



E-Star Power Development Co., Ltd. (E-STAR)  
 1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City  
 22069, Taiwan (R.O.C.)  
 Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

**10W Module Type Medical power supply > MPM-10**



**■ Features**

- 1.8"x1" compact size
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/EN60601-1
- Suitable for BF application with appropriate system consideration
- No load power consumption < 0.075W
- Extremely low leakage current
- Wide operating temp. range -30 ~ +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**

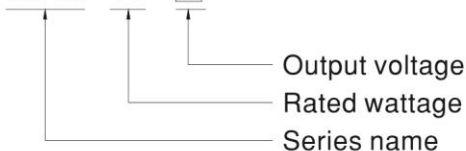
- Portable medical device
- Mobile clinical workstation
- Medical computer monitor
- Medical examination instrument

**■ Description**

MPM-10 is a 10W 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 84%, 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/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**

**MPM - 10 - 5**





**10W Module Type Medical power supply > MPM-10**

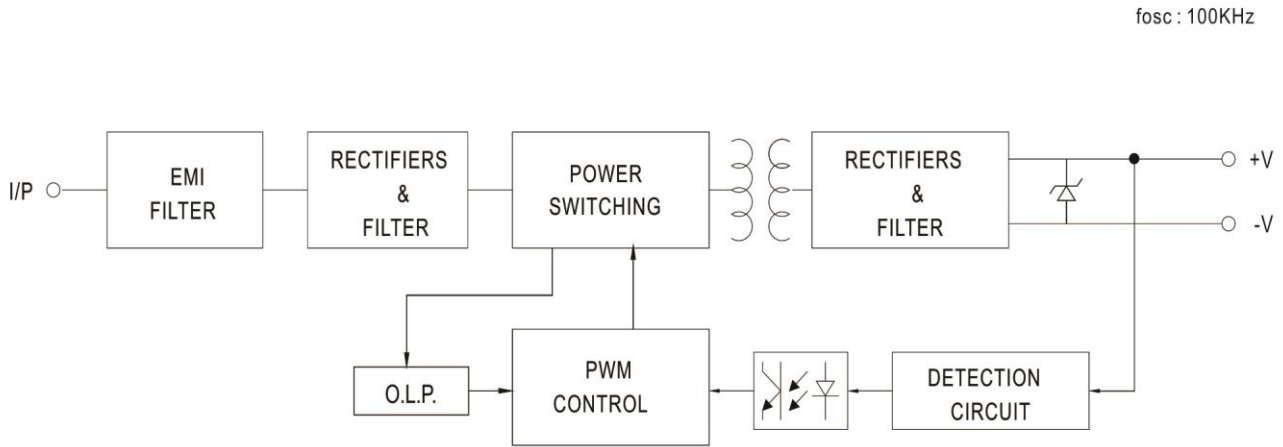
**SPECIFICATION**

MODEL	MPM-10-3.3	MPM-10-5	MPM-10-12	MPM-10-15	MPM-10-24				
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V			
	RATED CURRENT	2.5A	2A	0.85A	0.67A	0.42A			
	CURRENT RANGE Note.2	0 ~ 2.5A	0 ~ 2A	0 ~ 0.85A	0 ~ 0.67A	0 ~ 0.42A			
	PEAK CURRENT	2.75A	2.2A	0.94A	0.74A	0.46A			
	RATED POWER	8.3W	10W	10.2W	10W	10W			
	PEAK LOAD(10sec.) Note.3	9W	11W	11.3W	11.1W	11W			
	RIPPLE & NOISE (max.) Note.4	120mVp-p	100mVp-p	180mVp-p	180mVp-p	200mVp-p			
	VOLTAGE TOLERANCE Note.5	±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 8ms/115VAC at full load								
INPUT	VOLTAGE RANGE Note.6	80 ~ 264VAC							
	FREQUENCY RANGE	47 ~ 440Hz							
	EFFICIENCY (Typ.)	78%	81%	83%	83%	84%			
	AC CURRENT (Typ.)	0.3A/115VAC 0.2A/230VAC							
	INRUSH CURRENT (Typ.)	COLD START 25A/115VAC 45A/230VAC							
LEAKAGE CURRENT (max.) Note.7	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.	-30 ~ +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	260°C ± 5°C/10sec.max.							
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes							
OPERATING ALTITUDE Note.8	5000 meters								
SAFETY & EMC (Note 9)	SAFETY STANDARDS	IEC60601-1, EN60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22 3 <sup>rd</sup> Edition approved ; Design refer to EN60335-1							
	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	EN55011 (CISPR11)			Class B			
		Radiated	EN55011 (CISPR11)			Class B			
		Harmonic Current	EN61000-3-2			Class A			
	Voltage Flicker	EN61000-3-3			-----				
	EMC IMMUNITY	EN60601-1-2	Parameter			Standard		Test Level / Note	
		ESD	EN61000-4-2			Level 4, 15KV air ; Level 4, 8KV contact			
		RF field susceptibility	EN61000-4-3			Level 3, 10V/m( 80MHz~2.7GHz ) Table 9, 9~28V/m( 385MHz~5.78GHz )			
		EFT bursts	EN61000-4-4			Level 3, 2KV			
Surge susceptibility		EN61000-4-5			Level 3, 1KV/Line-Line				
Conducted susceptibility		EN61000-4-6			Level 3, 10V				
Magnetic field immunity		EN61000-4-8			Level 4, 30A/m				
Voltage dip, interruption		EN61000-4-11			100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods				
OTHERS	MTBF	1756.2Khrs 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/0.97CUFT							
NOTE	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>No minimum load required.</li> <li>33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power</li> <li>Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µf &amp; 47µf parallel capacitor.</li> <li>Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>Derating may be needed under low input voltages. Please check the derating curve for more details.</li> <li>Touch current was measured from primary input to DC output.</li> <li>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).</li> <li>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."</li> </ol>								

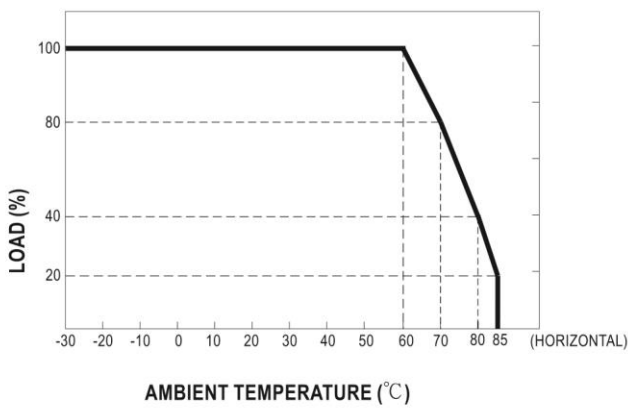


**10W Module Type Medical power supply > MPM-10**

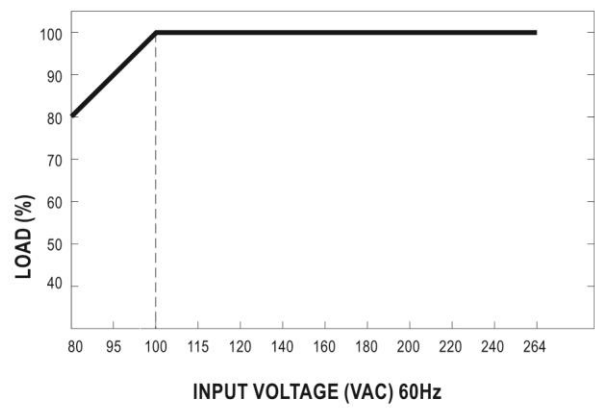
■ Block Diagram



■ Derating Curve



■ Output Derating VS Input Voltage





E-Star Power Development Co., Ltd. (E-STAR)

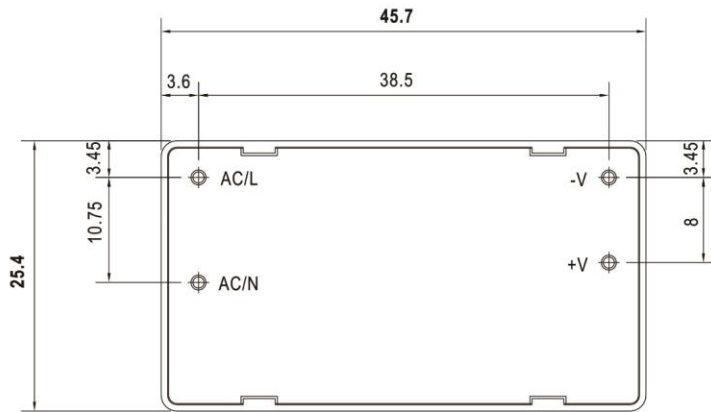
1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City  
22069, Taiwan (R.O.C.)

Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

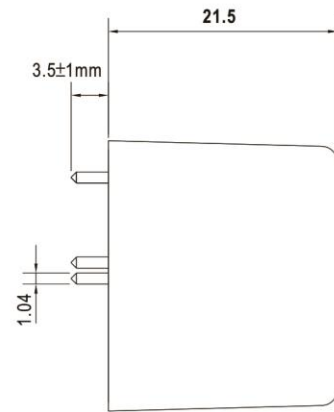
**10W Module Type Medical power supply > MPM-10**

■ Mechanical Specification

Case No.222A Unit:(mm)



BOTTOM VIEW



SIDE VIEW