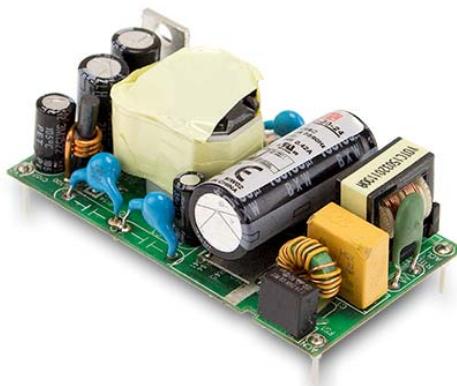




30W High Reliable Green Medical On Board Type

MFM-30 series



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



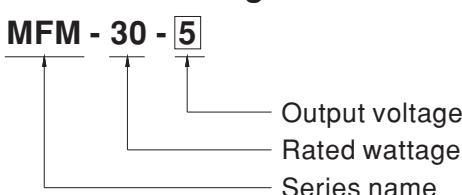
## ■ Features

- 2.58" x 1.38" 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
- No minimum load required
- 3 years warranty

## ■ Description

MFM-30 is a 30W high density and small size (65.5x35x23mm) AC/DC on board type medical power supply series offered in pin type. It features the operation for 80~264VAC, a low no load power consumption less than 0.075W, a high efficiency up to 91%, Class II (no FG) double insulation, outstanding dissipation, 3G anti-vibration, high EMC performance, 4KVAC isolation, etc. The design observes IEC/BS EN/EN60601-1 and ANSI/AAMI ES60601-1 version three with 2 x MOPP level and ultra-low leakage current (< 80µA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

## ■ Model Encoding



## ■ Applications

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

## SPECIFICATION

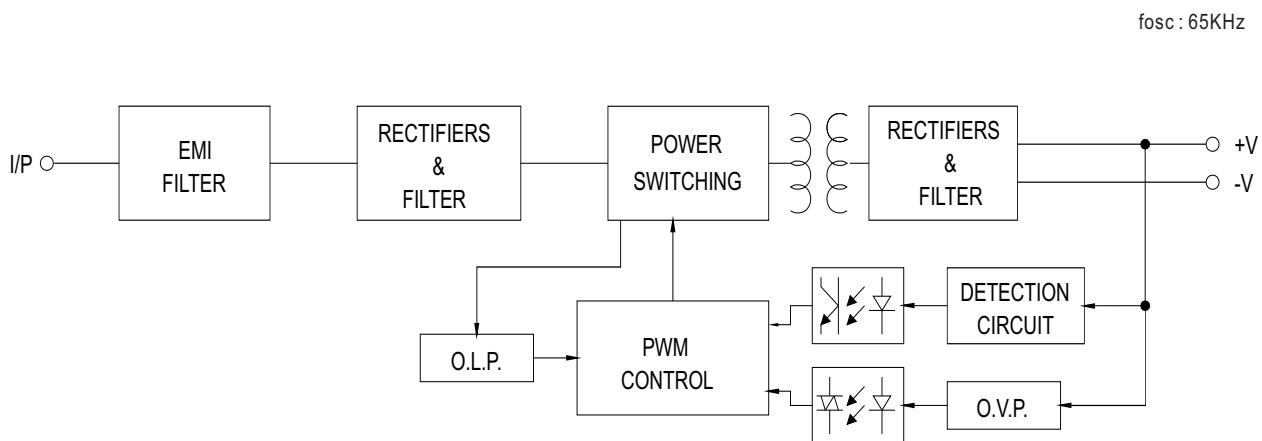
MODEL	MFM-30-3.3	MFM-30-5	MFM-30-12	MFM-30-15	MFM-30-24	MFM-30-48			
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V			
	RATED CURRENT	6A	6A	2.5A	2A	1.3A			
	CURRENT RANGE Note.2	0 ~ 6A	0 ~ 6A	0 ~ 2.5A	0 ~ 2A	0 ~ 1.3A			
	PEAK CURRENT	7.8A	6.9A	2.9A	2.3A	1.5A			
	RATED POWER	19.8W	30W	30W	30W	30.2W			
	PEAK LOAD(10sec.) Note.3	25.7W	34.5W	34.8W	34.5W	36W			
	RIPLE & NOISE (max.) Note.4	80mVp-p	80mVp-p	120mVp-p	120mVp-p	200mVp-p			
	VOLTAGE TOLERANCE Note.5	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%			
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%			
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%			
SETUP, RISE TIME		500ms, 30ms/230VAC	500ms, 30ms/115VAC at full load						
HOLD UP TIME (Typ.)		40ms/230VAC	12ms/115VAC at full load						
INPUT	VOLTAGE RANGE Note.6	80 ~ 264VAC							
	FREQUENCY RANGE	47 ~ 63Hz							
	EFFICIENCY (Typ.)	82.5%	86.5%	90%	89%	90%			
	AC CURRENT (Typ.)	0.75A/115VAC	0.5A/230VAC						
	INRUSH CURRENT (Typ.)	COLD START 25A/115VAC	45A/230VAC						
LEAKAGE CURRENT (max.) Note.7		Touch current <80μA/264VAC							
PROTECTION	OVERLOAD	115% ~ 165% rated output power							
		Protection type : Hiccup mode, recovers automatically after fault condition is removed							
OVER VOLTAGE	3.5 ~ 4.5V	5.3 ~ 6.8V	12.6 ~ 16.2V	15.8 ~ 20.3V	25.2 ~ 32.4V	50.4 ~ 64V			
	Protection type : Shut down o/p voltage, re-power on to recover								
ENVIRONMENT	WORKING TEMP.	-40 ~ +85°C (Refer to "Derating Curve")							
	WORKING HUMIDITY	20 ~ 90% RH non-condensing							
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 60°C)							
	SOLDERING TEMPERATURE	260°C ±5°C/10sec.max.							
	VIBRATION	10 ~ 500Hz, 3G 10min./1cycle, period for 60min. each along X, Y, Z axes							
SAFETY & EMC (Note 9)	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 3rd 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		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	779Khrs min. MIL-HDBK-217F (25°C)							
	DIMENSION	65.5*35*23mm (L*W*H) or 2.58" * 1.38" * 0.90" inch							
	PACKING	0.053Kg; 144pcs/8.6Kg/0.97CUFT							
NOTE	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 0.1 μf & 47 μf 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 <a href="http://www.meanwell.com">http://www.meanwell.com</a> ) ※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a>								



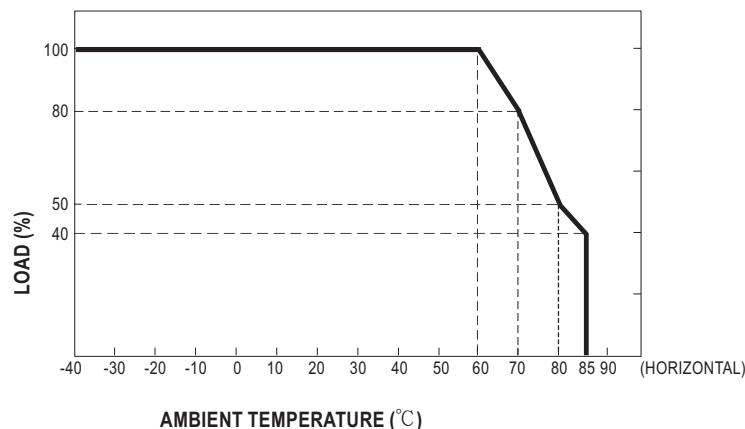
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**MFM-30** series

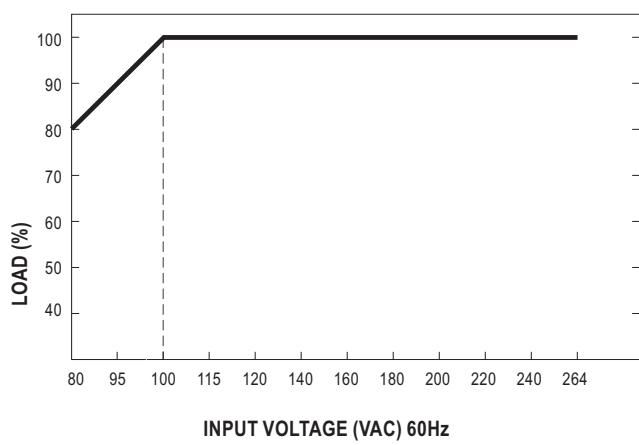
■ Block Diagram



■ Derating Curve

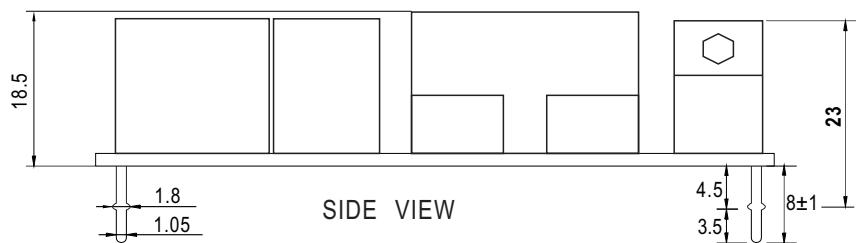
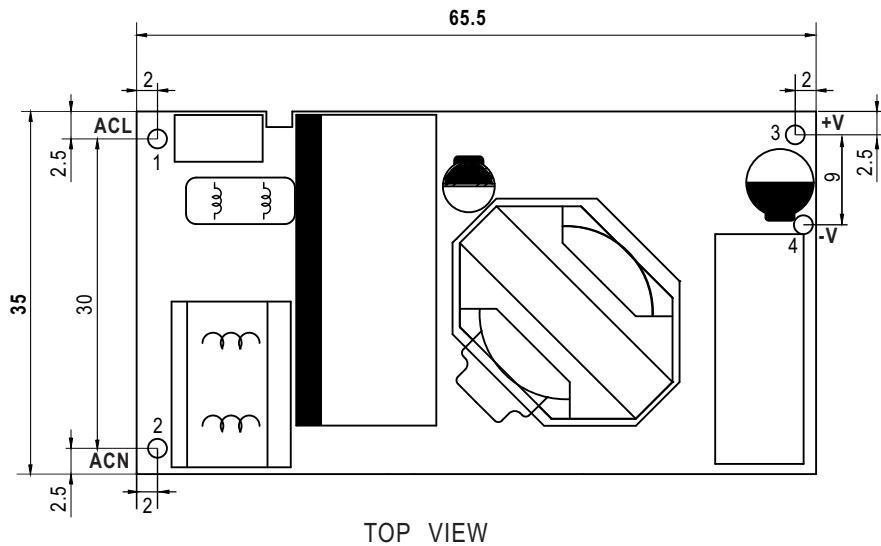


■ Output Derating VS Input Voltage



**■ Mechanical Specification**

Unit:inch(mm)

**■ Installation Manual**Please refer to : <http://www.meanwell.com/manual.html>