

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



...of land and
...addition to the system
...the basis of clearing

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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Industrial Automation Guide 2016

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	Servo systems	112
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	Measurement sensors	426
Safety	Emergency stop and control devices	462
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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
PRO^{plus}	Premium	Tailored	Special	Yes	Yes	Application oriented
PRO	Premium	Complete	Advanced	Yes	Yes	Above Standard
LITE	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.

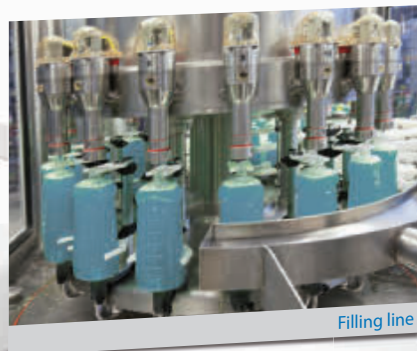


Machine Automation Controller

FACTORY
AUTOMATION

MACHINE
CONTROL

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:

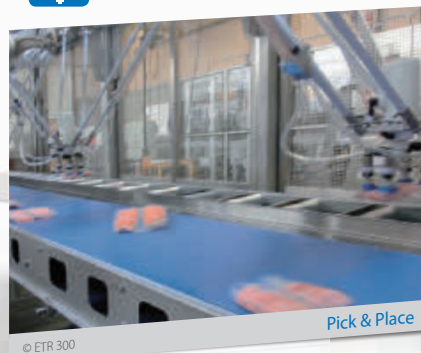
The Sysmac platform is scalable and provides the performance and functionality for a wide range of solutions from simple machines through to manufacturing cells

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

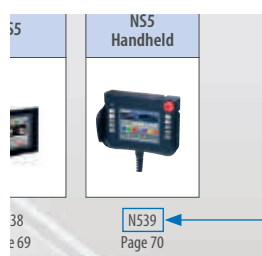
Product selection table

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

Control components

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Quick Link

Control components

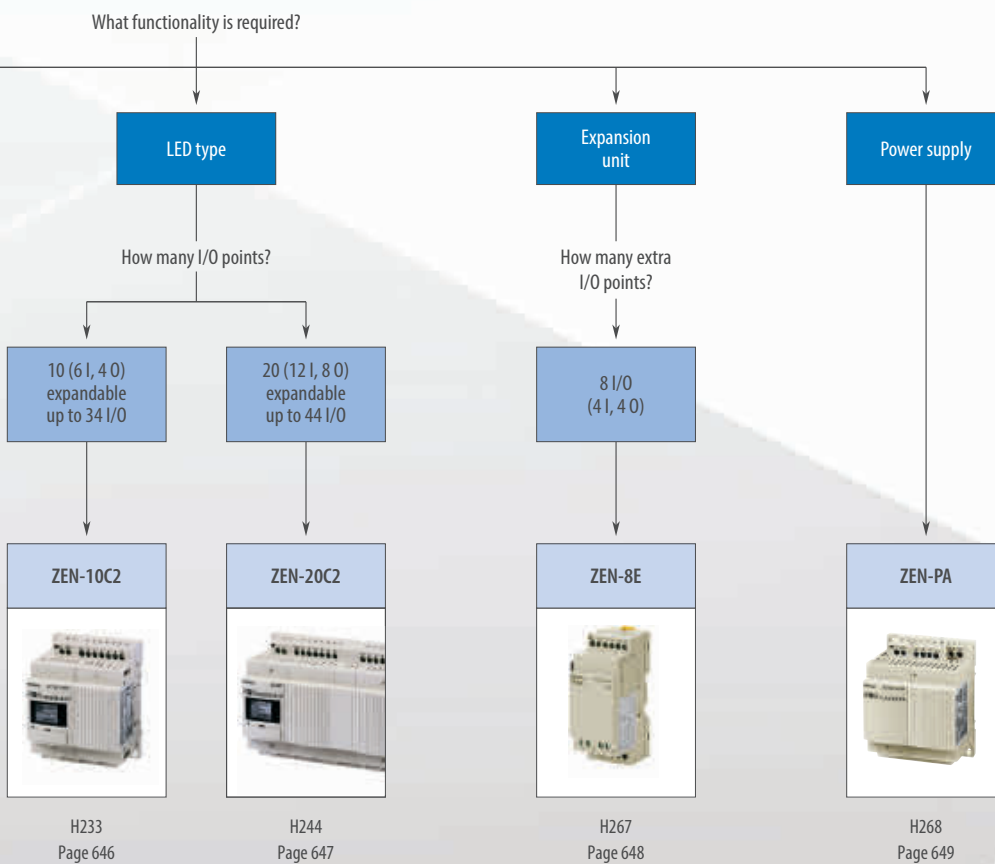
Temperature controllers	574	Timers	622
Selection table	576	Selection table	624
Basic temperature controllers		Analog solid state timers	
E5C2	579	H3DS	627
E5CSV	581	H3DK	628
E5CB	582	H3YN	629
K8AK-TH	749	H3CR	630
E5L	574	Digital timers	
E5L-A/C	576	H5CX	631
E5_L	576	H8GN	639
General purpose temperature controllers		Counters	632
E5_C	583	Selection table	634
Advanced and Multi-Loop controllers		Totalisers	
E5_C-T	587	H7EC	636
E5_R/E5_R-T	589	H7ET	637
CelciuX® (EJ1)	591	H7ER	638
E5_N-H/E5_N-HT	575	Pre-set counters	
Temperature sensors		H8GN	639
E52-E	593	H7CX	640
Auxiliaries		Cam positioners	
PRT1-SCU11/ES1B	594	H8PS	641
ES1C/EJ1N-HFU-ETN	595	Programmable relays	642
Power supplies	596	Selection table	645
Selection table	598	Programmable relays	
Single-phase		ZEN-10C	646
S8VK-C	601	ZEN-20C	647
S8VK-G	602	ZEN-8E	648
S8FS-C	603	ZEN-PA	649
S8JX-G	605	Digital panel indicators	650
S8JX-P	607	Selection table	652
S8EX	608	1/32 DIN multi-function	
Power back-up unit		K3GN	654
S8TS	609	1/8 DIN standard indicators	
S8T-DCBU-01/-02	610	K3MA-J, -L, -F	655
S8BA	618	1/8 DIN advanced indicators	
Three-phase		K3HB-X, -H, -V, -S	656
S8VK-T	611	K3HB-C, -P, -R	658
Digital multi circuit protector		Energy monitoring devices	660
S8M	612	Selection table	662
Redundancy unit		Smart power monitors	
S8VK-R	613	KM1 series	665
Uninterruptible power supplies (UPS)	614	KM50-E1-FLK	669
Selection table	617	Air flow sensors	
Uninterruptible power supplies (UPS)		D6FZ-FGT200/500/-FGS1000	671
S8BA	618	Power sensor stations	
BU_2RWL	620	ZN-KMX21	673
Photovoltaic	674	PID recovering	
Selection table	677	PID box series	679
Three-phase			
KP100L	678		



ZEN - SIMPLICITY AT ITS BEST

The ZEN series offers simple logic control for a wide variety of applications. With many on-board functions like season and weekly timers, counters, analog inputs and using the ladder logic, you can automate the application very quickly. Adjustments and maintenance is easy using the models with an LCD.

- RS-485 communication
- Expandable I/O
- Memory Data backup





				
Model	ZEN-10C	ZEN-20C		
Type	CPU unit	CPU unit		
Features C1	With LCD Display, program/control buttons, calendar and real-time clock	With LCD display, program/control buttons, calendar and real-time clock		
Features C2	With LED indication Logic control Programming by software	With LED indication Logic control Programming by software		
Features C3	Same as C1 but not expandable.	Same as C1 but not expandable.		
Features C4	Same as C1 but instead of one output relay you get RS-485 communication.	–		
Features Starter kits	Complete set with C1 CPU including software, cable and manual	–		
Number of I / O points	10 expandable up to 34 I/O (C4 up to 33 I/O)	20 expandable up to 44 I/O		
Inputs	6	12		
Inputs/power supply	100 to 240 VAC or 12 to 24 VDC	100 to 240 VAC or 12 to 24 VDC		
Outputs	4 relays (C4 = 3 relays) or 4 transistors	8 relays or 8 transistors		
Page/Quick Link	646/H233	647/H244		



Flexible automation

The ZEN-10C offers simple logic control in a choice of four CPU units. Expansion is possible on three of these CPU's of up to 34 I/O whereas the fourth (C3 Units) is fixed at 10 I/O. All DC models have analog input and a high-speed counter input up to 150 Hz.

- DC input/supply units have analog input + high speed counter
- The ZEN-10C4 has RS-485 communication
- Expansion available with relay output or transistor output
- ZEN-Kits the best choice to start!

Ordering information

Name	Number of I/O points	Inputs (I)/ power supply		Outputs (Q)		Type	LCD, buttons (B), calendar and clock	Analog input/ comparators (A)	8-digit counter (F)/ comparators (G)	No. of bits 16	No. of bits 8	Size in mm (H×W×D)	Order code
CPU units	10 Expand-able up to 34 I/O	6	100 to 240 VAC	4	Relays	LCD	yes	–	–	Work bits (M) Holding bits (H) Timers (T) Counters (C) Weekly timers (@) LCD display (D) Timer/counter comparator (P)	Holding timers (#) Button input (B)	90×70×56	ZEN-10C1AR-A-V2
						LED	–	–	–				ZEN-10C2AR-A-V2
						LCD	yes	yes / 4	yes / 4				ZEN-10C1DR-D-V2
						LED	–	yes / 4	yes / 4				ZEN-10C2DR-D-V2
			Transis-tors	LCD	yes	yes / 4	yes / 4	ZEN-10C1DT-D-V2					
				LED	–	yes / 4	yes / 4	ZEN-10C2DT-D-V2					
	Fixed I/O	100 to 240 VAC	3	Relays	LCD	yes	–	yes / 4	ZEN-10C3AR-A-V2				
					LCD	yes	yes / 4	yes / 4	ZEN-10C3DR-D-V2				
	10 Expand-able up to 33 I/O	100 to 240 VAC	3	Relays	LCD/ Comm.	yes	–	yes / 4	ZEN-10C4AR-A-V2				
					LCD/ Comm.	yes	yes / 4	yes / 4	ZEN-10C4DR-D-V2				
					LCD/ Comm.	yes	yes / 4	yes / 4	ZEN-10C4DR-D-V2				
					LCD/ Comm.	yes	yes / 4	yes / 4	ZEN-10C4DR-D-V2				
ZEN kit		Set containing CPU unit (ZEN-10C1AR-A-V2), connecting cable, ZEN support software and manual.										ZEN-KIT01-EV4	
		Set containing CPU unit (ZEN-10C1DR-D-V2), connecting cable, ZEN support software and manual.										ZEN-KIT02-EV4	

Specifications

Item	Specifications	
	ZEN-10C_AR-A-V2	ZEN-10C_D_-D-V2
Power supply voltage	100 to 240 VAC, 50/60 Hz	12 to 24 VDC (DC ripple rate: 5%)
Rated power supply voltage	85 to 264 VAC	10.8 to 28.8 VDC
Power consumption	9 VA max.	4 W max.
Inrush current	3 A max.	30 A max.
Ambient temperature	0°C to 55°C (–25°C to 55°C for ZEN-10C2 models (LED))	
Ambient storage	–20°C to 55°C (–40°C to 75°C for ZEN-10C2 models (LED))	
Control method	Stored program control	
I/O control method	Cyclic scan	
Programming language	Ladder diagram	
Program capacity	96 lines (3 input conditions and 1 output per line)	
LCD display	12 characters x 4 lines, with backlight (LCD-type CPU unit only)	
Operation keys	8 (4 cursor keys and 4 operation keys) (LCD-type CPU unit only)	
Super-capacitor holding time	2 days min. (25°C)	
Battery life (ZEN-BAT01)	10 years min. (25°C)	
Calendar & Clock function	Accuracy: ±15 s/month (at 25°C)	

Accessories

Name	Description	Order code
Memory Cassette	EEPROM (for data security and copying)	ZEN-ME01
Battery unit	Battery (keeps time, date and bit values for 10 years at 25°C)	ZEN-BAT01
Connecting Cable	For the programming software, RS-232C cable, 9-way 'D' connector for PC	ZEN-CIF01
USB-Serial conversion cable	USB-Serial conversion cable (to be used in combination with ZEN-CIF01)	CS1W-CIF31
ZEN support software	Runs on Windows ME, 2000, XP, NT4.0 Service Pack 3, Vista	ZEN-SOFT01-V4



Extended flexible automation

Ideal for small-scale control applications, the ZEN-20C provides an economical alternative to discrete timers, counters and general purpose relays. With 12 Inputs and 8 relay or transistor Outputs, and expansion possibilities of up to 44 I/O on C1 and C2 models, the ZEN-20C offers extended flexibility, with features such as calendar and real time clock functionality.

- ZEN-20C1/C2 expandable up to 44 I/Os
- ZEN DC units have analog input 0-10 VDC
- DC models have as well high speed counter 150 Hz
- Expansion available with relay output or transistor output

Ordering information

Name	Number of I/O points	Inputs (I)/ power supply	Outputs (Q)	Type	LCD, buttons (B), calendar and clock	Analog input/ comparators (A)	8-digit counter (F)/ comparators (G)	No. of bits 16	No. of bits 8	Size in mm (H×W×D)	Order code
CPU units	20	12	100 to 240 VAC	8	Relays	LCD	yes	–	–	90×122.5×56	ZEN-20C1AR-A-V2
						LED	–	–	–		ZEN-20C2AR-A-V2
						LCD	yes	yes / 4	yes / 4		ZEN-20C1DR-D-V2
						LED	–	yes / 4	yes / 4		ZEN-20C1DR-D-V2
	Expandable up to 44 I/O	12 to 24 VDC			Transistors	LCD	yes	yes / 4	yes / 4		ZEN-20C1DT-D-V2
						LED	–	yes / 4	yes / 4		ZEN-20C2DT-D-V2
						LCD	yes	–	yes / 4		ZEN-20C3AR-A-V2
						LCD	yes	yes / 4	yes / 4		ZEN-20C3DR-D-V2
	Fixed I/O	100 to 240 VAC			Relays	LCD	yes	–	yes / 4		ZEN-20C1AR-A-V2
						LCD	yes	yes / 4	yes / 4		ZEN-20C2AR-A-V2

Specifications

Item	Specifications	
	ZEN-20C_AR-A-V2	ZEN-20C_D_-D-V2
Power supply voltage	100 to 240 VAC, 50/60 Hz	12 to 24 VDC (DC ripple rate: 5%)
Rated power supply voltage	85 to 264 VAC	10.8 to 28.8 VDC
Power consumption	11 VA max.	5 W max.
Inrush current	4 A max.	30 A max.
Ambient temperature	0°C to 55°C (–25°C to 55°C for ZEN-20C2 models (LED))	
Ambient storage	–20°C to 55°C (–40°C to 75°C for ZEN-20C2 models (LED))	
Control method	Stored program control	
I/O control method	Cyclic scan	
Programming language	Ladder diagram	
Program capacity	96 lines (3 input conditions and 1 output per line)	
LCD display	12 characters x 4 lines, with backlight (LCD-type CPU unit only)	
Operation keys	8 (4 cursor keys and 4 operation keys) (LCD-type CPU unit only)	
Super-capacitor holding time	2 days min. (25°C)	
Battery life (ZEN-BAT01)	10 years min. (25°C)	
Calendar & Clock function	Accuracy: ±15 s/month (at 25°C) if applicable	

Accessories

Name	Description	Order code
Memory Cassette	EEPROM (for data security and copying)	ZEN-ME01
Battery unit	Battery (keeps time, date and bit values for 10 years at 25°C)	ZEN-BAT01
Connecting Cable	For the programming software, RS-232C cable, 9-way 'D' connector for PC	ZEN-CIF01
USB-Serial conversion cable	USB-Serial conversion cable (to be used in combination with ZEN-CIF01)	CS1W-CIF31
ZEN support software	Runs on Windows ME, 2000, XP, NT4.0 Service Pack 3, Vista	ZEN-SOFT01-V4



ZEN Expansion units

To scale-up your ZEN application we provide three different expansion units in only 35 mm width ZEN housing. All expansion units have standard 4 inputs and 4 outputs. You can add maximum 3 expansion units to one CPU.

- 4 inputs, 100 to 240 VAC or 12 to 24 VDC
- 4 outputs, either relays or transistors (only DC models)
- DIN-rail mounting
- Size in mm (H×W×D): 90×35×56

Ordering information

Name	Number of I/O points	Inputs (X)/power supply	Outputs (Y)	Size in mm (H×W×D)	Order code
Expansion I/O units	8	4	100 to 240 VAC	90×35×56	ZEN-8E1AR
			12 to 24 VDC		ZEN-8E1DR
			Transistors		ZEN-8E1DT

Specifications

Item	Specifications	
	ZEN-8E1AR	ZEN-8E1D
Power supply voltage	100 to 240 VAC, 50/60 Hz	12 to 24 VDC (DC ripple rate: 5% max.)
Rated power supply voltage	85 to 264 VAC	10.8 to 28.8 VDC
Power consumption	4 VA max.	2 W max.
Inrush current	1.5 A max.	15 A max.
Ambient temperature	0°C to 55°C (–25°C to 55°C for ZEN-10C2 models (LED))	
Ambient storage	–20°C to 55°C (–40°C to 75°C for ZEN-10C2 models (LED))	



ZEN Power Supply

The ZEN Power Supply has the same compact housing as our 10 I/O CPU units. With a current/wattage output of 1.3 A/30 W it covers enough power to supply the DC ZEN itself and the eventually used sensors. If needed parallel operation is possible.

- Output voltage 24 VDC
- Output current 1.3 A
- Capacity 30 W
- Allows parallel operation
- Size in mm (H×W×D): 90×70×56

Ordering information

Power rating	Inputs voltage	Output current	Order code
30 W	100 to 240 VAC	1.3 A	ZEN-PA03024

Specifications

Item	Specifications	
Power rating	30 W	
Efficiency	80% min. (24 V)	
Input voltage	100 to 240 VAC (85 to 264 VAC), single-phase	
Output voltage	Voltage adjustment	±10% to ±15% (with V. ADJ) min. of rate output voltage
	Ripple	2% (p-p) max. (–25°C to –10°C: 4% max.)
	Input variation	0.5% max.
	Temperature	0.05% / °C max.
Overload protection	105% to 135% of rated load current, inverted L drop, intermittent	
Overvoltage protection	yes	
Input Current	100 V	0.8 A max.
	200 V	0.45 A max.
Output indicator	yes (green)	
Weight	240 g max.	
Operating temperature	–10°C to 60°C	
Parallel operation	yes (2 units max.)	