



# 45W AC-DC High Reliable PCB-Mount Green Medical Power Module **MPM-45** series



(MPM-45)



(MPM-45-xxST)



ANSI/AAMI ES60601-1 BS EN/EN60601-1 IEC60601-1 TPTC004

## ■ Features

- 3.43"x2.05" compact size
- PCB chassis or screw terminal mounting version
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/BS EN/EN60601-1
- Suitable for BF application with appropriate system consideration
- No load power consumption < 0.1W
- Extremely low leakage current
- Wide operating temp. range -30 ~ +80°C
- EMI Class B without additional components
- Isolation Class II
- Protections: Short circuit / Overload / Over voltage
- No minimum load required
- Operating altitude up to 4000 meters( Note.7)
- 50W peak(10 sec.)
- 3 years warranty

## ■ Applications

- Portable medical device
- Mobile clinical workstation
- Medical computer monitor
- Medical examination instrument

## ■ GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

## ■ Description

MPM-45 is a 45W high density and small size (87x52x29.5mm) AC/DC PCB-mount type medical grade power supply. It features the operation for 80~264VAC, a low no load power consumption less than 0.1W, a high efficiency up to 92.5%, Class II (no FG) double insulation, outstanding dissipation, 2~5G anti-vibration by model, high EMC performance, 4KVAC isolation, etc. The design observes IEC/BS EN/EN60601-1 and ANSI/AAMI ES60601-1 version three with 2 x MOPP level and ultra-low leakage current (<100µA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

## ■ Model Encoding

**MPM - 45 - 5 ST**

{ Blank : PCB mounting style  
ST : Screw terminal style

Output voltage  
Rated wattage  
Series name



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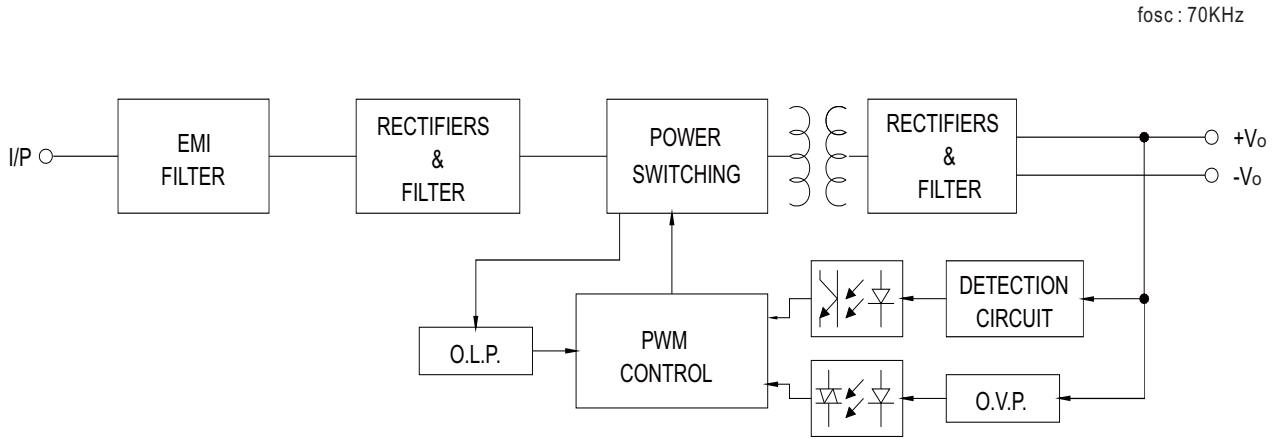
## SPECIFICATION

MODEL		MPM-45-5 <input type="checkbox"/>	MPM-45-12 <input type="checkbox"/>	MPM-45-15 <input type="checkbox"/>	MPM-45-24 <input type="checkbox"/>	MPM-45-48 <input type="checkbox"/>	
OUTPUT	DC VOLTAGE	5V	12V	15V	24V	48V	
	CURRENT	Peak(10 sec.)	8.8A	4.13A	3.3A	2.1A	1.05A
		Convection	8A	3.75A	3A	1.88A	0.94A
	RATED POWER	Peak(10 sec.) <small>Note.2</small>	44W	49.5W	49.5W	50.4W	50.4W
		Convection	40W	45W	45W	45.1W	45.1W
	RIPPLE & NOISE (max.) <small>Note.3</small>	80mVp-p	120mVp-p	120mVp-p	200mVp-p	240mVp-p	
	VOLTAGE TOLERANCE <small>Note.4</small>	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME	1000ms, 30ms/230VAC    1000ms, 30ms/115VAC at full load					
HOLD UP TIME (Typ.)	50ms/230VAC    12ms/115VAC at full load						
INPUT	VOLTAGE RANGE <small>Note.5</small>	80 ~ 264VAC    113 ~ 370VDC					
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY (Typ.)	88%	91.5%	92.5%	92.5%	92%	
	AC CURRENT (Typ.)	1.2A/115VAC    0.6A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START    30A/115VAC    60A/230VAC					
	LEAKAGE CURRENT (max.) <small>Note.6</small>	Touch current <100 $\mu$ A/264VAC					
PROTECTION	OVERLOAD	115% ~ 135% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	5.3 ~ 7.2V	12.6 ~ 16.2V	15.8 ~ 20.3V	25.2 ~ 32.4V	50.4 ~ 64.8V	
		Protection type : Shut down o/p voltage, re-power on to recover					
	OVER TEMPERATURE	Protection type : Shut down o/p voltage, re-power on to recover					
ENVIRONMENT	WORKING TEMP.	-30 ~ +80 $^{\circ}$ C (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP.	-40 ~ +85 $^{\circ}$ C					
	TEMP. COEFFICIENT	±0.03%/ $^{\circ}$ C (0 ~ 60 $^{\circ}$ C)					
	SOLDERING TEMPERATURE	Wave soldering: 265 $^{\circ}$ C, 5s (max.); Manual soldering: 390 $^{\circ}$ C, 3s (max.)					
	VIBRATION	Blank: 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes ST: 10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes					
	OPERATING ALTITUDE <small>Note.7</small>	4000 meters / OVC II					
SAFETY & EMC (Note 8)	SAFETY STANDARDS	IEC 60601-1:2005+A1, TUV BS EN/ EN 60601-1:2006+A1+A12+A2, ANSI/AAMI ES60601-1:2005+A2 CAN/CSA C22.2 No. 60601-1:2014+A2, EAC TP TC 004 approved; Design refer to BS EN/EN60335-1(by request)					
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP					
	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC					
	ISOLATION RESISTANCE	I/P-O/P: 100M Ohms / 500VDC / 25 $^{\circ}$ C / 70% RH					
	EMC EMISSION	Parameter	Standard			Test Level / Note	
		Conducted	BS EN/EN55011 (CISPR11)			Class B	
		Radiated	BS EN/EN55011 (CISPR11)			Class B	
		Harmonic Current	BS EN/EN61000-3-2			Class A	
		Voltage Flicker	BS EN/EN61000-3-3			----	
	EMC IMMUNITY	BS EN/EN55035, BS EN/EN60601-1-2					
		Parameter	Standard			Test Level / Note	
		ESD	BS EN/EN61000-4-2			Level 4, 15KV air ; Level 4, 8KV contact	
		RF field susceptibility	BS EN/EN61000-4-3			Level 3, 10V/m( 80MHz~2.7GHz ) Table 9, 9~28V/m( 385MHz~5.78GHz )	
		EFT bursts	BS EN/EN61000-4-4			Level 3, 2KV	
Surge susceptibility		BS EN/EN61000-4-5			Level 3, 1KV/Line-Line		
Conducted susceptibility		BS EN/EN61000-4-6			Level 3, 10V		
Magnetic field immunity		BS EN/EN61000-4-8			Level 4, 30A/m		
Voltage dip, interruption	BS EN/EN61000-4-11			>95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods			
OTHERS	MTBF	4590.4K hrs min.    Telcordia SR-332 (Bellcore) ; 563.4K hrs min.    MIL-HDBK-217F (25 $^{\circ}$ C)					
	DIMENSION	PCB mounting style : 87*52*29.5mm (L*W*H)    Screw terminal style : 109*52*33.5mm (L*W*H)					
	PACKING	PCB mounting style : 0.185Kg;60pcs/12.1Kg/0.94CUFT    Screw terminal style : 0.206Kg;50pcs/11.3Kg/0.56CUFT					
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25<math>^{\circ}</math>C of ambient temperature.</p> <p>2. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.</p> <p>3. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 <math>\mu</math>F &amp; 47 <math>\mu</math>F parallel capacitor.</p> <p>4. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>5. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>6. Touch current was measured from primary input to DC output.</p> <p>7. The ambient temperature derating of 3.5<math>^{\circ}</math>C/1000m with fanless models and of 5<math>^{\circ}</math>C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>8. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on <a href="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</a>)</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a></p>						

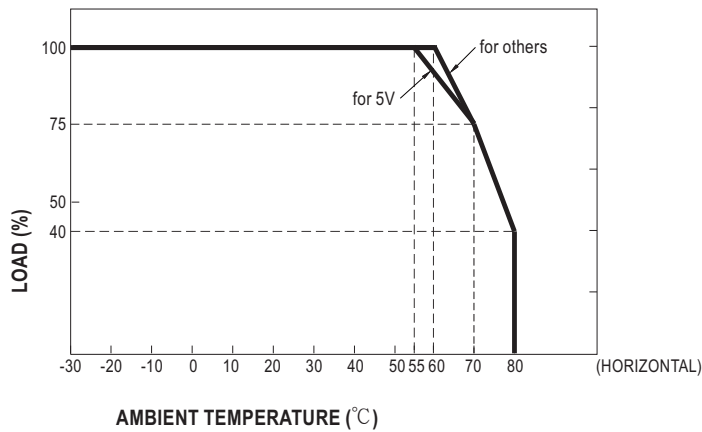


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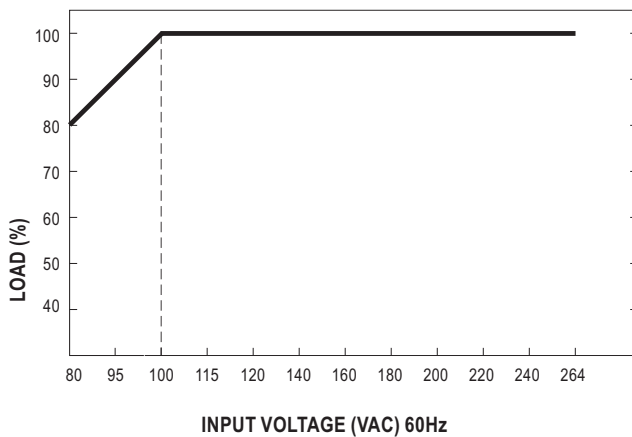
■ Block Diagram



■ Derating Curve



■ Output Derating VS Input Voltage

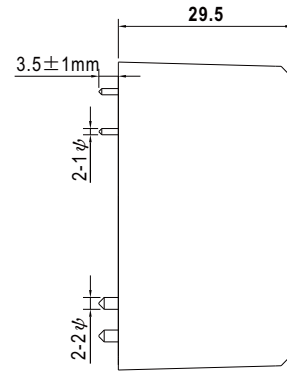
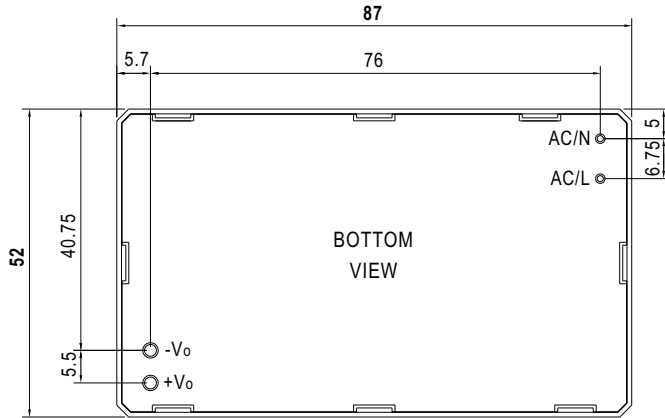




■ **Mechanical Specification**

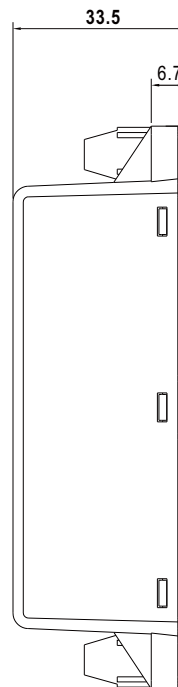
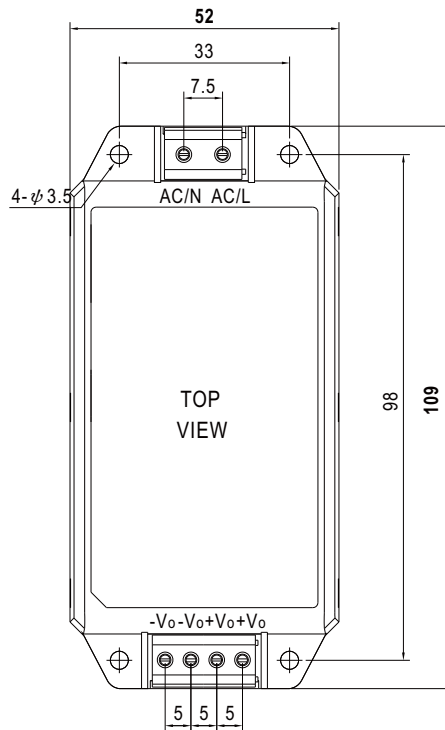
Case No. IRM60 Unit:mm

- PCB mounting style (MPM-45)



AC/L, AC/N P/N diameter: 1 φ  
+Vo, -Vo P/N diameter: 2 φ

- Screw terminal style (MPM-45-xxST)



■ **Installation Manual**

Please refer to : <http://www.meanwell.com/manual.html>