

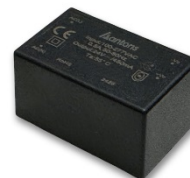
PMR15D Series

15W, Encapsulated DIP Package AC/DC Power Converters



Features

- Rated power: 15W
- Universal input: 85~305VAC 47~63Hz
- Regulated single output
- Isolation voltage 4000VAC
- Typical efficiency up to 87%
- Energy saving, standby power only less than 0.1W
- Operating temperature range: -40~+85°C
- RoHS compliance
- Compact DIP package
- Over current and short circuit protection
- *Meet IEC/EN/UL62368-1, EN60335, EN61558, CISPR32, EN55032 Class B
- 3 year warranty



*UL Certification is pending.

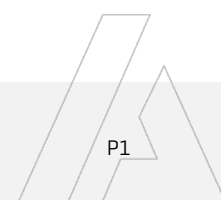
Overview

PMR15D series are compact size AC/DC power converters, featuring universal input voltage range, low stand by power consumption, high efficiency. Optional chassis are available for users who prefer chassis installation, or DIN Rail installation. Designed for high reliability industrial applications, these converters are encapsulated to protect from dust and moisture. They are certified to IEC/EN/UL62368, EN60335, EN61558, and EMC performance meets CISPR32, EN55032 Class B, ideally suitable for industrial, and critical commercial applications.

Model Numbers

Model Number	Input Voltage [VAC]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [uF] Max.
PMR15D-033	85~305VAC 100~430VDC	3.3	4000	79	6600
PMR15D-050		5	3000	80	5000
PMR15D-090		9	1670	84	3000
PMR15D-120		12	1250	85	2000
PMR15D-150		15	1000	85	1500
PMR15D-240		24	625	87	680

* Only typical models are listed, other models may be available, upon request.



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Electrical Specifications

Unless otherwise indicated, specifications are measured at $T_A=25^{\circ}\text{C}$, humidity<75%, nominal input voltage and rated output load.

Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Input voltage range	AC in	85	-	305	VAC	
	DC in	100	-	430	VDC	
Input frequency		47	-	63	Hz	
Nominal input voltage		100	-	277	VAC	
Input current	115VAC 230VAC	-	-	0.50 0.30	A	
Inrush current Cold start	115VAC 230VAC	-	30 60	-	A	
Leakage current	277VAC, 50Hz	-	-	0.1	mA RMS	
Output voltage accuracy		-	± 2	-	%	
Line regulation	Full load	-	± 0.5	-	%	
Load regulation $I_{OUT}=0\% \sim 100\%$ of $I_{OUT, rated}$		-	± 1	-	%	
Ripple and noise 20MHz bandwidth, peak to peak		-	70	120	mV	
Temperature coefficient		-	± 0.02	-	%/ $^{\circ}\text{C}$	
Standby power consumption	$V_{OUT}=24.0\text{V}$ Others	-	-	0.12 0.10	W	
Hold up time Full load	115VAC 230VAC	-	10 55	-	mS	
Over current protection	Automatic recovery	110	-	-	% I_{OUT}	
Short circuit protection		Continuous, hiccup mode, automatic recovery				
External fuse		2A, 300V slow blow *required*				
Minimum load		No minimum load is required				

* Ripple and noise measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 1uF ceramic capacitor and a 10uF electrolytic capacitor in parallel.

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General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Isolation voltage 1 minute, leakage current 5mA max	I/P to O/P	4000	-	-	VAC	
Isolation resistance 500VDC, 25°C, 70%RH	I/P to O/P	100	-	-	M Ohm	
Operating temperature range	See "Derating Curve"	-40	-	85	°C	
Storage temperature		-40	-	105	°C	
Storage humidity		10	-	95	%RH	
Operating altitude		-	-	5000	m	
Soldering temperature	Wave Manual	-	260 360	-	°C	
Case material		Black plastic UL94-V0				
Cooling method		Free air convection				
Vibration		10Hz to 55Hz, 10G, 30 minutes along X, Y and Z axis				
Class II power		Yes, no FG				
MTBF	MIL-HDBK-217F	> 3,200,000 Hours, 25°C				
Design based on standards		RoHS5 compliant, UL/IEC/EN62368, EN60335, EN61558				
Safety certifications		*UL/IEC/EN62368, EN60335, EN61558				
EMC		CISPR32, EN55032 Class B				
Size, and Weight	Default Package	45.7x25.4x21.5 mm, 36g				

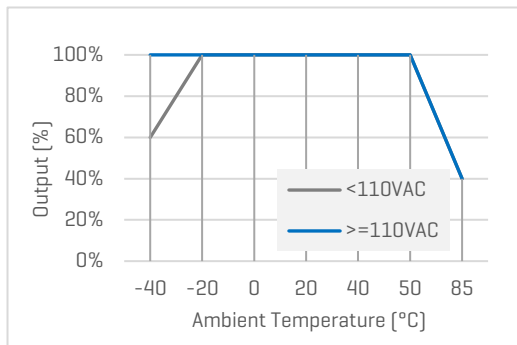
*UL certification is pending.

Characteristic Curves

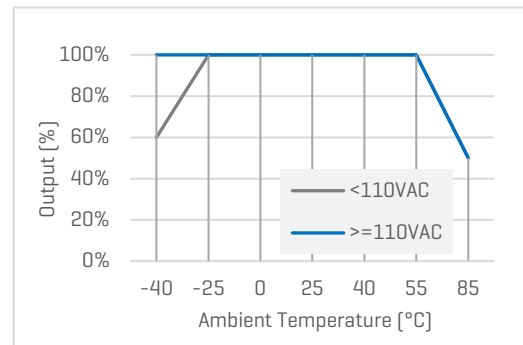
Derating Curves

Output vs Ambient Temperature

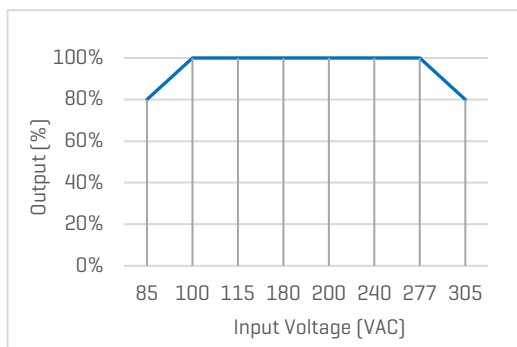
$V_{OUT}=3.3, 5V$



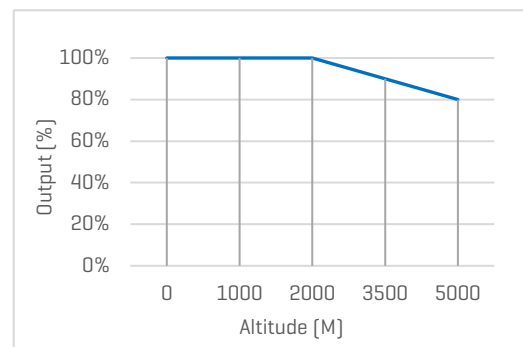
$V_{OUT}=9 \dots 24V$



Output vs Input Voltage

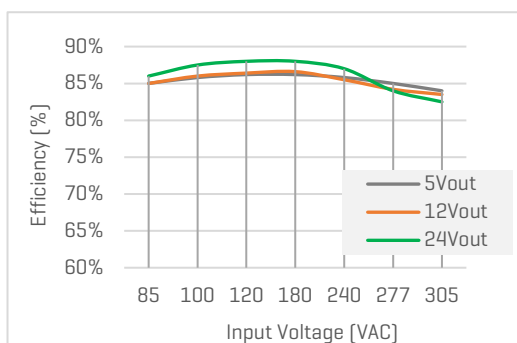


Output vs Altitude

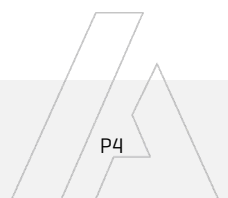
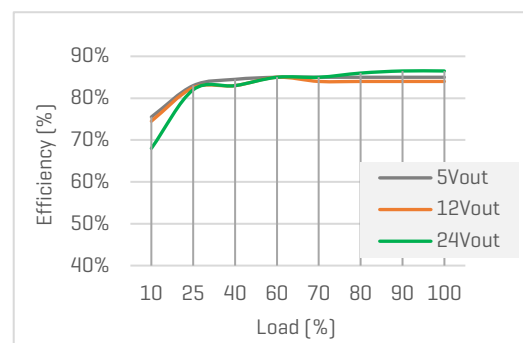


Efficiency Curves

Efficiency vs Input Voltage



Efficiency vs Load



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Recommended External Circuits

Typical External Circuit

* This application circuit is recommended for EMC enhancement. It is not mandatory for general operating.

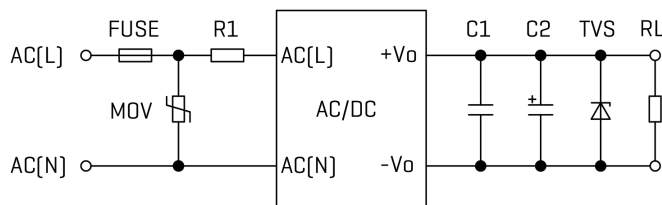


Figure 1. Typical external circuit

[Table 1] Recommended Components

SPEC	FUSE*	MOV	R1*	C1	C2	TVS
$V_{out}=3.3, 5V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	220uF, 16V	SMBJ7.0A
$V_{out}=9V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ12A
$V_{out}=12, 15V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	100uF, 25V	SMBJ20A
$V_{out}=24V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ30A

* Components with "*" are required, and others are recommended.

EMC Enhancement for EN55032 Class B

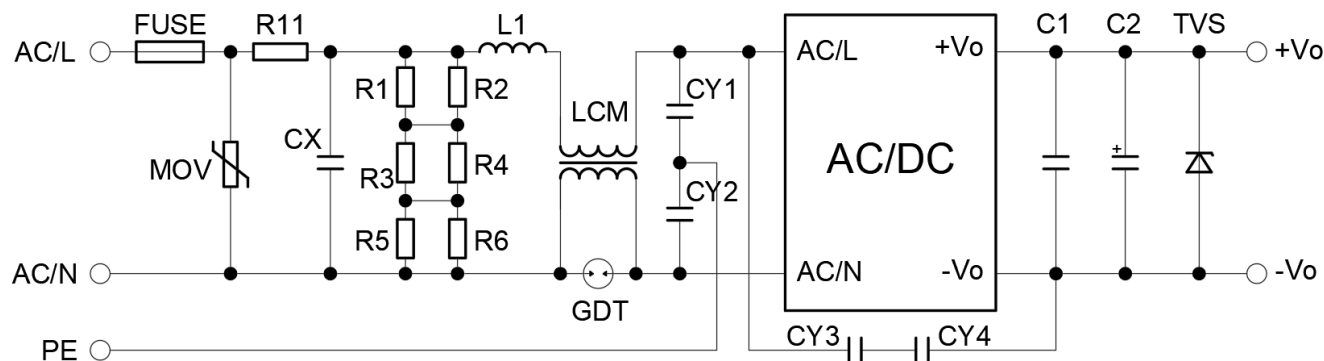


Figure 1. Circuit for EMC Enhancement

[Table 2] Recommended Components

MOV	CX	R11	L1	LCM	GDT	CY1, CY2	CY3, CY4
S14K350	334K, 305VAC	12 Ohm, 5W	1.2mH, 0.5A	20mH	300V, 1KA	2.2nF, 400VAC	1nF, 400VAC

*R1 ... R6 is the bleeder resistance of CX - 1.5Mohm, 150VDC

*Other components see the same in Table 1

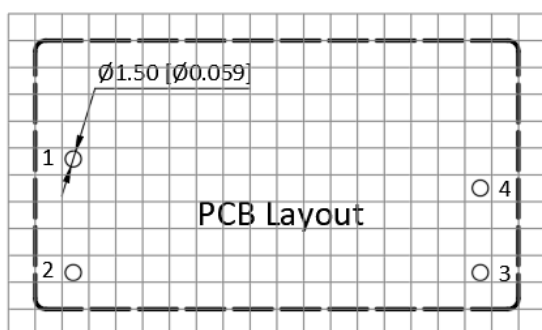
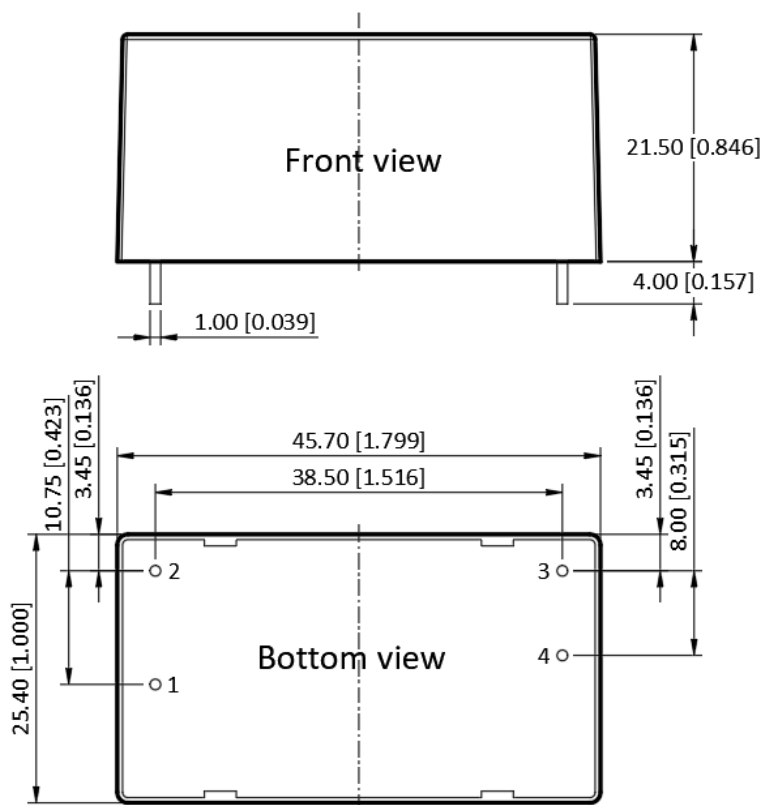
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Mechanical Specifications

Default Package



Pin Definition

Pin #	Single Out
1	AC [L]
2	AC [N]
3	-V _{OUT}
4	+V _{OUT}

* Unless otherwise specified unit: mm [inch]

* General tolerance: $\pm 1.00 [\pm 0.040]$

* Pin thickness: $\pm 0.15 [\pm 0.006]$

* Pin distance: $\pm 0.50 [\pm 0.020]$

* Footprint grid 2.54 x 2.54 mm