ES60601-1 EN62368-1 EN60601-1

Size: 5in x 3in x 1.59in (127mm x 76.2mm x 40.5mm)

FEATURES

- Universal 90~264VAC (127~370VDC) Input Range
- Built-In Active PFC Function
- PG Signal and Remote Sensing Function
- 5VDC Standby Output, 12VDC Fan Supply
- High Efficiency
- Operating altitude up to 5000m
- 320W with Air Cooling, 550W with 25CFM
- Base Plate with Conformal Coating
- Output Short Circuit, Over Current, Over Voltage, and Over Temperature Protection
- Medical Approved, Suitable for BF Applications
- RoHS Compliant
- Safety Class I

DESCRIPTION

The PSSW550 series of open frame switching power supplies offers up to 550 watts of output power in a very compact 5” x 3” x 1.59” package. This series consists of single output models with a universal input range of 90~264VAC (127~370VDC). 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
PSSW550-12S	Air Cooling	12V	26.7A	320.4W	11.4-12.6V	200mV	91%	6000µF
	25CFM	12V	41.6A	499.2W				
PSSW550-15S	Air Cooling	15V	21.3A	319.5W	14.25-15.75V	200mV	92%	6000µF
	25CFM	15V	33.3A	499.5W				
PSSW550-18S	Air Cooling	18V	17.8A	320.4W	17.1-19.9V	200mV	92.5%	6000µF
	25CFM	18V	27.8A	500.4W				
PSSW550-19S	Air Cooling	19V	16.8A	319.2W	17.1-19.9V	200mV	92.5%	6000µF
	25CFM	19V	26.3A	499.7W				
PSSW550-24S	Air Cooling	24V	13.4A	321.6W	22.8-25.2V	200mV	93%	6000µF
	25CFM	24V	22.9A	549.6W				
PSSW550-27S	Air Cooling	27V	11.9A	321.3W	25.65-28.35V	200mV	93.5%	4000µF
	25CFM	27V	20.4A	550.8W				
PSSW550-36S	Air Cooling	36V	8.9A	320.4W	34.2-37.8V	200mV	94%	3000µF
	25CFM	36V	15.3A	550.8W				
PSSW550-48S	Air Cooling	48V	6.7A	321.6W	45.6-50.4V	200mV	94%	2000µF
	25CFM	48V	11.46A	550W				
PSSW550-54S	Air Cooling	54V	5.75A	310.5W	51.3-56.7V	200mV	94%	1500µF
	25CFM	54V	10.2A	550.8W				

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	115VAC				6.5	A
	230VAC				3.0	
Inrush Current	115VAC, Cold Start			50		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/27V		±2		%
		36V/48V/54V		±1		
Line Regulation	Rated Load			±0.5		%
Load Regulation	0%-100% Load			±1		%
Output Power			See Table			
Fan Power[5]	12V/15V/18V/19V/24V/27V/36V/48V/54V		Offer Output Power of 12V/0.5A			
Output Current			See Table			
Minimum Load			0			%
Maximum Capacitive Load			See Table			
Ripple & Noise[6]	20MHz Bandwidth				200	mV
Hold Up Time	115VAC Input		10			ms
	230VAC Input		10			
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		%Io
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	25CFM	+40°C to +50°C	0			%/°C
			+50°C to +70°C	2.5			
	Air Cooling	230V/320W	+45°C to +50°C	4.0			W/°C
			+50°C to +60°C	6.0			
		115V/310W	+30°C to +40°C	1.0			
			+40°C to +50°C	6.0			
			+50°C to +60°C	4.0			
	Input Voltage Derating	90VAC – 115VAC		1.0			%/VAC
		115VAC-264VAC		0			
		127VDC-160VDC		0.76			%/VDC
		160VDC-370VDC		0			
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				17.28oz (490g)			
Dimensions (L x W x H)				5in x 3in x 1.59in (127mm x 76.2mm x 40.5mm)			
Cooling Method[9]	Air Cooling			310W/320W			
	25CFM			500W/550W			
Case Material				Open Frame			
SAFETY CHARACTERISTICS							
Safety Standard[10]	12V/15V/24V/27V/36V/48V		Approved To	ES60601-1 Safety Approval & EN62368-1, EN60601-1 (Report);			
			Design Refers To[11]	IEC/UL/EN62368-1, GB4943.1, EN60335-1, ES/EN60601-1			
	18V/19V/54V		Design Refers To[11]	EN/UL/IEC62368-1. GB4943.1, EN/ES60601-1, 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		
		DIP IEC/EN61000-4-11 0%,70%	IEC/EN61000-4-11	0%, 70%	Perf. Criteria B		

NOTES

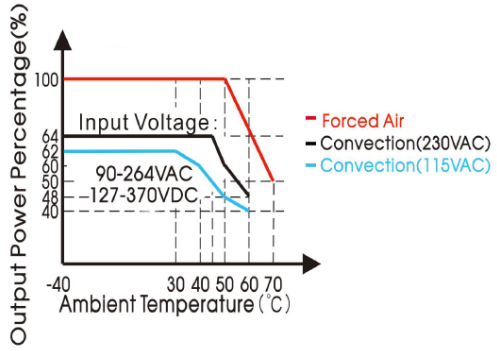
1. Product with shell also available. Add '-C' to model number to indicate product with shell.
2. Under any conditions, the total power of the product should not exceed the rated power. When the output voltage is increased, the total output power cannot exceed the rated output power, when the output 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. Refer to the product characteristic curve for cooling method and power derating.
10. This product is Listed to applicable standards and requirements by UL.
11. Models are designed to meet these standards, but have not reached approval at this time.
12. 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.
13. In order to improve efficiency, there will be audible noise generated, but it does not affect product performance and reliability.
14. Product customization is available. Please contact factory for more information.
15. The out case needs to be connected to PE (⏚) of system when the terminal equipment is operating.
16. Products should be classified according to ISO14001 and related environmental laws and regulations and should be handled by qualified units.
17. 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.
18. Customization is available, contact factory for more information.

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

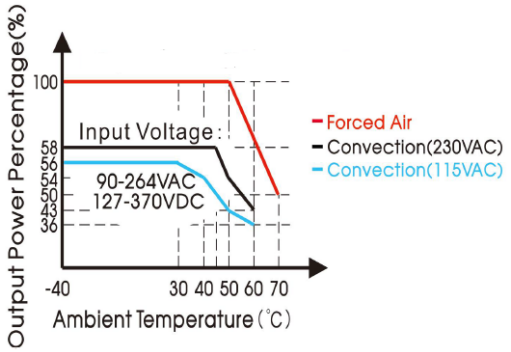
**Due to advances in technology, specifications subject to change without notice.*

CHARACTERISTIC CURVES

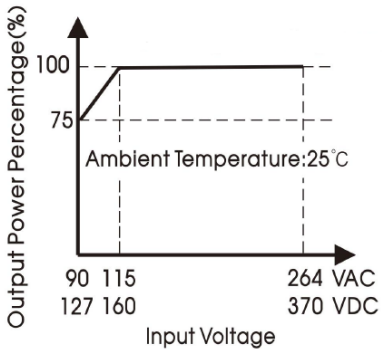
Temperature Derating Curve
12V/15V/18V/19V (Full Load 500W with Forced Air)



Temperature Derating Curve
24V/27V/36V/48V/54V (Full Load 550W with Forced Air)



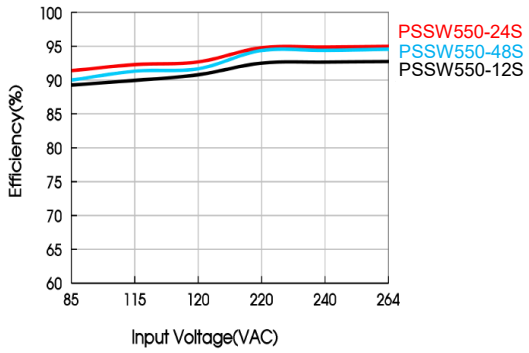
Input Voltage Derating Curve



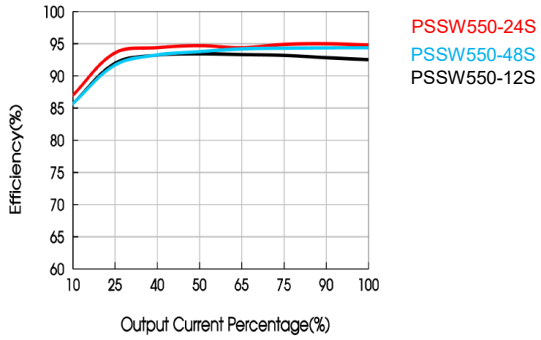
Note: With an AC input voltage between 90 – 115VAC and a DC input between 127-160VDC the output power must be derated as per the temperature derating curves.

CHARACTERISTIC CURVES

Efficiency vs. Input Voltage (Full Load)

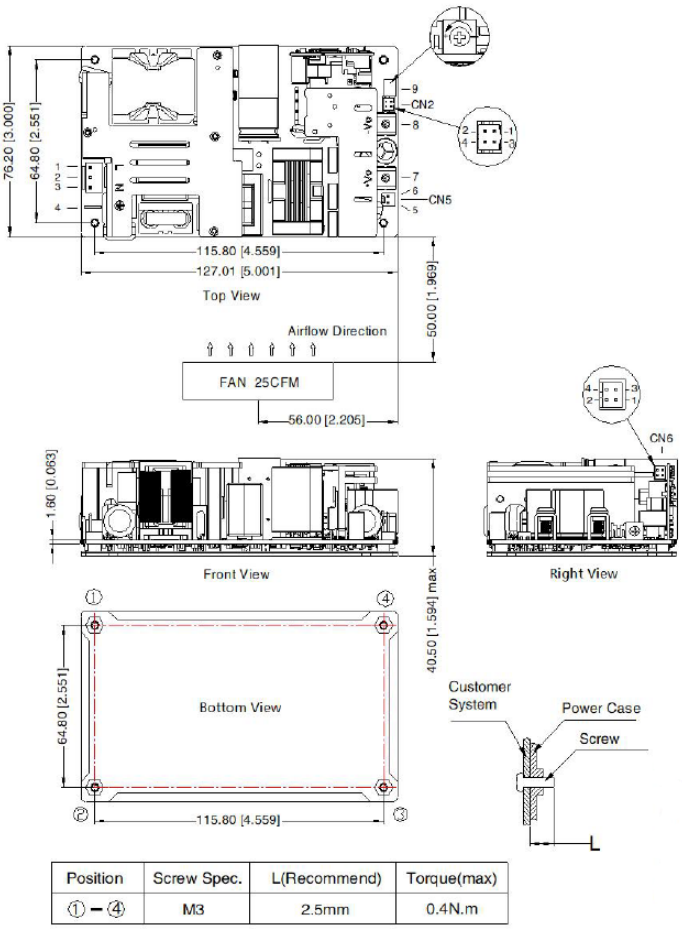


Efficiency vs. Output Load (Vin=230VAC)



MECHANICAL DRAWINGS

THIRD ANGLE PROJECTION



Position	Screw Spec.	L(Recommend)	Torque(max)
① – ④	M3	2.5mm	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)

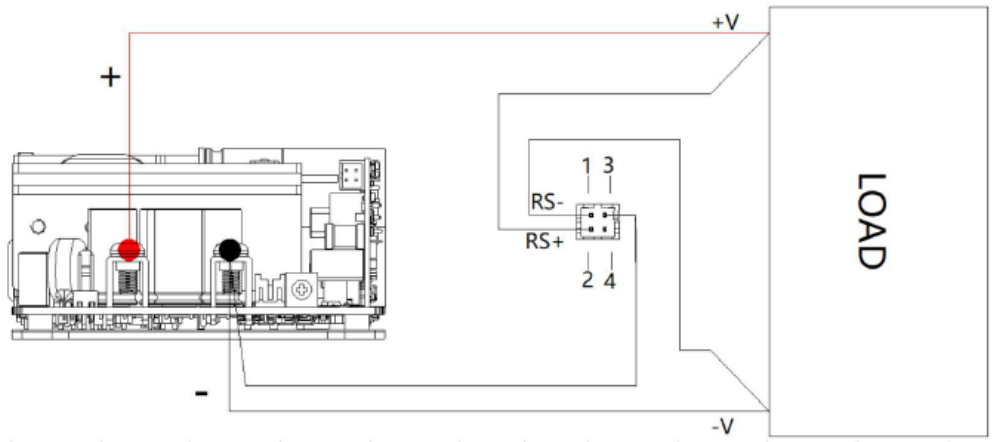
Pin-Out		Customer Connector
Pin	Function	
1	+5V	Housing: JST PHD-2*2Y or equivalent Contact: JST PHD-TE or equivalent
2	GND	
3	PS-ON	
4	GND	

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 system①②④ 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 output 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.

Contact **Wall Industries** for further information:

Phone: ☎(603)778-2300
Toll Free: ☎(888)597-9255
Fax: ☎(603)778-9797
E-mail: sales@wallindustries.com
Web: www.wallindustries.com
Address: 37 Industrial Drive
Exeter, NH 03833