



PDM-15-xx(M)-y Series



CE EN62368-1

RoHS Reach



Features

- Ultra-wide 85 - 305VAC and 100 - 430VDC input voltage range
- Operating ambient temperature range: -40°C to +85°C
- High I/O isolation test voltage up to 4000VAC
- No-load power consumption as low as 0.1W
- EMI performance meets CISPR32/EN55032 CLASS B, EN55014
- 5000m altitude application
- Panel mounting and DIN Rail mounting option

Selection Guide

TYPE	Output			Efficiency (%) Typ. at 230Vac	Capacity Load (μ F) Max.
	POWER (W)	Voltage (VDC)	Current (mA)		
PDM-15-03M	13.2	3.3	4000	81	8000
PDM-15-05M	15	5	3000	85	8000
PDM-15-09M	15	9	1670	85	5400
PDM-15-12M	15	12	1250	86	4000
PDM-15-15M	15	15	1000	87	3000
PDM-15-24M	15	24	625	87	1000
PDM-15-03-y	13.2	3.3	4000	82	6600
PDM-15-05-y	15	5	3000	85	5000
PDM-15-09-y	15	9	1670	84	3000
PDM-15-12-y	15	12	1250	85	2000
PDM-15-15-y	15	15	1000	85	1500
PDM-15-24-y	15	24	625	86	680

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



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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 (M version: 440)	HZ	
	Input Current	115VAC	--	--	0.45 (M version: 0,50)	A	
		230VAC	--	--	0.30		
	Inrush Current	115VAC	--	30 (M version: 20)	--		
		230VAC	--	60 (M version: 45)	--		
	Leakage Current	277VAC/50Hz		0.1mA RMS Max			
Built In Fuse	2A/300V, slow-blow (M version: 3.15A/300V, slow-blow)						
Hot Plug	Unavailable						
Output Specifications	Voltage Accuracy		--	±2.0	--	%	
	Voltage Accuracy (M version)		--	±1.5	--		
	Line Regulation	100% load	--	±0.5	--		
	Load Regulation	0-100% load	--	±1.0	--		
	Minimum Load		0	--	--		
	Ripple & Noise*	20MHz bandwidth (peak to peak value)		--	70	100	mV
	Ripple & Noise (M version)*	20MHz bandwidth (peak to peak value)		--	100	150	
	No-load Power Consumption	230Vac	3.3/5/9/12/15V	--	--	0.10	W
			24V	--	--	0.12	
	No-load Power Consumption (M version)	230Vac	3.3/5/9/12/15V	--	0.10	--	
			24V	--	0.12	--	
	Temperature Coefficient			--	±0.02	--	%/°C
	Hold Up Time	115Vac		--	10	--	ms
		230Vac		--	55	--	
Hold Up Time (M version)	115Vac		--	8	--		
	230Vac		--	55	--		
Short-circuit Protection	Hiccup, continuous, self-recovery						
Over-current Protection	≥110%Io, self-recovery						
Over-voltage Protection	3.3/5.0V output		≤7.5VDC (Output voltage clamp or hiccup)				
	9V output		≤15VDC (Output voltage clamp or hiccup)				
	12/15V output		≤20VDC (Output voltage clamp or hiccup)				
	24V output		≤30VDC (Output voltage clamp or hiccup)				
General Specifications	Operating Temperature		-40	--	+85	°C	
	Storage Temperature		-40	--	+85		
	Isolation (Input-Output)	Electric Strength Test for 1min., leakage current <5mA		4200	--	--	VAC



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	Isolation (M version, Input-Output)	Electric Strength Test for 1min., leakage current <5mA	4000	--	--		
	Insulation Resistance (Input-Output)	Test voltage: 500VDC	100	--	--	MΩ	
	Storage Humidity	Non-condensing	--	--	+95	%RH	
	Switching Frequency	--	--	65	--	kHz	
Mechanical Specification	Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5 - 10s				
		Manual-welding	360 ± 10°C; time: 3 - 5s				
	Power Derating	+50°C to +70°C (3.3/5V)	3	--	--	%/ ^o C	
		+55°C to +70°C (9/12/15/24V)	2.67	--	--		
		+70°C to +85°C	0.66	--	--		
		85VAC - 100VAC	1.33	--	--	%/ ^o VAC	
		277VAC - 305VAC	0.71	--	--		
		2000m - 5000m	6.7	--	--	%/Km	
	Power Derating (M version)	-40°C to -25°C	85VAC-165VAC	2	--	--	%/ ^o 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	--	--	%/ ^o VAC
			85VAC - 100VAC	2	--	--	
			277VAC - 305VAC	0.71	--	--	
			2000m - 5000m	0.67	--	--	
	Safety Class	CLASS II					
	MTBF	MIL-HDBK-217F/25°C	≥3 200kHrs (M version: ≥1500kHrs)				
Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)						
Dimensions / Weight	Standard version		47.60 x 26.80 x 23.50mm / 48g(typ.)				
	M version		52.40 x 27.20 x 24.00mm / 55g(typ.)				
	Panel Mounting version		76.00 x 31.50 x 32.30mm / 68.0g(typ.)				
	Din Mounting version		76.00 x 31.50 x 36.90mm / 88.0g(typ.)				
Cooling Method	Free air convection						

Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 10μF electrolytic capacitor and 1μF ceramic capacitor.



PDM-15-xx(M)-y Series

Electromagnetic Compatibility (EMC)

Emissions (EMI)	CE	CISPR32/EN55032	CLASS B		
		CISPR11/EN55011	CLASS B		
		EN55014-1			
	RE	CISPR32/EN55032	CLASS B		
		CISPR11/EN55011	CLASS B		
		EN55014-1			
Immunity (EMS)	ESD	IEC/EN 61000-4-2	Contact $\pm 8KV$	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	$\pm 2KV$		perf. Criteria B
		IEC/EN 61000-4-4	$\pm 4KV$ (See Fig. 2A for recommended circuit)		perf. Criteria B
		IEC/EN 61000-4-4	$\pm 4KV$ (See Fig. 3A for recommended circuit)		perf. Criteria A
		EN55014-2			perf. Criteria B
	Surge	IEC/EN 61000-4-5	line to line $\pm 1KV$		perf. Criteria B
		IEC/EN 61000-4-5	line to line $\pm 2KV$ (See Fig. 2A for recommended circuit)		perf. Criteria B
		IEC/EN 61000-4-5	line to line $\pm 2KV$ /line to PE $\pm 4KV$ (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 Comatibility (EMC) M version

Emissions (EMI)	CE	CISPR32/EN55032	CLASS B		
		CISPR11/EN55011	CLASS B		
		EN55014-1			
	RE	CISPR32/EN55032	CLASS B		
		CISPR11/EN55011	CLASS B		
		EN55014-1			
Immunity (EMS)	ESD	IEC/EN 61000-4-2	Contact $\pm 6KV$ /Air $\pm 8KV$	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	$\pm 2KV$		perf. Criteria B
		IEC/EN 61000-4-4	$\pm 4KV$ (See Fig. 2M for recommended circuit)		perf. Criteria B
		EN55014-2			perf. Criteria B
	Surge	IEC/EN 61000-4-5	line to line $\pm 1KV$		perf. Criteria B
		IEC/EN 61000-4-5	line to line $\pm 2KV$ (See Fig. 2M for recommended circuit)		perf. Criteria B
		EN55014-2			perf. Criteria B

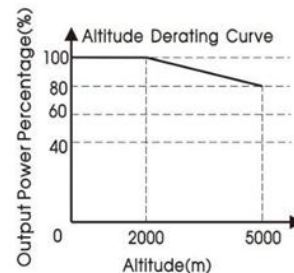
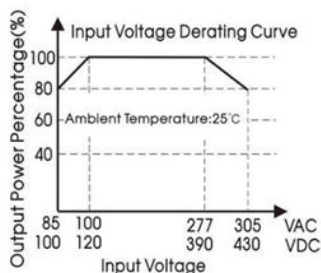
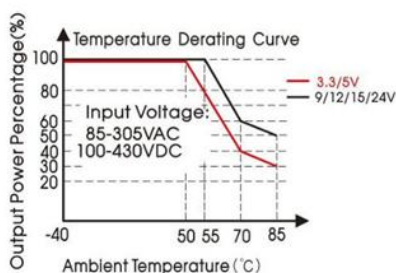


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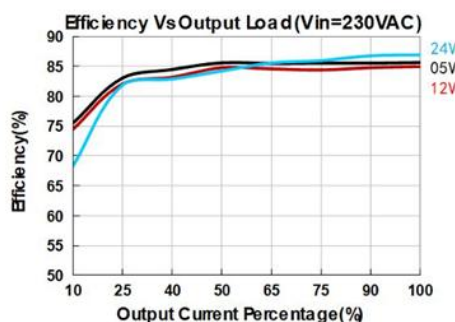
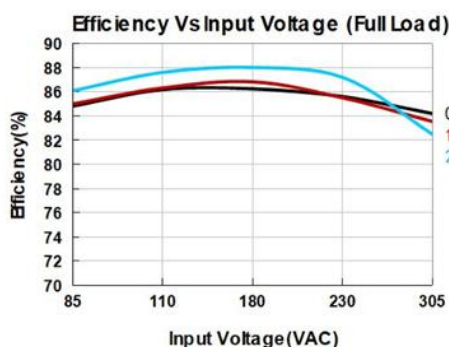
CS	IEC/EN 61000-4-6 10V r.m.s	perf. Criteria A
	EN55014-2	perf. Criteria A
Voltage dip, short interruption and voltage variation	IEC/EN 61000-4-11 0%, 70%	perf. Criteria B
	EN55014-2	perf. Criteria B

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 $T_a=25^\circ\text{C}$, 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

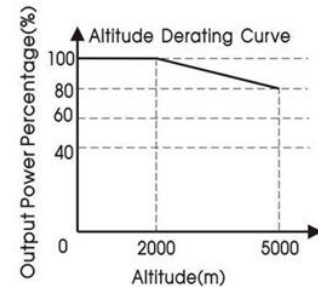
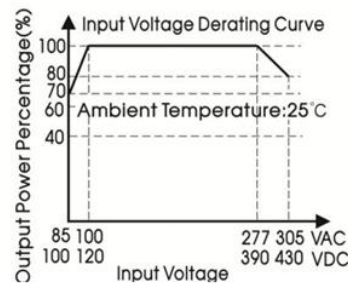
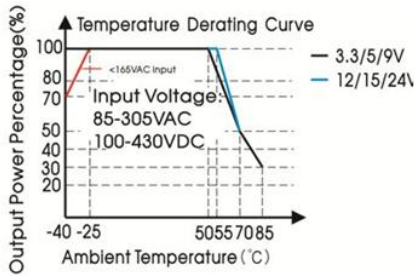


- Note: ① With an AC input between 85-100V/277-305VAC and a DC input between 100-120V/390-430VDC, the output power must be derated as per temperature derating curves;
- ② This product is suitable for applications using natural air cooling.

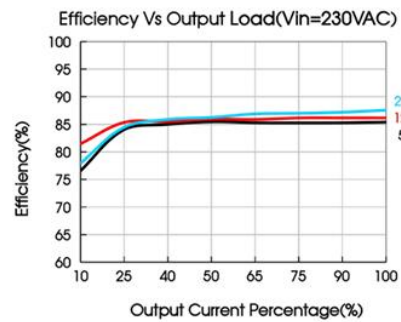
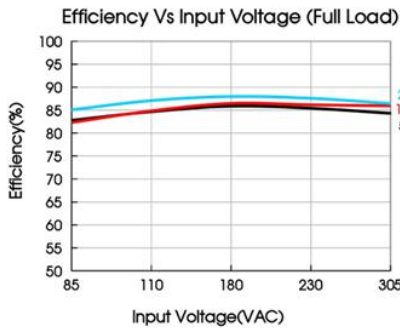


PDM-15-xx(M)-y Series

Characteristic Curve (M version)



- Note: ① The product takes peak power (20W) as the starting point for derating.
 ② 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;
 ③ This product is suitable for applications using natural air cooling.



Design Reference PDM-15-xx

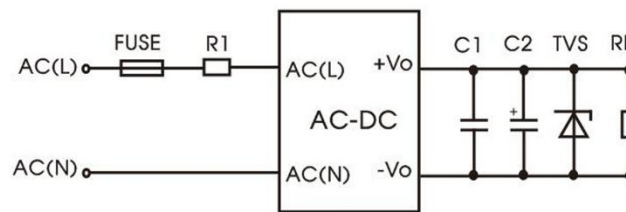


Fig. 1A: Typical circuit diagram

Part No.	C1 (μF)	C2 (μF)	Fuse	R1	TVS	MOV
PDM-15-03-y	1	220	3.15A / 300V, Slow-blow required	6.8Ω / 3W (wire-wound resistor)	SMBJ7.0A	S10K350
PDM-15-05-y		220			SMBJ7.0A	
PDM-15-09-y		100			SMBJ12A	
PDM-15-12-y		100			SMBJ20A	
PDM-15-15-y		100			SMBJ20A	
PDM-15-24-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 of a converter failure.

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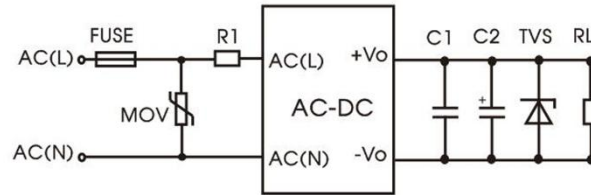


Fig. 2A: EMC application circuit with higher requirements

Component	Recommended value
MOV	S14K350

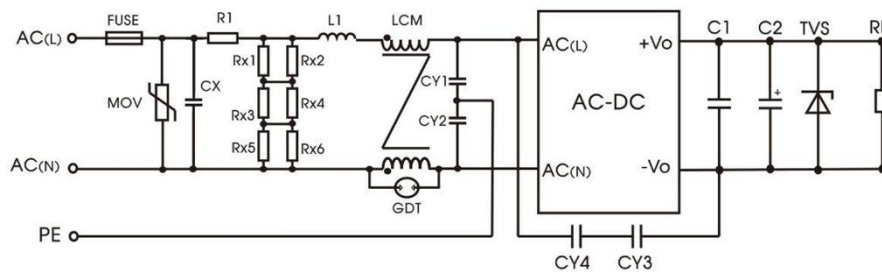


Fig. 3A: Recommended circuit for class I equipment

(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	3.15A / 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

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Design Reference PDM-15-xx (M version)

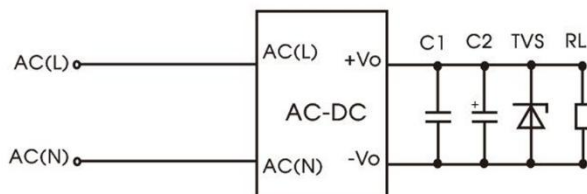


Fig. 1M: Typical circuit diagram

Part No.	C1	C2	TVS
PDM-15-03M	1μF / 50V	10μF / 16V	SMBJ7.0A
PDM-15-05M		10μF / 16V	SMBJ7.0A
PDM-15-09M		10μF / 25V	SMBJ12A
PDM-15-12M		10μF / 25V	SMBJ20A
PDM-15-15M		10μF / 25V	SMBJ20A
PDM-15-24M		10μF / 35V	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 of a converter failure.

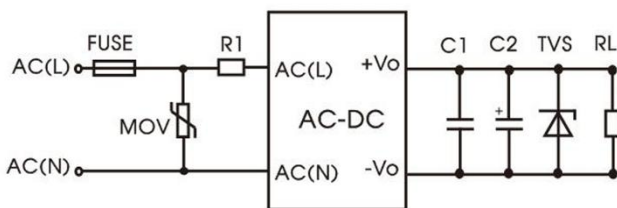


Fig. 2M: EMC application circuit with higher requirements

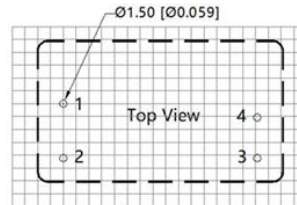
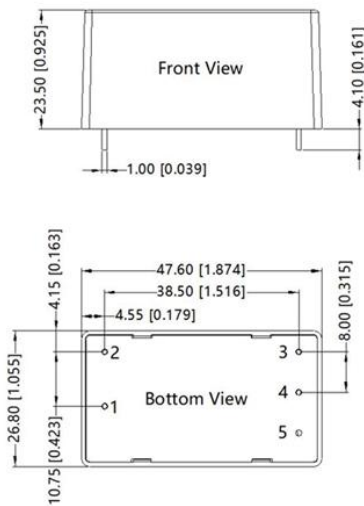
Component	Recommended value
FUSE	2A / 300V, slow-blow, required
MOV	S14K350
R1	3Ω / 3W



PDM-15-xx(M)-y Series

Dimensions and Recommended Layout PDM-15-xx-y

THIRD ANGLE PROJECTION



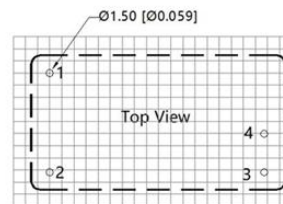
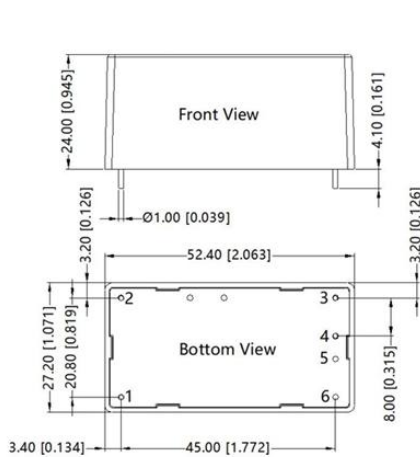
Note: Grid 2.54*2.54mm

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

Note:
Unit: mm[inch]
Pin diameter tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$

Dimensions and Recommended Layout PDM-15-xx (M version)

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

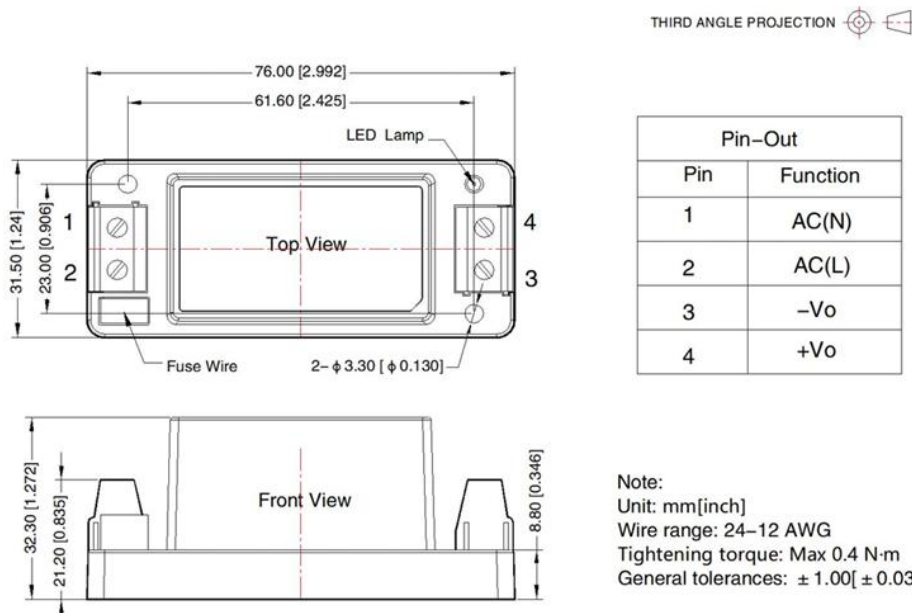
Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	-Vo
4	+Vo
5	No Pin
6	No Pin

Note:
Unit: mm[inch]
Pin diameter tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$

PDM-15-xx(M)-y Series

Dimensions of mechanical option PDM-15-xx-y

PANEL MOUNT OPTION (y = P)



DIN OPTION (y = D)

