chanhvinh.com

# 90W AC-DC High Reliable PCB-Mount Green Medical Power Module MPM-90 series



(MPM-90)



(MPM-90-xxST)

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

## Features

- 3.43"x2.05" compact size
- PCB,chassis or screw terminal mounting version
- 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 -30 ~ +80℃
- EMI Class B without additional components
- Isolation Class Ⅱ
- Protections: Short circuit / Overload / Over voltage
- No minimum load required
- Operating altitude up to 4000 meters( Note.7)
- 100W peak(10 sec.)
- 3 years warranty

## Applications

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

## Description

MPM-90 is a 90W high density and small size (87x52x29.5mm) AC/DC PCB-mount module type medical grade power supply . It features the operation for 80~264VAC, a low no load power consumption less than 0.1W, a high efficiency up to 93%, Class Ⅱ (no FG) double insulation, outstanding dissipation, 2~5G anti-vibration by model, high EMC performance, 4KVAC isolation, etc. The design observes IEC/EN60601-1 and ANSI/AAMI ES60601-1version three with 2 x MOPP level and ultra-low leakage current (<100μA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

## Model Encoding

MPM - 90 - 12 ST

- ST: Blank : PCB mounting style; ST : Screw terminal style
- 12: Output voltage
- 90: Rated wattage
- MPM: Series name

chanhvinh.com

# 90W AC-DC High Reliable PCB-Mount Green Medical Power Module MPM-90 series

## SPECIFICATION

| MODEL | | | MPM-90-12 ☐ | MPM-90-15 ☐ | MPM-90-24 ☐ | MPM-90-48 ☐ |
|---|---|---|---|---|---|---|
| OUTPUT | DC VOLTAGE | | 12V | 15V | 24V | 48V |
| | CURRENT | Peak(10 sec.) | 7.37A | 6.23A | 4.13A | 2.07A |
| | | Convection | 6.7A | 5.67A | 3.75A | 1.88A |
| | RATED POWER | Peak(10 sec.)Note.2 | 88.4W | 93.5W | 99W | 99.2W |
| | | Convection | 80.4W | 85.05W | 90W | 90.2W |
| | RIPPLE & NOISE (max.) Note.3 | | 120mVp-p | 150mVp-p | 200mVp-p | 240mVp-p |
| | VOLTAGE TOLERANCE Note.4 | | ±2.0% | ±2.0% | ±2.0% | ±2.0% |
| | LINE REGULATION | | ±0.5% | ±0.5% | ±0.5% | ±0.5% |
| | LOAD REGULATION | | ±1.0% | ±0.5% | ±0.5% | ±0.5% |
| | SETUP, RISE TIME | | 1000ms, 30ms/230VAC | 1000ms, 30ms/115VAC at full load | | |
| | HOLD UP TIME (Typ.) | | 30ms/230VAC | 10ms/115VAC at full load | | |
| INPUT | VOLTAGE RANGE Note.5 | | 80 ~ 264VAC | 113 ~ 370VDC | | |
| | FREQUENCY RANGE | | 47 ~ 63Hz | | | |
| | EFFICIENCY (Typ.) | | 92% | 92.5% | 93% | 93% |
| | AC CURRENT (Typ.) | | 1.9A/115VAC | 1.1A/230VAC | | |
| | INRUSH CURRENT (Typ.) | | COLD START | 30A/115VAC | 65A/230VAC | |
| | LEAKAGE CURRENT (max.) Note.6 | | Touch current <100μA/264VAC | | | |
| PROTECTION | OVERLOAD | | 115% ~ 160% rated output power | | | |
| | | | Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | |
| | OVER VOLTAGE | | 12.6 ~ 16.2V | 15.8 ~ 20.3V | 25.2 ~ 32.4V | 50.4 ~ 64.8V |
| | | | Protection type : Shut down o/p voltage, re-power on to recover | | | |
| | OVER TEMPERATURE | | Protection type : Shut down o/p voltage, re-power on to recover | | | |
| ENVIRONMENT | WORKING TEMP. | | -30 ~ +80℃ (Refer to "Derating Curve") | | | |
| | WORKING HUMIDITY | | 20 ~ 90% RH non-condensing | | | |
| | STORAGE TEMP. | | -40 ~ +85℃ | | | |
| | TEMP. COEFFICIENT | | ±0.03%/℃ (0 ~ 50℃) | | | |
| | SOLDERING TEMPERATURE | | 260℃ ±5℃/10sec.max. | | | |
| | VIBRATION | | Blank:10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes | | | |
| | | | ST:10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes | | | |
| | OPERATING ALTITUDE Note.7 | | 4000 meters / OVC II | | | |
| SAFETY & EMC (Note 8) | SAFETY STANDARDS | | IEC60601-1, EN60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22 3rd 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℃/ 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 | >95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods | |
| OTHERS | MTBF | | 570.5Khrs min. MIL-HDBK-217F (25℃); | | 1514.81Khrs min. Telcordia TR/SR-332 (Bellcore) (25℃) | |
| | DIMENSION | | PCB mounting style : 87*52*29.5mm (L*W*H) | | Screw terminal style : 109*52*33.5mm (L*W*H) | |
| | PACKING | | PCB mounting style : 0.197Kg;60pcs/12.8Kg/0.97CUFT | | Screw terminal style :0.219Kg;50pcs/12Kg/0.55CUFT | |

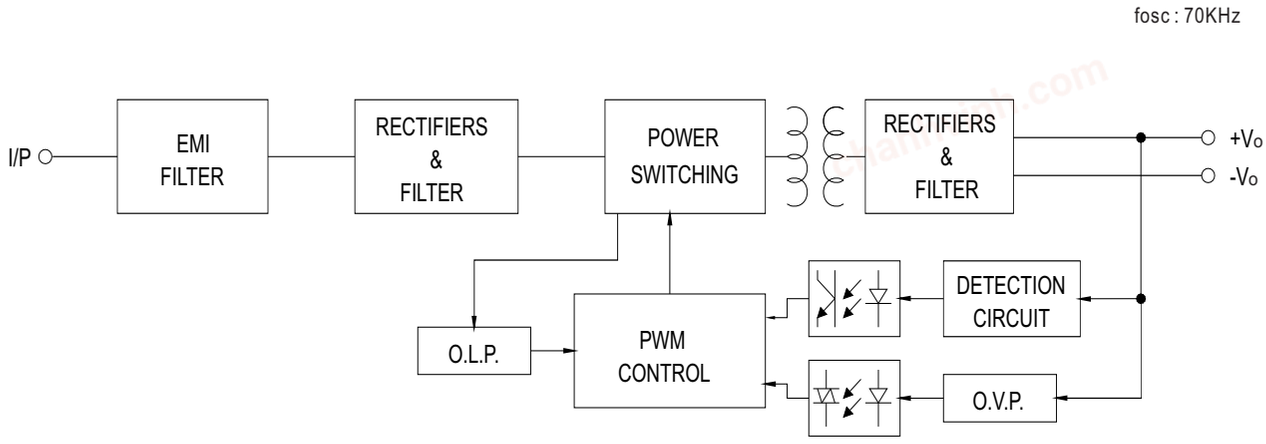
**NOTE**

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.
3. 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.
4. Tolerance : includes set up tolerance, line regulation and load regulation.
5. Derating may be needed under low input voltages. Please check the derating curve for more details.
6. Touch current was measured from primary input to DC output.
7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).
8. 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)

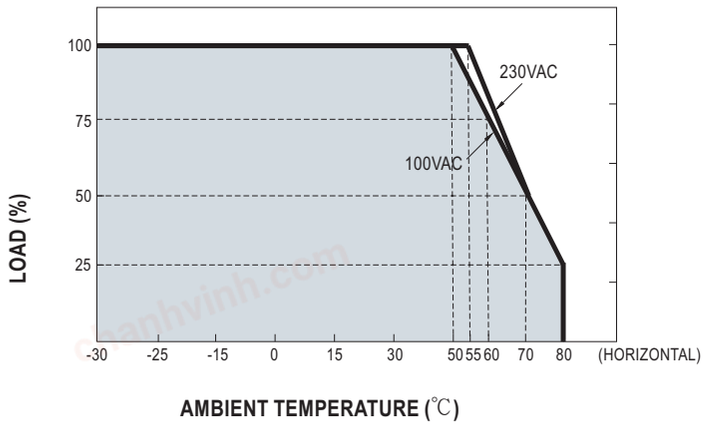
chanhvinh.com



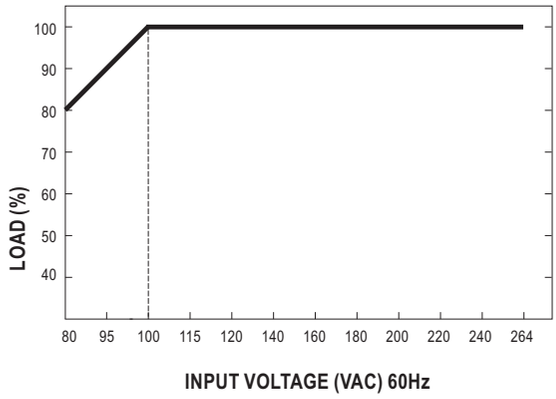
## ■ Block Diagram




## ■ Derating Curve




## ■ Output Derating VS Input Voltage



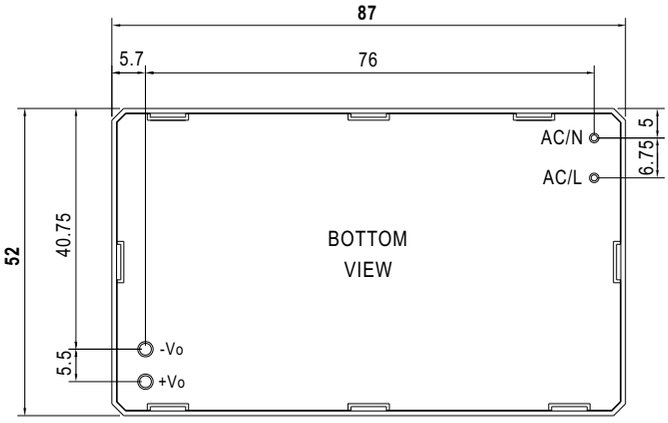
chanhvinh.com

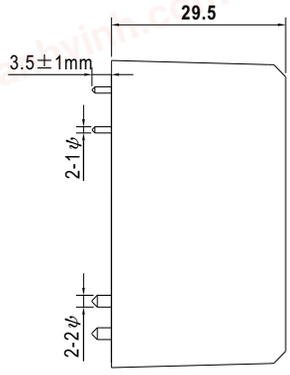


## ■ Mechanical Specification

Case No.IRM60 Unit:mm

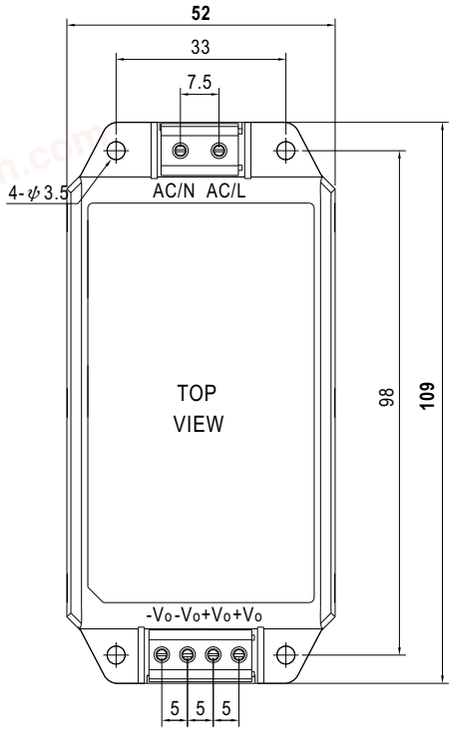
- **PCB mounting style (MPM - 90)**

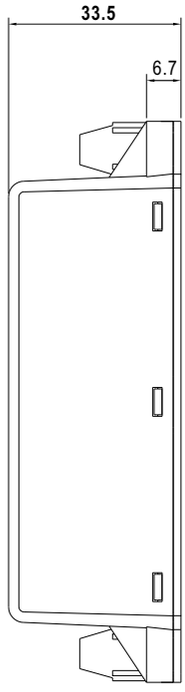



AC/L, AC/N P/N diameter:1ψ
+Vo, -Vo P/N diameter:2ψ

- **Screw terminal style (MPM-90-xxST)**




## ■ Installation Manual

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