PMR05H Series

5W, Encapsulated, AC/DC Converters

Features

- Rated power: 5W Max
- Universal input: 85~305VAC, 47~63Hz
- Regulated single output
- Isolation voltage 4000VAC
- Typical efficiency 74 ... 81%
- Energy saving, standby power only 0.1W
- Operating temperature range: -40~+85°C
- RoHS compliance
- No external components required for operating
- Over voltage, over current and short circuit protection
- Certified to UL/EN/IEC 62368-1, OVC II, EN60335-1, EN61558-1, FCC, UKCA, CISPR32, EN55032 Class B with NO externals
- 5 year warranty

Overview

PMR05H 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 are certified to UL/EN/IEC 62368-1, OVC II, 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.
PMR05H-033	85~305VAC 100~430VDC	3.3	1250	74	4000
PMR05H-050		5	1000	78	3000
PMR05H-090		9	555	79	1200
PMR05H-120		12	416	80	1200
PMR05H-150		15	333	80	680
PMR05H-240		24	208	81	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	Conditions	Min.	Typ.	Max.	Unit
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	-	-	0.13 0.07	A
Inrush current Cold start	115VAC 230VAC	-	35 70	-	A
Leakage current	277VAC, 50Hz	-	0.25	0.6	mA RMS
Output voltage accuracy		-	±3	-	%
Line regulation	Full load	-	±0.5	-	%
Load regulation	I_{OUT}=0%~100% of $I_{OUT, rated}$	-	±1.0	-	%
Ripple and noise [2]	20MHz bandwidth	-	150	200	mVp-p
Temperature coefficiency		-	±0.02	-	%/°C
Standby power consumption		-	0.1	-	W
Hold up time Full load	115VAC 230VAC	-	10 50	-	mS
Over voltage protection Hiccup or clamping by zener diode	V_{OUT}=3.3, 5V V_{OUT}=9, 12V V_{OUT}=15V V_{OUT}=24V	-	-	8.5 20 24 34	VDC
Over current protection	Automatic recovery	110	-	-	% I_{OUT}
Short circuit protection		Hiccup mode, automatic recovery			
Minimum load		No minimum load is required			
Built in fuse		2A, 300V, slow blow			

Note [2]: Ripple and noise measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.

General Specifications

Parameters	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage Tested for 1 minute	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	-	105	°C
Storage humidity		10	-	95	%RH
Maximum case temperature		-	-	95	°C
Operating altitude	See "Derating Curve"	-	-	5000	m
Soldering temperature	5 seconds	-	260	-	°C
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Vibration		10Hz to 55Hz, 5G, 30 minutes along X, Y and Z axis			
MTBF	MIL-HDBK-217F	> 1,500,000 Hours, 25°C			
Overvoltage category		OVC II			
Safety class		Class II			
Safety approvals		UL/EN/IEC 62368-1, UKCA, EN 60335-1, EN 61558-1			
EMC standards	CISPR32, EN55032	Class B with "NO External Circuit"			
ESD	IEC/EN61000-4-2	Contact ±6kV, Air ±8kV, perf. Criteria B			
Radiated	IEC/EN61000-4-3	10V/m, perf. Criteria A			
EFT, Burst	IEC/EN61000-4-4	±2kV, perf. Criteria B ±4kV, perf. Criteria B [3]			
Surge	IEC/EN61000-4-5	Line to Line ±1kV, perf. Criteria B Line to Line ±2kV, perf. Criteria B [3]			
Conducted	IEC/EN61000-4-6	10Vrms, perf. Criteria A			
Voltage dips and interruptions	IEC/EN 61000-4-11	0%, 70%, perf. Criteria B			
Size, and Weight		45.7x25.4x21.5mm, 33g			
Packing info	300 PCS/Carton	427x325x250mm, 11.4Kg G.W.			

Note [3]: with External Circuit Figure 1 for EMC Enhancement

Recommended External Circuits

EMC Enhancement Circuit

*This external circuit is not required for general purpose, but for EMC enhancement where higher EFT and Surge rating is needed.

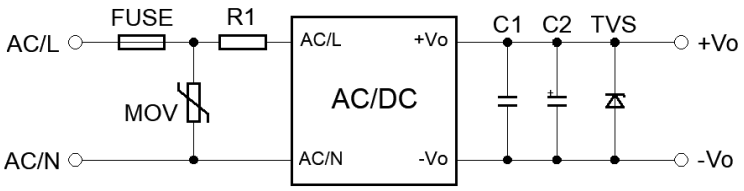


Figure 1. EMC Enhancement Circuit

Recommended Components [Table 1]

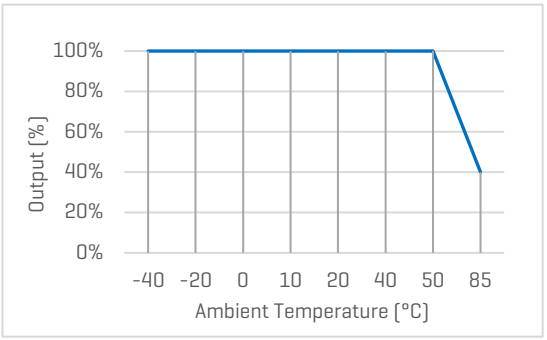
V_{OUT}	FUSE	MOV	R1	C1	C2	TVS
3.3, 5V	2A, 300V	S14K350	12 Ohm, 3W	1uF, 50V	220uF, 35V	SMBJ7.0A
9V	2A, 300V	S14K350	12 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ12A
12, 15V	2A, 300V	S14K350	12 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ20A
24V	2A, 300V	S14K350	12 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ30A

* For further questions contact one of our sales representatives.

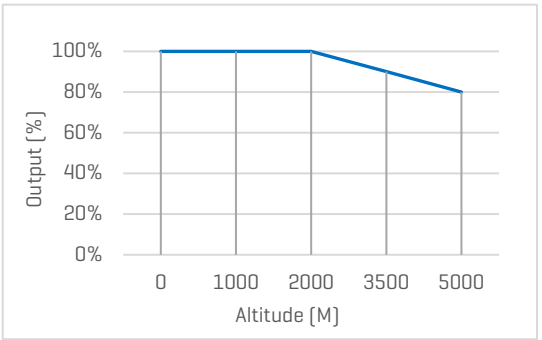
Characteristic Curves

Derating Curves

Output vs Ambient Temperature

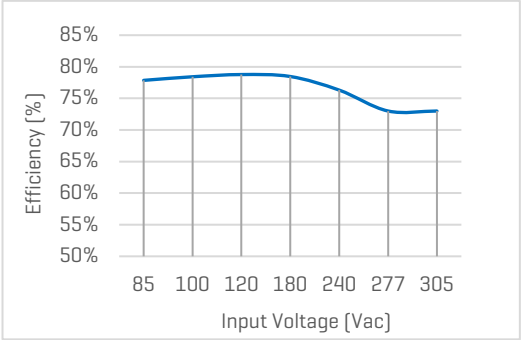


Output vs Altitude



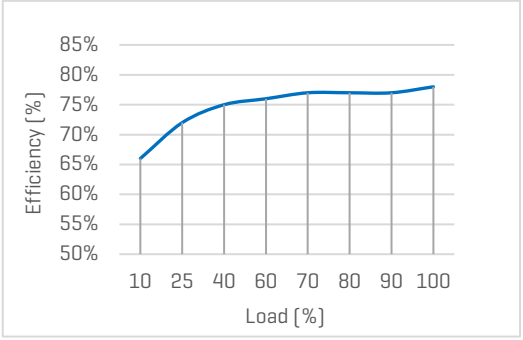
Efficiency vs Input Voltage

PMR05H-050, Full load



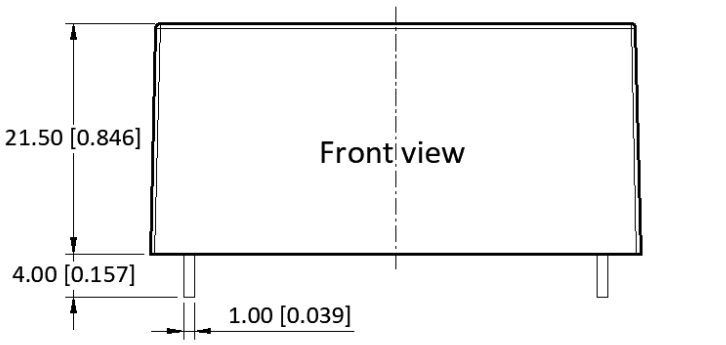
Efficiency vs Load

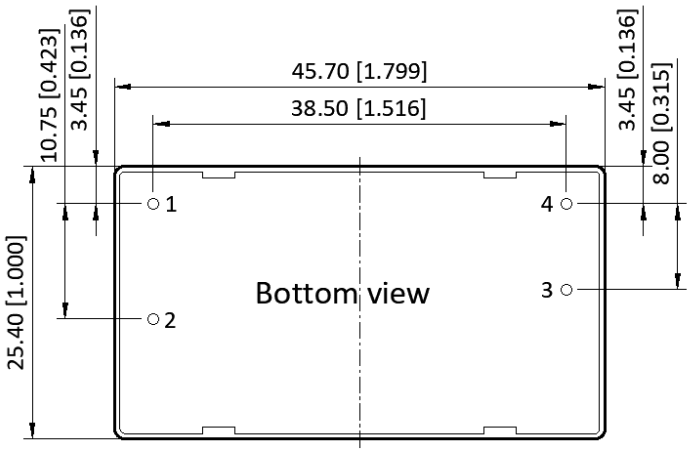
PMR05H-050, 230VAC

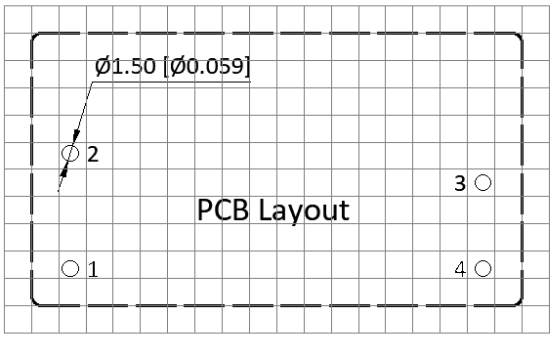


Mechanical Specifications

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: ±1.00 [±0.040]
* Pin thickness: ±0.15 [±0.006]
* Pin distance: ±0.50 [±0.020]
* Footprint grid 2.54 x 2.54 mm