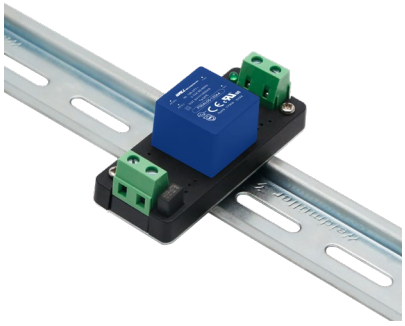
Horizontal Model

Size: 1 x 1 x 0.69in (25.4 x 25.4 x 17.6mm)

Chassis Mount (“A2” Suffix)

Size: 2.99 x 1.24 x 1.04in (76 x 31.5 x 26.4mm)

DIN Rail (“A4” Suffix)



Size: 2.99 x 1.24 x 1.22in (76 x 31.5 x 31mm)

OPTIONS

- Case Type
  -Horizontal Package
  -Chassis Mount
  -DIN Rail

APPLICATIONS

- Industrial
- Instrumentation
- Communication
- Civil Applications

FEATURES

- Ultra-Wide Input Voltage Range 85~305VAC (100~430VDC)
- Plastic Case meets UL94V-0 Flammability
- Low Power Consumption
- Reinforced Isolation
- Short Circuit, Over Current, and Over Voltage Protection
- RoHS Compliant
- EMI Performance Meets CISPR32/EN55032 Class B, EN55014
- IEC/EN/UL62368/EN60335/EN61558 Safety Approvals

DESCRIPTION

The PSDAL05 series of AC/DC converters offers up to 5 watts of output power in a compact horizontal, chassis mount, or DIN rail package. This series consists of regulated single output models with an ultra-wide 85-305VDC (100~430VDC) input range. Features of this series include short circuit, over current, and over voltage protection and the plastic case meets UL94V-0 flammability. This series is RoHS compliant and has IEC/EN/UL62368/EN60335/EN61558 safety approvals.

MODEL SELECTION TABLE

Model Number[1]	Input Voltage Range	Output Voltage	Output Current	Maximum Capacitive Load	Typ. Efficiency	Output Power	Max. Ripple & Noise	Certification
PSDAL05-03S	85~305VAC (100~430VDC)	3.3V	1515mA	4000µF	71.5%	5W	100mV	UL/CE/CB
PSDAL05-05S		5V	1000mA	3000µF	77.5%			
PSDAL05-09S		9V	555mA	1200µF	80.5%			
PSDAL05-12S		12V	416mA	1200µF	80.5%			
PSDAL05-15S		15V	333mA	680µF	81.5%			
PSDAL05-24S		24V	208mA	220µF	81.5%			

SPECIFICATIONS

All specifications are based on 25°C, Humidity <75%, 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		85		305	VAC
	DC Input		100		430	VDC
Input Frequency			47		63	Hz
Input Current	115VAC				0.13	A
	230VAC				0.07	
Inrush Current	115VAC			15		A
	230VAC			25		
Leakage Current	277VAC/50Hz			0.25mA RMS max.		
Recommended External Input Fuse	Actual fuse needs to be selected according to application environment			1A, slow-blow, required		
Hot plug				Unavailable		
OUTPUT SPECIFICATIONS						
Output Voltage				See Table		
Voltage Accuracy	PSDAL05-03S			±3		%
	Others			±2		
Line Regulation	Full Load			±0.5		%
Load Regulation	0%-100% Load			±1.0		%
Output Power				See Table		
Output Current				See Table		
Minimum Load			0			%
Maximum Capacitive Load				See Table		
Ripple & Noise[2]	20MHz Bandwidth (peak-peak value)			50	100	mV
Stand-by Power Consumption	230VAC			0.10		W
Hold-Up Time	115VAC Input			5		ms
	230VAC Input			50		
Temperature Coefficient				±0.02		%/ºC
PROTECTION						
Short Circuit Protection				Hiccup, Continuous, Self-Recovery		
Over Current Protection	Self-Recovery			≥130%Io, self-recovery		
Over Voltage Protection	3.3VDC/5VDC Outputs			≤7.5		VDC
	9VDC Output			≤15		
	12VDC Outputs			≤16		
	15VDC Outputs			≤20		
	24VDC Output			≤30		
ENVIRONMENTAL SPECIFICATIONS						
Operating Temperature			-40		+85	ºC
Storage Temperature			-40		+105	ºC
Storage Humidity					95	%RH
Soldering Temperature	Wave-Soldering			260±5ºC; time: 5-10s		
	Manual-Welding			360±10ºC; time: 3-5s		
Power Derating	-40ºC to -25ºC		3.0			%/ºC
	+50ºC to 70ºC	3.3V	1.75			
	+55°C to +70°C	5V/9V/12V	2.33			
	+60°C to +70°C	15V/24V	3.5			
	+70°C to +85°C	3.3V	1.67			
		Others	1.0			
	85VAC-100VAC		1.0			%/VAC
	277VAC-305VAC		0.54			
	2000m-5000m		0.67			%/Km
MTBF	MIL-HDBK-217F@25ºC			>2,602,000		h
Design Life	230VAC	Ta: 25°C 100% Load		>130x10^3		
		Ta: 55°C 100% Load		>41x10^3		
GENERAL SPECIFICATIONS						
Efficiency	230VAC			See Table		
Switching Frequency				65		kHz
Isolation Voltage	Input-Output, Electric Strength Test for 1min, leakage current <5mA		4000			VAC

SPECIFICATIONS

All specifications are based on 25°C, Humidity <75%, 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
PHYSICAL SPECIFICATIONS							
Weight	Horizontal Package	3.3V/5V/9V/12v			0.63oz (18g)		
		15V/24V			0.65oz (18.5g)		
	Chassis Mounting				1.34oz (38g)		
	DIN Rail Mounting				2.05oz (58g)		
Dimensions (L x W x H)	Horizontal Package				1in x 1in x 0.69in (25.4mm x 25.4mm x 17.6mm)		
	Chassis Mounting				2.99in x 1.24in x 1.04in (76mm x 31.5mm x 26.4mm)		
	DIN Rail Mounting				2.99in x 1.24in x 1.22in (76mm x 31.5mm x 31mm)		
Case Material					Blue Flame-Retardant and Heat-Resistant Plastic (UL94 V-0)		
Cooling Method					Free Air Convection		
SAFETY CHARACTERISTICS							
Safety Standards/Certifications[3]	IEC/EN/UL62368/EN60335/EN61558						
EMI	CE	CISPR32/EN55032					Class B
		EN55014-1					
	RE	CISPR32/EN55032					Class B
		EN55014-1					
Safety Class							Class II
Immunity	ESD	IEC/EN61000-4-2	Contact ±6kV/Air ±8kV				Perf. Criteria B
		EN55014-2					Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m				Perf. Criteria A
		EN55014-2					Perf. Criteria A
	EFT	IEC/EN61000-4-4	±2kV[4]				Perf. Criteria B
		IEC/EN61000-4-4	±4kV[5]				Perf. Criteria B
		EN55014-2					Perf. Criteria B
	Surge	IEC/EN61000-4-5	Line to Line ±1kV[4]				Perf. Criteria B
		IEC/EN61000-4-5	Line to Line ±2kV[5]				Perf. Criteria B
		EN55014-2					Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s				Perf. Criteria A
		EN55014-2					Perf. Criteria A
	Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-11	0%, 70%				Perf. Criteria B
		EN55014-2					Perf. Criteria B

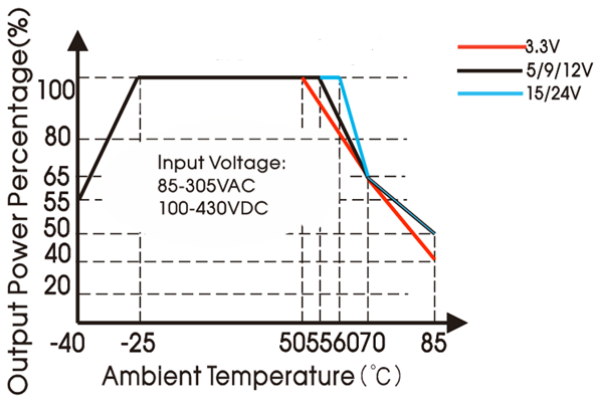
NOTES

1. Chassis mount and DIN rail models are available for this series. To indicate chassis mount model, add “A2” to product model number. To indicate DIN Rail model, add “A4” to product model number.
2. Tip and barrel method is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor, please contact factory for more information.
3. See Fig. 1 for typical application circuit.
4. See Fig. 2 for recommended circuit.
5. If product is not operated within required load range, it is not guaranteed that the product performance will comply with all parameters in the datasheet.
6. Products classified according to ISO14001 and related environmental laws and regulations. It should be handled by qualified units.
7. Customization available.

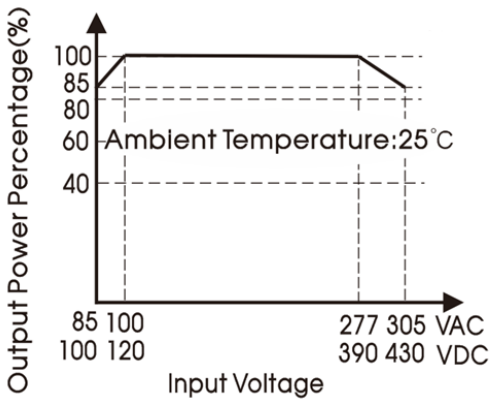
**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES

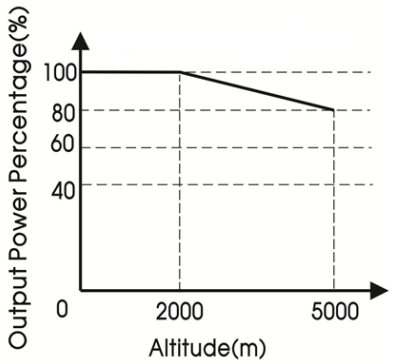
Temperature Derating Curve



Input Voltage Derating Curve



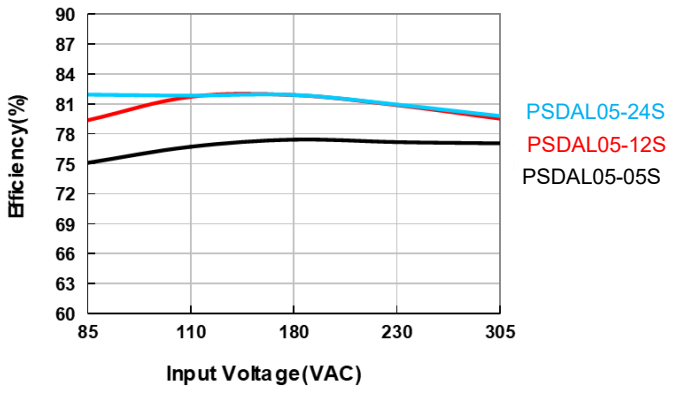
Altitude Derating Curve



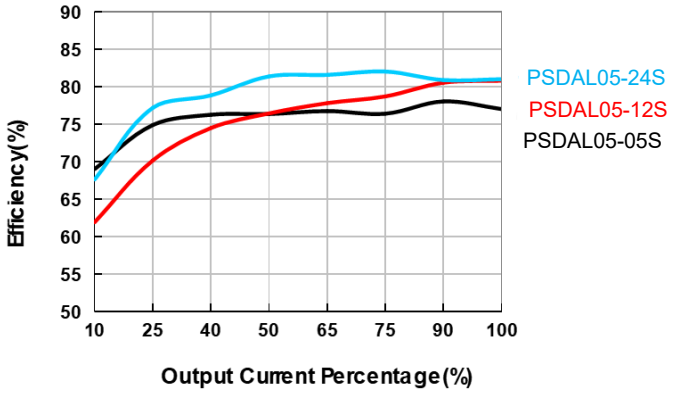
Note:
1. With an AC input between 85-100V/277-305VAC and a DC input between 100-120V/390-430VDC, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using natural air cooling, if in a closed environments, please contact factory.

EFFICIENCY GRAPHS

Efficiency vs. Input Voltage (Full Load)

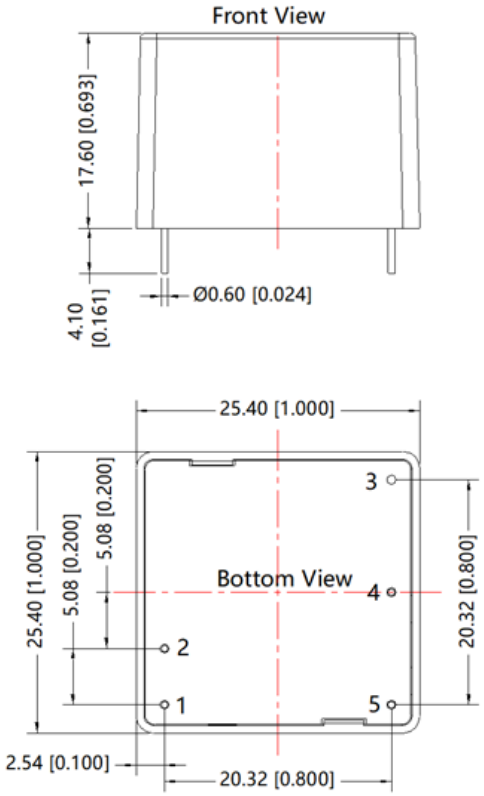


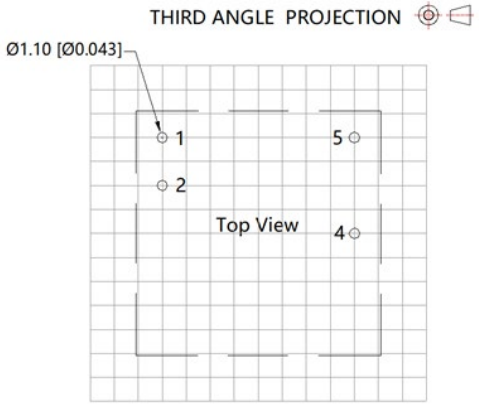
Efficiency vs. Output Load (Vin=230VAC)



MECHANICAL DRAWINGS

Horizontal Model





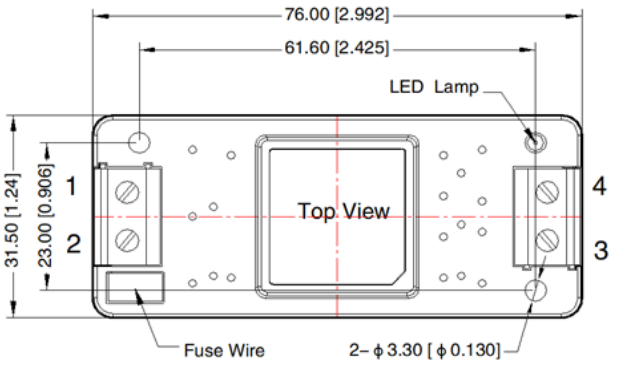
Note: Grid 2.54*2.54mm

Pin-Out

Pin	Function
1	AC(N)
2	AC(L)
3	No Pin
4	-Vo
5	+Vo

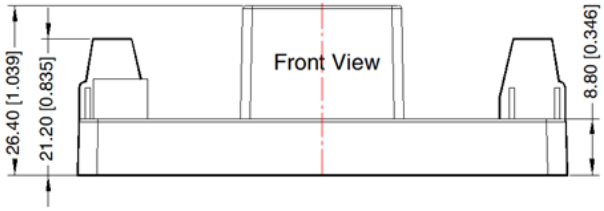
Note:
Unit: mm [inch]
Pin diameter tolerances: ±0.10 [±0.004]
General tolerances: ±0.50 [±0.020]

Chassis Mount (“A2” Suffix)



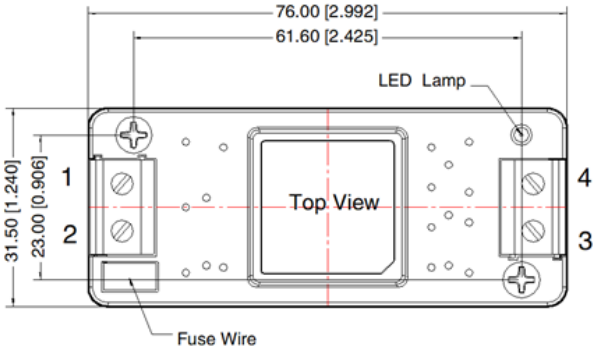
Pin-Out

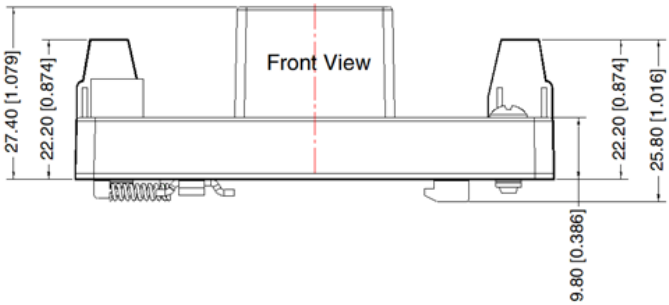
Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo



Note:
Unit: mm [inch]
Wire range: 24-12AWG
Tightening Torque: Max 0.4 N·m
General Tolerances: ±1.00 [±0.039]

DIN Rail ("A4" Suffix)





THIRD ANGLE PROJECTION

Pin-Out

Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

Note:
Unit: mm [inch]
Wire Range: 24-12AWG
Tightening torque: Max 0.4 N·m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ±1.00 [±0.039]

DESIGN REFERENCE

1. Typical Application

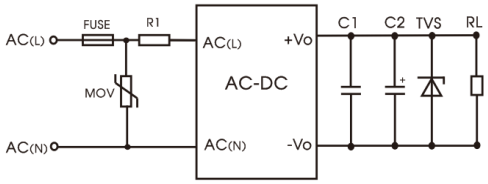


Fig. 1 Typical Circuit Diagram

Element Model	C1(μF)	C2(μF)	FUSE	R1	TVS	MOV
PSDAL05-03S	1	150	1A/300V, slow-blow, required	12Ω/3W	SMBJ7.0A	S10K350
PSDAL05-05S		150			SMBJ7.0A	
PSDAL05-09S		120			SMBJ12A	
PSDAL05-12S		120			SMBJ20A	
PSDAL05-15S		120			SMBJ20A	
PSDAL05-24S		68			SMBJ30A	

Note:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to data sheet). Choose a capacitor voltage rating with at least 20% margin (not exceeding 80%). C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2. EMC Compliant Recommended Circuit

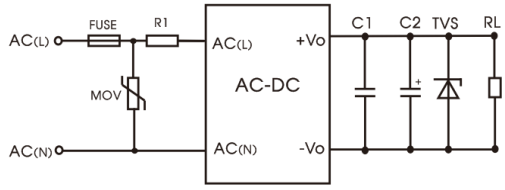


Fig. 2 EMC Application Circuit with Higher Requirements

Component	Recommended Value
MOV	S14K350
R1	33Ω/3W
FUSE	2A/300V, slow-blow, required

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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