

Switch Mode Power Supply

S8VK-S (30/60/120/240/480-W Models)

A Perfect Fit for Small Control Panels
Coated PCBs for Better Resistance to Environment
Connections for Easy Wiring



- Operation possible at ambient temperatures from -40 to 70°C.
- Side-by-side mounting possible (up to 55°C). *1
- DC input supported (90 to 350 VDC).
- Power Boost function at 120% (30/60 and 120 W); Power Boost function at 150% (240 and 480 W).
- Low-voltage detection output (only for 240 and 480 W).
- Certification for 3,000 m altitude (UL/EN/IEC 62368-1 and EN 62477-1).
- Complies with EN/IEC 61558-2-16.
- Lloyd's (Except 30 W)
- Five years Warranty *2



*1. For front, side-by-side mounting, see page 18.
 *2. Refer to *Period and Terms of Warranty* on page 23 for details.

Refer to Safety Precautions for All Power Supplies and Safety Precautions on page 17.

Related Products

Noise filter
S8V-NF



Note: Refer to the S8V-NF Datasheet (Cat. No. T212) for details.

DC Electronic Circuit Protector
S8V-CP



Note: Refer to the S8V-CP Datasheet (Cat. No. T226-E1) for details.

Model Number Structure

Model Number Legend

Note: Not all combinations are possible. Refer to *List of Models* in *Ordering Information*, below.

S8VK-S

1 2

1. Power Ratings

030: 30 W
 060: 60 W
 120: 120 W
 240: 240 W
 480: 480 W

2. Output voltage (DC)

24: 24 V

Ordering Information

Note: For details on normal stock models, contact your nearest OMRON representative.

Power ratings	Rated input voltage	Rated output voltage (DC)	Rated output current	Maximum boost current	Model number
30 W	100 to 240 VAC (allowable range: 85 to 264 VAC or 90 to 350 VDC)	24 V	1.3 A	1.56 A	S8VK-S03024
60 W		24 V	2.5 A	3 A	S8VK-S06024
120 W		24 V	5 A	6 A	S8VK-S12024
240 W		24 V	10 A	15 A	S8VK-S24024
480 W		24 V	20 A	30 A	S8VK-S48024

S8VK-S

Specifications

Ratings, Characteristics, and Functions

Item	Power rating		30 W	60 W	120 W	
	Output voltagec (DC)		24 V	24 V	24 V	
Efficiency	115 VAC input *1		87% typ.	87% typ.	90% typ.	
	230 VAC input *1		86% typ.	89% typ.	92% typ.	
Input	Voltage range *2		Single-phase, 85 to 264 VAC, 90 to 350 VDC *12, 265 to 300 VAC (1 second)			
	Frequency *2		50/60 Hz (47 to 450 Hz)			
	Input current	115 VAC input *1		0.58A typ.	1.1 A typ.	1.2 A typ.
		230 VAC input *1		0.36A typ.	0.66 A typ.	0.63 A typ.
	Power factor			---	0.9 min.	
	Leakage current *3	115 VAC input		0.5 mA max.		
		230 VAC input		1 mA max.		
	Inrush current *4 (for a cold start at 25°C)	115 VAC input		16 A typ.		
230 VAC input			32 A typ.			
Output	Rated output current		1.3 A	2.5 A	5 A	
	Rated output electric power		31.2 W	60 W	120 W	
	Maximum boost current		1.56 A	3 A	6 A	
	Voltage adjustment range *5		21.6 to 28 V (with V.ADJ)			
	Ripple & Noise voltage *6	100 to 240 VAC input *1	190 mVp-p max. at 20 MHz of bandwidth	190 mVp-p max. at 20 MHz of bandwidth	110 mVp-p max. at 20 MHz of bandwidth	
	Input variation influence *7		0.5% max.			
	Load variation influence *8		1.5% max.			
	Temperature variation influence	115 to 230 VAC input	0.05%/°C max.			
	Start up time *4	115 VAC input *1	1000 ms max.	1000 ms max.	1000 ms max.	
		230 VAC input *1	1000 ms max.	1000 ms max.	1000 ms max.	
Hold time *6	115 VAC input *1	30 ms typ.	20 ms typ.	45 ms typ.		
	230 VAC input *1	140 ms typ.	95 ms typ.	45 ms typ.		
Additional functions	Overload protection		Yes, automatic reset			
	Overvoltage protection *9		Yes, 130% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again)			
	Series operation		Yes (For up to two Power Supplies, external diodes are required.)			
	Parallel operation		Yes (For up to two Power Supplies), Refer to <i>Parallel Operation</i> on page 21 for details.			
	Output indicator		Yes (LED: Green)			
	Low-voltage detection output		No			
Insulation	Withstand voltage		3.0 kVAC for 1 min. (between all input terminals and output terminals), current cutoff 10 mA 2.0 kVAC for 1 min. (between all input terminals and PE terminals), current cutoff 10 mA 1.0 kVAC for 1 min. (between all output terminals and PE terminals), current cutoff 20 mA			
	Insulation resistance		100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC			
Environment	Ambient operating temperature *10		-40 to 70°C (Derating is required according to the temperature. Refer to <i>Engineering Data</i>) (with no condensation or icing)			
	Storage temperature		-40 to 85°C (with no condensation or icing)			
	Ambient operating humidity		95% RH max. (Storage humidity: 95% RH max.)			
	Vibration resistance		10 to 55 Hz, maximum 5G, 0.42 mm half amplitude for 2 h each in X, Y, and Z directions			
	Shock resistance		150 m/s ² , 3 times each in ±X, ±Y, ±Z directions			
Reliability	MTBF		135,000 hrs min. (Refer to page 12 <i>Reference Value</i>)			
	Life expectancy *11		10 years min.			
Construction	Weight		250 g max.	250 g max.	400 g max.	
	Cooling fan		No			
	Degree of protection		IP20 by EN/IEC 60529			
Standards	Harmonic current emissions		Conforms to EN 61000-3-2			
	EMI	Conducted Emissions	Conforms to EN 61204-3 Class B, EN 55011 Class B			
		Radiated Emissions	Conforms to EN 61204-3 Class B, EN 55011 Class B			
	EMS		Conforms to EN 61204-3 high severity levels			
	Approved Standards		UL Listing: UL 508 (For 30 W and 60 W only Class2 Output: Per UL 1310) cUL: CSA C22.2 No107.1 (For 30 W and 60 W only Class2 Output: Per CSA C22.2 No.223) UL UR: UL 62368-1 (Recognition) OVCII (≤ 3000 m) Pol2 cUR: CSA C22.2 No. 62368-1 OVCII (≤ 3000 m) Pol2 EN: EN 62477-1 OVCIII (≤ 2000 m) OVCII (2000 m≤ and≤3000) Pol2, EN 62368-1 OVCII (≤ 3000 m) Pol2			
	Conformed Standards		PELV (EN/IEC 60204-1) *12 EN/IEC 61558-2-16:2009+A1:2013 *12			
	Marine Standards *12		Lloyd's register (Except 30 W)			
SEMI		Conforms to F47-0706 (200 to 240 VAC input)				

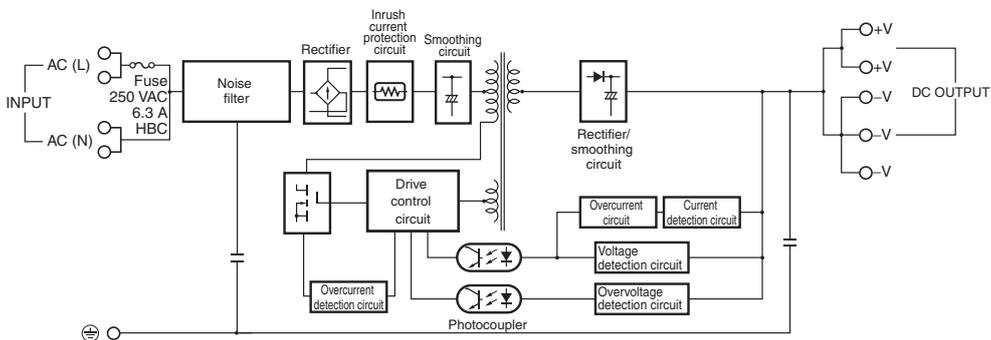
Note: For notes *1 to *12, refer to page 4.

Connections

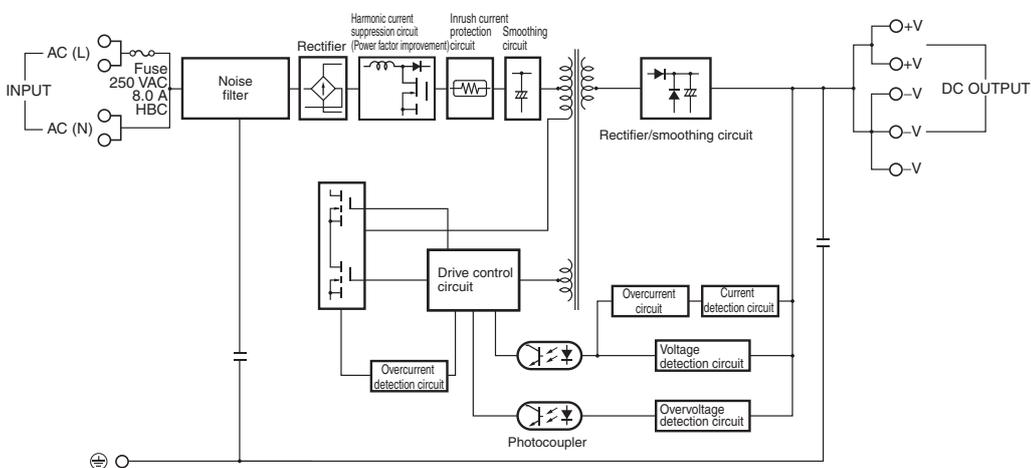
Block Diagrams

S8VK-S03024 (30 W)

S8VK-S06024 (60 W)



S8VK-S12024 (120 W)



Construction and Nomenclature

Nomenclature

30-W and 60-W Models

S8VK-S03024
S8VK-S06024

120-W Models

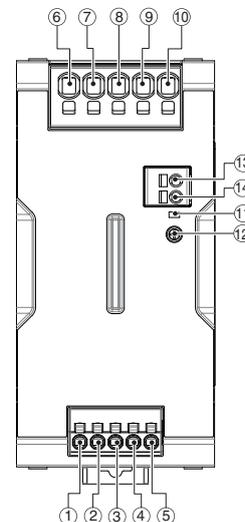
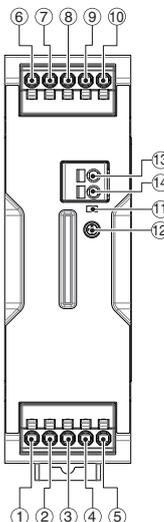
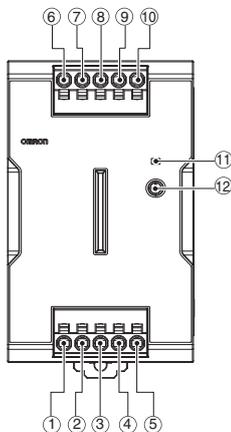
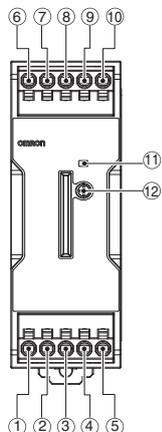
S8VK-S12024

240-W Models

S8VK-S24024

480-W Models

S8VK-S48024

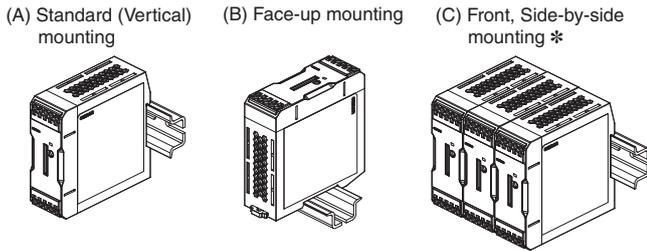


No.	Terminal name	Name	Function
1	L1	Input terminals	Connect the input lines to these terminals. *1
2	L2		
3	N1		
4	N2		
5	PE	Protective Earth terminal (PE)	Connect the ground line to this terminal. *2
6	+V1	DC Output terminals	Connect the load lines to these terminals.
7	+V2		
8	-V1		
9	-V2		
10	-V3		
11	---	Output indicator (DC ON: Green)	The green indicator indicates when a DC voltage is being output.
12	---	Output voltage adjuster (V.ADJ)	Use to adjust the voltage.
13	DC LOW1	Low-voltage detection output terminals	Low-voltage detection output signal wire is connected.
14	DC LOW2		

*1. The fuse is located on the (L) side. It is not user-replaceable. For a DC input, connect the positive voltage to the L terminal.

*2. This is the protective earth terminal specified in the safety standards. Always ground this terminal.

Mounting

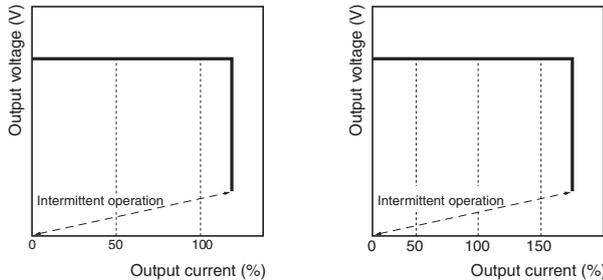


* For front, side-by-side mounting, see page 18.

Overload Protection

For models S8VK-S03024, S8VK-S06024 and S8VK-S12024, the output voltage is automatically reduced, and the unit is protected from short circuit current and overcurrent damage if the load current 121% to 160% of the rated current. For models S8VK-S24024 and S8VK-S48024, the output voltage is automatically reduced, and the unit is protected from short circuit current and overcurrent damage if the load current 151% to 165% of the rated current. When the output voltage returns within the rated range, overload protection is automatically cleared.

S8VK-S03024, S8VK-S06024, S8VK-S24024, S8VK-S48024
S8VK-S12024



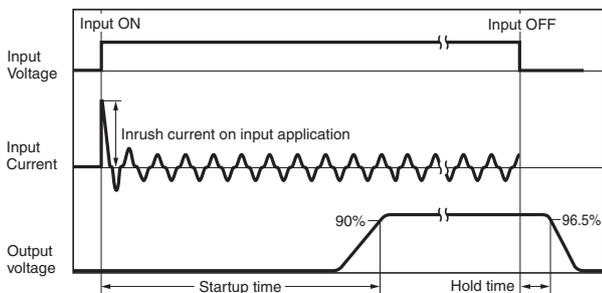
- Note:**
1. Internal parts may occasionally deteriorate or be damaged if a short-circuited or overcurrent state continues during operation.
 2. Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.

Overvoltage Protection

Consider the possibility of an overvoltage and design the system so that the load will not be subjected to an excessive voltage even if the feedback circuit in the Power Supply fails. If an excessive voltage that is approximately 130% of the rated voltage or more is output, the output voltage is shut OFF. Reset the input power by turning it OFF for at least three minutes and then turning it back ON again.

Note: Do not turn ON the power again until the cause of the overvoltage has been removed.

Inrush Current, Startup Time, Output Hold Time



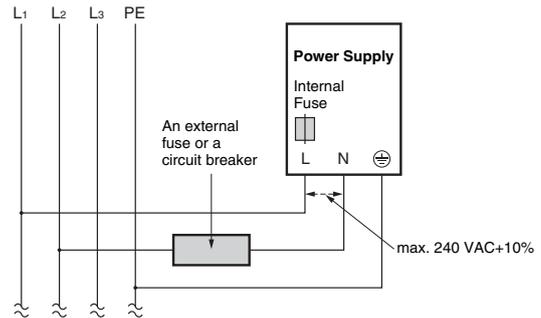
Note: Twice the normal inrush current will flow during parallel operation or for backup operation. Also, if crossover wiring is used for N number of Power Supplies, an inrush current of N times the inrush current for a standalone Power Supply will flow. Therefore, check the fusing characteristics of fuses and operating characteristics of breakers making sure that the external fuses will not burn out and the circuit breakers will not be activated by the inrush current.

Two phases application for Single phase models

For All Single phase Models, S8VK-S

Basically OMRON single phase power supply can be used on two-phases of a 3-phase-system when some of conditions satisfy like below.

1. The supplying voltage is below the maximum rated input. OMRON Power supply allows the input voltage equivalent or less than 240 VAC+10%. Please confirm the input voltage between two lines if the input voltage satisfies this condition before connecting.
2. The external protector is needed on N input line to secure a safety. N line has no protection of a fuse internally. An appropriate fuse or circuit breaker should be connected on N input line like the following.



Low-voltage detection output (Only for 240 and 480 W)

Output externally by photo-switch when an output voltage drop is detected (OFF when an output drop occurs). The detection voltage is set to about 80% (75% to 90%) of the rated output voltage.

Photo-switch

1. 30 VDC max., 50 mA max. Residual voltage 2 V or less when ON. Leakage current 0.1 mA or less when OFF.
2. The low-voltage detection output function monitors the voltage of the output terminal of the power supply. To check the precise voltage state, measure the voltage of the load end.
3. If the set voltage is less than 90% of the rated voltage, the low-voltage detection function may activate.
4. The signal output circuit do not contain current-limiting circuit. Do not allow the output current to exceed 50 mA.
5. After you complete the wiring, confirm that operation is correct.

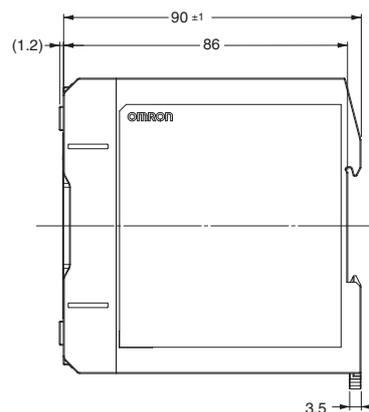
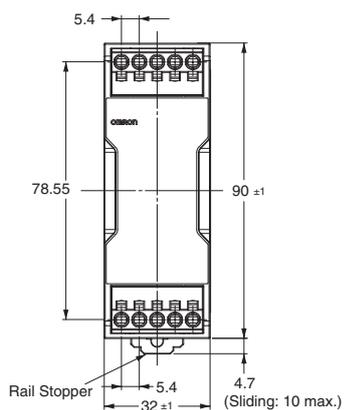
Reference Value

	Value
Reliability (MTBF)	Single phase model
	30 W: 640,000
	60 W: 640,000
	120 W: 480,000
	240 W: 390,000
480 W: 330,000	
Definition	MTBF stands for Mean Time Between Failures, which is calculated according to the probability of accidental device failures, and indicates reliability of devices. Therefore, it does not necessarily represent a life of the product.
Life expectancy	10 yrs. Min.
Definition	The life expectancy indicates average operating hours under the ambient temperature of 40°C and a load rate of 50%. Normally this is determined by the life expectancy of the built-in aluminum electrolytic capacitor.

Dimensions

(Unit: mm)

S8VK-S03024 (30 W)
S8VK-S06024 (60 W)



S8VK-S12024 (120 W)

