AC/DC Converter

PDM-10-xx(M)-y Series

CE EN62368-1 (PDM-10-xx)

RoHS Reach

3years warranty

Features

- **Ultra-wide 85 - 305VAC and 100 - 430VDC input voltage range**
- **Operating ambient temperature range: -40℃ to +85℃ (+90℃ PDM-10-xxM)**
- **High I/O isolation test voltage up to 4200VAC**
- **No-load power consumption as low as 0.1W**
- **EMI performance meets CISPR32/EN55032 CLASS B**
- **5000m altitude application**
- **Panel Mounting and Din Rail Mounting options**

Selection Guide

TYPE	Output			Efficiency (%) Typ. at 230Vac	Capacitive Load (µF) Max.
	POWER (W)	Voltage (VDC)	Current (mA) Typ.		
PDM-10-03M	8.58	3.3	2600	74	6600
PDM-10-05M	10	5	2000	79	5000
PDM-10-12M	10,2	12	850	83	2000
PDM-10-15M	10,05	15	670	83	1000
PDM-10-24M	10,08	24	420	84	680
PDM-10-03-y	8.58	3.3	2600	74	6600
PDM-10-05-y	10	5	2000	79	5000
PDM-10-09-y	9.9	9	1100	81	3600
PDM-10-12-y	9.96	12	830	84	2000
PDM-10-15-y	9.9	15	660	84	820
PDM-10-24-y	9.84	24	410	85	470

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

PDM-10-xx(M)-y Series

Specifications

Characteristic	Item	Operating 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		--	--	0.23	A
		230VAC		--	--	0.15	
	Inrush Current	115VAC		--	25 (M version: 20)	--	
		230VAC		--	40	--	
	Leakage Current	277VAC/50Hz		0.1mA RMS Max (M version: 0,25mA RMS Max)			
	Input Fuse			External, 2A/300V, slow-blow, required (M version: built in, 2A/300V, slow-blow)			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy			--	±2	--	%
	Voltage Accuracy (M version)	3.3V		--	±2.5	--	
		5/12/15/24V		--	±2	--	
	Line Regulation	100% load		--	±0.5	--	
	Line Regulation (M version)	100% load		--	±0.3	--	
	Load Regulation	0-100% load		--	±1	--	
	Load Regulation (M version)	0-100% load		--	±0.5	--	
	Minimum Load			0	--	--	
	Ripple & Noise*	20MHz bandwidth (peak to peak value)		--	50	100	mV
	Ripple & Noise* (M version)	20MHz bandwidth (peak to peak value)		--	100	180	
	Stand by Power Consumption	230Vac	3.3/5/9/12/15V	--	0.1	--	W
			24V	--	0.12	--	
	Stand by Power Consumption (M version)	230Vac	3.3/5/12/15V	--	--	0,1	
			24V	--	0,1	0,12	
	Temperature Coefficient			--	±0.02	--	%/°C
	Hold Up Time	115Vac		--	8	--	ms
		230Vac		--	40	--	
	Short-circuit Protection	M version: recover time <3s after the short circuit is removed		Hiccup, continuous, self-recover			
	Over-current Protection	≥110%Io (M version: ≥130%Io), self-recover					
	Over-voltage Protection	3.3/5.0V		≤7.5VDC (Output voltage clamp or hiccup)			
		9V		≤15VDC (Output voltage clamp or hiccup)			
		12/15V		≤20VDC (Output voltage clamp or hiccup)			
		24V		≤30VDC (Output voltage clamp or hiccup)			
	Over-voltage Protection (M version)	3.3/5.0V		≤7.5VDC (Output voltage clamp)			
		12V		≤16VDC (Output voltage clamp)			
		15V		≤20VDC (Output voltage clamp)			
		24V		≤30VDC (Output voltage clamp)			

PDM-10-xx(M)-y Series

General Specifications	Operating Temperature			-40	--	+85 (M version: +90)	°C
	Storage Temperature			-40	--	+85 (M version: +90)	
	Isolation (Input-Output)	Electric Strength Test for 1min., leakage current <5mA		4200	--	--	Vac
	Impulse Withstand Voltage (Input-Output, M version)			6000	--	--	
	Insulation Resistance (Input-Output)	Test voltage: 500VDC M version: Ambient temperature: 25 ± 5°C Relative humidity: <95% RH, no condensation)		100	--	--	MΩ
	Storage Humidity	Non -condensing			--	95	%RH
	Operation Humidity (M version)			20	--	85	
	Switching Frequency			--	65	--	kHz
Mechanical Specification	Soldering Temperature	Wave-soldering		260 ± 5℃; time： 5 - 10s			
		Manual-welding		360 ± 10℃; time： 3 - 5s			
	Power Derating	-40°C to -25°C	85Vac - 115Vac	2.2	--	--	%/°C
		+50°C to +70°C	3.3/5.0V	2.5	--	--	
		+55°C to +70°C	9/12/15/24V	3.33	--	--	
		+70°C to +85°C		0.66	--	--	
		85Vac - 100Vac		0.83	--	--	%/Vac
		2000m - 5000m		6.7	--	--	%/Km
	Power Derating (M version)	-40°C to -30°C	<115Vac Input	3.3	--	--	
		+50°C to +70°C	3.3/5.0V	2.5	--	--	
		+55°C to +70°C	12/15/24V	3.33	--	--	
		+70°C to +90°C		1	--	--	
		85Vac - 100Vac		1.34	--	--	%/Vac
		2000m - 5000m		6.67	--	--	%/Km
	Safety Class	CLASS II					
	MTBF	MIL-HDBK-217F@25°C		≥ 3200kHrs			
	Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)					
	Dimensions / Weight	Standard version		40.00 x 25.40 x 21.00 mm / 34g(typ.)			
		M version		47.60 x 26.80 x 23.50 mm / 45g (typ.)			
		Panel Mounting version		76.00 x 31.50 x 29.80mm / 54g (typ.)			
		Din Mounting version		76.00 x 31.50 x 34.40mm / 74g (typ.)			
	Cooling Method	Free air convection					

Note: *The “parallel cable” method is used for ripple and noise test, output parallel 10μF electrolytic capacitor and 0.1μF ceramic capacitor.

PDM-10-xx(M)-y Series

Electromagnetic Compatibility (EMC)

Emissions (EMI)	CE	CISPR32/EN55032	CLASS B	
		EN55014-1		
	RE	CISPR32/EN55032	CLASS B	
		EN55014-1		
Immunity (EMS)	ESD	IEC/EN 61000-4-2	Contact ±8kV/Air ±15kV	perf. Criteria B
		EN55014-2		perf. Criteria B
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
		EN55014-2		perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2 kV	perf. Criteria B
		IEC/EN 61000-4-4	±4kV (See Fig. 2A for recommended circuit)	perf. Criteria B
		IEC/EN 61000-4-4	±4kV (See Fig. 3A for recommended circuit)	perf. Criteria A
		EN55014-2		perf. Criteria B
	Surge	IEC/EN 61000-4-5	Line to line ±1kV	perf. Criteria B
		IEC/EN 61000-4-5	Line to line ±2kV (See Fig. 2A for recommended circuit)	perf. Criteria B
		IEC/EN 61000-4-5	Line to line ±2kV/line to PE ±4kV (See Fig. 3A for recommended circuit)	perf. Criteria A
		EN55014-2		perf. Criteria B
	CS	IEC/EN 61000-4-6	10V r.m.s	perf. Criteria A
		EN55014-2		perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN 61000-4-11	0%, 70%	perf. Criteria B
		EN55014-2		perf. Criteria B

Note: 1. When the output terminal of the product needs to be connected to PE through a Y capacitor, or close to the metal frame, please refer to the Fig. 3 for recommended circuit;

2. Unless otherwise specified, EMC performance indicators are tested according to typical application circuits (Fig. 1).

Electromagnetic Compatibility (EMC) M version

Emissions (EMI)	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
Immunity (EMS)	ESD	IEC/EN 61000-4-2	Contact ±6 kV /Air ±8kV	perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2kV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	Line to line ±1kV	perf. Criteria A
	CS	IEC/EN 61000-4-6	10V r.m.s	perf. Criteria A
	MS	IEC/EN 61000-4-8	30A/m	perf. Criteria A
	Voltage variations *	IEC/EN 61000-6-2/IEC/EN 61000-4-11	70% Un, 25/30 cycle (50/60Hz) 40% Un, 10/12 cycle (50/60Hz) 0% Un, 1 cycle	perf. Criteria B
	Voltage interruptions *	IEC/EN 61000-6-2/IEC/EN 61000-4-11	0% Un, 250/300 cycle (50/60Hz)	perf. Criteria C

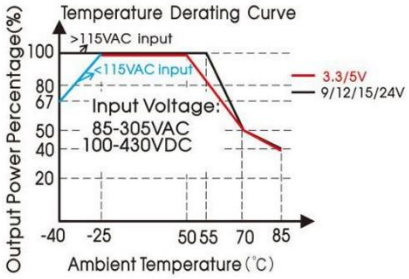
Note: *Un is the maximum input nominal voltage.

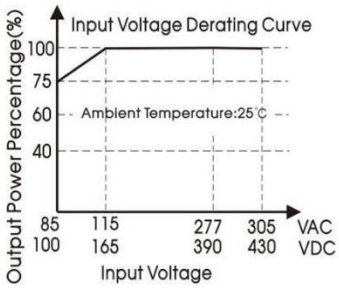
PDM-10-xx(M)-y Series

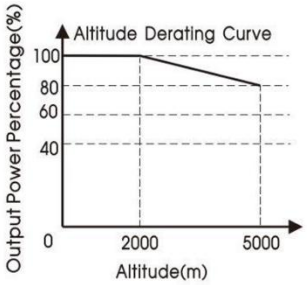
Note:

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.

Characteristic Curve

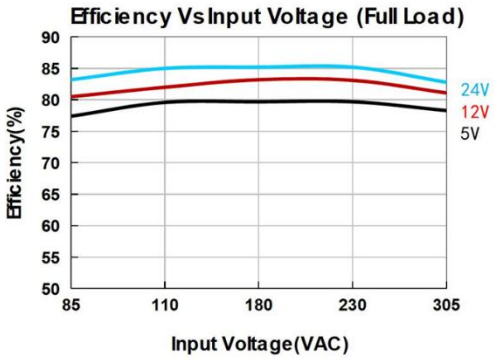


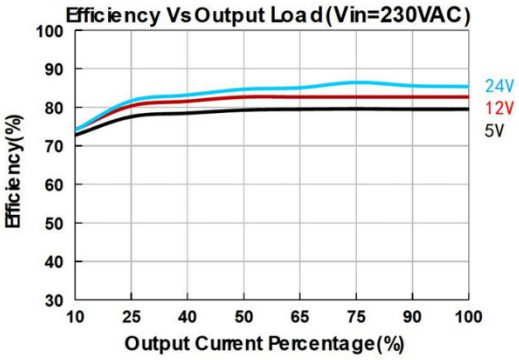




Note: ① With an AC input between 85-115VAC and a DC input between 100-165VDC, the output power must be derated as per temperature derating curves;

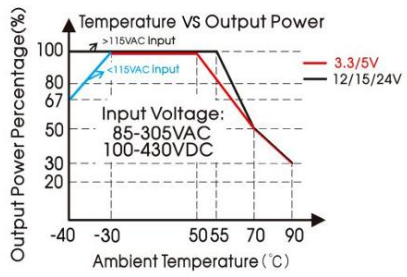
② This product is suitable for applications using natural air cooling.

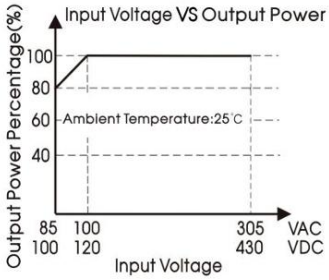


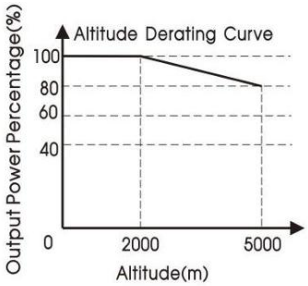


PDM-10-xx(M)-y Series

Characteristic Curve (M version)

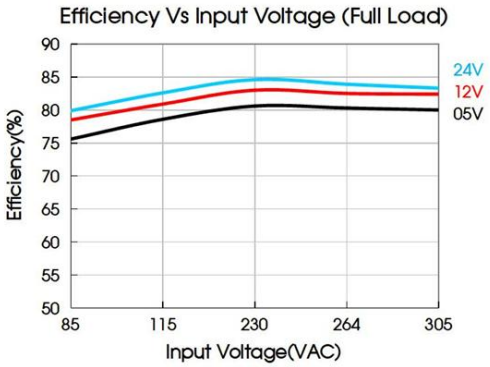


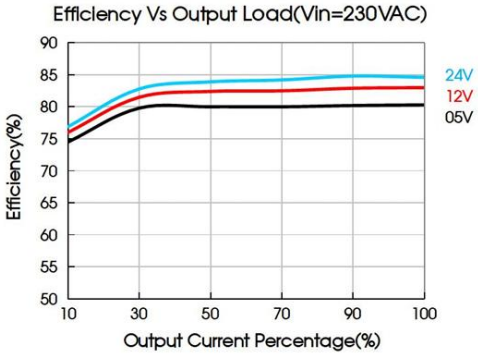




Note: 1. With an AC input between 85-100V and a DC input between 100-120V, the output power must be derated as per temperature derating curves;

2. This product is suitable for applications using natural air cooling.





Design Reference PDM-10-xx-y

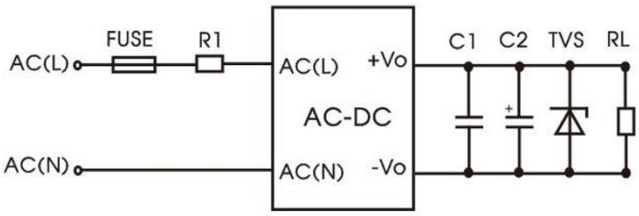


Fig. 1A: Typical circuit diagram

Part No.	C1 (µF)	C2 (µF)	Fuse	R1	TVS
PDM-10-03-y	1	220	2A / 300V, slow-blow, required	6.8Ω / 3W (wire-wound resistor, required)	SMBJ7.0A
PDM-10-05-y		220			SMBJ7.0A
PDM-10-09-y		100			SMBJ12A
PDM-10-12-y		100			SMBJ20A
PDM-10-15-y		100			SMBJ20A
PDM-10-24-y		100			SMBJ30A
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-10-xx(M)-y Series

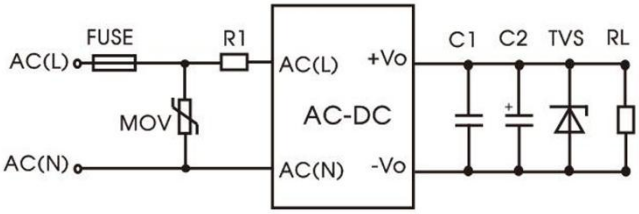


Fig. 2A: EMC application circuit with higher requirements

Component	Recommended value
MOV	S14K350

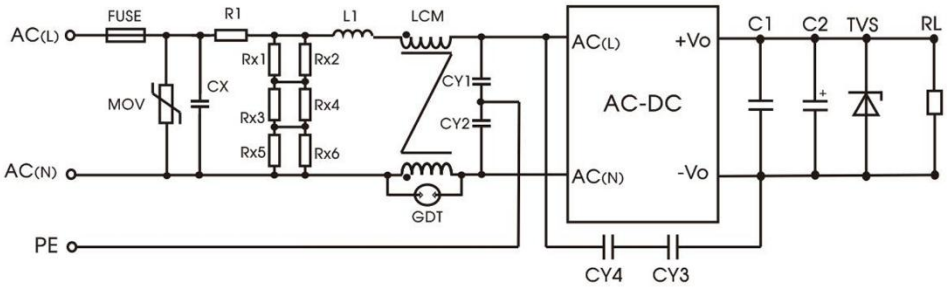


Fig. 3A: Recommended circuit for class I equipment

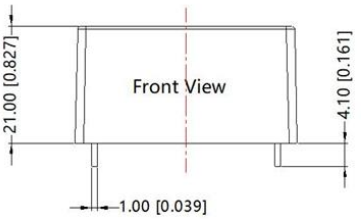
(Recommended when the output terminal of the product needs to be connected to PE or connected to PE through a Y capacitor)

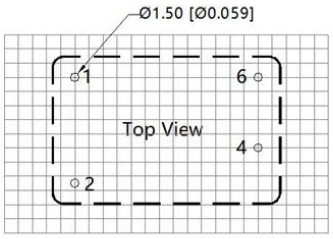
Component	Recommended value
FUSE	2A / 300V, slow-blow, required
MOV	S14K350
CX	334K / 305VAC
R1	12Ω / 5W (wire-wound resistor, required)
L1	1.2mH / 0.5A
CY1/CY2	2.2nF/400VAC
CY3/CY4	1nF/400VAC
GDT	300V / 1kA
LCM	20mH
Note: Rx1 / Rx2 / Rx3 / Rx4 / Rx5 / Rx6 is the bleeder resistance of Cx and the recommended resistance is 1.5MΩ / 150VDC	

PDM-10-xx(M)-y Series

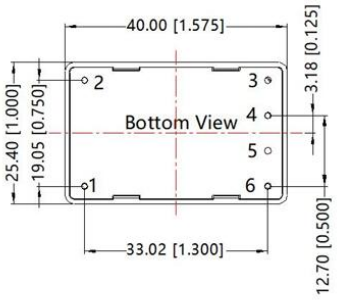
Dimensions and Recommended Layout PDM-10-xx-y

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm

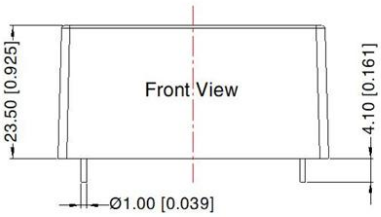


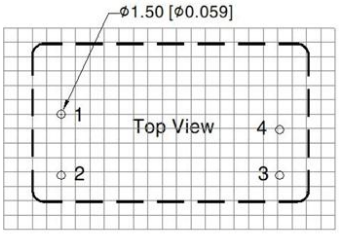
Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	No Pin
4	+Vo
5	No Pin
6	-Vo

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

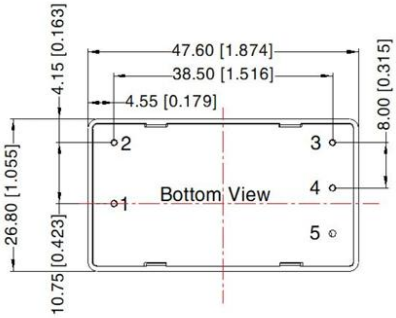
Dimensions and Recommended Layout PDM-10-xx (M version)

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm



Pin-Out	
Pin	Mark
1	AC(N)
2	AC(L)
3	–Vo
4	+Vo
5	No Pin

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

Rev 01/2025