

## Switch Mode Power Supply (15/30/50/100/150/300/600-W Models)

# S8FS-G

## Superior Basic Performance That Ensures Reliability. Wide Range of Standards Certification and Greater Usability.

- Superior basic performance that ensures reliability
   Ambient temperatures up to 70°C, greater resistance to rusting with aluminum/stainless steel case, and applications at altitudes up to 3,000 m.
- Certification for Global Standards
   North America: UL 508 (Listing)\*, CSA C22.2
   Europe: Overvoltage Category III (EN 62477-1)

EMI: Class B (EN 61204-3)

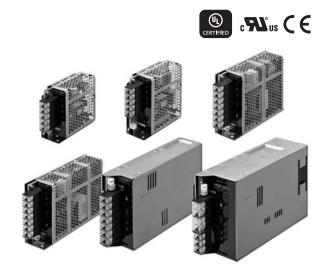
No need for control circuit transformers for which the Machinery Directive is specified. (EN/IEC 61558-2-16)

India BIS: IS 13252 (Part 1)\*

\* Refer to pages 4 to 10 for certified models.

Greater Usability

The Terminal Block Cover prevents screws from dropping out and the Front Cover prevents ingress of foreign matter.



Refer to Safety Precautions for All Power Supplies and Safety Precautions on page 29.

## Lineup

Output voltage (VDC)		Power rating								
Output voltage (VDC)	15 W	30 W	50 W	100 W	150 W	300 W	600 W			
5 V	Yes	Yes	Yes	Yes	Yes					
12 V	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
15 V	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
24 V	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
48 V					Yes	Yes	Yes			

## **Model Number Structure**

## **Model Number Legend**

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

S8FS-	$G \square \square$				<b>-</b> _			
	1	2	3	4	5	6	7	8

1. Power Ratings	2. Output vol
015: 15 W	(VDC)
030: 30 W	05: 5 V
050: 50 W <b>*1</b>	12: 12 V
100: 100 W <b>*2</b>	15: 15 V
150: 150 W <b>*3</b>	24: 24 V
300: 300 W	48: 48 V
600· 600 W	

Itage 3. Configuration

C: With cover/
Direct mounting
CD: With cover/
DIN Rail mounting

4. Option (1)

None: Screw terminal block E: Connectors **\*4** 

5. Option (2) \*5

None: None W: Parallel operation

6. Option (3) \*6
None: None

R: Remote control

7. Option (4) \*7

None: None

H: Extended hold time

#### 8. Safety Standards

None: For details, refer to Safety Standards of Specifications

on pages 4 to 10 500: Uncertified models by

\*8 BIS Standards

(Bureau of Indian Standards)

- $\*1.$  The output electric power is 40 W for products with an output voltage of 5 V.
- **\*2.** The output electric power is 80 W for products with an output voltage of 5 V.
- **\*3.** The output electric power is 105 W for products with an output voltage of 5 V.
- \*4. Applicable only for 150 W or less and 24 V.
- \*5. Applicable only for 600 W and 24 V.
- **\*6.** Applicable only for 100 W or more and 24 V.

**\*7.** Applicable only for 300 W or more and 24 V. **\*8.** S8FS-G10024C-500, S8FS-G10024CD-500,

S8FS-G15024C-500, S8FS-G15024CD-500,

S8FS-G30024C-500, S8FS-G30024CD-500,

S8FS-G60024C-500, S8FS-G60024CD-500 only.

## S8FS-G

## **Ordering Information**

## **List of Models**

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

## With Cover/DIN Rail Mounting

ower ratings	Input voltage	Output voltage (VDC)	Output current	Built-in fan	Model
		5 V	3 A		S8FS-G01505CD
15 W		12 V	1.3 A		S8FS-G01512CD
15 W		15 V	1 A		S8FS-G01515CD
		24 V	0.65 A		S8FS-G01524CD
		5 V	6 A		S8FS-G03005CD
00.14/		12 V	3 A		S8FS-G03012CD
30 W		15 V	2.4 A		S8FS-G03015CD
		24 V	1.5 A		S8FS-G03024CD
		5 V	8 A <b>*</b> 1		S8FS-G05005CD
50 W		12 V	4.3 A		S8FS-G05012CD
50 W	100 to 240 VAC (Permissible range	15 V	3.5 A		S8FS-G05015CD
	85 to 264 VAC,	24 V	2.2 A	None	S8FS-G05024CD
	80 to 370 VDC) *4	5 V	16 A <b>*</b> 2		S8FS-G10005CD
	<b>~</b> 4	12 V	8.5 A		S8FS-G10012CD
100 W		15 V	7 A		S8FS-G10015CD
	24 V 4.5 A	4.5.4		S8FS-G10024CD	
		24 V	4.5 A		S8FS-G10024CD-500 *
450.00		5 V	21 A <b>*</b> 3		S8FS-G15005CD
		12 V	13 A		S8FS-G15012CD
		15 V	10 A		S8FS-G15015CD
150 W		041/	0.5.4		S8FS-G15024CD
		24 V	6.5 A		S8FS-G15024CD-500 *
		48 V	3.3 A		S8FS-G15048CD
		12 V	25 A		S8FS-G30012CD
	100 to 240 VAC	15 V	20 A		S8FS-G30015CD
300 W	(Permissible range 85 to 264 VAC,	041/	44.6	_	S8FS-G30024CD
	120 to 370 VDC)	24 V	14 A		S8FS-G30024CD-500 *
		48 V	7 A	V	S8FS-G30048CD
		12 V	50 A	Yes	S8FS-G60012CD
	100 to 240 VAC	15 V	40 A	1	S8FS-G60015CD
600 W	(Permissible range	041/	07.4		S8FS-G60024CD
	85 to 264 VAC, 120 to 350 VDC)		24 V	27 A	
	•	48 V	13 A	1	S8FS-G60048CD

**Note:** Ask your OMRON representative for pricing information on optional models.

## With Cover/DIN Rail Mounting (Extended hold time type)

Power ratings	Input voltage	Output voltage (VDC)	Output current	Built-in fan	Model
300 W	100 to 240 VAC (Permissible range 85 to 264 VAC, 120 to 370 VDC)	- 24 V	14 A	Vac	S8FS-G30024CD-H
600 W	100 to 240 VAC (Permissible range 85 to 264 VAC, 120 to 350 VDC)		27 A	Yes	S8FS-G60024CD-H

**<sup>\*1.</sup>** The output electric power is 40 W.

<sup>\*2.</sup> The output electric power is 80 W.

**<sup>\*3.</sup>** The output electric power is 105 W.

**<sup>\*4.</sup>** Applicable to products produced from May 2018. **\*5.** Production started in July 2022.

**<sup>\*6.</sup>** Production started in parallel, since August 2022.

## With Cover/Direct Mounting

Power ratings	Input voltage	Output voltage (VDC)	Output current	Built-in fan	Model
		5 V	3 A		S8FS-G01505C
15 W		12 V	1.3 A		S8FS-G01512C
15 W		15 V	1 A		S8FS-G01515C
		24 V	0.65 A		S8FS-G01524C
		5 V	6 A		S8FS-G03005C
30 W		12 V	3 A		S8FS-G03012C
30 W		15 V	2.4 A		S8FS-G03015C
		24 V	1.5 A		S8FS-G03024C
		5 V	8 A <b>*</b> 1		S8FS-G05005C
50 W	100 to 240 VAC	12 V	4.3 A		S8FS-G05012C
50 VV	(Permissible range	15 V	3.5 A		S8FS-G05015C
	85 to 264 VAC,	24 V	2.2 A	None	S8FS-G05024C
	80 to 370 VDC)	5 V	16 A <b>*</b> 2		S8FS-G10005C
	*4	12 V	8.5 A		S8FS-G10012C
100 W		15 V	7 A		S8FS-G10015C
		24 V	4.5 A		S8FS-G10024C
		24 V	4.5 A		S8FS-G10024C-500 *
		5 V 21 A *3		S8FS-G15005C	
	12	12 V	13 A		S8FS-G15012C
150 W		15 V	10 A		S8FS-G15015C
150 VV		241/		S8FS-G15024C	
	24 V 6.5 A		S8FS-G15024C-500 *		
		48 V	3.3 A		S8FS-G15048C
		12 V	25 A		S8FS-G30012C
	100 to 240 VAC	15 V	20 A		S8FS-G30015C
300 W	(Permissible range 85 to 264 VAC,	24 V	14 A		S8FS-G30024C
	120 to 370 VDC)	24 V	14 A		S8FS-G30024C-500 *6
	- /	48 V	7 A	Voc	S8FS-G30048C
		12 V	50 A	Yes	S8FS-G60012C
	100 to 240 VAC	15 V	40 A		S8FS-G60015C
600 W	(Permissible range	0414	07.4		S8FS-G60024C
	85 to 264 VAC, 120 to 350 VDC)	24 V	27 A		S8FS-G60024C-500 *6
	120 10 000 100)	48 V	13 A	=	S8FS-G60048C

**Note: 1.** Ask your OMRON representative for pricing information on optional models.

To mount a Power Supply from the front, purchase a DIN Rail-mounting Power Supply and a Front-mounting Bracket (sold separately). Refer to page 27.

## With Cover/Direct Mounting (Extended hold time type)

Power ratings	Input voltage	Output voltage (VDC)	Output current	Built-in fan	Model
300 W	100 to 240 VAC (Permissible range 85 to 264 VAC, 120 to 370 VDC)	24 V	14 A	Yes	S8FS-G30024C-H
600 W	100 to 240 VAC (Permissible range 85 to 264 VAC, 120 to 350 VDC)	24 V	27 A	res	S8FS-G60024C-H

## With Cover/Direct Mounting (Connector type)

Power ratings	Input voltage	Output voltage (VDC)	Output current	Built-in fan	Model
15 W	100 to 240 VAC		0.65 A		S8FS-G01524CE
30 W	(Permissible range		1.5 A		S8FS-G03024CE
50 W	85 to 264 VAC,	3	2.2 A	None	S8FS-G05024CE
100 W	80 to 370 VDC) *4		4.5 A		S8FS-G10024CE
150 W			6.5 A		S8FS-G15024CE

**<sup>\*1.</sup>** The output electric power is 40 W.

**<sup>2.</sup>** Front-mounting is not possible.

<sup>\*2.</sup> The output electric power is 80 W.

<sup>\*3.</sup> The output electric power is 105 W.
\*4. Applicable to products produced from May 2018.

**<sup>\*5.</sup>** Production started in July 2022.

**<sup>\*6.</sup>** Production started in parallel, since August 2022.

## S8FS-G

## **Specifications**

		Power rating			15 W				
Item	Οι	tput voltage (VDC)	5 V	12 V	15 V	24 V			
		100 VAC input	80% typ.	84% typ.	84% typ.	85% typ.			
Efficiency *1		200 VAC input	80% typ.	84% typ.	84% typ.	86% typ.			
<b>,</b>		230 VAC input	80% typ.	84% typ.	84% typ.	86% typ.			
	Voltage range *1		Single phase, 85 to 264	* '		3011 3/F1			
	Frequency *1		50/60 Hz (47 to 450 Hz)						
	Trequency 41	100 VAC input	0.32 A typ.						
	Current *1	200 VAC input	0.2 A typ.						
	Power factor *1	200 VAC IIIput	0.2 A typ.						
Input	Power lactor & l	100 VAC input	0.5 mA max.						
	Leakage current *1	100 VAC input 200 VAC input							
		·	1 mA max.						
	Inrush current *1 (for a cold start at	100 VAC input	14 A typ.						
	25°C)	200 VAC input	28 A typ.						
	Rated Output Currer	nt	3 A	1.3 A	1 A	0.65 A			
	Voltage adjustment	range <b>*</b> 1	-10% to 15% (with V.AI	DJ)	<u> </u>	'			
	Ripple & Noise	100 to 240 VAC input	40 m\/n n may	40 m\/n n mov	40 m\/n n may	60 m\/n n may			
	voltage <b>*</b> 1	100 to 240 VAC input	40 mVp-p max.	40 mVp-p max.	40 mVp-p max.	60 mVp-p max.			
	Input variation influe	Input variation influence *1							
Outnut	Load variation influence *1		1.0% max.						
Output	Temperature variation influence	100 to 240 VAC input	0.05%/°C max.						
	011	100 VAC input	1,000 ms max.						
	Startup time *1	200 VAC input	1,000 ms max.						
		100 VAC input	15 ms typ.	14 ms typ.	15 ms typ.	15 ms typ.			
	Hold time *1	200 VAC input	75 ms typ.	70 ms typ.	75 ms typ.	70 ms typ.			
	Overload protection		Yes, automatic reset	. 31	- 71	. 71			
			rated output voltage.	power shut off (shut off th	e input voltage and turn or				
	Overvoltage protecti	ion <b>*</b> 1	the input again)	atou output romago,	porror orrat orr (orrat orr a	o mpat romago ama tam o			
	Overheat protection		No						
unctions —	Series operation		Yes (For up to two Pow	er Supplies, external	diodes are required.)				
	Parallel operation		No (However, backup o	peration is possible,	external diodes are requir	ed.)			
	Remote sensing		No						
	Remote control	emote control		No					
	Output indicator		Yes (LED: Green)						
			3 kVAC for 1 min. (between all input terminals and output terminals) current cutoff 20 mA						
	Withstand voltage		2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA						
Insulation			1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA						
	Insulation resistance	 e	100 M $\Omega$ min. (between all output terminals and all input terminals) at 500 VDC						
	Ambient operating to	emperature	-20 to 70°C (Derating is required according to the temperature.) (with no condensation or icing)						
	Storage temperature		-25 to 75°C (with no co	·	, , , , , , , , , , , , , , , , , , , ,	9/			
Environment	Ambient operating h		90% max. (Storage humidity: 90% max.)						
	Vibration resistance	<b>-</b>	10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and Z directions						
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions						
	MTBF		135,000 hrs min.	, , an ootio	·· <del>·</del>				
Reliability	Life expectancy *1		10 years min.						
	Dimensions (W×H×D	))	Refer to <i>Dimensions</i> on page 19.						
	Weight	1	250 g						
Construction	Cooling fan		No						
	Degree of protection								
	Harmonic current en		Conforms to EN 61000-	3_2					
	namonic current en	Conducted Emissions	Conforms to EN 61204-		Class B				
	EMI <b>*</b> 1			· · · · · · · · · · · · · · · · · · ·					
	EMS	Radiated Emissions	Conforms to EN 61204- Conforms to EN 61204-	· · · · · · · · · · · · · · · · · · ·					
Standards	Safety Standards *2		UL 508 (Listing, excluding models with connector option) UL 62368-1 (Recognition, OVCII $[\le 3,000 \text{ m}]$ , Pol2) CSA C22.2 No.107.1 (excluding models with connector option) CSA C22.2 No.62368-1 (excluding models with connector option) EN 62477-1 (OVCIII $[\le 2,000 \text{ m}]$ , OVCII $[> 2,000 \text{ m}]$ and $\le 3,000 \text{ m}]$ , Pol2) EN/IEC 62368-1 (OVCII $[\le 3,000 \text{ m}]$ , Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1)						
	Marine Standards		RCM (EN61000-6-4)						
	<b>+</b>		No Conforms to F47-0706 (200 VAC input)						
	SEMI		COIIIOIIIIS IO F47-0706 (	ZOU VAO IIIPUL)					

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11.
\*2. Refer to Standard Compliance on page 11.

		Power rating			30 W			
Item	Oı	Output voltage (VDC)		5 V 12 V 15 V 24 V				
		100 VAC input	81% typ.	84% typ.	86% typ.	86% typ.		
Efficiency *1		200 VAC input	81% typ.	86% typ.	88% typ.	88% typ.		
		230 VAC input	81% typ.	86% typ.	88% typ.	89% typ.		
	Voltage range *1	200 17 to 11.put	* .	264 VAC, 80 to 370 VDC		50 % typ.		
	Frequency *1		50/60 Hz (47 to 450 Hz)					
	. requeries v :	100 VAC input	0.72 A typ.	· · · · · · ·				
	Current *1	200 VAC input	0.43 A typ.					
Innut	Power factor *1	1						
Input		100 VAC input	0.5 mA max.					
	Leakage current *1	200 VAC input	1 mA max.					
	Inrush current *1	100 VAC input	14 A typ.					
	(for a cold start at	200 VAC input	28 A typ.					
	25°C)	·			0.4.4	454		
	Rated Output Curre		6 A	3 A	2.4 A	1.5 A		
	Voltage adjustment	range *1	-10% to 15% (with	V.ADJ)				
	Ripple & Noise voltage *1	100 to 240 VAC input	50 mVp-p max.	60 mVp-p max.	50 mVp-p max.	60 mVp-p max.		
	Input variation influ	ence <b>*</b> 1	0.5% max.					
Output	Load variation influe	ad variation influence *1				·		
Catput	Temperature variation influence	100 to 240 VAC input	0.05%/°C max.					
	Startur time stat	100 VAC input	1,000 ms max.					
	Startup time *1	200 VAC input	1,000 ms max.					
	Hold time *1	100 VAC input	11 ms typ.	10 ms typ.	11 ms typ.	10 ms typ.		
	noid time 本1	200 VAC input	60 ms typ.	50 ms typ.	50 ms typ.	55 ms typ.		
	Overload protection		Yes, automatic res	et				
	Overvoltage protection *1			er of rated output voltage,	power shut off (shut off th	ne input voltage and turn		
	Overheat protection		the input again)					
Additional Se unctions Pa	Series operation		Yes (For up to two	Power Supplies, external	diodes are required.)			
	Parallel operation		No (However, back	up operation is possible,	external diodes are require	ed.)		
	Remote sensing		No		<u> </u>	,		
	Remote control		No					
	Output indicator		Yes (LED: Green)					
			3 kVAC for 1 min. (between all input terminals and output terminals) current cutoff 20 mA					
lnoule#!e	Withstand voltage		2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA					
Insulation			1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA					
	Insulation resistanc	e	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC					
	Ambient operating t	emperature	−20 to 70°C (Derat	ing is required according t	o the temperature.) (with	no condensation or icinç		
	Storage temperature			o condensation or icing)	* *			
Environment	Ambient operating h	numidity	90% max. (Storage	humidity: 90% max.)				
	Vibration resistance		10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and Z directions					
	Shock resistance		150 m/s <sup>2</sup> , 3 times e	each in ±X, ±Y, ±Z directio	ns			
Reliability	MTBF		135,000 hrs min.					
r chability	Life expectancy *1		10 years min.			·		
	Dimensions (W×H×I	0)	Refer to <i>Dimensions</i> on page 19.					
Construction	Weight		250 g					
	Cooling fan		No					
	Degree of protection							
	Harmonic current er		Conforms to EN 61					
	EMI *1	Conducted Emissions		204-3 Class B, EN 55011				
		Radiated Emissions		204-3 Class B, EN 55011				
	EMS		Conforms to EN 61204-3 high severity levels					
Standards	Safety Standards <b>≭</b> 2	Safety Standards *2		UL 508 (Listing, excluding models with connector option) UL 62368-1 (Recognition, OVCII [ $\leq$ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option) CSA C22.2 No.62368-1 (excluding models with connector option) EN 62477-1 (OVCIII [ $\leq$ 2,000 m], OVCII [ $>$ 2,000 m and $\leq$ 3,000 m], Pol2) EN/IEC 62368-1 (OVCII [ $\leq$ 3,000 m], Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1) RCM (EN61000-6-4)				
	Marine Standards		No					
	SEMI			706 (200 VAC input)				
41 Defer to D	atings Characteristic	es and Functions on		, , ,				

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11. \*2. Refer to Standard Compliance on page 11.

		Power rating	50 W					
Item	Oı	utput voltage (VDC)	5 V 12 V 15 V 24 V					
		100 VAC input	81% typ.	84% typ.	86% typ.	86% typ.		
Efficiency *1		200 VAC input	82% typ.	86% typ.	88% typ.	89% typ.		
<b>,</b>		230 VAC input	82% typ.	86% typ.	88% typ.	89% typ.		
	Voltage range *1		Single phase, 85 to 264			00 /0 typ.		
	Frequency *1		50/60 Hz (47 to 450 Hz)					
		100 VAC input	1.1 A typ.					
	Current *1	200 VAC input	0.62 A typ.					
	Power factor *1	200 m.cput						
Input	1 01101 140101 4 1	100 VAC input	0.5 mA max.					
	Leakage current *1	200 VAC input	1 mA max.					
	Inrush current *1	100 VAC input	14 A typ.					
	(for a cold start at	-	* .					
	25°C)	200 VAC input	28 A typ.					
	Rated Output Curre		8 A	4.3 A	3.5 A	2.2A		
	Voltage adjustment	range *1	-10% to 15% (with V.AI	DJ)				
	Ripple & Noise voltage *1	100 to 240 VAC input	40 mVp-p max.	40 mVp-p max.	40 mVp-p max.	60 mVp-p max.		
	Input variation influ	ence <b>*</b> 1	0.5% max.					
Output	Load variation influe	ence <b>*</b> 1	1.0% max.					
σαιραί	Temperature variation influence	100 to 240 VAC input	0.05%/°C max.					
	Startup time *1	100 VAC input	1,000 ms max.					
	Startup time *1	200 VAC input	1,000 ms max.					
	11.1.1.2	100 VAC input	14 ms typ.	11 ms typ.	10 ms typ.	10 ms typ.		
	Hold time *1	200 VAC input	75 ms typ.	60 ms typ.	60 ms typ.	55 ms typ.		
	Overload protection		Yes, automatic reset					
	Overvoltage protect	Yes, 120% or higher of the input again)	rated output voltage,	power shut off (shut off th	e input voltage and turn o			
	Overheat protection		No					
unctions	Series operation		Yes (For up to two Pow	er Supplies, external	diodes are required.)			
	Parallel operation		No (However, backup o	peration is possible, e	external diodes are require	ed.)		
	Remote sensing		No	· · · · · · · · · · · · · · · · · · ·		·		
	Remote control		No					
	Output indicator		Yes (LED: Green)					
			3 kVAC for 1 min. (between all input terminals and output terminals) current cutoff 20 mA					
	Middle add and a college		2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA					
Insulation	Withstand voltage		1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA					
			500 VAC for 1 min. (between all output terminals and RC terminals) current cutoff 20 mA					
	Insulation resistanc	e	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC					
	Ambient operating t	emperature	–20 to 70°C (Derating is	required according to	o the temperature.) (with	no condensation or icing)		
	Storage temperature	)	-25 to 75°C (with no condensation or icing)					
Environment	Ambient operating h		90% max. (Storage humidity: 90% max.)					
	Vibration resistance		10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and Z directions					
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions					
Dallak!!!	MTBF		135,000 hrs min.					
Reliability	Life expectancy *1		10 years min.					
	Dimensions (W×H×I	0)	Refer to Dimensions on	page 20.				
Conotruction	Weight		300 g					
Construction	Cooling fan		No					
	Degree of protection	1						
	Harmonic current er	nissions	Conforms to EN 61000-	3-2				
	EMI 444	Conducted Emissions	Conforms to EN 61204-	3 Class B, EN 55011	Class B			
	EMI *1	Radiated Emissions	Conforms to EN 61204-	3 Class B, EN 55011	Class B			
	EMS		Conforms to EN 61204-	3 high severity levels				
Standards	Safety Standards *2	Safety Standards *2		UL 508 (Listing, excluding models with connector option) UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option) CSA C22.2 No.62368-1 (excluding models with connector option) EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [> 2,000 m and ≤ 3,000 m], Pol2) EN/IEC 62368-1 (OVCII [≤ 3,000 m], Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1) RCM (EN61000-6-4)				
	Marine Standards		No	000 //40 : ::				
	SEMI		Conforms to F47-0706 (200 VAC input)					

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11.
\*2. Refer to Standard Compliance on page 11.

200 VAC input   31% typ.   88% typ.   87% typ.   89%			Power rating	<b>1</b>					
	Item	Oı	utput voltage (VDC)	5 V	12 V	15 V	24 V		
Voltage range *1   200 VAC input   31% byp.   80% byp.   87% byp.   89%   89			_	79% tvp.		_	87% typ.		
Voltage range *1	Efficiency *1		•		• •		89% typ.		
Voltage range *1						, , ,	89% typ.		
Input		Voltage range *1	200 1110 1111000		• • • • • • • • • • • • • • • • • • • •		00 / 0 typ.		
Input									
Input		Troquoncy 4-1	100 VAC input		0112)				
Power factor #1		Current *1							
Leakage current *1   200 VAC input   0.5 mA max.   1 mrush current *1   100 VAC input   14 A typ.   120 VAC input   14 A typ.   200 VAC input   28 A typ.   200 VAC input   200	Innut	Dower factor \$1	200 VAC IIIput						
Leakage current *  1   200 VAC input	iliput	rower factor & r	400 VAC immut						
Inrush current #1 (100 VAC input   14 A typ.		Leakage current *1	•						
Rated Output Current   16 A   8.5 A   7 A   4.5.			•						
Voltage adjustment range #1   -10% to 15% (with V.AD.)		,	200 VAC input						
Rippie & Noise voltage #1   100 to 240 VAC input   0.5% max   100 mVp-p max		<u> </u>		-		7 A	4.5 A		
Input variation influence *1   0.5% max   1.0% max				·					
Load variation influence   100 to 240 VAC input   1,000 ms max.   100 to 240 VAC input   1,000 ms max.   11 ms typ.   11 ms typ.   10 to 200 VAC input   1,000 ms max.   11 ms typ.   11 ms typ.   10 to 200 VAC input   1,000 ms max.   11 ms typ.   11 ms typ.   10 to 200 VAC input   1,000 ms max.   11 ms typ.   15 ms typ.   55 ms typ.   50 ms		Ripple & Noise voltage *1	100 to 240 VAC input						
Temperature variation     100 to 240 VAC input   1,000 ms max.		Input variation influence	<b>*</b> 1						
Influence   100 to 240 VAC input   1,000 ms max.   100 VAC input   1,000 ms max.   11 ms typ.   11 ms typ.   55 ms typ.		Load variation influence	<b>*</b> 1	1.0% max.					
Startup time *1   100 VAC input   1,000 ms max.	Output		100 to 240 VAC input	0.05%/°C may					
National time *1   200 VAC input   1,000 ms max.   11 ms typ.   11 ms typ.   10 ms typ.   12 ms typ.   15		influence	•						
Hold time \$1   100 VAC input   12 ms typ.   11 ms typ.   11 ms typ.   10 ms typ.   10 ms typ.   10 ms typ.   55 ms typ.		Startup time #1	•						
Hold time *  200 VAC input		otal tap time 41	200 VAC input	1,000 ms max.					
Verload protection		II a l al 45 a a a abad	100 VAC input	12 ms typ.	11 ms typ.	11 ms typ.	10 ms typ.		
Overvoltage protection ★1   Ves. 120% or higher of rated output voltage, power shut off (shut off the input on the input again)		Hold time *1	200 VAC input	70 ms typ.	55 ms typ.	55 ms typ.	55 ms typ.		
Overheat protection ★   Overheat protection ★   No		Overload protection		Yes, automatic res	et				
Overheat protection ★   Overheat protection ★   No				Yes, 120% or high	er of rated output voltage	e, power shut off (shut o	off the input voltage and		
Series operation   Yes (For up to two Power Supplies, external diodes are required.)		Overvoltage protection *1							
Parallel operation   No (However, backup operation is possible, external diodes are required.)   Parallel operation   No (However, backup operation is possible, external diodes are required.)   Remote sensing   No		Overheat protection		No					
Parallel operation   No (However, backup operation is possible, external diodes are required.)   Remote sensing   No   Remote control   Yes (Cnly for models with remote control option)   Ves (Cnly for min. (between all input terminals and output terminals) current out   1 kVAC for 1 min. (between all output terminals and PE terminals) current out   1 kVAC for 1 min. (between all output terminals and PE terminals) current output   Verminals and PE terminals   Verminals   Vermi		Series operation		Yes (For up to two	Power Supplies, extern	al diodes are required.)			
Remote sensing   No   Yes (Only for models with remote control option)	functions	Parallel operation		No (However, back	cup operation is possible	e. external diodes are re	equired.)		
Remote control   Yes (Cnly for models with remote control option)   Output indicator   Yes (LED: Green)   3 kVAC for 1 min. (between all input terminals and output terminals) current 2 kVAC for 1 min. (between all input terminals and PE terminals) current out 1 kVAC for 1 min. (between all output terminals and PE terminals) current cut 1 kVAC for 1 min. (between all output terminals and PE terminals) current cut 1 kVAC for 1 min. (between all output terminals and PE terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current cut 1 kVAC for 1 min. (between all output terminals and RC terminals) current 2 kVAC for 1 min. (between all output terminals and RC terminals) current 2 kVAC for 1 min. (between all output terminals and RC terminals) current 2 kVAC for 1 min. (between all output terminals and RC terminals cutrent coll 6 kVAC for 1 min. (between all output terminals and RC terminals cutrent coll 6 kVAC for 1 min. (between all output terminals and RC terminals for 1 kVAC for	Re	·					. ,		
Note   Section   Sectio					els with remote control o	ontion)			
Withstand voltage					olo wiai romoto control c	,puo11)			
Withstand voltage		Catpat maicator		· · · · · · · · · · · · · · · · · · ·					
Mithstand voltage				, , , , , , , , , , , , , , , , , , , ,					
Insulation   Solution   Solut		Withstand voltage		, , , , , , , , , , , , , , , , , , , ,					
S00 VAC for 1 min. (between all output terminals and RC terminals) current	Insulation	Withstand Voltage		, , , , , , , , , , , , , , , , , , , ,					
Insulation resistance   100 MΩ min. (between all output terminals and all input terminals/PE termin   -20 to 70°C (Derating is required according to the temperature. Refer to English (with no condensation or icing)				1 '					
Ambient operating temperature		Inculation resistance		· · · · · · · · · · · · · · · · · · ·					
Storage temperature  Storage temperature  Storage temperature  -25 to 75°C (with no condensation or icing)  Ambient operating humidity  90% max. (Storage humidity: 90% max.)  Vibration resistance  10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and 150 m/s², 3 times each in ±X, ±Y, ±Z directions  MTBF  135,000 hrs min.  Life expectancy \$1  10 years min.  Dimensions (W×H×D)  Weight  Cooling fan  No  Degree of protection  Harmonic current emissions  Conforms to EN 61000-3-2  EMI \$1  Conducted Emissions  Radiated Emissions  Conforms to EN 61204-3 Class B, EN 55011 Class B  EMS  Conforms to EN 61204-3 Class B, EN 55011 Class B  Conforms to EN 61204-3 high severity levels  UL 508 (Listing, excluding models with connector option or remote control of UL 508 (Recognition, owcell swith remote control option)  UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2)  CSA C22.2 No.107.1 (excluding models with connector option or remote con EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [≥ 2,000 m] and ≤ 3,000 m], Pol2)  EN/IEC 62368-1 (OVCIII [≤ 2,000 m], Pol2)  Conforms to PELV (EN/IEC 60204-1)		ilisulation resistance		· · · · · · · · · · · · · · · · · · ·					
Storage temperature		Ambient operating tempe	erature						
Ambient operating humidity		Storage temperature		C/					
Vibration resistance	Environment		lity.	· · · · · · · · · · · · · · · · · · ·					
Shock resistance    150 m/s², 3 times each in ±X, ±Y, ±Z directions			····y						
MTBF									
Life expectancy \$1 10 years min.  Dimensions (W×H×D) Refer to Dimensions on page 21.  Weight 400 g  Cooling fan No  Degree of protection  Harmonic current emissions Conforms to EN 61000-3-2  EMI \$1 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  UL 508 (Listing, excluding models with connector option or remote control of UL 508 (Recognition, models with connector option or remote control of UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2)  CSA C22.2 No.107.1 (excluding models with connector option or remote content EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [≥ 2,000 m], Pol2)  Conforms to EN/IEC 61558-2-16  Conforms to EN/IEC 61558-2-16  Conforms to PELV (EN/IEC 60204-1)									
Dimensions (W×H×D)   Refer to Dimensions on page 21.    Weight   400 g	Reliability								
Weight       400 g         Cooling fan       No         Degree of protection         Harmonic current emissions       Conforms to EN 61000-3-2         EMI *1       Conducted Emissions       Conforms to EN 61204-3 Class B, EN 55011 Class B         EMS       Conforms to EN 61204-3 high severity levels         UL 508 (Listing, excluding models with connector option or remote control of UL 508 (Recognition, models with remote control option)         UL 508 (Recognition, OVCII [≤ 3,000 m], Pol2)         CSA C22.2 No.107.1 (excluding models with connector option or remote control option)         UL 508 (Recognition, OVCII [≤ 3,000 m], Pol2)         CSA C22.2 No.62368-1 (excluding models with connector option or remote control option)         UL 508 (Policy (Recognition, DVCII [≤ 3,000 m], Pol2)         CSA C22.2 No.62368-1 (excluding models with connector option or remote control option)         UL 62477-1 (OVCIII [≤ 2,000 m], OVCII [≤ 3,000 m], Pol2)         Conforms to EN/IEC 61558-2-16									
Cooling fan No  Degree of protection  Harmonic current emissions Conforms to EN 61000-3-2  EMI *1 Conducted Emissions Conforms to EN 61204-3 Class B, EN 55011 Class B  EMS Conforms to EN 61204-3 Class B, EN 55011 Class B  Conforms to EN 61204-3 Class B, EN 55011 Class B  Conforms to EN 61204-3 Class B, EN 55011 Class B  UL 508 (Listing, excluding models with connector option or remote control or UL 508 (Recognition, models with remote control or UL 508 (Recognition, OVCII [≤ 3,000 m], Pol2)  CSA C22.2 No.107.1 (excluding models with connector option or remote control or EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [> 2,000 m] and ≤ 3,000 m], Pol2)  EN/IEC 62368-1 (OVCII [≤ 3,000 m], Pol2)  Conforms to EN/IEC 61558-2-16  Conforms to PELV (EN/IEC 60204-1)				. 0					
Cooling fan  Degree of protection  Harmonic current emissions  Conforms to EN 61000-3-2  EMI ★1  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  UL 508 (Listing, excluding models with connector option or remote control of UL 508 (Recognition, models with connector option)  UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2)  CSA C22.2 No.107.1 (excluding models with connector option or remote content (EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [≥ 2,000 m], Pol2)  EN/IEC 62368-1 (OVCII [≤ 3,000 m], Pol2)  Conforms to EN/IEC 61558-2-16  Conforms to PELV (EN/IEC 60204-1)	Construction								
Harmonic current emissions  Conforms to EN 61000-3-2  EMI *1  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  Conforms to EN 61204-3 high severity levels  UL 508 (Listing, excluding models with connector option or remote control or UL 508 (Recognition, models with remote control option) UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option or remote control option) EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [> 2,000 m and ≤ 3,000 m], Pol2) EN/IEC 62368-1 (OVCII [≤ 3,000 m], Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1)				No					
EMI *1  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  Conforms to EN 61204-3 high severity levels  UL 508 (Listing, excluding models with connector option or remote control or UL 508 (Recognition, models with remote control option) UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option or remote control option) EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [> 2,000 m and ≤ 3,000 m], Pol2) EN/IEC 62368-1 (OVCII [≤ 3,000 m], Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1)		Degree of protection							
EMI *1  Radiated Emissions Conforms to EN 61204-3 Class B, EN 55011 Class B  Conforms to EN 61204-3 high severity levels  UL 508 (Listing, excluding models with connector option or remote control or UL 508 (Recognition, models with remote control option)  UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2)  CSA C22.2 No.107.1 (excluding models with connector option or remote control option)  EN 62477-1 (OVCIII [≤ 2,000 m], OVCII [> 2,000 m and ≤ 3,000 m], Pol2)  EN/IEC 62368-1 (OVCII [≤ 3,000 m], Pol2)  Conforms to EN/IEC 61558-2-16  Conforms to PELV (EN/IEC 60204-1)		Harmonic current emission	ons	Conforms to EN 6	1000-3-2				
Radiated Emissions   Conforms to EN 61204-3 Class B, EN 55011 Class B		EMI #1	Conducted Emissions	Conforms to EN 6	1204-3 Class B, EN 550	11 Class B			
UL 508 (Listing, excluding models with connector option or remote control of UL 508 (Recognition, models with remote control option) UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option or remote control of CSA C22.2 No.62368-1 (excluding models with connector option		L(Y)] 주	Radiated Emissions	Conforms to EN 6	1204-3 Class B, EN 550	11 Class B			
UL 508 (Listing, excluding models with connector option or remote control of UL 508 (Recognition, models with remote control option) UL 62368-1 (Recognition, OVCII [≤ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option or remote control option) CSA C22.2 No.62368-1 (excluding models with connector option or remote control option option option or remote control option option option or remote control option o		EMS							
-:::\=:::::::::::::::::::::::::::::::::	Standards	Safety Standards *2		UL 508 (Listing, ex UL 508 (Recognition) UL 62368-1 (Reco CSA C22.2 No.10 <sup>2</sup> CSA C22.2 No.623 EN 62477-1 (OVC EN/IEC 62368-1 (Conforms to EN/IE Conforms to PELV	cluding models with corporation, models with remote gnition, OVCII [≤ 3,000 °.1 (excluding models with excluding models with [≤ 2,000 m], OVCII [> 0VCII [≤ 3,000 m], Pol2); C 61558-2-16	nnector option or remote control option) m], Pol2) ith connector option or vith connector option or re 2,000 m and ≤ 3,000 m	remote control option) emote control option)		
Marine Standards No		Marine Standards							
					706 (200 ) (40 :				
SEMI Conforms to F47-0706 (200 VAC input)		SEIVII		Conforms to F47-0	700 (200 VAC input)				

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11.
\*2. Refer to Standard Compliance on page 11.

		Power rating			150 W			
Item	Oı	utput voltage (VDC)	5 V	12 V	15 V	24 V	48 V	
		100 VAC input	78% typ.	84% typ.	85% typ.	87% typ.	85% typ.	
Efficiency *1		200 VAC input	81% typ.	87% typ.	88% typ.	89% typ.	88% typ.	
		230 VAC input	81% typ.	87% typ.	88% typ.	90% typ.	88% typ.	
	Voltage range *1	'	Single phase, 85	to 264 VAC, 80 to	370 VDC	"	1	
	Frequency *1		50 /60 Hz (47 to 450 Hz)					
	Current *1	100 VAC input	3 A typ.					
	Current #1	200 VAC input	1.8 A typ.					
Input	Power factor *1							
	Laskana aumant sted	100 VAC input	0.5 mA max.					
	Leakage current *1	200 VAC input	1 mA max.					
	Inrush current *1	100 VAC input	14 A typ.					
	(for a cold start at 25°C) 200 VAC input		28 A typ.					
	Rated Output Current	!	21 A	13 A	10 A	6.5 A	3.3 A	
	Voltage adjustment range	<b>*</b> 1	-10% to 15% (w	rith V.ADJ)				
	Ripple & Noise voltage *1	100 to 240 VAC input	100 mVp-p max	. 110 mVp-p max.	80 mVp-p max.	110 mVp-p max.	120 mVp-p ma	
	Input variation influence	*1	0.5% max.					
	Load variation influence	<b>*</b> 1	1.0% max.					
Output	Temperature variation	4004-0404403						
	influence	100 to 240 VAC input	0.05%/°C max.					
	Startum time she	100 VAC input	1,000 ms max.					
	Startup time *1	200 VAC input	1,000 ms max.					
	11.11.0	100 VAC input	14 ms typ.	10 ms typ.	10 ms typ.	10 ms typ.	11 ms typ.	
	Hold time <b>*</b> 1	200 VAC input	80 ms typ.	55 ms typ.	55 ms typ.	55 ms typ.	55 ms typ.	
	Overload protection		Yes, automatic r	eset		7.		
	O	4	Yes, 120% or hig	gher of rated output	voltage, power shu	t off (shut off the inp	ut voltage and tur	
	Overvoltage protection *	1	on the input aga	in)	5 11		· ·	
	Overheat protection		No					
Additional	Series operation		Yes (For up to two Power Supplies, external diodes are required.)					
functions	Parallel operation		No (However, backup operation is possible, external diodes are required.)					
	Remote sensing		No					
	Remote control		Yes (Only for models with remote control option)					
	Output indicator		Yes (LED: Green)					
			3 kVAC for 1 min.(between all input terminals and output terminals) current cutoff 20 mA					
			2 kVAC for 1 min.(between all input terminals and PE terminals) current cutoff 20 mA					
Insulation	Withstand voltage		1 kVAC for 1 min.(between all output terminals and PE terminals) current cutoff 20 mA					
iiiSuiatioii			Only Remote control					
			500 VAC for 1 min.(between all output terminals and RC terminals) current cutoff 20 mA					
	Insulation resistance		100 MΩ min.(between all output terminals and all input terminals/PE terminals) at 500 VDC					
	Ambient operating tempe	rature	-20 to 70°C (Derating is required according to the temperature. Refer to Engineering Data)					
			(with no conden-					
Environment	Storage temperature		-25 to 75°C (with no condensation or icing)					
	Ambient operating humid	lity	90% max. (Storage humidity: 90% max.)					
	Vibration resistance		10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and Z directions					
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions					
Reliability	MTBF		135,000 hrs min.					
	Life expectancy *1		10 years min.					
	Dimensions (W×H×D)			ions on page 23.				
Construction	Weight		500 g					
	Cooling fan		No					
	Degree of protection		Conforms to EN 61000-3-2 (Applicable at 80% or less of the rated load.)					
	Harmonic current emission			\		ot the rated load.)		
	EMI *1	Conducted Emissions		61204-3 Class B, E				
		Radiated Emissions	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
	EMS		Conforms to EN 61204-3 high severity levels					
Standards	Safety Standards *2		UL 508 (Listing, excluding models with connector option or remote control option) UL 508 (Recognition, models with remote control option) UL 62368-1 (Recognition, OVCII [ $\leq$ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with connector option or remote control option) CSA C22.2 No.62368-1 (excluding models with connector option or remote control option) EN 62477-1 (OVCIII [ $\leq$ 2,000 m], OVCII [> 2,000 m and $\leq$ 3,000 m], Pol2) EN/IEC 62368-1 (OVCII [ $\leq$ 3,000 m], Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1) RCM (EN61000-6-4) BIS: IS 13252 (Part1) \$3 (Output voltage 24 V type only. However, excluding S8FS-G15024CD-500.)					
	Marine Standards		No	,				
	SEMI			7-0706 (200 VAC in	nut)			
	OLIVII		Comonis to F41	-0100 (200 VAC III	pui <i>)</i>			

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11. \*2. Refer to Standard Compliance on page 11.

<sup>\*3.</sup> This BIS Standard is an Indian standard that has been in effect for this product since April 2021, and certification has been acquired for some models to enable individual product export to India. For details, refer to List of Models with Bureau of Indian Standards (BIS) Certification on page 11.

		Power rating		30	00 W			
Item	Ωı	itput voltage (VDC)	12 V	15 V	24 V	48 V		
ILGIII	U			81% typ.	82% typ.	-		
Ecc. 1		100 VAC input	81% typ.			82% typ.		
Efficiency *1		200 VAC input	85% typ.	85% typ.	87% typ.	87% typ.		
		230 VAC input	85% typ.	86% typ.	87% typ.	87% typ.		
	Voltage range *1		Single phase, 85 to 264	VAC, 120 to 370 VDC				
	Frequency *1		50/60 Hz (47 to 63 Hz)					
	Commont shift	100 VAC input	4.2 A typ.					
	Current *1	200 VAC input	2.1 A typ.					
Input	Power factor *1		0.9 min.					
		100 VAC input	0.5 mA max.					
	Leakage current *1	200 VAC input	1 mA max.					
	1	100 VAC input						
	Inrush current *1 (for a cold start at 25°C)	•	14 A typ.					
	, ,	200 VAC input	28 A typ.	00.4	1	1		
	Rated Output Currer		25 A	20 A	14 A	7 A		
	Voltage adjustment	. <u> </u>	-10% to 15% (with V.AI					
	Ripple & Noise voltage *1	100 to 240 VAC input	140 mVp-p max.	270 mVp-p max.	150 mVp-p max.	330 mVp-p max.		
	Input variation influ	ence <b>*</b> 1	0.5% max.					
	Load variation influe	ence <b>*</b> 1	1.0% max.					
	Temperature variation influence	100 to 240 VAC input	0.05%/°C max.					
Output		100 VAC input	1,000 ms max.					
	Startup time *1	200 VAC input	1,000 ms max.					
		100 VAC input	30 ms typ.	30 ms typ.	30 ms typ. 40 ms typ. (Extended hold time type)	30 ms typ.		
	Hold time <b>*</b> 1	200 VAC input	30 ms typ.	25 ms typ.	30 ms typ. 40 ms typ. (Extended hold time type)	30 ms typ.		
	Overload protection		Voc. automatic recet		noid time type)			
Overvoltage protection *1			Yes, automatic reset					
			Yes, 120% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input voltage)					
	Overheat protection		Yes, power shut off (shut off the input voltage and turn on the input again)					
Additional	Series operation		Yes (For up to two Power Supplies, external diodes are required.)					
functions	Parallel operation		No (However, backup operation is possible, external diodes are required.)					
	Remote sensing		No					
	Remote control		Yes (Only for models with remote control option)					
	Output indicator		Yes (LED: Green)					
	•		3 kVAC for 1 min. (between all input terminals and output terminals) current cutoff 20 mA					
			2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA					
	Withstand voltage		1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA					
Insulation			Only Remote control					
			500 VAC for 1 min. (between all output terminals and RC terminals) current cutoff 20 mA					
	Insulation resistance	9	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC					
	Ambient operating t		,	<u>'</u>	ne temperature.) (with no	,		
	Storage temperature	<u> </u>	-25 to 75°C (with no co		ic temperature.) (with no	bondensation or long)		
F			(	3,				
Environment	Ambient operating h		90% max. (Storage humidity: 90% max.)					
	Vibration resistance		10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and Z directions					
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions					
Reliability	MTBF		135,000 hrs min.					
. tonubinty	Life expectancy *1		10 years min.					
	Dimensions (W×H×I	0)	Refer to Dimensions on	page 25				
0	Weight		700 g					
Construction	Cooling fan		Yes					
	Degree of protection	1						
	Harmonic current er		Conforms to EN 61000-	3-2				
	marmonic current er	Conducted Emissions		3-2 3 Class B, EN 55011 Cl	acc B			
	EMI *1			· · · · · · · · · · · · · · · · · · ·				
		Radiated Emissions		3 Class B, EN 55011 Cl	ass B			
	EMS		Conforms to EN 61204-	,				
Standards	Safety Standards *2		UL 508 (Recognition, m UL 62368-1 (Recognition CSA C22.2 No.107.1 (e CSA C22.2 No.62368-1 EN 62477-1 (OVCIII [s] EN/IEC 62368-1 (OVCI Conforms to EN/IEC 61 Conforms to PELV (EN/RCM (EN61000-6-4)	l [≤ 3,000 m], Pol2) 558-2-16 l'EC 60204-1) 3 (Output voltage 24 V ty	ol option) ol2) note control option)			
	Marine Standards		No					
	SEMI		Conforms to F47-0706	(200 VAC input)				
		es and Functions on		· · ···/				

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11.
\*2. Refer to Standard Compliance on page 11.
\*3. This BIS Standard is an Indian standard that has been in effect for this product since April 2021, and certification has been acquired for some models to enable individual product export to India. For details, refer to List of Models with Bureau of Indian Standards (BIS) Certification on page 11.

		Day			0.14/		
	_	Power rating	40.1/		0 W	40.14	
Item	Οι	itput voltage (VDC)	12 V	15 V	24 V	48 V	
		100 VAC input	84% typ.	84% typ.	85% typ.	88% typ.	
Efficiency *1		200 VAC input	88% typ.	88% typ.	89% typ.	92% typ.	
		230 VAC input	88% typ.	88% typ.	90% typ.	92% typ.	
	Voltage range *1		Single phase, 85 to 264	VAC, 120 to 350 VDC			
	Frequency *1		50 /60 Hz(47 to 63 Hz)				
	Current *1	100 VAC input	7.7 A typ.				
		200 VAC input	3.8 A typ.				
Input	Power factor *1		0.9 min.				
	Leakage current *1	100 VAC input	0.5 mA max.				
		200 VAC input	1 mA max.				
	Inrush current *1	100 VAC input	14 A typ.				
	(for a cold start at 25°C)		28 A typ.				
	Rated Output Currer		50 A	40 A	27 A	13 A	
	Voltage adjustment		-10% to 15% (with V.AI				
		100 to 240 VAC input	170 mVp-p max.	170 mVp-p max.	280 mVp-p max.	340 mVp-p max.	
	Input variation influe		0.5% max.				
	Load variation influe	ence <b>*1</b>	1.0% max.				
	Temperature variation influence	100 to 240 VAC input	0.05%/°C max.				
Output	Startup time *1	100 VAC input	1,000 ms max.				
	Startup time 41	200 VAC input	1,000 ms max.				
	Hold time <b>*</b> 1	100 VAC input	30 ms typ.	25 ms typ.	30 ms typ. 40 ms typ. (Extended hold time type)	30 ms typ.	
	How time 41	200 VAC input	30 ms typ.	25 ms typ.	30 ms typ. 40 ms typ. (Extended hold time type)	30 ms typ.	
	Overload protection		Yes, automatic reset	•		*	
	Overvoltage protecti	ion <b>*</b> 1	Yes, 120% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again)				
	Overheat protection		Yes, power shut off (shut off the input voltage and turn on the input again)				
Additional	Series operation		Yes (For up to two Power Supplies, external diodes are required.)				
functions	Parallel operation		Yes (up to five Power Supplies, S8FS-G60024 (models with parallel operation option) only).				
	Remote sensing		No				
	Remote control		Yes (Only Remote control)				
	Output indicator		Yes (LED: Green)	,			
Insulation	Withstand voltage		3 kVAC for 1 min. (between all input terminals and output terminals) current cutoff 20 mA 2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA 1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA Only Remote control 500 VAC for 1 min. (between all output terminals and RC terminals) current cutoff 20 mA				
	Insulation resistance	•	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC				
	Ambient operating to		-20 to 70°C (Derating is required according to the temperature.) (with no condensation or icing)				
	Storage temperature	• •	-25 to 75°C (with no co	ndensation or icing)	, , ,	07	
Environment	Ambient operating h		90% max. (Storage humidity: 90% max.)				
	Vibration resistance		10 to 55 Hz, 4.5 G max., 0.375-mm half amplitude for 2 h each in X, Y, and Z directions				
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions				
	MTBF		135,000 hrs min.	, ,			
Reliability	Life expectancy *1		10 years min.				
	Dimensions (W×H×D	))	Refer to <i>Dimensions</i> on page 26.				
	Weight		1,050 g				
Construction	Cooling fan		Yes				
	Degree of protection						
	Harmonic current en		Conforms to EN 61000-	3-2			
		Conducted Emissions		3 Class B, EN 55011 Cla	ss B		
	EMI *1	Radiated Emissions	Conforms to EN 61204-	3 Class B, EN 55011 Cla	ss B		
	EMS		Conforms to EN 61204-3 high severity levels				
Standards	Safety Standards *2		UL 508 (Listing, excluding models with remote control option) UL 508 (Recognition, models with remote control option) UL 62368-1 (Recognition, OVCII [ $\leq$ 3,000 m], Pol2) CSA C22.2 No.107.1 (excluding models with remote control option) CSA C22.2 No.62368-1 (excluding models with remote control option) EN 62477-1 (OVCIII [ $\leq$ 2,000 m], OVCII [ $>$ 2,000 m and $\leq$ 3,000 m], Pol2) EN/IEC 62368-1 (OVCII [ $\leq$ 3,000 m], Pol2) Conforms to EN/IEC 61558-2-16 Conforms to PELV (EN/IEC 60204-1) RCM (EN61000-6-4) BIS: IS 13252 (Part1) $\Rightarrow$ 3 (Output voltage 24 V type only. However, excluding S8FS-G60024C-500 and S8FS-G60024CD-500.)				
	Marine Standards		No Conforms to E47 0706	(200 VAC input)			
	SEMI		Conforms to F47-0706 (200 VAC input)				

<sup>\*1.</sup> Refer to Ratings, Characteristics, and Functions on page 11.
\*2. Refer to Standard Compliance on page 11.
\*3. This BIS Standard is an Indian standard that has been in effect for this product since April 2021, and certification has been acquired for some models to enable individual product export to India. For details, refer to List of Models with Bureau of Indian Standards (BIS) Certification on page 11.

## Ratings, Characteristics, and Functions

Efficiency			The value is when both rated output voltage and rated output current are satisfied.		
	_	e range	Do not use an inverter output for the Power Supply. Inverters with an output frequency of 50/60 Hz are available, but the rise in the internal temperature of the Power Supply may		
	Freque	ency	result in ignition or burning.		
	Currer	nt	The value is when both rated output voltage and rated output current are satisfied.		
Input	Power	factor	The value is when both rated output voltage and rated output current are satisfied.		
	Leaka	ge current	The values are determined according to the Act on Power Supply Safety of Electrical Appliances and Materials.		
		current cold start at 25°C)	For a cold start at 25°C. Refer to the following figure.		
	Voltage	e adjustment range	If the output voltage adjuster (V. ADJ) is turned, the voltage will increase by more than +159 of the voltage adjustment range. When adjusting the output voltage, confirm the actual output voltage from the Power Supply 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.		
Output	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 v	variation influence	This is the value when the output current is changed from 0 A to the rated output current while the input voltage is within the allowable input voltage.		
	Startu	p time	The value is when both rated output voltage and rated output current are satisfied. For a cold start at 25°C. Refer to the following figure.		
	Hold time		The value is when both rated output voltage and rated output current are satisfied. At 25°C. Refer to the following figure.		
Additional functions	Overvoltage protection		Refer to <i>Overvoltage Protection</i> on page 18 for the time when input voltage shuts off and input turns on again.		
Reliability	Life expectancy		Refer to Recommended Replacement Periods and Periodic Replacement for Preventive Maintenance on page 33 for details.		
Standarda	ЕМІ	Conducted Emissions	The 150-W and higher models conform to Class B when an aluminum plate is set under the		
Standards	FIVII	Radiated Emissions	Power Supply.		

## **Standard Compliance**

- The input voltage range for compliance with EC Directives and other safety standards (UL, EN, etc.) is 90 to 264 VAC.
- EN/IEC 61558-2-16

To comply with EN/IEC 60204-1 (Machine Safety), a transformer is required in the control circuit. If, however, a Power Supply that has a built-in transformer that complies with EN/IEC 6155-8-2-16 is used, an external transformer is not required.

• Safety standard targets during a DC input \*

During a DC input, UL 62368-1, cUR (CSA C22.2 No. 62368-1), EN/IEC 62368-1, EN 62477-1, EN/IEC 61558-2-16, and EN/IEC 60204-1 are safety standard targets. (However, the input voltage range is 120 to 320 VDC. The safety standards during DC input are not acquired for the S8FS-G60048□.)

It is possible to comply with the safety standards by connecting a UL-authenticated fuse. Select a UL-authenticated fuse that satisfies the following conditions:

S8FS-G015□□/030□□ (320 VDC or above, 3 A)

S8FS-G050□□ (320 VDC or above, 4 A)

S8FS-G100 (320 VDC or above, 8 A)

S8FS-G150□□ (320 VDC or above, 10 A)

S8FS-G300□□ (320 VDC or above, 12 A) S8FS-G600□□ (320 VDC or above, 20 A)

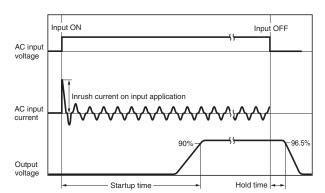
- To comply with the PELV output of the EN/IEC 60204-1, ground the output negative side (-V) to PE. \*
- \* Applicable to products produced from May 2018

## List of Models with Bureau of Indian Standards (BIS) Certification

S8FS-G15024C	S8FS-G30024C	S8FS-G60024C-R
S8FS-G15024C-R	S8FS-G30024C-H	S8FS-G60024C-W
S8FS-G15024CD	S8FS-G30024C-R	S8FS-G60024C-WR
S8FS-G15024CD-R	S8FS-G30024CD	S8FS-G60024CD
S8FS-G15024CDE	S8FS-G30024CD-H	S8FS-G60024CD-H
S8FS-G15024CDE-R	S8FS-G30024CD-R	S8FS-G60024CD-R
S8FS-G15024CE	S8FS-G60024C	S8FS-G60024CD-W
S8FS-G15024CE-R	S8FS-G60024C-H	S8FS-G60024CD-WR

Note: Ask your OMRON sales representative about models not contained in the list above.

## Inrush Current, Startup Time, Output Hold Time

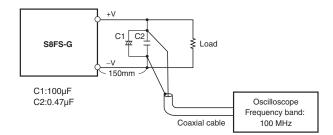


Note: The total inrush current of all of the Power Supplies will flow for parallel operation or backup operation.

Sufficiently check the fusing characteristics of fuses and the operating characteristics of breakers and select fuses and breakers so that external fuses will not burn out or breakers will not operate due to inrush current.

## **Ripple Noise Voltage**

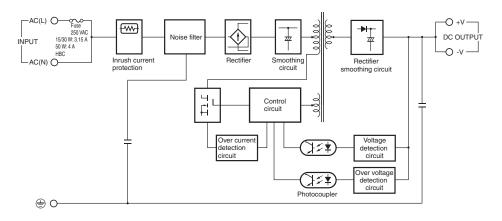
The specified standard for the ripple voltage noise was measured with a measurement circuit that is based on JEITA standard RC-9131A.



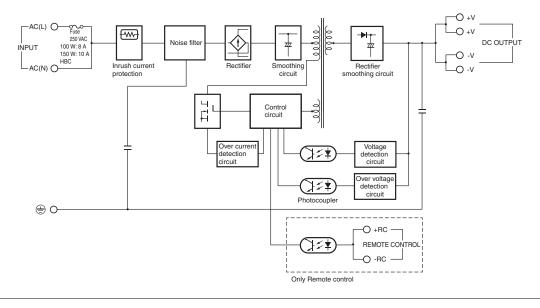
## **Connections**

## **Block Diagrams**

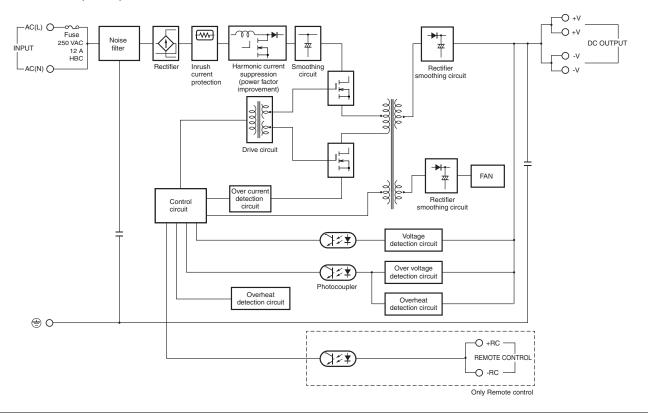
S8FS-G015□□□ (15 W) S8FS-G030□□□ (30 W) S8FS-G050□□□ (50 W)



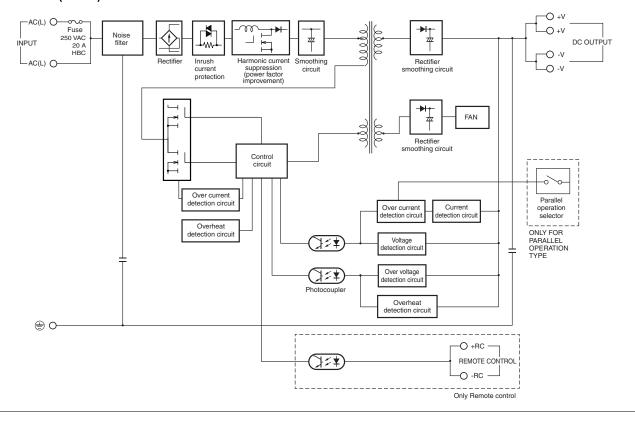
S8FS-G100□□□ (100 W) S8FS-G150□□□ (150 W)



### S8FS-G300□□□ (300 W)



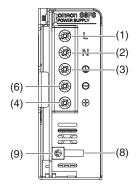
### S8FS-G600□□□ (600 W)



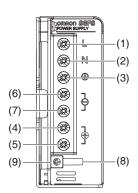
## **Construction and Nomenclature**

## **Nomenclature**

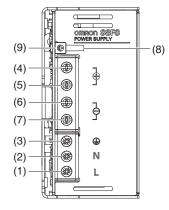




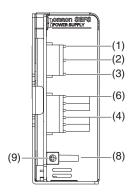
#### \$8FS-G100□□□ \$8FS-G150□□□



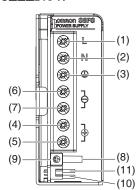
S8FS-G300□□□ S8FS-G600□□□



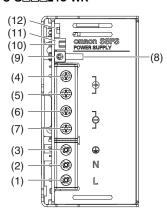
#### S8FS-G□□□24CE



#### S8FS-G□□□24C-R



## S8FS-G□□□24C-WR



No.	Terminal name	Name	Function		
(1)	L	Input terminals	Connect the input lines to these terminals. *1		
(2)	N	Input terminais	Connect the input lines to these terminals. *1		
(3)	PE	Protective Earth terminal (  )	Connect the ground line to this terminal. *2		
(4)	+V1				
(5)	+V2	DC output terminals	Connect the load lines to these terminals.		
(6)	-V1	DC output terminals	Connect the load lines to trese terminals.		
(7)	-V2				
(8)		Output indicator (DC ON: green)	Lights while a direct current (DC) output is ON.		
(9)		Output voltage adjuster (V.ADJ)	Use to adjust the voltage.		
(10)	+RC	Remote control terminals	Wire for remote control.		
(11)	-RC	Remote control terminals	Wile for remote control.		
(12)		Parallel operation switch	To operate in parallel, set the switch to the "PARALLEL" side.		

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

## Input and Output Connectors (Connector type)

•	•	•	• • •			
			Applicable connector	Housing	Terminals	Applicable crimp tool
Input side	All models	CN110	B3P5-VH (LF) (SN)	VHR-5N		
Output side	S8FS-G01524□E S8FS-G03024□E S8FS-G05024□E	CN510	B4P-VH (LF) (SN)	VHR-4N	Reel: SVH-21T-P1.1 Bulk: BVH-21T-P1.1	YC-160R
	S8FS-G10024□E S8FS-G15024□E		B6P-VH (LF) (SN)	VHR-6N		
Manufacturer			J.S.T. Mfg. Co., Ltd.	•	•	

Note: The female connectors that are required for wiring are not provided with the Power Supply.

<sup>\*2.</sup> This is the protective earth terminal specified in the safety standards. Always ground this terminal.

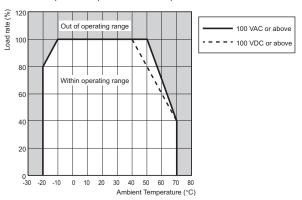
## S8FS-G

## **Engineering Data**

## **Derating Curves**

#### **Output Derating**

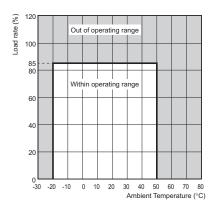
Standalone operation (15 W to 150 W)



**Note:** Multiply the load ratio shown in the above output derating curve by the coefficient of load reduction to input voltage.

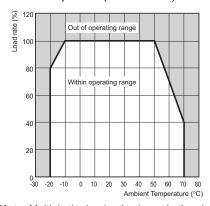
#### **Parallel Operation**

For Models with Parallel Operation Option



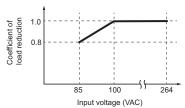
**Note:** Multiply the load ratio shown in the above output derating curve by the coefficient of load reduction to input voltage.

#### Standalone operation (300 W/600 W)



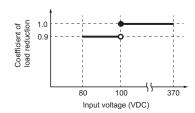
**Note:** Multiply the load ratio shown in the above output derating curve by the coefficient of load reduction to input voltage.

## Coefficient of load reduction to input voltage AC input (15 W to 600 W)



\* 15 W/30 W/50 W/100 W/150 W only when used at ambient temperature 40°C or higher

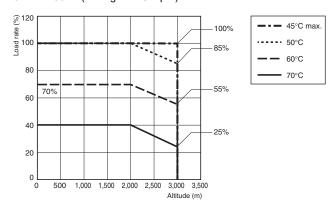
### DC input (15 W to 150 W)



This Power Supply can be used at an altitude of 3,000 m.

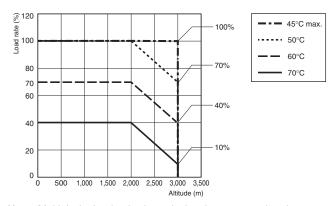
Between 2,000 and 3,000 m, derate the load according to the following derating curve.

#### 15 W to 150 W (During an AC input)



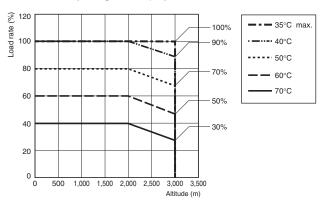
**Note:** Multiply the load ratio shown in the above output derating curve by the coefficient of load reduction to input voltage.

## 300 W and 600 W



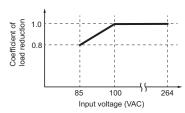
**Note:** Multiply the load ratio shown in the above output derating curve by the coefficient of load reduction to input voltage.

## 15 W to 150 W (During a DC input)



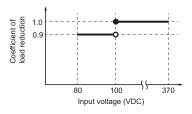
**Note:** Multiply the load ratio shown in the above output derating curve by the coefficient of load reduction to input voltage.

## Coefficient of load reduction to input voltage AC input (15 W to 600 W)



★ 15 W/30 W/50 W/100 W/150 W only when used at ambient temperature 40°C or higher

#### DC input (15 W to 150 W)

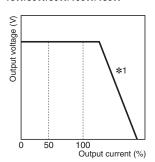


## **Engineering Data**

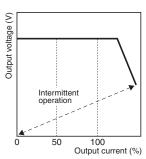
#### **Overload Protection**

The load and the Power Supply are automatically protected from overcurrent damage by this function. Overload protection is activated if the output current rises above 105 to 160% of the rated current. When the output current returns within the rated range overload protection is automatically cleared.

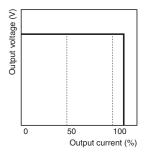
#### 15W/30W/50W/100W/150W



#### 300W



#### 600W



\*1. Operation is intermittent in a fixed cycle in short-circuited or overcurrent states.

**Note: 1.** Internal parts may occasionally deteriorate or be damaged if a short-circuited or overcurrent state continues during operation

Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.

### **Overvoltage Protection**

Consider the possibility of an overvoltage and design the system so that the load will not be subjected to an excessive voltage even if the feedback circuit in the Power Supply fails.

If an excessive voltage that is 120% of the rated voltage or more is output, the output voltage is shut OFF.

Reset the input power by turning it OFF for at least three minutes and then turning it back ON again.

#### Overheating Protection (300 W and 600 W)

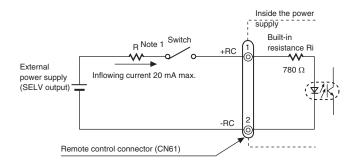
If the internal temperature of the Power Supply rises excessively as a result of fan failure or any other reason, the overheat protection circuit will be triggered to shut OFF the output voltage.

To restore operation, turn OFF the input power supply long enough for the Power Supply to cool sufficiently and then turn it ON again.

## **Remote Control Function (Only Remote control)**

This function is to turn ON/OFF the output by applying a voltage to the remote control connector from a DC power Supply (external power supply) other than this Power Supply.

Voltage between +RC and -RC (V)	Output voltage (VDC)
4.5 to 12.5	ON
0 to 0.5	OFF



Usage example of the remote control

#### Connectors used:

	CN61	Applicable connector	Applicable contact	
Model	B2B-XH-AM	XHP-2	SXH-001T-P0.6 or SXH-002T-P0.6	
Manufacturer	J.S.T. Mfg. Co., Ltd.			

Applicable crimp tool: YC-110R (J.S.T. Mfg. Co., Ltd.) or YRS-110 (J.S.T. Mfg. Co., Ltd.)

Note: 1. When the external power supply is 4.5 to 12.5 V, the current limiting resistor R is not required. When it is 12.5 to 24.5 V, insert 1.5 k $\Omega$  as the current limiting resistor R.

Reverse connection of the connector may cause damage on the internal parts.

The +RC and -RC terminals are the secondary circuit of the Power Supply. Use an SELV output power supply for an external power supply. The remote control circuit is insulated from the secondary output of the Power Supply (functional insulation).

#### **Reference Value**

	Value
Reliability (MTBF)	Single phase model 15W: 970,000 30W: 970,000 50W: 880,000 100W: 730,000 150W: 620,000 300W: 200,000 600W: 190,000
Definition	MTBF stands for Mean Time Between Failures, which is calculated according to the probability of accidental device failures, and indicates reliability of devices.  Therefore, it does not necessarily represent a life of the product.
Life expectancy	10 yrs. Min.
Definition	The life expectancy indicates average operating hours under the ambient temperature of 40°C and a load rate of 50%. Normally this is determined by the life expectancy of the built-in aluminum electrolytic capacitor.

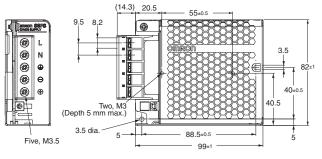
Dimensions (Unit: mm)

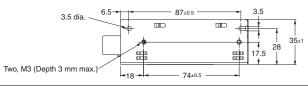
## **Power Supplies**

## 15 W and 30 W

## \$8FS-G015□□C \$8FS-G030□□C





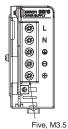


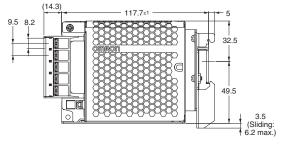
#### Panel mounting holes dimensions

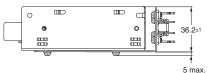
r unor mounting notes unitensions				
	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply		
Side Mounting	Two, M3 40±0.5	Two, 3.5 dia.		
Bottom Mounting	Two, M3	Two, 3.5 dia.		





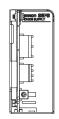


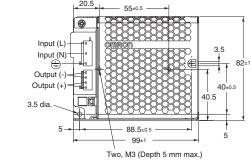


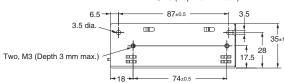


### \$8FS-G015□□E \$8FS-G030□□E







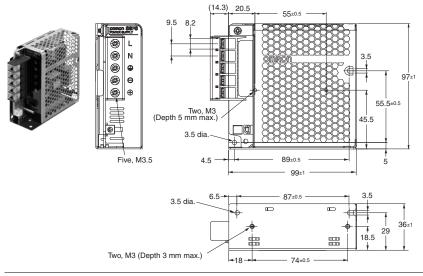


#### Panel mounting holes dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	Two, M3 40±0.5	Two, 3.5 dia.
Bottom Mounting	Two, M3	Two, 3.5 dia.

## **50W**

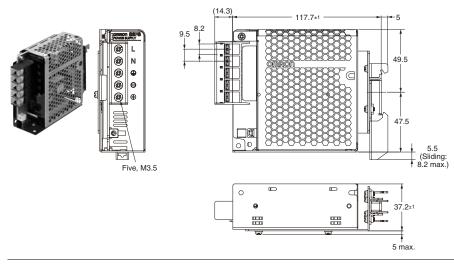
## S8FS-G050□□C



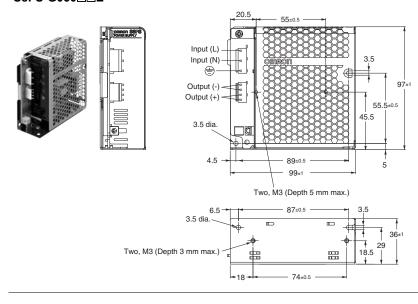
#### Panel mounting holes dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	Two, M3	Two, 3.5 dia.
Bottom Mounting	Two, M3	Two, 3.5 dia.

## S8FS-G050□□CD



## S8FS-G050□□E



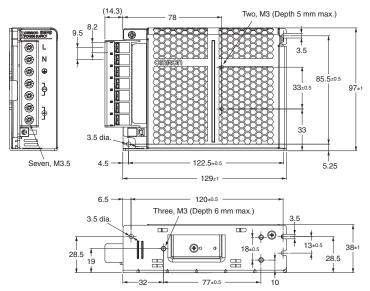
#### Panel mounting holes dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	Two, M3	Two, 3.5 dia.
Bottom Mounting	Two, M3	Two, 3.5 dia.

## 100W

## S8FS-G100□□C



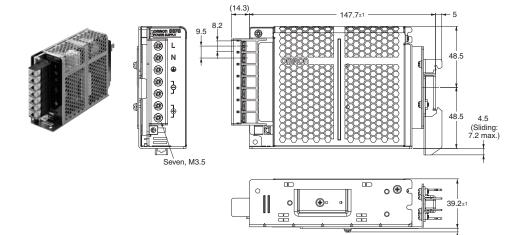


#### Panel mounting holes dimensions

5 max.

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	85.5±0.5 Two, M3	Two, 3.5 dia.
Bottom Mounting	Three, M3	Three, 3.5 dia.

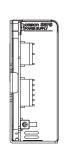
## S8FS-G100□□CD

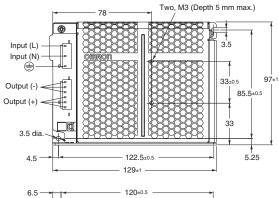


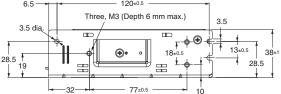
## S8FS-G

## S8FS-G100□□E









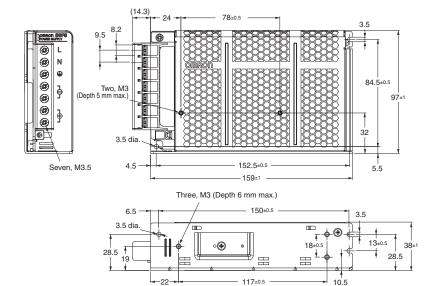
#### Panel mounting holes dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	Two, M3	Two, 3.5 dia.
Bottom Mounting	Three, M3	Three, 3.5 dia.

## 150W

## S8FS-G150□□C



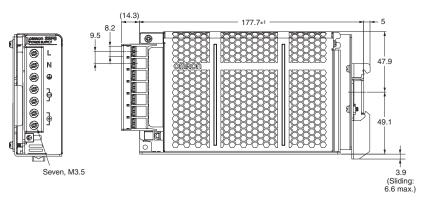


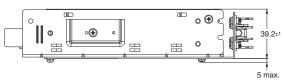
#### Panel mounting holes dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	Two, M3	Two, 3.5 dia.
Bottom Mounting	Three, M3 13±0.5	Three, 3.5 dia.

## S8FS-G150□□CD

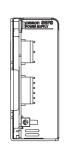


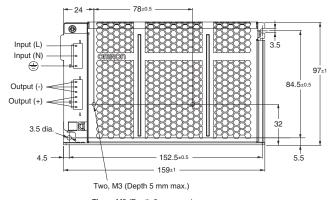


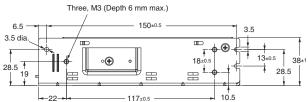


#### S8FS-G150□□E







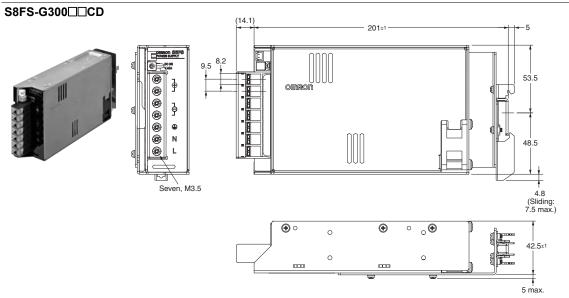


#### Panel mounting holes dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Side Mounting	Two, M3	Two, 3.5 dia.  78±0.5 →
Bottom Mounting	Three, M3 13±0.5	Three, 3.5 dia.

## 300W

#### S8FS-G300□□C Two, M4 (Depth 5 mm max.) Panel mounting holes dimensions Using the screw holes in the Power Supply **⊗** Two, 4.5 dia. 102±1 Side Mounting — 64±0.5 — Four, 4.5 dia. 50.5 Bottom Mounting 74±0.5 Seven, M3.5 (3.5)170±1 60 74±0.5 • • **(** $\odot$ 20±0.5 12 Four, M4 (Depth 5 mm max.)

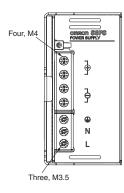


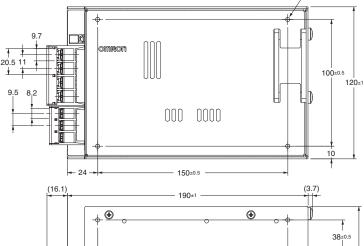
Note: Use a Front-mounting Bracket (S82Y-FSG-30F) when the DIN Rail is not strong enough for your usage environment.

## 600W

## S8FS-G600□□C

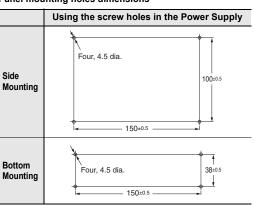






(16.1) 190±1 (3.7) (3.7) (3.7) (3.7) (3.7) (3.7) (3.7) (3.7) (3.7) (3.7) (61±1) (14.1) (14.1) (14.1) (15.1) (15.1) (16.1) (

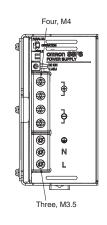
#### Panel mounting holes dimensions

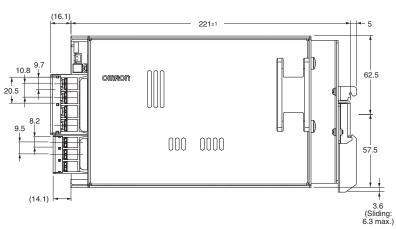


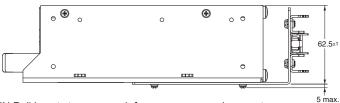
Four, M4 (Depth 5 mm max.)

### S8FS-G600□□CD









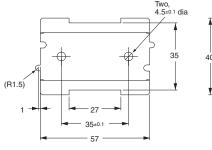
Note: Use a Front-mounting Bracket (S82Y-FSG-60F) when the DIN Rail is not strong enough for your usage environment.

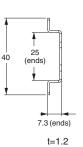
## **Mounting Brackets (Order Separately)**

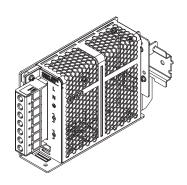
Use the Front-mounting Brackets together with DIN Rail-mounting Power Supplies (S8FS-G CD). Purchase a DIN Rail mounting bracket separately to mount direct mounting models (S8FS-G CD CD) on a DIN Rail.

Power rating	Mounting direction	Model
15 W, 30 W, 50 W 100 W, 150 W and 300 W	Front-mounting	S82Y-FSG-30F
600 W	Front-mounting	S82Y-FSG-60F

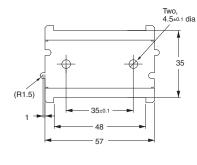
#### S82Y-FSG-30F

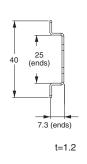


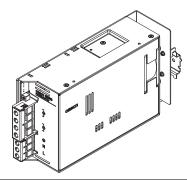




#### S82Y-FSG-60F







Note: Replacement brackets from the S8JX-N, S8JX-P, and S8VM series are available. Use these brackets for a front mounting configuration using direct mounting models.

Refer to the data sheet (Cat. No.: T216-E1, T217-E1, and T218-E1) for more information.

## **Terminal cover (Order Separately)**

Power rating	Applicable models	Terminal Cover model number
15 W	S8FS-G015□□□	
30 W	S8FS-G030 🗆 🗆	S82Y-FSG-C5P
50 W	S8FS-G050□□□	
100 W	S8FS-G100□□□	
150 W	S8FS-G150□□□	S82Y-FSG-C7P
300 W	S8FS-G300□□□	
600 W	S8FS-G600□□□	S82Y-FSG-C7P-L (Input Output)

Note: A Terminal Block Cover is provided with the Power Supply as a standard accessory. You can purchase another one if your Cover is damaged or lost.

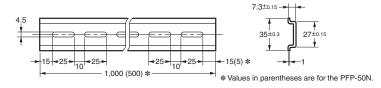
## **DIN Rail (Order Separately)**

(Unit: mm)

Mounting Rail (Material: Aluminum)

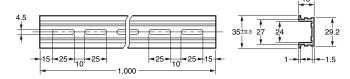
PFP-100N PFP-50N





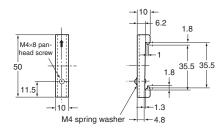
# Mounting Rail (Material: Aluminum) PFP-100N2





End Plate PFP-M

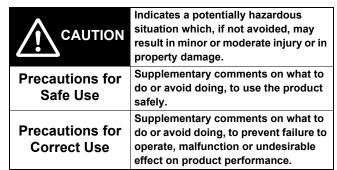




Note: If there is a possibility that the Unit will be subject to vibration or shock, use a steel DIN Rail. Otherwise, metallic filings may result from aluminum abrasion.

## **Safety Precautions**

Refer to Safety Precautions for All Power Supplies. Warning Indications



## **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.



Use 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.

## /!\ 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.



Fire may occasionally occur. Tighten terminal screws to the specified torque.

M3.5: 0.74 to 1.13N·m M4: 1.08 to 1.32N·m



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 or conductors or any clippings or cuttings resulting from installation work to enter the Product.



#### **Precautions for Safe Use**

### **Ambient Operating and Storage Environments**

- Store the Power Supply at a temperature of –25 to 75°C and a humidity of 90% max.
- Make sure to use the Power Supply within the derating curve, as this may damage the product. Ambient temperature, input voltage and altitude affect the derating.
- Use the Power Supply at a humidity of 90% max.
- Do not use locations where liquids, foreign matter, or corrosive gases may enter the interior of the Power supplies.

#### **Installation Environment**

- Do not use the Power Supply in locations subject to shocks or vibrations. In particular, install the Power Supply as far away as possible from contractors 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.

The S8FS-G015 to S8FS-G150 are cooled by natural convection. Mount them so that air convection will occur around them.

The S8FS-G300 and S8FS-G600 are cooled by forced airflow. Do not allow the ventilation holes to be blocked. The effectiveness of cooling would be reduced.

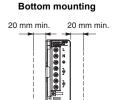
- When cutting out holes for mounting, make sure that cuttings do not enter the interior of the Power supplies.
- The internal parts may occasionally deteriorate and be broken due to adverse heat radiation. Do not loosen the screws on the Power Supply.
- If you mount the Power Supply with the holes provided on the chassis, do not exceed the depth given in the dimensional diagrams.

Use the following tightening torques.

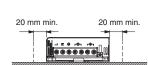
M3 screws: 0.48 to 0.59 N·m M4 screws: 1.08 to 1.32 N·m

## Mounting

#### <Standard mounting> S8FS-G015□□□ to 150□□□

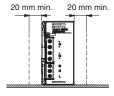


#### Side (horizontal orientation) mounting

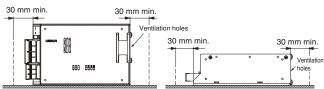


## S8FS-G300□□□ and S8FS-G600□□□

**Bottom mounting** Side (horizontal orientation) mounting

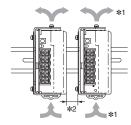






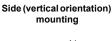
Note: Use a metal plate as the mounting surface.

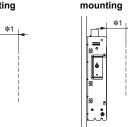
#### **DIN rail mounting**

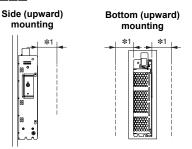


- \*1. Convection of air.
- \*2. 20 mm min.

#### <Other mounting types> \*2 S8FS-G015□□□ to 150□□□



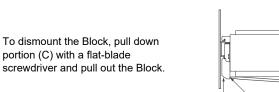




- \*1.20 mm min.
- \*2. Applicable to products produced from May 2018

## <DIN Rail Mounting>

To mount the Power Supply to a DIN Rail, hook portion (A) of the Power Supply onto the DIN Rail and press the Power Supply in direction (B) until you hear it lock into place.



Rail stopper

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

#### 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.
- Do not apply more than 150-N force to the terminal block when tightening it.
- Be sure to remove the sheet covering the Power Supply for machining before power-ON so that it does not interfere with heat
- · Use the following material for the wires to be connected to the S8FS-G to prevent smoking or ignition caused by abnormal loads.

#### Terminals and Wiring (Screw terminal block type)

Terminals	Model	Recommendes Wire Gauges
	S8FS-G015□□□	AWG12-22
Input	S8FS-G030 to 100 to	AWG12-20
	S8FS-G150□□□ to 600□□□	AWG12-16
	S8FS-G01512□ to 01524□	AWG12-22
	S8FS-G03024□	AVVG12-22
	S8FS-G01505□	
	S8FS-G03012□, 03015□	AWG12-20
	S8FS-G05015□, 05024□	AVVG 12-20
	S8FS-G15048□	
	S8FS-G05012□	AVA/C40 40
	S8FS-G10024□	AWG12-18
	S8FS-G03005□	
O. 16 14	S8FS-G10015□	AWG12-16
Output	S8FS-G15024□	
	S8FS-G30048□	
	S8FS-G05005□	
	S8FS-G10012□	AWG12-14
	S8FS-G15015□	
	S8FS-G10005□	
	S8FS-G15005□, 15012□	AWG12
	S8FS-G30012□ to 30024□	
	S8FS-G60015□ to 60048□	AWG10-12
	S8FS-G60012□	AWG10
Protective earth terminal	S8FS-G015□□□ to 600□□□	AWG12-14

Note: The current capacity per output terminal is given in the following table.

S8FS-G015 to S8FS-G300 : 20 A

S8FS-G600□□□: 30 A

Use two terminals together if the current flow is higher than the rated terminal current.

#### Terminals and Wiring (Connector type)

Terminals	Model	Recommendes Wire Gauges
Input	S8FS-G01524□E to 15024□E	AWG18
Output	S8FS-G01524□E to 15024□E	AWG18

Note: 1. The current capacity per output terminal is 5 A. Use two or more terminals together if the current flow is higher than the rated terminal current.

- 2. Do not insert and remove any connector more than 20 times
- Refer to Input and Output Connectors on page 15 for the model numbers of the input and output connectors.

#### **Overcurrent Protection**

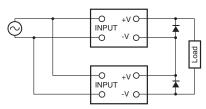
- Internal parts may possibly deteriorate or be damaged if a shortcircuited, overload, or boost load state continues during operation.
- Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent inrush current or overloading at the load end. Do not use the Power Supply for such applications.

### **Output Voltage Adjuster (V. ADJ)**

- The output voltage adjuster (V. ADJ) may possibly be damaged if it is turned with unnecessary force. Do not turn the adjuster with excessive force.
- After completing output voltage adjustment, be sure that the output capacity or output current does not exceed the rated output capacity or rated output current.

### **Series Operation**

Two Power Supplies can be connected in series operation.



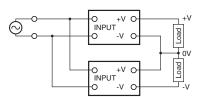
Note: 1. The diode is connected as shown in the figure. If the load is short-circuited, a reverse voltage will be generated inside the Power Supply. If this occurs the Power Supply may possibly deteriorate or be damaged. Always connect a diode as shown in the figure. Select a diode having the following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

Type	Schottky Barrier diode
Dielectric strength (VRRM)	Twice the output voltage or above
Forward current (I <sub>F</sub> )	Twice the rated output current or above

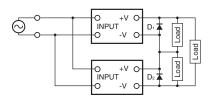
Although Power Supply having different specifications can be connected in series, the current flowing through connected in series, the current flowing through the load must not exceed the smaller rated output current.

#### <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. If positive and negative outputs are used, connect Power Supplies of the same series as in the following figure. Combinations with different output capacities or output voltages can be made. However, use the lower of the two rated 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. If the list of models that support series connection of outputs says that an external diode is not required, an external diode is also not required for positive/negative outputs.

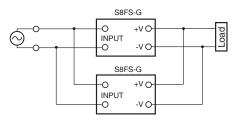


 Use the following information as a guide to the diode type, dialectic strength, and current.

Туре	Schottky Barrier diode
Dielectric strength (VRRM)	Twice the output voltage or above
Forward current (I <sub>F</sub> )	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.



#### Power Supplies without the Parallel Operation Option

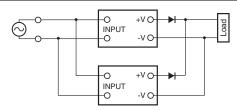
Parallel operation is not possible.

#### S8FS-G60024□-W□ (Models with the Parallel Operation Option)

Up to five Power Supplies can be connected in parallel operation. You must meet the following conditions to use parallel operation.

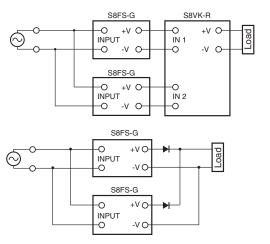
- The internal parts may occasionally deteriorate or be damaged. To operate in parallel, set the switch to the "PARALLEL" side.
- For parallel operation, always use Power Supplies with the same model number
- Use the output voltage adjusters (V. ADJ) to adjust the difference in the output voltages to 50 mV or less between Power Supplies that are used in parallel operation.
- The length and thickness of each wire connected to the load must be the same so that there is no difference in the voltage drop value between the load and the output terminals of each Power Supply.
- Drastic fluctuations in the load (including fluctuations that occur
  when starting and starting the load) may reduce the output voltage.
   If fluctuations in the output voltage that result from drastic
  fluctuations in the load would be a problem, connect external
  diodes as shown in the following diagram.
- Use the following information as a guide to the diode type, dialectic strength, and current.

Туре	Schottky Barrier diode
Dielectric strength (VRRM)	Twice the output voltage or above
Forward current (I <sub>F</sub> )	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 Supplies 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. Connect the S8VK-R or external diodes as shown in the following figure for backup operation. Refer to the S8VK-R datasheet (Cat. No.: T059) for information on using the S8VK-R.



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

Туре	Schottky Barrier diode
Dielectric strength (V <sub>RRM</sub> )	Twice the output voltage or above
Forward current (I <sub>F</sub> )	Twice the rated output current or above

#### In Case There Is No Output Voltage

There is a possibility that overload protection, overvoltage protection, or overheating protection are functioning. The internal protection may operate if a large amount of surge voltage, such as a lightning inrush, is applied to the input. In addition, other possible causes for some models include stoppage of the built-in fan and the remote control function (OFF). Check the following five points. If there is still no output voltage, contact your OMRON representative.

- Checking Overload Protection: Remove the load wires and check whether the load is in an overload state or is short-circuited.
- Checking Overvoltage or Internal Protection:
   Turn the power supply OFF, leave it OFF for at least three minutes, and then turn it ON again to see if this clears the condition.
- Checking Overheating Protection (300 W/600 W): Turn OFF the input power supply long enough for the Power Supply to cool sufficiently and then turn it ON again.
- Checking for Built-in Fan Stoppage (300 W/600 W): Check whether or not the built-in fan has stopped.
- Confirming Remote Control Operation (Power Supplies with Remote Control):

Check whether or not the +RC and -RC terminals are open. Connect the terminals as specified.

#### **Charging a Battery**

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

#### **Built-in Fan Replacement**

The built-in fan cannot be replaced.

#### **Audible Noise at Power ON**

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 Power Supply.

## **Period and Terms of Warranty**

## **Warranty Period**

The Power Supply warranty is valid for a period of three 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. (See note.)
- 2. Average load rate of 80% max. (See note.)
- 3. Mounting method: Standard mounting
- 4. Rated input voltage

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.\*

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 Power Supply model is designed with a service life of 10 years minimum under the above conditions.

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## **Terms and Conditions Agreement**

## Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

#### Warranties.

- (a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.
- (b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See http://www.omron.com/global/ or contact your Omron representative for published information.

## Limitation on Liability; Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

## Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

#### **Programmable Products.**

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

#### Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

#### Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

#### **Errors and Omissions.**

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Note: Do not use this document to operate the Unit.

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