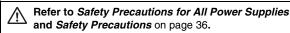
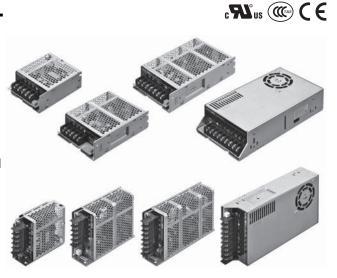


# Switch Mode Power Supply (15/25/35/50/75/100/150/200/350-W Models) S8FS-C

# High Reliability at a Reasonable Cost. Reliable, Basic Power Supplies That Contribute to Stable Equipment Operation.

- High Reliability: Enhanced abnormal overvoltage resistance and lightning surge resistance for stable operation even with an unstable input voltage.
- Long Life: Japanese 105°C electrolytic capacitors are used to achieve stable quality and long life. A reliable 3-year warranty.\*
- Wide Input Ranges: 100 to 120 VAC and 200 to 240 VAC
- Full Lineup: Models are available for the main output voltages and capacities used in FA applications.
- Global Standards: Conforms to CE (all models), Approved for UL (all models) and CCC (15 to 150-W models).
- Easy mounting to DIN Rails with Mounting Brackets.
- \* Refer to Period and Terms of Warranty on page 39.





#### **Product Lineup**

Output		Power rating											
voltage	15 W	25 W	35 W	50 W	75 W	100 W	150 W	200 W	350 W				
5 V	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
12 V	Yes	Yes	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	Yes	Yes				
36 V						Yes	Yes	Yes	Yes				
48 V				Yes	Yes	Yes	Yes	Yes	Yes				

#### **Model Number Structure**

#### **Model Number Legend**

Note: Not all combinations are possible. Refer to List of Models in Ordering Information on page 2.

S8FS-C			
	/1\	(2)	121

#### (1) Power Rating

Code	Power rating
015	15 W
025	25 W
035	35 W
050	50 W
075	75 W
100	100 W
150	150 W
200	200 W
350	350 W

#### (2) Output Voltage

Code	Output voltage
05	5 V
12	12 V
15	15 V
24	24 V
36	36 V
48	48 V

#### (3) Configuration

·	<u> </u>	
Code	Terminal Block	Direction
Blank	Models with terminal block facing upward	
J	Models with terminal block facing forward	
D	Models with DIN rail	

#### S8FS-C

## **Ordering Information**

#### **List of Models**

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

Power rating	Input voltage	Output voltage (VDC)	Output current	Built-in fan	Model with terminal block facing upward	Model with terminal block facing forward	Model wtih DIN rail
		5 V	3 A			S8FS-C01505J	S8FS-C01505I
45 \\		12 V	1.3 A			S8FS-C01512J	S8FS-C01512I
15 W		15 V	1 A			S8FS-C01515J	S8FS-C01515I
		24 V	0.7 A			S8FS-C01524J	S8FS-C01524I
		5 V	5 A		S8FS-C02505	S8FS-C02505J	S8FS-C02505I
OF W		12 V	2.1 A		S8FS-C02512	S8FS-C02512J	S8FS-C02512I
25 W		15 V	1.7 A		S8FS-C02515	S8FS-C02515J	S8FS-C02515I
		24 V	1.1 A		S8FS-C02524	S8FS-C02524J	S8FS-C02524
		5 V	7 A		S8FS-C03505	S8FS-C03505J	S8FS-C03505
05.144	100 to 240 VAC	12 V	3 A		S8FS-C03512	S8FS-C03512J	S8FS-C03512
35 W	(allowable range:	15 V	2.4 A		S8FS-C03515	S8FS-C03515J	S8FS-C03515
	85 to 264 VAC or 120 to 370 VDC	24 V	1.5 A		S8FS-C03524	S8FS-C03524J	S8FS-C03524
	*1)	5 V	10 A		S8FS-C05005	S8FS-C05005J	S8FS-C05005
		12 V	4.2 A		S8FS-C05012	S8FS-C05012J	S8FS-C05012
50 W	100 to 120 VAC,	15 V	3.4 A		S8FS-C05015	S8FS-C05015J	S8FS-C05015
		24 V	2.2 A		S8FS-C05024	S8FS-C05024J	S8FS-C05024
		48 V	1.1 A		S8FS-C05048	S8FS-C05048J	S8FS-C05048
		5 V	14 A		S8FS-C07505	S8FS-C07505J	S8FS-C07505
		12 V	6.2 A		S8FS-C07512	S8FS-C07512J	S8FS-C07512
75 W		15 V	5 A	None	S8FS-C07515	S8FS-C07515J	S8FS-C07515
		24 V	3.2 A		S8FS-C07524	S8FS-C07524J	S8FS-C07524
		48 V	1.6 A		S8FS-C07548	S8FS-C07548J	S8FS-C07548
		5 V	20 A		S8FS-C10005	S8FS-C10005J	S8FS-C10005
	200 to 240 VAC	12 V	8.5 A		S8FS-C10012	S8FS-C10012J	S8FS-C10012
	(allowable range: 85 to 132 VAC,	15 V	7 A		S8FS-C10015	S8FS-C10015J	S8FS-C10015
100 W	176 to 264 VAC, or	24 V	4.5 A		S8FS-C10024	S8FS-C10024J	S8FS-C10024
	248 to 373 VDC	36 V	2.8 A		S8FS-C10036	S8FS-C10036J	S8FS-C10036
	(Select with the switch.) . *2)	48 V	2.3 A		S8FS-C10048	S8FS-C10048J	S8FS-C10048
	,	5 V	26 A		S8FS-C15005	S8FS-C15005J	S8FS-C15005
		12 V	12.5 A		S8FS-C15012	S8FS-C15012J	S8FS-C15012
		15 V	10 A		S8FS-C15015	S8FS-C15015J	S8FS-C15015
150 W		24 V	6.5 A		S8FS-C15024	S8FS-C15024J	S8FS-C15024
		36 V	4.3 A		S8FS-C15036	S8FS-C15036J	S8FS-C15036
	100 to 120 VAC,	48 V	3.3 A		S8FS-C15048	S8FS-C15048J	S8FS-C15048
	200 to 240 VAC	5 V	40 A		S8FS-C20005	S8FS-C20005J	S8FS-C20005
	(allowable range: 90 to 132 VAC,	12 V	17 A		S8FS-C20012	S8FS-C20012J	S8FS-C20012
200 W	180 to 264 VAC, or	24 V	8.8 A		S8FS-C20024	S8FS-C20024J	S8FS-C20024
	254 to 373 VDC	36 V	5.9 A		S8FS-C20036	S8FS-C20036J	S8FS-C20036
	(Select with the switch.) (*2)	48 V	4.43 A		S8FS-C20048	S8FS-C20048J	S8FS-C20048
	-	5 V	60 A		S8FS-C35005	S8FS-C35005J	S8FS-C35005
		12 V	29 A		S8FS-C35012	S8FS-C35012J	S8FS-C35012
350 W	+	24 V	14.6 A	Yes	S8FS-C35024	S8FS-C35024J	S8FS-C35024
000 W	+	36 V	9.7 A	100	S8FS-C35024	S8FS-C35036J	S8FS-C35024
		48 V	7.32 A		S8FS-C35048	S8FS-C35048J	S8FS-C35048

Note: You can use brackets that are sold separately to mount the Power Supplies to DIN Rail. Refer to Mounting Brackets (Order Separately) on page 29.

<sup>\*1.</sup> The range for compliance with EC Directives and safety standards (UL, EN, etc.) is 100 to 240 VAC.

<sup>\*2.</sup> The range for compliance with EC Directives and safety standards (UL, EN, etc.) is 100 to 120 VAC, 200 to 240 VAC.

# **Ratings, Characteristics, and Functions**

la a-		Power rating	FM	40.17	15 W	6414				
Item		Output voltage	5 V	12 V	15 V	24 V				
Efficiency	<i>ı</i> *	115 VAC input	80% typ.	84% typ.	84% typ.	85% typ.				
		230 VAC input	82% typ.	85% typ.	86% typ.	87% typ.				
	Voltage range *			· ·						
	Frequency *		50 /60 Hz (47 to 450 Hz)							
	Current *	115 VAC input	0.3 A typ.							
nput	Current	230 VAC input	0.19 A typ.							
•	Power factor									
	Leakage current	115 VAC input	0.05 mA	0.05 mA	0.05 mA	0.05 mA				
	Leakage current	230 VAC input	0.10 mA	0.10 mA	0.10 mA	0.10 mA				
	Inrush current *	115 VAC input	16 A typ.							
	(for a cold start at 25°)	230 VAC input	32 A typ.							
	Rated Output Curre	ent	3 A	1.3 A	1 A	0.7 A				
	Voltage adjustment	range *	-10% to 10% (with V. Al	OJ)		<b>_</b>				
	Ripple & Noise voltage *	100 to 240 VAC input	30 mVp-p max.	30 mVp-p max.	40 mVp-p max.	30 mVp-p max.				
	Input variation influence *		0.5% max.	·		·				
0	Load variation influence *		1.0% max.							
Output	Temperature variation influence	100 to 240 VAC input	0.03%/°C max.							
	Startus time *	115 VAC input	490 ms typ.	500 ms typ.	470 ms typ.	480 ms typ.				
	Startup time *	230 VAC input	470 ms typ.	480 ms typ.	450 ms typ.	460 ms typ.				
0	Hald Sim - *	115 VAC input	14 ms typ.	16 ms typ.	18 ms typ.	15 ms typ.				
	Hold time *	230 VAC input	83 ms typ.	87 ms typ.	92 ms typ.	79 ms typ.				
	Overload protection	1	Yes, automatic reset							
	Overvoltage protec	tion *	Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again)							
Addi-	Overheat protection		No							
unc-	Series operation	Series operation		Supplies, external diodes	s are required.)					
	Parallel operation		No (However, backup o	peration is possible, exte	ernal diodes are required.	)				
	Remote sensing		No							
	Remote control		No							
	Output indicator		Yes (LED: Green)							
			3 kVAC for 1 min. (between	een all input terminals ar	nd output terminals) curre	nt cutoff 20 mA				
Insula- tion	Withstand voltage		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							
	Insulation resistance	e	,	•						
	Ambient operating	temperature	-20 to 60°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.) (which is no condensation or icing)							
	Storage temperatur	e	-40 to 85°C (with no cor	densation or icing)						
Envi- ronment	Ambient operating	humidity	20% to 90% (Storage humidity: 10% to 95%)							
. omnerit	Vibration resistance	е								
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions							
Reliabil-	MTBF		Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the again)  No  Yes (For up to 2 Power Supplies, external diodes are required.)  No (However, backup operation is possible, external diodes are required.)  No  No  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  1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA  100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC  -20 to 60°C (Derating is required according to the temperature. Refer to Derating Curves on page 17 no condensation or icing)  -40 to 85°C (with no condensation or icing)  y 20% to 90% (Storage humidity: 10% to 95%)  10 to 55 Hz, 0.375-mm half amplitude for 2 h each in X, Y, and Z directions 10 to 500 Hz, 0.26-mm half amplitude for 1 h each in X, Y, and Z directions  150 m/s², 3 times each in ±X, ±Y, ±Z directions  135,000 hrs min.  10 years min.  Refer to Dimensions on page 23.  150 g max.  No   Conforms to EN 61000-3-2, GB17625.1							
ity	Life expectancy *	No   Section   No   Yes (LED: Green)								
	Dimensions (W×H×	D)	Refer to <i>Dimensions</i> on	page 23.						
Con-	Weight									
struc- tion	Cooling fan		No							
	Degree of protection	n								
	Harmonic current e	missions	Conforms to EN 61000-3	3-2, GB17625.1						
	EMI	Conducted Emissions	Conforms to EN 61204-3	<u> </u>	ass B, GB9254					
	EMI	Radiated Emissions	Conforms to EN 61204-3 Class B, EN 55011 Class B, GB9254							
	EMS		Conforms to EN 61204-3	3 high severity levels						
Stan- dards	Safety Standards		Approved Standards UL: cURus UL 60950-1 CSA: cURus C22.2 No6 CCC: GB4943 Conformed Standards EN: EN 60950-1 OVC II	(Recognition) OVC II Po 0950-1	012					
			No							
	Marine Standards									

<sup>\*</sup> Refer to *Conditions* on page 12.

		Power rating			25 W						
Item		Output volt-	5 V	12 V	15 V	24 V					
			80% typ.	84% typ.	85% typ.	86% typ.					
Efficiency	<b>'</b> *	-	82% typ.	86% typ.	88% typ.	88% typ.					
	Voltage venue *	200 1710pat	,,		L terminal for the DC input is						
-			,	erating is required accor	ding to the input voltage. Ref	er to <i>Derating Curves</i> on page 18					
_	Frequency *	1	50 /60 Hz (47 to 450 Hz)								
	Current *	-	0.49 A typ.								
Input	Output volt age iciency*    Voltage range *   Frequency *   T15 VAC input 230 VAC inpu	0.3 A typ.									
		115 VAC input									
		-	0.10 mA 0.20 mA	0.10 mA 0.20 mA	0.10 mA 0.20 mA	0.10 mA 0.20 mA					
		-	16 A typ.	0.20 IIIA	0.20 IIIA	0.20 IIIA					
		•	32 A typ.								
	Ciency *  Voltage range * Frequency * Current * Power factor Leakage current Inrush current * (for a cold start at 25°) Rated Output Cu Voltage adjustme Ripple & Noise voltage * Input variation in Temperature var ation influence Startup time * Hold time *  Overload protect Overvoltage prot Overheat protect Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resista Ambient operatir Vibration resista Shock resistance abil- Life expectancy Dimensions (Wxi Weight Cooling fan Degree of protec	-	5 A	2.1 A	1.7 A	1.1 A					
	•		-10% to 10% (with V. ADJ)								
	Ripple & Noise	100 to 240 VAC	20 mVp-p max.	20 mVp-p max.	30 mVp-p max.	40 mVp-p max.					
-		•		20 mvp-p max.	30 mvp-μ max.	40 mvp-p max.					
	Voltage range * Frequency *  Current *  Power factor  Leakage current  Inrush current * (for a cold start at 25°)  Rated Output Current  Voltage adjustment  Ripple & Noise voltage * Input variation influe  Load variation influe  Coad variation influe  Startup time *  Hold time *  Overload protection  Overvoltage protection  Overvoltage protection  Series operation  Parallel operation  Remote sensing  Remote control  Output indicator  Withstand voltage  Insulation resistance  Ambient operating to  Storage temperature  Ambient operating to  Vibration resistance  Shock resistance  Shock resistance  Ambient operating to  Vibration resistance  Ambient operating to  Vibration resistance  Shock resistance  Ambient operating to  Vibration resistance  Ambient operating to  Vibration resistance  Shock resistance  Ambient operating to  Vibration resistance  Ambient operating to  Storage temperature  Ambient operating to  Vibration resistance  Shock resistance  EMI  EMS		0.5% max.								
Output	Voltage range * Frequency *  Current *  Power factor  Leakage current * (for a cold start at 25°)  Rated Output Current Voltage adjustment ration influence	I	1.0% max.								
			0.03%/°C max.								
		115 VAC input	390 ms typ.	340 ms typ.	400 ms typ.	360 ms typ.					
	Startup time *	230 VAC input	360 ms typ.	350 ms typ.	400 ms typ.	360 ms typ.					
	Hold time *	115 VAC input	17 ms typ.	22 ms typ.	23 ms typ.	21 ms typ.					
	noid time	230 VAC input	103 ms typ.	113 ms typ.	117 ms typ.	112 ms typ.					
	Overload protection	n	Yes, automatic reset								
	Overvoltage protect	ction *	Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again								
Addi-	•	n	No Vec (For up to 0 Poursy Cymplion, systemal diaden are required.)								
tional func-	•		Yes (For up to 2 Power Supplies, external diodes are required.)  No. (However, backup operation is possible, external diodes are required.)								
tions	•		No (However, backup operation is possible, external diodes are required.)								
ŧ	Parallel operation Remote sensing		No No								
_			Yes (LED: Green)								
	Output mulcator		,	all input terminals and	output terminals) current cuto	off 20 mA					
Incula	Withstand voltage		,	•	PE terminals) current cutoff 2						
tion			,	· · · · · · · · · · · · · · · · · · ·	d PE terminals) current cutoff						
	Startup time *  230 VAC ing Hold time *  230 VAC ing 240 VAC ing 2				nput terminals/PE terminals)						
	Ambient enerating	tomporaturo	-20 to 60°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.) (with no								
_		·	condensation or icing)								
Envi-	Voltage range * Frequency * Current * Power factor Leakage current Inrush current * (for a cold start at 25°) Rated Output Current Voltage adjustment Ripple & Noise voltage * Input variation influe Load variation influe Temperature variation influence Startup time * Hold time *  Overload protection Overvoltage protect Overheat protection Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistance Withstand voltage Insulation resistance Shock resistance Shock resistance Inabil- Life expectancy * Dimensions (W×H×E Weight Cooling fan Degree of protection Harmonic current er EMI  EMS		-40 to 85°C (with no conde	<u> </u>							
ronment		humidity	20% to 90% (Storage humid	, ,							
	Vibration resistance	e	10 to 55 Hz, 0.375-mm half 10 to 500 Hz, 0.26-mm half								
	Ripple & Noise voltage *  Input variation in Load variation in Temperature variation influence  Startup time *  Hold time *  Overload protect Overvoltage prot Overheat protect Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistated Ambient operation Storage temperated Ambient operation Vibration resistated Shock resistance Ambient operation Storage temperated Ambient operation Vibration resistated Shock resistance Ambient operation Storage temperated Ambient operation Vibration resistated Shock resistance Ambient operation Storage temperated Ambient operation Vibration resistated Shock resistance Ambient operation Storage temperated Ambient operation Vibration resistated Shock resistance Ambient operation Storage temperated Ambient operation Stora		150 m/s², 3 times each in ±	X, ±Y, ±Z directions							
Reliabil-	MTBF		135,000 hrs min.								
ity	Life expectancy *		10 years min.								
	Dimensions (W×H>	<b>√</b> D)	Refer to <i>Dimensions</i> on page	ges 20 and 23.		-					
Con- struc-			250 g max.								
tion			No								
	<u> </u>			00.000-							
	Harmonic current	I	Conforms to EN 61000-3-2, GB17625.1								
			Conforms to EN 61204-3 Class B, EN 55011 Class B, GB9254								
	EMI		Of t- FN 04004 0 O	D EN 55044 Ol	- D. OD0054						
			Conforms to EN 61204-3 Class B, EN 55011 Class B, GB9254								
Stan-	EMS		Conforms to EN 61204-3 hi	gh severity levels							
Stan- dards	Overload protect Overvoltage prot Overheat protect Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltag Insulation resistat Ambient operatin Vibration resistat Shock resistance Abil- Life expectancy Dimensions (W×k Weight Cooling fan Degree of protect Harmonic curren  EMI  EMS  Safety Standards SEMI		Approved Standards UL: cURus UL 60950-1 (Rc CSA: cURus C22.2 No6095 CCC: GB4943 Conformed Standards EN: EN 60950-1 OVC II Pol	60-1							
			No								
	Marine Standards		INO								

<sup>\*</sup> Refer to *Conditions* on page 12.

	Power rating			35 W				
	Output voltage	5 V	12 V	15 V	24 V			
	115 VAC input	81% typ.	83% typ.	84% typ.	87% typ.			
/ *	230 VAC input	81% typ.	84% typ.	84% typ.	87% typ.			
Voltage range *		Single phase 85 to 26	4 VAC, 120 to 370 VDC (The	L terminal for the DC input is	s the positive side and safety			
Frequency *								
	115 VAC input	0.66 A typ.	,					
Current *	230 VAC input	0.41 A typ.						
Power factor								
	115 VAC input	0.15 mA	0.15 mA	0.15 mA	0.15 mA			
Leakage current	230 VAC input	0.30 mA	0.25 mA	0.25 mA	0.25 mA			
Inrush current *	115 VAC input	16 A typ.						
(for a cold start at 25°)	230 VAC input	32 A typ.						
Rated Output Current		7 A	3 A	2.4 A	1.5 A			
Voltage adjustment	t range *	-10% to 10% (with V.	ADJ)					
Ripple & Noise voltage *	100 to 240 VAC input	80 mVp-p max.	90 mVp-p max.	90 mVp-p max.	80 mVp-p max.			
Input variation influ	uence *	0.5% max.						
Load variation influ		1.0% max.						
Temperature variation influence	100 to 240 VAC input	0.03%/°C max.						
Startup time *	115 VAC input	750 ms typ.	750 ms typ.	760 ms typ.	770 ms typ.			
•	230 VAC input	700 ms typ.	690 ms typ.	710 ms typ.	720 ms typ.			
Hold time *	115 VAC input	13 ms typ.	14 ms typ.	14 ms typ.	15 ms typ.			
		,	75 ms typ.	75 ms typ.	79 ms typ.			
•			£					
			or rated output voltage, power	snut off (snut off the input vo	ortage and turn on the input ag			
•	n		or Supplies, external diades a	ro roquirod \				
•		, ,						
		, , ,	operation is possible, extern	iai aloues are required.)				
)								
Parallel operation No (However, backup operation is possible, external diodes are required.)  Remote sensing No  Remote control No  Output indicator Yes (LED: Green)								
		3 kVAC for 1 min. (bet	tween all input terminals and	output terminals) current cut	off 20 mA			
Withstand voltage		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						
Insulation resistant	ce	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC						
Ambient operating	temperature	, ,		temperature. Refer to <i>Deratir</i>	ng Curves on page 17.) (with n			
Overvoltage protection Overheat protection Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistant Ambient operating Storage temperatur Ambient operating Vibration resistant Shock resistance MTBF	re	$-40$ to $85^{\circ}$ C (with no c	condensation or icing)					
Ambient operating	humidity	20% to 90% (Storage	humidity: 10% to 95%)					
Vibration resistanc	е							
		150 m/s <sup>2</sup> , 3 times eac	h in ±X, ±Y, ±Z directions					
		135,000 hrs min.						
Life expectancy *		10 years min.						
•	D)		on pages 20 and 23.					
Weight								
)								
			0.2.0. CP17005.1					
narmonic current e		Conforms to EN 61000-3-2, GB17625.1						
EMI	Emissions		·	•				
	Emissions	Conforms to EN 61204-3 Class B, EN 55011 Class B, GB9254						
EMS		Conforms to EN 6120	4-3 high severity levels					
Safety Standards		Conforms to EN 61204-3 high severity levels  Approved Standards UL: cURus UL 60950-1 (Recognition) OVC II Pol2 CSA: cURus C22.2 No60950-1 CCC: GB4943 Conformed Standards						
Safety Standards								
Safety Standards  Marine Standards		Conformed Standards						
	Frequency * Current * Power factor Leakage current Inrush current * (for a cold start at 25°) Rated Output Current Voltage adjustmen Ripple & Noise voltage * Input variation influt Load variation influt Temperature variation influence Startup time * Hold time * Overload protection Overvoltage protection Overvoltage protection Parallel operation Remote sensing Remote control Output indicator Withstand voltage Insulation resistant Ambient operating Storage temperatur Ambient operating Vibration resistance MTBF Life expectancy * Dimensions (W×H× Weight Cooling fan Degree of protection EMI	Voltage range * Frequency * Current *  Current *  Power factor  Leakage current * (for a cold start at 25°)  Rated Output Current * Voltage adjustment range * Ripple & Noise voltage *  Input variation influence *  Load variation influence *  Load variation influence *  Load variation influence *  115 VAC input 230 VAC input 100 to 240 VAC input 100 V	Voltage range *   Single phase 85 to 26 standards do not apply	Voltage range *   Single phase 85 to 264 VAC, 120 to 370 VDC (The standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting target according to the standards do not apply.) (Derarting is required according to the standards do not apply.) (Derarting target according to the standards do not apply.) (Derarting target according to the standards do not apply.) (Derarting target according to the standards do not apply.) (Derarting target according to the standards do not apply.) (Derarting target according	Voltage range   Singlip phase 85 to 264 VAC, 120 to 370 VDC (The L terminal for the DC input is advanted to not apply). (Denating is required according to the input voltage. Refit Frequency*			

<sup>\*</sup> Refer to *Conditions* on page 12.

		Power rating			50 W				
tem		Output voltage	5 V	12 V	15 V	24 V	48 V		
			79% tvp.	83% tvp.	84% tvp.	86% tvp.	87% typ.		
fficienc	y *						87% typ.		
	Voltage range *		Single phase 85 to	o 264 VAC, 120 to 370	VDC (The L terminal for	the DC input is the pos	sitive side and safety		
	Frequency *			,	Tod docording to the imple	at voltago. Floror to Bort	amy carros on page		
	rrequency	115 VAC input	`	100 112)					
	Current *		12 V   15 V   24 V   15 V   24 V   15 V   24 V   15 V						
nput		230 VAC Input				86% typ. 86% typ. the DC input is the posit voltage. Refer to Derail voltage and the input voltage and voltage. The input voltage and voltage in the input voltage and voltage in the input voltage and voltage. The input voltage and voltage in the input voltage in the inp			
•	Power factor	I		T	T		T		
	Leakage current	•					0.25 mA		
		230 VAC input	0.60 mA	0.55 mA	0.55 mA	0.55 mA	0.55 mA		
	Inrush current *	115 VAC input	16 A typ.						
	(for a cold start at 25°)	230 VAC input	32 A typ.						
	Rated Output Curr	ent	10 A	4.2 A	15 V   24 V   84% typ.   86% typ.   85% typ.   85% typ.   86% typ.   0 VDC (The L terminal for the DC input is the populared according to the input voltage. Refer to Dental input voltage are required. Since the input voltage are required.)    710 ms typ.	1.1 A			
	Voltage adjustmen	t range *	AC input   Section   Sec						
Dutput Fations Standard Insulation Insulatio	Ripple & Noise voltage * 100 to 240 VAC input		80 mVp-p max.	110 mVp-p max.	100 mVp-p max.	100 mVp-p max.	120 mVp-p max.		
	Input variation infl	uence *	0.5% max.	•					
Output	Temperature variation influence	100 to 240 VAC input							
		-	730 ms tvp	730 ms tvn	710 ms tvn	710 ms tvn	770 ms typ.		
	Startup time *						690 ms typ.		
			· · ·						
	Hold time *	-					14 ms typ.		
					78 ms typ.	// ms typ.	80 ms typ.		
	•								
	Output volt  acy * 115 VAC inp 230 VAC inp  Voltage range * Frequency *  Current * 115 VAC inp 230 VAC inp  Power factor  Leakage current (for a cold start at 25°)  Rated Output Current  Voltage adjustment range * Ripple & Noise voltage * 100 to 240 V input Input variation influence *  Load variation influence *  Temperature variation influence *  Temperature variation influence *  Temperature variation influence *  Temperature variation influence *  Toverload protection  Overvoltage protection  Overvoltage protection *  Overheat protection  Series operation  Parallel operation  Remote sensing  Remote control  Output indicator  Withstand voltage  Insulation resistance  Ambient operating temperature  Storage temperature  Ambient operating humidity  Vibration resistance  Shock resistance	ction *	Yes, 115% or high	ner of rated output voltag	ge, power shut off (shut	off the input voltage an	d turn on the input a		
Addi-	Overheat protection	n							
tional	Series operation								
func-	Parallel operation		No (However, ba	ckup operation is possib	ole, external diodes are	required.)			
tions	Remote sensing		No		external diodes are required.) is possible, external diodes are required.)				
	Remote control		No						
	Parallel operation No (However, backup operation is possible, external diodes are required.)  Remote sensing No  Remote control No  Output indicator Yes (LED: Green)								
lneula-	Parallel operation Remote sensing Remote control Output indicator  Withstand voltage				•	,			
tion	J			· · · · · · · · · · · · · · · · · · ·		0.25 mA 0.55 mA  2.2 A  100 mVp-p max.  710 ms typ. 640 ms typ. 14 ms typ. 77 ms typ. 2t off the input voltage and to required.)  anals) current cutoff 20 mA courrent cutoff 20			
	Inculation registan	re .	,						
	insulation resistan								
	Ambient operating	temperature	-20 to 60°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.) (with r condensation or icing)						
	Storage temperatu	re	5,						
Envi-			`		07	86% typ. 86% typ. the DC input is the post voltage. Refer to Dera  0.25 mA  0.55 mA  2.2 A  100 mVp-p max.  710 ms typ. 640 ms typ. 14 ms typ. 77 ms typ.  off the input voltage and equired.)  Is) current cutoff 20 mA ourrent cutoff 20 mA ou			
ronment		<u> </u>		, ,		directions			
	Vibration resistance	e							
	Shock resistance		150 m/s <sup>2</sup> , 3 times	each in ±X, ±Y, ±Z direc	ctions				
Reliabil-	MTBF		•	·					
ity									
		(D)	•	ons on pages 20 and 24					
Con-				on pages 20 and 24.	•				
struc-									
tion									
				24000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					
	Harmonic current		Conforms to EN 6	1000-3-2, GB17625.1					
	EMI	Emissions	Conforms to EN 6	31204-3 Class B, EN 550	011 Class B, GB9254				
			Conforms to EN 61204-3 Class B, EN 55011 Class B, GB9254						
	EMS		Conforms to EN 6	31204-3 high severity lev	/els				
Stan- dards	Safety Standards		Approved Standar UL: cURus UL 60 CSA: cURus C22 CCC: GB4943	rds 1950-1 (Recognition) O\ .2 No60950-1					
	Marine Standards		EN: EN 60950-1 (						

<sup>\*</sup> Refer to *Conditions* on page 12.

		Power rating			75 W					
Item		Output voltage	5 V	12 V	15 V	24 V	48 V			
		115 VAC input	75% typ.	83% typ.	84% typ.	87% typ.	87% typ.			
Efficiency	/ *	230 VAC input	77% typ.	83% typ.	84% typ.	87% typ.	87% typ.			
	Voltago rongo *		,,	Single phase 85 to 264 VAC, 120 to 370 VDC (The L terminal for the DC input is the positive side and safety						
	voitage range		standards do not apply.) (Derating is required according to the input voltage. Refer to <i>Derating Curves</i> on page							
	Frequency *	ı	,	50 Hz)						
	Current *	115 VAC input	1.4 A typ.							
Innut		230 VAC input	0.83 A typ.			87% typ. 87% typ. 10				
iliput	Power factor	1		1						
	Leakage current	115 VAC input	0.25 mA	0.25 mA	0.25 mA	0.25 mA	0.25 mA			
		230 VAC input	0.60 mA	0.60 mA	0.60 mA	0.60 mA	0.60 mA			
	Inrush current *	115 VAC input	16 A typ.							
Temperature variation influence										
	Notition   115 VAC   230				5 A	3.2 A	1.6 A			
	,		-10% to 10% (wit	h V. ADJ)						
			80 mVp-p max.	110 mVp-p max.	90 mVp-p max.	110 mVp-p max.	140 mVp-p max.			
	•		0.5% may							
	•									
Output										
			0.03%/°C max.							
	o	-	750 ms typ.	720 ms typ.	730 ms typ.	750 ms typ.	700 ms typ.			
	Startup time *				690 ms typ.	690 ms typ.	730 ms typ.			
	11-1-1-1	115 VAC input	12 ms typ.	13 ms typ.	13 ms typ.	14 ms typ.	15 ms typ.			
	Hold time *	230 VAC input	75 ms typ.	74 ms typ.	74 ms typ.	76 ms typ.	78 ms typ.			
	Overload protection	n	Yes, automatic re	set						
İ	Overvoltage protect	ction *	Yes, 115% or high	ner of rated output voltag	e, power shut off (shut	off the input voltage an	d turn on the input ag			
Addi- ional S unc- ions	Overheat protection	n	No	<u> </u>	<u> </u>	<del>_</del>				
	230 VAC input   7	Yes (For up to 2 F	Power Supplies, external	diodes are required.)						
func-	Parallel operation		No (However, ba	ckup operation is possible	le, external diodes are	87% typ. 87% typ. the DC input is the posit tvoltage. Refer to Derail  0.25 mA 0.60 mA  3.2 A  110 mVp-p max.  750 ms typ. 690 ms typ. 14 ms typ. 76 ms typ. 76 ms typ. off the input voltage and equired.)  Is current cutoff 20 mA				
tions	Remote sensing		No							
Ī	Remote control		No							
	Output indicator		Yes (LED: Green)	)						
			3 kVAC for 1 min.	(between all input termin	nals and output termina	als) current cutoff 20 m/	4			
Insula-	Withstand voltage		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							
Ī	Insulation resistan	ce	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC							
	Ambient energting	town over the	−20 to 60°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.) (with no							
	Ambient operating	temperature								
F	Frequency *  Current *	re	$-40$ to $85^{\circ}\text{C}$ (with	no condensation or icing	a)					
	Ambient operating	humidity	20% to 90% (Stor	age humidity: 10% to 95	%)					
	Vibration resistance	e								
				· · · · · · · · · · · · · · · · · · ·		uirections				
,				each in ±X, ±Y, ±∠ direc	uoris					
			,							
у	•	(D)	•	ana an nassa 01 101						
Con-	•	(U)		ons on pages 21 and 24.						
struc-	)									
tion		n e								
				\$1000 2 2 GP17605 1						
	namonic current		COMOTHIS IO EN 6	11000-3-2, GD1/625.1						
			Conforms to EN 6	61204-3 Class B, EN 550	11 Class B, GB9254					
	EMI		Conformer	21004 0 Ol D. EN EE	utd Olea- D ODGGE:					
			Conforms to EN 6	1204-3 Class B, EN 550	ULL Class B, GB9254					
	Overload protection Overvoltage protection Overheat protection Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistant Ambient operating Vibration resistant Shock resistance MTBF Life expectancy * Dimensions (W×H) Weight Cooling fan Degree of protection Harmonic current of EMI  EMS		Conforms to EN 6	31204-3 high severity leve	els					
04			Approved Standa UL: cURus UL 60 CSA: cURus C22	0950-1 (Recognition) OV	C II Pol2					
Addi- ional unc- ions Re Re Ou nsula- ion Ins Strivi- conment Strivi- con Reliabil- EV Dir Con Tetruc- ion Re Re An Vil Sh Reliabil- Lif Con De Ha EM Stan- lards Sa	Safety Standards		CCC: GB4943 Conformed Stand EN: EN 60950-1 0							
Stan- dards	Safety Standards  Marine Standards		Conformed Stand							

<sup>\*</sup> Refer to Conditions on page 12.

		Power rating			10	0 W				
ltem		Output voltage	5 V	12 V	15 V	24 V	36 V	48 V		
		115 VAC input	80% typ.	82% typ.	83% typ.	85% typ.	86% typ.	87% typ.		
fficienc	y *	230 VAC input	81% typ.	83% typ.	84% typ.	87% typ.	87% typ.	88% typ.		
	Voltage range *		(The L terminal f	to 132 VAC, 17 for the DC input	6 to 264 VAC, 248 to	o 373 VDC Sele and safety stand	ect with the switch. ards do not apply.)	8.)		
	Frequency *		50 /60 Hz (47 to	450 Hz)						
	O	115 VAC input	2 A typ.							
nnut	Voltage range *  Frequency *  Current *  Power factor  Leakage current  Inrush current * (for a cold start at 25°)  Rated Output Current  Voltage adjustmer Ripple & Noise voltage * Input variation infil Load variation infil Temperature variation influence  Startup time *  Hold time *  Overload protection Overvoltage prote Overheat protection Parallel operation Remote sensing Remote control Output indicator  a-  Withstand voltage Insulation resistant Ambient operating Storage temperatur Vibration resistance Shock resistance  MTBF Life expectancy * Dimensions (W×H) Weight Cooling fan Degree of protection Harmonic current EMI EMS	230 VAC input	1.1 A typ.							
put	Power factor									
	Voltage range *  Frequency *  Current *  Power factor  Leakage current  Inrush current * (for a cold start at 25°)  Rated Output Curr  Voltage adjustment Ripple & Noise voltage *  Input variation influence  Startup time *  Hold time *  Overload protection Overvoltage protection Overvoltage protection Overheat protection Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistant Ambient operating Storage temperation Vibration resistant Shock resistance  MTBF Life expectancy * Dimensions (W×H Weight Cooling fan	115 VAC input	0.35 mA	0.35 mA	0.35 mA	0.35 mA	0.40 mA	0.40 mA		
	Leakage current	230 VAC input	0.60 mA	0.55 mA	0.60 mA	0.50 mA	0.60 mA	0.60 mA		
tficiency *  Vol Free Cur Pov Lea Inru (for a Rip vol Inp	Inrush current *	115 VAC input	32 A typ.							
	(for a cold start at 25°)	230 VAC input	32 A typ.				86% typ. 87% typ. ect with the switch. lards do not apply.) g Curves on page  0.40 mA  0.60 mA  2.8 A  90 mVp-p max.  450 ms typ. 690 ms typ. 36 ms typ. 41 ms typ.  11 ms typ.  12 current cutoff 20 mA 13 current cutoff 20 mA 14 current cutoff 20 mA 15 current cutoff 20 mA 16 current cutoff 20 mA 17 current cutoff 20 mA 18 current cutoff 20 mA 19 current cutoff 20 mA 10 current cutoff 20 mA 10 current cutoff 20 mA 10 current cutoff 20 mA 11 current cutoff 20 mA 12 current cutoff 20 mA 13 current cutoff 20 mA 14 current cutoff 20 mA 15 current cutoff 20 mA 16 current cutoff 20 mA 17 current cutoff 20 mA 18 current cutoff 20 mA 19 current cutoff 20 mA 19 current cutoff 20 mA 10 cutoff 20 mA 10 current cutoff 20 mA 10 cutoff 20 mA			
	Rated Output Cur	rent	20 A	8.5 A	7 A	4.5 A	86% typ. 87% typ. ect with the switch. lards do not apply.) g Curves on page  0.40 mA  0.60 mA  2.8 A  90 mVp-p max  450 ms typ. 690 ms typ. 36 ms typ. 41 ms typ. nput voltage and turn quired.)  current cutoff 20 mA urrent cutoff 20 mA urrent cutoff 20 mA er to Derating Curverections	2.3 A		
	cy* 115 VAC input   80% typ. 82% typ. 85% typ.	<u>'</u>								
on sula- on			70 mVp-p max.		70 mVp-p max.		90 mVp-p max.	120 mVp-p max.		
	Input variation inf	luence *	0.5% max.				86% typ. 87% typ. elect with the switch. Idards do not apply.) Ing Curves on page 1  0.40 mA 0.60 mA  2.8 A  90 mVp-p max.  450 ms typ. 690 ms typ. 36 ms typ. 41 ms typ. e input voltage and turn  equired.)  s) current cutoff 20 mA effer to Derating Curve			
Output	Load variation inf	luence *	1.0% max.							
Juipul										
	Startup time *	115 VAC input	710 ms typ.	440 ms typ.	440 ms typ.	430 ms typ.		430 ms typ.		
		230 VAC input	720 ms typ.	700 ms typ.	720 ms typ.	660 ms typ.		660 ms typ.		
	Hold time *	115 VAC input	23 ms typ.	37 ms typ.	36 ms typ.	34 ms typ.	36 ms typ.	34 ms typ.		
	Tiola tille	230 VAC input	29 ms typ.	40 ms typ.	39 ms typ.	39 ms typ.	41 ms typ.	38 ms typ.		
	Overload protection Yes, automatic reset Overvoltage protection * Yes, 115% or higher of rated output voltage, power shut off (shut off the inpu Overheat protection No									
		ection *	Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input aga							
Addi- ional unc- ions R	Overheat protection									
	•									
	Parallel operation									
	Remote sensing		No							
	Remote control		No							
	Output indicator		Yes (LED: Green	n)						
				•	•	·		A		
insula-	Leakage current  Inrush current * (for a cold start at 25°)  Rated Output Current Voltage adjustment Ripple & Noise voltage * Input variation influe Load variation influe Temperature variation influence Startup time *  Hold time *  Overload protection Overvoltage protect Overheat protection Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistance Ambient operating to Vibration resistance Shock resistance Shock resistance Indicate  MTBF Life expectancy * Dimensions (W×H×L Weight Cooling fan Degree of protection Harmonic current er EMI EMS		2 kVAC for 1 mir	n. (between all ir	put terminals and P	PE terminals) cui	rrent cutoff 20 mA			
tion				•	•					
	Insulation resistar	nce	,			•	•			
		· ·	(with no condens	sation or icing)		emperature. Refe	er to <i>Derating Curve</i>	es on page 17.		
Envi-			### Company of Company							
ronment	Ambient operating	g numidity	,			- V V - 17 "	86% typ. 87% typ. elect with the switch. Idards do not apply.) Ing Curves on page 1  0.40 mA 0.60 mA  2.8 A  90 mVp-p max.  450 ms typ. 690 ms typ. 36 ms typ. 41 ms typ. einput voltage and turn  equired.)  s) current cutoff 20 mA			
		ce	10 to 500 Hz, 0.2	26-mm half amp	litude for 1 h each ir					
					, ±£ unections					
Reliabil- ty				•						
•				sions on nages o	1 and 24					
Con-		~ <b>-</b> /		nono on payes 2	. and 24.		86% typ. 87% typ. Select with the switch. andards do not apply.) ating Curves on page 1  0.40 mA 0.60 mA  2.8 A  90 mVp-p max.  450 ms typ. 36 ms typ. 41 ms typ. 41 ms typ. the input voltage and turn required.)  als) current cutoff 20 mA s) current cutoff 20 mA			
struc-	_		Ŭ							
ion	_	ion					86% typ. 87% typ. 87% typ. correct with the switch. ards do not apply.) g Curves on page  0.40 mA  0.60 mA  2.8 A  90 mVp-p max.  450 ms typ. 690 ms typ. 36 ms typ. 41 ms typ.  uired.)  current cutoff 20 mA arrent cutoff 20 mA			
				61000-3-2 GB1	7625 1					
	. Id. III O GUITEIIL									
	ЕМІ									
	EMS					_, \\				
Stan- lards	Voltage range * Frequency * Current * Power factor Leakage current Inrush current * (for a cold start at 25°) Rated Output Cur Voltage adjustme Ripple & Noise voltage * Input variation inf Load variation inf Temperature variation influence Startup time * Hold time *  Overload protecti Overvoltage protecti Series operation Parallel operation Remote sensing Remote control Output indicator  Withstand voltage Insulation resistan Ambient operating Vibration resistan Ambient operating Vibration resistan Storage temperati Ambient operating Vibration resistan Shock resistance iabil- Life expectancy * Dimensions (W×H Weight Cooling fan Degree of protect Harmonic current EMI EMS  n-ds  Safety Standards		Approved Stand UL: cURus UL 6 CSA: cURus C2 CCC: GB4943 Conformed Stan	ards 60950-1 (Recogi 2.2 No60950-1						
			LIV. LIV 00000 I	0.0						
	Marine Standards			0.0						

<sup>\*</sup> Refer to Conditions on page 12.

		Power rating	150 W						
Item	tem Output voltage		5 V 12 V 15 V 24 V 36 V 48 V						
		115 VAC input	81% typ.	84% typ.	85% typ.	86% typ.	86% typ.	87% typ.	
Efficiency	y *	230 VAC input	82% typ.	85% typ.	86% typ.	87% typ.	87% typ.	88% typ.	
	Voltage range *		Single phase 90 to 132 VAC, Single phase 180 to 264 VAC, 254 to 373 VDC Select with the switch. (The L terminal for the DC input is the positive side and safety standards do not apply.) (Derating is required according to the input voltage. Refer to <i>Derating Curves</i> on page 18.)						
	Frequency *		50 /60 Hz (47 to	o 450 Hz)					
	Current *	115 VAC input	2.8 A typ.						
nput	Current	230 VAC input	1.6 A typ.						
	Power factor			_					
	Leakage current	115 VAC input	0.50 mA	0.50 mA	0.50 mA	0.50 mA	0.40 mA	0.50 mA	
		230 VAC input	0.75 mA	0.75 mA	0.75 mA	0.70 mA	0.60 mA	0.70 mA	
	Inrush current *	115 VAC input	32 A typ.						
	(for a cold start at 25°)	230 VAC input	32 A typ.	T			T		
	Rated Output Curre		26 A	12.5 A	10 A	6.5 A	4.3 A	3.3 A	
	Voltage adjustment		-10% to 10% (\	with V. ADJ)			222 11	1,00 1/	
	Ripple & Noise voltage *	100 to 120 VAC/200 to 240 VAC input	50 mVp-p max.	90 mVp-p max	110 mVp-p max.	100 mVp-p max.	200 mVp-p max.	120 mVp-p max.	
	Input variation influ		0.5% max.						
Output		100 to 120 VAC/200 to	1.0% max.						
	Temperature vari- ation influence	100 to 120 VAC/200 to 240 VAC input	0.03%/°C max.						
	Chambum birra +	115 VAC input	770 ms typ.	730 ms typ.	740 ms typ.	770 ms typ.	730 ms typ.	760 ms typ	
	Startup time *	230 VAC input	750 ms typ.	720 ms typ.	730 ms typ.	760 ms typ.	720 ms typ.	750 ms typ	
	Hold time *	115 VAC input	29 ms typ.	24 ms typ.	27 ms typ.	23 ms typ.	23 ms typ.	21 ms typ.	
	Hold time *	230 VAC input	35 ms typ.	30 ms typ.	31 ms typ.	28 ms typ.	29 ms typ.	27 ms typ.	
	Overload protection	n	Yes, automatic	reset	·				
	Overvoltage protect	tion *	Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input						
	Overheat protection		again) No						
tional func-	Overheat protection		Yes (For up to 2 Power Supplies, external diodes are required.)						
	Series operation		No (However, backup operation is possible, external diodes are required.)						
tions	Parallel operation		No						
	Remote sensing  Remote control		No						
	Output indicator		Yes (LED: Green)						
			3 kVAC for 1 min. (between all input terminals and output terminals) current cutoff 20 mA						
Insula-	Withstand voltage		2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA						
tion	_		1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA						
	Insulation resistan	ce	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC						
	Ambient operating	tomporaturo	-20 to 60°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.)						
		·	(with no condensation or icing)						
Envi-	Storage temperatur		-40 to 85°C (with no condensation or icing)						
ronment	Ambient operating	humidity	20% to 90% (Storage humidity: 10% to 95%)						
	Vibration resistanc	е	10 to 55 Hz, 0.375-mm half amplitude for 2 h each in X, Y, and Z directions 10 to 500 Hz, 0.26-mm half amplitude for 1 h each in X, Y, and Z directions						
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions						
Reliabil-	MTBF		135,000 hrs mir	•					
ity	Life expectancy *		10 years min.						
	Dimensions (W×H×	(D)	Refer to <i>Dimensions</i> on pages 21 and 24.						
Con-	Weight		500 g max.						
struc- tion	Cooling fan		No						
	Degree of protection	on							
	Harmonic current e	emissions	Conforms to EN 61000-3-2, GB17625.1						
	EMI	Conducted Emissions	Conforms to EN	N 61204-3 Class I	B, EN 55011 Cla	ss B, GB9254			
		Radiated Emissions	Conforms to EN	N 61204-3 Class I	B, EN 55011 Cla	ss B, GB9254			
	EMS		Conforms to EN	N 61204-3 high se	verity levels				
Stan- dards	Safety Standards			60950-1 (Recogi 22.2 No60950-1 ndards	nition) OVC II Pol	2			
	Marine Standards		No						

<sup>\*</sup> Refer to Conditions on page 12.

		Power rating			200 W				
Item	•		5 V	5 V 12 V 24 V 36 V 4					
		115 VAC input	81% typ.	85% typ.	88% typ.	89% typ.	88% typ.		
Efficiency	230 VAC input		81% typ.	87% typ.	88% typ.	90% typ.	90% typ.		
	Voltage range * Frequency *		Single phase 90 to 132 VAC , Single phase 180 to 264 VAC , 254 to 373 VDC Select with the switch. (The L terminal for the DC input is the positive side and safety standards do not apply.) (Derating is required according to the input voltage. Refer to <i>Derating Curves</i> on page 18.)						
			50 /60 Hz (47 to 4				,		
	115 VAC input		4 A typ.						
	Current *	230 VAC input	2.3 A typ.						
nput	Power factor								
	1 OWEI Ideloi	115 VAC input	0.35 mA	0.25 mA	0.40 mA	0.20 mA	0.40 mA		
	Leakage current	230 VAC input	0.60 mA	0.50 mA	0.75 mA	0.45 mA	0.40 mA		
				0.50 IIIA	0.75 IIIA	0.45 IIIA	0.80 IIIA		
	Inrush current * (for a cold start at 25°)	115 VAC input	16 A typ.						
	,	230 VAC input	32 A typ.	17 A	0.0.4	5 O A	4.40.4		
	Rated Output Curre		40 A	17 A	8.8 A	5.9 A	4.43 A		
	Voltage adjustmen		-10% to 10% (wit	in V. ADJ)					
	Ripple & Noise voltage *	100 to 120 VAC/200 to 240 VAC input	60 mVp-p max.	60 mVp-p max.	110 mVp-p max.	130 mVp-p max.	120 mVp-p max		
	Input variation influ	•	0.5% max.						
	Load variation influ		1.0% max.						
Output		100 to 120 VAC/200							
	Temperature vari- ation influence	to 240 VAC input	0.03%/°C max.						
		115 VAC input	620 ms typ.	630 ms typ.	580 ms typ.	630 ms typ.	620 ms typ.		
	Startup time *	230 VAC input	600 ms typ.	610 ms typ.	550 ms typ.	600 ms typ.	600 ms typ.		
		115 VAC input	32 ms typ.	30 ms typ.	38 ms typ.	30 ms typ.	31 ms typ.		
	Hold time *	230 VAC input							
	Overload protection		37 ms typ. 35 ms typ. 45 ms typ. 37 ms typ. 37 ms typ.						
	Overvoltage protection *		Yes, automatic reset  Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input aga						
			No						
Addi- tional	Overheat protection		Yes (For up to 2 Power Supplies, external diodes are required.)						
	Series operation		` .	• • • • • • • • • • • • • • • • • • • •	•	·			
tions	Parallel operation		No (However, backup operation is possible, external diodes are required.)						
	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						
Insula-	Withstand voltage		2 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA						
tion			1 kVAC for 1 min. (between all output terminals and PE terminals) current cutoff 20 mA						
	Insulation resistan	ce	100 M $\Omega$ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC						
	Ambient operating	temperature	-20 to 50°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.) (with						
	Ambient operating	temperature	no condensation or icing)						
Envi-	Storage temperatu		-40 to 85°C (with no condensation or icing)						
ronment	Ambient operating	humidity	20% to 90% (Storage humidity: 10% to 95%)						
	Vibration resistance	e	10 to 55 Hz, 0.375-mm half amplitude for 2 h each in X, Y, and Z directions						
	Shook registers		10 to 500 Hz, 0.26-mm half amplitude for 1 h each in X, Y, and Z directions						
	Shock resistance		150 m/s², 3 times each in ±X, ±Y, ±Z directions						
Reliabil-	MTBF		135,000 hrs min.						
ity	Life expectancy *		10 years min.						
Con-	Dimensions (W×H×	נט	Refer to <i>Dimensions</i> on pages 22 and 25.						
con- struc-	Weight		700 g max.						
tion	Cooling fan		No						
	Degree of protection	on							
	Harmonic current 6	emissions							
	ЕМІ	Conducted Emissions	Conforms to EN 6	61204-3 Class A, EN 5	55011 Class A				
		Radiated Emis- sions	Conforms to EN 6	61204-3 Class A, EN 5	5011 Class A				
	EMS	Jions	Conforms to EN 6	31204-3 high severity l	avale				
Stan- dards	Safety Standards		Approved Standa	rds 0950-1 (Recognition) ( .2 No60950-1 lards					
	Marine Standards		No	O TO 11 1 UIZ					
	SEMI	ne 12	No						

<sup>\*</sup> Refer to *Conditions* on page 12.

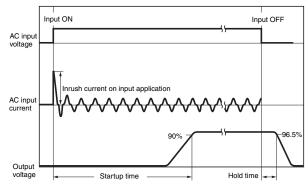
		Power rating			350 W						
Item			5 V	5 V 12 V 24 V 36 V 48 V							
		115 VAC input	77% typ.	83% typ.	86% typ.	87% typ.	87% typ.				
fficiency	y *	230 VAC input	77% typ. 83% typ. 86% typ. 87% typ. 87% typ. 87% typ. 78% typ. 88% typ. 88% typ. 88% typ. 88% typ.								
	Voltage range *	200 the input	Single phase 90 to 132 VAC, Single phase 180 to 264 VAC, 254 to 373 VDC Select with the switch. (The L terminal for the DC input is the positive side and safety standards do not apply.) (Derating is required according to the input voltage. Refer to <i>Derating Curves</i> on page 18.)								
	Frequency *		50 /60 Hz (47 to	450 Hz)							
	0	115 VAC input	6.4 A typ.								
nput	Current *	230 VAC input	3.5 A typ.								
	Power factor										
	Lookogo ourrent	115 VAC input	0.40 mA	0.40 mA	0.40 mA	0.40 mA	0.40 mA				
	Leakage current	230 VAC input	0.75 mA	0.80 mA	0.75 mA	0.80 mA	0.80 mA				
	Inrush current *	115 VAC input	16 A typ.								
	(for a cold start at 25°)	230 VAC input	32 A typ.								
	Rated Output Curre	ent	60 A	29 A	14.6 A	9.7 A	7.32 A				
	Voltage adjustment	t range *	-10% to 10% (wi	th V. ADJ)							
	Ripple & Noise voltage *	100 to 120 VAC/200 to 240 VAC input	110 mVp-p max.	130 mVp-p max.	120 mVp-p max.	180 mVp-p max.	180 mVp-p max				
	Input variation influ	ience *	0.5% max.								
Output	Load variation influ		2.0% max.	1.0% max.							
	Temperature variation influence	100 to 120 VAC/200 to 240 VAC input	0.03%/°C max.								
	Startup time *	115 VAC input	610 ms typ.	620 ms typ.	580 ms typ.	610 ms typ.	610 ms typ.				
		230 VAC input	570 ms typ.	590 ms typ.	560 ms typ.	590 ms typ.	590 ms typ.				
	Hold time *	115 VAC input	25 ms typ.	18 ms typ.	17 ms typ.	19 ms typ.	19 ms typ.				
		230 VAC input	31 ms typ.	25 ms typ.	23 ms typ.	25 ms typ.	24 ms typ.				
	Overload protection	Overload protection		Yes, automatic reset							
	Overvoltage protection *		Yes, 115% or higher of rated output voltage, power shut off (shut off the input voltage and turn on the input again)								
tional func-	Overheat protection		Yes, power shut off (shut off the input voltage and turn on the input again) (Overheat protection when the cooling fan is in an abnormal condition)								
	Series operation		Yes (For up to 2 Power Supplies, external diodes are required.)								
ions	Parallel operation		No (However, backup operation is possible, external diodes are required.)								
	Remote sensing		No No								
	Remote control		No Voc (LED: Green)								
	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 output terminals) current cutoff 20 mA								
Insula- tion	Withstand voltage		1 kVAC for 1 min. (between all input terminals and PE terminals) current cutoff 20 mA								
	Insulation resistant	20	100 MΩ min. (between all output terminals and all input terminals/PE terminals) at 500 VDC								
	ilisulation resistant	<del>СС</del>	-20 to 60°C (Derating is required according to the temperature. Refer to <i>Derating Curves</i> on page 17.)								
	Ambient operating	temperature	(with no condensation or icing)								
	Storage temperatur	re	-40 to 85°C (with no condensation or icing)								
Envi- onment	Ambient operating	humidity	20% to 90% (Storage humidity: 10% to 95%)								
J	Vibration resistanc	e	10 to 55 Hz, 0.375-mm half amplitude for 2 h each in X, Y, and Z directions 10 to 500 Hz, 0.26-mm half amplitude for 1 h each in X, Y, and Z directions								
	Shock resistance		150 m/s², 3 times	each in ±X, ±Y, ±Z o	irections						
	MTBF		135,000 hrs min.								
Reliabil-	Life expectancy *		10 years min.								
	•		Refer to Dimensi	ons on pages 22 and	25.						
ty	Dimensions (W×H×	טי	800 g max.								
ty Con-	Dimensions (W×H× Weight	ט)	800 g max.		Yes (ON/OFF control according to internal temperature)						
Con-		טן	,	ntrol according to inte	rnal temperature)						
Con-	Weight	•	,	ntrol according to inte	rnal temperature)						
Con-	Weight Cooling fan	on	Yes (ON/OFF co	ntrol according to inte	rnal temperature)						
Con-	Weight Cooling fan Degree of protectio Harmonic current e	on	Yes (ON/OFF co	ntrol according to inte	. ,						
Con-	Weight Cooling fan Degree of protection	on emissions	Yes (ON/OFF co		55011 Class A						
con-	Weight Cooling fan Degree of protectio Harmonic current e	on emissions Conducted Emissions	Yes (ON/OFF co Conforms to EN C	61204-3 Class A, EN	55011 Class A 55011 Class A						
Reliabil- ity  Con- struc- tion  Stan- dards	Weight Cooling fan Degree of protectio Harmonic current e	on emissions Conducted Emissions	Yes (ON/OFF co	61204-3 Class A, EN 61204-3 Class A, EN 61204-3 high severity ards 0950-1 (Recognition) 2.2 No60950-1	55011 Class A 55011 Class A levels						
Con- struc- tion	Weight Cooling fan Degree of protectio Harmonic current e EMI EMS	on emissions Conducted Emissions	Yes (ON/OFF co Conforms to EN Conforms to EN Conforms to EN CONFORMS UL : cURus UL : cURus UL : cURus C22 Conformed Stands	61204-3 Class A, EN 61204-3 Class A, EN 61204-3 high severity ards 0950-1 (Recognition) 2.2 No60950-1	55011 Class A 55011 Class A levels						

<sup>\*</sup> Refer to Conditions on page 12.

#### **Conditions**

Efficiency		The value is given for the rated output voltage and rated output current.			
	Voltage range	Although some inverters give 50/60 Hz as the output frequency, do not use an inverter output as the power source for the Power Supply. Doing so may result in smoking or burning due to internal temperature			
Input	Frequency	ncreases in the Power Supply. If you connect a UPS to the input, do not connect one with a square wave output.			
	Current	The value is given for the rated output voltage and rated output current.			
	Inrush current (for a cold start at 25°C)	The value is given for a cold start at 25°C. Refer to following for details.			
	Voltage adjustment range	If the output voltage adjuster (V. ADJ) is turned, the voltage will increase by 10% or more over the voltage adjustment range.  When adjusting the output voltage, confirm the actual output voltage from the Power Supply and be sure that load is not damaged.			
	Ripple & Noise voltage	The value is given for the rated output voltage and rated output current.  The value is for an ambient operating temperature of 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 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.			
	Startup time	The value is given for the rated output voltage and rated output current.  The value is given for a cold start at 25°C. Refer to following for details.			
	Hold time	The value is given for the rated output voltage and rated output current. Refer to following for details.			
Additional functions	Overvoltage protection	Refer to Overvoltage Protection on page 19 for information on resetting the input power.			
Reliability	Life expectancy	Refer to Recommended Replacement Periods and Periodic Replacement for Preventive Maintenance on page 39 for details.			

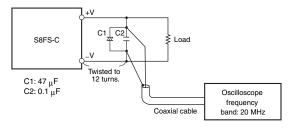
#### Inrush Current, Startup Time, and Output Hold Time



Note: Twice the normal input current will flow for a redundant system. 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**

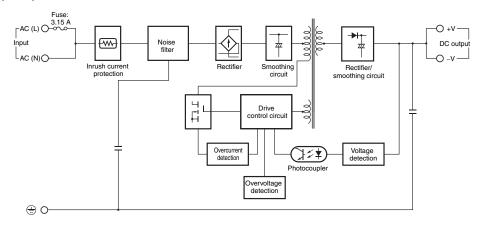
The specified standard for the ripple voltage noise was measured with the following measurement circuit.

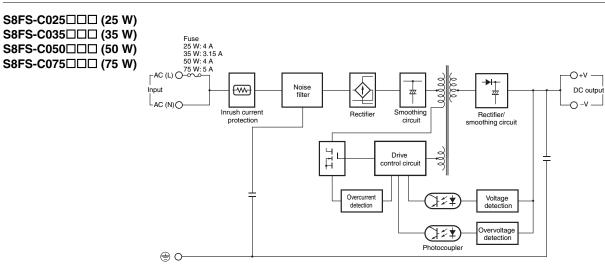


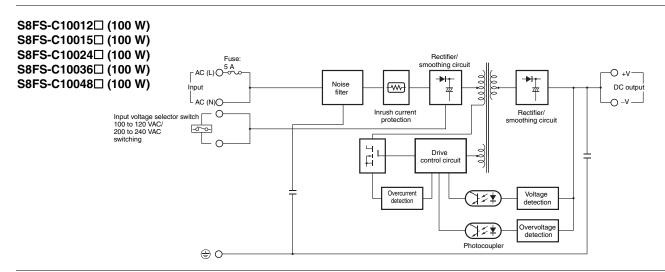
#### **Connections**

#### **Block Diagrams**

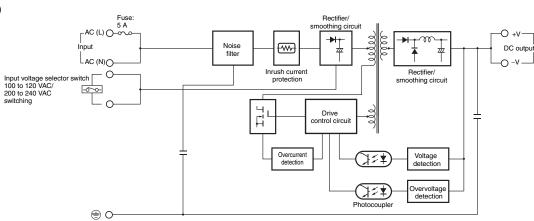
#### S8FS-C015□□□ (15 W)



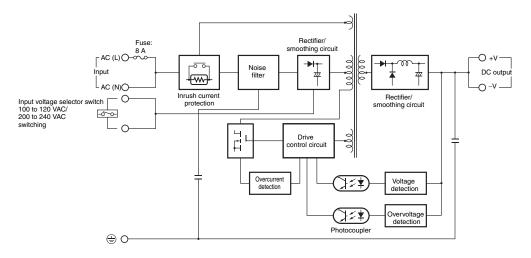




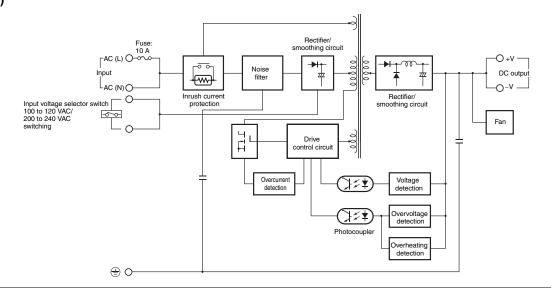
#### S8FS-C10005□ (100 W) S8FS-C150□□□ (150 W)



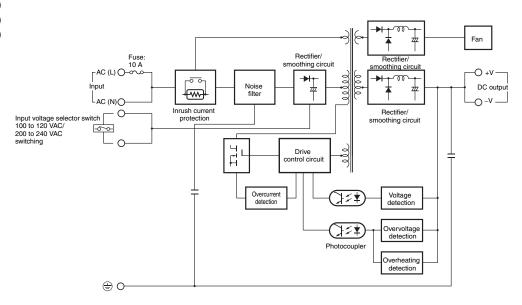
#### S8FS-C200□□□ (200 W)



#### S8FS-C35024□ (350 W)



S8FS-C35005□ (350 W) S8FS-C35012□ (350 W) S8FS-C35036□ (350 W) S8FS-C35048□ (350 W)



#### **Construction and Nomenclature**

#### **Nomenclature**

#### 25-W, 35-W, 50-W, 15-W Models 100-W and 150-W Models 200-W and 350-W Models and 75-W Models OMRON SEFS POWER SUPPLY 4 4 أعاماهاهاهاهاها (5) (5) 2 (3) (3) S8FS-C025□□ S8FS-C050□□ S8FS-C100□□ S8FS-C200□□ S8FS-C035□□ S8FS-C075□□ S8FS-C150□□ S8FS-C350□□ (6) -(5) (5) 2 2 3 ① S8FS-C025□□□ S8FS-C015□□□ S8FS-C050□□□ S8FS-C100□□□ S8FS-C200□□□ S8FS-C035□□□ S8FS-C075□□□ S8FS-C150□□□ S8FS-C350□□□ CHECK INPUT VOLTAGE SELECTOR SWITCH BEFORE POWER ON INPUT:100-120VAC (輸入) 200-240VAC 6

No.	Name	Function
1	Input terminals (L), (N)	Connect the input lines to these terminals. *1
2	Protective Earth Terminal (PE)	Connect the ground line to this terminal. *2
3	DC output terminals (-V), (+V)	Connect the load lines to these terminals.
4	Output indicator (DC ON: Green)	Lit while the DC output is ON.
5	Output voltage adjuster (V. ADJ)	Use to adjust the output voltage.
6	Input voltage selector switch	Used to switch the input voltage. *3, *4

<sup>\*1.</sup> The fuse is located on the (L) side. It is not user replaceable. For a DC power input, connect the positive voltage to the L terminal. \*2. This is the protective earth terminal specified in the safety standards. Always ground this terminal. \*3. The 100-W, 150-W, 200-W, and 350-W models only.

<sup>\*4.</sup> Refer to Input Voltage Selector Switch in Safety Precautions on page 36.

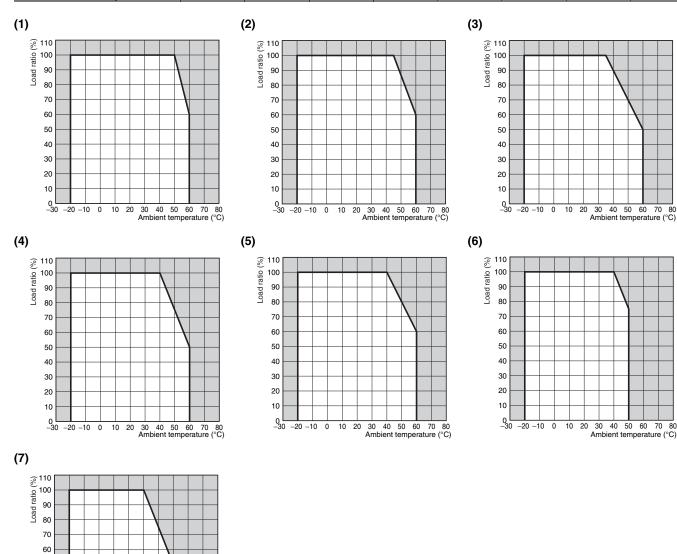
## **Engineering Data**

#### **Derating Curves**

10 20

**Derating for Ambient Temperatures** 

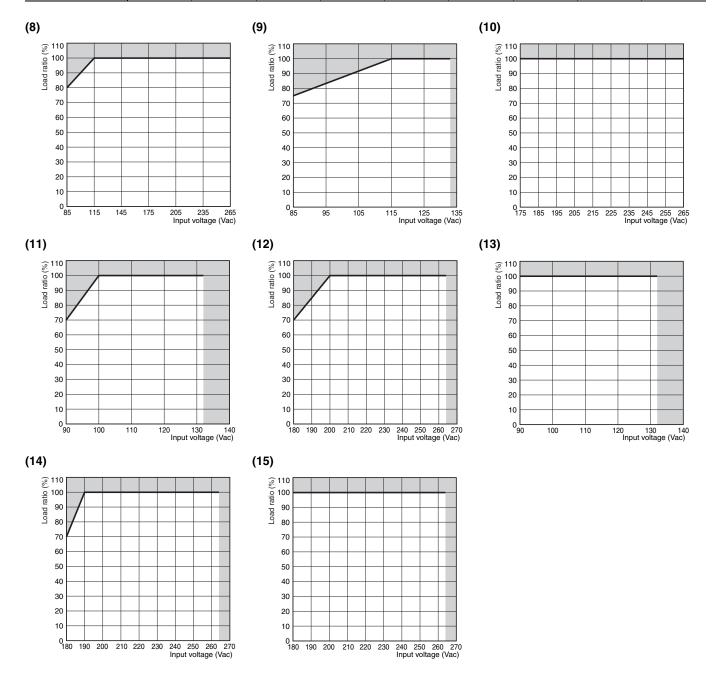
Power rating Output voltage	15 W	25 W	35 W	50 W	75 W	100 W	150 W	200 W	350 W	
5 V	(1)	(2)			(3)	(4)	(5)	(7)	(1)	
12 V		(4)		(1)	(1)				(6)	(1)
15 V		(1)	(1) (1) (1) (1)	(1)	(1)					
24 V					(2)	(1)				
36 V								(6)	(1)	
48 V				(1)	(1)					



Note: The internal parts may occasionally deteriorate or be damaged. Use the standard mounting method only. Do not use the Power Supply in the area outside the derating curve.

#### **Derating for Input Voltages**

Power rating Output voltage	15 W	25 W	35 W	50 W	75 W	100 W	150 W	200 W	350 W
5 V			(8)	(8)	(8)	(9) (10)	(11) (12)	(11) (14)	(11) (15)
12 V	(8)	(8)						(11)(14)	(11) (13)
15 V	(0)								
24 V									
36 V								(13) (15)	(11) (15)
48 V				(8)	(8)				

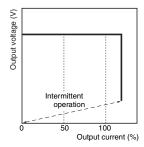


Note: The internal parts may occasionally deteriorate or be damaged. Use the standard mounting method only. Do not use the Power Supply in the area outside the derating curve.

#### **Overload Protection**

The load and the Power Supply are automatically protected from short-circuit currents and overcurrent damage by this function. Overload protection is activated if the output current rises above 105% of the rated current.

When the output current returns within the rated range, the overload protection is automatically cleared.



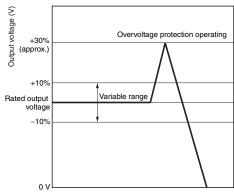
The values shown in the above diagrams are for reference only.

Note: 1. If the Power Supply has been short-circuited or supplied with an overcurrent longer than 10 seconds, the internal parts of the Power Supply may occasionally deteriorate or be damaged.

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. When an excessive voltage that is 115% of the rated voltage or more is output, the output voltage is shut OFF, preventing damage to the load due to overvoltage. Reset the input power by turning it OFF for at least three minutes and then turning it back ON again.



The values shown in the above diagrams are for reference only.

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

#### Overheat Protection (S8FS-C350□□□ Only)

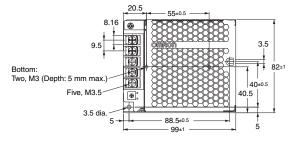
If the internal temperature rises excessively as a result of fan failure or any other reason, the overheat protection circuit will operate to protect internal elements. Reset the input power by turning it OFF for at least three minutes and then turning it back ON again.

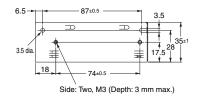
Dimensions (Unit: mm)

# Power Supplies Models with Terminal Block Facing Upward

#### S8FS-C025□□ (25 W)





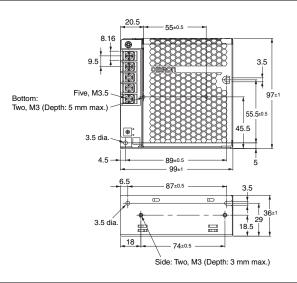


#### Panel mounting hole dimensions

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

#### S8FS-C035□□ (35 W)



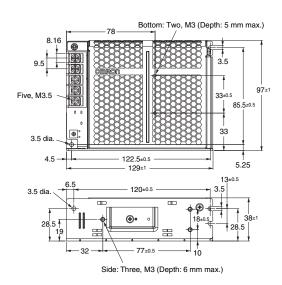


#### Panel mounting hole dimensions

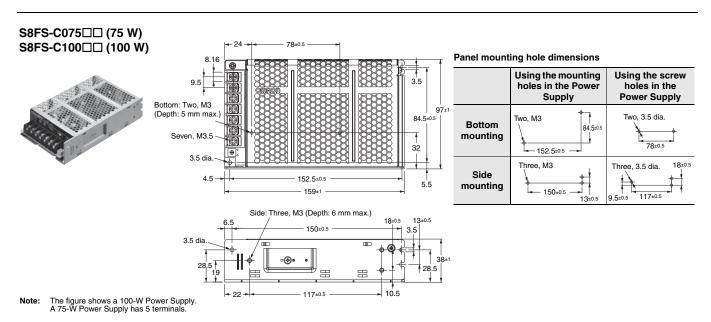
	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Bottom mounting	Two, M3 55,5±0.5	Two, 3.5 dia.
Side mounting	Two, M3	Two, 3.5 dia.

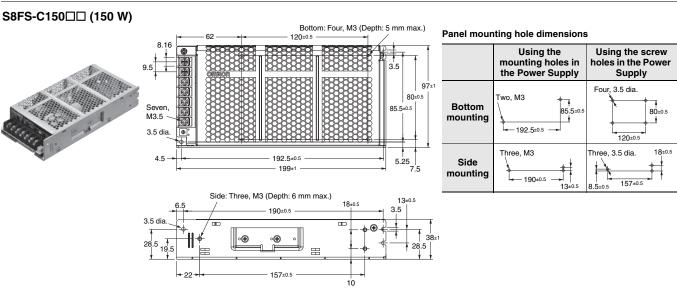
#### S8FS-C050□□ (50 W)



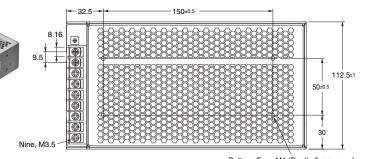


	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply
Bottom mounting	Two, M3 85,5:0.5	Two, 3.5 dia.
Side mounting	Three, M3	Three, 3.5 dia. 18±0.5





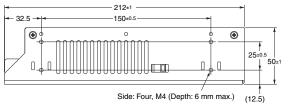
# S8FS-C200□□ (200 W)



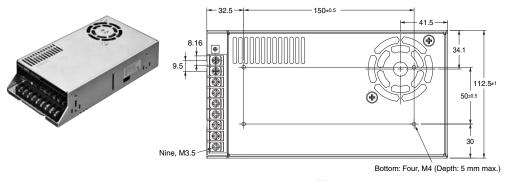
#### Panel mounting hole dimensions

	· •
	Using the screw holes in the Power Supply
Bottom mounting	Four, 4.5 dia.  50±0.5  150±0.5
Side mounting	Four, 4.5 dia. 25=0.5

# Bottom: Four, M4 (Depth: 5 mm max.)



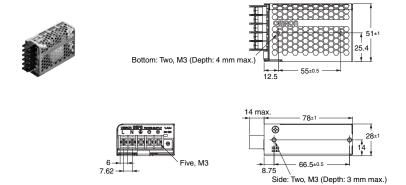
#### S8FS-C350□□ (350 W)



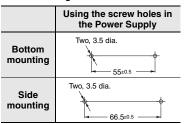
	Using the screw holes in the Power Supply		
Bottom mounting	Four, 4.5 dia.		
Side mounting	Four, 4.5 dia. 25±0.5		

#### **Models with Terminal Block Facing Forward**

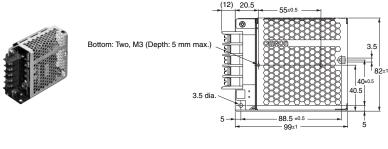
#### S8FS-C015□□J (15 W)



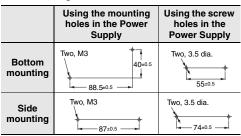
#### Panel mounting hole dimensions

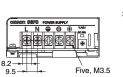


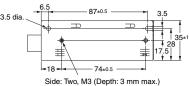
#### S8FS-C025□□J (25 W)



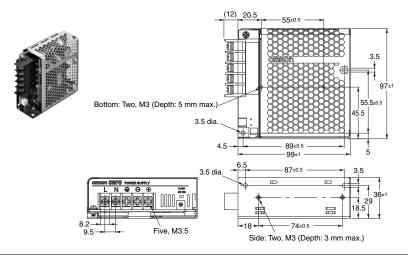
#### Panel mounting hole dimensions







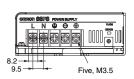
#### S8FS-C035□□J (35 W)



	•		
	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply	
Bottom mounting	Two, M3 55.5±0.5	Two, 3.5 dia.	
Side mounting	Two, M3	Two, 3.5 dia.	

# S8FS-C050□□J (50 W)

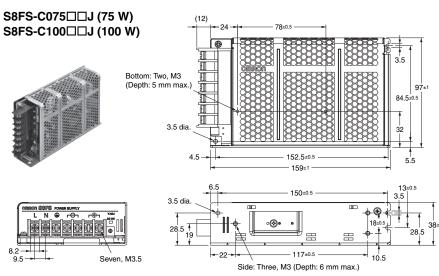




# 3.5 dia. 3.5 dia. 3.5 dia. 3.5 dia. 3.5 dia. 3.5 dia. 3.6 dia. 3.7 dia. 3.7 dia. 3.8 dia. 3.8 dia. 3.9 dia. 3.1 dia. 3.5 dia. 3.5 dia. 3.5 dia. 3.5 dia. 3.6 dia. 3.7 dia. 3.7 dia. 3.8 di

#### Panel mounting hole dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Power Supply	
Bottom mounting	Two, M3 85.5±0.5	Two, 3.5 dia.	
Side mounting	Three, M3	Three, 3.5 dia. 18±0.5 9±0.5 77±0.5	
		9±0.5 77±0.5	

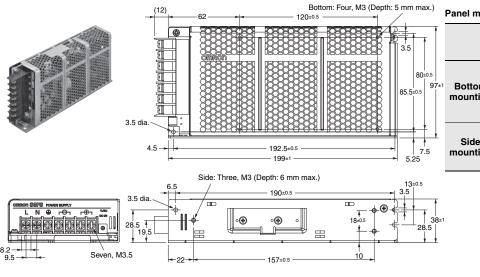


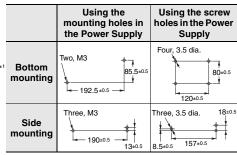
#### Panel mounting hole dimensions

	Using the mounting holes in the Power Supply	Using the screw holes in the Powe Supply	
Bottom mounting	Two, M3 84.5±0.5	Two, 3.5 dia.	
Side mounting	Three, M3	Three, 3.5 dia. 18±0.5 9.5±0.5 117±0.5	

Note: The figure shows a 100-W Power Supply. A 75-W Power Supply has 5 terminals.

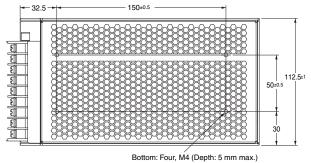
#### S8FS-C150□□J (150 W)

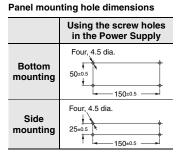


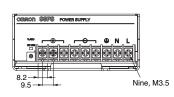


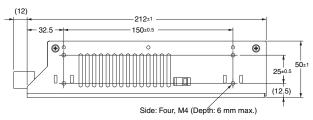
#### S8FS-C200□□J (200 W)









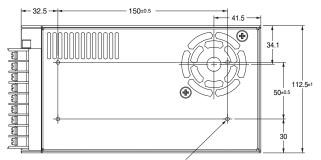


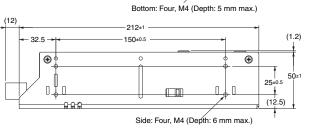
#### S8FS-C350□□J (350 W)



**• • • • • • • • •** 

Nine, M3.5





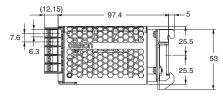
	Using the screw holes in the Power Supply		
Bottom mounting	Four, 4.5 dia.		
Side mounting	Four, 4.5 dia. 25±0.5		

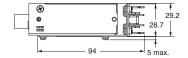
#### Models with DIN rail

#### S8FS-C015□□D (15 W)



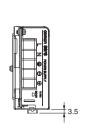


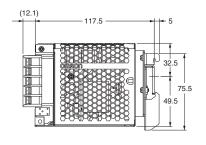


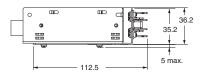


#### S8FS-C025□□D (25 W)



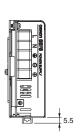


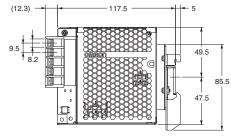


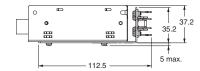


#### S8FS-C035□□D (35 W)

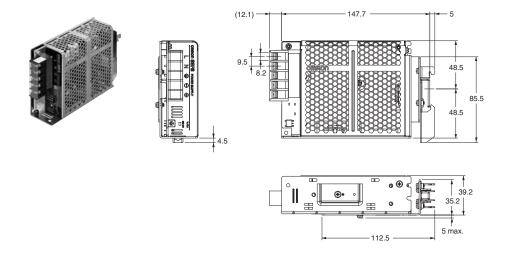




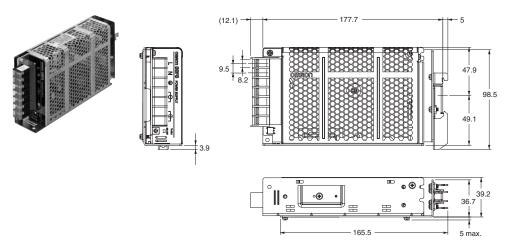




#### S8FS-C050□□D (50 W)

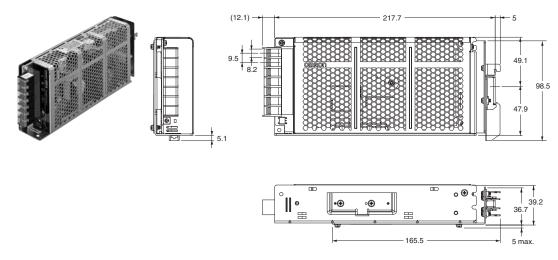


#### S8FS-C075□□D (75 W) S8FS-C100□□D (100 W)

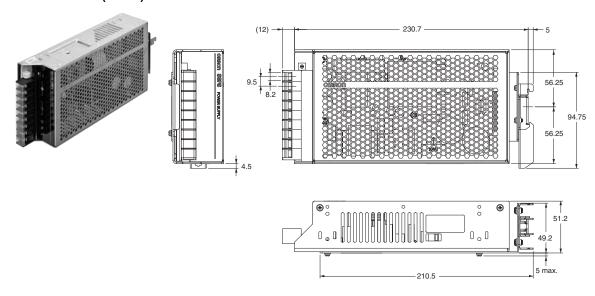


Note: The figure shows a 100-W Power Supply. A 75-W Power Supply has 5 terminals.

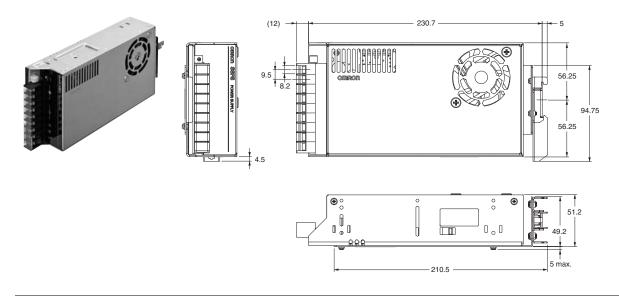
#### S8FS-C150□□D (150 W)



#### S8FS-C200□□D (200 W)



#### S8FS-C350□□D (350 W)

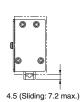


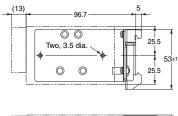
#### **Mounting Brackets (Order Separately)**

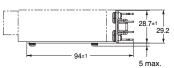
Power rating	Mounting direction	Model	
15 W		S82Y-FSC015DIN	
25 W		S82Y-FSC025DIN	
35 W		S82Y-FSC050DIN	
50 W		3621-F3C030DIN	
75 W	DIN Rail		
100 W		S82Y-FSC150DIN	
150 W			
200 W		S82Y-FSC350DIN	
350 W		3021-F3C330DIN	
15 W		S82Y-FSC015DIN-S	
25 W		S82Y-FSC025DIN-S	
35 W		S82Y-FSC035DIN-S	
50 W	Bottom-mounting to DIN Rail	S82Y-FSC050DIN-S	
75 W	2 Divition	S82Y-FSC100DIN-S	
100 W		3021-F3C100DIN-S	
150 W		S82Y-FSC150DIN-S	
200 W	Pottom mounting with L brookets	SOOV ESCOPEDE (4 brooksts)	
350 W	Bottom-mounting with L-brackets	S82Y-FSC350B (4 brackets)	

#### S82Y-FSC015DIN

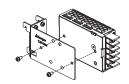






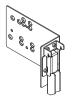


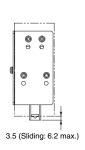
#### **Mounting Method**

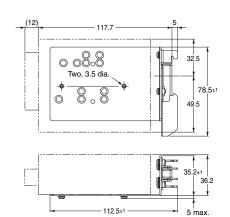


Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque: 0.48 to
0.59 N·m for M3 screws

#### S82Y-FSC025DIN



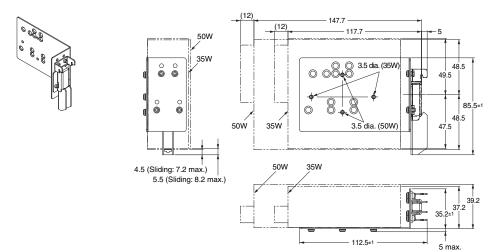




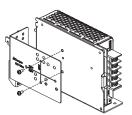


Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque: 0.48 to
0.59 N·m for M3 screws

#### S82Y-FSC050DIN

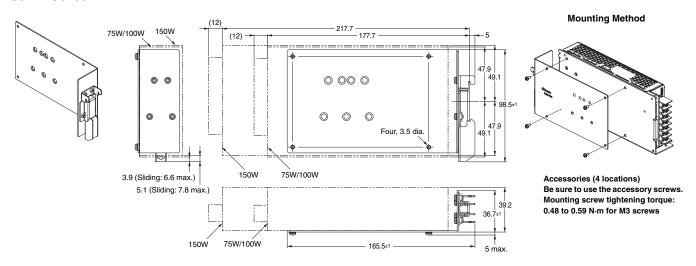


#### **Mounting Method**

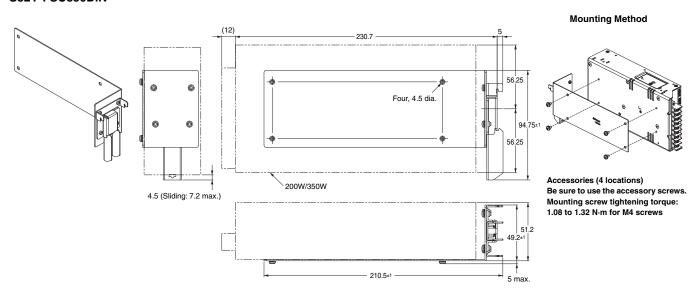


Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque:
0.48 to 0.59 N·m for M3 screws

#### S82Y-FSC150DIN



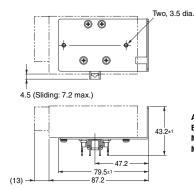
#### S82Y-FSC350DIN



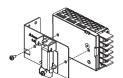
#### S82Y-FSC015DIN-S







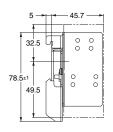
#### **Mounting Method**

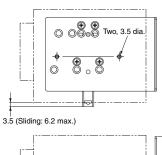


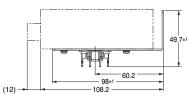
Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque: 0.48 to 0.59 N·m for M3 screws

#### S82Y-FSC025DIN-S

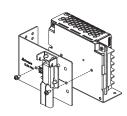








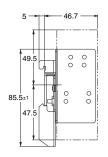
#### **Mounting Method**

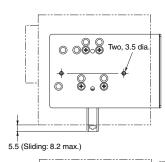


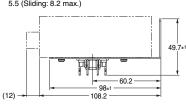
Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque: 0.48 to
0.59 N·m for M3 screws

#### S82Y-FSC035DIN-S

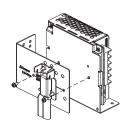








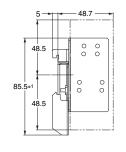
#### **Mounting Method**

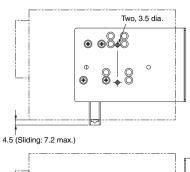


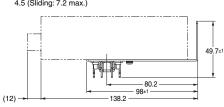
Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque: 0.48 to 0.59
N·m for M3 screws

#### S82Y-FSC050DIN-S

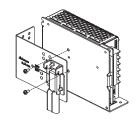






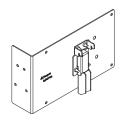


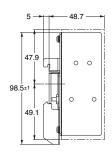
#### **Mounting Method**

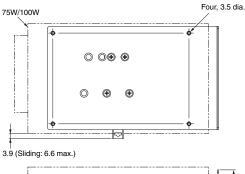


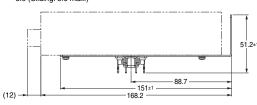
Accessories (2 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque:
0.48 to 0.59 N·m for M3 screws

#### S82Y-FSC100DIN-S

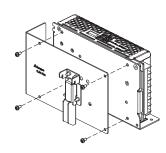






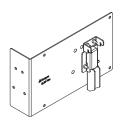


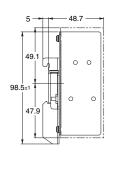
#### Mounting Method

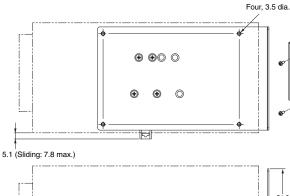


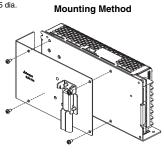
Accessories (4 locations)
Be sure to use the accessory screws.
Mounting screw tightening torque: 0.48
to 0.59 N·m for M3 screws

#### S82Y-FSC150DIN-S





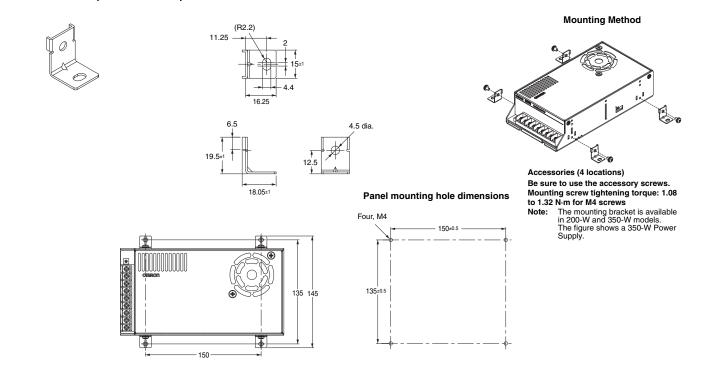




Accessories (4 locations)
Be sure to use the accessory
screws.
Mounting screw tightening torque:
0.48 to 0.59 N·m for M3 screws

51.2±1

#### S82Y-FSC350B (Four Brackets)



#### For Users of S8JC DIN Rail-mounting Power Supplies

If you are using a DIN Rail-mounting S8JC-series Power Supply, you can use a DIN Rail-mounting S8FS-C-series Power Supply or replace it with an S8FS-C-series Power Supply with a Forward-facing Terminal Block and a DIN Rail Mounting Bracket.

Table of Corresponding S8JC Power Supplies and S8FS-C□J Power Supplies with DIN Rail Mounting Brackets

Power rating	S8JC-Z *2	S8JC-ZS		S8FS-C Power Supply		DIN Rail-mounting Bracket *1
	S8JC-Z01505CD	S8JC-ZS01505CD-AC2	$\Rightarrow$	S8FS-C01505J		
15 W	S8JC-Z01512CD	S8JC-ZS01512CD-AC2	$\Rightarrow$	S8FS-C01512J	+	S82Y-FSC015DIN
	S8JC-Z01524CD	S8JC-ZS01524CD-AC2	$\Rightarrow$	S8FS-C01524J	-	
	S8JC-Z03505CD	S8JC-ZS03505CD-AC2	$\Rightarrow$	S8FS-C03505J		
35 W	S8JC-Z03512CD	S8JC-ZS03512CD-AC2	$\Rightarrow$	S8FS-C03512J	+	S82Y-FSC050DIN
	S8JC-Z03524CD	S8JC-ZS03524CD-AC2	$\Rightarrow$	S8FS-C03524J		
	S8JC-Z05005CD	S8JC-ZS05005CD-AC2	$\Rightarrow$	S8FS-C05005J		
50 W	S8JC-Z05012CD	S8JC-ZS05012CD-AC2	$\Rightarrow$	S8FS-C05012J		S82Y-FSC050DIN
30 W	S8JC-Z05024CD	S8JC-ZS05024CD-AC2	$\Rightarrow$	S8FS-C05024J	+	3621-1 30030DIN
	S8JC-Z05048CD		$\Rightarrow$	S8FS-C05048J		
	S8JC-Z10005CD	S8JC-ZS10005CD-AC2	$\Rightarrow$	S8FS-C10005J		
100 W	S8JC-Z10012CD	S8JC-ZS10012CD-AC2	$\Rightarrow$	S8FS-C10012J		S82Y-FSC150DIN
100 W	S8JC-Z10024CD	S8JC-ZS10024CD-AC2	$\Rightarrow$	S8FS-C10024J	+	3621-F3C130DIN
	S8JC-Z10048CD		$\Rightarrow$	S8FS-C10048J		
	S8JC-Z15005CD	S8JC-ZS15005CD-AC2	$\Rightarrow$	S8FS-C15005J		
150 W	S8JC-Z15012CD	S8JC-ZS15012CD-AC2	$\Rightarrow$	S8FS-C15012J		S82Y-FSC150DIN
150 W	S8JC-Z15024CD	S8JC-ZS15024CD-AC2	$\Rightarrow$	S8FS-C15024J	+	3021-1 30130DIN
	S8JC-Z15048CD		$\Rightarrow$	S8FS-C15048J		
	S8JC-Z35005CD	S8JC-ZS35005CD-AC2	$\Rightarrow$	S8FS-C35005J		
350 W	S8JC-Z35012CD	S8JC-ZS35012CD-AC2	$\Rightarrow$	S8FS-C35012J	+	S82Y-FSC350DIN
	S8JC-Z35024CD	S8JC-ZS35024CD-AC2	$\Rightarrow$	S8FS-C35024J		

<sup>\*1.</sup> To mount an S8FS-series Power Supply that is not a DIN Rail-mounting model to a DIN Rail, purchase a DIN Rail-mounting Bracket separately from the Power Supply.

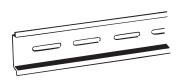
<sup>\*2.</sup> Consult with your OMRON representative if you use a 15-W or 35-W S8JC-Z Power Supply with a 48-V output voltage.

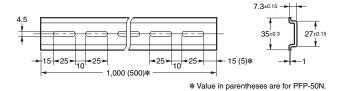
#### **DIN Rail (Order Separately)**

Note: All units are in millimeters unless otherwise indicated.

#### **Mounting Rail**

(Material: Aluminum)



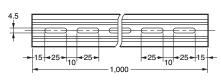


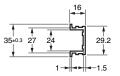


## Mounting Rail

(Material: Aluminum)



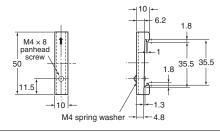






#### **End Plate**







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

#### **Terminal Cover (Order Separately)**

Terminal block direction	Power rating	Applicable models	Terminal Cover model number	
	25-W	S8FS-C025□□		
	35-W	S8FS-C035□□	S82Y-FSC-C5	
	50-W	S8FS-C050□□	3021-F30-03	
Models with terminal block	75-W	S8FS-C075□□		
facing upward	100-W	S8FS-C100□□	S82Y-FSC-C7	
	150-W	S8FS-C150□□	3021-130-07	
	200-W	S8FS-C200□□	S82Y-FSC-C9	
	350-W	S8FS-C350□□		
	15-W	S8FS-C015□□J/D	S82Y-FSC-C5MF	
	25-W	S8FS-C025□□J/D		
	35-W	S8FS-C035□□J/D	S82Y-FSC-C5F	
	50-W	S8FS-C050□□J/D	3021-F30-05F	
Models with terminal block facing forward	75-W	S8FS-C075□□J/D		
idoling for ward	100-W	S8FS-C100□□J/D	000V F00 07F	
	150-W	S8FS-C150□□J/D	S82Y-FSC-C7F	
	200-W	S8FS-C200□□J/D	S82Y-FSC-C9F	
	350-W	S8FS-C350□□J/D	3021-730-097	

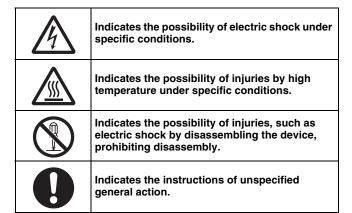
#### **Safety Precautions**

Refer to Safety Precautions for All Power Supplies.

#### **Warning Indications**

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

#### **Meaning of Product Safety Symbols**



#### **⚠** CAUTION

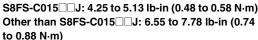
Minor electric shock, fire, or Product failure may occasionally occur. Do not disassemble, modify, or repair the Product or touch the interior of the Product.



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.





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 –40 to 85°C and a humidity of 10% to 95%.
- The internal parts may occasionally deteriorate or be damaged.
   Use the standard mounting method only. Do not use the Power Supply outside the derating range.
- Use the Power Supply at a humidity of 20% to 90%.
- Do not use the Power Supply in locations subject to direct sunlight.
- Do not use the Power Supply in 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. Install the Power Supply away from contactors and other parts and devices that are sources of vibration.
- Install the Power Supply well away from any sources of strong, high-frequency noise and surge.

#### Input Voltage Selector Switch

For 100-W or higher models, the input voltage is factory-set to 200 to 240 V.

To use an input voltage of 100 to 120 VAC, change the input voltage selector switch to the 100 to 120 VAC setting. To use a DC input, set the input voltage selector switch to the 200 to 240 VAC setting.

 Minor electric shock may occasionally occur. Do not operate the input voltage selector switch while power is being supplied.

#### Mounting

- Take adequate measures to ensure proper heat dissipation to increase the long-term reliability of the Power Supply.
- For models other than the S8FS-C350 \( \subseteq \subseteq \), be sure to allow convection in the atmosphere around devices when mounting. Do not use the Power Supply in locations where the ambient temperature exceeds the range of the derating curve.
- For the S8FS-C350 : Forced air cooling with a fan is used. Do not allow the ventilation holes to be blocked. The effectiveness of cooling would be reduced.
- The internal parts may occasionally deteriorate or be damaged.
   Use the standard mounting method only. Do not use the Power Supply outside the derating range.
- If you mount the Power Supply by using the screw holes provided on the chassis, the screws should preferably not penetrate beyond the exterior by more than 3 mm inside the Power Supply. If you use screws that are longer than this, make sure that they do not penetrate beyond the depth given in the dimensional diagram. Use the following tightening torque.

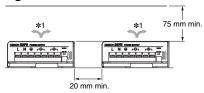
0.48 to 0.59 N·m for M3 screws

- 1.08 to 1.32 N·m for M4 screws
- 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 or be damaged due to adverse heat radiation. Do not loosen the screws on the Power Supplies.

#### Mounting

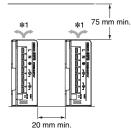
The standard mounting pattern is shown below.

#### **Mounting Pattern A**



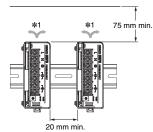
The above figure shows a model with the terminal block facing upward.

#### **Mounting Pattern B**



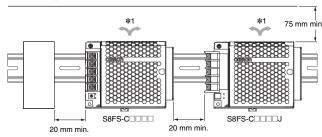
The above figure shows a model with the terminal block facing upward.

#### Mounting Pattern C \*2



The above figure shows a model with the terminal block facing forward.

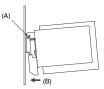
#### **Mounting Pattern D\*2**

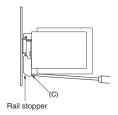


To mount the Power Supply to a DIN Rail, hook portion (A) of the Power Supply onto the DIN Rail and press the Power Supply in direction (B) until you hear it lock into place. Make sure that the catch on the Mounting Bracket is engaged with the DIN Rail.

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

- \*1. Air flow
- \*2. For mounting patterns C and D, a separately sold Mounting Bracket is used to mount the Power Supplies to DIN Rail. Refer to *Mounting Brackets* (Order Separately) on page 29 for the separately sold Mounting Brackets.





#### 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 75 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 dissipation.
- Use the following material for the wires to be connected to the S8FS-C to prevent smoking or ignition caused by abnormal loads.

#### **Recommended Wire Gauges**

Terminals	Model	Recommended Wire Gauges
	S8FS-C015□□□	AWG14 to 22
Input	S8FS-C025□□□ to S8FS-C100□□□	AWG12 to 20
iliput	S8FS-C150□□□ or S8FS-C200□□□	AWG12 to 16
	S8FS-C350□□□	AWG12
	S8FS-C015□□□	AWG14 to 18
	S8FS-C02512 to S8FS-C02524□	
	S8FS-C03515 to S8FS-C03524□	AWG12 to 20
	S8FS-C05024 to S8FS-C05048□	
	S8FS-C02505 or S8FS-C03512□	
	S8FS-C05012 to S8FS-C05015□	
	S8FS-C07515 to S8FS-C07548□	AWG12 to 16
Output	S8FS-C10024 to S8FS-C10048□	
	S8FS-C15036 to S8FS-C15048□	
	S8FS-C03505 or S8FS-C05005□	
	S8FS-C07505 to S8FS-C07512□	
	S8FS-C10005 to S8FS-C10015□	AWG12
	S8FS-C15005 to S8FS-C15024□	7
	S8FS-C200□□□ or S8FS-C350□□□	
Protective	S8FS-C015□□□	AWG14
earth terminal	S8FS-C025□□□ to S8FS-C350□□□	AWG12 to 14

Note: The current capacity for the output terminals on the S8FS-C025□□□ to S8FS-C350□□□ is 25 A for each terminal. Make sure to use multiple terminals together if the current flow is higher than the current capacity for each terminal.

#### **Overload Protection**

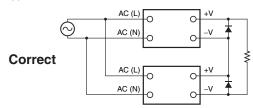
- If the Power Supply has been short-circuited or supplied with an overcurrent longer than 10 seconds, the internal parts of the Power Supply may occasionally deteriorate or be damaged.
- Internal parts may possibly deteriorate or be damaged if the Power Supply is used for applications with frequent 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.



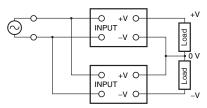
Note: 1. If the load is short-circuited, a reverse voltage will be generated inside the Power Supply. If this occurs the Power Supply may possibly deteriorate or be damaged. Always connect a diode as shown in the figure. Select a diode having the following ratings.

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

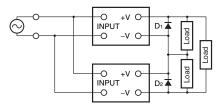
Although Power Supplies having different specifications can be connected in series, the current flowing through the load must not exceed the smaller rated output current.

#### **Making Positive/Negative Outputs**

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



 Depending on the model, internal circuits may be damaged due to startup failure when the power is turned ON if loads such as a servomotor or operational amplifier operate in series. Therefore, connect bypass diodes (D<sub>1</sub>, D<sub>2</sub>) as shown in the following figure.

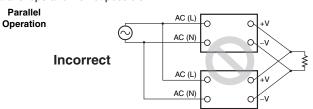


· Select a diode having the following ratings.

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

#### **Parallel Operation**

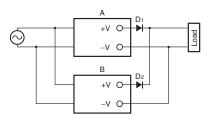
Parallel operation is not possible.



#### **Backup Operation**

Backup operation is possible if you use two Power Supplies of the same model.

Connect diodes as shown in the following figure for backup operation.



Select a diode having the following ratings.

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

- The output voltages of Power Supplies A and B output must be set higher only by a value equivalent to the drop in forward voltages (VF) of diodes D1 and D2.
- Power loss occurs equivalent to the Power Supply output current (lout) times the diode forward voltage (VF), and heat is generated.
   The diode must be cooled to ensure that its temperature is kept at or below the value indicated in the diode catalog.
- There will be a power loss caused by load power and diodes. Be sure that this total power loss does not exceed the rated output power (rated output voltage times rated output current) of each Power Supply.

#### In Case There Is No Output Voltage

There is a possibility that functions such as overcurrent protection, over-voltage protection or overheating protection are functioning. The internal protection circuit may operate if a large amount of surge voltage such as a lightening surge occurs while turning ON the Power Supply.

In case there is no output voltage, please check the following points before contacting us:

- Checking overload protection status:
   Check whether the load is in overload status or is short-circuited.
   Remove wires to load when checking.
- Checking overvoltage or internal protection:
   Turn the power supply OFF once, and leave it OFF for at least 3 minutes. Then turn it ON again to see if this clears the condition.
- Check overheating protection (350-W model):
   Switch off the input power supply and switch back on after allowing sufficient time for cooling.

#### **Charging Batteries**

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

#### **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.
- 2. Average load rate: 80% max.
- 3. Mounting method: Standard mounting
- \* 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 product 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 and accidents that can be caused by using a Power Supply beyond its service life, 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, Power Supply failures or accidents may occur. We therefore recommend that you replace the Power Supply periodically to minimize Power Supply failures and 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. (The fan is excluded for models with fans.)

This product 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.

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