



Наличие и актуальные цены на

**MPM-45-5ST**

<https://www.mean-well.ru/store/MPM-45-5ST/>



(MPM-45)



(MPM-45-xxST)

User's Manual



ANSI/AAMI ES60601-1 BS EN/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/BS EN/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°C
- 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)
- 50W peak(10 sec.)
- 3 years warranty

## Description

MPM-45 is a 45W high density and small size (87x52x29.5mm) AC/DC PCB-mount 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 92.5%, Class II (no FG) double insulation, outstanding dissipation, 2~5G anti-vibration by model, 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 (<100μA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

## Model Encoding

**MPM - 45 - 5 ST**

Blank : PCB mounting style  
ST : Screw terminal style

Output voltage  
Rated wattage  
Series name

## Applications

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

## GTIN CODE

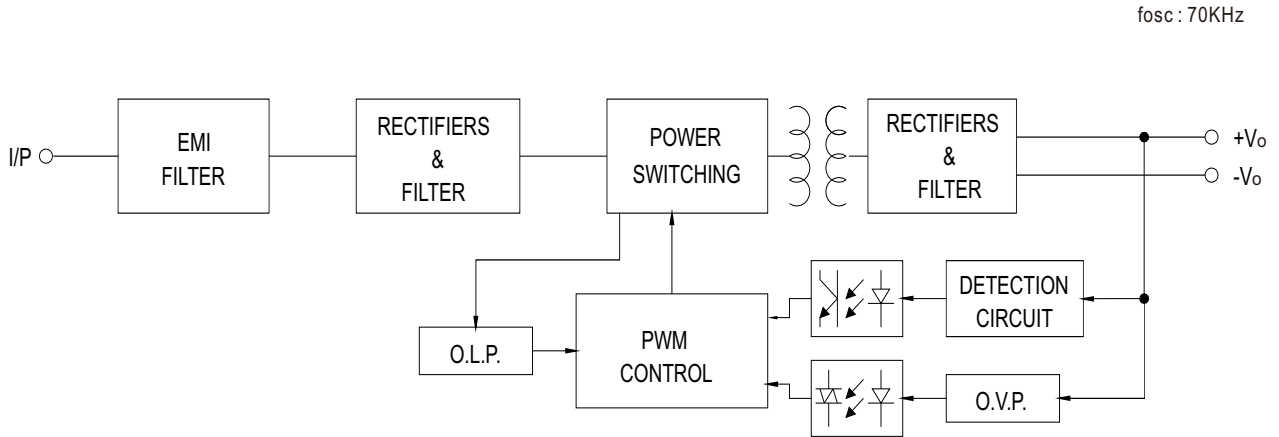
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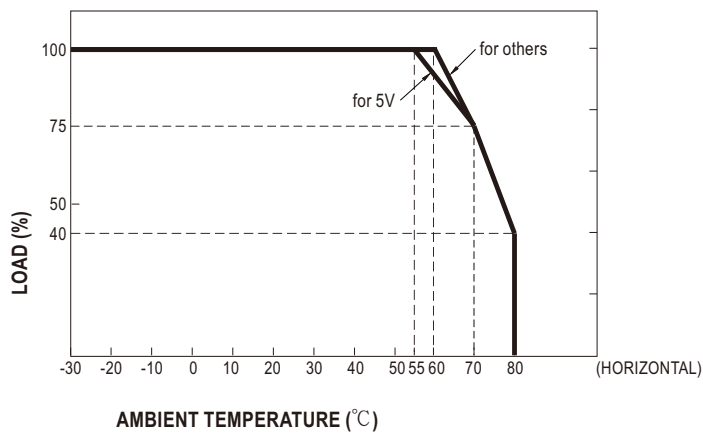
## SPECIFICATION

| MODEL                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MPM-45-5                                                                                                                                                                   | MPM-45-12               | MPM-45-15                                                                   | MPM-45-24                                                            | MPM-45-48    |       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------|--------------|-------|
| OUTPUT                    | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5V                                                                                                                                                                         | 12V                     | 15V                                                                         | 24V                                                                  | 48V          |       |
|                           | CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Peak(10 sec.)                                                                                                                                                              | 8.8A                    | 4.13A                                                                       | 3.3A                                                                 | 2.1A         | 1.05A |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Convection                                                                                                                                                                 | 8A                      | 3.75A                                                                       | 3A                                                                   | 1.88A        | 0.94A |
|                           | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Peak(10 sec.) <sup>Note.2</sup>                                                                                                                                            | 44W                     | 49.5W                                                                       | 49.5W                                                                | 50.4W        | 50.4W |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Convection                                                                                                                                                                 | 40W                     | 45W                                                                         | 45W                                                                  | 45.1W        | 45.1W |
|                           | RIPPLE & NOISE (max.) <sup>Note.3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 80mVp-p                                                                                                                                                                    | 120mVp-p                | 120mVp-p                                                                    | 200mVp-p                                                             | 240mVp-p     |       |
|                           | VOLTAGE TOLERANCE <sup>Note.4</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ± 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1000ms, 30ms/230VAC      1000ms, 30ms/115VAC at full load                                                                                                                  |                         |                                                                             |                                                                      |              |       |
| HOLD UP TIME (Typ.)       | 50ms/230VAC      12ms/115VAC at full load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                            |                         |                                                                             |                                                                      |              |       |
| INPUT                     | VOLTAGE RANGE <sup>Note.5</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 80 ~ 264VAC    113 ~ 370VDC                                                                                                                                                |                         |                                                                             |                                                                      |              |       |
|                           | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47 ~ 63Hz                                                                                                                                                                  |                         |                                                                             |                                                                      |              |       |
|                           | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 88%                                                                                                                                                                        | 91.5%                   | 92.5%                                                                       | 92.5%                                                                | 92%          |       |
|                           | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1.2A/115VAC    0.6A/230VAC                                                                                                                                                 |                         |                                                                             |                                                                      |              |       |
|                           | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | COLD START    30A/115VAC    60A/230VAC                                                                                                                                     |                         |                                                                             |                                                                      |              |       |
|                           | LEAKAGE CURRENT (max.) <sup>Note.6</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Touch current <100 $\mu$ A/264VAC                                                                                                                                          |                         |                                                                             |                                                                      |              |       |
| PROTECTION                | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 115% ~ 135% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed                                                   |                         |                                                                             |                                                                      |              |       |
|                           | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.3 ~ 7.2V                                                                                                                                                                 | 12.6 ~ 16.2V            | 15.8 ~ 20.3V                                                                | 25.2 ~ 32.4V                                                         | 50.4 ~ 64.8V |       |
|                           | OVER TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Protection type : Shut down o/p voltage, re-power on to recover                                                                                                            |                         |                                                                             |                                                                      |              |       |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 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 ~ 60℃)                                                                                                                                                         |                         |                                                                             |                                                                      |              |       |
|                           | SOLDERING TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Wave soldering: 265℃,5s (max.); Manual soldering: 390℃,3s (max.)                                                                                                           |                         |                                                                             |                                                                      |              |       |
|                           | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Blank:10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes<br>ST:10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes                |                         |                                                                             |                                                                      |              |       |
|                           | OPERATING ALTITUDE <sup>Note.7</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4000 meters / OVC II                                                                                                                                                       |                         |                                                                             |                                                                      |              |       |
|                           | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | IEC60601-1, BS EN/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 BS EN/EN60335-1(by request) |                         |                                                                             |                                                                      |              |       |
| SAFETY & EMC<br>(Note 8)  | 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                                                                                                                                                                  | BS EN/EN55011 (CISPR11) |                                                                             | Class B                                                              |              |       |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Radiated                                                                                                                                                                   | BS EN/EN55011 (CISPR11) |                                                                             | Class B                                                              |              |       |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Harmonic Current                                                                                                                                                           | BS EN/EN61000-3-2       |                                                                             | Class A                                                              |              |       |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Voltage Flicker                                                                                                                                                            | BS EN/EN61000-3-3       |                                                                             | -----                                                                |              |       |
|                           | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | BS EN/EN55035, 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                                                                                                                                                    | BS EN/EN61000-4-3       |                                                                             | Level 3, 10V/m( 80MHz~2.7GHz )<br>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                                                                                                                                                         |                         | >95% dip 0.5 periods, 30% dip 25 periods,<br>>95% interruptions 250 periods |                                                                      |              |       |
| OTHERS                    | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4590.4K hrs min.    Telcordia SR-332 (Bellcore) ; 563.4K hrs min.    MIL-HDBK-217F (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 : 0.185Kg;60pcs/12.1Kg/0.94CUFT    Screw terminal style : 0.206Kg;50pcs/11.3Kg/0.56CUFT                                                                 |                         |                                                                             |                                                                      |              |       |
| NOTE                      | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.<br>3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 $\mu$ f & 47 $\mu$ f parallel capacitor.<br>4. Tolerance : includes set up tolerance, line regulation and load regulation.<br>5. Derating may be needed under low input voltages. Please check the derating curve for more details.<br>6. Touch current was measured from primary input to DC output.<br>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).<br>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."<br>(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> )<br>※ Product Liability Disclaimer : For detailed information, please refer to <a href="https://www.meanwell.com/serviceDisclaimer.aspx">https://www.meanwell.com/serviceDisclaimer.aspx</a> |                                                                                                                                                                            |                         |                                                                             |                                                                      |              |       |

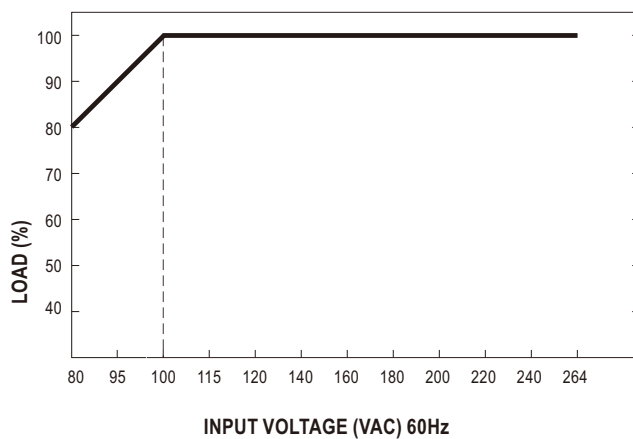
### ■ Block Diagram



### ■ Derating Curve



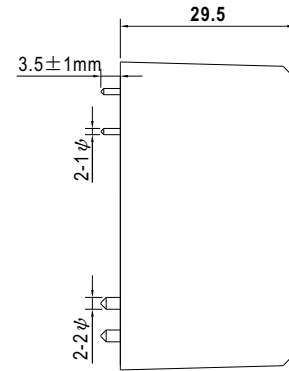
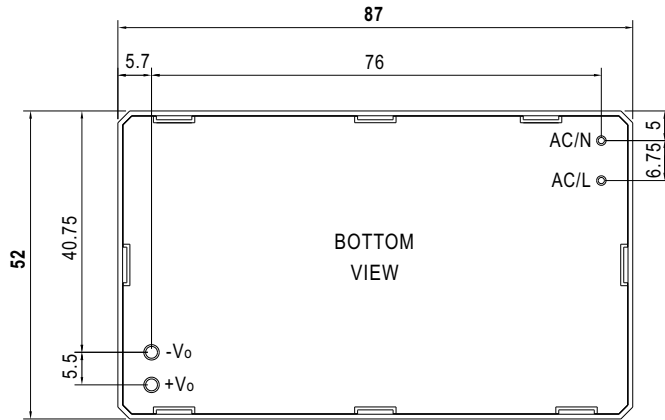
### ■ Output Derating VS Input Voltage



## Mechanical Specification

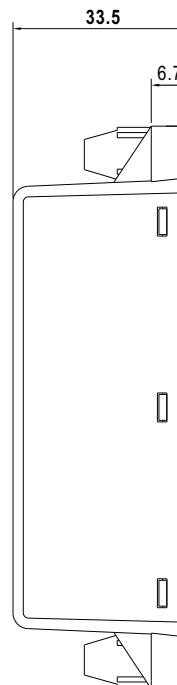
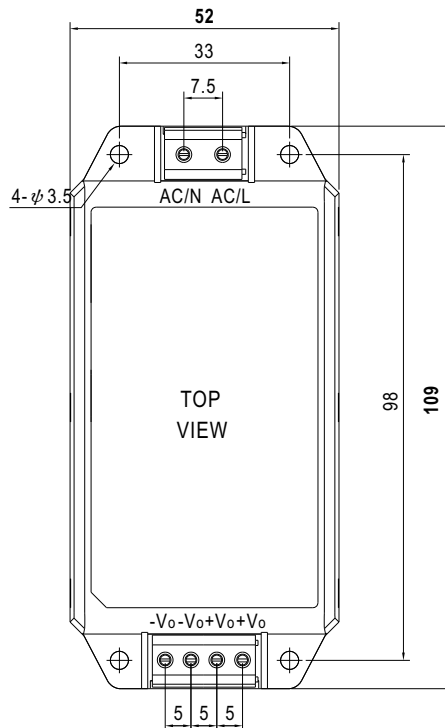
Case No. IRM60 Unit:mm

### • PCB mounting style (MPM-45)



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

### • Screw terminal style (MPM-45-xxST)



## Installation Manual

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