AC/DC Converter

PDM-90-xx-y Series

CE EN62368-1

RoHS Reach

3years warranty

Features

- **Ultra-wide 80 - 305VAC and 110 - 430VDC input voltage range**
- **Operating ambient temperature range: -40℃ to +85℃**
- **High I/O isolation test voltage up to 4200VAC**
- **No-load power consumption < 0.21W**
- **EMI performance meets CISPR32/EN55032 CLASS B**
- **4000m altitude application**
- **Panel mounting and DIN Rail mounting option**

Selection Guide

TYPE	Output			Efficiency (%) Typ. at 230Vac	Capacitive Load (µF) Max.
	POWER (W)	Voltage (VDC)	Current (mA) Typ.		
PDM-90-12-y	80.4	12	6700	92	6800
PDM-90-15-y	85.05	15	5670	92.5	4500
PDM-90-24-y	90	24	3750	93	3000
PDM-90-48-y		48	1875	93	470

Note: y = P – panel mounting option, y = D – din rail mounting option.

PDM-90-xx-y Series

Specifications

Characteristic	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range	AC input		80	--	305	VAC
		DC input		110	--	430	VDC
	Input Frequency			47	--	63	HZ
	Input Current (Inrush Current)	115VAC		--	(35)	2	A
		230VAC		--	(65)	1.1	
	Leakage Current	277VAC/50Hz		0.25mA RMS max			
	Built In Fuse			3.15A/300V, slow-blow			
	Hot Plug			unavailable			
Output Specifications	Voltage Accuracy			--	±2.0	--	%
	Line Regulation	100% load		--	±0.5	--	
	Load Regulation	0-100% load		--	±1.0	--	
	Ripple & Noise (*)	20MHz bandwidth (peak to peak)	12/15V	--	--	120	mV
			24V	--	--	200	
			48V	--	--	240	
	Standby Power Consumption			--	--	0.21	W
	Temperature Coefficient			--	±0.02	--	%/°C
	Hold Up Time	115/230Vac		--	10/30	--	ms
	Short-circuit Protection			Hiccup, continuous, self-recover			
	Over-current Protection			≥ 110%Io, self-recover			
	Over-voltage Protection (Hiccup or clamp)	12/15/24/48V		≤ 16/25/35/60VDC			
General Specifications	Operating Temperature			-40	--	+85	℃
	Storage Temperature			-40	--	+85	
	Isolation (Input-Output)	Electric Strength Test for 1min., leakage current <5mA		4200	--	--	VAC
	Storage Humidity	Non-condensing		--	--	95	%RH
	Switching Frequency			--	75	--	kHz
	Soldering Temperature	Wave-soldering		260 ± 5℃; time: 5 - 10s			
		Manual-welding		360 ± 10℃; time: 3 - 5s			
	Power Derating	-40°C to -30°C		5	--	--	%/°C
		+50°C to +70°C		2.5	--	--	
		+70°C to +85°C		1.66	--	--	
		85VAC - 100VAC		1.0	--	--	
		2000m - 4000m		10.0	--	--	
	Safety Class			CLASS II			
	Vibration			10 - 500Hz, 2G 10min./1cycle, period for 60min. Each along X, Y, Z axes			
	MTBF	MIL-HDBK-217F/25°C		≥ 500kHrs			
	Cooling Method	Free air convection					

PDM-90-xx-y Series

Mechanical Specification	Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)	
	Dimensions/Weight	PCB	87.00 x 52.00 x 29.50 mm/200.0g (typ.)
		Panel Mounting version	135.00 x 70.00 x 37.90 mm/280.0g (typ.)
		Din Mounting version	137.00 x 70.00 x 42.40 mm/350.0g (typ.)

Note: *The “parrallel cable” method is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor.

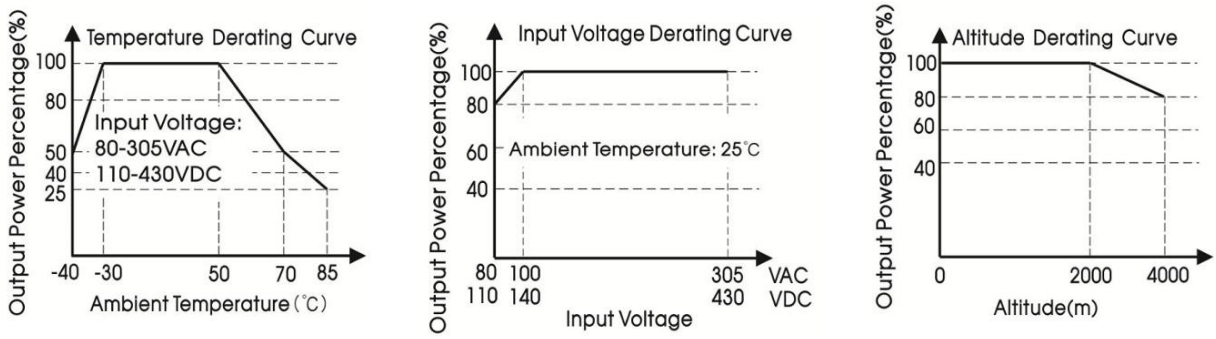
Electromagnetic Compatibility (EMC)

Emissions (EMI)	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN 61000-3-2	CLASS A	
Immunity (EMS)	ESD	IEC/EN 61000-4-2	Contact ±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line ±2KV	perf. Criteria A
		IEC/EN 61000-4-5	line to line ±2KV/line to PE ±4KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN 61000-4-6	10V r.m.s	perf. Criteria A
	PFM	IEC/EN 61000-4-8	30A/m	perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN 61000-4-11	0%, 70%	perf. Criteria B

1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

PDM-90-xx-y Series

Characteristic Curve



Note: ① With an AC input between 80-100VAC and a DC input between 110-140DC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling.

Design Reference PDM-90-xx-y

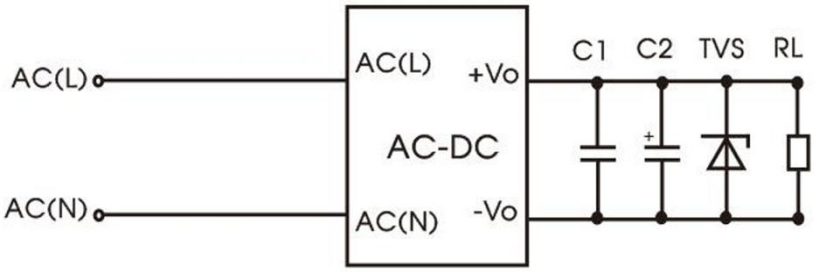


Fig. 1: Typical circuit diagram

Part No.	C1	C2	TVS
PDM-90-12-y	1 μF/100V	330 μF/35V	SMBJ20A
PDM-90-15-y		330 μF/35V	SMBJ20A
PDM-90-24-y		200 μF/35V	SMBJ30A
PDM-90-48-y		100/63V	SMBJ60A
Output Filter Components: We recommend using an electrolytic capacitor with high frequency and low ESR rating for C2. Choose a capacitor voltage with at least 20% margin. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is recommended suppressor diode to protect the application in case of a converter failure.			

PDM-90-xx-y Series

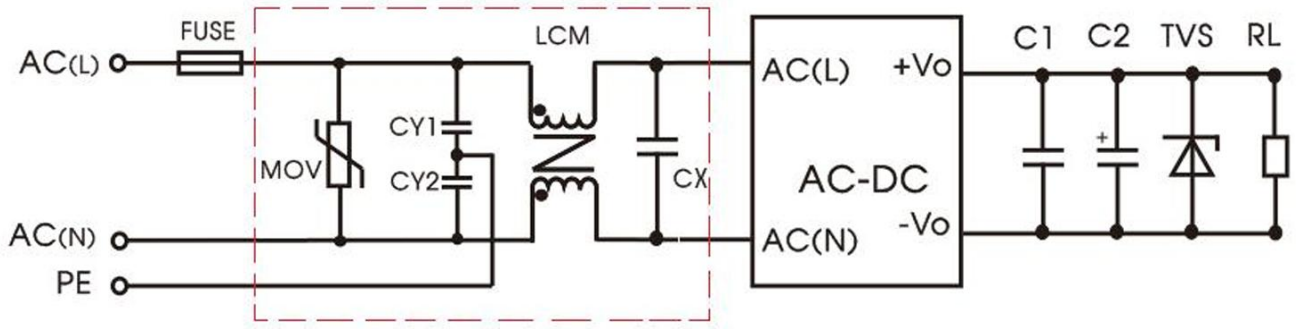
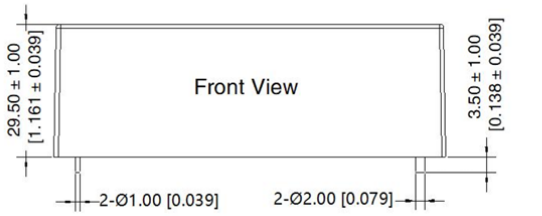
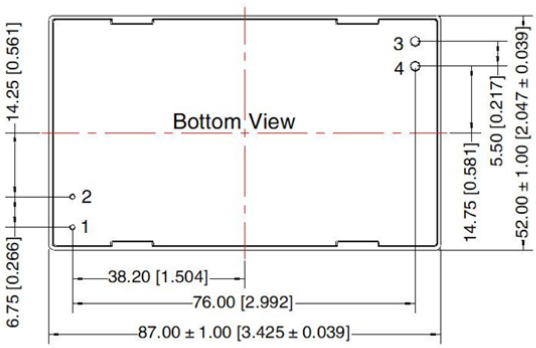


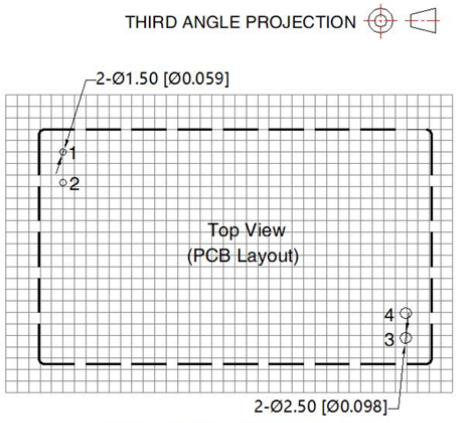
Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	6.3A / 300V, slow-blow, required
MOV	S14K350
CY1/CY2	1nF / 400VAC
CX	684K / 310V
LCM	10mH

Dimensions and Recommended Layout PDM-90-xx-y







Note: Grid 2.54*2.54mm

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

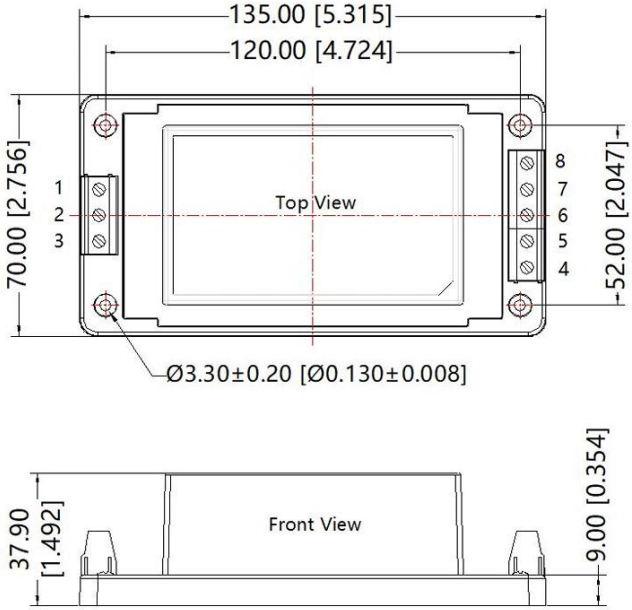
Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]

PDM-90-xx-y Series

Dimensions of mechanical option PDM-90-xx-y

PANEL MOUNTING OPTION **(y = P)**

THIRD ANGLE PROJECTION

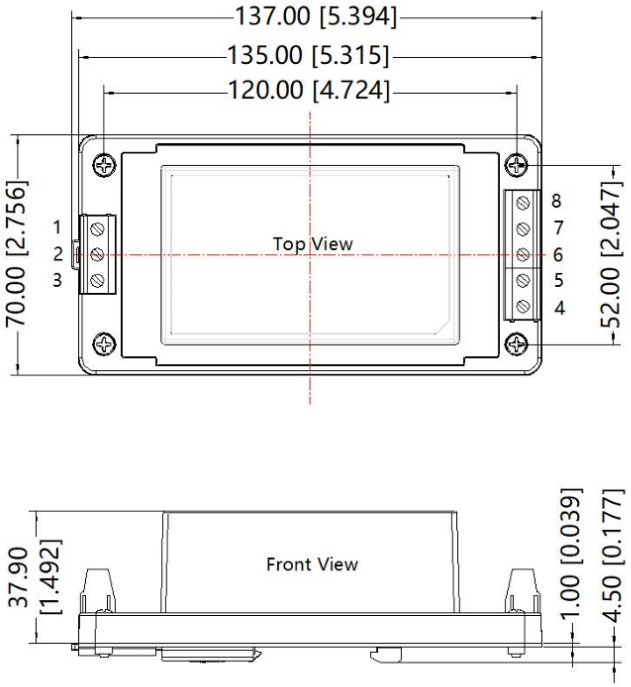


Pin-Out	
Pin	Mark
1	AC(L)
2	NC
3	AC(N)
4	+Vo
5	-Vo
6	NC
7	NC
8	NC

Note:
Unit: mm[inch]
Wire range: 24~12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±1.00[±0.040]

DIN RAIL MOUNTING OPTION **(y = D)**

THIRD ANGLE PROJECTION



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

Note:
Unit: mm[inch]
Wire range: 24~12 AWG
Tightening torque: Max 0.4 N·m
Installed on DIN RAIL TS35
General tolerances: ±1.00[±0.040]