PMR10D Series

10W, Encapsulated DIP Package AC/DC Power Converters

Features

- Rated power: 10W
- Universal input: 85~305VAC, 47~63Hz
- Regulated single output
- Isolation voltage 4000VAC
- Typical efficiency 74 ... 85%
- Energy saving, standby power only about 0.1W
- Operating temperature range: -40~+85°C
- RoHS compliance
- Compact DIP package
- Over current and short circuit protection
- *Meet IEC/EN/UL62368-1, OVC III, EN60335, EN61558, CISPR32, EN55032 Class B with NO externals
- 3 year warranty

*UL Certification is pending.

Overview

PMR10D series are compact size AC/DC power converters, featuring universal input voltage range, low stand by power consumption, high efficiency. Designed for high reliability industrial applications, these converters are encapsulated to protect from dust and moisture. They meet IEC/EN/UL62368-1, OVC III, EN60335-1, EN61558-1, FCC, UKCA and EMC performance meets CISPR32, EN55032 Class B without support from any external components, 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.
PMR10D-033	85~305VAC 100~430VDC	3.3	2600	74	3000
PMR10D-050		5	2000	79	3000
PMR10D-090		9	1100	81	1000
PMR10D-120		12	830	84	820
PMR10D-150		15	660	84	680
PMR10D-240		24	410	85	220

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

Electrical Specifications

Unless otherwise indicated, specifications are measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load.

Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Input voltage range	AC in DC in	85 100	-	305 430	VAC VDC	
Input frequency		47	-	63	Hz	
Nominal input voltage		100	-	277	VAC	
Input current	115VAC 230VAC	-	-	0.23 0.15	A	
Inrush current Cold start	115VAC 230VAC	-	25 40	-	A	
Leakage current	230VAC, 50Hz	-	-	0.1	mA RMS	
Output voltage accuracy		-	±2	-	%	
Line regulation	Full load	-	±0.5	-	%	
Load regulation I_{OUT}=0%~100% of $I_{OUT, rated}$		-	±1.0	-	%	
Ripple and noise 20MHz bandwidth, peak to peak		-	50	150	mV	
Temperature coefficiency		-	±0.02	-	%/°C	
Standby power consumption		-	0.10	-	W	
Hold up time Full load	115VAC 230VAC	-	10 40	-	mS	
Over current protection	Automatic recovery	110	-	-	% I_{OUT}	
Short circuit protection		Continuous, hiccup mode, automatic recovery				
Recommended 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.

General Specifications

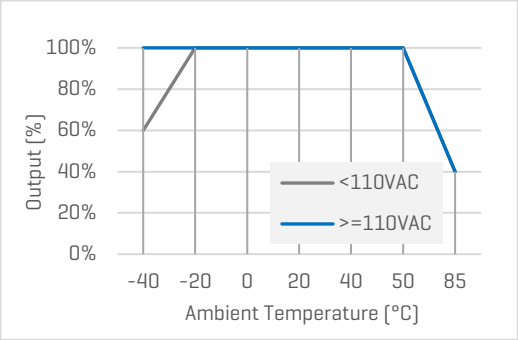
Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Isolation voltage 1 minute, leakage current 5mA max	I/P to O/P	4000	-	-	VAC	
Isolation resistance 500VDC, 25°C, 70%RH	I/P to O/P	100	-	-	M Ohm	
Switching frequency		-	65	-	KHz	
Operating temperature range	See "Derating Curve"	-40	-	85	°C	
Storage temperature		-40	-	85	°C	
Storage humidity		10	-	95	%RH	
Operating altitude	See "Derating Curve"	-	-	5000	m	
Soldering temperature	5 seconds	-	260	-	°C	
Case material		Black plastic UL94-V0				
Cooling method		Free air convection				
Class II power		Yes, no FG				
Vibration		10Hz to 55Hz, 10G, 30 minutes along X, Y and Z axis				
MTBF	MIL-HDBK-217F	> 1,000,000 Hours, 25°C				
Design based on standards		RoHS & REACH directives, IEC/EN/UL 62368-1, OVC III, EN 60335-1, EN 61558-1, UKCA				
Safety certifications		IEC/EN62368				
EMC [1] With External Circuit as shown in "Figure 1" [2] With External Circuit as shown in "Figure 2"	CE ESD RS EFT EFT Surge Surge CS DIP	CISPR32, EN55032 Class B IEC/EN61000-4-2, Contact ±6kV, Air ±8kV, Criteria B IEC/EN61000-4-3, 10V/m, Criteria A IEC/EN61000-4-4, ±2kV, Criteria B IEC/EN61000-4-4, ±4kV, Criteria B, [2] IEC/EN61000-4-5, Line to Line ±1kV, Criteria B IEC/EN61000-4-5, Line to Line ±2kV, Criteria B, [2] IEC/EN61000-4-6, 10Vrms, Criteria A IEC/EN61000-4-11, 0%, 70%, Criteria A				
Size, and Weight		40x25.4x21mm, 40g				

Characteristic Curves

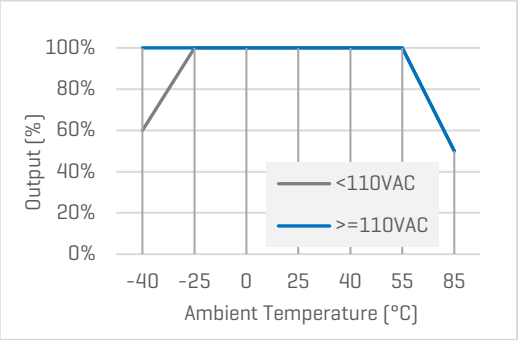
Derating Curves

Output vs Ambient Temperature

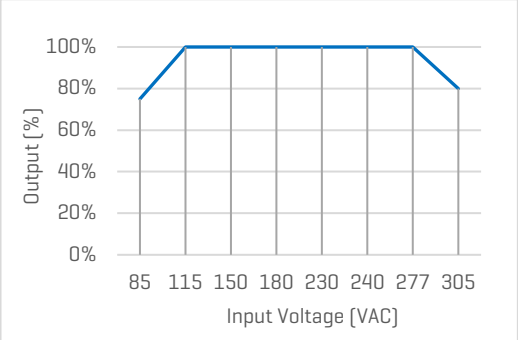
V_{OUT}=3.3, 5V



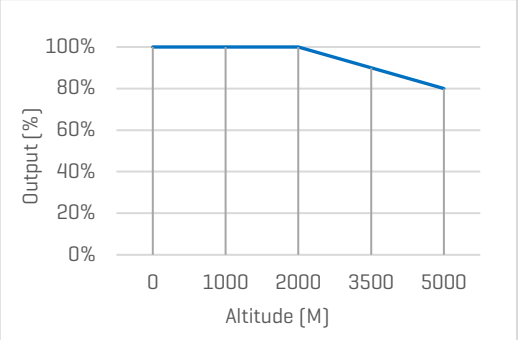
V_{OUT}=9 ... 24V



Output vs Input Voltage

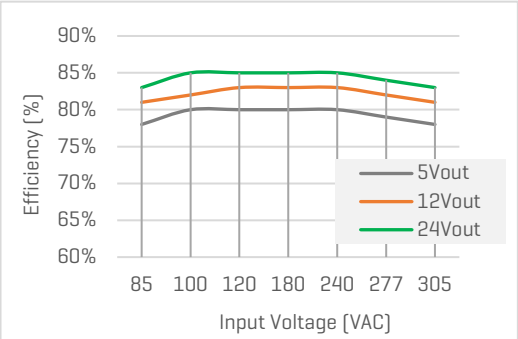


Output vs Altitude

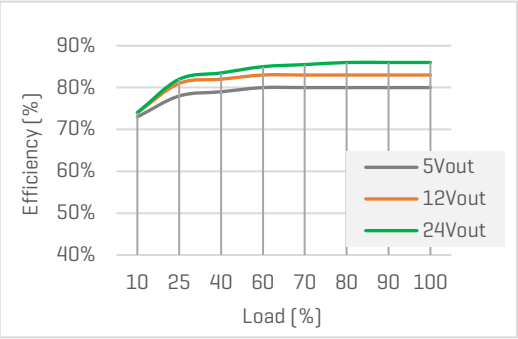


Efficiency Curves

Efficiency vs Input Voltage



Efficiency vs Load



Recommended External Circuits

Typical External Circuit

Components with "" are required. The other components are highly recommended.

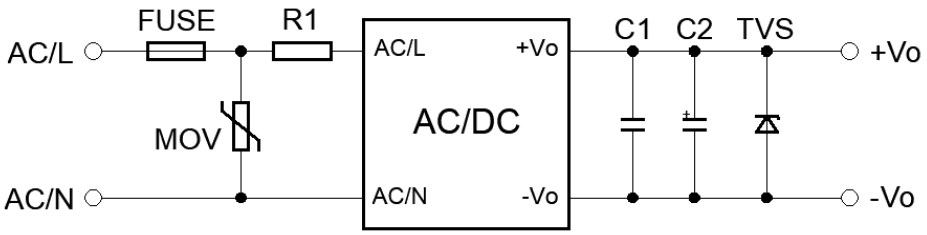


Figure 1. Typical external circuit

Recommended Components [Table 1]

SPEC	FUSE*	MOV	R1*	C1	C2	TVS
V_{OUT}=3.3, 5V	2A, 300V	10D561K	12 Ohm, 3W	1uF, 50V	220uF, 35V	SMBJ7.0A
V_{OUT}=9, 12V	2A, 300V	10D561K	12 Ohm, 3W	1uF, 50V	150uF, 35V	SMBJ12A
V_{OUT}=15, 24V	2A, 300V	10D561K	12 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ20A

* For further questions contact one of our sales representatives.

EMC Enhancement for EN55032 Class B

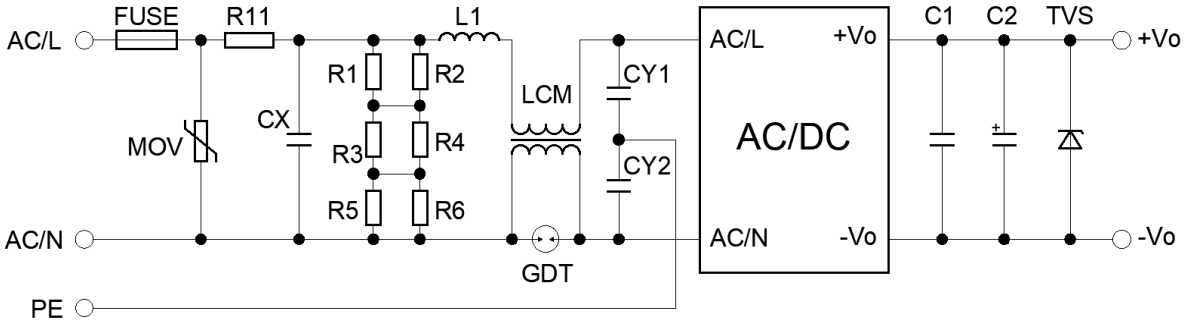


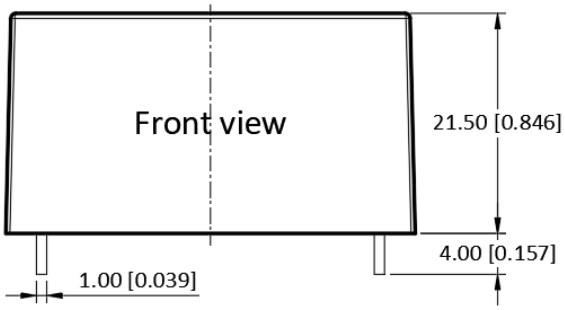
Figure 2. Circuit for EMC Enhancement

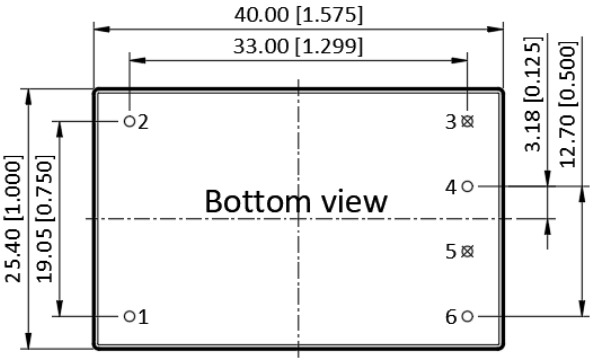
[Table 2] Recommended Components

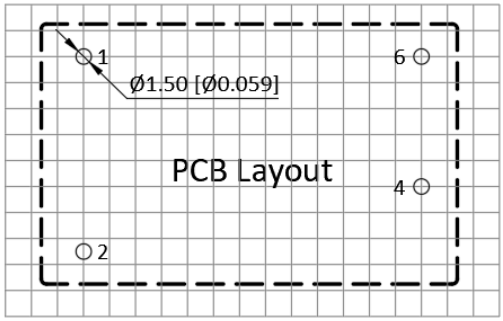
MOV	CX	R11	L1	LCM	GDT	CY1, CY2	
14D561K	0.1uF, 300VAC	12 Ohm, 5W	4.7uH, 2A	2.2mH	300V, 1KA	1nF, 400VAC	

*R1 ... R6 is the bleeder resistance of CX – 1.5Mohm, 150VDC
*Other components see the same in Table 1

Mechanical Specifications







Pin Definition

Pin #	Single Out
1	AC (L)
2	AC (N)
3	No Pin
4	$+V_{OUT}$
5	No Pin
6	$-V_{OUT}$

* Unless otherwise specified unit: mm [inch]
* General tolerance: ±1.00 [±0.040]
* Pin thickness: ±0.15 [±0.006]
* Pin distance: ±0.50 [±0.020]
* Footprint grid 2.54 x 2.54 mm