

### ■ Features

- 2.58"x1.38" 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 -40 ~ +85°C
- EMI class B for class II configuration
- Protections: Short circuit / Overload / Over voltage
- No minimum load required
- 3 years warranty

### ■ Applications

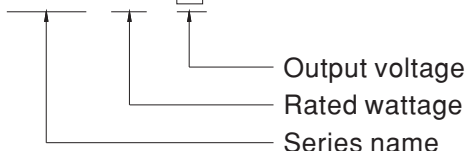
- Portable medical device
- Mobile clinical workstation
- Medical computer monitor
- Medical examination instrument

### ■ 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/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

**MFM - 30 - 5**

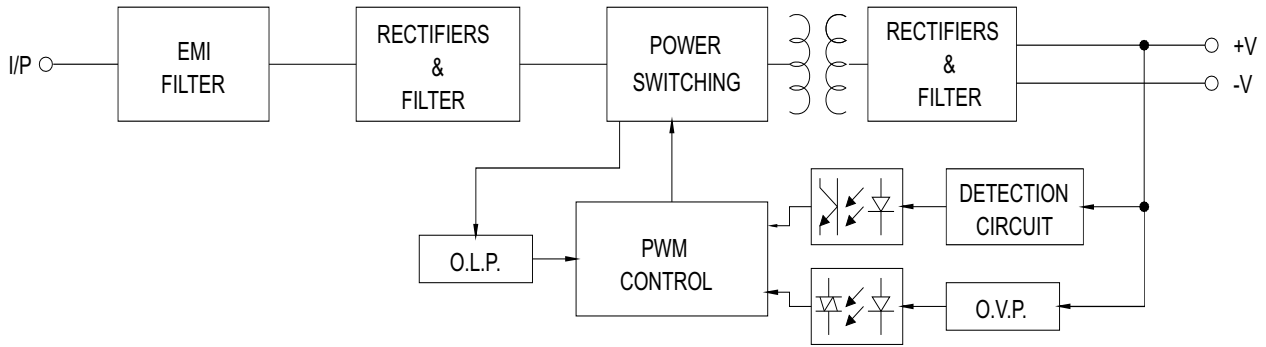


**SPECIFICATION**

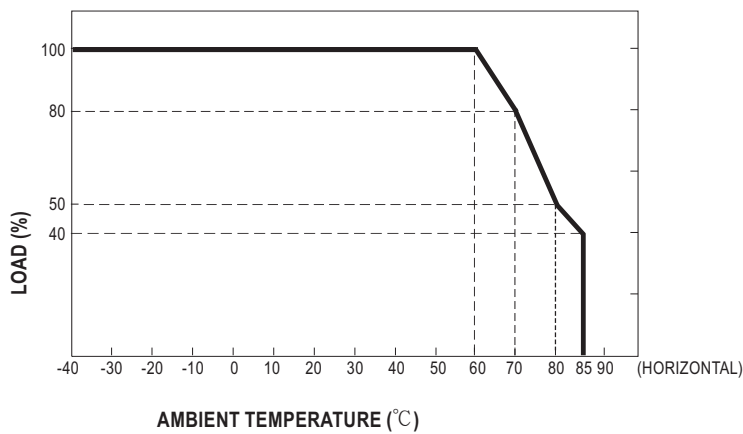
MODEL	MFM-30-3.3	MFM-30-5	MFM-30-12	MFM-30-15	MFM-30-24	MFM-30-48	
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	6A	6A	2.5A	2A	1.3A	0.63A
	CURRENT RANGE <small>Note.2</small>	0 ~ 6A	0 ~ 6A	0 ~ 2.5A	0 ~ 2A	0 ~ 1.3A	0 ~ 0.63A
	PEAK CURRENT	7.8A	6.9A	2.9A	2.3A	1.5A	0.73A
	RATED POWER	19.8W	30W	30W	30W	31.2W	30.2W
	PEAK LOAD(10sec.) <small>Note.3</small>	25.7W	34.5W	34.8W	34.5W	36W	35W
	RIPPLE & NOISE (max.) <small>Note.4</small>	80mVp-p	80mVp-p	120mVp-p	120mVp-p	200mVp-p	200mVp-p
	VOLTAGE TOLERANCE <small>Note.5</small>	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±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 <small>Note.6</small>	80 ~ 264VAC					
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY (Typ.)	82.5%	86.5%	90%	89%	90%	91%
	AC CURRENT (Typ.)	0.75A/115VAC    0.5A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START	25A/115VAC	45A/230VAC			
	LEAKAGE CURRENT (max.) <small>Note.7</small>	Touch current <80 $\mu$ A/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
ENVIRONMENT	WORKING TEMP.	-40 ~ +85 $^{\circ}$ C (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85 $^{\circ}$ C, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/ $^{\circ}$ C (0 ~ 60 $^{\circ}$ C)					
	SOLDERING TEMPERATURE	260 $^{\circ}$ C ±5 $^{\circ}$ C/10sec.max.					
	VIBRATION	10 ~ 500Hz, 3G 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	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(by request)					
	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	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	779Khrs min.    MIL-HDBK-217F (25 $^{\circ}$ 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	<ol style="list-style-type: none"> <li>All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25<math>^{\circ}</math>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 0.1 <math>\mu</math>f &amp; 47 <math>\mu</math>f 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<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).</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." (as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a>)</li> </ol> <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

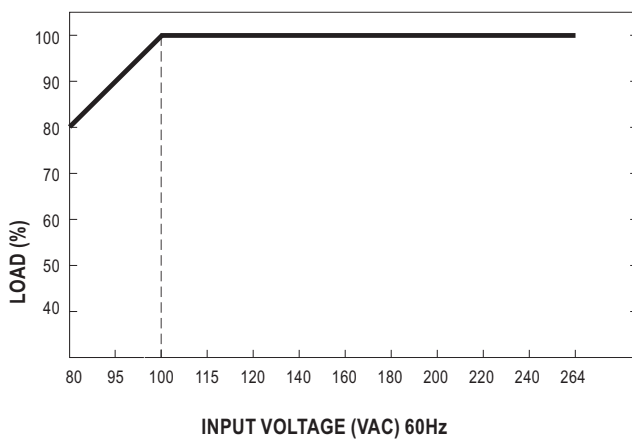
fosc : 65KHz



### Derating Curve

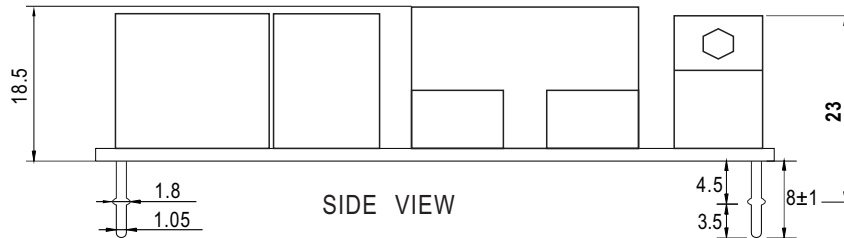
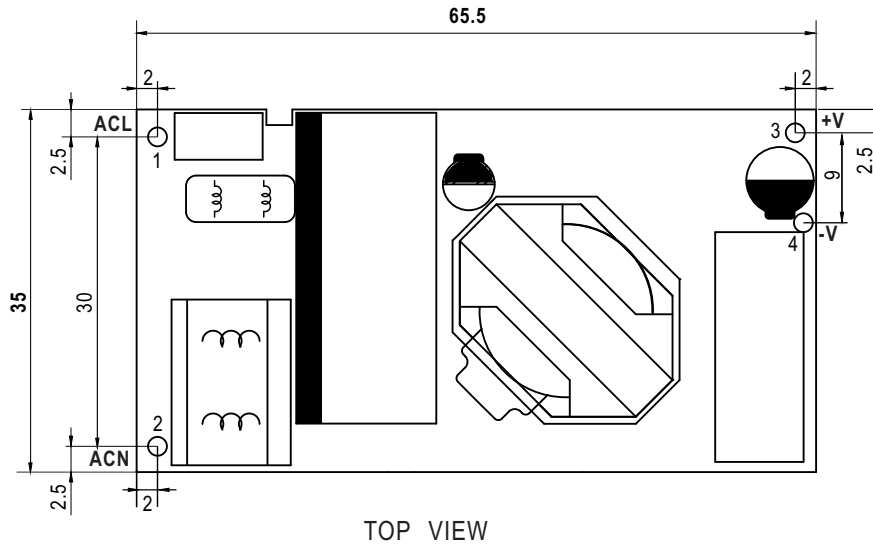


### Output Derating VS Input Voltage



■ Mechanical Specification

Unit:inch(mm)



■ Installation Manual

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