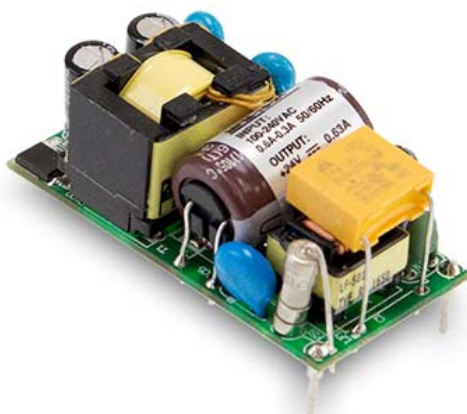




EN60335-1



ANSI/AAMI ES60601-1



EN60601-1



IEC60601-1 TPTC004



Features

- 1.93"x0.94" 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<0.1W
- 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

Description

MFM-20 is a 20W high density and small size (49*23.8*23mm) AC/DC on board type medical power supply series. 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, 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 μ A). It is very suitable for BF (patient contact) type medical device or relevant equipment.

Model Encoding

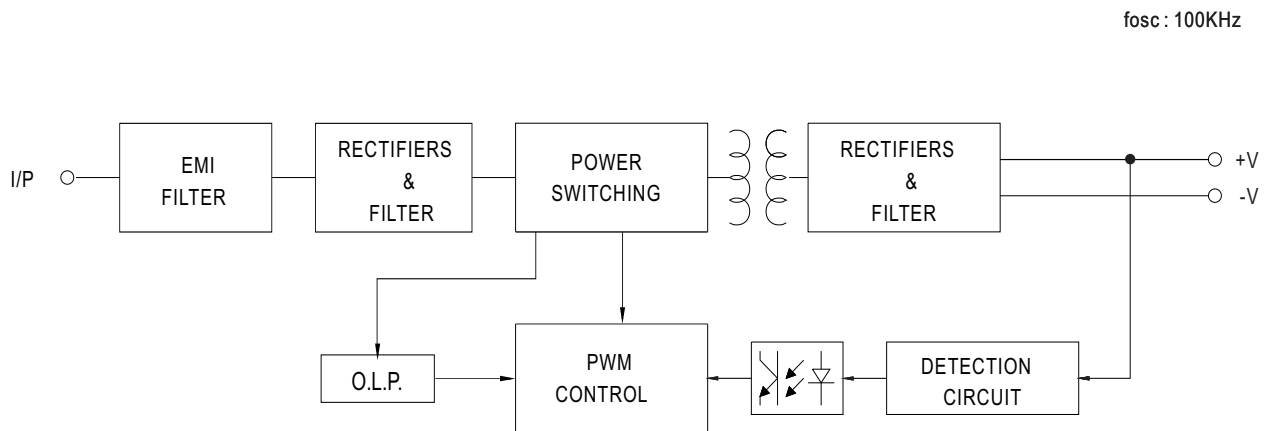
MFM - 20 - 5

Output voltage
Rated wattage
Series name

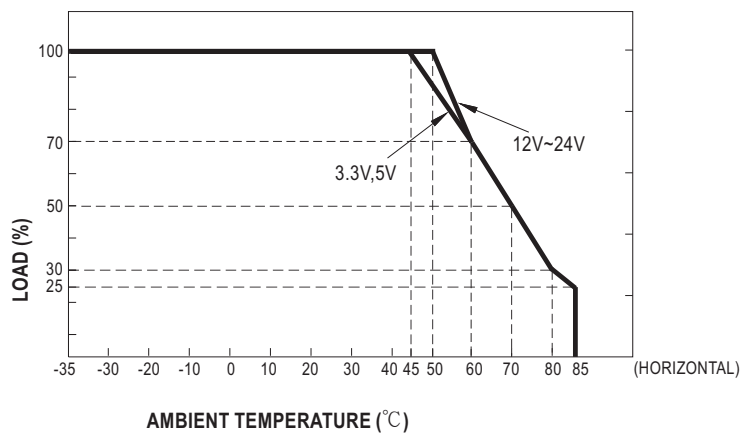
SPECIFICATION

MODEL		MFM-20-3.3	MFM-20-5	MFM-20-12	MFM-20-15	MFM-20-24	
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	
	RATED CURRENT	4.5A	4A	1.8A	1.4A	0.9A	
	CURRENT RANGE Note.2	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.) Note.3	16.3W	22W	23.8W	23.1W	23.8W	
	RIPPLE & NOISE (max.) Note.4	150mVp-p	150mVp-p	150mVp-p	180mVp-p	180mVp-p	
	VOLTAGE TOLERANCE Note.5	±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 Note.6	80 ~ 264VAC					
	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.) Note.7	Touch current <80 μ 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℃ (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing					
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)					
	SOLDERING TEMPERATURE	260℃ ±5℃/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, IEC60335-1, EN60335-1, EAC TP TC 004,UL ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22 3 rd Edition approved					
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP					
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC					
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH					
	EMC EMISSION	Parameter	Standard			Test Level / Note	
		Conducted emission	EN55011 (CISPR11)			Class B	
		Radiated emission	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	1210Khrs min. MIL-HDBK-217F (25℃)					
	DIMENSION	49*23.8*23mm (L*W*H) or 1.93 **0.94**0.91" inch					
	PACKING	0.028Kg; 200pcs/6.6Kg/0.94CUFT					

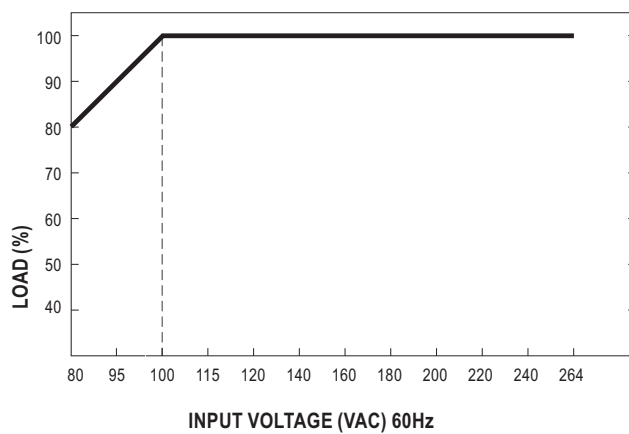
■ Block Diagram



■ Derating Curve

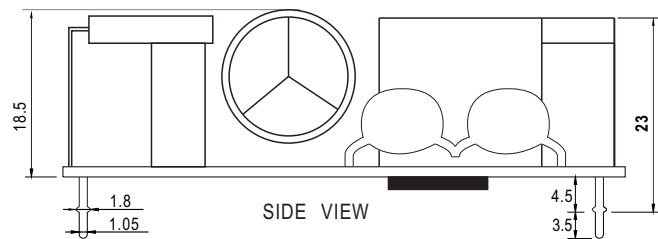
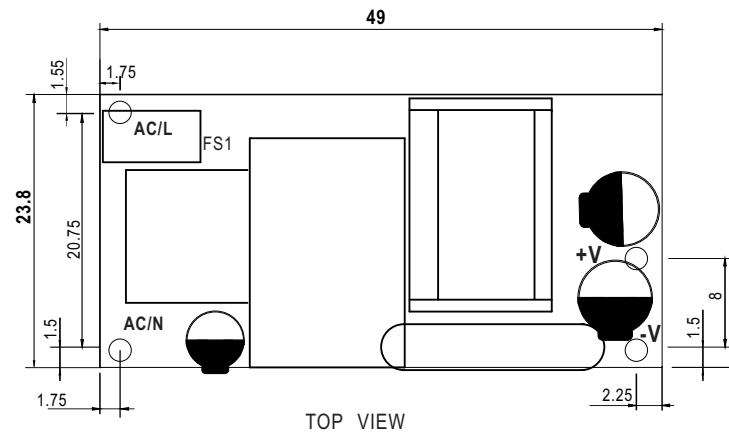


■ Output Derating VS Input Voltage



Mechanical Specification

Unit: inch(mm)



Installation Manual

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