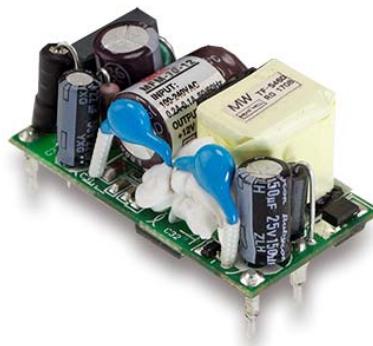




10W High Reliable Green Medical On Board Type

MFM-10 series



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



■ Features

- 1.65"x0.88" 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 -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

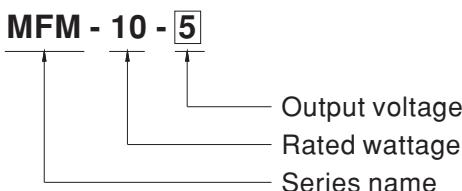
■ Applications

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

■ Description

MFM-10 is a 10W high density and small size (42*22.3*20.5mm) AC/DC on board type medical grade power supply series. 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, 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 μ A). It is very suitable for BF (patient contact) type medical device or relevant equipment.

■ Model Encoding



SPECIFICATION

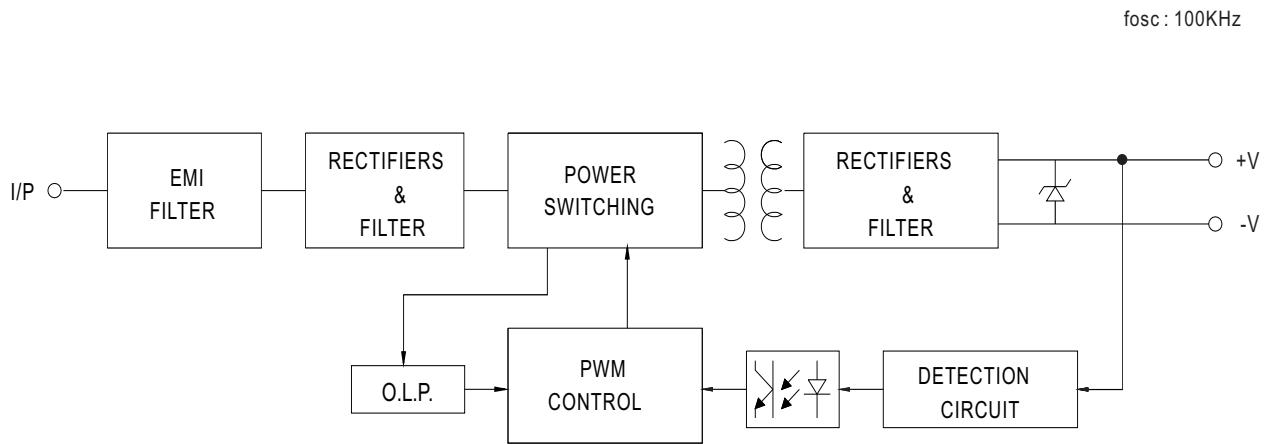
MODEL	MFM-10-3.3	MFM-10-5	MFM-10-12	MFM-10-15	MFM-10-24									
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V									
	RATED CURRENT	2.5A	2A	0.85A	0.67A									
	CURRENT RANGE Note.2	0 ~ 2.5A	0 ~ 2A	0 ~ 0.85A	0 ~ 0.67A									
	PEAK CURRENT	2.75A	2.2A	0.94A	0.74A									
	RATED POWER	8.3W	10W	10.2W	10W									
	PEAK LOAD(10sec.) Note.3	9W	11W	11.3W	11W									
	RIPLE & NOISE (max.) Note.4	120mVp-p	100mVp-p	180mVp-p	180mVp-p									
	VOLTAGE TOLERANCE Note.5	±2.5%	±2.5%	±2.5%	±2.5%									
	LINE REGULATION	±0.3%	±0.3%	±0.3%	±0.3%									
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	±0.5%									
INPUT	SETUP, RISE TIME	1000ms, 30ms/230VAC	1000ms, 30ms/115VAC at full load											
	HOLD UP TIME (Typ.)	40ms/230VAC	8ms/115VAC at full load											
PROTECTION	VOLTAGE RANGE Note.6	80 ~ 264VAC												
	FREQUENCY RANGE	47 ~ 440Hz												
	EFFICIENCY (Typ.)	78%	81%	83%	83%									
	AC CURRENT (Typ.)	0.3A/115VAC	0.2A/230VAC											
	INRUSH CURRENT (Typ.)	COLD START 25A/115VAC	45A/230VAC											
ENVIRONMENT	LEAKAGE CURRENT (max.) Note.7	Touch current <80μA/264VAC												
	OVERLOAD	110% ~ 180% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed												
	OVER VOLTAGE	3.8 ~ 5V	5.75 ~ 6.8V	13.8 ~ 16.2V	17.3 ~ 20.3V									
	OVER TEMPERATURE	Protection type : Shut off o/p voltage, clamping by zener diode												
SAFETY & EMC (Note 9)	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 ~ 50°C)												
	SOLDERING TEMPERATURE	260°C ±5°C/10sec.max.												
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes												
OTHERS	OPERATING ALTITUDE Note.8	5000 meters												
	SAFETY STANDARDS	IEC60601-1, BS EN/EN60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22 3 rd Edition 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										
	EMC IMMUNITY	Voltage Flicker	BS EN/EN61000-3-3	-----										
		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										
NOTE	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											
	MTBF	1756.2Khrs min. MIL-HDBK-217F (25°C)												
	DIMENSION	42*22.3*20.5mm (L*W*H) or 1.65" * 0.88" * 0.80" inch												
NOTE	PACKING	0.018Kg; 270pcs/5.8Kg/0.94CUFT												
	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.													
	2. No minimum load required.													
	3. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power													
	4. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor.													
	5. Tolerance : includes set up tolerance, line regulation and load regulation.													
	6. Derating may be needed under low input voltages. Please check the derating curve for more details.													
	7. Touch current was measured from primary input to DC output.													
	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).													
	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 http://www.meanwell.com)													
	※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx													



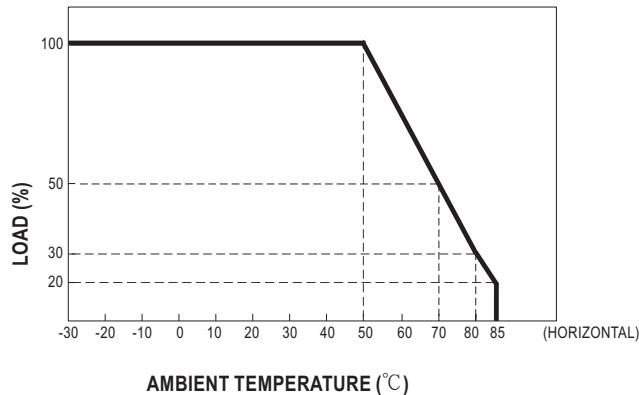
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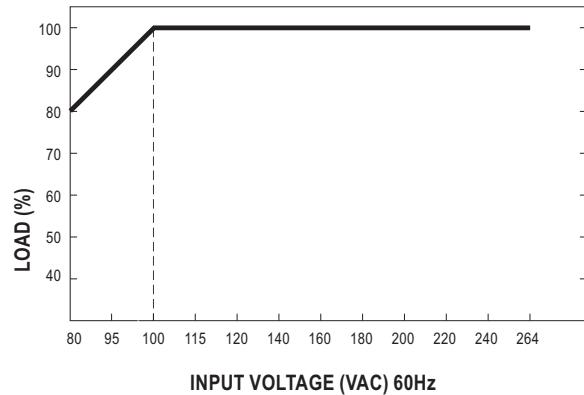
■ Block Diagram



■ Derating Curve

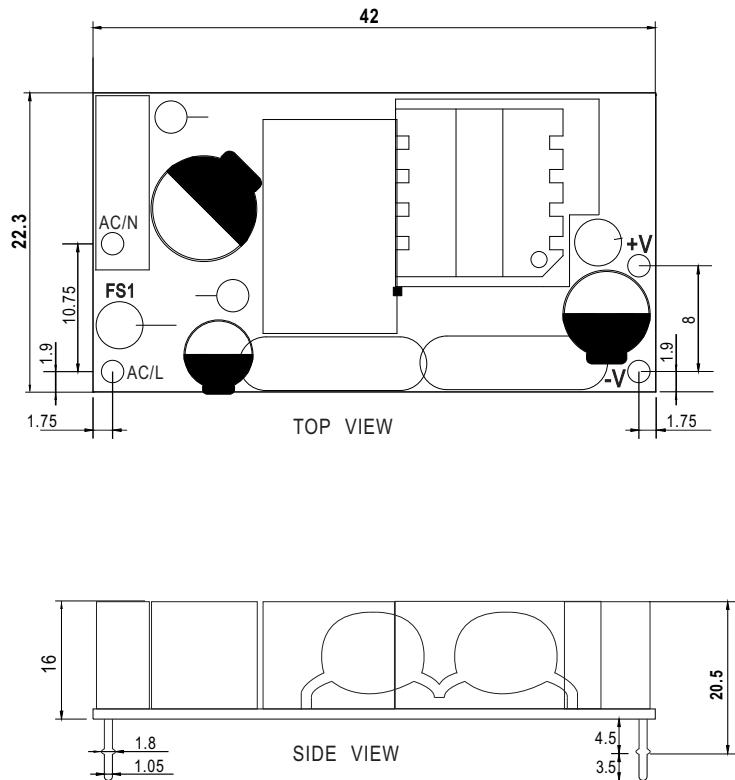


■ Output Derating VS Input Voltage



■ Mechanical Specification

Unit:mm

**■ Installation Manual**

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