New Product

OMRON

Switch Mode Power Supply
S8VK-X (60/120/240/480-W Models)

EtherNet/IP, Modbus TCP-Compatible Maximizing System Availability Through the Connecting of Equipment to IoT

- Product replacement time, output voltage, output current, and more are acquired on the network and can be managed all at once
- Product status can be checked on-site using the indication monitor
- Ambient operating temperatures from -40 to 70°C
- Power Boost function at 150% (240 and 480 W)
- Side-by-side mounting possible (up to 55°C)
- UL Class 2 conformance (90 W or less)
- Complies with EN/IEC 61558-2-16
- Coated PCBs for better resistance to environment

⚠ **Refer to *Safety Precautions* on page 20.**

Recommended Noise Filter

Noise filter
S8V-NF

Listed on page 28.

Model Number Structure

Model Number Legend

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

S8VK- X□□□□□□-EIP
1 2 3

1. Power Ratings
030: 30 W
060: 60 W
090: 90 W
120: 120 W
240: 240 W
480: 480 W

2. Output voltage
05: 5 V
12: 12 V
24: 24 V

3. Indication monitor
A: With indication monitor
None: Without indication monitor

Ordering Information

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

With Indication Monitor

Power rating	Rated input voltage	Rated output voltage (DC)	Rated output current	Maximum boost current	Model number
90 W	100 to 240 VAC (allowable range: 85 to 264 VAC, 90 to 350 VDC)	24 V	3.75 A	---	**S8VK-X09024A-EIP**
120 W		24 V	5 A	6 A	**S8VK-X12024A-EIP**
240 W		24 V	10 A	15 A	**S8VK-X24024A-EIP**
480 W		24 V	20 A	30 A	**S8VK-X48024A-EIP**

Without Indication Monitor

Power rating	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, 90 to 350 VDC)	5 V	5 A ***1***	6 A	**S8VK-X03005-EIP**
60 W		12 V	4.5 A ***2***	5.4 A	**S8VK-X06012-EIP**
		24 V	2.5 A	3 A	**S8VK-X06024-EIP**
90 W		24 V	3.75 A	---	**S8VK-X09024-EIP**
120 W		24 V	5 A	6 A	**S8VK-X12024-EIP**
240 W		24 V	10 A	15 A	**S8VK-X24024-EIP**
480 W		24 V	20 A	30 A	**S8VK-X48024-EIP**

1. Output power is 25 W at rated output current.
2. Output power is 54 W at rated output current.

Mounting Brackets (Order Separately)

Power rating	Mounting direction	Model number
30 W, 60 W	Front mounting	**S82Y-VS10F**
30 W, 60 W	Side mounting	**S82Y-VS10S**
240 W, 480 W	Front mounting	**S82Y-VK10F**

DIN Rail Mounting (Order Separately)

Part name	Model number
Mounting Rail (Material: Aluminum)	**PFP-100N**
	PFP-50N
	PFP-100N2
End Plate	**PFP-M**

Recommended Ethernet Communications Cables

Use STP (shielded twisted-pair) cable of category 6A or higher

Appearance	Type	Cable Sheath Material	Part Number	Length in inch (cm)	xx = Length	y = Color
	Category 6A Cable with Connectors on Both Ends (RJ45/RJ45)	LOW Smoke Zero Halogen (LSZH)	**XS6W-6LSZH8SSxxCM-y**	7.87 (20)	20	B = Blue
				11.8 (30)	30	
				19.6 (50)	50	
				39.4 (100)	100	

Example: XS6W-6LSZH8SS100CMB = CAT6A cable with RJ45 connectors at both ends 39.4 inch (100 cm) long, Blue

Recommended Industrial Switching Hubs (Order Separately)

Name	Shape	Specification			Model number
		Functions	No. of ports	Failure detection function	
Industrial switching hub		Priority control (QoS): EtherNet/IP control data priority Failure detection: Broadcast storm/ LSI abnormality detection 10/100BASE-TX, Auto-Negotiation	3	No	W4S1-03B
			5	No	W4S1-05B
			5	Yes	W4S1-05C

Ratings, Characteristics, and Functions

Item			Power rating	30 W	60 W	
			Rated output voltage	5 V	12 V	24 V
			Indication monitor	None	None	None
Efficiency ✻			115 VAC input	78% typ.	85% typ.	85% typ.
			230 VAC input	77% typ.	86% typ.	86% typ.
Input conditions	Voltage range ✻			Single-phase, 85 to 264 VAC, 90 to 350 VDC, 265 to 300 VAC (1 second)		
	Frequency ✻			50/60 Hz (47 to 450 Hz)		
	Input current ✻		115 VAC input	0.53 A typ.	0.99 A typ.	1.1 A typ.
			230 VAC input	0.32 A typ.	0.61 A typ.	0.67 A typ.
	Power factor			---		
	Leakage current ✻		115 VAC input	0.5 mA max.		
			230 VAC input	1 mA max.		
	Inrush current ✻		115 VAC input	16 A typ.		
			230 VAC input	32 A typ.		
Output characteristics	Rated output current			5 A	4.5 A	2.5 A
	Rated output power			25 W	54 W	60 W
	Maximum boost current			6 A	5.4 A	3 A
	Voltage adjustment range ✻			4.5 to 5.8V (with V. ADJ)	10.8 to 14 V (with V. ADJ)	21.6 to 28 V (with V. ADJ)
	Ripple noise voltage ✻		100 to 240 VAC input	130 mVp-p max. at 20 MHz of bandwidth	120 mVp-p max. at 20 MHz of bandwidth	110 mVp-p max. at 20 MHz of bandwidth
	Input variation influence ✻			0.5% max.		
	Load variation influence ✻			1.5% max.		
	Temperature variation influence		100 to 240 VAC input	0.05%/°C max.		
	Start up time ✻		115 VAC input	1000 ms max.	1000 ms max.	1000 ms max.
			230 VAC input	1000 ms max.	1000 ms max.	1000 ms max.
	Hold time ✻		115 VAC input	45 ms typ.	20 ms typ.	20 ms typ.
			230 VAC input	240 ms typ.	120 ms typ.	110 ms typ.
Additional functions	Overload protection			Yes, automatic reset, intermittent operation type, Refer to *Overload Protection* on page 8 for details.		
	Overvoltage protection			Yes, 130% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again), Refer to *Overvoltage Protection* on page 8 for details.		
	Series operation			Yes (For up to two Power Supplies; external diodes required.)		
	Parallel operation			Yes (For up to two Power Supplies), Refer to *Parallel Operation* on page 22 for details.		
	Output indicator			Yes (LED: Green)		
	Alarm indicator			Yes (LED: Red)		
	Indication monitor		Measurement and display details	Refer to *Communication and Indication Items* on page 7 for details.		
			Main display	None		
	Ethernet communication		Measurement and display details	Refer to *Communication and Indication Items* on page 7 for details.		
			Communication protocol	EtherNet/IP, Modbus TCP		
			Physical layer	100BASE-TX		
			Communication specifications	Refer to *Communication Specifications* on page 8 for details.		
Insulation	Withstand voltage			3.0 kVAC for 1 min. (between all input terminals and output terminals, all EtherNet/IP ports), current cutoff 20 mA		
				2.0 kVAC for 1 min. (between all input terminals and PE terminals), current cutoff 20 mA		
				1.0 kVAC for 1 min. (between all output terminals and PE terminals), current cutoff 30 mA		
				0.5 kVAC for 1 min. (between all output terminals and all EtherNet/IP ports), current cutoff 30 mA		
	Insulation resistance			100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC		
				100 MΩ min. (between all EtherNet/IP ports and all input terminals) at 500 VDC		
Environment	Ambient operating temperature ✻			-40 to 70°C (Derating is required according to the temperature. Refer to *Engineering Data*) (with no condensation or icing)		
	Storage temperature			-40 to 85°C (with no condensation or icing)		
	Ambient operating humidity			95% max. (Storage humidity: 95% max.)		
	Vibration resistance			10 to 55 Hz, maximum 5 G, 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 ✻			160,000 hrs typ.		
	Life expectancy ✻			10 years min.		
Construction	Weight			250 g max.	250 g max.	250 g max.
	Cooling fan			No		
	Degree of protection			IP20 by EN/IEC 60529		

✻ Refer to *Definitions of the Terms Under Ratings, Characteristics, and Functions* on page 6.

Item			Power rating	90 W		120 W	
			Rated output voltage	24 V		24 V	
			Indication monitor	Included	None	Included	None
Efficiency ✻		115 VAC input		86% typ.	87% typ.	90% typ.	90% typ.
		230 VAC input		87% typ.	88% typ.	92% typ.	92% typ.
Input conditions	Voltage range ✻			Single-phase, 85 to 264 VAC, 90 to 350 VDC, 265 to 300 VAC (1 second)			
	Frequency ✻			50/60 Hz (47 to 450 Hz)		50/60 Hz (47 to 63 Hz)	
	Input current ✻	115 VAC input		1.7 A typ.	1.7 A typ.	1.2 A typ.	1.2 A typ.
		230 VAC input		1.0 A typ.	1.0 A typ.	0.63 A typ.	0.63 A typ.
	Power factor			---		0.9 min.	
	Leakage current ✻	115 VAC input		0.5 mA max.			
		230 VAC input		1 mA max.			
	Inrush current ✻	115 VAC input		16 A typ.			
		230 VAC input		32 A typ.			
Output characteristics	Rated output current			3.75 A		5 A	
	Rated output power			90 W		120 W	
	Maximum boost current			---		6 A	
	Voltage adjustment range ✻			23.0 to 24.1 V		21.6 to 28 V (with V. ADJ)	
	Ripple noise voltage ✻	100 to 240 VAC input		300 mVp-p max. at 20 MHz of bandwidth		150 mVp-p max. at 20 MHz of bandwidth	
	Input variation influence ✻			0.5% max.			
	Load variation influence ✻			1.5% max.			
	Temperature variation influence	100 to 240 VAC input		0.05%/°C max.			
	Start up time ✻	115 VAC input		1000 ms max.		1000 ms max.	
		230 VAC input		1000 ms max.		1000 ms max.	
	Hold time ✻	115 VAC input		25 ms typ.		35 ms typ.	
		230 VAC input		130 ms typ.		35 ms typ.	
Additional functions	Overload protection			Yes, automatic reset, intermittent operation type, Refer to *Overload Protection* on page 8 for details.			
	Overvoltage protection			Yes, 110% or higher of rated output voltage (90 W), 130% or higher of rated output voltage (120 W), power shut off (shut off the input voltage and turn on the input again, Refer to *Overvoltage Protection* on page 8 for details.			
	Series operation			Yes (For up to two Power Supplies, external diodes are required.)			
	Parallel operation			Yes (For up to two Power Supplies), Refer to *Parallel Operation* on page 22 for details.			
	Output indicator			Yes (LED: Green)			
	Alarm indicator			Yes (LED: Red)			
	Indication monitor	Measurement and display details		Refer to *Communication and Indication Items* on page 7 for details.			
		Main display		7-segment LED (White)	None	7-segment LED (White)	None
	Ethernet communication	Measurement and display details		Refer to *Communication and Indication Items* on page 7 for details.			
		Communication protocol		EtherNet/IP, Modbus TCP			
		Physical layer		100BASE-TX			
		Communication specifications		Refer to *Communication Specifications* on page 8 for details.			
Insulation	Withstand voltage			3.0 kVAC for 1 min. (between all input terminals and output terminals, all EtherNet/IP ports), current cutoff 20 mA			
				2.0 kVAC for 1 min. (between all input terminals and PE terminals), current cutoff 20 mA			
				1.0 kVAC for 1 min. (between all output terminals and PE terminals), current cutoff 30 mA			
				0.5 kVAC for 1 min. (between all output terminals and all EtherNet/IP ports), current cutoff 30 mA			
	Insulation resistance			100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC			
				100 MΩ min. (between all EtherNet/IP ports and all input terminals) at 500 VDC			
Environment	Ambient operating temperature ✻			-40 to 70°C (Derating is required according to the temperature. Refer to *Engineering Data*) (with no condensation or icing)			
	Storage temperature			-40 to 85°C (with no condensation or icing)			
	Ambient operating humidity			95% max. (Storage humidity: 95% max.)			
	Vibration resistance			10 to 55 Hz, maximum 5 G, 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 ✻			110,000 hrs typ.	150,000 hrs typ.	110,000 hrs typ.	140,000 hrs typ.
	Life expectancy ✻			10 years min.			
Construction	Weight			350 g max.		400 g max.	
	Cooling fan			No			
	Degree of protection			IP20 by EN/IEC 60529			

✻ Refer to *Definitions of the Terms Under Ratings, Characteristics, and Functions* on page 6.

Item			Power rating	240 W		480 W	
			Rated output voltage	24 V		24 V	
			Indication monitor	Included	None	Included	None
Efficiency ✻			115 VAC input	91% typ.	91% typ.	92% typ.	92% typ.
			230 VAC input	93% typ.	93% typ.	94% typ.	94% typ.
Input conditions	Voltage range ✻			Single-phase, 85 to 264 VAC, 90 to 350 VDC, 265 to 300 VAC (1 second)			
	Frequency ✻			50/60 Hz (47 to 63 Hz)		50/60 Hz (47 to 63 Hz)	
	Input current ✻		115 VAC input	2.4 A typ.	2.4 A typ.	4.6 A typ.	4.6 A typ.
			230 VAC input	1.2 A typ.	1.2 A typ.	2.3 A typ.	2.3 A typ.
	Power factor			0.9 min.			
	Leakage current ✻		115 VAC input	0.5 mA max.			
			230 VAC input	1 mA max.			
	Inrush current ✻		115 VAC input	16 A typ.			
			230 VAC input	32 A typ.			
Output characteristics	Rated output current			10 A		20 A	
	Rated output power			240 W		480 W	
	Maximum boost current			15 A		30 A	
	Voltage adjustment range ✻			21.6 to 28 V (with V. ADJ)			
	Ripple noise voltage ✻		100 to 240 VAC input	140 mVp-p max. at 20 MHz of bandwidth		130 mVp-p max. at 20 MHz of bandwidth	
	Input variation influence ✻			0.5% max.			
	Load variation influence ✻			1.5% max.			
	Temperature variation influence		100 to 240 VAC input	0.05%/°C max.			
	Start up time ✻		115 VAC input	1000 ms max.		1000 ms max.	
			230 VAC input	1000 ms max.		1000 ms max.	
	Hold time ✻		115 VAC input	35 ms typ.		25 ms typ.	
			230 VAC input	35 ms typ.		25 ms typ.	
Additional functions	Overload protection			Yes, automatic reset, intermittent operation type, Refer to *Overload Protection* on page 8 for details.			
	Overvoltage protection			Yes, 130% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again), Refer to *Overvoltage Protection* on page 8 for details.			
	Series operation			Yes (For up to two Power Supplies; external diodes required.)			
	Parallel operation			Yes (For up to two Power Supplies), Refer to *Parallel Operation* on page 22 for details.			
	Output indicator			Yes (LED: Green)			
	Alarm indicator			Yes (LED: Red)			
	Indication monitor		Measurement and display details	Refer to *Communication and Indication Items* on page 7 for details.			
			Main display	7-segment LED (White)	None	7-segment LED (White)	None
	Ethernet communication		Measurement and display details	Refer to *Communication and Indication Items* on page 7 for details.			
			Communication protocol	EtherNet/IP, Modbus TCP			
			Physical layer	100BASE-TX			
			Communication specifications	Refer to *Communication Specifications* on page 8 for details.			
Insulation	Withstand voltage			3.0 kVAC for 1 min. (between all input terminals and output terminals, all EtherNet/IP ports),			
				2.0 kVAC for 1 min. (between all input terminals and PE terminals), current cutoff 20 mA			
				1.0 kVAC for 1 min. (between all output terminals and PE terminals), current cutoff 30 mA			
				0.5 kVAC for 1 min. (between all output terminals and all EtherNet/IP ports), current cutoff 30 mA			
	Insulation resistance			100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC			
				100 MΩ min. (between all EtherNet/IP ports and all input terminals) at 500 VDC			
Environment	Ambient operating temperature ✻			-40 to 70°C (Derating is required according to the temperature. Refer to *Engineering Data*) (with no condensation or icing)			
	Storage temperature			-40 to 85°C (with no condensation or icing)			
	Ambient operating humidity			95% max. (Storage humidity: 95% max.)			
	Vibration resistance			10 to 55 Hz, maximum 5 G, 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 ✻			100,000 hrs typ.	130,000 hrs typ.	90,000 hrs typ.	120,000 hrs typ.
	Life expectancy ✻			10 years min.			
Construction	Weight			700 g max.		1,100 g max.	
	Cooling fan			No			
	Degree of protection			IP20 by EN/IEC 60529			

✻ Refer to *Definitions of the Terms Under Ratings, Characteristics, and Functions* on page 6.

Standards

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
	Safety standards		UL 508, ANSI/ISA 12.12.01 (Listing) (For 30 W, 60 W, and 90 W only Class 2 Output: Per UL 1310) CSA C22.2 No. 107.1, CSA C22.2 No. 213 (cUL) (For 30 W, 60 W, and 90 W only Class 2 Output: Per CSA C22.2 No. 223) UL 60950-1, UL 62368-1 (Recognition) OVC II (≤3000 m) Pol2 (For 30 W, 60 W, and 90 W only LPS) CSA C22.2 No. 60950-1, No. 62368-1 (cUR) OVC II (≤3000 m) Pol2 (For 30 W, 60 W, and 90 W only LPS) EN 50178 OVC III (≤2000 m) OVC II (2000 m < and ≤ 3000 m) Pol2 EN 60950-1, EN 62368-1 OVC II (≤3000 m) Pol2 (For 30 W, 60 W, and 90 W only LPS) EAC (TR CU 004 / 2011, TR CU 020 / 2011) RCM (EN61000-6-4) Korea Radio Waves Act (Law No. 10564) Conforms to PELV (EN/IEC 60204-1) Conforms to EN/IEC 61558-2-16
	SEMI		Conforms to F47-0706 (200 to 240 VAC input)

- EMI (radiated emissions) conform to Class B when this Power Supply is installed in a control panel.
- EN/IEC 61558-2-16
  The S8VK-X was designed based on EN/IEC 61558-2-16.
  Currently, IEC 61558-2-17 has been replaced by IEC 61558-2-16.
  When certification was received for EN/IEC 60204-1 (Machinery Safety), it was necessary to go through a control transformer to the control circuits. However, a control transformer is not always necessary for product that have been certified for the safety standard for OVCIII or for product that use a transformer that conforms to EN/IEC 61558-2-16.
- Safety Standards for a DC Input
  When DC is used, UL 60950-1, UL 62368-1, cUR (CSA 22.2 No. 60950-1), cUR (CSA C22.2 No. 62368-1), EN/IEC 60950-1, EN/IEC 62368-1, EN 50178 and EN/IEC 61558-2-16 are applicable to safety standards.
  Safety standard compliance is achievable by connecting a UL-certified fuse as specified below.
  Select an external fuse that satisfies the following conditions:
  S8VK-X03005-EIP, S8VK-X06012-EIP, S8VK-X06024-EIP (350 VDC or more, 6 A)
  S8VK-X09024□-EIP, S8VK-X12024□-EIP, S8VK-X24024□-EIP (350 VDC or more, 8 A)
  S8VK-X48024□-EIP (350 VDC or more, 12 A)
- To comply with PELV output requirements for EN/IEC 60204-1, ground the negative side of the output (-V) to a protective earth (PE).

Definitions of the Terms Under Ratings, Characteristics, and Functions

Input conditions	Efficiency	The value is when both rated output voltage and rated output current are satisfied.
	Voltage range	Do not use an inverter output for the product. Inverters with an output frequency of 50/60 Hz are available, but the rise in the internal temperature of the product may result in smoking or burning. If the input is connected to a UPS, do not connect a UPS with a square-wave output. Doing so will cause the internal temperature of the product to increase, possibly causing smoking or burning.
	Frequency	
	Input current	The value is when both rated output voltage and rated output current are satisfied.
	Leakage current	The value is determined according to the Electrical Appliances and Material Safety Act.
	Inrush current	Values for a cold start at 25°C. Refer to *Inrush Current, Startup Time, and Output Hold Time* on page 7 for details.
Output characteristics	Voltage adjustment range	If the output voltage adjuster (V. ADJ) is turned, the voltage will increase by more than of the voltage adjustment range. When adjusting the output voltage, confirm the actual output voltage from the product and be sure that the load is not damaged.
	Ripple noise voltage	The value is when both rated output voltage and rated output current are satisfied. A characteristic when the ambient operating temperature is 25°C.
	Static input variation influence	This is the maximum variation in the output voltage when the input voltage is gradually changed within the allowable input voltage range at the rated output voltage and rated output current.
	Load variation influence	100 to 240 VAC input, in the range of 0 A to the rated output current.
	Startup time	The value is when both rated output voltage and rated output current are satisfied and at room temperature (25°C). Refer to *Inrush Current, Startup Time, and Output Hold Time* on page 7 for details.
	Hold time	The value is when both rated output voltage and rated output current are satisfied and at room temperature (25°C). Refer to *Inrush Current, Startup Time, and Output Hold Time* on page 7 for details.
Environment	Ambient operating temperature	At -40 to -25°C, time will be required before the rated output voltage is output after the input voltage is input. Also, the ripple noise value may exceed the value shown in the above table.
Reliability	MTBF	MTBF is calculated according to JEITA RCR-9102. 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	Refer to *Recommended Replacement Periods and Periodic Replacement for Preventive Maintenance* on page 27 for details.

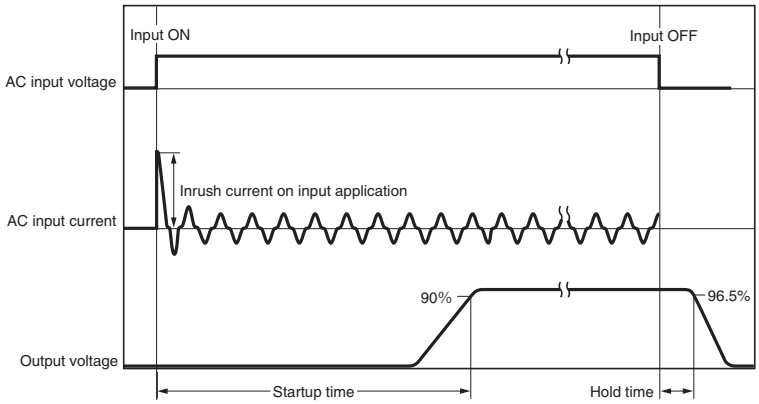
Communication and Indication Items

Item	Communication ✻	Indication monitor ✻	Resolution		Data update cycle	Details
Output voltage measurement	Yes	Yes	0.1 V		5 ms	Measurement accuracy ±2% (percentage of output voltage value) ±1 digit
Output current measurement	Yes	Yes	0.1 A		5 ms	Measurement accuracy ±5% (percentage of rated output current) ±1 digit
Peak hold current measurement	Yes	Yes	0.1 A		5 ms	Measurement accuracy ±5% (percentage of rated output current) ±1 digit
Years until replacement	Yes	Yes	0.1 years		1 min	Range 0.0 to 15.0 years (communication) FUL (Full) / HLF (Half) / 0.0 to 4.9 years (indication monitor)
Percentage until replacement	Yes	Yes	0.1%		1 min	Range 0.0 to 100%
Total run time	Yes	Yes	Communication	1 h	1 min	Range 0 to 262,800 h (communication) 0 to 263 kh (indication monitor)
			Indication monitor	1 kh		
Continuous run time	Yes	None	1 min		1 min	Range 0 to 15,768,000 min
Self-diagnostics	Yes	Yes	None		None	Refer to *Self-Diagnostics Function* on page 11 for details.
Product model	Yes	None	None		None	Product model is expressed in ASCII code
Serial number	Yes	None	None		None	Expressed in hexadecimal (4-byte)
Firmware version	Yes	None	None		None	Expressed in hexadecimal (2-byte)
MAC address	Yes	None	None		None	None
IP address	Yes	None	None		None	None
IP address setting method	Yes	None	None		None	Static IP address/BOOTP selection

Note: For details on the communication function and setting method, refer to the *Switch Mode Power Supply S8VK-X Communication Manual* (Man. No. T213).

✻ Communication cycle can be set from 100 to 10,000 ms. The indication update cycle is 50 ms.

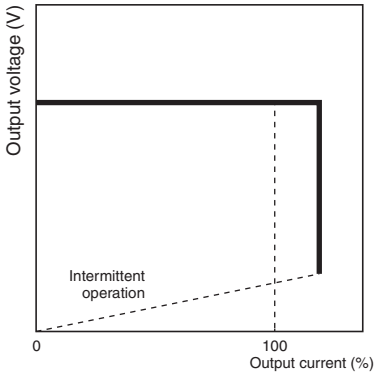
Inrush Current, Startup Time, and Output Hold Time



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.

Overload Protection

When the load current reaches 121% to 160% of the rated current for S8VK-X03005-EIP, S8VK-X06012-EIP, S8VK-X06024-EIP, and S8VK-X12024□-EIP, 101% to 110% for S8VK-X09024□-EIP, or 151% to 165% for S8VK-X24024□-EIP and S8VK-X48024□-EIP, output voltage is automatically lowered to protect the Power Supply from short-circuit currents and overcurrents.
When the output current falls within the rated range, the overload protection function is automatically cleared.



Note: 1. Internal parts may possibly 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

Overvoltage will be detected to prevent the load from being subjected to excessive voltage when the feedback circuit in the Power Supply fails, etc. If an excessive voltage that is approximately 130% of the rated output voltage (but approximately 110% of the rated output voltage for only the S8VK-X09024□-EIP) 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.

Communication Specifications

Item		Specification
Media access method		CSMA/CD
Modulation system		Baseband
Topology		Star configuration
Transmission speed		100 Mbps
Transmission medium		Twisted pair cable (with shield: STP): Category 5, 5e or above
Maximum transmission distance (distance between hub and node)		100 m
Tag data Link	**Class1**	Possible
	Connection resouce	1
	No. of connected nodes	1
	No. of tag sets	1
	Packet interval (RPI)	100 to 10,000 ms
	Time-out value	Multiple of RPI
	Connection type	Point To Point Connection (fixed)
Explicit Message	**Class3**	Possible
	UCMM	Possible
	Connection resouce	2 (Class3 server)
	No. of clients for which simultaneous UCMM communication is possible	2
Factory default values	**IP address**	192.168.250.20
	Subnet mask	255.255.255.0
	Default gateway	0.0.0.0
	IP address setting method	Static IP address

Module Status and Network Status Indicators

Name	Color	Status	Operating status
Module status Indicator (MS)	Green	Lit	Normal
		Flashing	---
	Red	Lit	RAM abnormality, EEPROM abnormality
		Flashing	Voltage measurement abnormality, current measurement abnormality
	---	Not lit	No power supply
	Green/Red	Flashing	When power is turned ON
Network status Indicator (NS)	Green	Lit	Connection established
		Flashing	Connection not established
	Red	Lit	Multiple IP addresses
		Flashing	Connection timeout BOOTP server connection abnormality
	---	Not lit	No power supply
	Green/Red	Flashing	When power is turned ON

Communication Reset Function

This function temporarily resets the communication settings to their factory default values. Use this function when the IP address previously set is no longer known and communication is not possible.

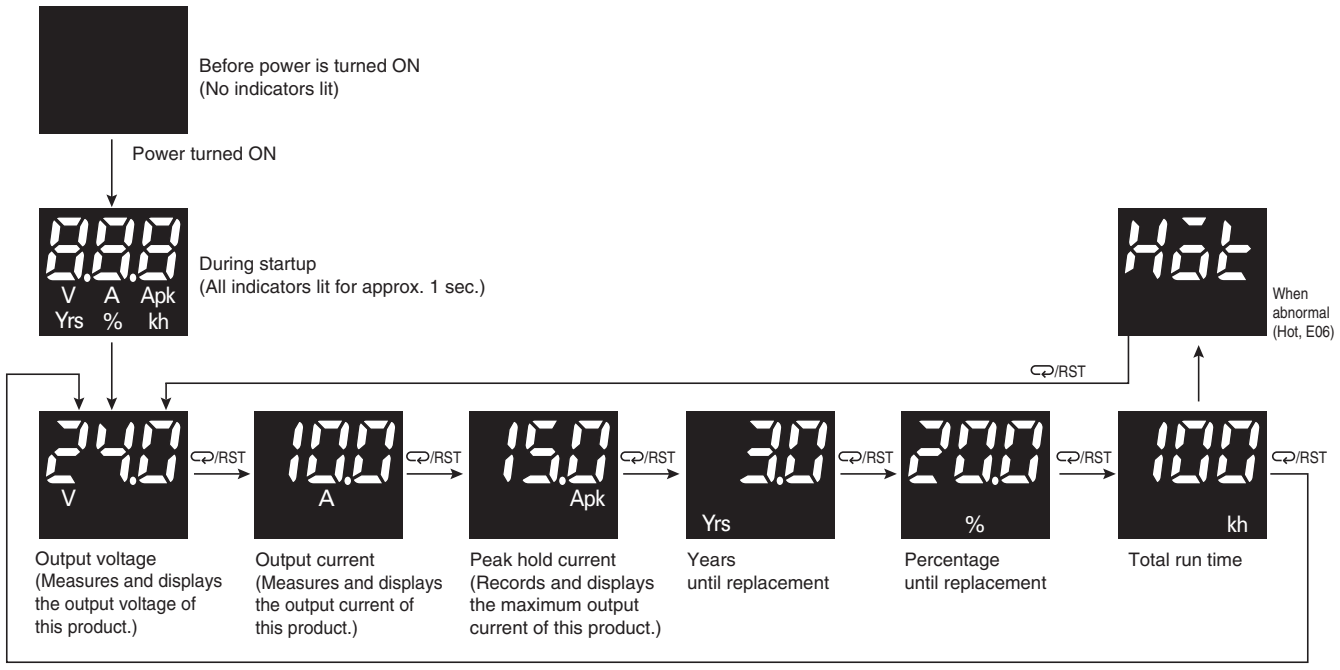
Setting Method

(1) With the reset key pressed, turn on the power supply.
(2) Continue to hold the reset key for 10 seconds.
While pressed, an alarm indicator will flash in 0.5-second intervals.
(For models with an indication monitor, the main display and operation indicator will also repeatedly turn all indicators on and off in 0.5-second intervals.)
(3) After 10 seconds have elapsed, the system shifts into the communication reset state, and the communication setting values temporarily reset to their factory default values.
In the communication reset state, the alarm indicator will flash in 1-second intervals. (For models with an indication monitor, the main display and operation indicator will return to normal operation.)
(4) In the communication reset state, reset the communication settings from the host device.
(5) After setting, turn on the power supply once again, and confirm that the set values have been changed.

Note: 1. After confirming that the product output indicator has turned off, turn on the power supply once again.
2. The only way to exit the communication reset state is to restart the power supply.
3. If you do not change the communication settings during step (4), settings will return to their prior values once the communication reset is ended.

Switching Indications

All indicators of the indication monitor will be lit for 1 second when power is turned on. After that, each status can be displayed using the Indication switching key.



Note: For the factory setting, the output voltage will be displayed when the power supply is first turned ON. Thereafter, the status before shutting down will be displayed.

Sensor Mounting Brackets

Appearance	Specification	Application	Model
	Standard Fixed Bracket	Bracket to mount the F3SG-R. Side mounting and backside mounting possible. (Included in the F3SG-R product package. See *1 below for the number of included brackets.)	**F39-LGF**
	Standard Adjustable Bracket	Bracket to mount the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is ±15°. Side mounting and backside mounting possible. (Sold separately. See *1 below for the number of required brackets.)	**F39-LGA**
	Top/Bottom Adjustable Bracket *2	Bracket to mount the F3SG-R. Use this bracket at the top and bottom positions of the F3SG-R. Beam alignment after mounting possible. The angle adjustment range is ±22.5°. Side mounting and backside mounting possible. (Sold separately. 4 brackets per set.)	**F39-LGTB**
	Top/Bottom Adjustable Bracket *2 (For user-made mounting part)	Top/Bottom Adjustable Bracket without a bracket to mount to the wall. Use the user's own wall mounting part to suit the machine. (Sold separately. 4 brackets per set.)	**F39-LGTB-1**

*1. Two brackets per set
[for F3SG-4RA □□□□-14]
- Protective height of 0160 to 1200: 2 sets, Protective height of 1280 to 2080: 3 sets
[for F3SG-4RA□□□□-30]
- Protective height of 0190 to 1230: 2 sets, Protective height of 1310 to 2270: 3 sets, Protective height of 2350 to 2510: 4 sets

*2. Top/Bottom Adjustable Bracket cannot be used with the Standard Fixed Bracket. Use with the Standard Adjustable Bracket. (See *1 for the number of required brackets).

Interface units and configuration tool SD Manager 2

Appearance	Type	Specifications	Model
	SD Manager2	The Configuration Tool SD Manager 2 is available to download from our website at http://www.omron247.com/safety_light_curtain/f3sg_ra/Software tools/SD mManager 2 Configurator.. To change the settings of the F3SG-RA using SD Manager 2, it is necessary to set the receiver's two DIP switches No. 8 to ON.	–
	Interface Unit	F39-GIF interface unit to connect the F3SG-RA receiver to a USB port of the PC	**F39-GIF**
	Bluetooth Unit	F39-BT bluetooth unit to enable bluetooth on the F3SG-RA	**F39-BT**

Lamp

Appearance	Type	Specifications	Model
	Lamp Unit	The lamp can be connected to a receiver and turned ON based on the operation of F3SG-RA/RR. The lamp can indicate red, orange, and green colors, to which three different states can be assigned.	**F39-LP**
	Bluetooth + Lamp Unit		**F39-BTLP**

End Cap

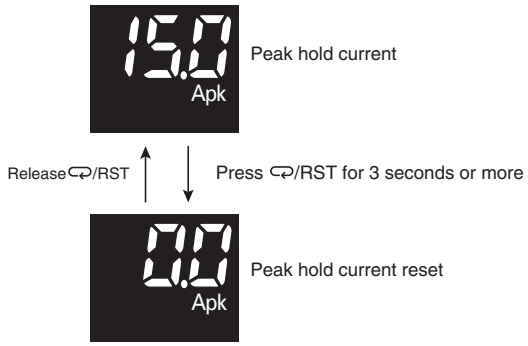
Appearance	Specifications	Model
	Housing color: Black For both emitter and receiver (Attached to the F3SG-R. The End Cap can be purchased if lost.)	**F39-CNM**

Peak Hold Current

The output current maximum value is stored as the peak hold current. (5 ms average value)
Measurement is not performed for approximately 3 seconds immediately after the input power is turned ON.

Peak Hold Current Reset

When the peak hold current is displayed, it can be reset by pressing the Reset key for 3 seconds or more.



Note: For types without an indication monitor, it is not possible to reset the peak hold current via reset key operation.

Replacement Time Calculation Function

This Power Supply is equipped with electrolytic capacitors. The electrolyte inside the electrolytic capacitors penetrates the sealing rubber and evaporates as time passes after it is manufactured. This causes deterioration of characteristics, such as decreasing the capacitance. Due to this deterioration of the characteristics of the electrolytic capacitor, this Power Supply decreases its performance as time passes. The replacement time calculation function calculates an approximate period left for maintenance of this Power Supply due to deterioration of electrolytic capacitors. Use this function to know the approximate replacement time of the Power Supply.

Note: The replacement time calculation function indicates an approximate period left for maintenance, based on deterioration of the electrolytic capacitors. It does not predict failures resulting from other causes.

Principle of Operation

The deterioration speed of the electrolytic capacitors varies considerably with the ambient temperature. (Generally the speed follows the Arrhenius Law, i.e., for every 10°C increase in the temperature, the rate of degradation doubles.) The S8VK-X monitors the temperature inside the Power Supply, and calculates the amount of deterioration according to the running hours and internal temperature.

Note: 1. Due to degradation of internal electronic parts, replace the Power Supply approximately 15 years after purchase even if the replacement time calculation for years and percentage do not appear.

2. The replacement time is accelerated or decelerated according to operating conditions. Periodically check indication.

3. The accuracy of the replacement time calculation function will be reduced in applications where the input power turns ON and OFF frequently.

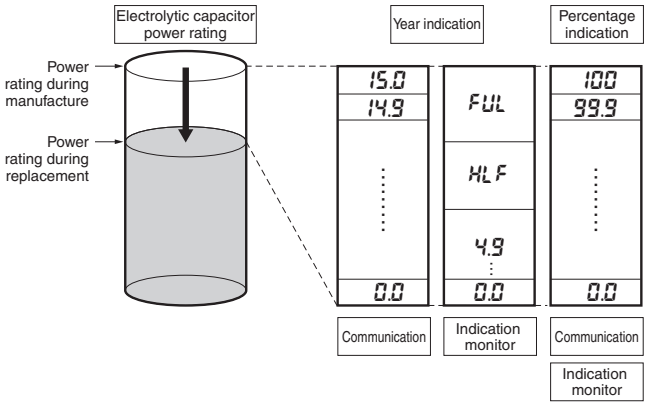
Years until replacement

(Indication monitor)
FUL is indicated at the time of purchase (when initially powered on), and continues to be indicated for approximately one month. Afterward, the state of deterioration for the electrolytic capacitor is calculated based on the usage environment, and HLF is indicated when deterioration progresses. When the years until replacement reaches 5 years or less, it is indicated in 0.1 step increments within the range of 4.9 to 0.0. (Depending on the usage environment, the number of years may be indicated after FUL without HLF being indicated.)
(Communication)
Communication is calculated in 0.1 step increments within a range of 15.0 to 0.0.

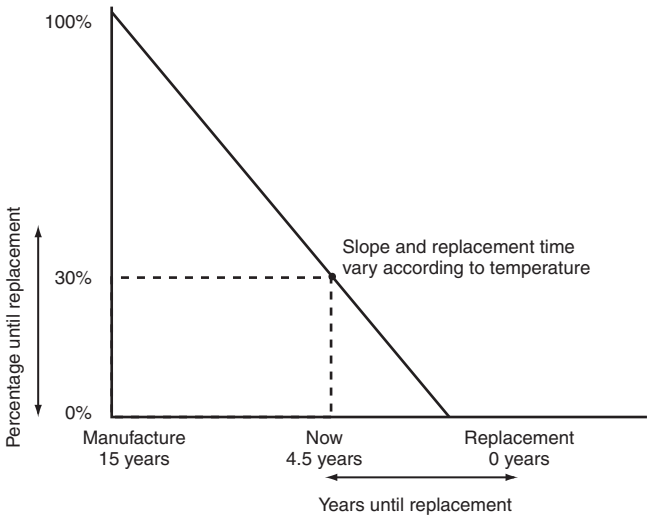
Note: The number of years until replacement may vary if there are frequent load variations or in locations where the ambient temperature fluctuates drastically.

Percentage until replacement

With the number of years until replacement at the time of manufacture set as 100%, as deterioration of the electrolytic capacitor progresses through use, it decreases in 0.1% step increments.



Relationship between electrolytic capacitor power rating and indicator



Relationship between number of years and percentage until replacement

Difference between Expected Life and Replacement Time

OMRON calculates the expected life based on the following conditions.

1.Rated input voltage

2. Load rate: 50%

3. Ambient temperature: +40°C

4. Standard mounting

Note: As the values were calculated using an aluminum electrolytic condenser temperature rise test, they are not guaranteed. Use this data as a reference for maintenance and replacement time calculation.

The expected life span of the S8VK-X is 10 years minimum. Also, a replacement time calculation function is included among the functions of the S8VK-X. The replacement time is the service life (the Power Supply's internal temperature is monitored at all times) of the internal electrolytic capacitor in actual operating conditions, and varies according to the customers operating conditions. 15 years is taken as the maximum period of the maintenance forecast.

Total Run Time

The accumulated value of the product's time powered on is measured as the total run time.

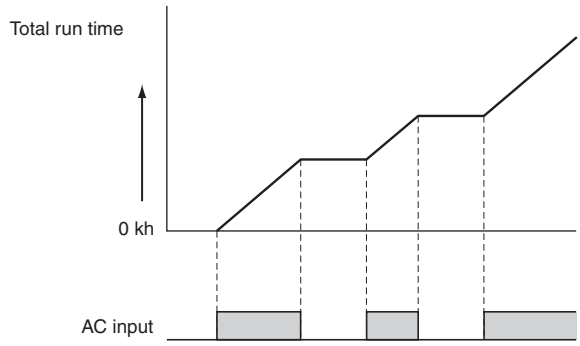
(With indication monitor)

Total run time increases in 1 (kh) steps with use.

(Communication)

Total run time increases in 1 (h) steps with use.

Time Chart



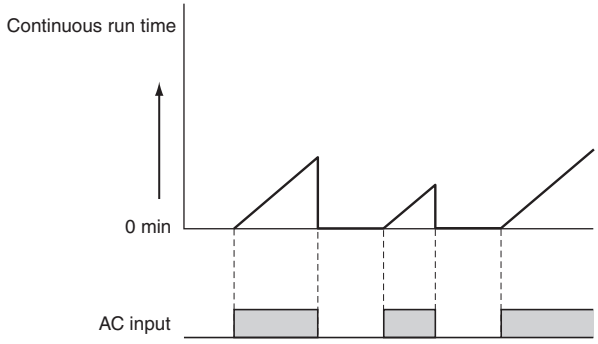
Note: 1. The total run time does not include the time that the Power Supply is OFF.

2. The total run time measures the total time that power is being supplied and is not related in any way to deterioration in the electrolytic capacitor built into the Power Supply or to the effects of the ambient temperature.

Continuous Run Time (Communication Only)

The product's time powered on is measured as continuous run time, and the continuous run time increases in 1 (min) steps with use. Continuous run time will be reset when power is turned off.

Time Chart



Note: 1. The continuous run time does not include the time that the Power Supply is OFF.

2. The continuous run time measures the total time that power is being supplied and is not related in any way to deterioration in the electrolytic capacitor built into the Power Supply or to the effects of the ambient temperature.

Self-Diagnostics Function

Main display	Alarm indicator	Status name	Details	Restoration method
- - -	Lit	Measurement abnormality	Output voltage, output current, etc., cannot be measured normally due to noise	Automatic reset.
H&t (Flashing)	Lit	Overheating alarm	Overheated status has continued for 1 to 180 minutes	Automatic reset.
E06 (Flashing)	Lit	Product overheat abnormality	Overheated status has continued for more than 180 minutes	Replace the Power Supply, as internal parts may be deteriorated.
E03	Lit	Memory error	If there is an internal memory error, damage to data, etc., may occur	Turn the AC input OFF then ON again. If the Product is not reset, contact the dealer.

Note: 1. External noise is probable as a cause of - - - and E03 errors.

2. When E03 is displayed, indication switching is not possible.

3. Operation out of the derating curve area, ventilation errors, and incorrect mounting direction are probable as a cause of H&t and E06 errors.

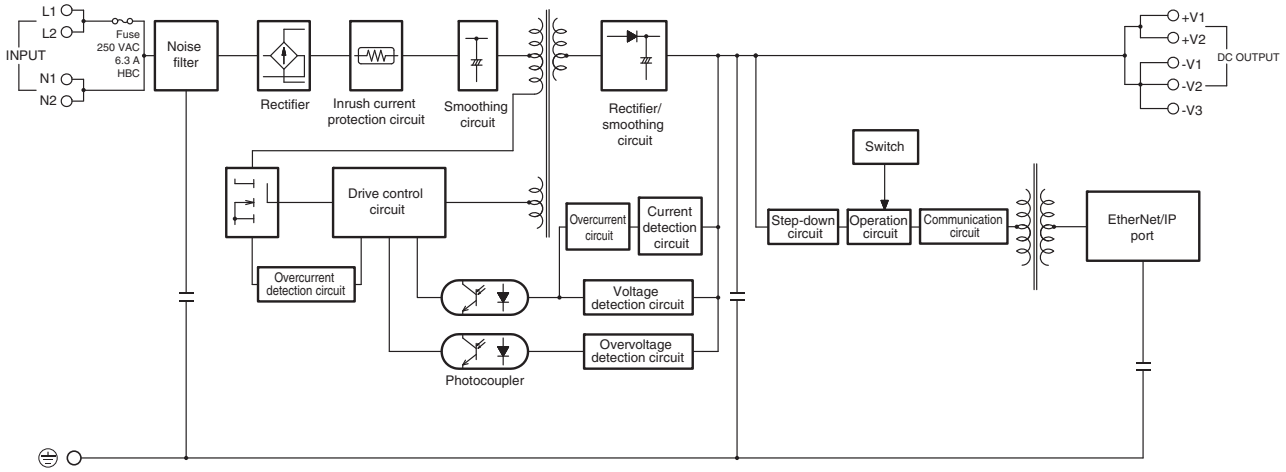
4. Pressing the indication switching key on the H&t and E06 display screen will return to the normal display screen.

5. When E06 is displayed, the years/percentage until replacement will become 0.0 and 0.0% respectively.

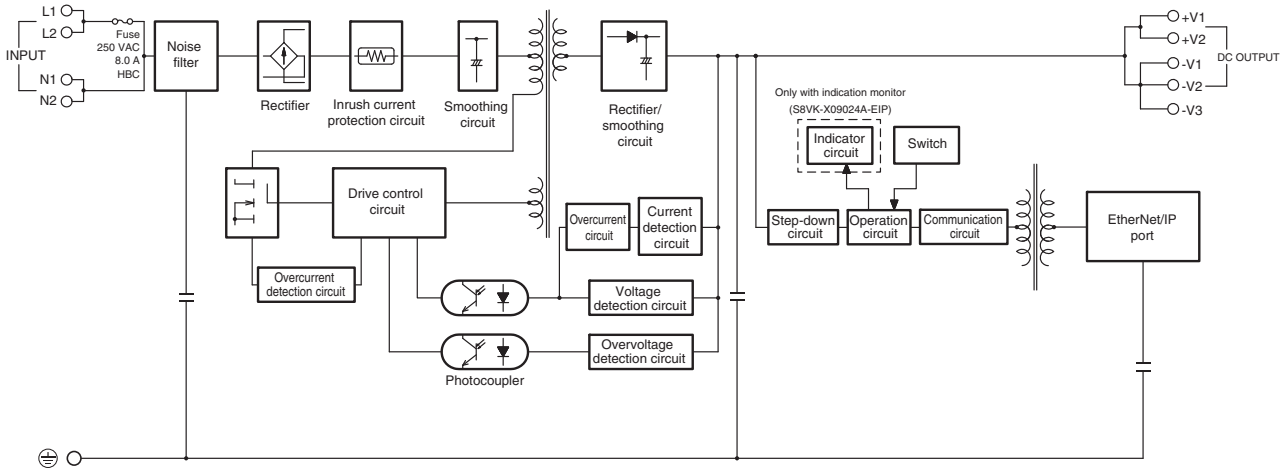
Connections

Block Diagrams

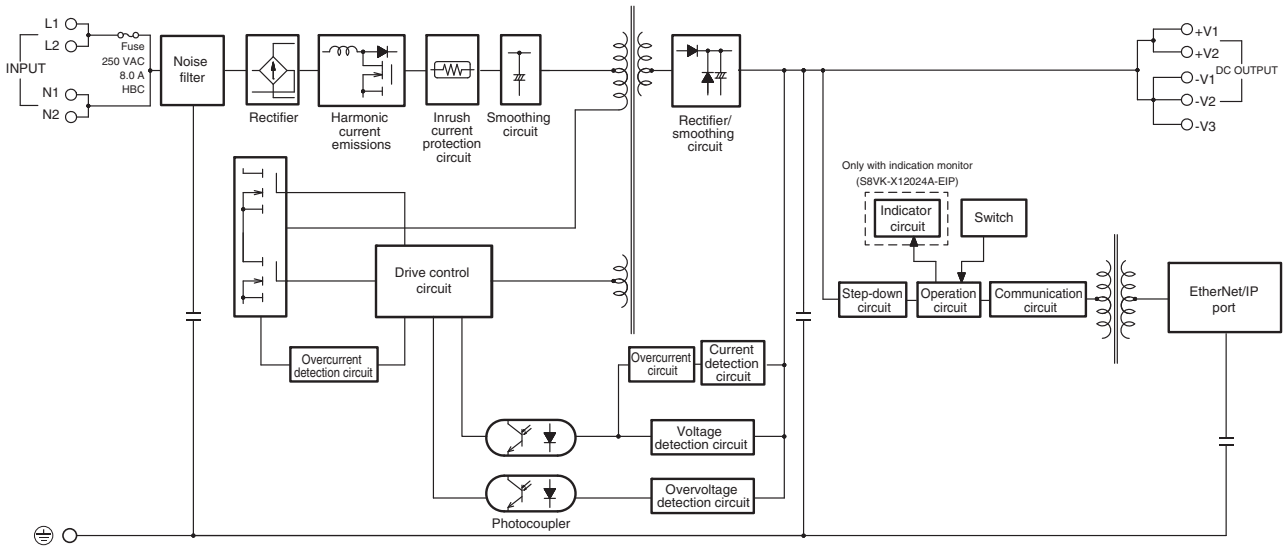
S8VK-X03005-EIP/06012-EIP/06024-EIP



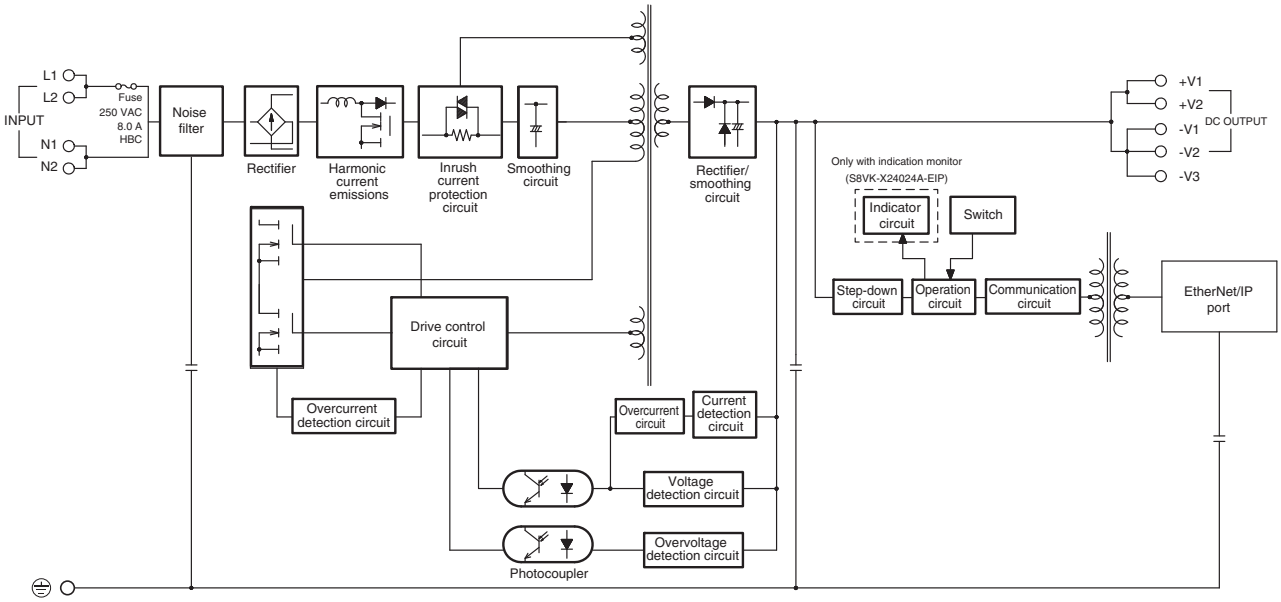
S8VK-X09024□-EIP



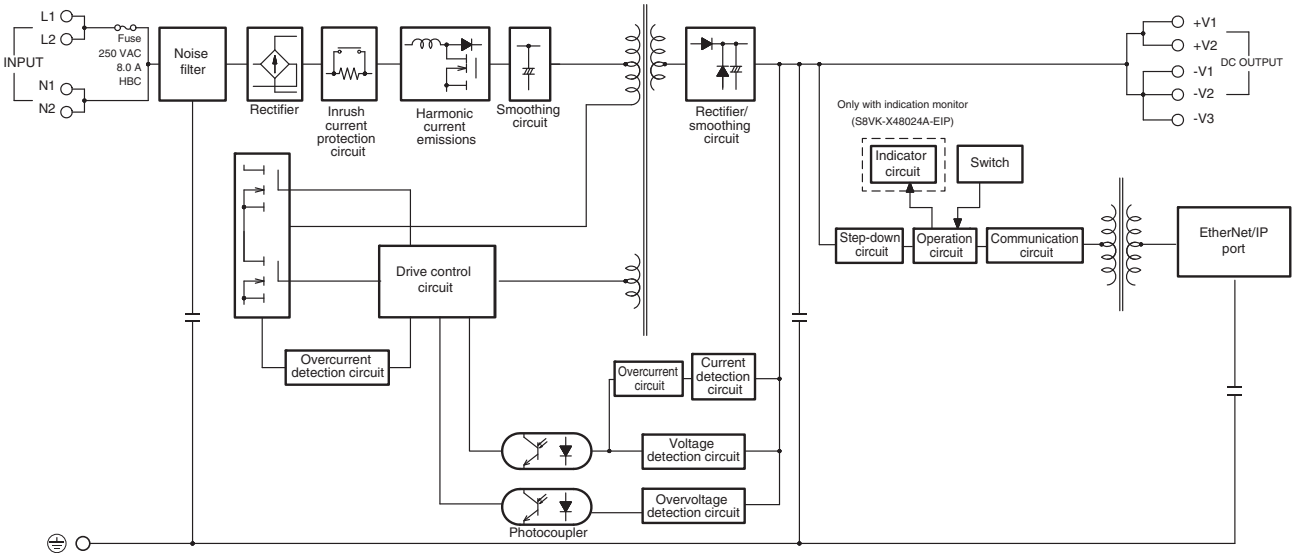
S8VK-X12024□-EIP



S8VK-X24024□-EIP



S8VK-X48024□-EIP

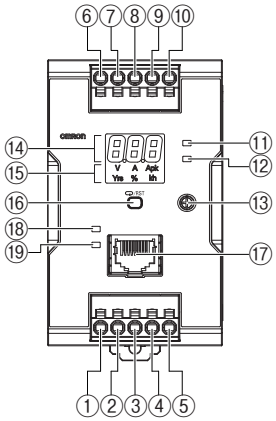


Nomenclature

With Indication Monitor

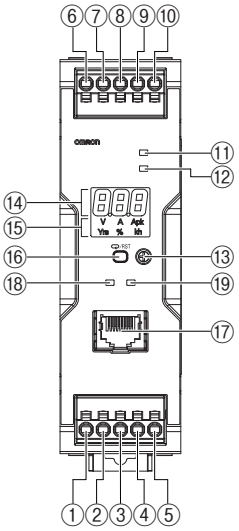
90 W/120 W

S8VK-X09024A-EIP
S8VK-X12024A-EIP



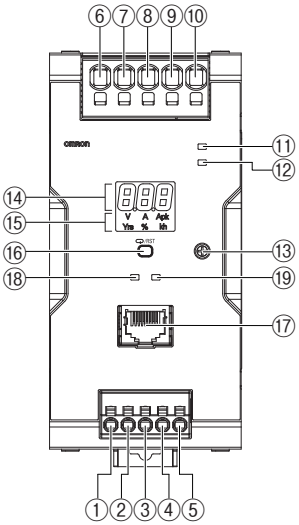
240 W

S8VK-X24024A-EIP



480 W

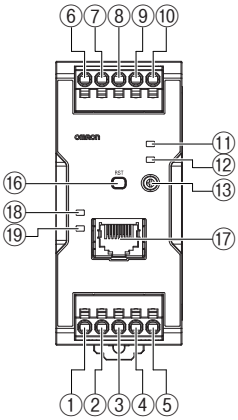
S8VK-X48024A-EIP



Without Indication Monitor

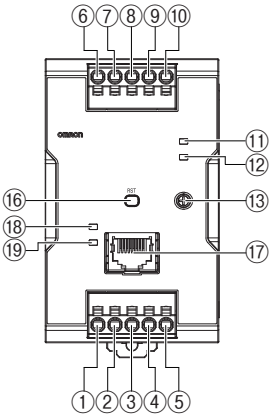
30 W/60 W

S8VK-X03005-EIP
S8VK-X06012-EIP
S8VK-X06024-EIP



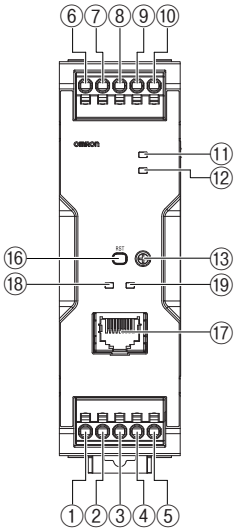
90 W/120 W

S8VK-X09024-EIP
S8VK-X12024-EIP



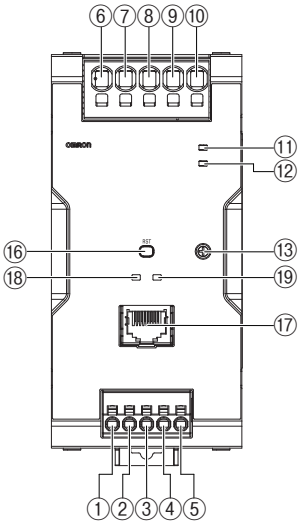
240 W

S8VK-X24024-EIP



480 W

S8VK-X48024-EIP



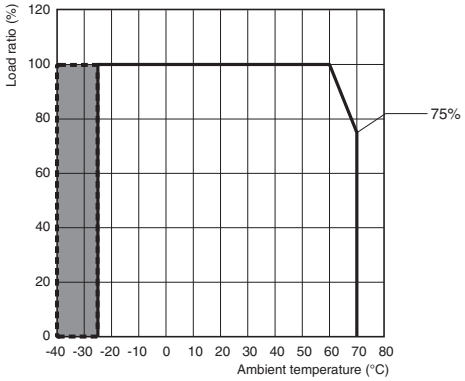
No.	Terminal name	Name		Function
1	L1	Input terminals		Connect the input lines to these terminals. ✻ 1
2	L2			
3	N1			
4	N2			
5	PE	Protective Earth terminal (PE)		Connect the ground line to this terminal. ✻ 2
6	+V1	DC Output terminals		Connect the load lines to these terminals.
7	+V2			
8	-V1			
9	-V2			
10	-V3			
11	---	Output indicator (DC ON: Green)		The green indicator indicates when a DC voltage is being output.
12	---	Alarm indicator (ALM: Red)		Lights up in red when a Power Supply abnormality occurs. Refer to *Self-Diagnostics Function* on page 11 for details.
13	---	Output voltage adjuster (V. ADJ)		Use to adjust the output voltage.
14	---	Main display (white)		Displays measured values.
15	---	Operation indicator (white)	V	Lights up when the output voltage is indicated.
	---		A	Lights up during indication of output current.
	---		Apk	Lights up during indication of peak hold current.
	---		Yrs	Lights up during replacement time calculation year indication.
	---		%	Lights up during years until replacement time indication.
	---		kh	Lights up during percentage until replacement time indication.
16	---	Indication switching/reset key (types with indication monitor) Reset key (types without indication monitor)		Used to change the indicated parameter. Used to reset the peak hold current or communication settings. For reset methods, refer to *Communication Reset Function* on page 9.
17	---	EtherNet/IP port		Connects to EtherNet cables.
18	---	Module status indicator (MS)		Refer to *Module Status and Network Status Indicators* on page 9 for details.
19	---	Network status indicator (NS)		

✻1. The fuse is located on the (L) side. 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.

Engineering Data

Derating Curves

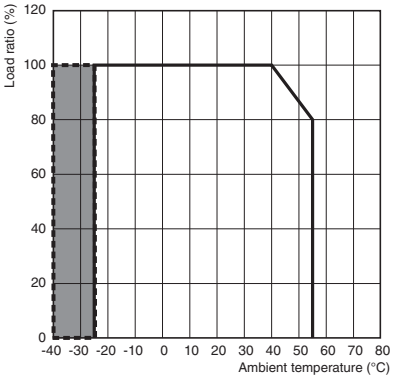
Horizontal separation: 15 mm or more



Note: 1. 1%/V derating at less than 100 VAC
2. 0.5%/V derating at less than 140 VDC
3. In the shaded area, time is required to reach the rated output voltage after the input voltage is applied.
Also, the ripple noise value in this area may exceed the range given on page 3 to 5.

A: Standard mounting, mounted with side-mounting brackets (30 W, 60 W), or mounted with front-mounting brackets (30 W, 60 W, 240 W, 480 W)

Horizontal separation: Less than 15 mm

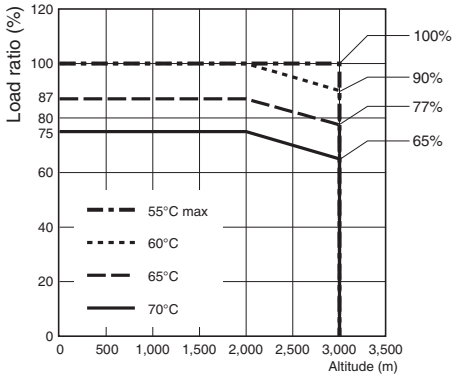


Note: 1. Apply the rated voltage.
2. In the shaded area, time is required to reach the rated output voltage after the input voltage is applied.
Also, the ripple noise value in this area may exceed the range given on page 3 to 5.

B: Front, side-by-side mounting

This Power Supply can be used at an altitude of 3,000 m.
Between 2,000 and 3,000 m, derate the load according to the following derating curve.

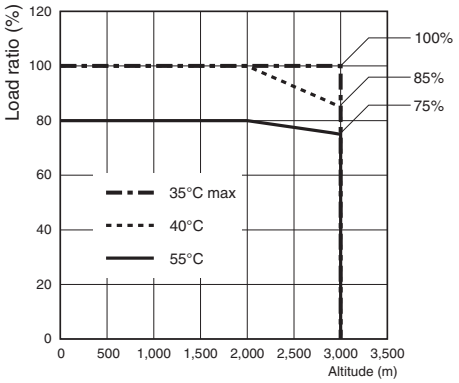
Horizontal separation: 15 mm or more



Note: 1. 1%/V derating at less than 100 VAC
2. 0.5%/V derating at less than 140 VDC

A: Standard mounting, mounted with side-mounting brackets (30 W, 60 W), or mounted with front-mounting brackets (30 W, 60 W, 240 W, 480 W)

Horizontal separation: Less than 15 mm



Note: Apply the rated voltage.

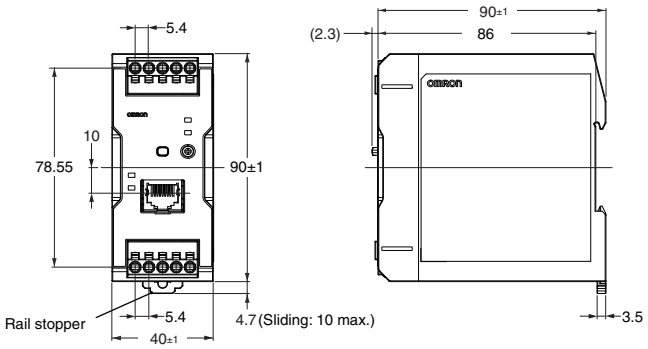
B: Front, side-by-side mounting

Dimensions

(Unit: mm)

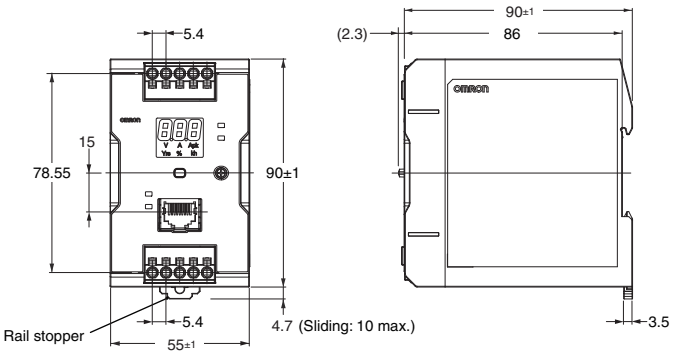
Unit

S8VK-X03005-EIP (30 W)
S8VK-X06012-EIP (60 W)
S8VK-X06024-EIP (60 W)



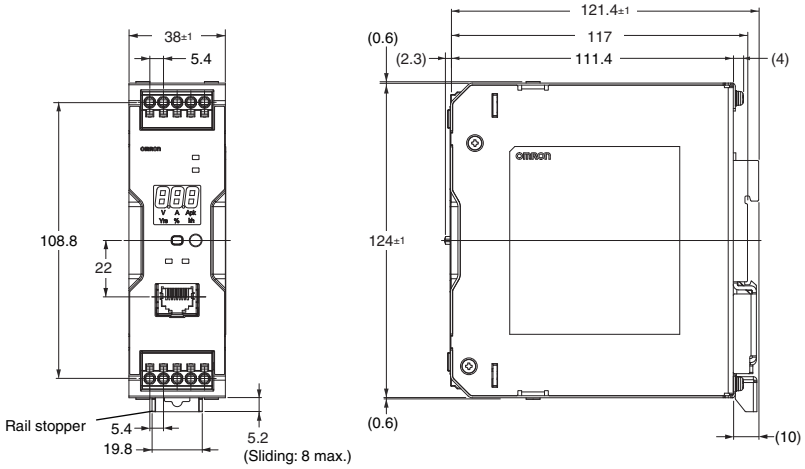
The above diagram shows S8VK-X06024-EIP.

S8VK-X09024□-EIP (90 W)
S8VK-X12024□-EIP (120 W)



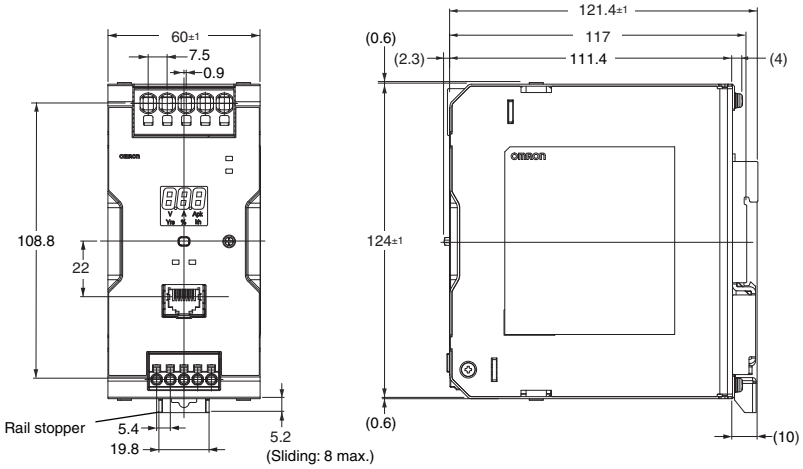
The above diagram shows S8VK-X09024A-EIP.

S8VK-X24024□-EIP (240 W)

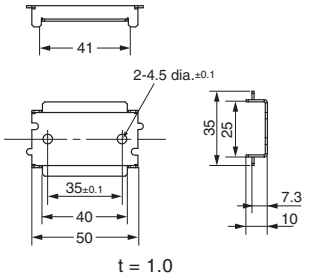
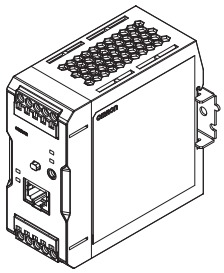
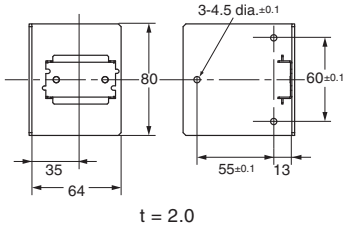
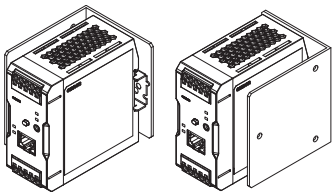
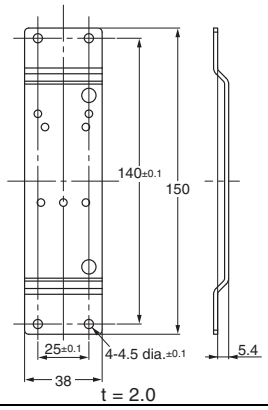
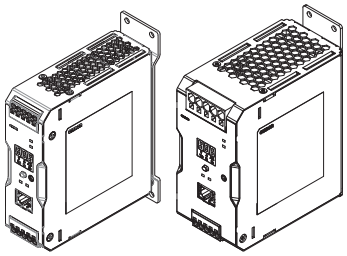


The above diagram shows S8VK-X24024A-EIP.

S8VK-X48024□-EIP (480 W)



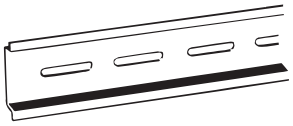
The above diagram shows S8VK-X48024A-EIP.

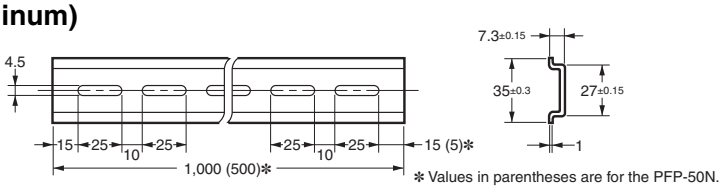
Name	Model number	Dimensions	Appearance
Front-mounting bracket (For 30 W and 60 W models)	**S82Y-VS10F**		
Side-mounting bracket (For 30 W and 60 W models)	**S82Y-VS10S**		Left-side mounting Right-side mounting 
Front-mounting bracket (For 240 W and 480 W models)	**S82Y-VK10F**		240 W Three locations Mounting screw tightening torque: 0.5 to 0.6 N·m 480 W Four locations Mounting screw tightening torque: 0.5 to 0.6 N·m Be sure to use the accessory screws. 

DIN Rail Mounting (Order Separately)

Mounting Rail (Material: Aluminum)

PFP-100N
PFP-50N

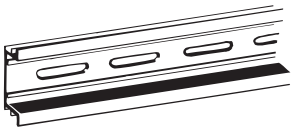


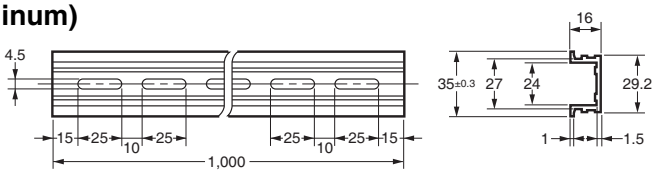


* Values in parentheses are for the PFP-50N.

Mounting Rail (Material: Aluminum)

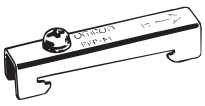
PFP-100N2

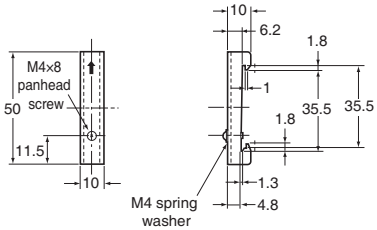




End Plate

PFP-M





Note: 1. If there is a possibility that the Unit will be subject to vibration or shock, use a steel DIN Rail. Otherwise, metallic filings may result from aluminum abrasion.
2. If the Unit may be subjected to sliding to either side, attach an End Plate (model PFP-M) on each side of the Unit.

Safety Precautions

Warning Indications

WARNING	**Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.**
CAUTION	**Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.**
Precautions for Safe Use	**Supplementary comments on what to do or avoid doing, to use the product safely.**
Precautions for Correct Use	**Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance.**

Meaning of Product Safety Symbols

	Used to warn of the risk of electric shock under specific conditions.
	Used to warn of the risk of minor injury caused by high temperatures.
	Used to indicate prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.
	Used for general mandatory action precautions for which there is no specified symbol.

⚠ WARNING

The electrical wire may come out and an electric shock may be caused. Insert the solid wire or ferrule straight into the terminal block until the end touches the terminal block.

⚠ CAUTION

Minor electric shock, fire, or Product failure may occasionally occur. Do not disassemble, modify, or repair the Product or touch the interior of the Product.

Minor burns may occasionally occur. Do not touch the Product while power is being supplied or immediately after power is turned OFF.

Minor injury due to electric shock may occasionally occur. Do not touch the terminals while power is being supplied.

Minor electric shock, fire, or Product failure may occasionally occur. Do not allow any pieces of metal, conductors, or cuttings from installation work to enter the Power Supply.

Precautions for Safe Use

Ambient Operating and Storage Environments

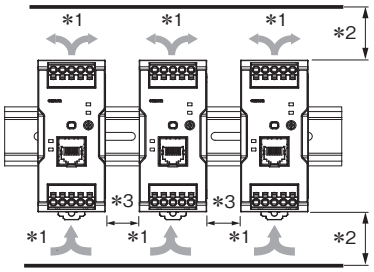
- Store the Power Supply at a temperature of -40 to 85°C and a humidity of 95% or less.
- To maintain performance of the replacement time calculation functions, make sure the following conditions are satisfied for long-term storage. For storage exceeding three months, keep the Product at a temperature of -25 to 30°C and a relative humidity of 25 to 70%.
- Do not use the Power Supply in areas outside the derating curve as doing so may result in internal parts occasionally deteriorating or being damaged.
- Use the Power Supply at a humidity of 95% max.
- Do not use the Power Supply in locations subject to direct sunlight.
- Do not use locations where liquids, foreign matter, or corrosive gases may enter the interior of the Product.

Installation Environment

- Do not use the Product in locations subject to shocks or vibrations. In particular, install the Power Supply as far away as possible from contactors or other devices that are a vibration source.
- Install the Power Supply well away from any sources of strong, high-frequency noise and surge.

Mounting

- Take adequate measures to ensure proper heat dissipation to increase the long-term reliability of the Power Supply. Be sure to allow convection in the atmosphere around devices when mounting. Do not use in locations where the ambient temperature exceeds the range of the derating curve.
- When cutting out holes for mounting, make sure that cuttings do not enter the interior of the Power Supplies.
- The internal parts may occasionally deteriorate and be broken due to adverse heat radiation. Do not loosen the screws on the Power Supply.

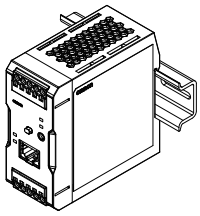


∗1. Convection of air
∗2. Vertical separation:
25 mm or more
(S8VK-X03005-EIP, X060□□-EIP, X09024□-EIP, X12024□-EIP)
Vertical separation:
23 mm or more
(S8VK-X24024□-EIP, X48024□-EIP)
∗3. Horizontal separation:
15 mm or more
(Standard mounting)
Horizontal separation:
Less than 15 mm
(Front, side-by-side mounting)

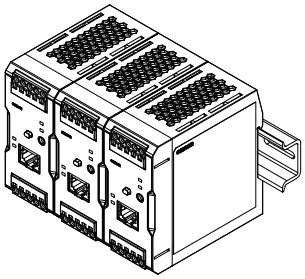
- S8VK-X can be used in combinations with a horizontal separation of less than 15 mm (front, side-by-side mounting) only in cases of the same model being used.
  In such cases, use the product in accordance with a derating curve with a horizontal separation of less than 15 mm.

Mounting

(A) Standard (vertical) mounting



(B) Front, side-by-side mounting



Wiring

- Connect the ground completely. A protective earthing terminal stipulated in safety standards is used. Electric shock or malfunction may occur if the ground is not connected completely.
- Minor fire may possibly occur. Ensure that input and output terminals are wired correctly.
- When you insert wires or insert a screwdriver into a release hole, do not press down on the terminal block with a force of 40 N or greater.
- Do not wire anything to the release holes.
- Do not tilt or twist a flat-blade screwdriver while it is inserted into a release hole on the terminal block. The terminal block may be damaged.
- Insert a flat-blade screwdriver into the release holes at an angle. The terminal block may be damaged if you insert the screwdriver straight in.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Do not bend a wire past its natural bending radius or pull on it with excessive force. This may cause a wire to be broken.
- Do not insert more than one wire into each terminal insertion hole.
- Do not pre-solder the ends of the wires. Doing so will inhibit proper connection.
- Be sure to remove the sheet covering the S8M for machining before power-ON so that it does not interfere with heat dissipation.
- If there is a possibility of vibration or shock, please use wires and stranded wires with ferrules.
- Use the following material for the wires after confirming the rating of the wires in order to prevent smoking or ignition.

Recommended Wire Type

Terminal	Model number	Recommended wire gauge	
		(mm^2)	(AWG)
Input	S8VK-X03005-EIP, X06012-EIP, X06024-EIP, X09024□-EIP, X12024□-EIP	0.34 to 2.5	22 to 14
	S8VK-X24024□-EIP	0.5 to 2.5	20 to 14
	S8VK-X48024□-EIP	0.75 to 2.5	18 to 14
Output	S8VK-X03005-EIP	0.75 to 2.5	18 to 14
	S8VK-X06012-EIP	0.75 to 2.5	18 to 14
	S8VK-X06024-EIP	0.5 to 2.5	20 to 14
	S8VK-X09024□-EIP	0.5 to 2.5	20 to 14
	S8VK-X12024□-EIP	0.75 to 2.5	18 to 14
	S8VK-X24024□-EIP	2 to 2.5	14
	S8VK-X48024□-EIP	3.5 to 6	12 to 10
PE (protective earth) terminal	S8VK-X03005-EIP, X06012-EIP, X06024-EIP, X09024□-EIP, X12024□-EIP, X24024□-EIP, X48024□-EIP	2 to 2.5	14

- Input crossover wiring can be used for the input side of this Power Supply.
- Do not use crossover wiring for more than five Power Supplies, and do not allow the steady-state current to the input terminals to exceed 10 A. The above table gives the recommended wires for one Power Supply.
- If you use crossover wiring for N number of Power Supplies, a current that is N times the current for a standalone Power Supply may flow to the input terminals.Take this into consideration when you select wiring materials.

Stripping Length

S8VK-X03005-EIP, S8VK-X06012-EIP,
S8VK-X06024-EIP, S8VK-X09024□-EIP,
S8VK-X12024□-EIP, S8VK-X24024□-EIP
: Input and output terminals

S8VK-X48024□-EIP: Input terminals

Recommended wire gauge	Stripping length (Ferrules not used)
0.34 to 1.5 mm^2/ AWG22 to 16	8 mm
2 to 2.5 mm^2/AWG14	10 mm

S8VK-X48024□-EIP: Output terminals

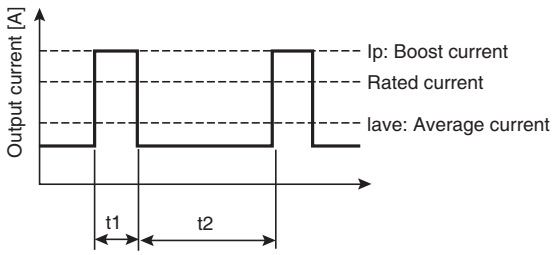
Recommended wire gauge	Stripping length (Ferrules not used)
3.5 to 6 mm^2/ AWG12 to 10	15 mm

Power Boost Function

The boost current is a temporary current that exceeds the rated current.
However, it should meet the following four boost current conditions.

- Time that the boost current flows: t1 ≤ 10 s
- The boost current: Ip ≤ Maximum boost current
- The average output current: Iave ≤ Rated output current
- The time ratio of the boost current flow: Duty ≤ 30%

$$\text{Duty} = \frac{t1}{t1 + t2} \times 100\ [\%] \leq 30\%$$



- Do not allow the boost current to continue for more than 10 seconds. Do not allow the duty to exceed 30%. The Power Supply may be damaged.
- Ensure that the average current of one cycle of the boost current does not exceed the specified value. The Power Supply may be damaged.
- Derate the load at the boost current and average output current according to the ambient operating temperature and mounting.

Charging a Battery

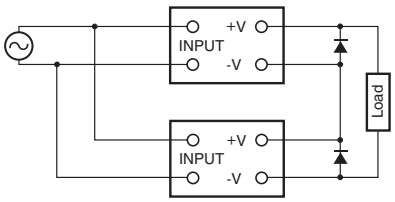
If you connect a battery as the load, install overcurrent control and overvoltage protection circuits.

Output voltage adjuster (V. ADJ)

- The output voltage adjuster (V. ADJ.) may possibly become damaged. Do not apply more than the required force.
- After completing output voltage adjustment, be sure that the output power or output current does not exceed the rated output electric power or rated output current.

Series Operation

Two Power Supplies can be connected in series.



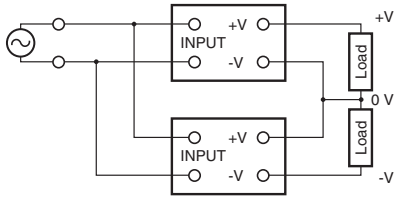
Note: 1. If the load is short-circuited, a reverse voltage will be generated inside the Power Supply. If this occurs the product may possibly deteriorate or be damaged. Always connect a diode as shown in the figure. Select diodes with the following ratings.

Type	Schottky Barrier diode
Dielectric strength (V_{RRM})	Twice the output voltage or above
Forward current (If)	Twice the rated output current or above

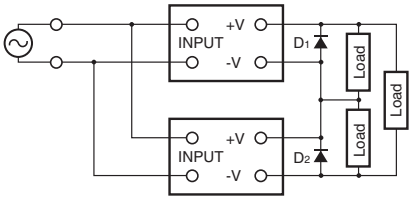
Note: 2. Though Power Supplies having different specifications can be connected in series, the current flowing through the load must not exceed the smaller rated output current.

Making Positive/Negative Outputs

- The outputs are floating outputs (i.e., the primary circuits and secondary circuits are separated). You can therefore make positive and negative outputs by using two Power Supplies. You can make positive/negative outputs with any of the models.
  If positive and negative outputs are used, connect Power Supplies of the same model as in the following figure. (Combinations with different output capacities or output voltages can be made. However, use the lower of the two maximum rated output currents as the current to the loads.)



- Depending on the model, internal circuits may be damaged due to startup failure when the power is turned ON if loads such as a servomotor or operational amplifier may operate in series. Therefore, connect bypass diodes (D1, D2) as shown in the following figure.



- Use the following information as a guide to the diode type, dialectic strength, and current.

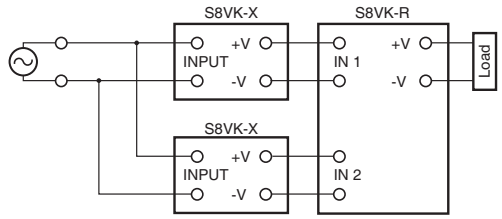
Type	Schottky Barrier diode
Dielectric strength (V_{RRM})	Twice the output voltage or above
Forward current (If)	Twice the rated output current or above

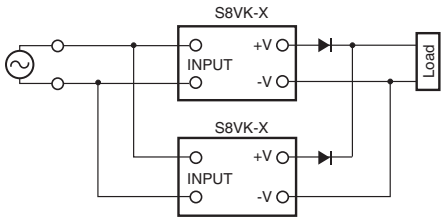
Parallel Operation

Parallel operation is used when the output current from one Power Supply is insufficient for the load. Power Supplies are connected in parallel to increase the output current. Two Power Supplies can be connected in parallel.
You must meet the following conditions to use parallel operation.

- Rated input voltage range
- Output voltage
  25 V or less: (S8VK-X□□□24□-EIP)
  12.5 V or less: (S8VK-X06012-EIP)
  5.2 V or less: (S8VK-X03005-EIP)
- Output current per unit
  100% or less of the rated output current (excluding S8VK-X060□□-EIP and S8VK-X03005-EIP)
  80% or less of the rated output current (S8VK-X060□□-EIP and S8VK-X03005-EIP)
- Ambient temperature: -25 to 40°C
- Standard mounting.
- Horizontal separation: 15 mm or more
- Vertical separation: 25 mm or more (excluding S8VK-X24024□-EIP and S8VK-X48024□-EIP)
  23 mm or more (S8VK-X24024□-EIP and S8VK-X48024□-EIP)

- Adjust the output voltage difference of each Power Supply to 50 mV or less, using the output voltage adjuster (V. ADJ).
- There is no current balancing function for S8VK-X. A high output voltage unit may work at overcurrent state and in this situation, a life of a Power Supply will be extremely short.After adjusting the output voltage, confirm the output current of the Power Supplies balances.
- During parallel operation, UL1310 Class 2 output and UL 60950-1, UL 62368-1, EN 60950-1, and EN62368-1 LPS output are excluded.
- For Parallel Operation, to balance the current of the each unit, the length and thickness of each wire connected to the load and each unit must be same as much as possible.
- If you use the output voltage may drop by several volts if the load changes rapidly (e.g., if the load starts or is disconnected). Use the S8VK-R or connect external diodes as shown in the figure.
  For parallel operation with 30 W, 60 W, 90 W or 120 W Power Supplies, use the S8VK-R10. For parallel operation with 240 W Power Supplies, use the S8VK-R20.
- Do not use parallel operation when there is the possibility that the input voltage will vary outside of the rated input range.



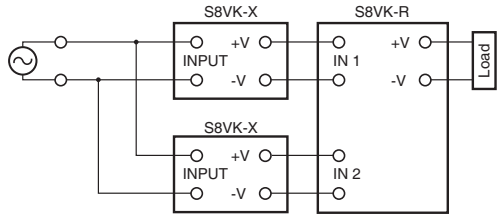


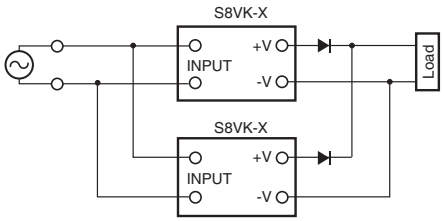
- Use the following information as a guide to the diode type, dialectic strength, and current.

Type	Schottky Barrier diode
Dielectric strength (V_{RRM})	Twice the output voltage or above
Forward current (I_F)	Twice the rated output current or above

<Backup Operation>

Backup operation is possible if you use two Power Supplies of the same model.
Even if one Power Supply fails, operation can be continued with the other Power Supply.
Make sure that the maximum load does not exceed the capacity of one Power Supply.
Use the S8VK-R or connect external diodes.
For backup operation with 30 W, 60 W, 90 W or 120 W Power Supplies, use the S8VK-R10. For backup operation with 240 W Power Supplies, use the S8VK-R20.





- Use the following information as a guide to the diode type, dialectic strength, and current.

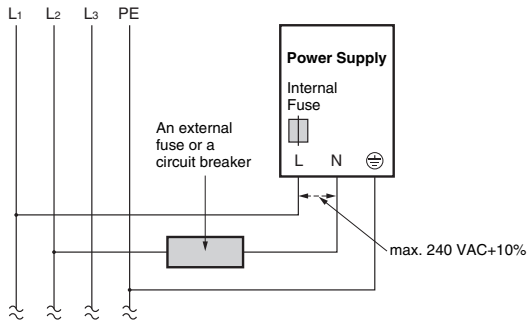
Type	Schottky Barrier diode
Dielectric strength (V_{RRM})	Twice the output voltage or above
Forward current (I_F)	Twice the rated output current or above

Two phases application for Single phase models

For All Single phase Models, S8VK-X

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.



Precautions for Correct Use

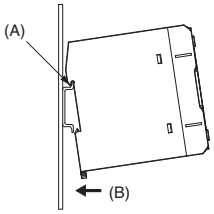
DIN Rail Mounting

30 W/60 W/90 W/120 W

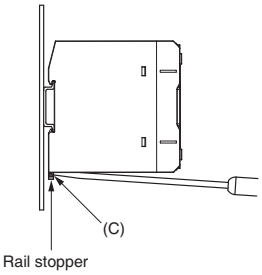
To mount the Block on a DIN Rail, hook portion (A) of the Block onto the rail and press the Block in direction (B).

240 W/480 W

To mounting on a DIN Rail, hook portion (A) of the onto the rail and press in the (B) direction.

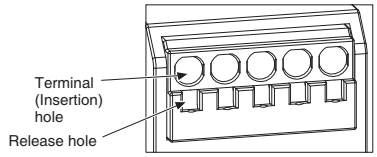


To dismount the Block, pull down portion (C) with a flat-blade screwdriver and pull out the Block.



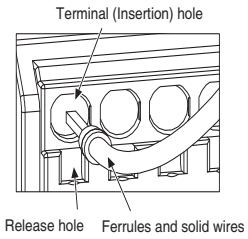
Connecting Wires to the Push-In Plus Terminal Block

Part Names of the Terminal Block



Connecting Wires with Ferrules and Solid Wires

Insert the solid wire or ferrule straight into the terminal block until the end touches the terminal block.

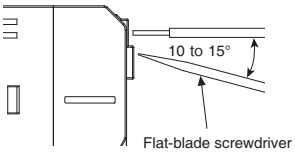


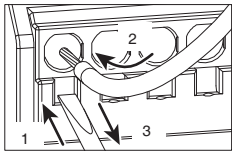
- If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wire.

Connecting Stranded Wires

Use the following procedure to connect the wires to the terminal block.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
   The angle should be between 10° and 15°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until it strikes the terminal block.
3. Remove the flat-blade screwdriver from the release hole.





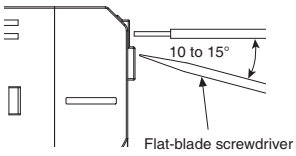
Checking Connections

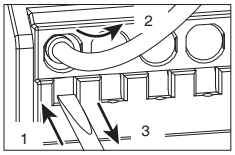
- After the insertion, pull gently on the wire to make sure that it will not come off and the wire is securely fastened to the terminal block.
- The insulation distance is still satisfied although some of the conductor may still be visible after being inserted into the terminal block, even though ferrules with a conductor length of 10 mm are used.

Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
3. Remove the flat-blade screwdriver from the release hole.





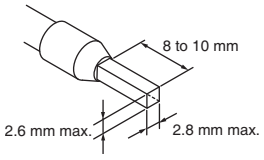
Recommended Ferrules and Crimping Tools

Recommended Ferrules

S8VK-X03005-EIP, X06012-EIP, X06024-EIP
S8VK-X09024□-EIP, X12024□-EIP, X24024□-EIP
: Input and Output Terminals
S8VK-X48024□-EIP: Input Terminals

Applicable wire		Ferrule Conductor length (mm)	Stripping length (mm) (Ferrules used)	Recommended ferrules		
(mm^2)	(AWG)			Manufactured by Phoenix Contact	Manufactured by Weidmuller	Manufactured by Wago
0.34	22	8	10	AI 0,34-8	H0.34/12	FE-0.34-8N-TQ
		10	12	AI 0,34-10	---	---
0.50	20	8	10	AI 0,5-8	H0.5/14	FE-0.5-8N-WH
		10	12	AI 0,5-10	H0.5/16	FE-0.5-10N-WH
0.75	18	8	10	AI 0,75-8	H0.75/14	FE-0.75-8N-GY
		10	12	AI 0,75-10	H0.75/16	FE-0.75-10N-GY
1/1.25	18/17	8	10	AI 1-8	H1.0/14	FE-1.0-8N-RD
		10	12	AI 1-10	H1.0/16	FE-1.0-10N-RD
1.25/1.5	17/16	8	10	AI 1,5-8	H1.5/14	FE-1.5-8N-BK
		10	12	AI 1,5-10	H1.5/16	FE-1.5-10N-BK
2.5	14	10	12	AI 2,5-10	H2.5/16DS	FE-2.5-10N-BU
Recommended crimp tool				CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocrimp4

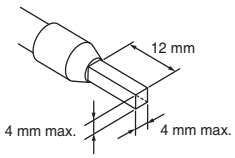
Note: 1. Make sure that the outer diameter of the wire is smaller than the inner diameter of the insulating sleeve of the recommended ferrule.
2. Make sure that the ferrule processing dimensions conform to the following figure.



S8VK-X48024-EIP: Output Terminals

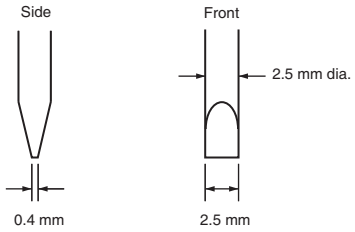
Applicable wire		Ferrule Conductor length (mm)	Stripping length (mm) (Ferrules used)	Recommended ferrules		
(mm^2)	(AWG)			Manufactured by Phoenix Contact	Manufactured by Weidmuller	Manufactured by Wago
3.5	12	12	14	AI 4-12	H4.0/20D	FE-4.0-12N-GY
6	10	12	16	AI 6-12	H6.0/20	FE-6.0-12N-YE ✻
Recommended crimp tool				CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocrimp4 ✻ Use the Variocrimp16.

Note: 1. Make sure that the outer diameter of the wire is smaller than the inner diameter of the insulating sleeve of the recommended ferrule.
2. Make sure that the ferrule processing dimensions conform to the following figure.



Recommended Flat-blade Screwdriver

Use a flat-blade screwdriver to connect and remove wires. Use the following flat-blade screwdriver.
The following table shows manufacturers and models as of 2015/Dec.



Model number	Manufacturer
ESD 0,40×2,5	Wera
SZS 0,4×2,5 SZF 0-0,4×2,5 ✻	Phoenix Contact
0.4×2.5×75 302	Wiha
AEF.2,5×75	Facom
210-719	Wago
SDI 0.4×2.5×75	Weidmuller

✻ OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0,4×2,5 (manufactured by Phoenix Contact).

Audible Noise at Power ON

<S8VK-X12024□-EIP, -X24024□-EIP, -X48024□-EIP>

A harmonic current suppression circuit is built into the Power Supply. This circuit can create noise when the input is turned ON, but it will last only until the internal circuits stabilize and does not indicate any problem in the Product.

Communication

- Communication settings are required when installing/replacing. Set according to the *S8VK-X Communication Manual* (Man. No. T213).
- For details on the EtherNet/IP, Modbus TCP connection method or cable to be used, refer to the *S8VK-X Communication Manual* (Man. No. T213). This may cause a communication error to occur.
- Ensure that communication distance within the usage range.
- If performing EtherNet/IP tag data link communication (cyclic communication) using a repeater hub, the communication load of the network will increase, increasing the number of collisions and making stable communication impossible.
  Make sure to use switching hubs for networks using tag data links.

Communication Cables

- Do not bend a communication cable past its natural bending radius or pull on it with excessive force. Do not place heavy objects on the cord. This may cause a wire to be broken.
- Separate the communication cable into a high voltage and high current power line to prevent induction noise. Additionally, avoid parallel wiring with or using the same wire as the power line.
  It is effective to separate piping and ducts.
- If no communication cable is connected, attach a dust cover.
- Depending on the ambient temperature or load ratio, the Power Supply may get extremely hot.
  In that case, minor burns may occur. Do not insert and remove communications cables.

In Case There Is No Output Voltage

The possible cause for no output voltage may be that the overload protection or overvoltage protection has operated. The internal protection may operate if a large amount of surge voltage, such as a lightning inrush, is applied to the input.
In case there is no output voltage, please check the following points before contacting us:

Checking overload protected status:
Check whether the load is in overload status or is short-circuited. Remove the load wires when checking.

Checking overvoltage or internal protection:
Switch off the input power supply, and switch back on after at least 3 minutes have elapsed.

Period and Terms of Warranty

Warranty Period

The Power Supply warranty is valid for a period of Five years from the date of shipment from the factory.

Terms of Warranty

The warranty is valid only for the following operating conditions.
1. Average ambient operating temperature of the Power Supply: 40°C max.
2. Average load rate of 80% max.
3. Mounting method: Standard mounting

Note: The maximum ratings must be within the derating curve.

If the Power Supply fails for reasons attributable to OMRON within the above warranty period, OMRON will repair or replace the faulty part of the Power Supply at the place of purchase or the place where the Power Supply delivered without charge.
This warranty does not cover the following types of failures.

(1) Failures that result from handling or operation of the Power Supply under conditions or in environments that are not given in this document and not given in any other specifications exchanged between OMRON and the customer
(2) Failures that originate in causes other than the delivered product itself
(3) Failures caused by disassembly, modification, or repair of the Power Supply by anyone other than OMRON
(4) Failures caused by applications or uses for which the Power Supply was not originally intended.
(5) Failures caused by factors that could not be anticipated with the scientific or technical knowledge available when the Power Supply was shipped.
(6) Failures caused by other causes for which OMRON is not responsible, such as natural disasters and other acts of God.
This warranty is limited to the individual Power Supply that was delivered and does not cover any secondary, subsequent, or related damages.

Recommended Replacement Periods and Periodic Replacement for Preventive Maintenance

The recommended replacement period for preventive maintenance is greatly influenced by the application environment of the Power Supply. As a guideline, the recommended replacement period is 7 to 10 years.✻
S8VK-X is equipped with a replacement time calculation function, and the approximate number of years until replacement based on the ambient temperature and load rate can be checked via indicator (types with indication monitors only) or communication.
To prevent failures or accidents that can be caused by using a Power Supply beyond its service live, we recommend that you replace the Power Supply as early as possible within the recommended replacement period.
However, bear in mind that the recommended replacement period is for reference only and does not guarantee the life of the Power Supply.

Many electronic components are used in the Power Supply and the Power Supply depends on the correct operation of these components to achieve the original Power Supply functions and performance. However, the influence of the ambient temperature on aluminum electrolytic capacitors is large, and the service life is reduced by half for each 10°C rise in temperature (Arrhenius law). When the capacity reduction life of the electrolytic capacitor is reached, the Power Supply failures or accidents may occur. We therefore recommend that you replace the Power Supply periodically to minimize product failures or accidents in advance.

✻ The recommended replacement period applies under the following conditions: rated input voltage, load rate of 50% max., ambient temperature of 40°C max., and the standard mounting method.
This product model is designed with a service life of 10 years minimum under the above conditions.

Noise Filter

S8V-NF (Single-phase 250 V 3 A / 6 A Type)

DIN Rail Mounting Type Ideal for Control Panels Featuring a Slim Design that Saves Space Push-In Connections for Safe and Easy Wiring

- 150 kHz to 1 MHz high attenuation
- Operation possible at ambient temperatures from -40 to 85°C
- Complies with RoHS directives
- Certification for 3,000 m altitude (UL/EN 60939)
- Five years Warranty ✻1

✻1. Refer to “Period and Terms of Warranty” on page 36 for details.

⚠ Refer to “Safety Precautions” on page 33.

Model Number Structure

Model Number Legend

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

S8V-NF S 2 □□
1 2 3

1. Input type
S: Single-phase AC/DC

2. Rated voltage
2: 250 VAC/250 VDC

3. Rated current
03: 3 A
06: 6 A

Ordering Information

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

Rated voltage	Rated current	Model number
250 VAC 250 VDC	3 A	**S8V-NFS203**
	6 A	**S8V-NFS206**

Ratings and Characteristics

Item		Rated current	3 A	6 A
		Rated voltage	Single-phase 250 VAC 50/60 Hz ✻1, 250 VDC	
I/O characteristics	Leakage current		1.0 mA max. (250 VAC/60 Hz)	
	DC resistance		110 mΩ max.	
	Attenuation		25 dB min. (Common Mode: 0.1 to 10 MHz, Normal Mode: 0.2 to 30 MHz)	
	Withstand voltage		2.5 kVAC for 1 min. (between line and ground), current cutoff 10 mA	
	Insulation resistance		100 MΩ min. (500 VDC, 1 min.)	
Environment	Ambient operating temperature		-40 to 85°C (Derating is required. Refer to *Engineering Data*) (with no condensation or icing)	
	Derating start temperature		+85°C	+60°C
	Storage temperature		-40 to 85°C (with no condensation or icing)	
	Ambient operating humidity		95% (Storage humidity: 95% max.)	
	Vibration resistance		10 to 55 Hz, maximum 5 G, 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	
Construction	Weight		140 g max.	
	Degree of protection		IP20 by EN/IEC 60529	
Standards	Safety standards		UL 60939 (Recognition) OVC III (≤3000 m) Pol2 CSA C22.2 No.8 EN 60939 OVC III (≤3000 m) Pol2 ENEC ✻2 EAC (TR CU 004 / 2011)	

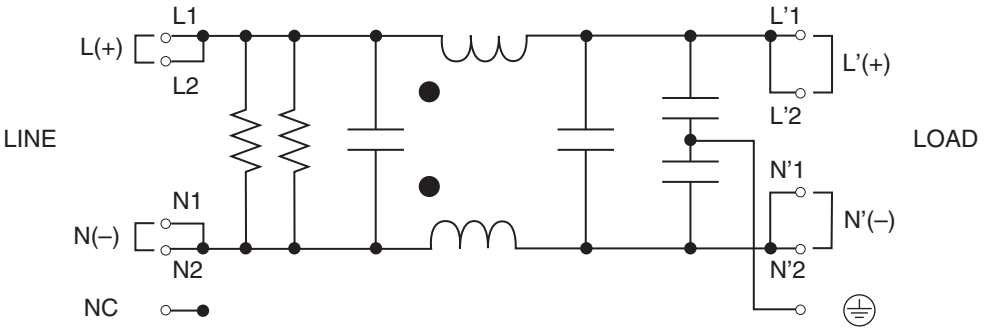
✻1. If the input is connected to a UPS, do not connect a UPS with a square-wave output. Doing so will cause the internal temperature of the product to increase, possibly causing smoking or damage.

✻2. ENEC is a certification that makes product distribution to EU member countries, EFTA (European Free Trade Association) member countries, and Eastern European countries possible.

Connections

Circuit Diagram

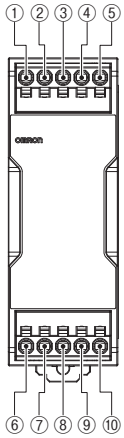
S8V-NFS203
S8V-NFS206



Construction and Nomenclature

Nomenclature

S8V-NFS203, S8V-NFS206



No.	Terminal name	Name	Function
1	L1	Line terminals	Connect the input lines to these terminals. ✻1
2	L2		
3	N1		
4	N2		
5	NC	No connection	Do not wire.
6	L'1	Load terminals	Connect the output lines to these terminals. ✻1
7	L'2		
8	N'1		
9	N'2		
10	PE	Protective Earth terminal (PE)	Connect the ground line to this terminal. ✻2

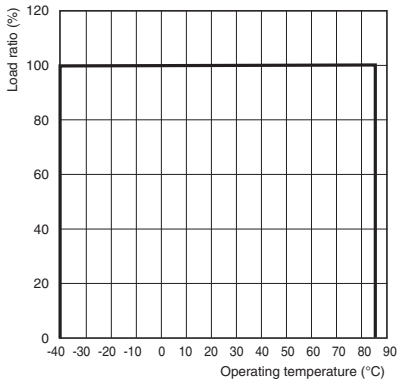
✻1. Wiring is generally laid out so that the line terminal is connected to the input side and the load terminal is connected to the output side, though use in the opposite direction is also possible.
Note that if the input and output are wired in reverse, the appropriate attenuation characteristics may not be obtained.

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

Engineering Data

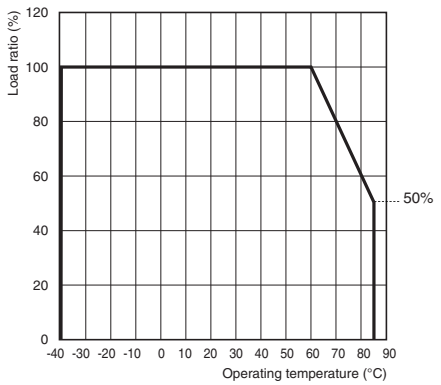
Derating Curves

S8V-NFS203



Note: If using at an altitude of 2000 m to 3000 m, multiply the above derating curve by 0.8 to reduce the load. (Does not apply for face-up mounting)

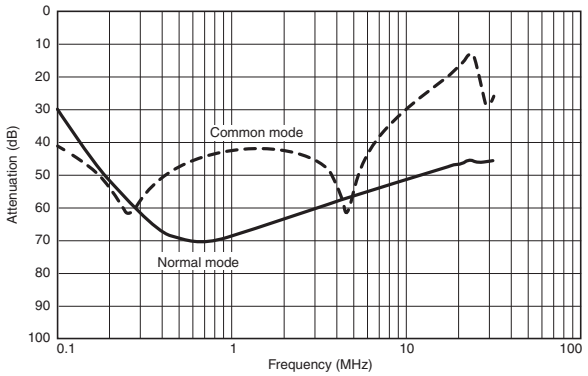
S8V-NFS206



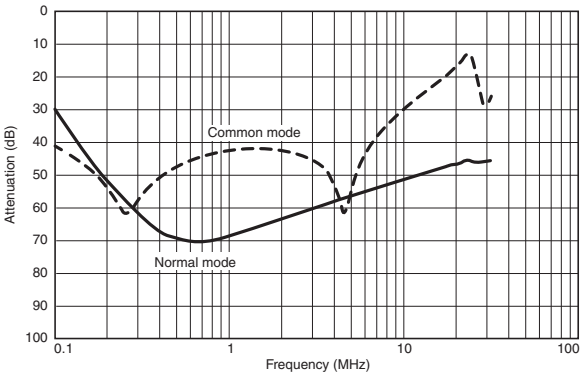
Note: If using at an altitude of 2000 m to 3000 m, multiply the above derating curve by 0.8 to reduce the load. (Does not apply for face-up mounting)

Attenuation Frequency Characteristics (Typical example)

S8V-NFS203

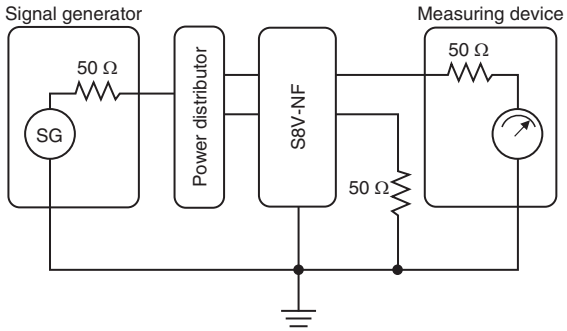


S8V-NFS206

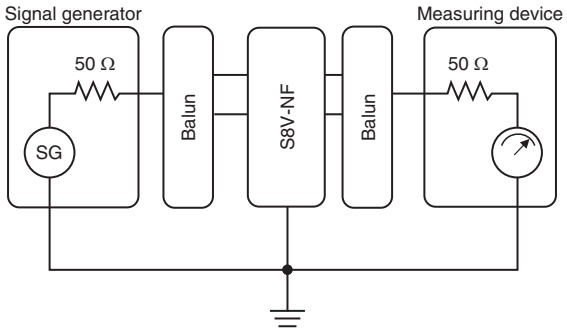


The above characteristics are data acquired by the following measurement circuits.

Common mode



Normal mode

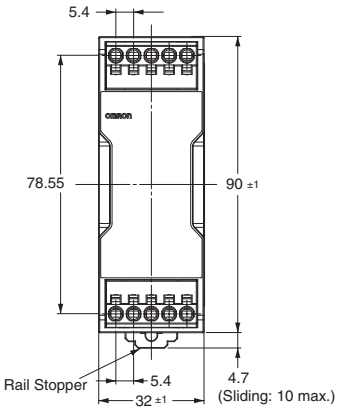


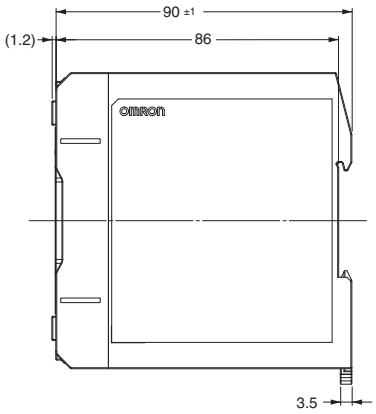
Note: The noise filter attenuation characteristics are measured under a constant I/O impedance of 50 Ω. When used attached to actual equipment, the power line impedance varies depending on the wiring method. Therefore, attenuation characteristics may not match those listed in the catalog.

Dimensions

(Unit: mm)

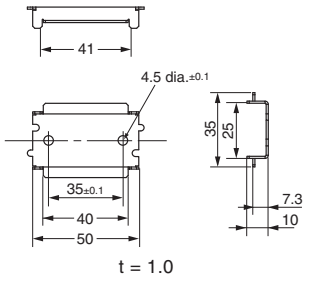
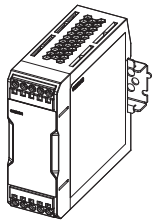
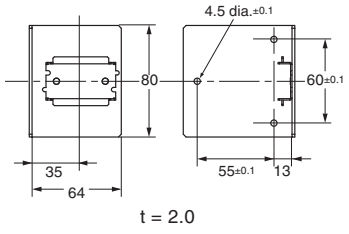
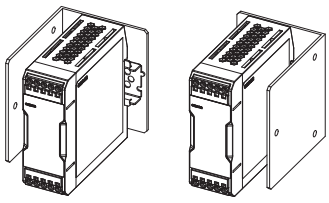
S8V-NFS203
S8V-NFS206





Mounting Brackets

Name	Model number
Front-mounting bracket	**S82Y-VS10F**
Side-mounting bracket	**S82Y-VS10S**

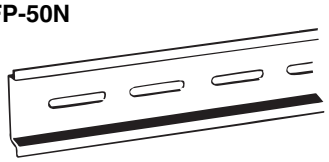
Name	Model number	Dimensions	Appearance
Front-mounting bracket	**S82Y-VS10F**		
Side-mounting bracket	**S82Y-VS10S**		Left-side mounting Right-side mounting 

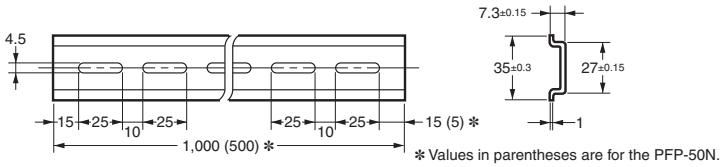
DIN Rails (Order Separately)

(Unit: mm)

Mounting Rail (Material: Aluminum)

PFP-100N
PFP-50N

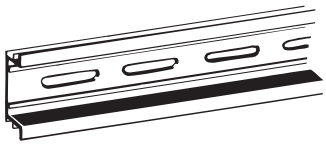


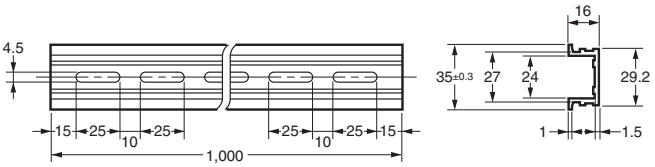


✻ Values in parentheses are for the PFP-50N.

Mounting Rail (Material: Aluminum)

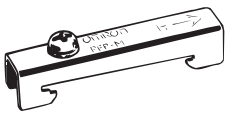
PFP-100N2

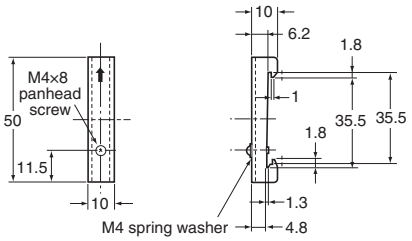




End Plate

PFP-M





Note: If there is a possibility that the Unit will be subject to vibration or shock, use a steel DIN Rail. Otherwise, metallic filings may result from aluminum abrasion.

Safety Precautions

Warning Indications

WARNING	**Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.**
CAUTION	**Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.**
Precautions for Safe Use	**Supplementary comments on what to do or avoid doing, to use the product safely.**
Precautions for Correct Use	**Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance.**

Meaning of Product Safety Symbols

	Used to warn of the risk of electric shock under specific conditions.
	Used to warn of the risk of minor injury caused by high temperatures.
	Used to indicate prohibition when there is a risk of minor injury from electrical shock or other source if the product is disassembled.
	Used for general mandatory action precautions for which there is no specified symbol.

⚠ WARNING

The electrical wire may come out and an electric shock may be caused. Insert the solid wire or ferrule straight into the terminal block until the end touches the terminal block.

⚠ CAUTION

Minor electric shock, fire, or product failure may occasionally occur. Do not disassemble, modify, or repair the product or touch the interior of the product.

Minor burns may occasionally occur. Do not touch the product while power is being supplied or immediately after power is turned OFF.

Minor injury due to electric shock may occasionally occur. Do not touch the terminals while power is being supplied.

Minor electric shock, fire, or product failure may occasionally occur. Do not allow any pieces of metal, conductors, or cuttings from installation work to enter the product.

Fire or product failure may occasionally occur. Do not use on the secondary side (output side) of inverters, etc.

Precautions for Safe Use

Installation Environment

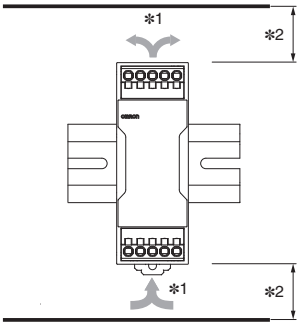
- Do not use the product in locations subject to shocks or vibrations. In particular, install the product as far away as possible from contactors or other devices that are a vibration source.
- Install the product well away from any sources of strong, high-frequency noise and surge.

Ambient Operating and Storage Environments

- Store the product at a temperature of -40 to 85°C and a humidity of 95% or less.
- Do not use the product in areas outside the derating curve otherwise, internal parts may occasionally deteriorate or be damaged.
- Use the product at a humidity of 95% max.
- Do not use the product in locations subject to direct sunlight.
- Do not use locations where liquids, foreign matter, or corrosive gases may enter the interior of the product.

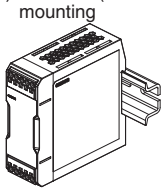
Mounting

- Take adequate measures to ensure proper heat dissipation to increase the long-term reliability of the product. Be sure to allow convection in the atmosphere around devices when mounting. Do not use in locations where the ambient temperature exceeds the range of the derating curve.
- When cutting out holes for mounting, make sure that cuttings do not enter the interior of the product.

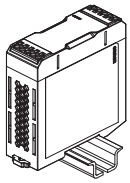


***1.** Convection of air
***2.** Vertical separation: 25 mm or more

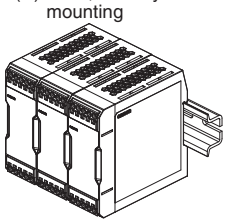
(A) Standard (Vertical) mounting



(B) Face-up mounting



(C) Front, Side-by-side mounting



Note: Horizontal separation
(A), (B): 15 mm or more
(C) : 0 mm or more and 15 mm or less.

Wiring

- Connect the ground completely. A protective earthing terminal stipulated in safety standards is used. Electric shock or malfunction may occur if the ground is not connected completely.
- When you insert wires or insert a screwdriver into a release hole, do not press down on the terminal block with a force of 40 N or greater.
- Do not wire anything to the release holes.
- Do not tilt or twist a flat-blade screwdriver while it is inserted into a release hole on the terminal block. The terminal block may be damaged.
- Insert a flat-blade screwdriver into the release holes at an angle. The terminal block may be damaged if you insert the screwdriver straight in.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Do not bend a wire past its natural bending radius or pull on it with excessive force. This may cause a wire to be broken.
- Do not insert more than one wire into each terminal insertion hole.
- Do not pre-solder the ends of the wires. Doing so will inhibit proper connection.
- Be sure to remove the sheet covering the product for machining before power-ON so that it does not interfere with heat dissipation.
- If there is a possibility of vibration or shock, please use wires and stranded wires with ferrules.
- To prevent wiring materials from ignition or smoking, confirm wire ratings and use the wiring materials given in the following table.

Terminal	Model number	Recommended wire gauge	
		(mm^2)	(AWG)
I/O terminals	S8V-NFS203	0.5 to 2.5	20 to 14
	S8V-NFS206	0.75 to 2.5	18 to 14
PE (protective earth) terminal	S8V-NFS203 S8V-NFS206	2 to 2.5	14

- Crossover wiring can be used for this product.
- However, do not allow the total steady-state current to terminals to exceed 10 A.
  The above table gives the recommended wires for one product.
- When using crossover wiring, select wiring materials suitable for the total current that will flow to terminals.

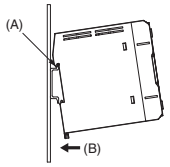
Stripping length

Recommended Wire	Stripping length (Ferrules not used)
0.34 to 1.5 mm^2/AWG20 to 16	8 mm
2 to 2.5 mm^2/AWG14	10 mm

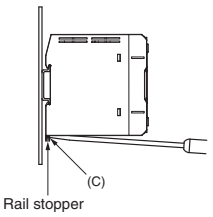
Precautions for Correct Use

DIN Rail Mounting

To mount the Block on a DIN Rail, hook portion (A) of the Block onto the rail and press the Block in direction (B).

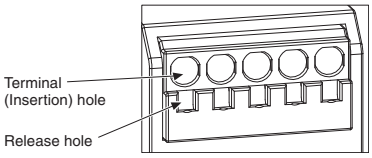


To dismount the Block, pull down portion (C) with a flat-blade screwdriver and pull out the Block.



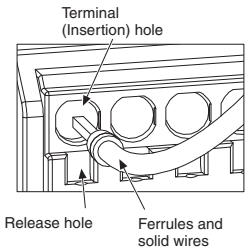
Connecting Wires to the Push-In Plus Terminal Block

Part Names of the Terminal Block



Connecting Wires with Ferrules and Solid Wires

Insert the solid wire or ferrule straight into the terminal block until the end touches the terminal block.

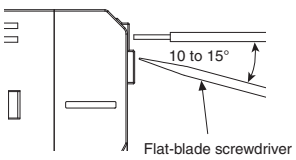


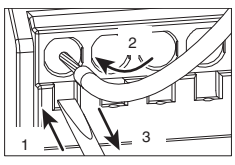
- If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wire.

Connecting Stranded Wires

Use the following procedure to connect the wires to the terminal block.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
   The angle should be between 10° and 15°. If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until it strikes the terminal block.
3. Remove the flat-blade screwdriver from the release hole.





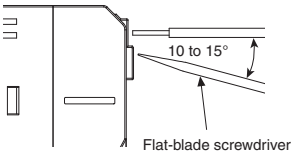
Checking Connections

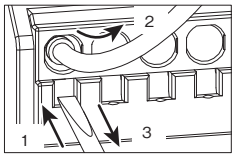
- After the insertion, pull gently on the wire to make sure that it will not come off and the wire is securely fastened to the terminal block
- If you use a ferrule with a conductor length of 10 mm, part of the conductor may be visible after the ferrule is inserted into the terminal block, but the product insulation distance will still be satisfied.

Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

1. Hold a flat-blade screwdriver at an angle and insert it into the release hole.
2. With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
3. Remove the flat-blade screwdriver from the release hole.





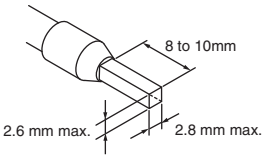
Recommended Ferrules and Crimping Tools

Recommended Ferrules

Applicable wire		Ferrule Conductor length (mm)	Stripping length (mm) (Ferrules used)	Recommended ferrules		
(mm^2)	(AWG)			Manufactured by Phoenix Contact	Manufactured by Weidmuller	Manufactured by Wago
0.50	20	8	10	AI 0,5-8	H0.5/14	FE-0.5-8N-WH
		10	12	AI 0,5-10	H0.5/16	FE-0.5-10N-WH
0.75	18	8	10	AI 0,75-8	H0.75/14	FE-0.75-8N-GY
		10	12	AI 0,75-10	H0.75/16	FE-0.75-10N-GY
1/1.25	18/17	8	10	AI 1-8	H1.0/14	FE-1.0-8N-RD
		10	12	AI 1-10	H1.0/16	FE-1.0-10N-RD
1.25/1.5	17/16	8	10	AI 1,5-8	H1.5/14	FE-1.5-8N-BK
		10	12	AI 1,5-10	H1.5/16	FE-1.5-10N-BK
2.5	14	10	12	AI 2,5-10	H2.5/16DS	FE-2.5-10N-BU
Recommended crimp tool				CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocrimp4

Note: 1. Make sure that the outer diameter of the wire is smaller than the inner diameter of the insulating sleeve of the recommended ferrule.

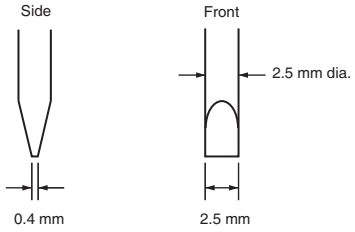
2. Make sure that the ferrule processing dimensions conform to the following figure.



Recommended Flat-blade Screwdriver

Use a flat-blade screwdriver to connect and remove wires. Use the following flat-blade screwdriver.

The following table shows manufacturers and models as of 2015/Dec.



Model number	Manufacturer
ESD 0,40×2,5	Wera
SZS 0,4×2,5 SZF 0-0,4×2,5 ✻	Phoenix Contact
0.4×2.5×75 302	Wiha
AEF.2,5×75	Facom
210-719	Wago
SDI 0.4×2.5×75	Weidmuller

✻OMRON's exclusive purchase model XW4Z-00B is available to order as SZF 0-0,4×2,5 (manufactured by Phoenix Contact).

Period and Terms of Warranty

Warranty Period

The product warranty is valid for a period of five years from the date of shipment from the factory.

Terms of Warranty

The warranty is valid only for the following operating conditions.
1. Average ambient operating temperature of the product: 40°C max. (See note.)
2. Average load rate of 80% max. (See note.)
3. Mounting method: Standard mounting

Note: The maximum ratings must be within the derating curve.

If the product fails for reasons attributable to OMRON within the above warranty period, OMRON will repair or replace the faulty part of the product at the place of purchase or the place where the product delivered without charge.
This warranty does not cover the following types of failures.

(1) Failures that result from handling or operation of the product under conditions or in environments that are not given in this document and not given in any other specifications exchanged between OMRON and the customer
(2) Failures that originate in causes other than the delivered product itself
(3) Failures caused by disassembly, modification, or repair of the product by anyone other than OMRON
(4) Failures caused by applications or uses for which the product was not originally intended.
(5) Failures caused by factors that could not be anticipated with the scientific or technical knowledge available when the product was shipped.
(6) Failures caused by other causes for which OMRON is not responsible, such as natural disasters and other acts of God.
This warranty is limited to the individual product that was delivered and does not cover any secondary, subsequent, or related damages.

OMRON AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

OMRON CANADA, INC. • HEAD OFFICE
Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • www.omron247.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE
México DF • 52.55.59.01.43.00 • 01-800-226-6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE
Apodaca, N.L. • 52.81.11.56.99.20 • 01-800-226-6766 • mela@omron.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE
São Paulo, SP, Brasil • 55.11.2101.6300 • www.omron.com.br

OMRON ARGENTINA • SALES OFFICE
Cono Sur • 54.11.4783.5300

OTHER OMRON LATIN AMERICA SALES
54.11.4783.5300

Authorized Distributor:

Controllers & I/O
• Machine Automation Controllers (MAC) • Motion Controllers
• Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Robotics
• Industrial Robots • Mobile Robots

Operator Interfaces
• Human Machine Interface (HMI)

Motion & Drives
• Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems
• Frequency Inverters

Vision, Measurement & Identification
• Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing
• Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
• Rotary Encoders • Ultrasonic Sensors

Safety
• Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
• Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
• Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components
• Power Supplies • Timers • Counters • Programmable Relays
• Digital Panel Meters • Monitoring Products

Switches & Relays
• Limit Switches • Pushbutton Switches • Electromechanical Relays
• Solid State Relays

Software
• Programming & Configuration • Runtime

T66I-E-01 Note: Specifications are subject to change. © 2018 Omron. All Rights Reserved. Printed in U.S.A.

Printed on recycled paper.