



Size:  
1.33 x 0.87 x 0.67 inches  
33.7 x 22.2 x 17.0 mm

## FEATURES

- RoHS Compliant
- Isolation Class II
- 2 Watts Output Power
- Low Ripple and Noise
- Single Outputs
- UL/cUL, CE, CB Safety Approvals
- PCB Mountable Switching Power Supply
- Fully Encapsulated Plastic Case
- -40°C to +80°C Operating Temperature Range
- < 0.3W No Load Power Consumption
- Universal Input Range: 90-305VAC (120-430VDC)
- Short Circuit, Over Power, and Over Voltage Protection

## DESCRIPTION

The PSAYC series of AC/DC switching power supplies provides 2 watts of output power in a 1.33" x 0.87" x 0.67" encapsulated PCB mountable package. This series consists of single output models with a universal input range of 90-305VAC (120-430VDC). Some features include low ripple and noise, -40°C to +80°C operating temperature range, and over power, over voltage, and short circuit protection. All models are RoHS compliant and have UL/cUL, CE, and CB safety approvals.

## MODEL SELECTION TABLE

Model Number	Input Voltage	Output Voltage	Output Current		Line Regulation	Load Regulation	Output Power	Efficiency	Maximum Capacitive Load
			Min Load	Max Load					
PSAYC-3.3S	90~305 VAC (120~430 VDC)	3.3 VDC	0%	600mA	±1.0%	±1.5%	2W	66%	7,000µF
PSAYC-5S		5 VDC	0%	400mA	±1.0%	±1.5%	2W	70%	4,000µF
PSAYC-9S		9 VDC	0%	222mA	±1.0%	±1.5%	2W	73%	1200µF
PSAYC-12S		12 VDC	0%	167mA	±1.0%	±1.5%	2W	73%	500µF
PSAYC-15S		15 VDC	0%	133mA	±1.0%	±1.5%	2W	73%	350µF
PSAYC-24S		24 VDC	0%	83mA	±1.0%	±1.5%	2W	75%	110µF

**SPECIFICATIONS: PSAYC SERIES**

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.  
 We reserve the right to change specifications based on technological advances.

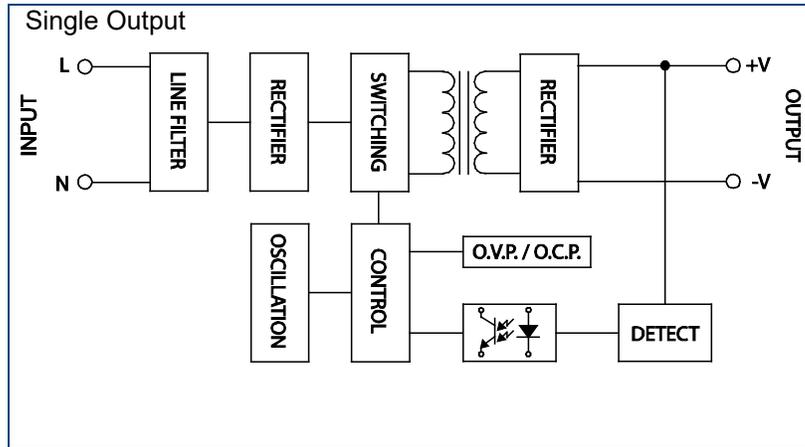
SPECIFICATION		TEST CONDITIONS	Min	Typ	Max	Unit
<b>INPUT SPECIFICATIONS</b>						
Input Voltage	AC input voltage range		90		305	VAC
	DC input voltage range		120		430	VDC
Input Frequency			47		63	Hz
Input Current	At 115VAC and full load				75	mA
	At 230VAC and full load				55	
Inrush Current (<500µs)	At 115VAC				15	A
	At 230VAC				25	
No Load Power Consumption					0.3	W
External Fuse (recommended)			3.15A slow blow type			
<b>OUTPUT SPECIFICATIONS</b>						
Output Voltage			See Table			
Voltage Accuracy			-5		+5	%
Line Regulation	Low line to high line		-1		+1	%
Load Regulation	0% to 100% load		-1.5		+1.5	%
Output Power					2	W
Output Current			See Table			
Minimum Load			0			%
Ripple & Noise <sup>(1)</sup>	120Hz	Measured at 20MHz BW with 0.1µF and 47µF capacitors in parallel		1		Vp-p
	100kHz			0.25		
Max Capacitive Load			See Table			
Hold-Up Time <sup>(2)</sup>	At 230VAC		15			ms
Temperature Coefficient			-0.02		+0.02	%/°C
<b>PROTECTION</b>						
Short Circuit Protection			Hiccup mode, indefinite (auto-recovery)			
Over Voltage Protection			Zener diode clamp			
Over Power Protection			Hiccup technique, auto-recovery			
<b>GENERAL SPECIFICATIONS</b>						
Efficiency			See Table			
Isolation Voltage	Input to output		3000			VAC
Leakage Current					0.25	mA
<b>ENVIRONMENTAL SPECIFICATIONS</b>						
Operating Temperature	With derating (see derating curve)		-40		+80	°C
Storage Temperature			-40		+85	°C
Humidity					95	% RH
Cooling			Free air convection			
MTBF	25°C (MIL-HDBK-217F)		350,000			hours
<b>PHYSICAL SPECIFICATIONS</b>						
Weight			0.71 oz (20.1 g)			
Case Material			Plastic resin with fiberglass (Flammability to UL 94V-0)			
Dimensions (L x W x H)			1.33 x 0.87 x 0.67 inches (33.7 x 22.2 x 17.0 mm)			
<b>SAFETY &amp; EMC</b>						
Safety Approvals			UL/cUL <sup>(6)</sup> , CE, CB			
EMC	EMI (Conducted and Radiated Emissions)		EN 55022 Class B			
	EMS (Noise Immunity)		EN 55024			

**NOTES**

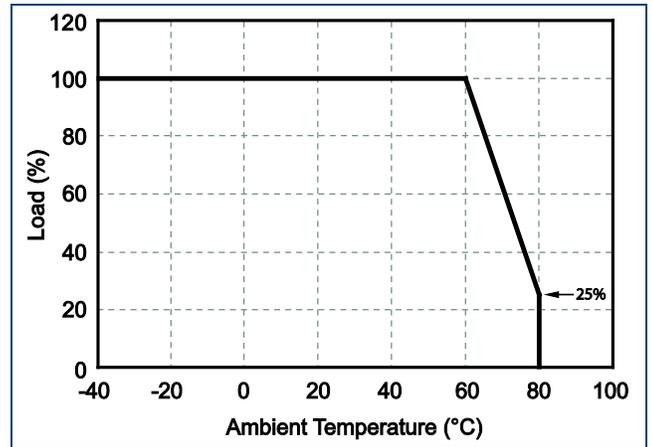
- (1) Ripple & Noise measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.
- (2) Hold-up time measured at 90% Vout.
- (3) Varistor 14S561K required at L/N input side in parallel.
- (4) 10R/ 15f thermistor required at L input side in series connection.
- (5) Please request our PDF file "AC-DC Application Notes" for more details.
- (6) This product is Listed to applicable standards and requirements by UL.

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

**BLOCK DIAGRAM**



**DERATING CURVE**



**MECHANICAL DRAWING**

PIN CONNECTIONS	
Pin No	Assignment
1	AC IN (N)
2	AC IN (L)
3	-DC OUT
4	+DC OUT

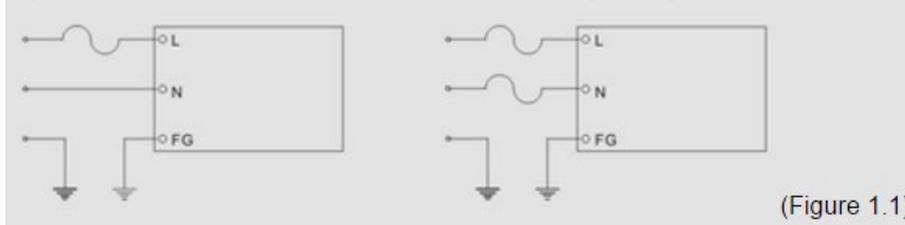
**NOTES**

1. Unit: inches (mm)
2. Tolerance: ±0.02 (±0.5)
3. Weight: TBD
4. Case Material: Plastic resin with fiberglass
5. All dimensions are for reference only

**APPLICATION NOTES**

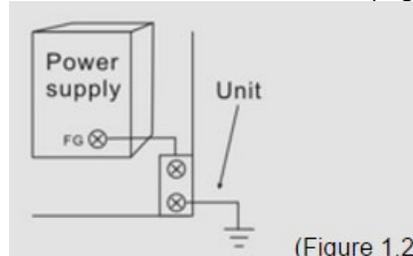
**AC Input Line Connection:**

The pin of AC line (L), AC Neutral (N), and the third wire safety ground (FG) should be retained from the AC power outlet to the power supply input terminals without accidental interchange. (Figure 1.1)



(Figure 1.1)

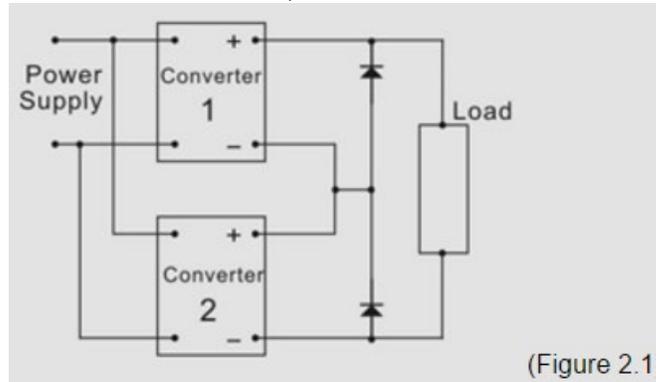
The FG pin should be connected to the equipment where power supply is placed as thicker and shorter to protect electric shock or noise interference. (Figure 1.2)



(Figure 1.2)

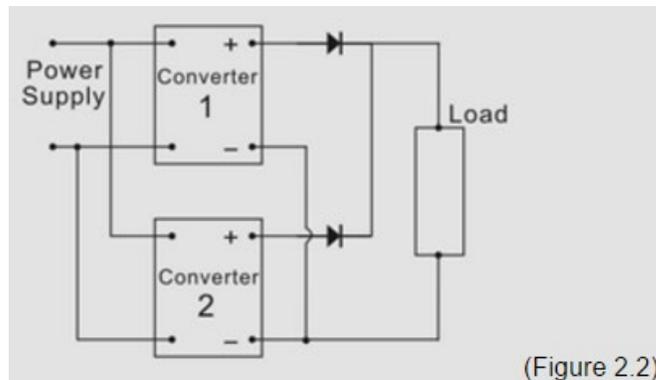
**Series and Parallel Operation**

- I. Series operation: Most power converters can be operated in series if they have overload limitation by either constant current or constant power circuits. To protect each output from the reverse voltage applied by the other unit in the event of load short circuits, reverse biased diodes are used as shown in Figure 2.1.



(Figure 2.1)

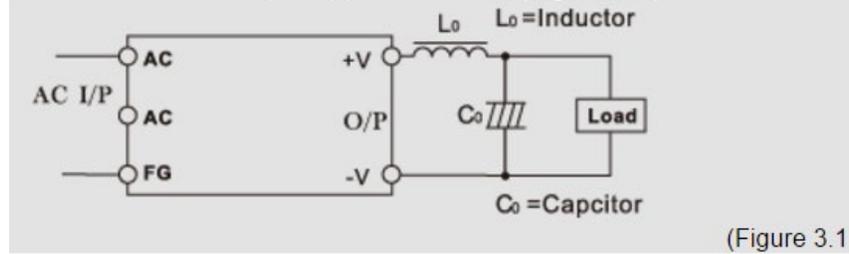
- II. Parallel operation: This is only recommended with power converters specifically designed for parallel connection. In the parallel redundant scheme illustrated in Figure 2.2, one of the power converters could be replaced by a battery followed by a DC-DC converter to provide a no-break power system in the event of main supply failure.



(Figure 2.2)

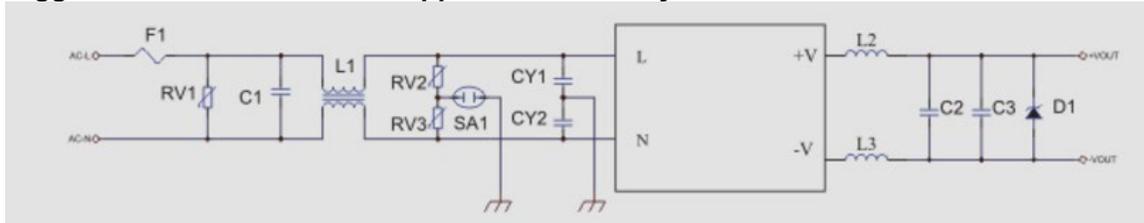
**Reduce the Output Ripple and Noise:**

Using a LC filter or a capacitor reduces the output ripple and noise (Figure 3.1)



(Figure 3.1)

**Class II Suggested Circuit for General Application Circuitry Connection:**



Item		Location	Description
1	F1	AYC	Slow blow Fuse 3.15A/300V
2	RV1	Vin(Max)=264	14S471K or 20S471K
		Vin(Max)=305	14S561K or 20S561K
3	RV2	Vin(Max)=264	14S471K or 20S471K
		Vin(Max)=305	14S561K or 20S561K
4	RV3	Vin(Max)=264	14S471K or 20S471K
		Vin(Max)=305	14S561K or 20S561K
5	C1	X Capacitor	0.1uF~0.68uF 300V X1
6	L1		10~50mH
7	D1	TVS (Vout=3.3V)	SMBJ5.0A or 600W↑ (Peak)
		TVS (Vout=5V)	SMBJ7.0A or 600W↑ (Peak)
		TVS (Vout=9V)	SMBJ12A or 600W↑ (Peak)
		TVS (Vout=12V)	SMBJ20A or 600W↑ (Peak)
		TVS (Vout=15V)	SMBJ20A or 600W↑ (Peak)
		TVS (Vout=24V)	SMBJ30A or 600W↑ (Peak)
8	CY1	Y Capacitor	220pF~4700pF 250V Y2
		Y Capacitor	220pF~4700pF 250V Y2
9	CY2	Y Capacitor	220pF~4700pF 250V Y2
10	RT1		φ8~φ20 10R
11	L2		3.3uH~100uH
12	L3		3.3uH~100uH
13	C2	Aluminum	47uF or 47uF↑
14	C3	Solid Capacitor	0.1uF
15	SA1	Surge Absorber (Vout=5VDC)	3KV

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## COMPANY INFORMATION

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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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