

ANSI/AAMI ES60601-1


 EN60601-1
IEC60601-1


IEC60601-1



■ 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

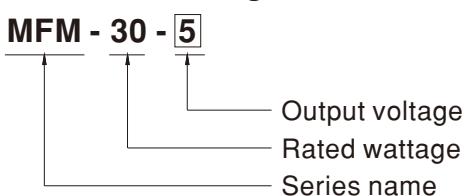
■ Applications

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

■ Description

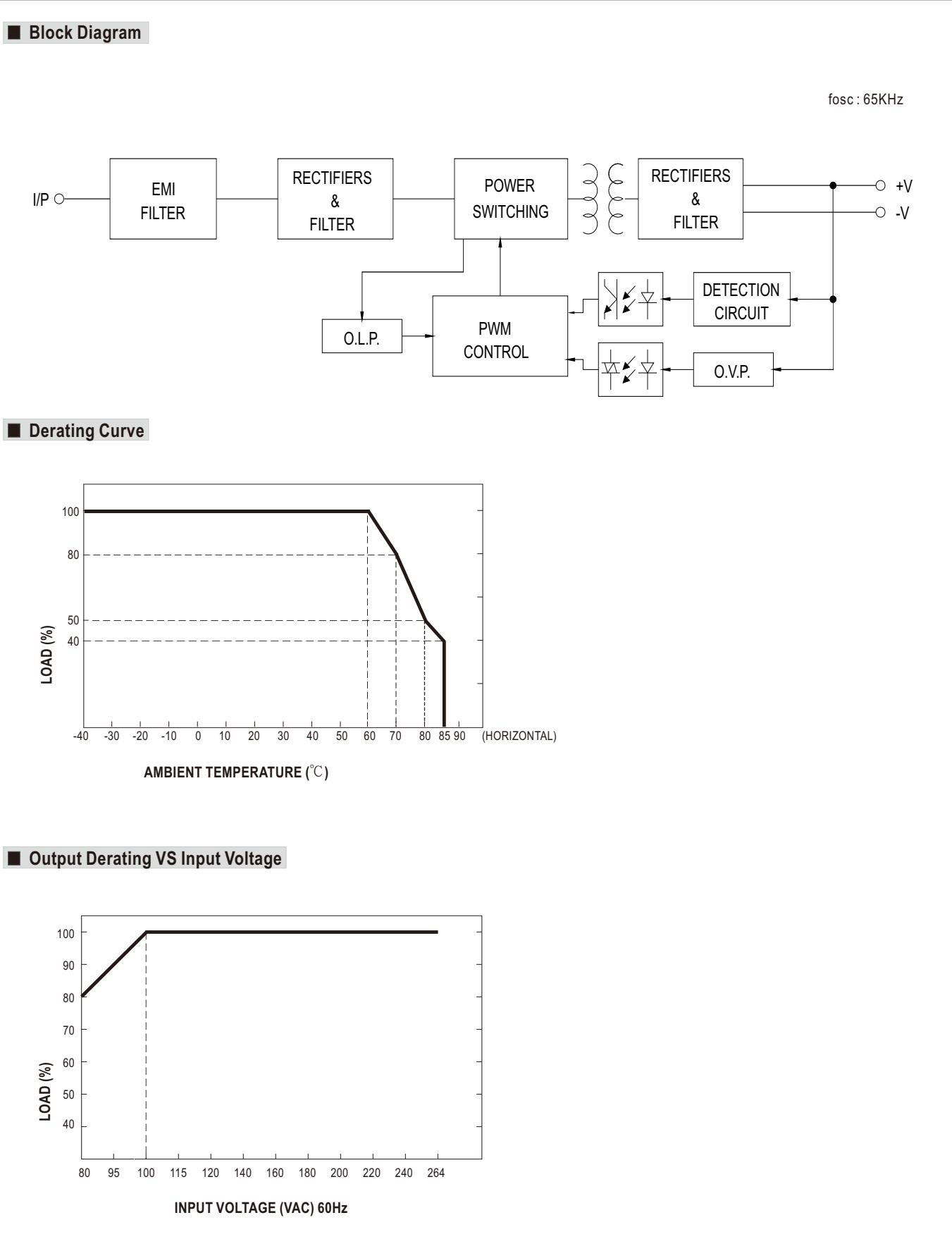
MFM-30 is a 30W high density and small size (65.5x35x23mm) AC/DC module type medical power supply series offered in pin type. It features the operation for 80~264VAC, a low no load power consumption less than 0.075W, a high efficiency up to 91%, Class II (no FG) double insulation, outstanding dissipation, 5G 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



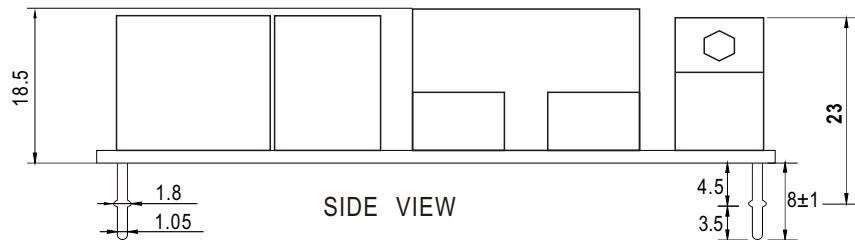
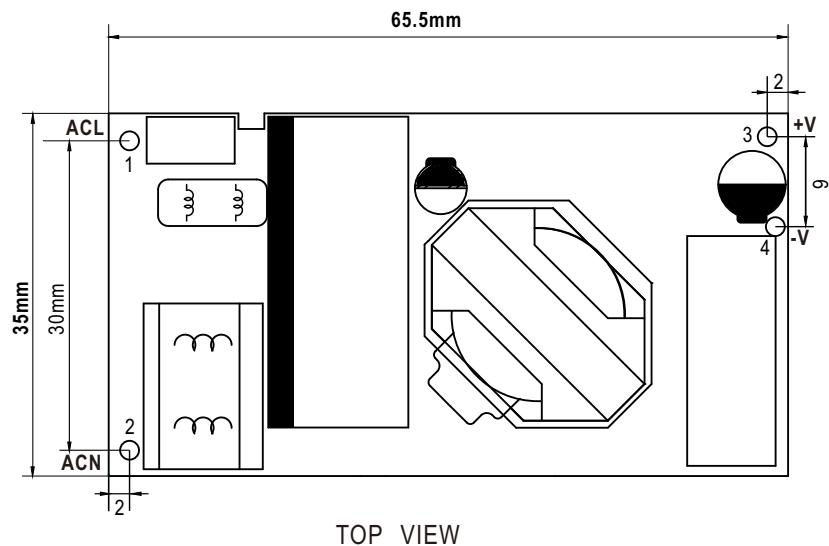
SPECIFICATION

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			
	RIPLPE & 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%			
INPUT	SETUP, RISE TIME	500ms, 30ms/230VAC	500ms, 30ms/115VAC at full load						
	HOLD UP TIME (Typ.)	40ms/230VAC	12ms/115VAC at full load						
PROTECTION	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						
ENVIRONMENT	LEAKAGE CURRENT (max.) Note.7	Touch current <80μA/264VAC							
	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			
SAFETY & EMC (Note 9)	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.							
OTHERS	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes							
	OPERATING ALTITUDE Note.8	5000 meters							
	SAFETY STANDARDS	IEC60601-1, EN60601-1, UL ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22 3 rd Edition approved; Design refer to EN60335-1							
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP							
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC							
SAFETY & EMC (Note 9)	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					
	EMC IMMUNITY	Voltage Flicker	EN61000-3-3	-----					
		EN60601-1-2							
		Parameter	Standard	Test Level / Note					
		ESD	EN61000-4-2	Level 3, 8KV air ; Level 4, 8KV contact					
		Radiated	EN61000-4-3	Level 3					
		EFT / Burst	EN61000-4-4	Level 3					
		Surge	EN61000-4-5	Level 2, 1KV/Line-Line					
		Conducted	EN61000-4-6	Level 3					
NOTE	Magnetic Field	EN61000-4-8	Level 4						
	Voltage Dips and Interruptions	EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods						
OTHERS	MTBF	779Khrs min. MIL-HDBK-217F (25°C)							
OTHERS	DIMENSION	65.5*35*23mm (L*W*H) or 2.58" * 1.38" * 0.90" inch							
OTHERS	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 2.5°C / 1000m is needed for operating altitude greater 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)								



■ Mechanical Specification

Unit:inch(mm)

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