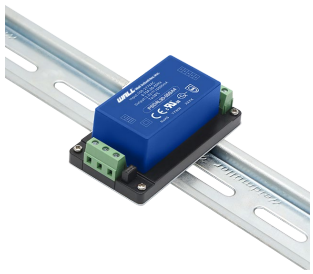
Horizontal Model

Size: 2.73 x 1.53 x 0.94in (69.5 x 39 x 24mm)

Chassis Mount (“A2” Suffix)

Size: 3.78 x 2.12 x 1.28in (96.1 x 54 x 32.5mm)

DIN Rail (“A4” Suffix)



Size: 3.78 x 2.12 x 1.46in (96.1 x 54 x 37.1mm)

OPTIONS

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

FEATURES

- Ultra-Wide Input Voltage Range 85~305VAC (100~430VDC)
- Cooling by Free Air Convection
- High Efficiency
- No Load Power Consumption <0.1W
- RoHS Compliant
- Meets Surge ±2KV Without Additional Circuits
- Short Circuit, Over Current, and Over Voltage Protection
- Over Voltage Category OVC III (Meets EN61558-1)
- 5000m altitude application
- EMI Performance Meets CISPR32/EN55032 Class B, EN55014
- IEC/EN/UL62368/EN60335/EN61558 Safety Approvals

APPLICATIONS

- Industrial
- Home Appliances
- Instrumentation
- Communication
- Civil Applications

DESCRIPTION

The PSDAL30 series of AC/DC converters offers up to 31.2 watts of output power in a compact horizontal, chassis mount, or DIN rail package. This series consists of 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 cooling by free air convection. This series is RoHS compliant, 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
PSDAL30-03S	85~305VAC (100~430VDC)	3.3V	6000mA	6600µF	85%	19.8W	120mV	UL/EN/IEC
PSDAL30-05S		5V	6000mA	6600µF	86%	30W		
PSDAL30-09S		9V	3400mA	4400µF	88%	30.6W		
PSDAL30-12S		12V	2500mA	4400µF	90%	30W		
PSDAL30-15S		15V	2000mA	3300µF	90%	30W		
PSDAL30-24S		24V	1300mA	1000µF	88%	31.2W		
PSDAL30-48S		48V	630mA	470µF	90%	30.2W		

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				0.75	A
	230VAC				0.50	
Inrush Current	115VAC			25		A
	230VAC			50		
Leakage Current	277VAC/50Hz			0.1mA RMS max.		
Built-In Fuse				2A/300V, slow-blow		
Hot plug				Unavailable		
OUTPUT SPECIFICATIONS						
Output Voltage				See Table		
Voltage Accuracy	3.3V			±3		%
	5V/9V/12V/15V/24V/48V			±2		
Line Regulation	Full Load			±0.5		%
Load Regulation	0%-100% load	3.3V		±2		%
		5V		±1.5		
		9V/12V/15V/24V/48V		±1		
Output Power				See Table		
Output Current				See Table		
Minimum Load			0			%
Maximum Capacitive Load				See Table		
Ripple & Noise[2]	20MHz Bandwidth (peak-to-peak value)	3.3V/5V/9V/12V/15V			100	mV
		24V/48V		100	150	
Stand-by Power Consumption	230VAC	3.3V/5V/9V/12V/15V/24V		0.075	0.1	W
		48V		0.12	0.15	
Hold-Up Time	115VAC Input			10		ms
	230VAC Input			50		
Temperature Coefficient				±0.02		%/ºC
PROTECTION						
Short Circuit Protection				Hiccup, Continuous, Self-Recovery		
Over Current Protection				≥110%Io, self-recovery		
Over Voltage Protection	Output voltage hiccup	3.3VDC		≤6.3		VDC
		5VDC		≤16		
		9VDC		≤16		
		12VDC		≤16		
		15VDC		≤25		
		24VDC		≤35		
		48VDC		≤60		
ENVIRONMENTAL SPECIFICATIONS						
Operating Temperature			-40		+85	ºC
Storage Temperature			-40		+85	ºC
Storage Humidity					95	%RH
Soldering Temperature	Wave-Soldering			260±5ºC; time: 5-10s		
	Manual-Welding			360±10ºC; time: 3-5s		
Power Derating	-40°C to -25°C (＜115VAC)		1.33			%/ºC
	+50ºC to 70ºC		2.5			
	+70°C to +85°C		0.67			
	85VAC-100VAC		1.33			%/VAC
	277VAC-305VAC		0.72			
	2000-5000m		6.7			%/Km
MTBF	MIL-HDBK-217F@25ºC			>500,000		h
GENERAL SPECIFICATIONS						
Efficiency	230VAC			See Table		
Switching Frequency				65		kHz
Isolation	Input-Output, Electric Strength Test for 1min, leakage current <5mA		4200			VAC
Insulation Resistance	Input-Output, at 500VDC		100			MΩ

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				3.53oz (100g)		
	Chassis Mounting				5.18oz (147g)		
	DIN Rail Mounting				6.70oz (190g)		
Dimensions (L x W x H)	Horizontal Package				2.73 x 1.53 x 0.94in (69.5 x 39 x 24mm)		
	Chassis Mounting				3.78 x 2.12 x 1.28in (96.1 x 54 x 32.5mm)		
	DIN Rail Mounting				3.78 x 2.12 x 1.46in (96.1 x 54 x 37.1mm)		
Cooling Method					Free Air Convection		
Case Material					Black Plastic, Flame-Retardant and Heat-Resistant (UL94V-0)/Metal		
SAFETY CHARACTERISTICS							
Safety Standards[3]	IEC/UL62368-1, EN61558-1, EN60335-1 Safety Approval & EN62368-1 (Report)						
Safety Class							Class II
EMI	CE	CISPR32/EN55032					Class B
		CISPR32/EN55032					Class B[5]
		EN55014-1					
	RE	CISPR32/EN55032					Class B
		CISPR32/EN55032					Class B[5]
		EN55014-1					
Immunity	ESD	IEC/EN61000-4-2	Contact ±8KV /Air ±15KV				Perf. Criteria A
		EN55014-2					Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m				Perf. Criteria A
		EN55014-2					Perf. Criteria A
	EFT	IEC/EN61000-4-4	±2kV				Perf. Criteria A
		IEC/EN61000-4-4	±4kV[4][5]				Perf. Criteria A
		IEC/EN55014-2					Perf. Criteria A
	Surge	IEC/EN61000-4-5	Line to Line ±2kV				Perf. Criteria A
		IEC/EN61000-4-5	line to line ±2KV/line to ground ±4KV[4][5]				Perf. Criteria A
		IEC/EN55014-2					Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s				Perf. Criteria A
		IEC/EN55014-2					Perf. Criteria A
	Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-11	0%, 70%				Perf. Criteria B
		IEC/EN55014-2					Perf. Criteria B

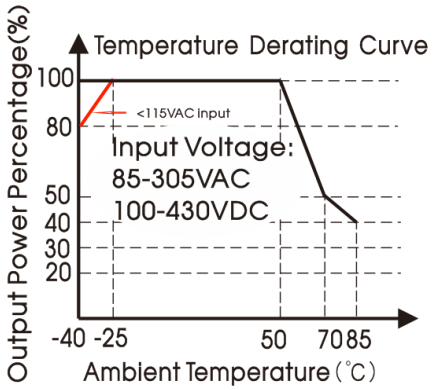
NOTES

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. 2 for recommended circuit.
4. See Fig. 3 for recommended circuit
5. When the output terminal of the product needs to be connected to PE trough a Y capacitor or close to the metal frame, please refer to Fig. 3 for recommended circuit.
6. 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.
7. Products classified according to ISO14001 and related environmental laws and regulations. It should be handled by qualified units.
8. Customization available.

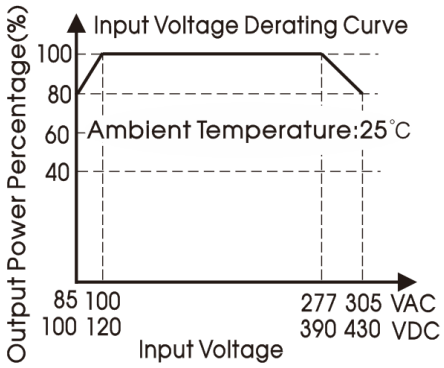
**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES

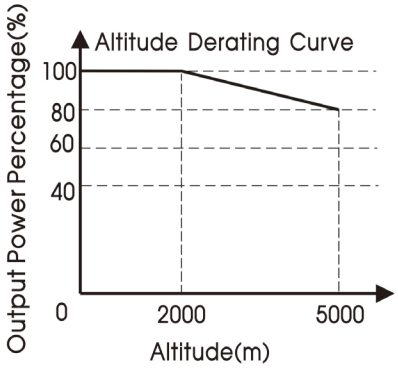
Temperature Derating Curve



Input Voltage Derating Curve



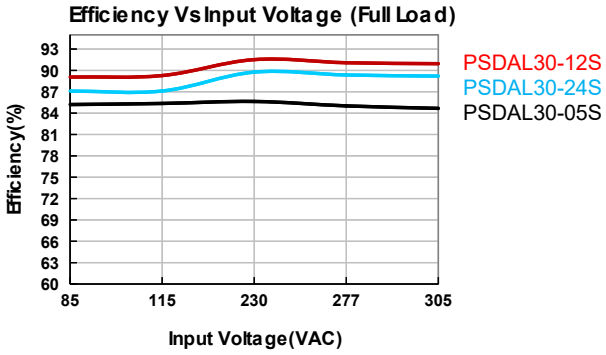
Altitude Derating Curve



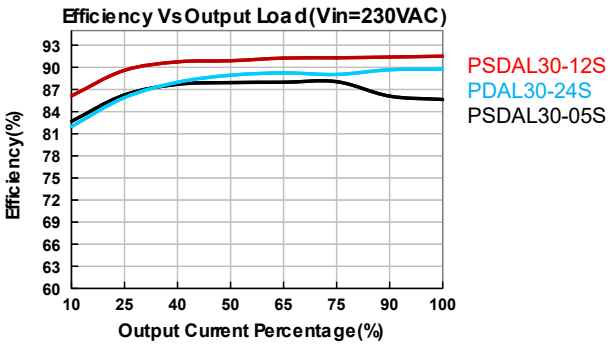
Note:
1. With an AC input between 85-100V/277-305VAC and a DC input between 100-120V/390-430VDC, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using natural air cooling, if in closed environment, please contact factory.

EFFICIENCY GRAPHS

Efficiency vs. Input Voltage (Full Load)

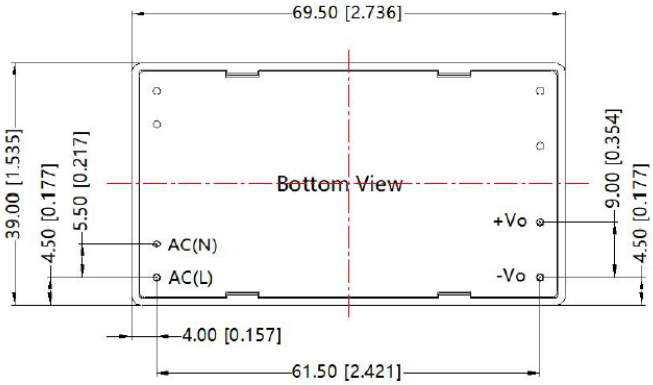


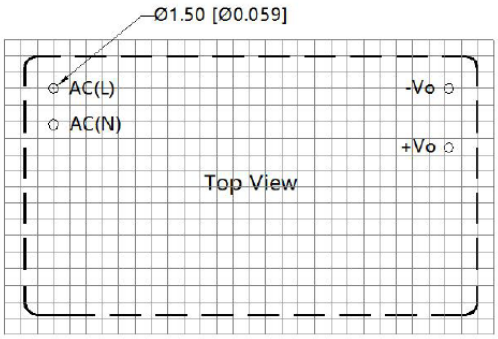
Efficiency vs. Output Load (Vin=230VAC)



MECHANICAL DRAWINGS

Horizontal Model

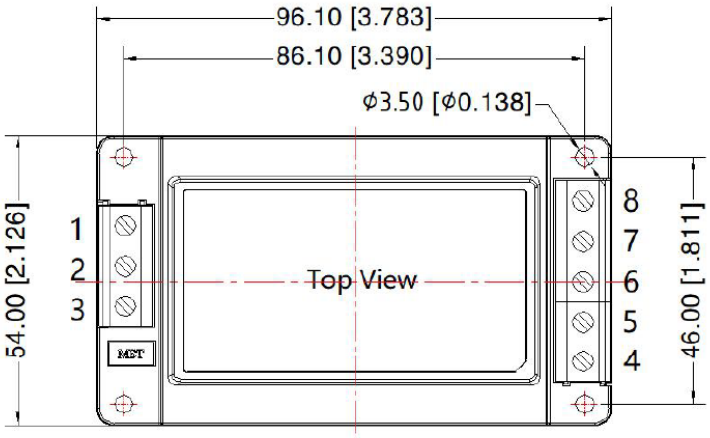


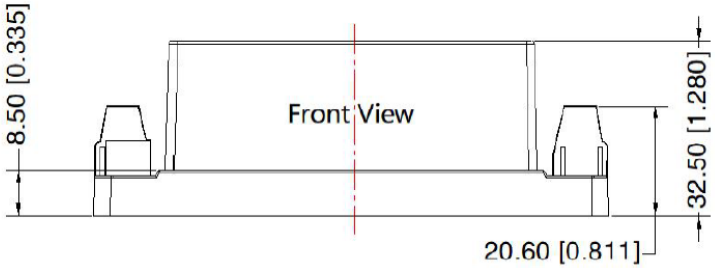


Note: Grid 2.54*2.54mm

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

Chassis Mount (“A2” Suffix)



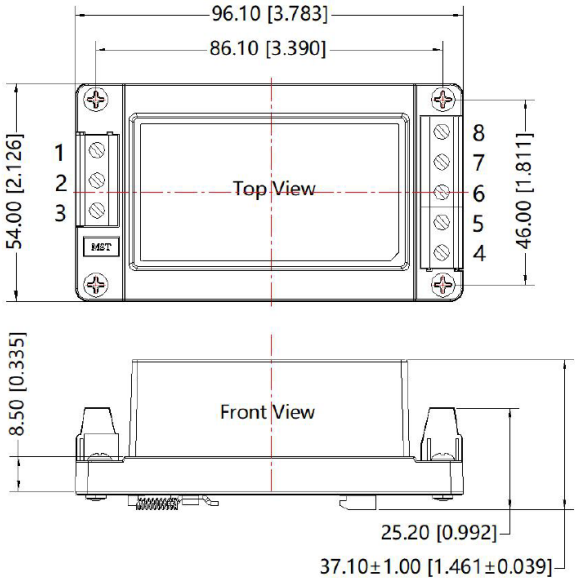


Pin Out

Pin	Mark
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Note:
UnitL 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	Mark
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

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

DESIGN REFERENCE

1. Typical Application

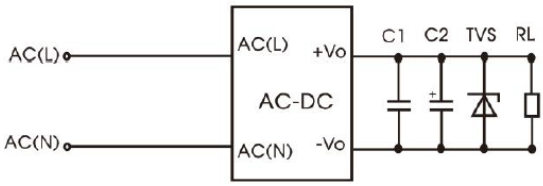


Fig. 1 Typical Circuit Diagram

Element Model	C1(μF)	C2(μF)	TVS
PSDAL30-03S	1μF/100V	10uF/50V	SMBJ7.0A
PSDAL30-05S		10uF/50V	SMBJ7.0A
PSDAL30-09S		10uF/50V	SMBJ12A
PSDAL30-12S		10uF/50V	SMBJ20A
PSDAL30-15S		10uF/50V	SMBJ20A
PSDAL30-24S		10uF/50V	SMBJ30A
PSDAL30-48S		10uF/63V	SMBJ64A

Output Filter Components:
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

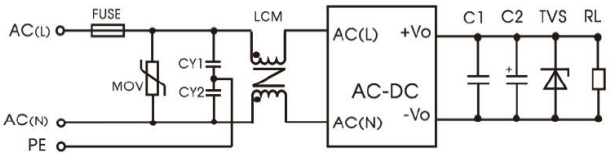


Fig. 2 EMC Application Circuit with Higher Requirements

Component	Recommended value
FUSE	3.15A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1nF/400VAC
LCM	10mH, contact factory for recommendation

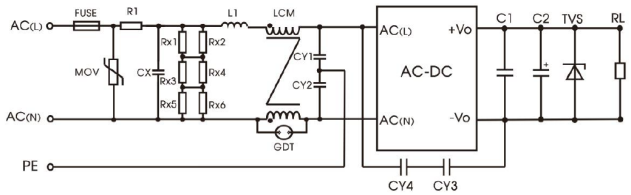


Fig. 3 Recommended ciruit frr Class I equipment

Component	Recommended value
FUSE	3.15A/300V, slow-blow, required
MOV	S14K350
CX	334K/305VAC
R1	6.8Ω/5W (wire-wound resistor)
L1	1.2mH/0.5A
CY1/CY2	2.2nF/400VAC
CY3/CY4	1nF/400VAC
GDT	300V/1KA
	20mH, contact factory for recommendation

Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX and the recommended resistance value is 1.5MΩ/150VDC

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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