 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, and display brightness setting  |  |
| <b>Ambient operating temperature</b>   |  | -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)   |  |
| <b>Ambient operating humidity</b>  |  | 25% to 85%   |  |
| <b>Storage temperature</b>   |  | -25 to 65°C (with no condensation or icing)  |  |
| <b>Degree of protection</b>  |  | Front panel: IP50, Rear case: IP20, Terminals: IP00  | Main unit: IP20, Terminal unit: IP00   |
| <b>Input sampling period</b>   |  | 50 ms  |  |
| <b>Size in mm (HxWxD)</b>  |  | 48×48×76.8   | 96×22.5×85   |

**Note:** \*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 temperatures is ±2°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 at a temperature of 400 to 800°C 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. Only two set points are selectable for event inputs.

## USB communication cable E58-CIFQ2

|             | E5GC | E5CC | E5EC | E5AC | E5CC-U | E5DC |
|-------------|------|------|------|------|--------|------|
| E58-CIFQ2   | ■    | ■    | ■    | ■    | ■      | ■    |
| E58-CIFQ2-E | ■    | -    | ■    | ■    | -      | ■    |



## E5GC/E5CC/E5EC/E5AC/E5CC-U/E5DC optional tools

| Option                                     | Order code                                       |
|--|--|
| USB based configuration cable              | E58-CIFQ2, E58-CIFQ2-E (for E5GC/E5EC/E5AC/E5DC) |
| PC based configuration and tuning software | EST2-2C-MV4                                      |

Refer to the *E5□□/E5□□-T Digital Temperature Controllers Datasheet* (Cat. No. H177) for details.

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