Size: 5in x 3in x 1.52in (127mm x 76.2mm x 38.5mm)

FEATURES

- Universal 90~264VAC (127~370VDC) Input Range
- Accepts AC or DC Input (Dual-Use of Same Terminal)
- Built-In Active PFC Function
- PG Signal and Remote Sensing Function
- 5VDC Standby Output, 12VDC Fan Supply
- 250W with Air Cooling, 450W with 25CFM
- Base Plate with Conformal Coating
- Output Short Circuit, Over Current, Over Voltage, and Over Temperature Protection
- Medical Approved, Suitable for BF Applications
- Operating altitude up to 5000m
- RoHS Compliant

DESCRIPTION

The PSSW450 series of open frame switching power supplies offers up to 450 watts of output power in a very compact 5” x 3” x 1.52” package. This series consists of single output models with a universal input range of 90~264VAC (127~370VDC) and accepts AC or DC input. This series features built-in active PFC, PG signal, remote sensing function, and base plate with conformal coating. It is also protected against short circuit, over current, over voltage, and over temperature conditions and is RoHS compliant. Safety approvals vary by model, see data sheet for full details.

MODEL SELECTION TABLE

Model Number(1)	Cooling Method	Nominal Output Voltage	Nominal Output Current	Output Power(2)	Output Adjustable Range	Ripple & Noise	Efficiency(3)	Maximum Capacitive Load
PSSW450-12S	Air Cooling	12V	20.8A	250W	11.4-12.6V	200mV	91%	6000µF
	25CFM	12V	33.3A	400W				
PSSW450-15S	Air Cooling	15V	16.7A	250W	14.25-15.75V	200mV	92%	6000µF
	25CFM	15V	26.7A	400W				
PSSW450-18S	Air Cooling	18V	13.9A	250.2W	17.1-19.9V	200mV	92.5%	6000µF
	25CFM	18V	22.2A	399.6W				
PSSW450-19S	Air Cooling	19V	13.2A	250.8W	17.1-19.9V	200mV	92.5%	6000µF
	25CFM	19V	21.1A	400.9W				
PSSW450-24S	Air Cooling	24V	10.5A	250W	22.8-25.2V	200mV	93%	6000µF
	25CFM	24V	18.75A	450W				
PSSW450-27S	Air Cooling	27V	9.3A	250W	25.65-28.35V	200mV	93.5%	4000µF
	25CFM	27V	16.7A	450W				
PSSW450-36S	Air Cooling	36V	6.95A	250W	34.2-37.8V	200mV	93%	3000µF
	25CFM	36V	12.5A	450W				
PSSW450-48S	Air Cooling	48V	5.3A	250W	45.6-50.4V	200mV	94%	2000µF
	25CFM	48V	9.4A	450W				
PSSW450-54S	Air Cooling	54V	4.63A	250W	51.3-56.7V	200mV	94%	2000µF
	25CFM	54V	8.33A	449.8W				

SPECIFICATIONS

All specifications are based on Ta=25°C, Humidity <75%RH, Nominal Input Voltage, and Rated Output Load unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS			Min	Typ	Max	Unit
INPUT SPECIFICATIONS							
Input Voltage Range	AC Input			90		264	VAC
	DC Input			127		370	VDC
Input Voltage Frequency				47		63	Hz
Input Current	90VAC/115VAC					5.2	A
	230VAC					2.6	
Inrush Current	115VAC, Cold Start				40		A
	230VAC, Cold Start				80		
Power Factor	115VAC, Full Load			0.98			
	230VAC, Full Load			0.95			
Leakage Current	Contact Leakage Current, 264VAC			<0.1mA			
	Earth Leakage Current, 264VAC			<0.5mA			
Hot Plug				Unavailable			
OUTPUT SPECIFICATIONS							
Output Voltage				See Table			
Voltage Accuracy[4]	Full Load Range	12V/15V/18V/19V/24V			±2		%
		27V/36V/48V/54V			±1		
Line Regulation	Rated Load				±0.5		%
Load Regulation	0%-100% Load				±1		%
Output Power				See Table			
Fan Power[5]				Offer Output Power of 12V/0.5A			
Output Current				See Table			
Minimum Load				0			%
Maximum Capacitive Load				See Table			
Ripple & Noise[6]	20MHz Bandwidth (Peak-to-Peak Value)					200	mV
Hold Up Time	25°C, 115VAC Input			12			ms
	25°C, 230VAC Input			16			
Stand By Power Consumption	Room Temperature, 230VAC Input, (PS_ON Low Potential)					0.5	W
Temperature Coefficient					±0.03		%/°C
PS_ON Input Signal[7]	Power On	PS_ON High		2		5	V
	Power Off	PS_ON Low		0		0.5	
PG Signal[8]	Power On	The PG signal goes high with 10ms to 500ms delay after power set up		10		500	ms
	Power Off/Power Fail	The TTL signal goes low at least 1ms before output below 90% of rated value		1			
	High Level	High		2		6	V
	Low Level	Low		0		0.6	
Remote Sense	When RS+ and RS- are connected to the system, with function of remote voltage compensation, if not needed, left RS+ and RS- open						
5V Standby	5Vsb: The load capacity is 0.6A without fan; the load capacity is 1A with fan 25CFM, tolerance 2%, ripple: 120mVp-p (max).						
PROTECTION							
Short Circuit Protection	Recovery time <5s after the short circuit disappears			Hiccup, Continuous, Self-Recover			
Over Current Protection	Hiccup, Self-Recover				≥105		%
Over Voltage Protection	Output voltage turn off, re-power on for recover		12V		≤15.6		VDC
			15V		≤19.5		
			18V		≤23.4		
			19V		≤23.4		
			24V		≤31.2		
			27V		≤35.1		
			36V		≤46.8		
			48V		≤60		
			54V		≤63		
Over Temperature Protection	Protection when over temperature occurs, recovers automatically after temperature drops.						

SPECIFICATIONS

All specifications are based on Ta=25°C, Humidity <75%RH, Nominal Input Voltage, and Rated Output Load unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS				Min	Typ	Max	Unit
ENVIRONMENTAL SPECIFICATIONS								
Operating Temperature					-40		+70	°C
Storage Temperature					-40		+85	°C
Storage Humidity	Non-Condensing				10		95	%RH
Operating Humidity	Non-Condensing				20		90	%RH
Power Derating	Operating Temperature Derating	Air Cooling (250W)	115VAC	+40°C to +60°C	4.5			%/°C
			230VAC	+45°C to +60°C	4.0			
		25CFM	+50°C to +70°C		2.0			
	Input Voltage Derating		90VAC – 115VAC		1.0			%/VAC
Operating Altitude							5000	m
MTBF	MIL-HDBK-217F@25°C				200,000			h
GENERAL SPECIFICATIONS								
Typ. Efficiency	@230VAC				See Table			
Isolation Test	Electric Strength Test for 1min. Leakage Current <5mA			Input – Output	4000			VAC
				Input - ⏚	2000			
				Output -⏚	1500			
Insulation Resistance	Environment Temperature: 25±5°C Relative Humidity: <95%RH, non-condensing Testing Voltage: 500VDC			Input – Output	100			MΩ
				Input - ⏚	100			
				Output -⏚	100			
Isolation Level	Input – Output				2 x MOPP			
	Input - ⏚				1 x MOPP			
	Output -⏚				1 x MOPP			
PHYSICAL SPECIFICATIONS								
Weight					14.11oz (400g)			
Dimensions (L x W x H)					5in x 3in x 1.52in (127mm x 76.2mm x 38.5mm)			
Cooling Method	See typical characteristic curve for cooling method and power derating				Air Cooling (250W)/25CFM (400/450W)			
Case Material					Open Frame			
SAFETY CHARACTERISTICS								
Safety Standard[9]	12V/15V/24V/27V/36V/48V			Approved To	ES60601-1 Safety Approval & EN62368-1, EN60601-1 (Report);			
				Design Refers To[10]	IEC/EN62368-1, ES/EN60601-1, GB4943.1, EN60335-1			
	18V/19V/54V			Design Refers To[10]	EN/UL/IEC62368-1. GB4943.1, ES/EN60601-1, EN60335-1			
Safety Class					CLASS I			
EMC[10]	Emissions	CE	EN55032(CISPR32)/EN55011(CISPR11)		Class B			
		RE	EN55032(CISPR32)/EN55011(CISPR11)		Class B			
		Harmonic Current	IEC/EN61000-3-2		Class A and Class D			
		Flicker	IEC/EN61000-3-3					
	Immunity	ESD	IEC/EN61000-4-2		Contact ±8KV/ Air ±15KV			Perf. Criteria A
		RS	IEC/EN61000-4-3		10V/m			Perf. Criteria A
		EFT	IEC/EN61000-4-4		±2KV			Perf. Criteria A
		Surge	IEC/EN61000-4-5		Line to Line ±2KV/ Line to Ground ±4KV			Perf. Criteria A
		CS	IEC/EN61000-4-6		10 Vr.m.s			Perf. Criteria A
		Voltage Dips, Short Interruptions, & Voltage Variations Immunity	IEC/EN61000-4-11		0%, 70%			Perf. Criteria B

NOTES

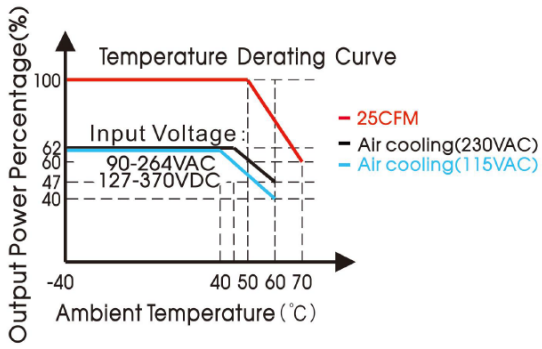
1. Product with shell also available. Add '-C' to model number to indicate product with shell.
2. Under any conditions, the total power of the product should not exceed the rated power. When the output voltage is increased, the total output power cannot exceed the rated output power, when the output voltage is decreased, the output current cannot exceed the rated output current.
3. When measuring the full load efficiency, the fan should be connected to an external power supply. Fan loss is not included in the input power.
4. Output voltage accuracy: including setting error, line regulation, load regulation.
5. For fan power connection method, refer to 5,6 in the external dimension drawing.
6. The "tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor (Low ESR) and a 0.1uF ceramic capacitor. Please contact factory for more information.
7. For PS_ON, 5V standby connection method, please refer to CN6 in the external dimension drawing.
8. For PG standby connection method, please refer to CN2 in the external dimension drawing.
9. This product is Listed to applicable standards and requirements by UL.
10. Models are designed to meet these standards, but have not reached approval at this time.
11. The power supply is considered a component as part of a system. All EMC items are tested on a metal plate (360mm x 360mm x 1mm). Power supply should be combined with final equipment for EMC confirmation.
12. In order to improve efficiency, there will be audible noise generated, but it does not affect product performance and reliability.
13. Product customization is available. Please contact factory for more information.
14. The out case needs to be connected to PE (⏚) of system when the terminal equipment is operating.
15. Products should be classified according to ISO14001 and related environmental laws and regulations and should be handled by qualified units.
16. The power supply is considered a component which will be installed into terminal equipment. All EMC tests should be confirmed with the final equipment. Contact factory for more information.
17. Customization is available, contact factory for more information.

CAUTION: Double pole, neutral fusing. Disconnect mains before servicing.

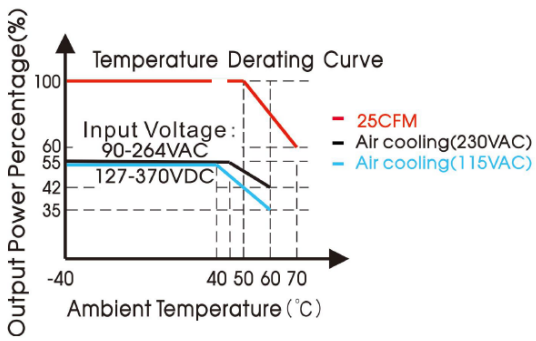
**Due to advances in technology, specifications subject to change without notice.*

CHARACTERISTIC CURVES

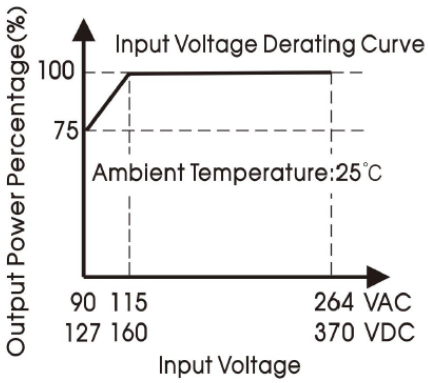
Temperature Derating Curve
PSSW450-12/15/18/19 (Full Load 400W with 25CFM)



Temperature Derating Curve
PSSW450-24/27/36/48/54 (Full Load 450W with 25CFM)



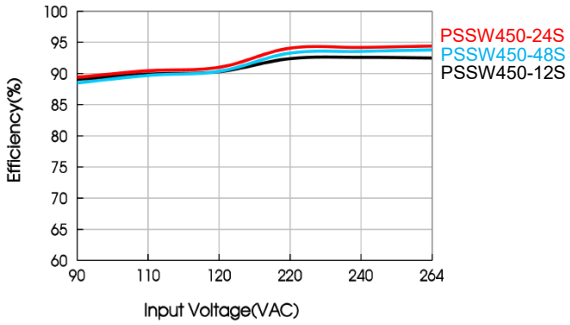
Input Voltage Derating Curve



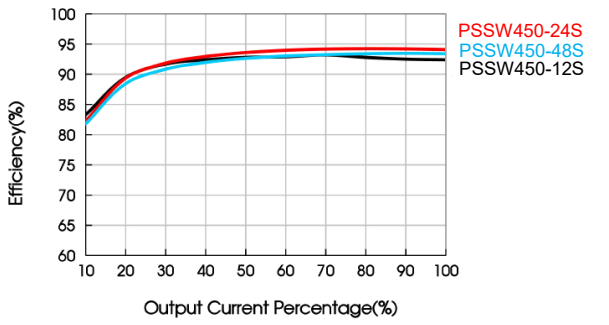
Note: With an AC input voltage between 90 – 115VAC and a DC input between 127-160VDC the output power must be derated as per the temperature derating curves.

CHARACTERISTIC CURVES

Efficiency vs. Input Voltage (Full Load)

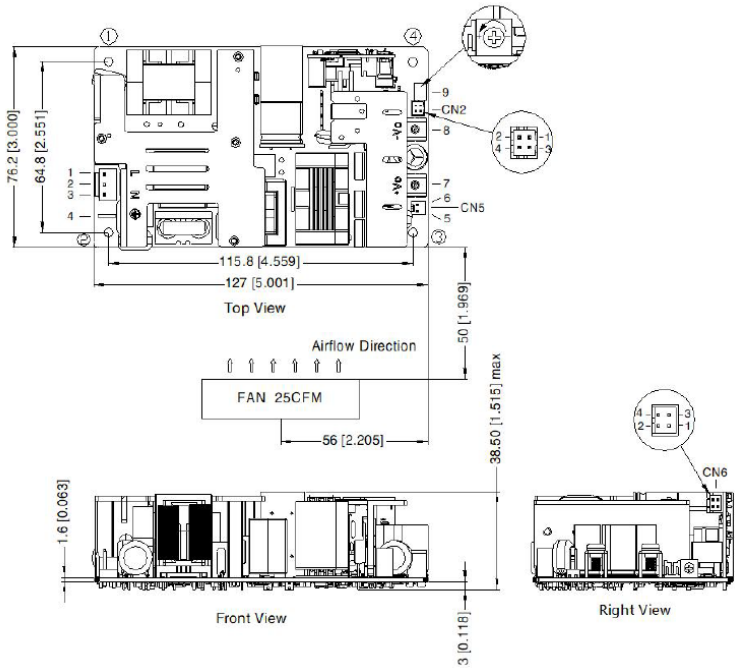


Efficiency vs. Output Load

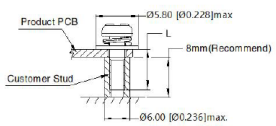


MECHANICAL DRAWINGS

THIRD ANGLE PROJECTION



Position	Screw Spec.	L(Recommend)	Torque(max)
① – ④	M3	6mm	0.4N.m



Pin-Out		Customer Connector
Pin	Function	
1	AC(L)	Housing: JST VHR or equivalent Contact: JST SVH-21T-P1.1 or equivalent
2	NC	
3	AC(N)	
4	⏚	Contact: JST SPS-21T-250
5	FAN+	CN5: Fan Power Output Port Housing: TKP 2502 or equivalent Contact: TKP 8811 or equivalent
6	FAN-	
7	+Vo	
8	-Vo	
9	ADJ Output Adjustable Resistor	

CN6: PS_ON signal input port (3-4)
5VDC Standby Output (1-2)

Pin-Out		Customer Connector
Pin	Function	
1	+5V	Housing: JST PHD-2*2Y or equivalent Contact: JST PHD-TE or equivalent
2	GND	
3	PS-ON	
4	GND	

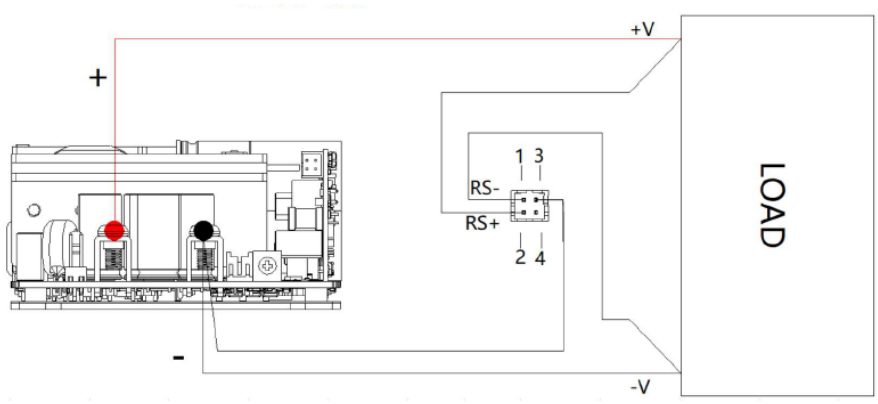
CN2: Remote Sensing Signal Input Port (1-2)
PG Signal (3-4

Pin Out		Customer Connector
Pin	Function	
1	RS-	Housing: JST PHD-2*2Y or equivalent Contact: JST PHD-TE or equivalent
2	RS+	
3	GND	
4	PG	

Note:
1. Unit: mm [inch]
2. Pin7,8 connector tightening torque: M4, 1.2N·m (max)
3. General tolerances: ±1.00 [±0.039]
4. Layout of device is for reference only, please refer to the actual product.
5. It is recommended 10mm distance between the PCB and other components for safety purpose.

6. Class 1 system①②③ positions must be connected to earth (⏚)

REMOTE SENSING FUNCTION



Remote Sensing Function Wiring Diagram

Note:
1. RS- and RS+ cannot be shorted or reversed, otherwise the module will be damaged.
2. The remote compensation function can compensate the voltage drop on the output cable, which includes the sum of the cable drop connected to the output positive terminal and the outptu negative terminal.
3. If you need to use remote compensation function, the signal pin needs to be connected with the load and with a twisted pair.

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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