

■ Features

- 1.65"x0.88" 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 -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

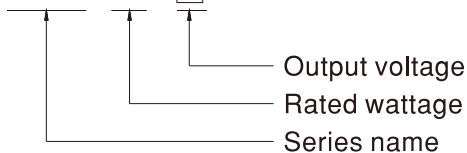
- Portable medical device
- Mobile clinical workstation
- Medical computer monitor
- Medical examination instrument

■ 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/EN60601-1 and ANSI/AAMI ES60601-1 version three with 2xMOPP level and ultra-low leakage current (<80 μA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

■ Model Encoding

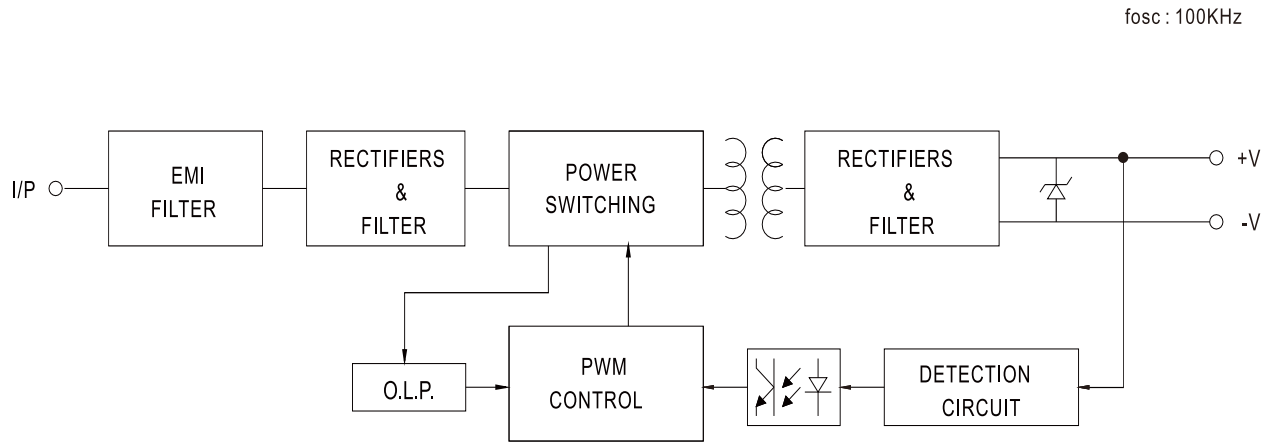
MFM - 10 - 5



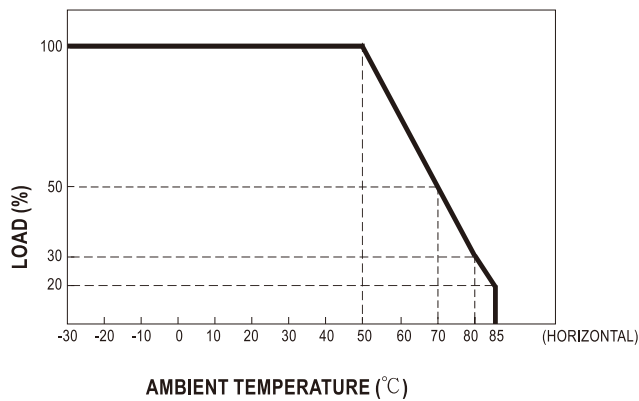
SPECIFICATION

| 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 | 24V | |
| | RATED CURRENT | 2.5A | 2A | 0.85A | 0.67A | 0.42A | |
| | CURRENT RANGE <small>Note.2</small> | 0 ~ 2.5A | 0 ~ 2A | 0 ~ 0.85A | 0 ~ 0.67A | 0 ~ 0.42A | |
| | PEAK CURRENT | 2.75A | 2.2A | 0.94A | 0.74A | 0.46A | |
| | RATED POWER | 8.3W | 10W | 10.2W | 10W | 10W | |
| | PEAK LOAD(10sec.) <small>Note.3</small> | 9W | 11W | 11.3W | 11.1W | 11W | |
| | RIPPLE & NOISE (max.) <small>Note.4</small> | 120mVp-p | 100mVp-p | 180mVp-p | 180mVp-p | 200mVp-p | |
| | VOLTAGE TOLERANCE <small>Note.5</small> | ±2.5% | ±2.5% | ±2.5% | ±2.5% | ±2.5% | |
| | LINE REGULATION | ±0.3% | ±0.3% | ±0.3% | ±0.3% | ±0.3% | |
| | LOAD REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | |
| | SETUP, RISE TIME | 1000ms, 30ms/230VAC 1000ms, 30ms/115VAC at full load | | | | | |
| HOLD UP TIME (Typ.) | 40ms/230VAC 8ms/115VAC at full load | | | | | | |
| INPUT | VOLTAGE RANGE <small>Note.6</small> | 80 ~ 264VAC | | | | | |
| | FREQUENCY RANGE | 47 ~ 440Hz | | | | | |
| | EFFICIENCY (Typ.) | 78% | 81% | 83% | 83% | 84% | |
| | AC CURRENT (Typ.) | 0.3A/115VAC 0.2A/230VAC | | | | | |
| | INRUSH CURRENT (Typ.) | COLD START 25A/115VAC 45A/230VAC | | | | | |
| | LEAKAGE CURRENT (max.) <small>Note.7</small> | Touch current <80µA/264VAC | | | | | |
| PROTECTION | 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 | 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. | -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 | | | | | |
| OPERATING ALTITUDE <small>Note.8</small> | 5000 meters | | | | | | |
| SAFETY & EMC <small>(Note 9)</small> | SAFETY STANDARDS | IEC60601-1, EN60601-1, EAC TP TC 004,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 | | | | | |
| | 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 | | | |
| | | 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 | 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 | | | | | |
| | PACKING | 0.018Kg; 270pcs/5.8Kg/0.97CUFT | | | | | |
| NOTE | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. No minimum load required.</p> <p>3. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power</p> <p>4. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capacitor.</p> <p>5. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>6. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>7. Touch current was measured from primary input to DC output.</p> <p>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).</p> <p>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)</p> | | | | | | |

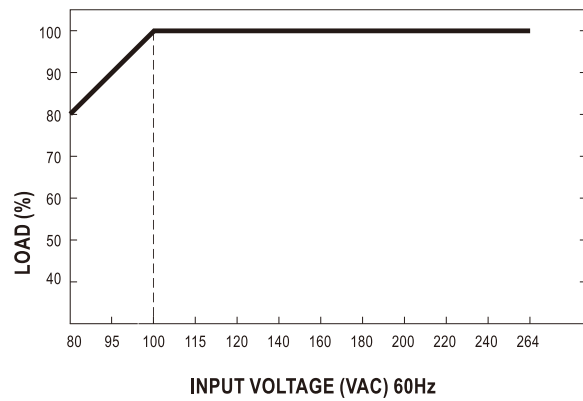
Block Diagram



Derating Curve

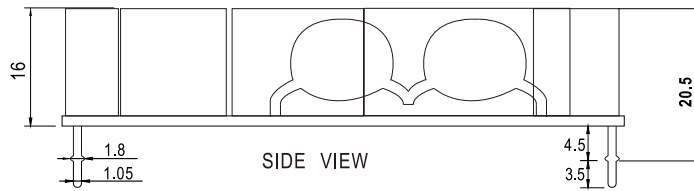
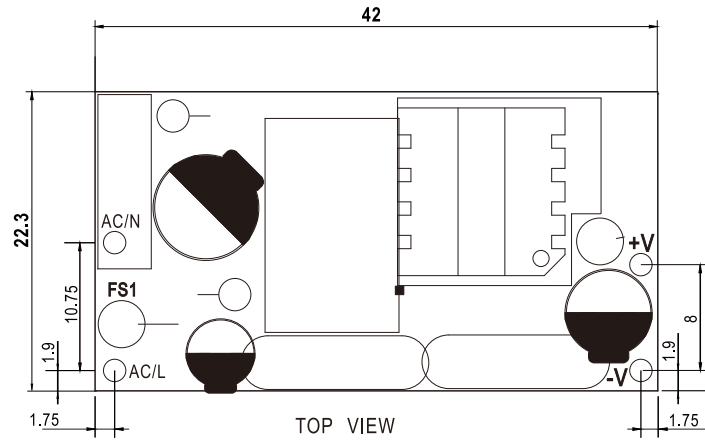


Output Derating VS Input Voltage



■ **Mechanical Specification**

Unit:mm



■ **Installation Manual**

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