



5W High Reliable Green Medical Encapsulated Type

MPM-05 series

User's Manual



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



■ Features

- 1.8"x1" compact size
- 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 < 0.075W
- Extremely low leakage current
- Wide operating temp. range -40 ~ +85°C
- EMI class B for class II configuration
- Protections:
Short circuit / Overload / Over voltage / Over temperature
- No minimum load required
- Typical lifetime > 48K hours
- 3 years warranty

■ Applications

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

■ GTIN CODE

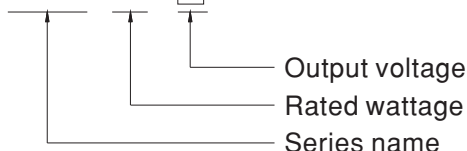
MW Search : <https://www.meanwell.com/serviceGTIN.aspx>

■ Description

MPM-05 is a 5W high density and small size (45.7*25.4*21.5mm) AC/DC module type medical grade power supply series offered in pin type. It features the operation for 80~264VAC, a low no load power consumption less than 0.075W, a high efficiency up to 82%, Class II (no FG) double insulation, outstanding dissipation and high lifespan thanks to the interior potting, 5G anti-vibration, high EMC performance, 4KVAC isolation, etc. The design observes IEC/BS EN/EN60601-1 and ANSI/AAMI ES60601-1 version three with 2xMOPP level and ultra-low leakage current (<80 μA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

■ Model Encoding

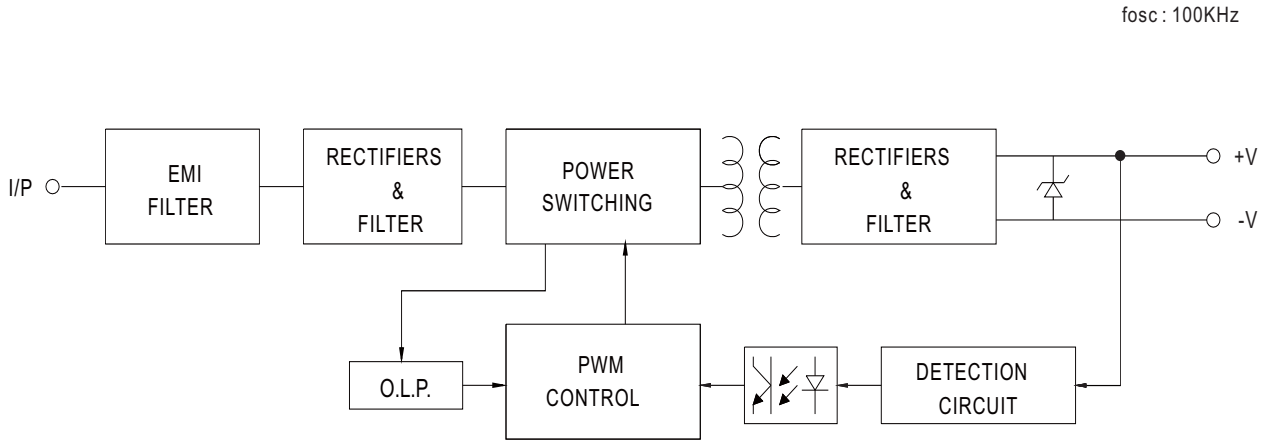
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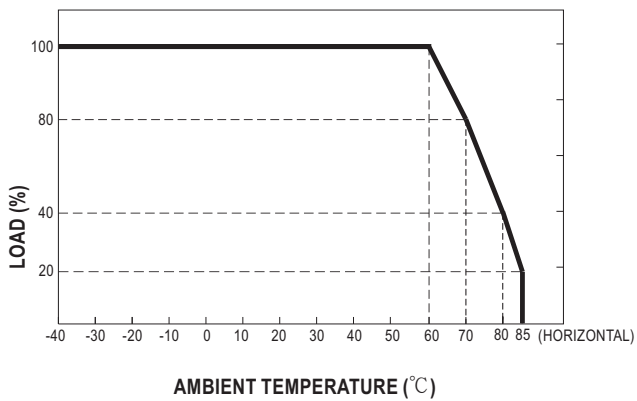
SPECIFICATION

MODEL	MPM-05-3.3	MPM-05-5	MPM-05-12	MPM-05-15	MPM-05-24		
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	
	RATED CURRENT	1.25A	1A	0.42A	0.33A	0.23A	
	CURRENT RANGE <small>Note.2</small>	0 ~ 1.25A	0 ~ 1A	0 ~ 0.42A	0 ~ 0.33A	0 ~ 0.23A	
	PEAK CURRENT	1.38A	1.1A	0.46A	0.36A	0.25A	
	RATED POWER	4.1W	5W	5W	5W	5.5W	
	PEAK LOAD(10sec.) <small>Note.3</small>	4.6W	5.5W	5.5W	5.4W	6W	
	RIPPLE & NOISE (max.) <small>Note.4</small>	100mVp-p	100mVp-p	150mVp-p	150mVp-p	180mVp-p	
	VOLTAGE TOLERANCE <small>Note.5</small>	±2.5%	±2.5%	±2.5%	±2.5%	±2.5%	
	LINE REGULATION	±0.3%	±0.3%	±0.3%	±0.3%	±0.3%	
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	SETUP, RISE TIME	1000ms, 30ms/230VAC 1000ms, 30ms/115VAC at full load					
HOLD UP TIME (Typ.)	40ms/230VAC 12ms/115VAC at full load						
INPUT	VOLTAGE RANGE <small>Note.6</small>	80 ~ 264VAC 113V~370VDC					
	FREQUENCY RANGE	47 ~ 440Hz					
	EFFICIENCY (Typ.)	74%	78%	80%	81%	82%	
	AC CURRENT (Typ.)	0.2A/115VAC 0.1A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START 25A/115VAC 45A/230VAC					
	LEAKAGE CURRENT (max.) <small>Note.7</small>	Touch current <80μA/264VAC					
PROTECTION	OVERLOAD	110% ~ 180% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	3.8 ~ 5V	5.8 ~ 6.8V	13.8 ~ 16.2V	17.3 ~ 20.3V	27.6 ~ 32.4V	
	OVER TEMPERATURE	Protection type : Shut down o/p voltage, recovers automatically after temperature goes down					
ENVIRONMENT	WORKING TEMP.	-40 ~ +85°C (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +100°C, 10 ~ 95% RH non-condensing					
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 60°C)					
	SOLDERING TEMPERATURE	Wave soldering: 265°C, 5s (max.); Manual soldering: 390°C, 3s (max.)					
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes					
	OPERATING ALTITUDE <small>Note.8</small>	5000 meters					
SAFETY & EMC (Note 9)	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°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			100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods			
OTHERS	MTBF	9337.3K hrs min. Telcordia SR-332 (Bellcore) ; 1799.5K hrs min. MIL-HDBK-217F (25°C)					
	DIMENSION	45.7*25.4*21.5mm (L*W*H) or 1.8*1.0*0.85" inch					
	PACKING	0.035Kg; 270pcs/10.5Kg/0.94CUFT					
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. No minimum load required.</p> <p>3. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power</p> <p>4. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μF & 47μF parallel capacitor.</p> <p>5. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>6. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>7. Touch current was measured from primary input to DC output.</p> <p>8. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>9. 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 https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf)</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p>						

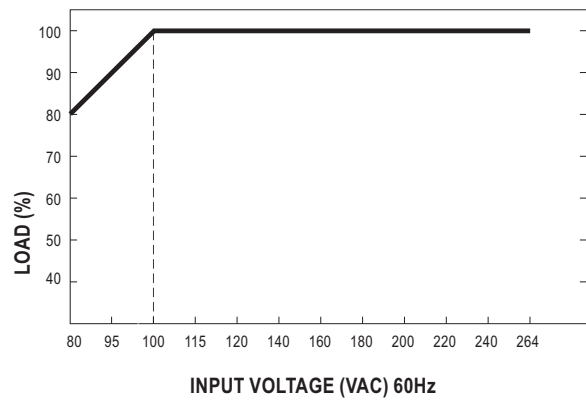
■ Block Diagram



■ Derating Curve



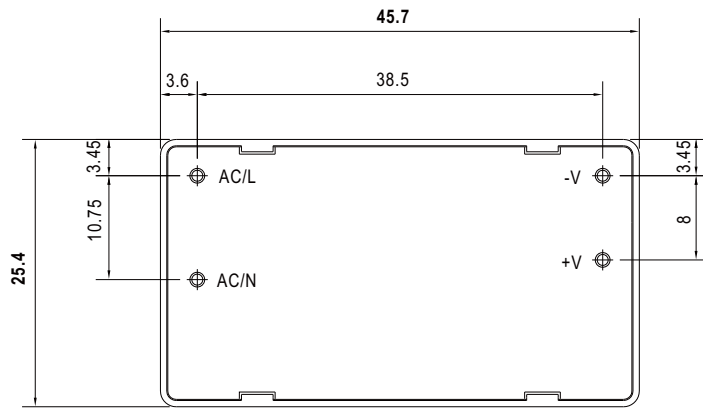
■ Output Derating VS Input Voltage



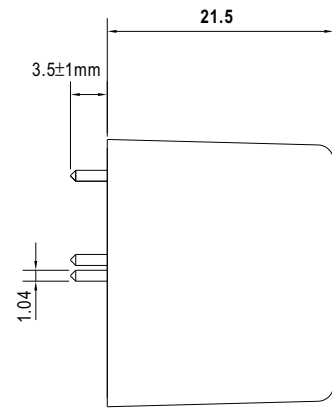
■ Mechanical Specification

(Unit: mm , tolerance $\pm 0.5\text{mm}$)

Case No.222A



BOTTOM VIEW



SIDE VIEW

■ Installation Manual

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