

For achieving Carbon-Neutral society,
Designing and manufacturing Control Panel with
Low power loss & Space Saving



Creating green control panels

Natural disasters caused by global warming and climate change are a global social issue, driving over 150 countries and regions worldwide to take action toward decarbonization. Our goal is to cut greenhouse gas (GHG) emissions by half through new ways of building control panels, which constitute the core of the manufacturing site.



Process

Realize greatly reduces design/ manufacturing work

Innovation for design, building Process

Further Evolution for Panels

Building sustainable control panels

Panel

Realize compact & highly reliable control panels

Creating green control panels

Simple & Easy People

Green

Reducing CFP of control panels to achieve carbon neutrality

People

Provide reliable and comfortable manufacturing for all people who deal with control panels



Integrating green perspectives into Value Design

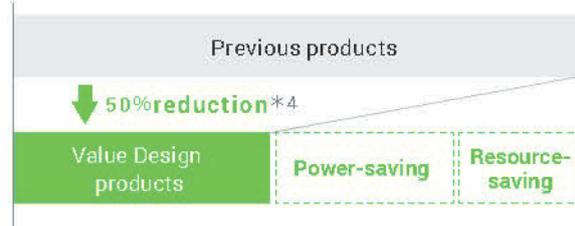
Value Design for Panel (Value Design) is the common concept shared across OMRON's in-panel product specifications to deliver new value to your control panels.

The concept now factors in environmental impact as well, to deliver control panels that are green as well as user-friendly.



- 1 Unified height & slim size^{*1}
- 2 Side-by-side mounting at (55°C) ambient temperature^{*2}
- 3 Unique Push-In Plus technology^{*1}
- 4 Front-in and front-release wiring
- 5 eCAD library
- 6 Certification for CE, UL, and CSA
- 7 **Green features that save energy and resources^{*3}**

CFP of control panel (total GHG emissions)



*1. Expect for some products

*2. Side-by-side mounting is possible in the same series

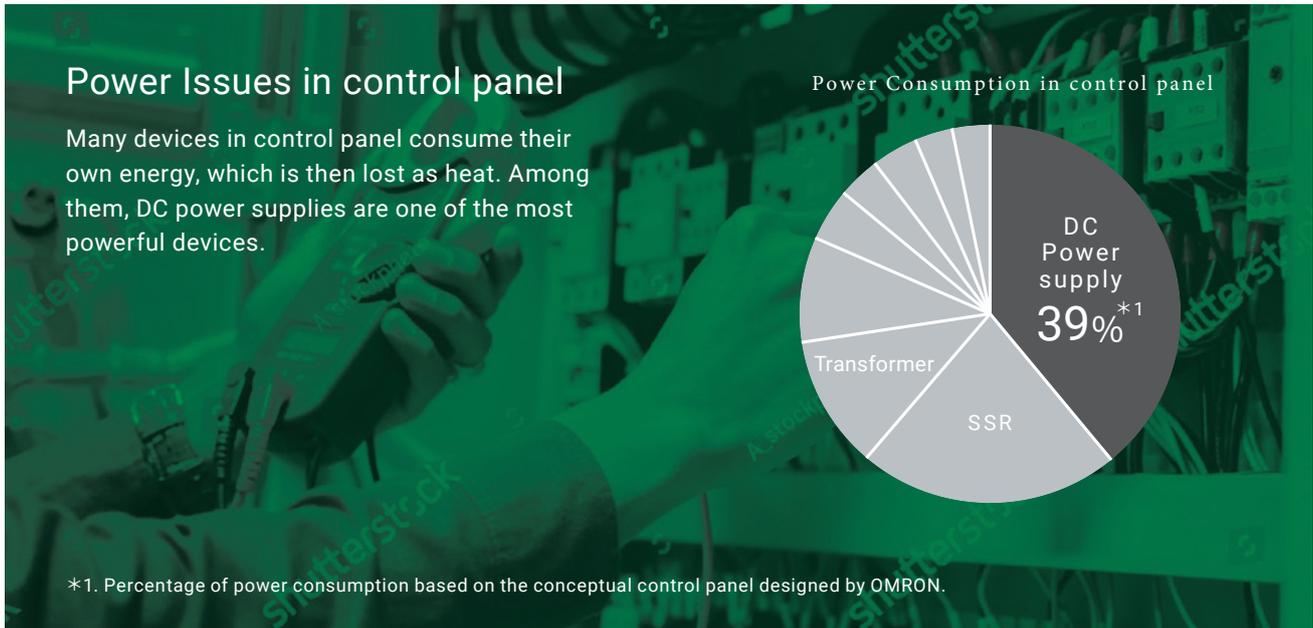
*3. Greener design compared to previous (2016) products

*4. According to OMRON investigation in April 2023

To the creation of environmentally friendly control panel

Reducing GHG Emissions from the components installed in control panel.

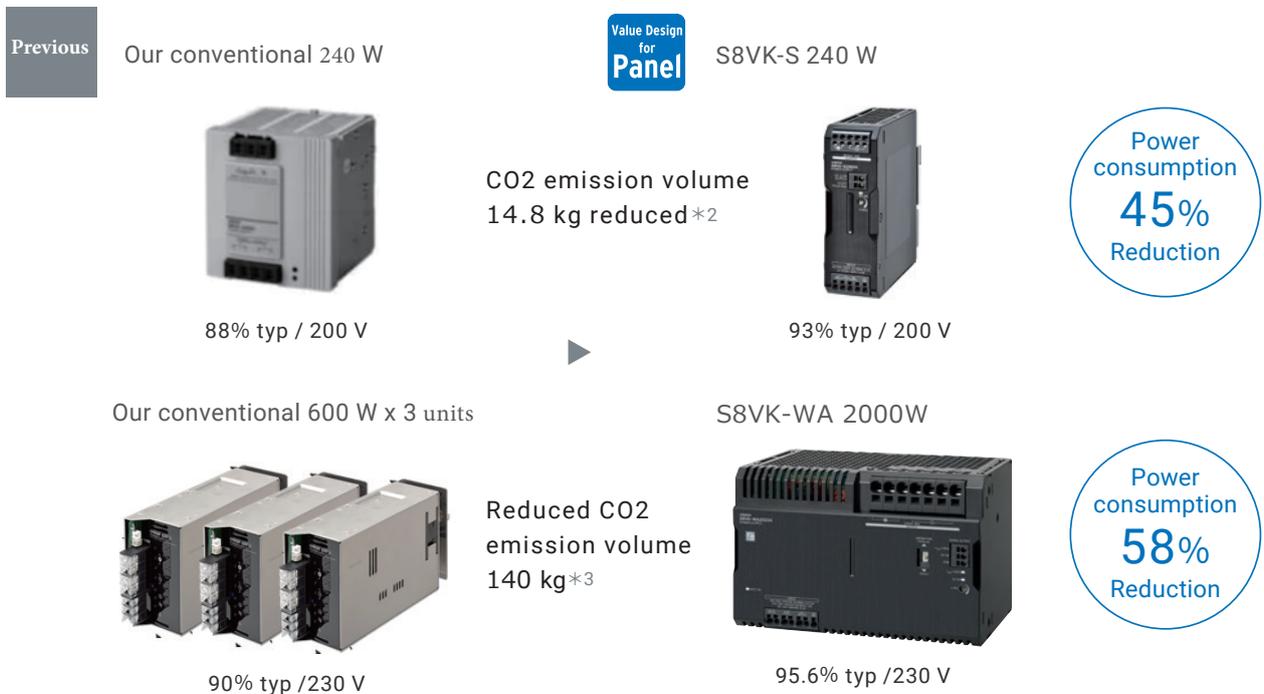
The power saving of control panel can be achieved by selecting low-power devices while keeping the conventional designing philosophy.



Effect in reducing power loss through the selection of highly efficient DC power sources

Using a more efficient DC power source reduces the power consumed within control panel and consequently reduces CO2 emissions.

Case studies



CO2 emission volume
14.8 kg reduced*2

Reduced CO2
emission volume
140 kg*3

*2. 8 h/day x 365 days at 180W power, 1Wh= 0.4591 g _ CO2 (Estimation based on our electricity-CO2 emission conversion standard)

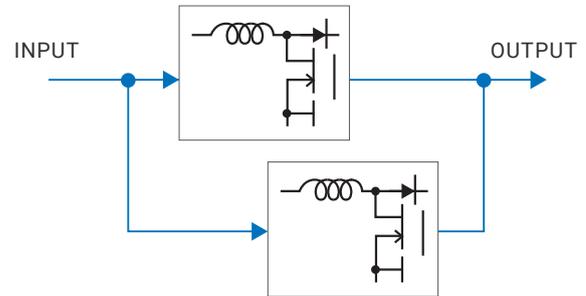
*3. 8 h/day x 365 days at 1500 W power, 1Wh= 0.4591 g _ CO2 (Estimation based on our electricity-CO2 emission conversion standard)

Technology and data to realize low-power consumption

The achievement of low loss harmonic suppression circuit.

Interleave method *1

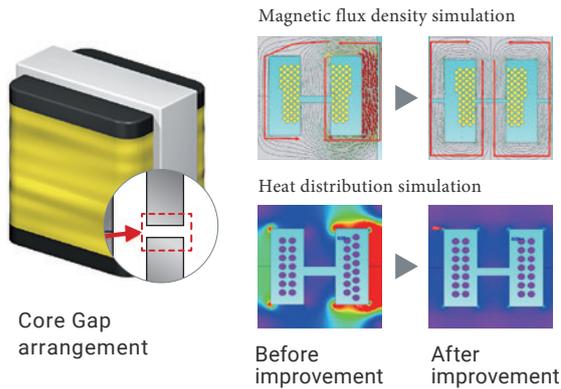
*1. The interleaving method is a technology that reduces ripple electricity by shifting and controlling the phase of two sets of harmonic suppression circuits consisting of transistors, diodes, and inductors.



Distributed control of harmonic suppression circuit configuration in two sets

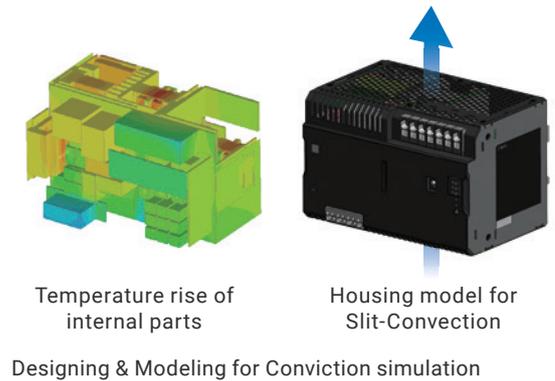
Pursuit of component performance

Magnetic simulation technology optimizes transformer winding specifications/core gap to reduce power consumption (heat generation)



Realization of Natural Air Cooling by Modeling Technology Realization of Optimum Part Layout by Modeling

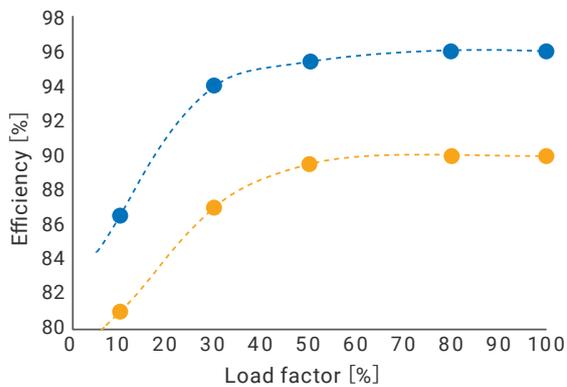
Verification of Part Heat Generation and Convection



Efficiency improvement effect

High efficiency even under light load

Efficiency Characteristics for Load Factor of Power Supply

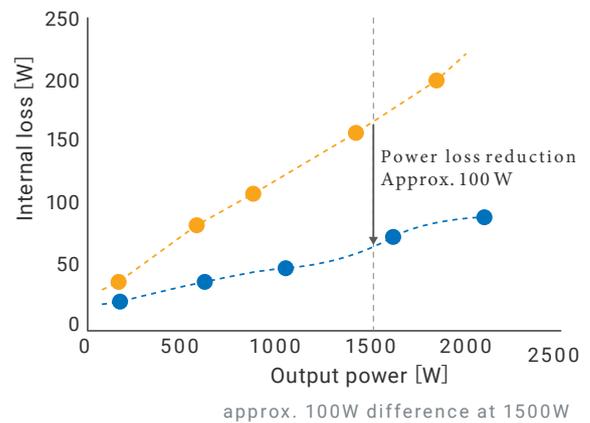


● S8VK-WA 2000 W ● General power 1800 W

*. In the case compared with the efficiency 90% of Power supply 1800W.

Contribute to reducing CO2 at the same load by higher efficiency

Internal loss to the output power of the power supply



On further advances in control panel

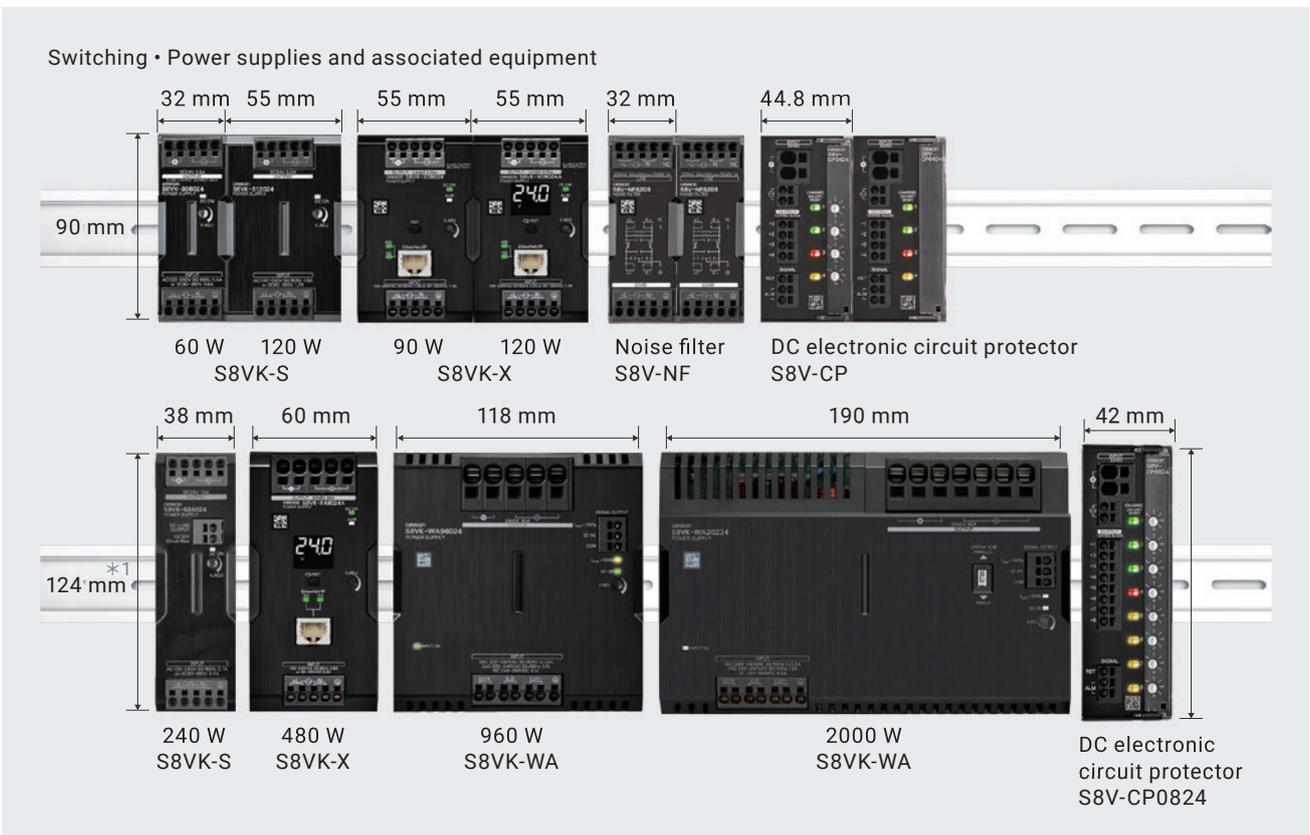
Space-saving and high functionality of control panel



Unified height reduces dead-space and miniaturizes control panel



Value Design for Panel compliant switching power supplies, noise filters, and DC electronic circuit protectors are standardized in height. Reduces dead-space and reduces the size of control panel.



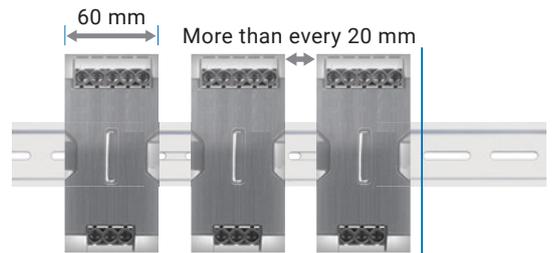
*1. Height: 124 mm S8V-CP0824 excluded

Contact mounting possible at an ambient temperature of 55°C *1

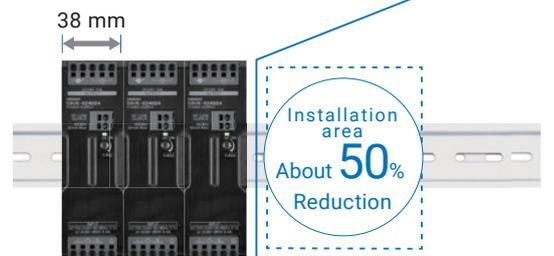
Close mounting can greatly reduce the installation space.

*1. Refer to the data sheet of each product for detailed usage conditions.

At present
Previous MEW products
240 W



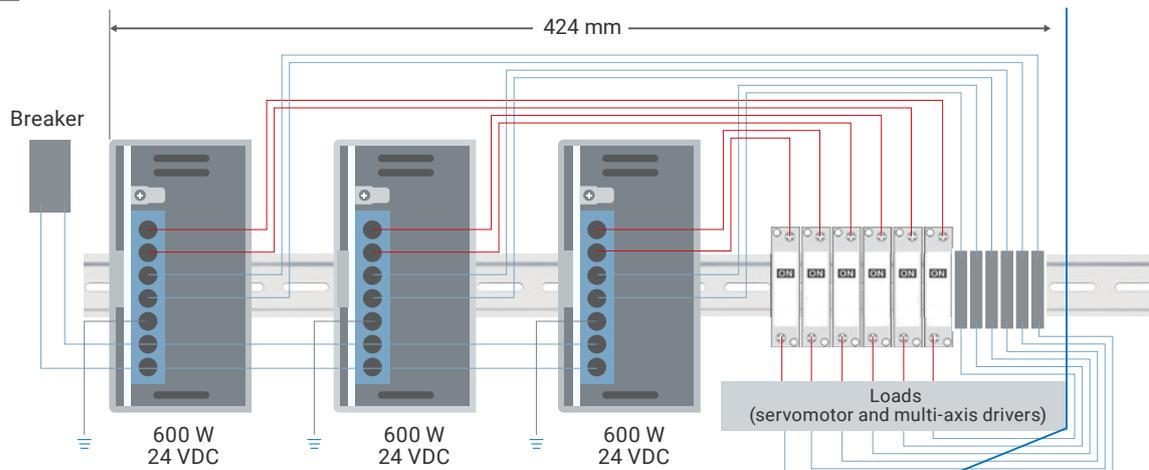
Value Design for Panel
S8VK-S
240 W



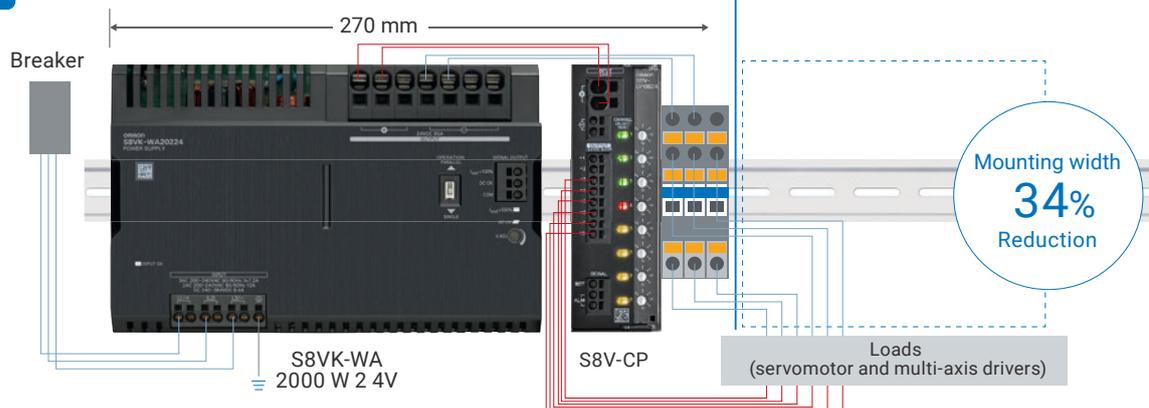
Reduced mounting space by using new DC distribution methods

Examples of S8VK-WA 2000 W Types: Space-saving implementation by solving wire issues by providing branch methods and protective devices

At present
Our conventional 600 W×3 unit + mechanical circuit protector + terminal block



Value Design for Panel
S8VK-WA 2000W + Electronic circuit protector S8V-CP0824



Design and fabrication processes

Reduce lead time for control panel production

Electric control CAD and compliance with overseas safety standards can shorten the entire control panel manufacturing process.

Processing Challenges in control panel

Improvement of customer response ability is required by speeding up various processes.

Design

Optimum products can be selected from a wide range of input specifications and capacity types, dramatically reducing selection man-hours

Electric control CAD library is provided for all model to significantly reduce designing man-hours



Omron offers the industry's highest library of 48 and more than 000 model *1, greatly reducing the number of man-hours required to create electrical design drawings and data.

Maximum
50%*2

*1. Based on Omron investigation as of December 2020 for EPLAN
*2. For the Zuken E3.series

Electric Control CAD Partners

We are working with a number of partners to expand the range of options for your electric control CAD.

E3.Series is the name of the electric control designing CAD of Zuken Co., Ltd.
E PLAN is a registered trademark of E PLAN Software & Service GmbH & Co. KG.
ECAD is a registered trademark of ECAD Solutions Corporation.



Zuken Inc.



EPLAN



ECAD Co., Ltd. Solutions

Assembly/Wiring

The push-in terminal block requires one step. Drastically Reduce wiring time

Approx.
60%*3

*3. Our measured values for both datum-in Plus terminal block and screw terminal block



- ① Remove the screws
- ② Attach the terminal
- ③ Tighten the screws
- ④ Put a check mark
- ⑤ Tighten up



- ① Insert the terminal

At present Screw terminals have many processes to complete wiring..

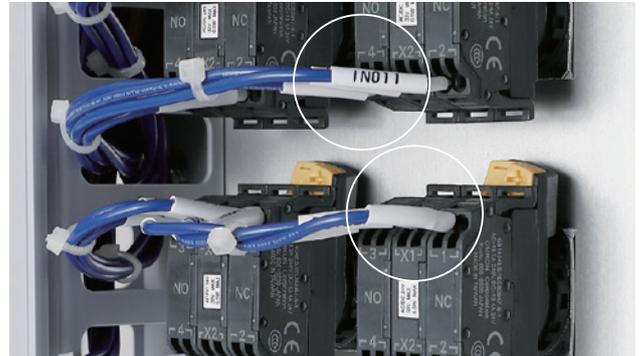
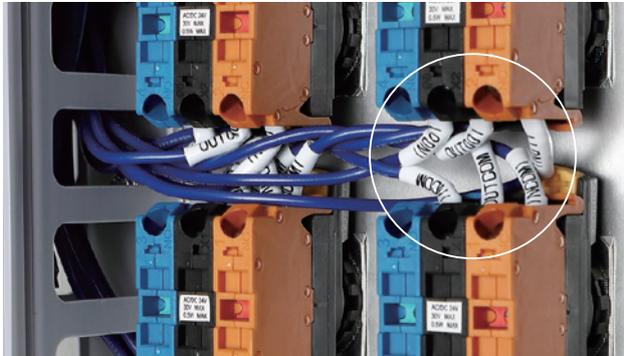


If push-in Plus terminal block, complete in 1 step

On "ease" and "gentleness" for people Reduction of wiring workload

The push-in Plus terminal block & front-in/front release simplifies and speeds everyone in wiring.

Even if the distance between the front-in devices is reduced, the wiring does not interfere with each other and workability and safety are improved



At present

Screw terminals are used for upper and lower wiring, so wiring interferes with each other in a small area, making it difficult to perform work.

Value Design for Panel

Wiring does not interfere, so workability and safety are improved.

Similar wiring ease can be realized even with large-capacity DC power supplies that require a large wiring diameter



At present

The large power connection is complicated by the bolts/the nuts with the special tools.

Value Design for Panel

The push-in terminal allows the easiness of wiring as well as the smaller cable

Shipping/Operation

The status of the input/output power and the output current can be identified by LED, speeding up startup and checking operations

S8VK-WA/WB

Situation	The output current is larger than the rating.	Output short-circuit	No input/Input voltage is lower than the specified value.
LED display			

Selections

OMRON's wide variety of products compliant with the "Value Design for Panel" concept



Single-phase 200 to 240 VAC Input S8VK-WA

Rated input voltage	Rated output voltage	Capacity	Rated output current	Maximum peak current	Model	External Dimensions W×H×D(mm)
Single-phase 200-240 VAC (Allowable range 170 to 264 VAC, 240 to 350 VDC)	24 VDC	2000 W	85 A	127.5 A	S8VK-WA20224-SPI	190×124×124
	48 VDC	2000 W	45 A	67.5 A	S8VK-WA20248-SPI	190×124×124



Three-phase 380 to 480 VAC Input S8VK-WB

Rated input voltage	Rated output voltage	Capacity	Rated output current	Maximum peak current	Model	External Dimensions W×H×D(mm)
Three-phase 380 to 480 VAC (Allowable range: Three-phase 320 to 576 VAC, 450 to 810 VDC)	24 VDC	240 W	10 A	15 A	S8VK-WB24024	55×124×117
		480 W	20 A	30 A	S8VK-WB48024	65×124×117
		960 W	40 A	60 A	S8VK-WB96024	118×124×117
	48 VDC	240 W	5 A	7.5 A	S8VK-WB24048	55×124×117
		480 W	10 A	15 A	S8VK-WB48048	65×124×117
		960 W	20 A	30 A	S8VK-WB96048	118×124×117



Single-phase 100 to 240 VAC Input S8VK-S

Rated input voltage	Rated output voltage	Capacity	Rated output current	Maximum peak current	Model	External Dimensions W×H×D(mm)
Single phase 100 to 240 VAC (Allowable range: 85 to 264 VAC or 90 to 350 VDC)	24 VDC	30 W	1.3 A	1.56 A	S8VK-S03024	32×90×86
		60 W	2.5 A	3 A	S8VK-S06024	32×90×86
		120 W	5 A	6 A	S8VK-S12024	55×90×86
		240 W	10 A	15 A	S8VK-S24024	38×124×117.8
		480 W	20 A	30 A	S8VK-S48024	60×124×117.8

Single-phase 100 to 240 VAC input-type S8VK-X (with display and communication)

Cat. No. T211-E1



With Indication Monitor

Rated input voltage	Rated output voltage	Capacity	Rated output current	Maximum peak current	Model	External Dimensions W×H×D(mm)
100 to 240 VAC (Allowable range:85 to 264 VAC or 90 to 350 VDC)	24 VDC	90 W	3.75 A	—	S8VK-X09024A-EIP	55×90×86
		120 W	5 A	6 A	S8VK-X12024A-EIP	55×90×86
		240 W	10 A	15 A	S8VK-X24024A-EIP	38×124×117
		480 W	20 A	30 A	S8VK-X48024A-EIP	60×124×117

Without Indication Monitor

Rated input voltage	Rated output voltage	Capacity	Rated output current	Maximum peak current	Model	External Dimensions W×H×D(mm)	
100 to 240 VAC (Allowable range:85 to 264 VAC, 90 to 350 VDC)	5 VDC	30 W	5 A *1	6 A	S8VK-X03005-EIP	40×90×86	
	12 VDC	60 W	4.5 A *2	5.4 A	S8VK-X06012-EIP	40×90×86	
			2.5 A	3 A	S8VK-X06024-EIP	40×90×86	
	24 VDC	90 W	3.75 A	—	6 A	S8VK-X09024-EIP	55×90×86
						S8VK-X12024-EIP	55×90×86
						S8VK-X24024-EIP	38×124×117
						S8VK-X48024-EIP	60×124×117

*1. At the rated output current, the output power is 25 W
*2. At the rated output current, the output power is 54 W

Noise filter S8V-NF

Cat. No. T214-E



Rated voltage	Rated current	Model	External Dimensions W×H×D (mm)
250 VAC 250 VDC	3 A	S8V-NFS203	32×90×86
	6 A	S8V-NFS206	

DC electronic circuit protector S8V-CP

Cat. No. T227-E1



Number of branched outputs	UL Class2 Output	Rated input voltage	Model	External Dimensions W×H×D (mm)
4 outputs	None	24 VDC	S8V-CP0424	44.8×90×90.8
	Yes		S8V-CP0424S	
8 outputs	None		S8V-CP0824	42×127×118.1



Creating green control panels

Cat. No. Y235-E1

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Products that especially help reduce environmental impact



Slim I/O Relay
Slim I/O Solid State Relay
G2RV-ST/G3RV-ST
Series

Cat No. J266-E1



Ultra-Compact Interface Wiring System
XW2K series

Cat No. G153-E1



DC Electronic Circuit Protector
S8V-CP

Cat No. T227-E1



Solid-state Timers
H3DT

Cat No. M091-E1



Digital Temperature Controllers
E5□C series

Cat No. H220-E1

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