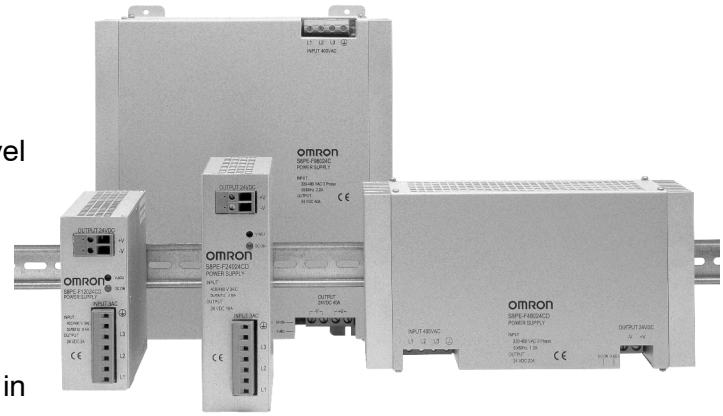
OMRON

Switching Power Supply

S8PE

DIN-rail mounting, 3-phase input Switching Power Supply with a range of 5A to 40A output current

- 3 phase 400/480 or 200/230 VAC input
- 5, 10, 20 and 40A; 24 VDC output
- Higher stability, lower ripple and noise level
- Compact and attractive design, easily mounted to DIN rail (for 5, 10 and 20A types)
- Natural ventilation, no fan for less maintenance
- UL60950, UL508 listing, CSA22.2-60950 in addition to the CE mark
- Conform to EN61000-3-2
- All types can be used for parallel & serial operation



Ordering Information

■ S8PE

Input voltage	Power rating	Output voltage	Output current	With Front mounting Bracket	With DIN rail mounting Bracket
400/480 VAC 3-phase	120 W	24 V	5 A	---	S8PE-F12024CD
	240 W	24 V	10 A	---	S8PE-F24024CD
	480 W	24 V	20 A	S8PE-F48024C	S8PE-F48024CD
	960 W	24 V	40 A	S8PE-F96024C	---
200/230 VAC 3-phase	120 W	24 V	5 A	---	S8PE-J12024CD
	240 W	24 V	10 A	---	S8PE-J24024CD
	480 W	24 V	20 A	---	S8PE-J48024CD
	960 W	24 V	40 A	S8PE-J96024C	---

■ Model Number Legend

S8PE - □ □□□□ □□ □□

1 2 3 4

1. Input voltage

F: 400/480 VAC 3-phase
J: 200/230 VAC 3-phase

2. Power Rating

120: 120 W
240: 240 W
480: 480 W
960: 960 W

3. Output voltage

24: 24V

4. Configuration

C: Covered type with Front-mounting bracket
CD: Covered type with DIN-rail mounting bracket

Specifications

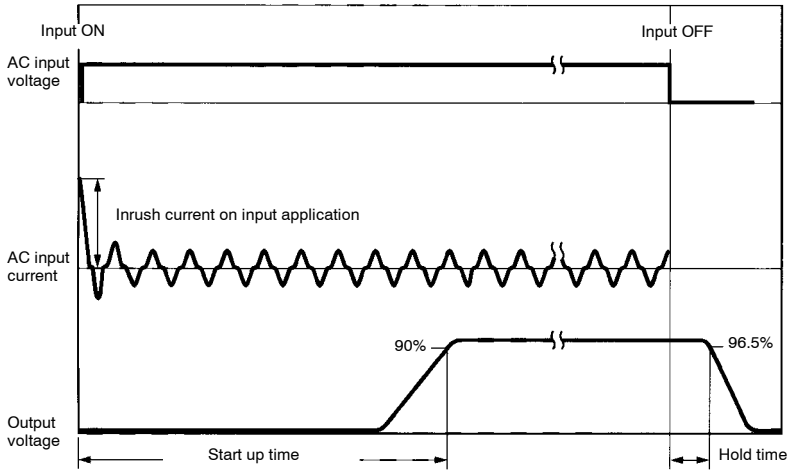
Item		400 / 480 VAC				200 / 230 VAC			
		5 A	10 A	20 A	40 A	5 A	10 A	20 A	40 A
Efficiency (typical)	(Vin = 400 VAC, Pmax)	85%	88%	87%	90%	–	–	–	–
	(Vin = 480 VAC, Pmax)	84%	88%	87%	90%	–	–	–	–
	(Vin = 230 VAC, Pmax)	–	–	–	–	84%	86%	87%	88%
Input	**Voltage range**	340-576 VAC				180-264 VAC			
	Frequency	50/60 Hz							
	Current (max.) (Vin = Range min., Pmax)	0.5 A	1.0 A	1.5 A	2.5 A	1.0 A	2.0 A	3.0 A	5.0 A
	Power factor (typical)								
	(Vin = 400 VAC, Pmax)	0.58	0.64	0.89	0.89	–	–	–	–
	(Vin = 480 VAC, Pmax)	0.52	0.59	0.84	0.84	–	–	–	–
	(Vin = 230 VAC, Pmax)	–	–	–	–	0.56	0.55	0.86	0.87
	Leakage current (max.)								
	(Vin = 400 VAC, Pmax)	0.4 mA	0.9 mA	1.3 mA	0.7 mA	–	–	–	–
	(Vin = 480 VAC, Pmax)	0.5 mA	1.1 mA	1.6 mA	0.9 mA	–	–	–	–
	(Vin = 230 VAC, Pmax)	–	–	–	–	0.3 mA	0.4 mA	0.7 mA	1.4 mA
	Inrush current (max.) (Pmax.) (see Note 1)	30 A	30 A	40 A	50 A	30 A	30 A	40 A	50 A
Output	**Voltage adjustment range**	22.5 to 26.4 VDC min.							
	Tolerance voltage accuracy	± 0.5%							
	Ripple & noise (Pmax.)	200 mV max.							
	Load variation influence	± 2% max.							
	Input variation influence	± 0.5% max.							
	Temp. variation influence (Pmax.)	0.01%/°C							
	Start up time (max.)	1.7 s	1.5 s	1.0 s	0.1 s	0.9 s	1.0 s	1.3 s	0.1 s
	Hold time (min.)								
	(Vin = Range min., Pmax)	8 ms	4 ms	3 ms	7 ms	8 ms	4 ms	4 ms	8 ms
	(Vin = 400 VAC, Pmax)	21 ms	17 ms	11 ms	14 ms	–	–	–	–
	(Vin = 480 VAC, Pmax)	25 ms	26 ms	24 ms	26 ms	–	–	–	–
	(Vin = 230 VAC, Pmax)	–	–	–	–	21 ms	10 ms	10 ms	16 ms
	Protection	– Short circuit protection with automatic reset – Over load protection – Over voltage protection							
	Parallel operation	Yes (for two units)							
	Serial operation	Yes (for two units)							
	Indicator	Yes (Green LED)							
Others	**Heat radiation**	Natural air cooling							
	Ambient temperature	–10 to 50 °C (UL rating), –10 to 60 °C (de-rating: 2%/°C for 50-60 °C)							
	Storage temperature	–25 to 85 °C							
	Ambient humidity	25 to 85%							
	Dielectric strength	3 kVAC 50/60 Hz (Input - Output) 2.5 kVAC 50/60 Hz (Input - P.E.)							
	Insulation resistance	500 M ohm min. at 500 VDC: P.E. - Output							
	EMC	EN55022 class B, EN55011 class B, EN50081-1 EN50082-2, EN61000-3-2 class A							
	Approved standards	UL60950, UL508 (Listing), CSA22.2-60950, EN60950, EN50178							
	Life expectancy (see note 2)	10 years (typical)							
	Weight (approx.)	750 g	1.0 kg	2.65 kg	4.75 kg	750 g	1.0 kg	2.65 kg	4.75 kg

Note: 1. Measured at 25 °C, and cold start condition.

2. Under the ambient temperature of 40 °C, and a load rate of 50%.

Engineering Data

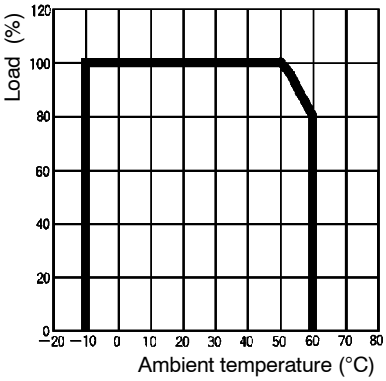
■ Definition of Inrush Current, Start up Time and Hold Time



■ Overload Protection

The Power supply is provided with an overload protection function that protect the load and the power supply from possible damage by over current. When the output current rises above between 105 to 130% of the rated current, the protection function is triggered, decreasing the output voltage. When output current falls within the rated range, the overload protection function is automatically cleared.

■ De-rating Curve



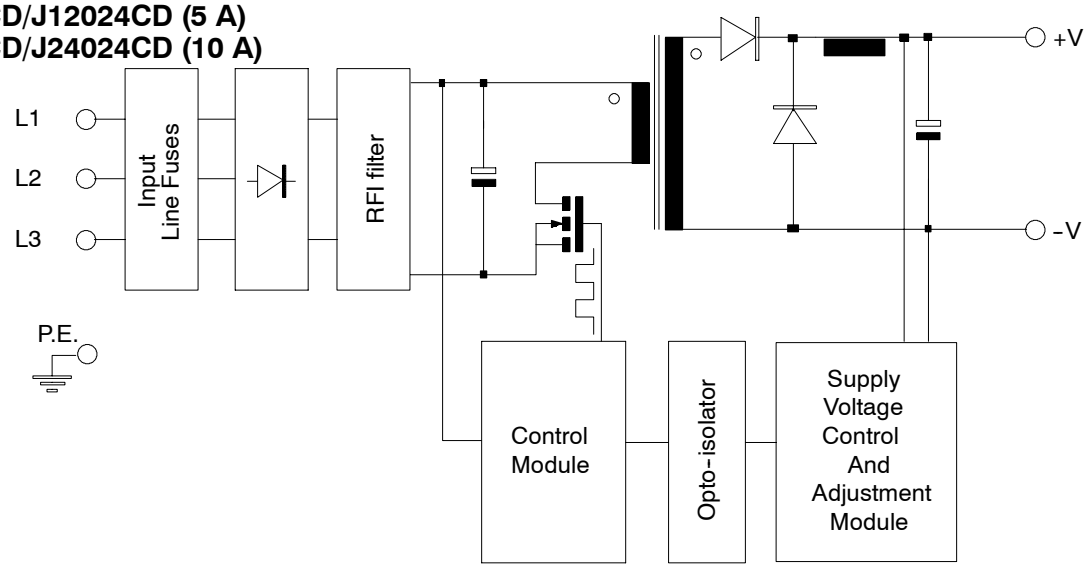
■ Overvoltage Protection

If output voltage exceed the rated voltage more than 20% (50% at maximum) by some reason, then the output voltage will be turned OFF automatically for safety. To restart the S8PE, turn OFF the input voltage, wait for a few seconds, then apply the input power again.

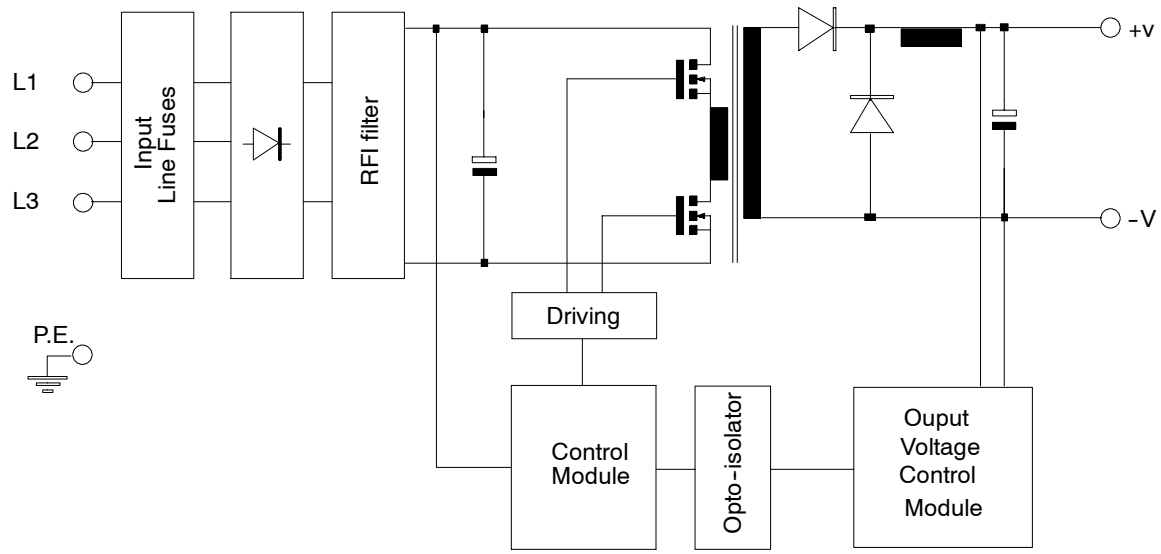
Operation

■ Block Diagram

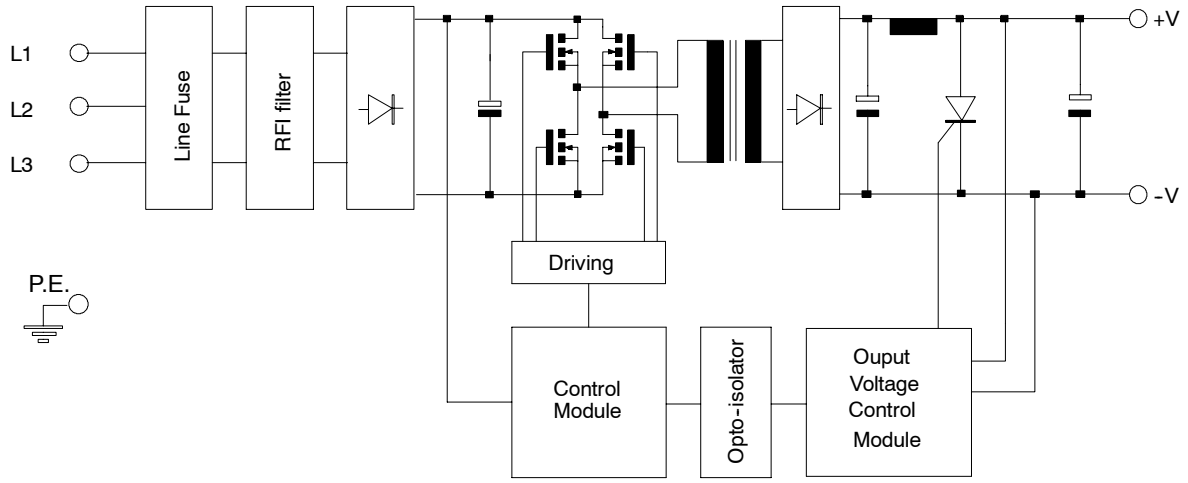
S8PE-F12024CD/J12024CD (5 A)
S8PE-F24024CD/J24024CD (10 A)



S8PE-F48024C (20 A)
S8PE-F48024CD/J48024CD (20 A)



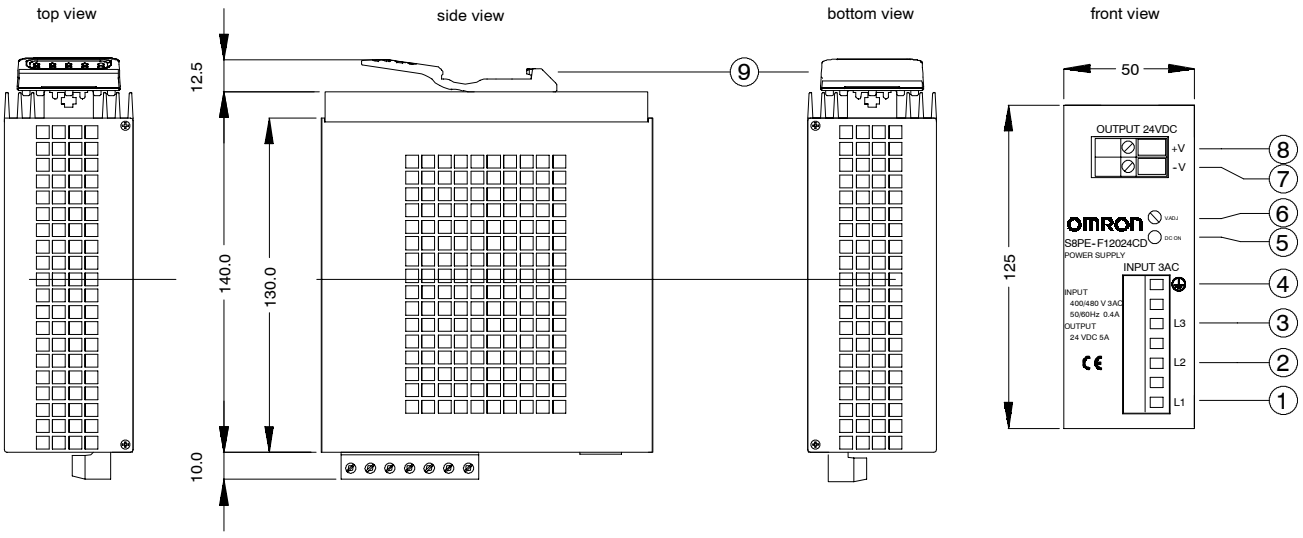
S8PE-F96024C/J96024C (40 A)



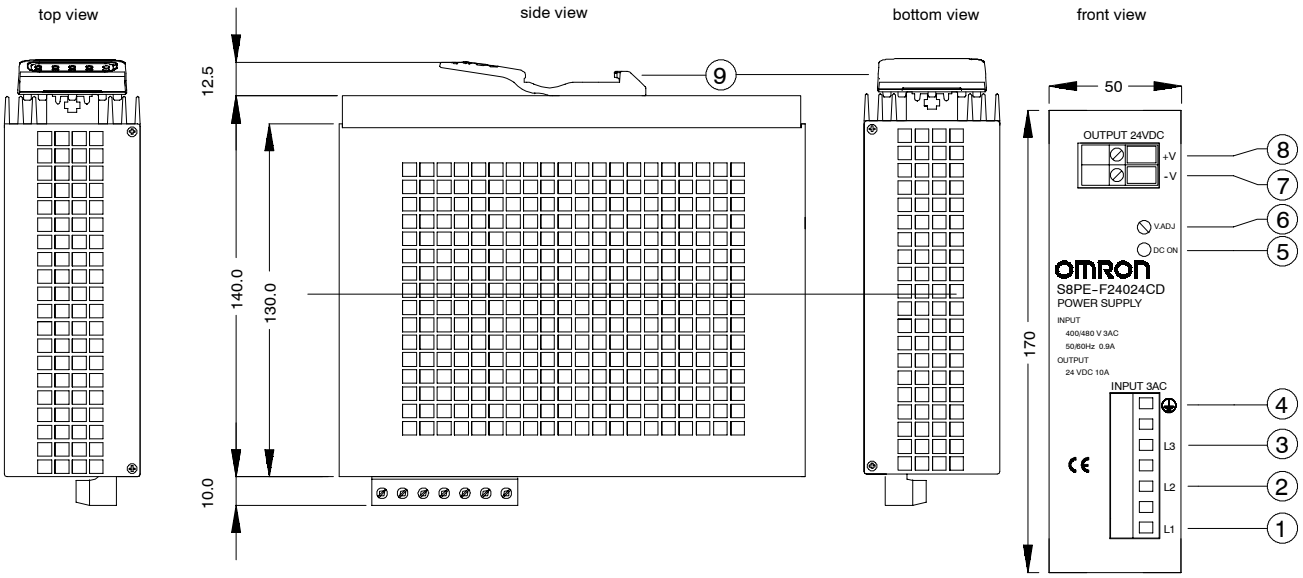
Dimensions and Installation

Note: All dimensions shown are in millimeters.

S8PE-F12024CD/J12024CD (5 A)

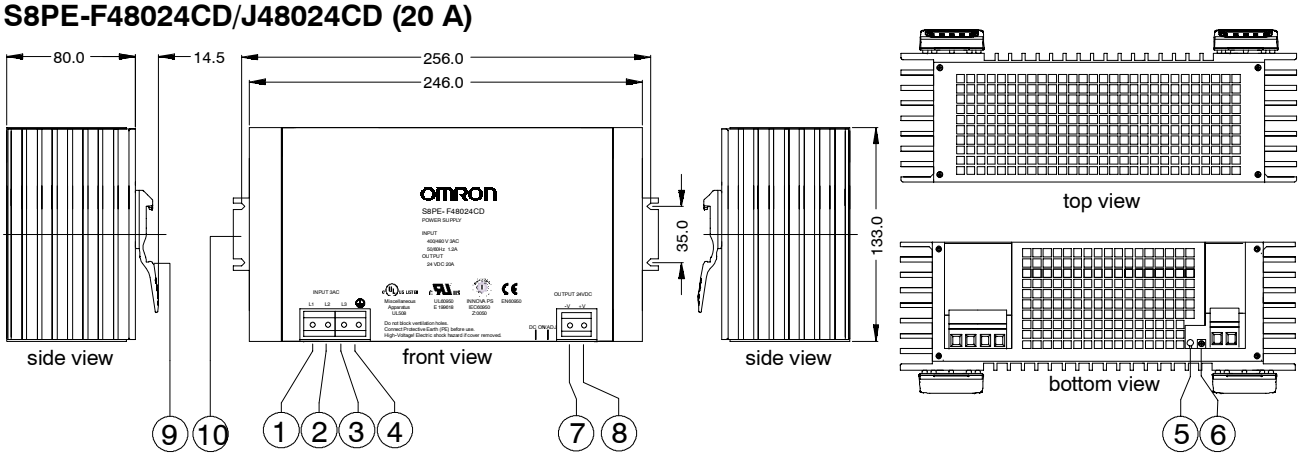


S8PE-F24024CD/J24024CD (10 A)

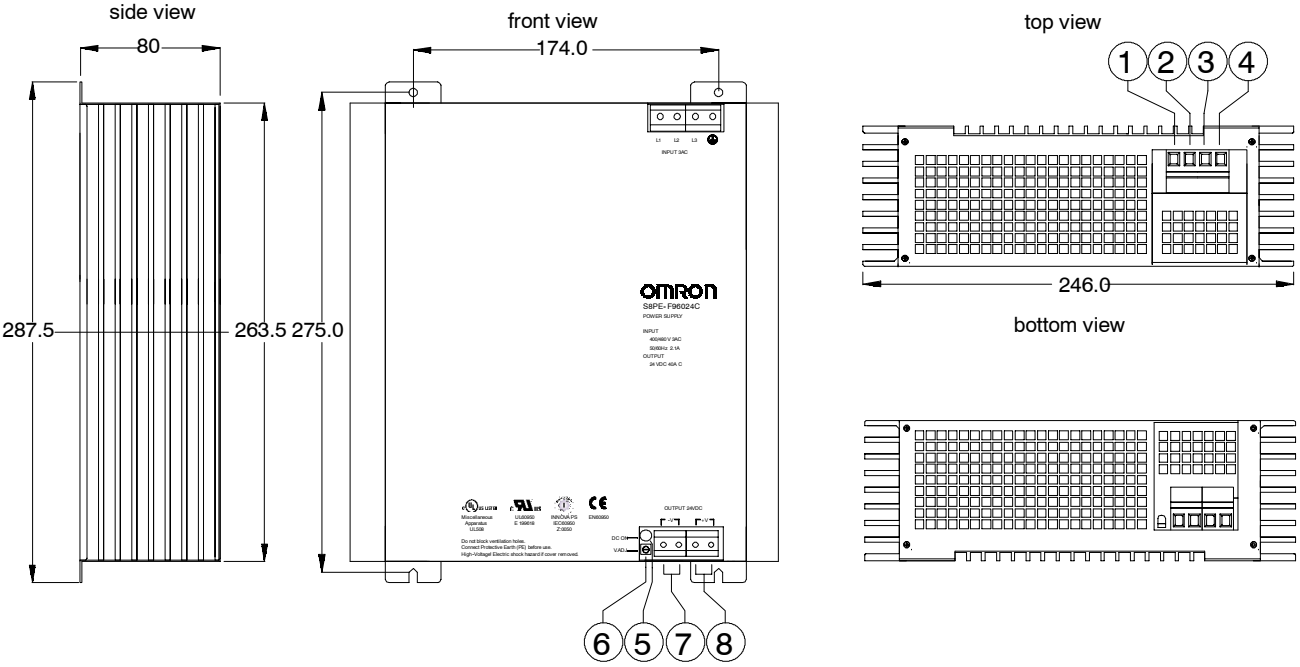


①	AC INPUT L1		Output Voltage adjustment trimmer V.ADJ
②	AC INPUT L2	⑦	DC OUTPUT –V
③	AC INPUT L3	⑧	DC OUTPUT +V
④	Protective Earth (P.E.)	⑨	35 mm DIN-rail attachment
⑤	DC OUTPUT indicator		

S8PE-F48024C (20 A)
S8PE-F48024CD/J48024CD (20 A)



S8PE-F96024C/F96024C (40 A)



①	AC INPUT L1		Output Voltage adjustment trimmer V.ADJ
②	AC INPUT L2	⑦	DC OUTPUT –V
③	AC INPUT L3	⑧	DC OUTPUT +V
④	Protective Earth (P.E.)	⑨	35 mm DIN-rail attachment for S8PE-F48024CD/J48024CD type only
⑤	DC OUTPUT indicator	⑩	Fixing bracket for S8PE-F48024C type only

Notice

Three phase input operation with one missing phase

The S8PE Power Supplies can also operate even if one of the 3 phases is missing.

Output Voltage will remain stable and also maximum output capacity will be available.

Conditions:
Above 350 VAC (for S8PE-F)/170 VAC (for S8PE-J) input voltage, the operation on 2 phases can be guaranteed with S8PE series.
Below 350 VAC (for S8PE-F)/170 VAC (for S8PE-J) input voltage, the ripple and noise will become larger.

It is not recommended to operate the Power Supply permanently on 2 phases (or for longer periods, for example over several days) as this will result in a reduced life period.

Three phase input switch off

In order to switch off the Power Supply completely: all 3 phases need to be switched off.

Mounting

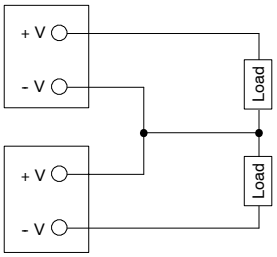
To improve and maintain the reliability of the Power Supply over a long period, adequate consideration must be taken to heat radiation.

The S8PE is designed to radiate heat by natural air cooling, therefore, mount the S8PE so that enough air flow takes place around the power supply.

If installing S8PEs closely, keep the minimum distance of 10 cm at 50 °C ambient, 5 cm at 20 °C ambient.

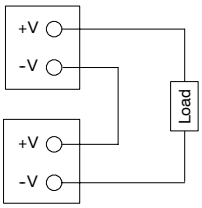
Generating (±) Output Voltage

An output of ± can be generated as shown below, since the S8PE has a floating output.



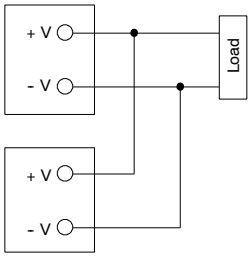
Serial Operation

As shown below, the output voltage from each S8PE can be added.



Parallel Operation

As shown below, The Power supply can use for parallel operation. All the output voltage of each S8PEs should be exactly the same. Also, make sure that the thickness and the length of all wires connected to the load are the same to ensure that the wires will have no voltage drop difference.



Safety Precautions

■ Safety Signal words

This document uses the following signal words to mark safety precautions for the S8PE. These precautions provide important information for the safe application of the product. You must be sure to follow the instructions provided with safety signal words.

⚠ **WARNING**	Indicates information that, if ignored, could possibly result in loss of life or seriously injury.
⚠ **CAUTION**	Indicates information that, if ignored, could result in relatively serious or minor injury, damage to the product, or faulty operation.

⚠ WARNING

Be sure to connect the grounding line. Not doing so may result in electric shock.

⚠ CAUTION

Do not attempt to disassemble the Power Supply or touch its internal parts while power is being supplied. Doing so may result in electric shock.

⚠ CAUTION

Do not touch the S8PE while the power is being supplied or immediately after the power is turned OFF. Otherwise, a skin burn may result from the hot Switching Power Supply.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. T200-E2-02 **In the interest of product improvement, specifications are subject to change without notice.**

OMRON EUROPE B.V.
Wegalaan 67-69
2132 JD Hoofddorp
The Netherlands
Phone: +31 23 568 13 00
Fax: +31 23 568 13 88

Printed in The Netherlands