

# Industrial Automation Guide 2016



Industrial Products & Systems

# Targeted Technologies

## Creating maximum output with minimum input

By identifying the many ways of innovation in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritized format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples on our website.

[industrial.omron.eu/technologies](https://industrial.omron.eu/technologies)





## PROplus Line

If you have a complex application or one where you need to address special needs, then the PROplus Line is the answer. That's because PROplus products are designed to be customisable.

The possibility to modify a PROplus product means that your application is unique. However, this does not mean that the PROplus Line is not a ready-made solution. On the contrary, it is a ready-made solution that can be adapted to your specific application. This allows you to benefit from the high reliability of a PROplus product while maintaining the flexibility of a customisable solution.

For example, the PROplus 4000 series is designed for applications where you need to control a large number of axes. The PROplus 4000 series is designed for applications where you need to control a large number of axes. The PROplus 4000 series is designed for applications where you need to control a large number of axes.

The new ES-NH temperature controller is designed for applications where you need to control a large number of axes. The ES-NH temperature controller is designed for applications where you need to control a large number of axes.

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## The 361° Approach

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritised format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

## Technologies

### Creating maximum output with minimum input

Whatever type of automated machinery you are specialized in, you know that there are many ways to innovate. You are already aware that there are many possible areas for improvement. But where do you start? Where do you focus your efforts? Where can you make the biggest difference with the least amount of effort?

At Omron, we asked ourselves these questions too. And by identifying the answers in specific industries we developed the 'targeted technologies' concept. It's a way of thinking about technology in a prioritised format. Prioritized according to our customers' most pressing needs. The result? A set of solutions that make immediate impact on the core of our customers' businesses. A set of solutions that hit the target every time. Take a look at the examples below.

## Technologies

### Sysmac: the all-in-one platform

We know that machine builders prefer different product solutions for different challenges. But this can cause hierarchy headaches and communications issues. That's why we developed Sysmac: a single unified platform that is open, scalable, flexible, and totally focused on maximising the speed and flexibility of machines. A platform that integrates robotic, motion and sequential logic control into a single multitasking system.

[Learn more](#)

### 361°: the perfect match

When it comes to sensors and components, we know that our customers all have different needs. That's why our product development in this area is driven by the 361° Approach. It produces product families that offer a total all-round choice. From quality products suited to standard environments to specialist devices that can handle extremes. A full circle of choice, all with an extra degree of quality and proven reliability.

[Learn more](#)



## The 361° portfolio

**PRO Line**  
PROplus products are designed for specialty applications or customer demands.

[Learn more](#)



### LITE Line

LITE sensors are the effective solution for applications requiring high performance in quality.

[Learn more](#)



## Related product news



With new G2B sensors, you only pay for what you need. Optimizing relative placement sensors in the new G2B range have been specifically designed to offer a cost-effective sensing solution or standard sensing conditions, making it unnecessary to buy more sensors than you actually need.

[Learn more](#)

## Related product news



ES16 - Omron's new photo sensors combine simplicity with performance. Drawing on our experience of manufacturing over a million photoelectric sensors a year, we have developed a new generation of high-precision products that combine simple selection, installation with reliability, versatility, rugged construction and value for money.

[Learn more](#)

## Related product news



RS-485 Control: New step towards the full integration of Automation Systems. The RS-485 Control is a new step towards the full integration of Automation Systems. The RS-485 Control is a new step towards the full integration of Automation Systems.

[Learn more](#)

# Welcome to our world

## Our best-in-class devices for your automation system

Welcome to Omron's world of advanced industrial automation. The INDUSTRIAL AUTOMATION GUIDE is your essential tool to select best-in-class devices for your automation system. It highlights our core competences in sensing, control, visualisation, motion and panel components.

Of course, Omron offers a much larger range of products than you can find on the attached DVD. For more information on services and company competence visit our website.

Here you will find:

- Latest product news
- Technical product specifications
- 2D / 3D CAD Library
- Customer references
- Technology concepts
- Supporting product documentation
- Knowledge Base - "myOmron"
- Events Calendar
- Contact information

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“To the machine the work of the machine,  
to man the thrill of further creation.”

Kazuma Tateisi, founder of Omron

# Omron at a glance

200.000 products ranging  
input, logic and output

Sensing, Control Systems, Visualization, Drives, Robots, Safety,  
Quality Control & Inspection, Control and Switching Components

7%

Investment in Research & Development

Innovation track  
record of 80 years

Top 150 global patent assignee

1.200 employees dedicated to R&D

11.000 + issued and pending patents

37.000

Employees worldwide

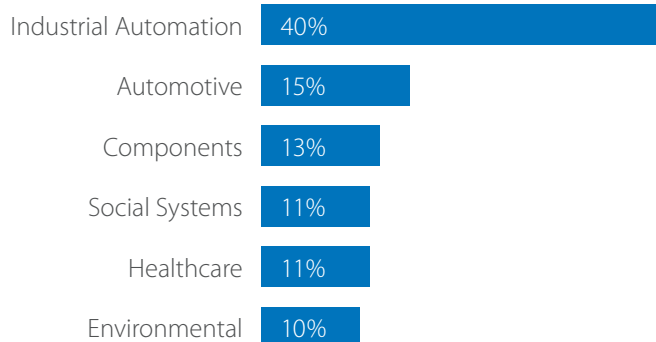
210

Locations worldwide

22

Countries in EMEA

Working for the  
benefit of society



## Close to your needs

Technical training & seminars, technical support, Automation Technology Centers, online community (MyOmron), online catalogues and technical documentation, customer service & sales support, inter-operability labs (Tsunagi), safety services, repairs.

# Your needs, our focus

## Solutions perfectly matching your needs

We asked ourselves: 'What do you need in sensors and components?' Well, first you need reliability. Then a variety and choice of performance levels. You may also want advanced functionality, with special features defined by you – or you may want standardized solutions, with highly competitive prices.

Whatever it is, it can all add up to a wish list that is difficult to fulfil. Until now. That's because our new 361° Approach not only provides a complete all-round offer without gaps, it also puts you at the very centre of the product selection process. It's an approach that leads to a Perfect Match – one with the extra degree of confidence that comes from choosing Omron.

### 361° in one view



Quality



Line-up



Application



Customization



Global availability



Specs

	Quality	Line-up	Application	Customization	Global availability	Specs
<b>PRO<sup>plus</sup></b>	Premium	Tailored	Special	Yes	Yes	Application oriented
<b>PRO</b>	Premium	Complete	Advanced	Yes	Yes	Above Standard
<b>LITE</b>	Premium	Standard	Basic	No	No	Basic
	'Quality' refers to the standard of manufacturing and the materials used – this translates into reliability	'Line-up' refers to the number of model types	'Application' indicates the complexity of the automation	'Customization' is the possibility to modify the product		'Specs' refers to the choice of performance levels



# The extra degree of advantage

## Three distinct lines of sensors and components

### Three distinct lines

361° Approach offers three distinct lines within each sensor or component product category. LITE products are cost-effective without any compromise in quality. PRO products represent the “install & forget” option, offering longer lifetime, higher protection, and more features. While PROplus products are designed for specific applications or customer demands.

### Optimized reliability

All three lines are backed by the Omron commitment to quality, so even when you need a price-competitive advantage, you can be confident that they will never let you down.

### Solutions that perfectly match your needs

The 361° Approach ensures that you can quickly and easily identify the perfect match solution to your needs – nothing more, nothing less.

### Optimized costs

Your sensor and component costs are also minimized – because it eliminates over-specification.

### Why an extra 1°?

The extra degree is what you get when you do business with Omron, and that means different things to different customers – all depending on their needs. For example, if you need specification advice, the extra degree is ‘service’. But ultimately, to everyone it means “an extra degree of confidence in the perfect match”.



# Sysmac: A fully integrated platform

## Integration and Functionality

Sysmac is an integrated automation platform dedicated to providing complete control and management of your automation plant. At the core of this platform, the Machine Controller series offers synchronous control of all machine devices and advanced functionality such as motion, robotics and database connectivity. This multidisciplinary concept allows you to simplify solution architecture, reduce programming and optimize productivity.

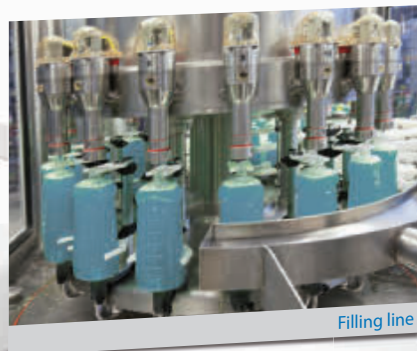


FACTORY  
AUTOMATION

MACHINE  
CONTROL

Machine Automation Controller

## Motion



Filling line

- Motion Control: Integrated within the IDE, and operating in real-time
- Standard PLCopen Function Blocks plus Omron generated motion FB's
- Direct Synchronous control for Position, Speed and Torque

## Safety



Assembly

- All safety related data is synchronized with the whole network
- Safety functions such as muting, guard locking, EDM and valve monitoring are simple to manage

- ✓ **One Integrated Development Environment software** for Configuration, Programming, Simulation and Monitoring



## Information



- Sysmac communicates in real-time with Databases such as SQL
- Secure Data: In the event of a server going down or losing communications, data is automatically stored in internal memory
- Sysmac operates with Databases at high speed [1000 table element/ 100 ms] ensuring realistic Big Data Processing to improve productivity and aid predictive maintenance etc.

### ✓ Integrated Automation Control:

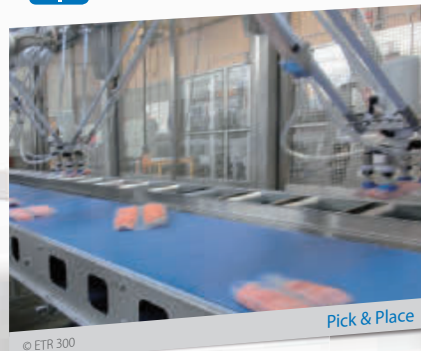
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

## Vision



- Higher resolution images available without increasing the vision processing time
- Shape search technology: Provides more stable and accurate object detection for Pick & Place projects

## Robotics



- Up to 8 Delta robots with one controller
- Time-based Robotic Function Blocks make programming easier

## Sensing



- Full control of the process parameter setting and predictive maintenance functions
- High precision detection and positioning data synchronized on the network

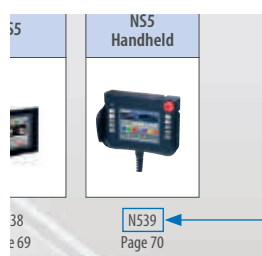
# Product selection table

Automation systems	 <p>12 Machine automation controller</p>	 <p>26 Programmable logic controllers (PLC)</p>	 <p>54 Remote I/O</p>	 <p>68 Human machine interfaces (HMI)</p>
Motion & Drives	 <p>96 Motion controllers</p>	 <p>112 Servo systems</p>	 <p>170 Robots</p>	 <p>202 Frequency inverters</p>
Sensing	 <p>236 Photoelectric sensors</p>	 <p>278 Mark and Color sensors</p>	 <p>284 Lightcurtains and area sensors</p>	 <p>292 Fiber optic sensors and amplifiers</p>
Quality control & Inspection	 <p>370 Inspection &amp; Ident systems</p>	 <p>426 Measurement sensors</p>		
Safety	 <p>462 Emergency stop and control devices</p>	 <p>472 Safety limit switches</p>	 <p>480 Safety door switches</p>	 <p>506 Safety sensors</p>
Control components	 <p>574 Temperature controllers</p>	 <p>596 Power supplies</p>	 <p>614 Uninterruptible power supplies (UPS)</p>	 <p>622 Timers</p>
Switching components	 <p>682 Electromechanical relays</p>	 <p>696 Solid state relays</p>	 <p>706 Low voltage switchgear</p>	 <p>722 Monitoring products</p>
Software	 <p>766 Software</p>			

# Control components

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*Quick Link*



# Control components

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# Temperature controllers

## E5\_C – THE NEW STANDARD

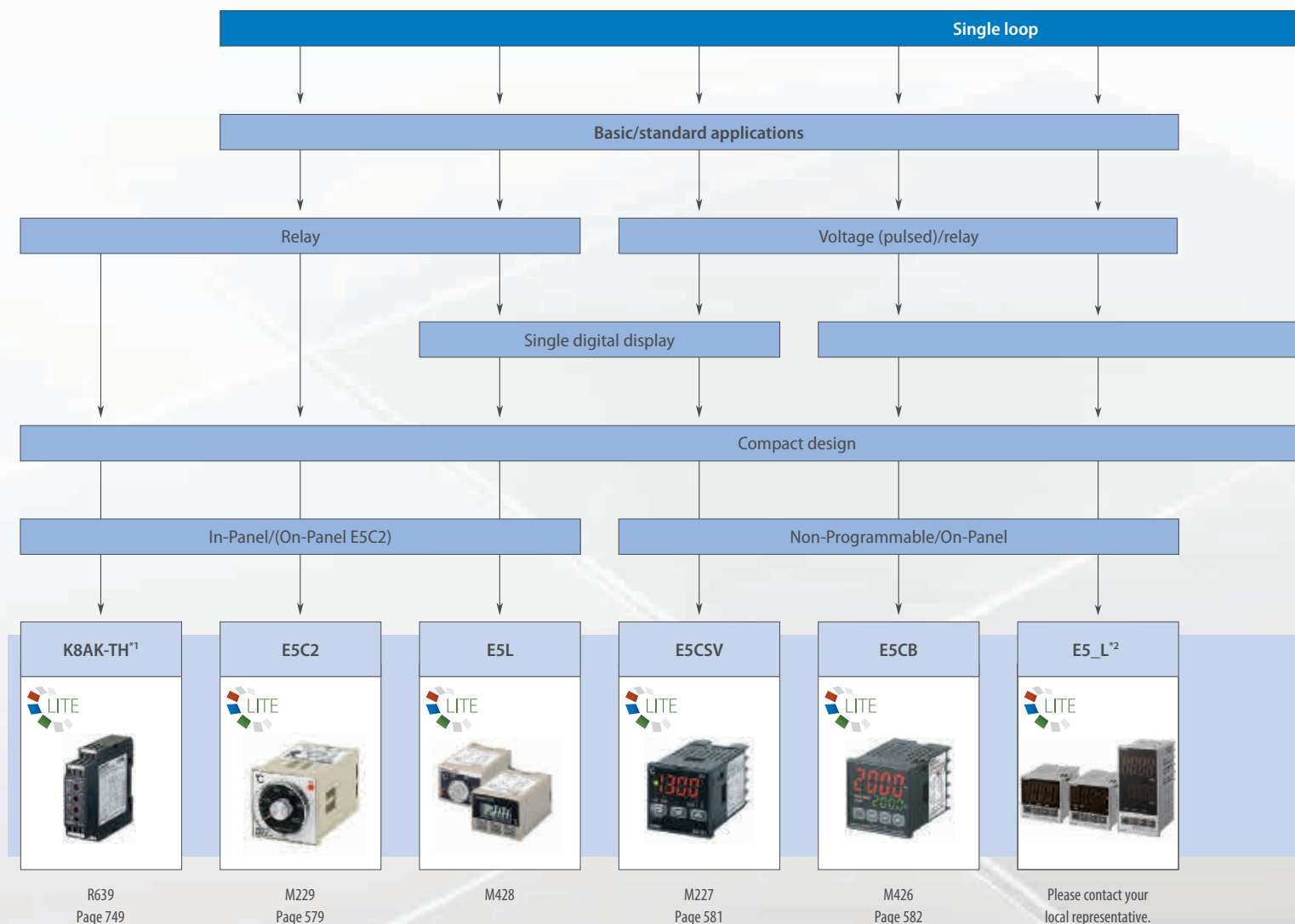
### ...in temperature control

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 E\_C, which set new global standards in the crucial areas of precision, user friendliness and control performance. The E\_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.



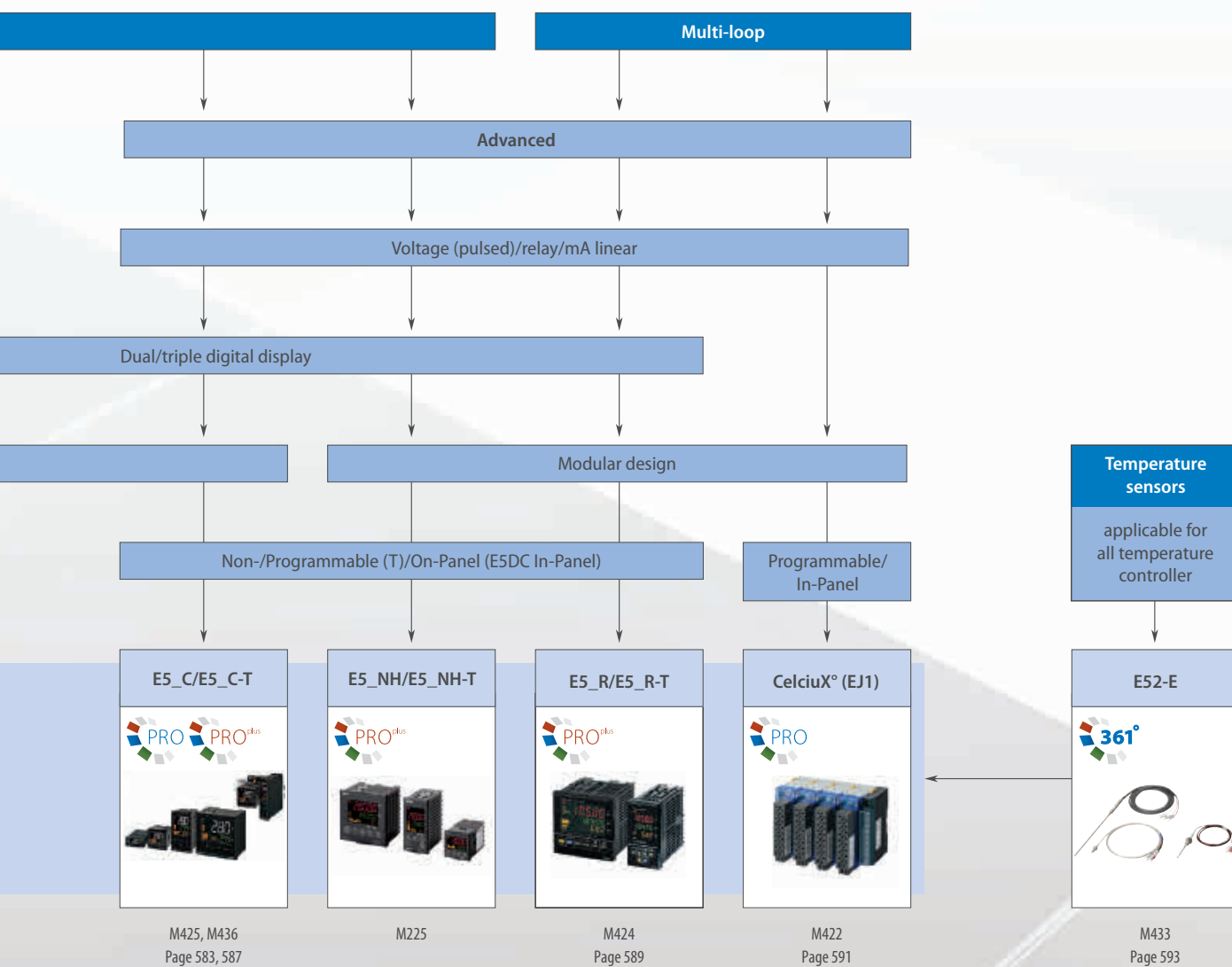
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Explanation of 361° concept see page 4



\*1 Temperature limiter

\*2 Only available in Africa, Middle East and Russia

# Selection table

Category		Analog temperature controller	Analog/digital temperature controller	Digital temperature controller		
						
Model		E5C2	E5L-A/C	E5CSV	E5CB	E5_L
Selection criteria	Type	Lite line				
	Panel	On-panel/In-Panel	In-Panel	On-panel		
	Loops	1	1	1	1	1
	Size	1/16 DIN	45 × 35 mm	1/16 DIN	1/16 DIN	1/16, 1/32 DIN
Control mode	ON/OFF   PID   2-PID <sup>*1</sup>	■/P   ■   -	■   -   -	■   -   ■	■   -   ■	■   -   ■
	Operation <sup>*2</sup>	H/C	H/C	H/C	H/C	H/C
	Valve Control <sup>*3</sup>	-	-	-	-	-
Features	Accuracy	-	±1°C	±0.5%	±0.5%	±0.5%
	Auto-/Self-/Gradient-tuning	-   -	-   -	■   ■	■   ■   -	■   ■   -
	Transfer output	-	-	-	-	-
	Remote input	-	-	-	-	-
	Number of alarms	-	-	1	1	1
	Heater alarm	-	-	-	-	-
	IP rating front panel	IP40	IP40	IP66	IP66	IP50
Supply voltage	Display	-	Analog (A)/3 digit (C)	Single 3.5 digit	Dual 4 digit	Dual 4 digit
	110/240 VAC	■	■	■	■	■
Comms	24 VAC/VDC	-	-	□	□	-
	RS-232   RS-485	-   -	-   -	-   -	-   -	-   -
	Event IP	-	-	-	-	-
	QLP port	-	-	-	■ <sup>*4</sup>	-
	DeviceNet	-	-	-	-	-
	Modbus	-	-	-	■	-
	PROFIBUS	-	-	-	-	-
Control output	Modbus TCP	-	-	-	-	-
	ProfiNet	-	-	-	-	-
	Relay   SSR	-   -	-   -	■   -	■   -	■   -
	Voltage (pulse)	-	-	■	■	■
Input type – linear	Linear voltage	-	-	-	-	-
	Linear current	-	-	-	-	-
	mA	-	-	-	-	-
Input type	mV	-	-	-	-	-
	V	-	-	-	-	-
	Thermocouple	K	■	-	■	■
		J	■	-	■	■
		T	-	-	■	■
		E	-	-	-	-
		L	-	-	■	-
		U	-	-	■	-
		N	-	-	■	-
		R	-	-	■	■
		S	-	-	■	■
		B	-	-	-	-
		W	-	-	-	-
		PLII	-	-	-	-
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







































































































































<sup>\*1</sup> 2-PID is Omron's easy to use high performance PID algorithm

<sup>\*2</sup> H = heat, H/C = heat or cool, H & C = heat and/or cool

<sup>\*3</sup> Valve control = relay up and down

<sup>\*4</sup> QLP: Quick Link Port to connected TC to PC using the smart USB cable E58-CIFQ2

<sup>\*5</sup> SP sensor provided

Digital temperature controller	Digital programmable temperature controller	Digital (programmable) temperature controller		Digital temperature/Gradient controller
				
<b>E5_C</b>	<b>E5_C-T</b>	<b>E5_NH/E5_NH-T</b>	<b>E5_R/E5_R-T</b>	<b>CelciuX° (EJ1/-G)</b>
Pro line	Pro <sup>plus</sup> (Lite) line – Programmable (T)	Pro <sup>plus</sup> line – Programmable (T)		Pro line
On-panel/In-Panel		On-panel		In-panel
1	1	1	2/4	2/4
1/4, 1/8, 1/16, 1/32, 22,5 mm	1/4, 1/8, 1/16 DIN	1/4, 1/8, 1/16 DIN	1/4, 1/8 DIN	31 × 95.5 × 109 mm
				
H & C	H & C	H & C	H & C	H & C
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	–
±0.3%	±0.3%	±0.1%	±0.1%	±0.5%
				 (only G)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (only EJ1)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0-4	3-4	2-3	2-3	2
<input type="checkbox"/> *6	<input type="checkbox"/> *6	<input type="checkbox"/> *6	<input type="checkbox"/> *6	<input type="checkbox"/>
IP66	IP66	IP66	IP66	IP20
Dual/triple 4 digit	Dual/triple 4 digit	Dual/triple 5 digit	Triple 5 digit	–
				–
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24 VDC
<input type="checkbox"/> I <input type="checkbox"/>	<input type="checkbox"/> I <input type="checkbox"/>	<input type="checkbox"/> I <input type="checkbox"/>	<input type="checkbox"/> I <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 *7	 *7	 *10	 *10	
–	–	–	<input type="checkbox"/>	<input type="checkbox"/>
				
<input type="checkbox"/> *8	<input type="checkbox"/> *8	<input type="checkbox"/> *8	<input type="checkbox"/> *8	<input type="checkbox"/> *8
<input type="checkbox"/> *9	<input type="checkbox"/> *9	<input type="checkbox"/> *9	<input type="checkbox"/> *9	<input type="checkbox"/> *9
<input type="checkbox"/> *9	<input type="checkbox"/> *9	<input type="checkbox"/> *9	<input type="checkbox"/> *9	<input type="checkbox"/> *9
				<input type="checkbox"/> I <input type="checkbox"/>
				
–	–		–	–
				 (only EJ1)
				
–	–	–	–	–
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
583/M425	587/M436	M225	589/M424	591/M422

\*6 Heater alarm = heater burnout & SSR failure detection

\*7 Quick link port using comm. cable E58-CIFQ2

\*8 PROFIBUS-DP communication option via PRT1-SCU11

\*9 EJ1N-HFU-ETN Serial gateway

\*10 QLP: Quick Link Port to connected TC to PC using the smart USB cable E58-CIFQ1







### Easy-to-use, basic temperature controller with analog dial setting

Omron's basic ON/OFF or PD controller features an analog setting dial. This compact, low-cost controller has a setting accuracy of 2% of full scale. It incorporates a plug-in socket allowing for DIN-rail or flush mounting.

- Compact, cost-effective controller
- Control mode: ON/OFF or P
- Control output: relay
- Power supply: 100 to 240 VAC
- Thermocouple K: 0 to 1200°C, J: 0 to 400°C, Pt100: -50 to 400°C

### Ordering information

Standard models (Power supply: 100 to 240 VAC)

Input			Control method	On/OFF	Proportional (P)
			Output/Indication method	Relay/No indication	
Input/ standard scale (°C)	Thermocouple	K (CA) Chromel vs. Alumel	0 to 200 °C	E5C2-R20K AC100-240 0-200	E5C2-R40K AC100-240 0-200
			0 to 300 °C	—	E5C2-R40K AC100-240 0-300
			0 to 400 °C	E5C2-R20K AC100-240 0-400	E5C2-R40K AC100-240 0-400
			0 to 600 °C	E5C2-R20K AC100-240 0-600	E5C2-R40K AC100-240 0-600
			0 to 800 °C	E5C2-R20K AC100-240 0-800	E5C2-R40K AC100-240 0-800
			0 to 1000 °C	E5C2-R20K AC100-240 0-1000	—
			0 to 1200 °C	E5C2-R20K AC100-240 0-1200	—
		J (IC) Iron versus Constantan	0 to 200 °C	E5C2-R20J AC100-240 0-200	—
			0 to 300 °C	E5C2-R20J AC100-240 0-300	—
			0 to 400 °C	E5C2-R20J AC100-240 0-400	—
	Resistance thermometer	Platinum resistance thermometer	-50 to 50 °C	E5C2-R20P-D AC100-240 -50-50	—
			0 to 50 °C	E5C2-R20P-D AC100-240 0-50	—
			0 to 100 °C	E5C2-R20P-D AC100-240 0-100	—
			0 to 200 °C	E5C2-R20P-D AC100-240 0-200	—
			0 to 300 °C	E5C2-R20P-D AC100-240 0-300	—
			0 to 400 °C	E5C2-R20P-D AC100-240 0-400	—
	Thermistor	THE (replaceable element)	0 to 100 °C	E5C2-R20G AC100-240 0-100	—
			100 to 200 °C	E5C2-R20G AC100-240 100-200	—
			150 to 300 °C	E5C2-R20G AC100-240 150-300	—

Input ranges	Thermocouple *1		Platinum resistance thermometer	Thermistor *2
	K (CA) chromel vs. alumel	J (IC) iron vs. constantan	Pt100	THE
°C	0 to 200 (5), 0 to 400 (10), 0 to 600 (20), 0 to 800 (20), 0 to 1,000 (25), 0 to 1,200 (25)	0 to 200 (5), 0 to 300 (10), 0 to 400 (10)	-50 to 50 (2), 0 to 50 (1), 0 to 100 (2), 0 to 200 (5), 0 to 300 (10), 0 to 400 (10)	0 to 100 (2) (6 kΩ at 0°C), 100 to 200 (2) (550 Ω @ 200°C), 150 to 300 (2) (4 kΩ @ 200°C)

\*1 Values in ( ) are the minimum unit.

\*2 Values in ( ) are the thermistor resistive value.

### Accessories

Functions	Order code
Front connecting socket with finger protection	P2CF-08-E
Back connecting socket (for flush mounting)	P3G-08
Finger protection cover (for P3G-08)	Y92A-48G
Protective front cover (IP66)	Y92A-48B

**Specifications**

Supply voltage	100 to 240 VAC, 50/60 Hz
Thermocouple input type	K, J (with sensor break detection)
RTD input type	Pt100, THE
Control mode	ON/OFF or P control
Setting method	analog setting
Output	Relay, SPDT, 3 A at 250 VAC
Life expectancy	Electrical: 100,000 operations min.
Setting accuracy	±2% FS max.
Hysteresis	Approx. 0.5% FS (fixed)
Proportional band	3% FS (fixed)
Reset range	5 ±1% FS min.
Control period	20 s
IP Rating front panel	IP40 (IP66 cover available)
IP rating terminals	IP00
Ambient temperature	−10 to 55°C
Size in mm (HxWxD)	48×48×96



### The easy way to perfect temperature control

This multi-range 1/16 DIN controller with alarm function offers field-selectable PID control or ON/OFF control. The large, single display shows process value, direction of deviation from set point, output and alarm status.

- All setting fields configurable with switches
- Multi-input (Thermocouple/Pt100)
- Clearly visible 3.5 digit display with character height of 13.5 mm
- Control output: relay, voltage (for driving SSR)
- ON/OFF or 2-PID control with auto-tuning and self-tuning

### Ordering information

Size in mm	Supply voltage	Number of alarm points	Control output	Order code
1/16 DIN 48H×48W×78D	100 to 240 VAC	1	Relay	E5CSV-R1T-500
			Voltage (for driving SSR)	E5CSV-Q1T-500
	24 VAC/VDC	1	Relay	E5CSV-R1TD-500
			Voltage (for driving SSR)	E5CSV-Q1TD-500

Note: Other models are available on request.

### Accessories

Type	Order code
Hard protective cover	Y92A-48B

### Specifications

Item		E5CSV
Supply voltage		100 to 240 VAC, 50/60 Hz or 24 VAC/VDC (depending on model)
Operating voltage range		85 to 110% of rated supply voltage
Power consumption		5 VA
Sensor input		Multi-input (thermocouple/platinum resistance thermometer): K, J, L, T, U, N, R, Pt100, JPt100
Control output	Relay output	SPST-NO, 250 VAC, 3 A (resistive load)
	Voltage output (for driving SSR)	12 VDC, 21 mA (with short-circuit protection circuit)
Control method		ON/OFF or 2-PID (with auto-tune and self-tune)
Alarm output		SPST-NO, 250 VAC, 1 A (resistive load)
Setting method		Digital setting using front panel keys (functionality set-up with DIP switch)
Indication		7-segment digital display (character height: 13.5 mm) and deviation indicators
Ambient temperature		-10 to 55°C (with no condensation or icing)
Setting/indication accuracy		±0.5% of indication value or ±1 °C, whichever is greater ±1 digit max.
Hysteresis (for ON/OFF control)		0.2% FS (0.1% FS for multi-input (thermocouple/platinum resistance thermometer) models)
Proportional band (P)		1 to 999°C (automatic adjustment using AT/ST)
Integral time (I)		0 to 1,999 s (automatic adjustment using AT/ST)
Derivative time (D)		0 to 1,999 s (automatic adjustment using AT/ST)
Control period		2/20 s
Sampling period		500 ms
Electrical life expectancy		100,000 operations min. (relay output models)
Weight		Approx. 120 g (controller only)
Degree of protection		Front panel: Equivalent to IP66; rear case: IP20; terminals: IP00
Memory protection		EEPROM (non-volatile memory) (number of writes: 1,000,000)
Size in mm (H×W×D)		48×48×78



### Best price performance ratio and user-friendliness combined with ergonomic design

Thanks to a clear and easy-to-use menu structure, the E5CB General Purpose Controller is extremely user friendly. Despite being very simply layered, the E5CB still offers a high performance inherited from the E5CN series. Even if no power is available, the E5CB can be powered and parameterized with only a few clicks using the free ThermoMini remote software.

- Set up your configuration in only 30 s
- Large display (16.2 mm) legible up to 5 m
- Built to last and precisely regulate with Omron unique 2-PID algorithm
- Easy and quick remote parameterization via free ThermoMini software
- Speed up your application with a sampling period time of 250 ms

### Ordering information

Size	Power supply voltage	Input type	Alarm output	Control output	Order code
E5CB 48 × 48 mm	100 to 240 VAC	Thermocouple	1	Relay output	E5CB-R1TC
		Platinum resistance thermometer			E5CB-R1P
		Thermocouple		Voltage output (for driving SSR)	E5CB-Q1TC
		Platinum resistance thermometer			E5CB-Q1P
	24 VAC/VDC	Thermocouple		Relay output	E5CB-R1TCD
		Platinum resistance thermometer			E5CB-R1PD
		Thermocouple		Voltage output (for driving SSR)	E5CB-Q1TCD
		Platinum resistance thermometer			E5CB-Q1PD

### Accessories

Option	Order code
USB-Serial conversion cable	E58-CIFQ2



### Software

Description	Features
ThermoMini	Freeware/Parameter copying and cloning tool Parameter export (.csv), self-expressing

### Specifications

Item	E5CB
Power supply voltage	100 to 240 VAC 50/60 Hz, 24 VAC 50/60 Hz, or 24 VDC
Operating voltage range	85% to 110% of rated supply voltage
Power consumption	Approx. 3.5 VA (100 to 240 VAC) Approx. 3.5 VA (24 VAC) Approx. 2.5 W (24 VDC)
Sensor input	Models with thermocouple inputs Thermocouple: K, J, T, R, or S (JIS C 1602-1995, IEC60584-1) Models with platinum resistance thermometer inputs Platinum resistance thermometer: Pt100 (JIS C 1604-1997, IEC60751)
Control output	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA Output voltage: 12 VDC +25%/–15% (PNP), max. load current: 21 mA, with short-circuit protection circuit
Alarm output	SPST-NO, 250 VAC, 1 A (resistive load), electrical life: 100,000 operations, minimum load: 5 V, 10 mA
Control method	ON/OFF control or 2-PID control (with auto-tuning)
Setting method	Digital setting using front panel keys
Indication method	7-segment digital display and individual indicators Character height: 16.2 mm (PV)
Other functions	Temperature input shift, run/stop, protection functions, etc.
Ambient operating temperature	–10 to 55°C (with no condensation or icing)/With a three-year guarantee: –10 to 50°C
Ambient operating humidity	25% to 85%
Storage temperature	–25 to 65°C (with no condensation or icing)
Size in mm (H × W × D)	48×48×65

Note: Other models (E5C\_L/E5EW) with similar features but without USB communication are only available for "Emerging Countries". Please ask your local Sales representative for further information.





### 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 only 60 mm deep.

- Fast and precise regulation: 50 ms 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
- Practical timer and logic operation functions eliminating the need of a PLC
- Additional models with different features are available. Please check related product catalogue.

### Ordering information

#### E5CC (48 × 48 mm)

Control Output	Option no	Option description	Alarm outputs	Order code	
				100 to 240 VAC	24 VAC/DC
Out1: Relay Out2: non	000	No option	3	E5CC-RX3A5M-000	E5CC-RX3D5M-000
	001	HB/HS alarm for 1-phase heaters, 2 EV inputs	3	E5CC-RX3A5M-001	E5CC-RX3D5M-001
	003	HB/HS alarm for 3-phase heaters, RS485	3	E5CC-RX3A5M-003	E5CC-RX3D5M-003
	006	2 EV inputs, transfer output	3	E5CC-RX3A5M-006	E5CC-RX3D5M-006
	007	2 EV inputs, remote SP	3	E5CC-RX3A5M-007	E5CC-RX3D5M-007
Out1: Voltage (pulse) Out2: non	000	No option	3	E5CC-QX3A5M-000	E5CC-QX3D5M-000
	001	HB/HS alarm for 1-phase heaters, 2 EV inputs	3	E5CC-QX3A5M-001	E5CC-QX3D5M-001
	003	HB/HS alarm for 3-phase heaters, RS485	3	E5CC-QX3A5M-003	E5CC-QX3D5M-003
	006	2 EV inputs, transfer output	3	E5CC-QX3A5M-006	E5CC-QX3D5M-006
	007	2 EV inputs, remote SP	3	E5CC-QX3A5M-007	E5CC-QX3D5M-007
Out1: Linear current Out2: non	000	No option	3	E5CC-CX3A5M-000	E5CC-CX3D5M-000
	004	RS485, 2 EV inputs	3	E5CC-CX3A5M-004	E5CC-CX3D5M-004
	006	2 EV inputs, transfer output	3	E5CC-CX3A5M-006	E5CC-CX3D5M-006
	007	2 EV inputs, remote SP	3	E5CC-CX3A5M-007	E5CC-CX3D5M-007

**Note:** Other models with 2 control outputs, 4 EV inputs or with different kind of option combination are available on request. Please contact the local sales office for special request.

#### E5EC (48 × 96 mm)/E5AC (96 × 96 mm)

Control Output	Option no	Option description	Alarm outputs	Order code	
				100 to 240 VAC	24 VAC/DC
Out1: Relay Out2: non	000	No option	4	E5_C-RX4A5M-000	E5_C-RX4D5M-000
	009	HB/HS alarm for 3-phase heaters, RS485, 2 EV inputs	4	E5_C-RX4A5M-009	E5_C-RX4D5M-009
	010	HB/HS alarm for 1-phase heaters, 4 EV inputs	4	E5_C-RX4A5M-010	E5_C-RX4D5M-010
	011	HB/HS alarm for 1-phase heaters, 6 EV inputs, remote SP, transfer output	4	E5_C-RX4A5M-011	E5_C-RX4D5M-011
Out1: Voltage (pulse) Out2: non	000	No option	4	E5_C-QX4A5M-000	E5_C-QX4D5M-000
	009	HB/HS alarm for 3-phase heaters, RS485, 2 EV inputs	4	E5_C-QX4A5M-009	E5_C-QX4D5M-009
	010	HB/HS alarm for 1-phase heaters, 4 EV inputs	4	E5_C-QX4A5M-010	E5_C-QX4D5M-010
	011	HB/HS alarm for 1-phase heaters, 6 EV inputs, remote SP, transfer output	4	E5_C-QX4A5M-011	E5_C-QX4D5M-011
Out1: Linear current Out2: non	000	No option	4	E5_C-CX4A5M-000	E5_C-CX4D5M-000
	004	2 EV inputs, RS485	4	E5_C-CX4A5M-004	E5_C-CX4D5M-004
	014	RS485, 4 EV inputs, remote SP, transfer output	4	E5_C-CX4A5M-014	E5_C-CX4D5M-014
Out1: Relay Out2: Relay Positional proportional control model	000	No option	4	E5_C-PR4A5M-000	E5_C-PR4D5M-000
	004	2 EV inputs, RS485	4	E5_C-PR4A5M-004	E5_C-PR4D5M-004
	014	RS485, 4 EV inputs, remote SP, transfer output	4	E5_C-PR4A5M-014	E5_C-PR4D5M-014

**Note:** Other models with 2 control outputs or with different kind of option combination are available on request. Please contact the local sales office for special request. Replace “\_” with “A” for E5AC or “E” for E5EC

## E5GC (48 × 24 mm)

Control Output	Terminal type	Option no	Option description	Alarm outputs	Order code	
					100 to 240 VAC	24 VAC/DC
Out1: Relay	Screwless clamp	000	No option	1	E5GC-RX1ACM-000	E5GC-RX1DCM-000
		015	RS485	1	E5GC-RX1ACM-015	E5GC-RX1DCM-015
		024	2 EV inputs	1	E5GC-RX1ACM-024	E5GC-RX1DCM-024
Out1: Voltage (pulse)	Screwless clamp	000	No option	1	E5GC-QX1ACM-000	E5GC-QX1DCM-000
		015	RS485	1	E5GC-QX1ACM-015	E5GC-QX1DCM-015
		024	2 EV inputs	1	E5GC-QX1ACM-024	E5GC-QX1DCM-024
Out1: Linear current	Screwless clamp	000	No option	1	E5GC-CX1ACM-000	E5GC-CX1DCM-000
		015	RS485	1	E5GC-CX1ACM-015	E5GC-CX1DCM-015
		024	2 EV inputs	1	E5GC-CX1ACM-024	E5GC-CX1DCM-024

**Note:** Other models with screw terminals, 0 or 2 Alarm outputs, 1 Event input or HBA alarm are available on request. Please contact the local sales office for special request.

## E5DC (In-panel mounting)

Control Output	Option no	Option description	Alarm outputs	Order code	
				100 to 240 VAC	24 VAC/DC
Out1: Relay	000	No option	2	E5DC-RX2ASM-000	E5DC-RX2DSM-000
	002	HB/HS alarm for 1-phase heaters, RS485	2	E5DC-RX2ASM-002	E5DC-RX2DSM-002
	017	HB/HS alarm for 1-phase heaters, 1 EV input	2	E5DC-RX2ASM-017	E5DC-RX2DSM-017
Out1: Voltage (pulse)	000	No option	2	E5DC-QX2ASM-000	E5DC-QX2DSM-000
	002	HB/HS alarm for 1-phase heaters, RS485	2	E5DC-QX2ASM-002	E5DC-QX2DSM-002
	017	HB/HS alarm for 1-phase heaters, 1 EV input	2	E5DC-QX2ASM-017	E5DC-QX2DSM-017
Out1: Linear current	000	No option	2	E5DC-CX2ASM-000	E5DC-CX2DSM-000
	015	RS485	2	E5DC-CX2ASM-015	E5DC-CX2DSM-015
	016	1 EV input	2	E5DC-CX2ASM-016	E5DC-CX2DSM-016

**Note:** Other models with no Alarm output or with different kind of option combination are available on request. Please contact the local sales office for special request.

## E5\_C optional tools

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

## Specifications

## E5CC/E5EC/E5AC

Item	E5CC	E5EC	E5AC
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	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	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	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
Sensor input	<ul style="list-style-type: none"><li>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 (ES1B): 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C</li><li>Analog inputs Current input (mA): 4 to 20 or 0 to 20 Voltage input (V): 1 to 5, 0 to 5, or 0 to 10</li></ul>		
Input impedance	Current input: 150 Ω max., Voltage input: 1 MΩ min. (Use a 1:1 connection when connecting the ES2-HB/THB.)		
Control method	ON/OFF control or 2-PID control (with auto-tuning)		
Indication accuracy	Thermocouple input: (±0.3% of indicated value or ±1°C, whichever is greater) ±1 digit max. Platinum resistance thermometer input: (±0.2% of indicated 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.	Thermocouple input: (±0.3% of indicated value or ±1°C, whichever is greater) ±1 digit max. Platinum resistance thermometer input: (±0.2% of indicated 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. Potentiometer input: ±5% FS ±1 digit max.	
Auto-Tuning	Yes, 40%/100% MV output limit selection. When using Heat/Cool: Automatic cool gain adjustment		
Self-Tuning	Yes		
Control outputs	Relay output	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA	
	Voltage output (for driving SSR)	Output voltage: 12 VDC ±20% (PNP), max. load current: 21 mA, with short-circuit protection circuit (The maximum load current is 21 mA for models with two control outputs.)	
	Linear current output	4 to 20 mA DC/0 to 20 mA DC, load: 500 Ω max., resolution: approx. 10,000	
Auxiliary outputs	Number of outputs	3	4
	Output specifications	N.O. relay outputs, 250 VAC, Models with 3 outputs: 2 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA	

Item		E5CC	E5EC	E5AC
Event inputs	Number of inputs	2 or 4 or 6 max (depends on the 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 or via Remote Software CX-Thermo V4.5		
Indication method		11-segment digital display and individual indicators		
Multi SP		Up to eight set points (SP0 to SP7) can be saved and selected using event inputs, key operations, or serial communications.		
Other functions		Manual output, heating/cooling control, loop burnout alarm, SP ramp, other alarm functions, heater burnout detection (including SSR failure detection), 40% AT, 100% AT, MV limiter, input digital filter, self-tuning, temperature input shift, run/stop, protection functions, 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)		
Ambient operating humidity		25% to 85%		
Storage temperature		−25 to 65°C (with no condensation or icing)		
Degree of protection		Front panel: IP66, Rear case: IP20, Terminals: IP00		
Sampling period		50 ms		
Size in mm (H×W×D)		48×48×64	48×96×64	96×96×64

## E5GC

Item		E5GC
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
Sensor input		<ul style="list-style-type: none"> <li>Temperature input Thermocouple: K, J, T, E, L, U, N, R, S, B, 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</li> <li>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</li> </ul>
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 $\pm$ 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 $\Omega$ 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)
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.*1
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.*2
Size in mm (H×W×D)		24×48×93

\*1 Only four set points are selectable for event inputs.

\*2 Simple transfer output and work bit message are only for E5GC.

## E5DC

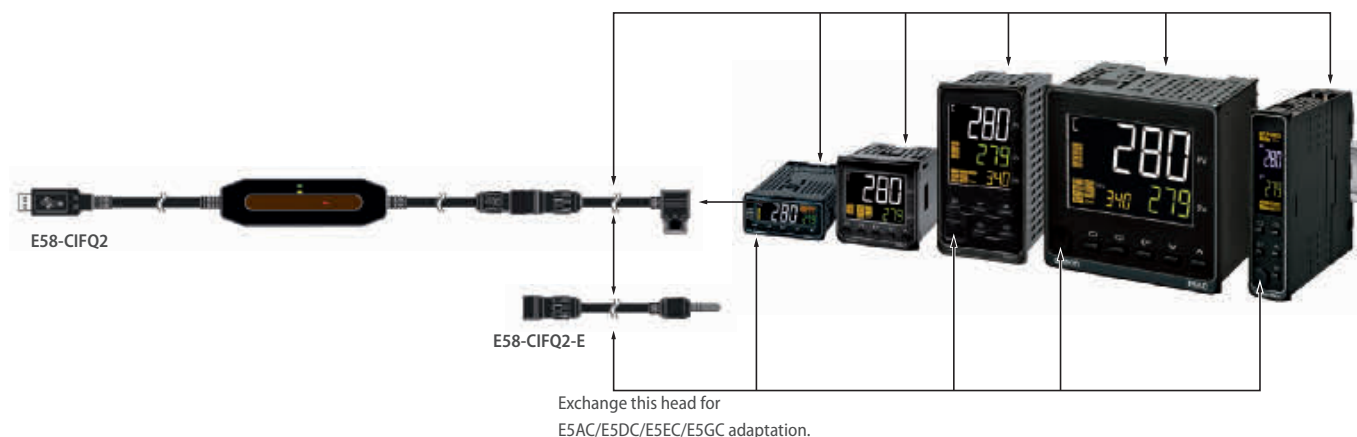
Item		E5DC
Power supply voltage		A in model number: 100 to 240 VAC, 50/60 Hz D in model number: 24 VAC, 50/60 Hz; 24 VDC
Operating voltage range		85% to 110% of rated supply voltage
Power consumption		4.9 VA max. at 100 to 240 VAC, and 2.8 VA max. at 24 VDC or 1.5 W max. at 24 VDC
Sensor input		<ul style="list-style-type: none"> <li>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 (ES1B): 10 to 70°C, 60 to 120°C, 115 to 165°C, or 140 to 260°C</li> <li>Analog inputs Current input (mA): 4 to 20 or 0 to 20 Voltage input (V): 1 to 5, 0 to 5, or 0 to 10</li> </ul>
Input impedance		Current input: 150 $\Omega$ max., Voltage input: 1 M $\Omega$ min. (Use a 1:1 connection when connecting the ES2-HB/THB.)
Control method		ON/OFF control or 2-PID control (with auto-tuning)
Indication accuracy		Thermocouple input: ( $\pm$ 0.3% of PV or $\pm$ 1°C, whichever is greater) $\pm$ 1 digit max. Platinum resistance thermometer input: ( $\pm$ 0.2% of PV or $\pm$ 0.8°C, whichever is greater) $\pm$ 1 digit max. Analog input: $\pm$ 0.2% FS $\pm$ 1 digit max. CT input: $\pm$ 5% FS $\pm$ 1 digit max.
Auto-Tuning		Yes, 40%/100% MV output limit selection. When using Heat/Cool: Automatic cool gain adjustment
Self-Tuning		Yes
Control outputs	Relay output	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA
	Voltage output (for driving SSR)	Output voltage: 12 VDC $\pm$ 20% (PNP), max. load current: 20 mA, with short-circuit protection circuit
	Linear current output	4 to 20 mA DC/0 to 20 mA DC, load: 500 $\Omega$ max., resolution: approx. 10,000
Auxiliary outputs	Number of outputs	2 (depends on model)
	Output specifications	SPST-NO relay outputs: 250 VAC, 2 A (resistive load), Electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA

Item		E5DC
Event inputs	Number of inputs	1 (depends on model)
	External contact input specifications	Contact input: ON: 1 k $\Omega$ max., OFF: 100 k $\Omega$ 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 8.5 mm, SV: 8.0 mm
Multi SP		Up to eight set points (SP0 to SP7) can be saved and selected using event inputs, key operations, or serial communications.* <sup>1</sup>
Other functions		Manual output, heating/cooling control, loop burnout alarm, SP ramp, other alarm functions, heater burnout (HB) alarm (including SSR failure (HB) 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, simple calculations, temperature status display, simple programming, moving average of input value, and display brightness setting
Ambient operating temperature		-10 to 55°C (with no condensation or icing), for 3-year warranty: -10 to 50°C (with no condensation or icing)
Ambient operating humidity		25% to 85%
Storage temperature		-25 to 65°C (with no condensation or icing)
Degree of protection		Main unit: IP20, Terminal unit: IP00
Sampling period		50 ms
Size in mm (H×W×D)		96×22.5×85

\*<sup>1</sup> Only two set points are selectable for event inputs.

#### USB communication cable E58-CIFQ2

Item	E5AC	E5CC	E5DC	E5EC	E5GC
E58-CIFQ2	■	■	■	■	■
E58-CIFQ2-E	■	—	■	■	■





### Compact and intelligent Ramp/Soak controller

The E5\_C-T Ramp/Soak temperature controllers expand the E5\_C family to handle process applications. Capable of addressing up to 6 event inputs and up to 4 auxiliary outputs all in a compact 60 mm (depth) housing, makes this controller series one of Omron's most powerful and versatile temperature controllers.

- Set up to 8 programs with 32 segments totaling 256 program segments simply via CX-Thermo software.
- The three-level display is visible simultaneously so each process status can be easily identified.
- "Segment Jump" allows users to move directly to the specified segment reducing programming time and increase production throughput.
- Additional models with different features are available. Please check related product catalog.

### Ordering information

#### E5CC-T (48 × 48 mm)

Control Output	Option no	Option description	Alarm outputs	Order code	
				100 to 240 VAC	24 VAC/DC
Out1: Relay Out2: non	000	No option	3	E5CC-TRX3A5M-000	E5CC-TRX3D5M-000
	001	HB/HS alarm for 1-phase heaters, 2 EV inputs	3	E5CC-TRX3A5M-001	E5CC-TRX3D5M-001
	003	HB/HS alarm for 3-phase heaters, RS485	3	E5CC-TRX3A5M-003	E5CC-TRX3D5M-003
	006	2 EV inputs, transfer output	3	E5CC-TRX3A5M-006	E5CC-TRX3D5M-006
Out1: Voltage (pulse) Out2: non	000	No option	3	E5CC-TQX3A5M-000	E5CC-TQX3D5M-000
	001	HB/HS alarm for 1-phase heaters, 2 EV inputs	3	E5CC-TQX3A5M-001	E5CC-TQX3D5M-001
	003	HB/HS alarm for 3-phase heaters, RS485	3	E5CC-TQX3A5M-003	E5CC-TQX3D5M-003
	006	2 EV inputs, transfer output	3	E5CC-TQX3A5M-006	E5CC-TQX3D5M-006
Out1: Linear current Out2: non	000	No option	3	E5CC-TCX3A5M-000	E5CC-TCX3D5M-000
	004	RS485, 2 EV inputs	3	E5CC-TCX3A5M-004	E5CC-TCX3D5M-004
	006	2 EV inputs, transfer output	3	E5CC-TCX3A5M-006	E5CC-TCX3D5M-006

**Note:** Other models with 2 control outputs, 4 EV inputs or with different kind of option combination are available on request. Please contact the local sales office for special request.

#### E5EC-T (48 × 96 mm)/E5AC-T (96 × 96 mm)

Control Output	Option no	Option description	Alarm outputs	Order code	
				100 to 240 VAC	24 VAC/DC
Out1: Relay Out2: non	000	No option	4	E5_C-TRX4A5M-000	E5_C-TRX4D5M-000
	008	HB/HS alarm for 1-phase heaters, RS485, 2 EV inputs	4	E5_C-TRX4A5M-008	E5_C-TRX4D5M-008
	019	HB/HS alarm for 1-phase heaters, 6 EV inputs, transfer output	4	E5_C-TRX4A5M-019	E5_C-TRX4D5M-019
Out1: Voltage (pulse) Out2: non	000	No option	4	E5_C-TQX4A5M-000	E5_C-TQX4D5M-000
	008	HB/HS alarm for 1-phase heaters, RS485, 2 EV inputs	4	E5_C-TQX4A5M-008	E5_C-TQX4D5M-008
	019	HB/HS alarm for 1-phase heaters, 6 EV inputs, transfer output	4	E5_C-TQX4A5M-019	E5_C-TQX4D5M-019
Out1: Linear current Out2: non	000	No option	4	E5_C-TCX4A5M-000	E5_C-TCX4D5M-000
	004	RS485, 2 EV inputs	4	E5_C-TCX4A5M-004	E5_C-TCX4D5M-004
	021	6 EV inputs, transfer output	4	E5_C-TCX4A5M-021	E5_C-TCX4D5M-021
	022	RS485, 4 EV inputs, transfer output	4	E5_C-TCX4A5M-022	E5_C-TCX4D5M-022
Out1: Relay Out2: Relay Positional proportional control model	000	No option	4	E5_C-TPR4A5M-000	E5_C-TPR4D5M-000
	004	RS485, 2 EV inputs	4	E5_C-TPR4A5M-004	E5_C-TPR4D5M-004
	022	RS485, 4 EV inputs, transfer output	4	E5_C-TPR4A5M-022	E5_C-TPR4D5M-022

**Note:** Other models with 2 control outputs or with different kind of option combination are available on request. Please contact the local sales office for special request. Replace "\_" with "A" for E5AC or "E" for E5EC

## Specifications

## E5CC-T/E5AC-T/E5EC-T

	E5CC-T	E5EC-T	E5AC-T
Sizes in mm (W × H × D)	48×48×60	48×96×60	96×96×60
Supply voltage	100 to 240 VAC 50/60Hz or 24 VAC/VDC		
Sensor input	Temperature input Thermocouple: K, J, T, E, L, U, N, R, S, B, 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		
Control mode	2-PID control (with auto-tuning) or ON/OFF control		
Accuracy	Thermocouple: (±0.3% of indication value or ±1°C, whichever is greater) ±1 digit max. /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. Potentiometer input: ±5% FS ±1 digit max.		
Functions	Manual output, heating/cooling control, loop burnout alarm, other alarm functions, heater burnout (HB) alarm (including SSR failure (HS) alarm), 40% AT, 100% AT, MV limiter, input digital filter, robust tuning, PV input shift, protection functions, extraction of square root, MV change rate limit, logic operations, temperature status display, moving average of input value, and display brightness setting		
Programs / segments	8/32		
PID sets	8		
Communication	RS-485 (multi-drop), CompowayF or Modbus RTU		
Event inputs	2-6		
QLP (Quick link port)	Yes, via USB and E58-CIFQ2 conversion cable		
Ambient temperature	-10 to 55 °C		
IP rating of front panel	IP66		
Sampling period time	50 ms		

## Program control

Number of programs (patterns)		8
Number of segments (steps)		32
Segment setting method		Time setting (Segment set with set point and time.) Slope setting (Segment set with segment type, set point, slope, and time.)
Segment times		0 h 0 min to 99 h 59 min 0 min 0 s to 99 min 59 s
Alarm setting		Set separately for each program.
Reset operation		Select either stopping control or fixed SP operation.
Startup operation		Select continuing, resetting, manual operation, or run mode.
PID sets	Number of sets	8
	Setting method	Set separately for each program (automatic PID group selection also supported).
Alarm SP function		Select from ramp SP and target SP.
Program status control	Segment operation	Advance, segment jump, hold, and wait
	Program operation	Program repetitions and program links
Wait operation	Wait method	Waiting at segment ends
	Wait width setting	Same wait width setting for all programs
Time signals	Number of outputs	2
	Number of ON/OFF Operations	1 each per output
	Setting method	Set separately for each program.
Program status output		Program end output (pulse width can be set), run output, stage output
Program startup operation	PV start	Select from segment 1 set point, slope-priority PV start
	Standby	0 h 0 min to 99 h 59 min 0 day 0 h to 99 day 23h
Operation end operation		Select from resetting, continuing control at final set point, and fixed SP control.
Program SP shift		Same program SP shift for all programs

## E5CC-T/E5AC-T/E5EC-T series optional tools

USB PC based configuration cable	E58-CIFQ2 for E5CC-T
	E58-CIFQ2 (& E58-CIFQ2-E) for E5AC-T and E5EC-T

## E5CC-T/E5AC-T/E5EC-T series software

CX-Thermo >4.62	Professional parameterization and cloning software, data-logging, Fine-Tuning, logic operations, easy setting of process steps Operation system: Microsoft Windows XP (Service Pack 3 or higher)/Vista/7/8
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### Fast, accurate and equipped for application specific needs

The E5\_R series provides you with high accuracy inputs (0.01°C for Pt100) and a 50 ms sample and control cycle for all four loops. Its unique Disturbance Overshoot Reduction Adjustment ensures solid, robust control.

- Easy and clear read-out thanks to bright Liquid Crystal Display
- Exceptional versatility – multi-loop control, cascade control, and valve control
- Easy integration with DeviceNet, PROFIBUS or Modbus
- SV programmer optional, 32 programs with up to 256 segments

### Ordering information

Function	Loops	Input analog	Event Inputs	Number of outputs	Outputs	AUX outputs	Communication	Order code (96 × 96 mm)	
								100 to 240 VAC	24 VAC/DC
standard	1	1	2	2	QC,Q	4R	–	E5AR-Q4B AC100-240	E5AR-Q4B AC/DC24
standard	1	1	2	2	QC,Q	4R	RS-485	E5AR-Q43B-FLK AC100-240V	
standard	1	1	6	2	QC,Q	4R	RS-485	E5AR-Q43DB-FLK AC100-240V	
standard	1	1	6	4	QC,Q,C,C	4R	RS-485	E5AR-QC43DB-FLK AC100-240	E5AR-QC43DB-FLK AC/DC24
standard	max 2	2	4	2	QC,Q	4R	RS-485	E5AR-Q43DW-FLK AC100-240V	
standard	max 2	2	4	4	QC,Q,QC,Q	4R	RS-485	E5AR-QQ43DW-FLK AC100-240	E5AR-QQ43DW-FLK AC/24
standard	max 4	4	4	4	QC,Q,QC,Q	4R	RS-485	E5AR-QQ43DWW-FLK AC100-240V	
standard	1	1	2	2	C,C	4R	–	E5AR-C4B AC100-240	E5AR-C4B AC/DC24
standard	1	1	2	2	C,C	4R	RS-485	E5AR-C43B-FLK AC100-240V	
standard	1	1	6	2	C,C	4R	RS-485	E5AR-C43DB-FLK AC100-240V	
standard	max 2	2	4	2	C,C	4R	RS-485	E5AR-C43DW-FLK AC100-240V	E5AR-CC43DWW-FLK AC/DC24
standard	max 4	4	4	4	C,C,C,C	4R	RS-485	E5AR-CC43DWW-FLK AC100-240	
valve	1	1 + pot	4	2	R,R	4R	–	E5AR-PR4DF AC100-240	E5AR-PR4DF AC/DC24
valve	1	1 + pot	4	4	R,R,QC,Q	4R	RS-485	E5AR-PRQ43DF-FLK AC100-240	E5AR-PRQ43DF-FLK AC/DC24
standard	1	1	2	2	QC,Q	4R	DeviceNet	E5AR-Q4B-DRT AC100-240V	E5AR-Q4B-DRT AC24V
standard	1	1	2	4	QC,Q,C,C	4R	DeviceNet	E5AR-QC4B-DRT AC100-240V	E5AR-QC4B-DRT AC24V
standard	max 2	2	–	4	QC,Q,QC,Q	4R	DeviceNet	E5AR-QQ4W-DRT AC100-240V	E5AR-QQ4W-DRT AC24V
standard	1	1	2	2	C,C	4R	DeviceNet	E5AR-C4B-DRT AC100-240V	E5AR-C4B-DRT AC24V
standard	max 4	4	–	4	C,C,C,C	4R	DeviceNet	E5AR-CC4WW-DRT AC100-240V	E5AR-CC4WW-DRT AC24V
valve	1	1 + pot	–	2	R,R	4R	DeviceNet	E5AR-PR4F-DRT AC100-240V	E5AR-PR4F-DRT AC24V
valve	1	1 + pot	–	4	R,R,QC,Q	4R	DeviceNet	E5AR-PRQ4F-DRT AC100-240V	E5AR-PRQ4F-DRT AC24V
SV programmer	1	1	2	2	QC,Q	4R	–	E5AR-TQ4B AC100-240	E5AR-TQ4B AC/DC24
SV programmer	1	1	2	2	C,C	4R	–	E5AR-TC4B AC100-240	E5AR-TC4B AC/DC24
SV programmer	1	1	2	2	QC,Q	4R	RS-485	E5AR-TQ43B-FLK AC100-240	
SV programmer	1	1	2	2	C,C	4R	RS-485	E5AR-TC43B-FLK AC100-240	
SV programmer	1	1	10	2	QC,Q	10T	RS-485	E5AR-TQE3MB-FLK AC100-240	E5AR-TQE3MB-FLK AC/DC24
SV programmer	1	1	10	2	C,C	10T	RS-485	E5AR-TCE3MB-FLK AC100-240	
SV programmer	1	1	10	4	QC,Q,C,C	10T	RS-485	E5AR-TQCE3MB-FLK AC100-240V	
SV programmer	max 2	2	4	2	QC,Q	4R	RS-485	E5AR-TQ43DW-FLK AC100-240	E5AR-TQE3MW-FLK AC/DC24
SV programmer	max 2	2	4	2	C,C	4R	RS-485	E5AR-TC43DW-FLK AC100-240	
SV programmer	max 2	2	8	4	QC,Q,QC,Q	10T	RS-485	E5AR-TQCE3MW-FLK AC100-240	E5AR-TCE3MWW-FLK AC/DC24
SV programmer	max 4	4	8	2	C,C,C,C	10T	RS-485	E5AR-TCCE3MWW-FLK AC100-240	
SV programmer	max 4	4	8	4	QC,Q,QC,Q	10T	RS-485	E5AR-TQCE3MWW-FLK AC100-240	
SV programmer + valve	1	1 + pot	4	2	R,R	4R	–	E5AR-TPR4DF AC100-240	E5AR-TPR4DF AC/DC24
SV programmer + valve	1	1 + pot	8	4	R,R,QC,Q	10T	RS-485	E5AR-TPRQE3MF-FLK AC100-240	E5AR-TPRQE3MF-FLK AC/DC24

- Note**
- Standard = heat and/or cool PID control, valve = valve positioning (relay up/down) (PRR)
  - max 2 = 2 loops heat and/or cool or 1 loop cascade, ratio or remote SP
  - max 4 = 4 loops heat and/or cool
  - 1, 2 or 4 = number of analog universal input 1 + pot = 1 universal and 1 slide wire feedback from valve
  - QC = voltage (pulse) or current (switch), Q = voltage (pulse), C = current, 4R = two pole relay, 2T = two transistor output NPN



Function	Loops	Input analog	Event Inputs	Number of outputs	Outputs	AUX outputs	Communication	Order code (48 × 96 mm)	
								100 to 240 VAC	24 VAC/DC
standard	1	1	2	2	QC+Q	4R	–	E5ER-Q4B AC100-240	E5ER-Q4B AC/DC24
standard	1	1	2	2	QC+Q	4R	RS-485	E5ER-Q43B-FLK AC100-240V	
standard	1	1	2	4	QC+Q+C+C	4R	RS-485	E5ER-QC43B-FLK AC100-240	E5ER-QC43B-FLK AC/DC24
standard	1	1	6	2	QC+Q	2T	RS-485	E5ER-QT3DB-FLK AC100-240V	
standard	max 2	2	4	2	QC+Q	2T	RS-485	E5ER-QT3DW-FLK AC100-240	E5ER-QT3DW-FLK AC/DC24
standard	1	1	2	2	C+C	4R	–	E5ER-C4B AC100-240	
standard	1	1	2	2	C+C	4R	RS-485	E5ER-C43B-FLK AC100-240V	E5ER-C4B AC/DC24
standard	1	1	6	2	C+C	2T	RS-485	E5ER-CT3DB-FLK AC100-240V	
standard	max 2	2	4	2	C+C	2T	RS-485	E5ER-CT3DW-FLK AC100-240	E5ER-CT3DW-FLK AC/DC24
valve	1	1 + pot	4	2	R+R	2T	–	E5ER-PRTDF AC100-240	
valve	1	1 + pot	–	4	R+R+QC+Q	4R	RS-485	E5ER-PRQ43F-FLK AC100-240	E5ER-PRQ43F-FLK AC/DC24
standard	1	1	2	2	QC+Q	2T	DeviceNet	E5ER-QTB-DRT AC100-240V	
standard	max 2	2	–	2	QC+Q	2T	DeviceNet	E5ER-QTW-DRT AC100-240V	E5ER-QTB-DRT AC24V
standard	1	1	2	2	C+C	2T	DeviceNet	E5ER-CTB-DRT AC100-240V	
standard	max 2	2	–	2	C+C	2T	DeviceNet	E5ER-CTW-DRT AC100-240V	E5ER-CTB-DRT AC24V
valve	1	1 + pot	–	2	R+R	2T	DeviceNet	E5ER-PRTF-DRT AC100-240V	
SV programmer	1	1	2	2	QC+Q	4R	–	E5ER-TQ4B AC100-240	E5ER-TQ4B AC/DC24
SV programmer	1	1	2	2	C+C	4R	–	E5ER-TC4B AC100-240	
SV programmer	1	1	2	2	QC+Q	4R	RS-485	E5ER-TQC43B-FLK AC100-240	E5ER-TQC43B-FLK AC/DC24
SV programmer	max 2	2	4	2	QC+Q	2T	RS-485	E5ER-TQT3DW-FLK AC100-240	
SV programmer	max 2	2	4	2	C+C	2T	RS-485	E5ER-TCT3DW-FLK AC100-240	E5ER-TCT3DW-FLK AC/DC24
SV programmer + valve	1	1 + pot	4	2	R+R	2T	–	E5ER-TPRTDF AC100-240	
SV programmer + valve	1	1 + pot	–	3	R+R+QC	4R	RS-485	E5ER-TPRQ43F-FLK AC100-240	E5ER-TPRQ43F-FLK AC/DC24

- Note**
- Standard = heat and/or cool PID control, valve = valve positioning (relay up/down) (PRR)
  - max 2 = 2 loops heat and/or cool or 1 loop cascade, ratio or remote SP
  - max 4 = 4 loops heat and/or cool
  - 1, 2 or 4 = number of analog universal input 1 + pot = 1 universal and 1 slide wire feedback from valve
  - QC = voltage (pulse) or current (switch), Q = voltage (pulse), C = current, 4R = 4 two pole relay, 2T = two transistor output NPN

### Accessories

Terminal covers	Order code
Terminal cover for E5AR	E53-COV14
Terminal cover for E5ER	E53-COV15

### E5\_R/E5\_R-T optional tools

Option	Order code
PC based configuration and tuning software CX-Thermo	EST2-2C-MV4

### Specifications

Item	
Thermocouple input type	K, J, T, E, L, U, N, R, S, B, W
RTD input type	Pt100
Linear input type	mA, V
Control mode	2-PID or ON/OFF control
Accuracy	±0.1% FS
Auto-tuning	yes
RS-485	optional
Event input	optional
Ambient temperature	–10 to 55°C
IP rating front panel	IP66
Sampling period	50 ms
Size in mm (H×W×D)	E5ER: 96×48×110 E5AR: 96×96×110



## CelciuX° (EJ1) - Multi-Loop temperature control – Control and Connectivity

CelciuX° (EJ1) is designed to handle complex temperature profiles thanks to Omron's unique Gradient temperature Control (GTC) algorithm and to offer easy program-less communication with Omron and third-party PLCs and HMI. Above all, CelciuX° (EJ1) incorporates all "simple to use" clever temperature control technology, like 2-PID, disturbance control and various ways of tuning.

- Interfaces to a wide range of industrial networks
- Reduced engineering due to Program-less communications, Smart Active Parts and Function Block Libraries
- Available with screw terminals and screw-less clamp terminals
- One unit handling various types of input, such as Pt, Thermocouple, mA, and V input
- Gradient Temperature Control (GTC)

### Ordering information

Type	Control points	Control outputs	Auxiliary outputs	Other functions	Terminal	Order code
Basic unit	2	2 voltage (pulse)	2 transistor (NPN) <sup>*1</sup>	2 CT input <sup>*2</sup> + 2 event input	M3 screws	EJ1N-TC2A-QNHB
Basic unit	2	2 voltage (pulse)	2 transistor (NPN) <sup>*1</sup>	2 CT input <sup>*2</sup> + 2 event input	Screw-less clamp	EJ1N-TC2B-QNHB
Basic unit	2	2 current	2 transistor (NPN) <sup>*1</sup>	2 event input	M3 screws	EJ1N-TC2A-CNB
Basic unit	2	2 current	2 transistor (NPN) <sup>*1</sup>	2 event input	Screw-less clamp	EJ1N-TC2B-CNB
Basic unit	4	4 voltage (pulse)	–	–	M3 screws	EJ1N-TC4A-QQ
Basic unit	4	4 voltage (pulse)	–	–	Screw-less clamp	EJ1N-TC4B-QQ
High function unit	–	–	4 transistor (NPN)	4 event input	M3 screws	EJ1N-HFUA-NFLK
High function unit	–	–	4 transistor (NPN)	4 event input	Screw-less clamp	EJ1N-HFUB-NFLK
DeviceNet unit	–	–	–	–	Screw connector	EJ1N-HFUB-DRT
Ethernet unit <sup>*3</sup>	–	–	–	–	3 x RJ45	EJ1N-HFU-ETN
End unit <sup>*4</sup>	–	–	2 transistor (NPN)	–	M3 screws	EJ1C-EDUA-NFLK
End unit <sup>*4</sup>	–	–	2 transistor (NPN)	–	Removable Connector	EJ1C-EDUC-NFLK

<sup>\*1</sup> For heating/cooling control applications, the auxiliary outputs on the 2-point models are used for cooling control.

On the 4-point models, heating/cooling control can be performed for two input points only.

<sup>\*2</sup> When using the heater burnout alarm, purchase a Current Transformer (E54-CT1 or E54-CT3) separately.

<sup>\*3</sup> This unit mounts to the left of the CelciuX° (EJ1) configuration and enables PROFINET or Modbus/TCP network connection. Combine the HFU-ETN with an EDU\_-NFLK end unit to use with other devices supporting Modbus-RTU like E5\_N temperature controllers and MX2 Inverters.

<sup>\*4</sup> An End unit is always required for connection to a Basic unit or an HFU. An HFU cannot operate without a Basic unit.

Type	Control points	Control outputs	Auxiliary outputs	Other functions	Terminal	Order code
Basic unit	2 (GTC)	2 voltage (pulse) <sup>*1</sup>	2 transistor (NPN)	2 CT input <sup>*2</sup>	M3 screws	EJ1G-TC2A-QNH
Basic unit	2 (GTC)	2 voltage (pulse) <sup>*1</sup>	2 transistor (NPN)	2 CT input <sup>*2</sup>	Screw-less clamp	EJ1G-TC2B-QNH
Basic unit	4 (GTC)	4 voltage (pulse) <sup>*1</sup>	–	–	M3 screws	EJ1G-TC4A-QQ
Basic unit	4 (GTC)	4 voltage (pulse) <sup>*1</sup>	–	–	Screw-less clamp	EJ1G-TC4B-QQ
High function unit	– (GTC)	–	4 transistor (NPN)	–	M3 screws	EJ1G-HFUA-NFLK
High function unit	– (GTC)	–	4 transistor (NPN)	–	Screw-less clamp	EJ1G-HFUB-NFLK
End unit <sup>*3</sup>	–	–	2 transistor (NPN)	–	M3 screws	EJ1C-EDUA-NFLK
End unit <sup>*3</sup>	–	–	2 transistor (NPN)	–	Removable Connector	EJ1C-EDUC-NFLK

<sup>\*1</sup> Heating/cooling control is not supported for gradient temperature control.

<sup>\*2</sup> When using the heater burnout alarm, use a Current Transformer (E54-CT1 or E54-CT3) (sold separately).

<sup>\*3</sup> An End-unit (EDU) is always required to connect an HFU and/or a Basic TC unit for Communications and Power supply. A GTC (Gradient Temperature Control) basic TC unit always requires a GTC HFU unit.

### Accessories

#### Current transformer

Diameter	Order code
5.8 dia.	E54-CT1
12.0 dia.	E54-CT3

#### Communications and cables

Description	Order code
G3ZA connecting cable 5 meter	EJ1C-CBLA050
USB programming cable	E58-CIFQ1
PC based configuration and tuning software CX-Thermo	EST2-2C-MV4
PROFIBUS Gateway	PRT1-SCU11

## Specifications

Item	Type	EJ1_-TC2	EJ1_-TC4
Power supply voltage		24 VDC	
Operating voltage range		85% to 110% of rated voltage	
Power consumption		4 W max. (at maximum load)	5 W max. (at maximum load)
Input (see note) <sup>*1</sup>		Thermocouple: K, J, T, E, L, U, N, R, S, B, W, PLII ES1B Infrared Thermosensor: 10 to 70°C, 60 to 120°C, 115 to 165°C, 140 to 260°C. Analog input: 4 to 20 mA, 0 to 20 mA, 1 to 5 V, 0 to 5 V, 0 to 10 V Platinum resistance thermometer: Pt100, JPt100	
Input impedance		Current input: 150Ω max., voltage input: 1 MΩ min.	
Control outputs	Voltage output	Output voltage: 12 VDC ±15%, max. load current: 21 mA (PNP models with short-circuit protection circuit)	
	Transistor output	Max. operating voltage: 30 V, max. load current: 100 mA	–
	Current output	Current output range: 4 to 20 mA or 0 to 20 mA DC Load: 500 Ω max. (including transfer output) (Resolution: Approx: 2,800 for 4 to 20 mA DC, approx. 3,500 for 0 to 20 mA DC)	–
Event inputs	Input points	2	–
	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.	–
		Outflow current: approx. 4 mA per point	–
Number of input and control points		Input points: 2, control points: 2	Input points: 4, control points: 4
Setting method		Via communications	
Control method		ON/OFF control or 2-PID (with autotuning, selftuning, Heat & Cool autotuning and non-linear cool output selection)	
Other functions		Two-point input shift, digital input filter, remote SP, SP ramp, manual manipulated variable, manipulated variable limiter, interference overshoot adjustment, loop burnout alarm, RUN/STOP, banks, I/O allocations, etc.	
Alarm output		2 points via End unit	
Communication		RS-485, PROFIBUS, Modbus, DeviceNet	RS-485, PROFIBUS, Modbus, DeviceNet
Size in mm (W×H×D)		31×96×109	
Weight		180 g	
Ambient temperature range		Operating –10°C to 55°C, Storage –25°C to 65°C (with no icing or condensation)	
Ambient humidity range		Operating 25% to 85% (with no condensation)	

<sup>\*1</sup> Inputs are fully multi-input. Therefore, platinum resistance thermometer, thermocouple, infrared thermosensor, and analog input can be selected.

## Dimensions

Item	Size in mm (H×W×D)
EJ1N-HFU_-NFL_	95.4×31.0×104.9/109.0
EJ1N-HFUB-DRT	90.9×31.0×82.2
EJ1C-EDU	95.4×15.7×76.2/79.7



### Temperature sensors for standard applications

E52-E temperature sensors and thermocouples provide accurate temperature sensing for standard and challenging environments and include a wide range of mounting and connection options.

For best control results, the E52-E series is optimized to operate perfectly with suitable E5\_ temperature controllers.

- Thermocouples and PT100 elements
- Wide range of housing, mounting and connection options
- Best performance match with temperature controllers from the E5\_ portfolio

### Ordering information

Line-Type	Series	Technology	Sub-Type	Min [°C]	Max [°C]	Dia. [mm]	Length [mm]	Material	Type	Fixing	Length [m]	Order code		
PRO-Line	Smooth tube	t/c <sup>*1</sup>	T	-80	400	3	100	SUS 316	2-wire	pre-wired with cable end shoes	2	E52-ETT3-100-2-A		
					600	6						E52-ETT6-100-2-A		
			J		1	E52-ETJ1-100-2-A								
					2	E52-ETJ2-100-2-A								
					3	E52-ETJ3-100-2-A								
					4.5	E52-ETJ4.5-100-2-A								
					6	E52-ETJ6-100-2-A								
					Lite-Line	0						400	4	SUS 304
			5										E52-ELTJ5-100-2-A	
			6										E52-ELTJ6-100-2-A	
8	E52-ELTJ8-100-2-A													
Pro-Line	K	-80	1100	1	INCONEL 600	E52-ETK1-100-2-A								
				2		E52-ETK2-100-2-A								
				3		E52-ETK3-100-2-A								
				4.5		E52-ETK4.5-100-2-A								
				6		E52-ETK6-100-2-A								
Lite-Line	0	400	4	SUS 304	E52-ELTK4-100-2-A									
			5		E52-ELTK5-100-2-A									
			6		E52-ELTK6-100-2-A									
			8		E52-ELTK8-100-2-A									
			Pro-Line		PT100	class B	-50	500	3	SUS 316	3-wire	pre-wired with open cable ends	E52-EP3-250-2-B	
6	E52-EP6-250-2-B													
Lite-Line	0	400		4					SUS 304				E52-ELP4-50-2-A	
				5									E52-ELP5-100-2-A	
				6									E52-ELP6-100-2-A	
			8	E52-ELP8-100-2-A										
Pro-Line	Bayonet mounting	t/c <sup>*1</sup>	J	-50	500	6	35	SUS 316	2-wire	enclosed screw terminals	-	E52-EP6-35-2-BG1/4G-B		
	Enclosed terminals, smooth tube					E52-EP6-200-T2-B								
	Bayonet mounting					E52-ETJ6-15-2-BG1/4G-B								
	Enclosed terminals, smooth tube					E52-ETK6-200-T2-B								
	Enclosed terminals, G1/2" g; mounting					E52-ETJ6-200-T2-B								
						E52-ETK6-200-T2-CG1/2G-B								
	Enclosed terminals, clamp mounting 1.5"					E52-ETJ6-200-T2-CG1/2G-B								
						E52-EP6-200-T2-CG1/2G-B								
	Enclosed terminals, clamp mounting 2"					E52-EP6-100-T2-CC1.5-B								
						E52-EP6-100-T2-CC2-B								
Pro <sup>plus</sup> -Line	Surface temperature	t/c <sup>*1</sup>	J	0	250	10	dia	Cu (tin plated)	2-wire	pre-wired with open cable ends	2	E52-ETJS1-B		
	Environmental temperature	PT100	class B	-40	80	-	-	Aluminium	3-wire	enclosed screw terminals	-	E52-EPE1-B		
								PVC				E52-EPE2-B		
	Non-contact	IR <sup>*2</sup>	up to 60 mm	10	260	M18	44.5	ABS	4-wire	pre-wired with open cable ends	3	ES1B		
up to 1000 mm			0	400		120	SUS 304	5-wire	2		ES1C-A40			

<sup>\*1</sup> t/c = Thermocouple

<sup>\*2</sup> IR = Infrared Sensor

**Note:** Further types with different dia., tube & cable lengths and other confectioning are available on request.



Ordering information

Name	Order code
PROFIBUS remote terminal serial communications unit	PRT1-SCU11

Supports all CompoWay/F equipped units, but has “drag-and-drop” function blocks for

- ESAN/ESEN/ESCN/ESGN
- ESZN and CelciuX® (EJ1)
- ESAR/ESER
- ESAK/ESEK

Omron’s intelligent PROFIBUS and CompoWay/F gateway

This gateway supports all CompoWay/F equipped products, including temperature controllers, digital panel indicators, etc. It can also be used for connecting MCW151-E and E5\_K series.

- Cost-effectively integrates basic instruments into a PROFIBUS network
- Requires no complex protocol conversion writing
- Has function blocks for drag-and-drop configuration
- Connects up to 15 instruments to a single PROFIBUS point



Specifications

Item	PRT1-SCU11
Storage temperature	–20 to +75°C
Ambient temperature	0 to 55°C
Ambient humidity	10 to 90% (non-condensing)
EMC compliance	EN 50081-2, EN 61131-2
Power supply	+24 VDC (+10%/–15%) Current consumption 80 mA (typical)
Weight	125 g (typical)
Communication interface	RS-485 based PROFIBUS-DP RS-422A Host link RS-485 CompoWay/F RS-232C Peripheral Port supporting connection to thermotools
Size in mm (H×W×D)	90×40×65

ES1B



Achieve low-cost measurements with an infrared thermosensor

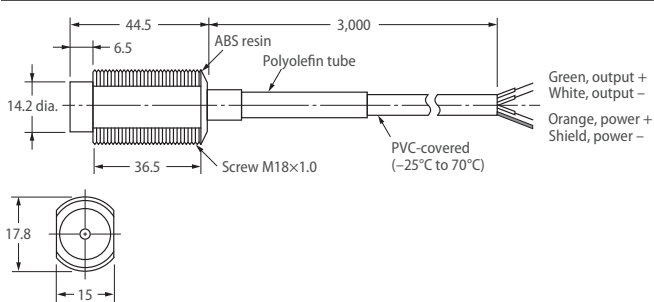
This infrared thermosensor provides an accurate, stable and cost-effective way to measure the temperature of objects. It behaves just like a standard K-type thermocouple, which enables it to operate with any temperature controller or alarm unit.

- Cost-effective infrared thermosensor
- Contactless, meaning no deterioration, unlike thermocouples
- 4 temperature ranges available: 10-70°C, 60-120°C, 115-165°C and 140-260°C
- Response speed 300 ms

Ordering information

Appearance and sensing characteristics	Specification	Order code
	10 to 70°C	ES1B 10-70C
	60 to 120°C	ES1B 60-120C
	115 to 165°C	ES1B 115-165C
	140 to 260°C	ES1B 140-260C

Dimensions (unit: mm)



Specifications

Item	ES1B
Power supply voltage	12/24 VDC
Current consumption	20 mA max.
Accuracy	±5°C ±2% PV or ±2°C, whichever is larger ±10°C ±4% PV or ±4°C, whichever is larger ±30°C ±6% PV or ±6°C, whichever is larger ±40°C ±8% PV or ±8°C, whichever is larger
Reproducibility	±1% PV or ±1°C, whichever is larger
Temperature drift	0.4°C/°C max.
Receiver element	Thermopile
Response speed	Approximately 300 ms at response rate of 63%
Operating temperature	–25 to 70°C (with no icing or condensation)
Allowable ambient humidity	35 to 85%
Degree of protection	IP65
Size in mm	head: 17.8 dia.×44.5 (screw M18×1.0), cable 3,000



### Achieve Superior Environmental Resistance and a Wide Measurement Range of 0 to 400°C.

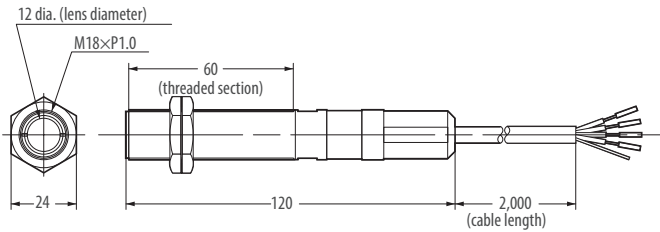
This infrared thermosensor provides an fast, accurate and very stable way to measure the temperature of objects. Its output provides a universal 4-20 mA, which enables it to operate with many temperature controllers or PLCs.

- Flexible placement with slim cylindrical shape and long focus with a distance of 500 mm and area diameter of 80 mm.
- The SUS body and silicon lens resist ambient operating temperatures of up to 70°C and resist dust and water to the equivalent of IP67.
- Fast measurement with high-speed response of 100 ms/90%.
- Strong resistance to noise with output of 4 to 20 mA.

#### Ordering information

Specification (measuring temperature range)	Order code
0 to 400°C	ES1C-A40

#### Dimensions (unit: mm)



#### Ratings and Characteristics

Item	Model	ES1C
Power supply voltage		12 to 24 VDC
Operating voltage range		90% to 110% of rated voltage
Current consumption		70 mA max.
Measuring temperature range		0 to 400°C
Measurement accuracy		0 to 200°C: $\pm 2^\circ\text{C}$ , 201 to 400°C: $\pm 1^\circ\text{C}$ (emissivity: 0.95)
Response time		100 ms/90%
Reproducibility		$\pm 1^\circ\text{C}$ of reading value
Emissivity		0.95 fixed
Current output		4 to 20 mA DC, Load: 250 $\Omega$ max.
Ambient temperature range		Operating: 0 to 70°C, Storage: -20 to 70°C (with no icing or condensation)
Ambient humidity range		Operating and storage: 35% to 85%
Vibration resistance (destruction)		1.5-mm amplitude at 10 to 55 Hz for 2 hours each in the X, Y, and Z directions
Weight		180 g
Degree of protection		Equivalent to IP67

## EJ1N-HFU-ETN



### Connect Modbus slaves to ETHERNET

The EJ1N-HFU-ETN provides the solution to connect a CelciuX<sup>®</sup> (EJ1) in-panel multi-loop PID controller to PROFINET and Modbus/TCP. Although built on the CelciuX<sup>®</sup> (EJ1) platform, this unit can be used as a gateway for discrete Modbus units when only using the EJ1N-EDU endplate.

- Connects Modbus serial slaves to PROFINET and Modbus/TCP
- Built for integration into the CelciuX<sup>®</sup> (EJ1)
- Usable as a gateway for discrete units like E5\_N-series temperature controllers and MX2 inverters.
- Flexible implementation with standard .gsd files



#### Ordering information

Name	Order code
ETHERNET to Serial Gateway	EJ1N-HFU-ETN

#### Specifications

Item	EJ1N-HFU-ETN
PROFINET	IO Device
Conformance	Class A
Supported RT	Class 1
Minimum Update Rate	8 ms
Number of Modbus RTU nodes	31
Ambient operating temperature	-10°C to 55°C
Ambient operating humidity	25% to 85%
Storage temperature	-20°C to 65°C
Weight	170 g