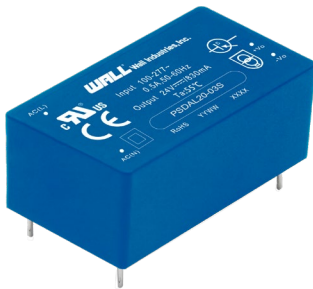


Horizontal Model



Size: 2.06 x 1.07 x 0.95in (52.4 x 27.2 x 24mm)

Chassis Mount ("A2" Suffix)



Size: 2.99 x 1.24 x 1.29in (76 x 31.5 x 32.8mm)

DIN Rail ("A4" Suffix)



Size: 2.99 x 1.24 x 1.33in (76 x 31.5 x 37.4mm)

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
- Short Circuit, Over Current, and Over Voltage Protection
- Over Voltage Category OVC III (Meets EN61558)
- EMI Performance Meets CISPR32/EN55032 Class B, EN55014
- IEC/UL62368-1, EN61558-1, EN60335-1 Safety Approvals & EN62368-1 (Report)

APPLICATIONS

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

DESCRIPTION

The PSDAL20 series of AC/DC converters offers up to 20 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/ UL62368-1, EN61558-1, EN60335-1 & EN62368-1 (report) 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
PSDAL20-03S	85~305VAC (100~430VDC)	3.3V	4500mA	8000μF	81%	14.85W	150mV	UL/EN/IEC
PSDAL20-05S		5V	4000mA	8000μF	85%	20W		
PSDAL20-09S		9V	2200mA	5400μF	84%			
PSDAL20-12S		12V	1670mA	4000μF	86%			
PSDAL20-15S		15V	1330mA	3000μF	87%			
PSDAL20-24S		24V	830mA	1000μF	87%			

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		440		Hz	
Input Current	115VAC				0.5		A	
	230VAC				0.3			
Inrush Current	115VAC			20			A	
	230VAC			45				
Leakage Current	277VAC/50Hz		0.1mA RMS max.					
Built-In Fuse			3.15A/300V, slow-blow					
Hot plug			Unavailable					
OUTPUT SPECIFICATIONS								
Output Voltage			See Table					
Voltage Accuracy				±1.5			%	
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-to-peak value)			100	150		mV	
Stand-by Power Consumption	230VAC	3.3/5/9/12/15V		0.10			W	
		24V		0.12				
Hold-Up Time	115VAC Input			8			ms	
	230VAC Input			50				
Temperature Coefficient				±0.02			%/°C	
PROTECTION								
Short Circuit Protection			Hiccup, Continuous, Self-Recovery					
Over Current Protection			≥110%Io, self-recovery					
Over Voltage Protection	Output voltage clamp or hiccup	3.3/5V		≤7.5			VDC	
		9V		≤16				
		12/15V		≤20				
		24V		≤30				
ENVIRONMENTAL SPECIFICATIONS								
Operating Temperature			-40		+85		°C	
Storage Temperature			-40		+85		°C	
Storage Humidity					95		%RH	
Soldering Temperature	Wave-Soldering		260±5°C; time: 5-10s					
	Manual-Welding		360±10°C; time: 3-5s					
Power Derating	-40°C to -25°C		85VAC-165VAC	2.0			% / °C	
	+50°C to 70°C		3.3/5/9V	2.5				
	+55°C to +70°C		12/15/24V	3.33				
	+70°C to +85°C			1.33				
	85VAC-100VAC			2.0			% / VAC	
	277VAC-305VAC			0.71				
MTBF	2000-5000m			6.7			% / Km	
Designed Life	230VAC	MIL-HDBK-217F@25°C			>1,500,000		h	
		Ta: 25°C 100% Load			>130x10 ³			
		Ta: 55°C 100% Load			>16x10 ³			
		Ta: 55°C 80% Load			>27x10 ³			
GENERAL SPECIFICATIONS								
Efficiency	230VAC		See Table					
Switching Frequency				65			kHz	
Isolation	Input-Output, Electric Strength Test for 1min, leakage current <5mA		4000				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			1.94oz (55g)			
	Chassis Mounting			2.65oz (75g)			
	DIN Rail Mounting			3.35oz (95g)			
Dimensions (L x W x H)	Horizontal Package			2.06 x 1.07 x 0.95in (52.4 x 27.2 x 24mm)			
	Chassis Mounting			2.99 x 1.24 x 1.29in (76 x 31.5 x 32.8mm)			
	DIN Rail Mounting			2.99 x 1.24 x 1.33in (76 x 31.5 x 37.4mm)			
Cooling Method				Free Air Convection			
Case Material				Black Plastic, Flame-Retardant and Heat-Resistant (UL94V-0)			
SAFETY CHARACTERISTICS							
Safety Standards ⁽³⁾	IEC/UL62368-1, EN61558-1, EN60335-1 Approval & EN62368-1 Report						
Safety Class				Class II			
EMI	CE	CISPR32/EN55032		Class B			
		CISPR32/EN55032		Class B ⁽⁵⁾			
		CISPR11/EN55011		Class B			
		EN55014-1					
	RE	CISPR32/EN55032		Class B			
		CISPR32/EN55032		Class B ⁽⁵⁾			
		CISPR11/EN55011		Class B			
		EN55014-1					
	Flicker	IEC/EN6100-3-3					
		EN550154-1					
Immunity	ESD	IEC/EN61000-4-2	Contact ±6kV / Air ±8kV	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 ±1kV	Perf. Criteria A			
		IEC/EN61000-4-5	Line to Line ±2kV ⁽⁴⁾	Perf. Criteria A			
		IEC/EN61000-4-5	Line to Line ±2kV/Line to Ground ±4kV ⁽⁵⁾	Perf. Criteria A			
	CS	IEC/EN55014-2		Perf. Criteria A			
		IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A			
		IEC/EN55014-2		Perf. Criteria A			
	PFMF	IEC/EN6100-4-8	10A/m	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				

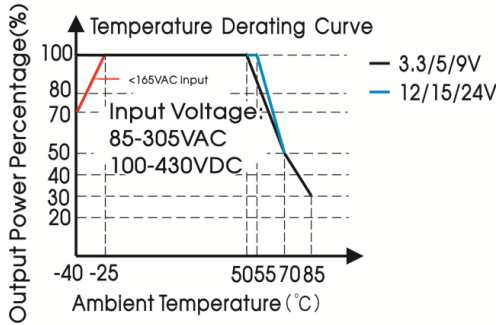
NOTES

- 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.
- 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.
- This product is Listed to applicable standards and requirements by UL.
- See Fig. 2 for recommended circuit.
- See Fig. 3 for recommended circuit.
- The output terminal of the product needs to be connected to PE through a Y capacitor or close the to metal frame. Refer to Fig. 3 for recommended circuit.
- 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.
- Products classified according to ISO14001 and related environmental laws and regulations. It should be handled by qualified units.
- Customization available.

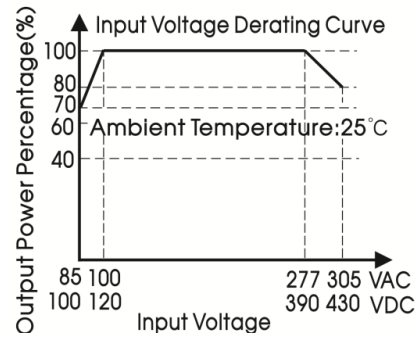
*Due to advances in technology, specifications subject to change without notice.

DERATING CURVES

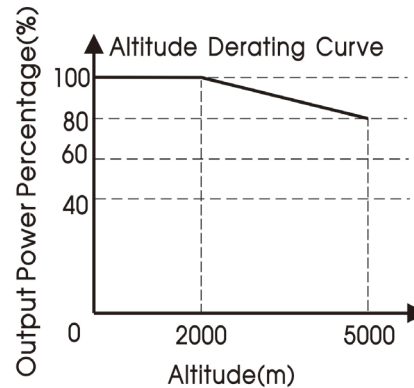
Temperature Derating Curve



Input Voltage Derating Curve



Altitude Derating Curve

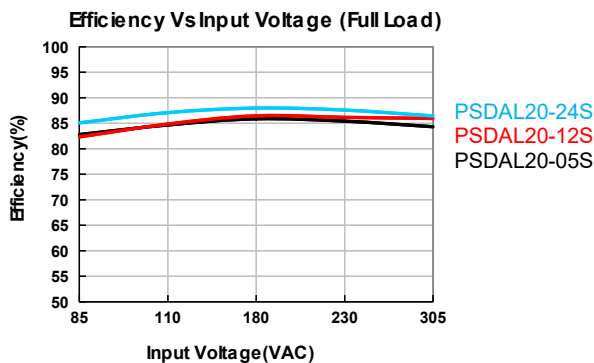


Note:

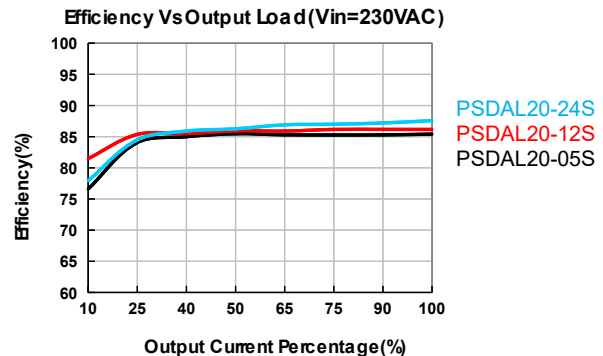
1. With an AC input between 85-100V/277-305VAC and a DC input between 100-120V/390-430VDC, the output power must be derated as per temperature derating curves.
2. This product is suitable for applications using natural air cooling, if in closed environment, please contact factory.

EFFICIENCY GRAPHS

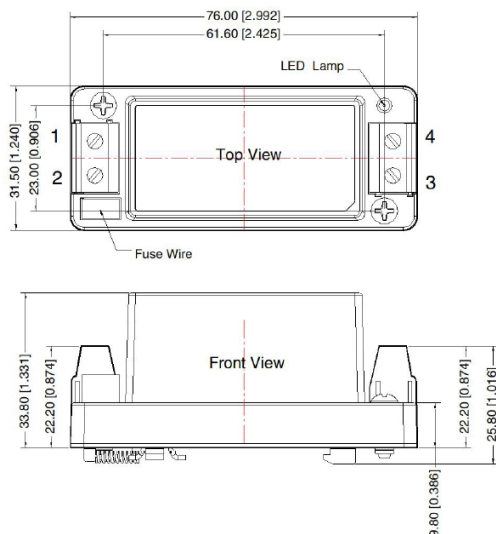
Efficiency vs. Input Voltage (Full Load)



Efficiency vs. Output Load (Vin=230VAC)



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: 24-12 AWG
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

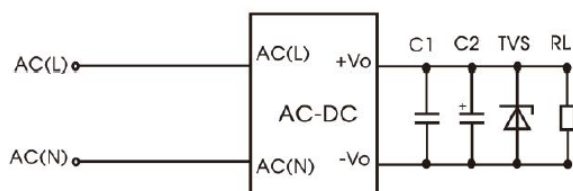


Fig. 1 Typical Circuit Diagram

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.

Element Model	C1(μ F)	C2(μ F)	TVS
PSDAL20-03S	1 μ F/50V	10 μ F/16V	SMBJ7.0A
PSDAL20-05S		10 μ F/16V	SMBJ7.0A
PSDAL20-09S		10 μ F/25V	SMBJ12A
PSDAL20-12S		10 μ F/25V	SMBJ20A
PSDAL20-15S		10 μ F/25V	SMBJ20A
PSDAL20-24S		10 μ F/35V	SMBJ30A

2. EMC Compliant Recommended Circuit

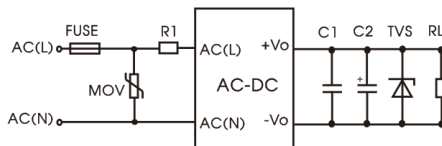
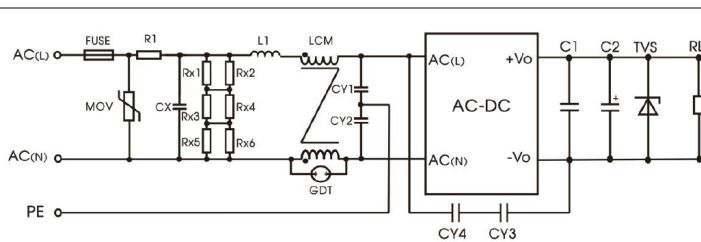


Fig. 2 EMC Application Circuit with Higher Requirements

Component	Recommended Value
FUSE	3.15A/300V, slow-blow, required
MOV	S14K350
R1	3 Ω /3W (wire-wound resistor)



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

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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