



BS EN/EN60335-1 ANSI/AAMI ES60601-1 BS EN/EN60601-1 IEC60601-1 TPTC004

## ■ Features

- 2.06"x1.07" 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 < 0.1W
- Extremely low leakage current
- Wide operating temp. range -35 ~ +85°C
- EMI class B for class II configuration
- Protections:  
Short circuit / Overload / Over voltage / Over temperature
- No minimum load required
- 3 years warranty

## ■ Applications

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

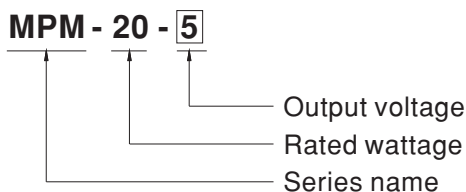
## ■ GTIN CODE

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

## ■ Description

MPM-20 is a 20W high density and small size (52.4\*27.2\*24mm) AC/DC module type medical power supply series offered in pin type. It features the operation for 80~264VAC, a low no load power consumption less than 0.1W, a high efficiency up to 87%, Class II (no FG) double insulation, outstanding dissipation and high lifespan thanks to the interior potting, 2G 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



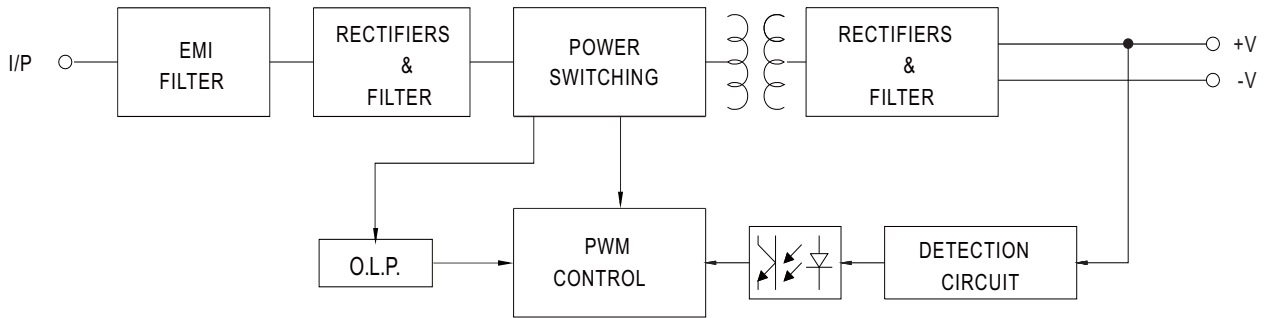


## SPECIFICATION

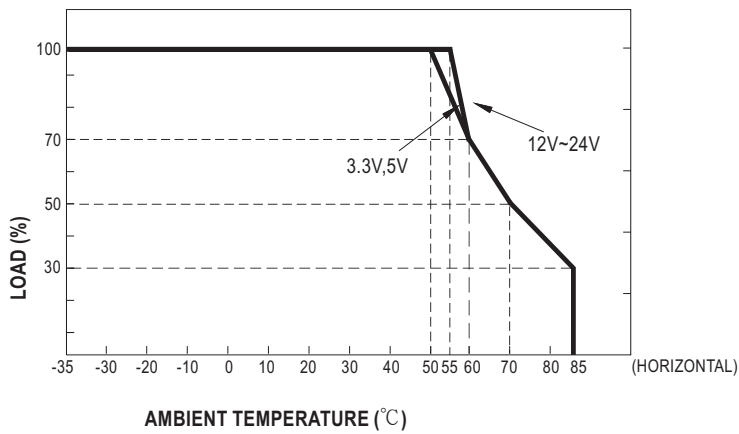
MODEL	MPM-20-3.3	MPM-20-5	MPM-20-12	MPM-20-15	MPM-20-24	
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V
	RATED CURRENT	4.5A	4A	1.8A	1.4A	0.9A
	CURRENT RANGE <small>Note.2</small>	0 ~ 4.5A	0 ~ 4A	0 ~ 1.8A	0 ~ 1.4A	0 ~ 0.9A
	PEAK CURRENT	4.95A	4.4A	1.98A	1.54A	0.99A
	RATED POWER	14.9W	20W	21.6W	21W	21.6W
	PEAK LOAD(10sec.) <small>Note.3</small>	16.3W	22W	23.8W	23.1W	23.8W
	RIPPLE & NOISE (max.) <small>Note.4</small>	150mVp-p	150mVp-p	150mVp-p	180mVp-p	180mVp-p
	VOLTAGE TOLERANCE <small>Note.5</small>	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.3%	±0.3%	±0.3%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1500ms, 30ms/230VAC      1500ms, 30ms/115VAC at full load				
HOLD UP TIME (Typ.)	40ms/230VAC      10ms/115VAC at full load					
INPUT	VOLTAGE RANGE <small>Note.6</small>	80 ~ 264VAC	113V~370VDC			
	FREQUENCY RANGE	47 ~ 440Hz				
	EFFICIENCY (Typ.)	81%	85%	85.5%	87%	87%
	AC CURRENT (Typ.)	0.75A/115VAC	0.5A/230VAC			
	INRUSH CURRENT (Typ.)	COLD START	20A/115VAC	45A/230VAC		
LEAKAGE CURRENT (max.) <small>Note.7</small>	Touch current <80 $\mu$ A/264VAC					
PROTECTION	OVERLOAD	110% ~ 150% 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 off o/p voltage, clamping by zener diode Protection type : Shut down o/p voltage, recovers automatically after temperature goes down				
ENVIRONMENT	WORKING TEMP.	-35 ~ +85 $^{\circ}$ C (Refer to "Derating Curve")				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85 $^{\circ}$ C, 10 ~ 95% RH non-condensing				
	TEMP. COEFFICIENT	±0.03%/ $^{\circ}$ C (0 ~ 55 $^{\circ}$ C)				
	SOLDERING TEMPERATURE	Wave soldering: 265 $^{\circ}$ C, 5s (max.); Manual soldering: 390 $^{\circ}$ C, 3s (max.)				
	VIBRATION	10 ~ 500Hz, 2G 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/A2:2021, CAN/CSA C22.2 No. 60601-1:2014+A2, IEC 60335-1:2010/AMD2:2016, Dekra BS EN/ EN 60335-1:2012+A11+A13+A14+A15, EAC TP TC 004 approved				
	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 emission	BS EN/EN55011 (CISPR11)			Class B
		Radiated emission	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	7319.8K hrs min.    Telcordia SR-332 (Bellcore) ; 1210.0K hrs min.    MIL-HDBK-217F (25 $^{\circ}$ C)				
	DIMENSION	52.4*27.2*24mm (L*W*H) or 2.06**1.07**0.94" inch				
	PACKING	0.056Kg; 240pcs/14.4Kg/0.94CUFT				
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. 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 &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>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<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>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 <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>					

### Block Diagram

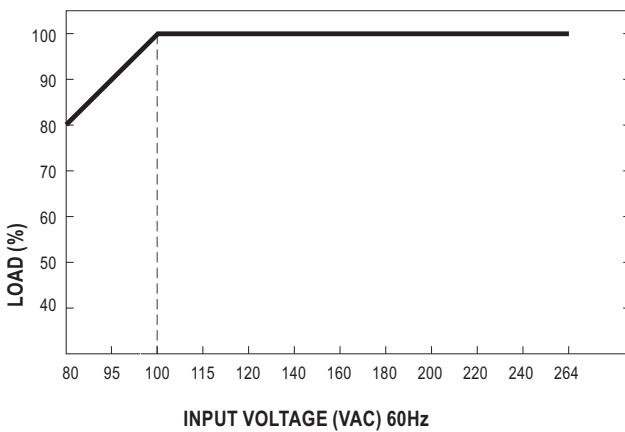
fosc: 100KHz



### Derating Curve



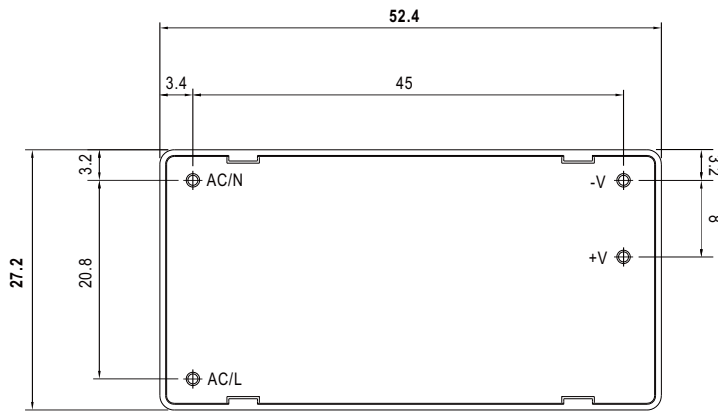
### Output Derating VS Input Voltage



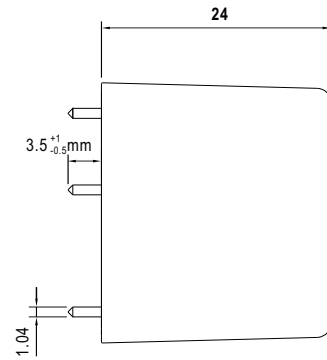
■ **Mechanical Specification**

(Unit: mm , tolerance  $\pm 0.5$ mm)

Case No.219A



BOTTOM VIEW



P/N diameter:1.04

SIDE VIEW

■ **Installation Manual**

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