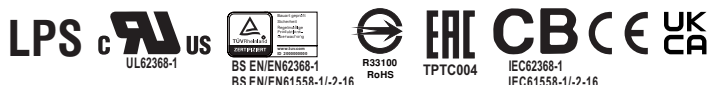




# 10W AC-DC High Reliable PCB-Mount Green Industrial Power Module **IRM-10** series

User's Manual



## ■ Features

- 1.8"x1" compact size
- Universal input 85~305Vac
- No load power consumption<0.1W
- EMI Class B without additional components
- Wide operating temp. range -30~85°C
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- Isolation Class II
- Over voltage category III (OVC III)
- Pass LPS
- 3 years warranty

## ■ Applications

- Industrial electrical equipment
- Mechanical equipment
- Factory automation equipment
- Hand-held electronic device

## ■ GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

## ■ Description

IRM-10 is a 10W miniature (45.7\*25.4\*21.5mm) AC-DC module-type power supply, ready to be soldered onto the PCB boards of various kinds of electronic instruments or industrial automation equipments. This product allows the universal input voltage range of 85~305Vac. The 94V-0 flame retardant plastic case and potted with silicone enhance the heat dissipation and meet the anti-vibration demand up to 5G; moreover, it provides the fundamental resistance to dust and moisture.

With the high efficiency up to 82% and the extremely low no-load power consumption below 0.1W, IRM-10 series fulfills the worldwide regulation for the low power consumption requirement for electronics. The entire series is a Class II design (no FG pin), incorporating the built-in EMI filtering components, enabling the compliance with BS EN/EN55032 Class B; the supreme EMC features keep the end electronic units from electromagnetic interference.

## ■ Model Encoding

**IRM - 10 - 5**

Output voltage(3.3V/5V/12V/15V/24V)

Rated wattage

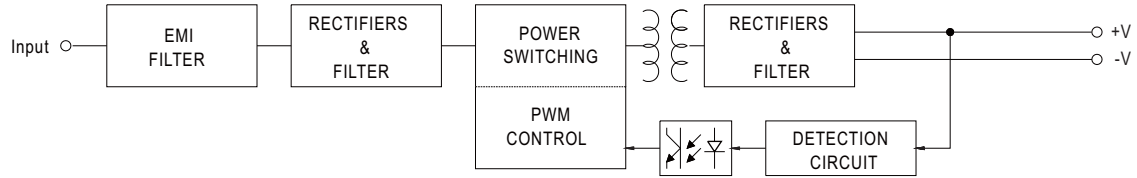
Series name

**SPECIFICATION**

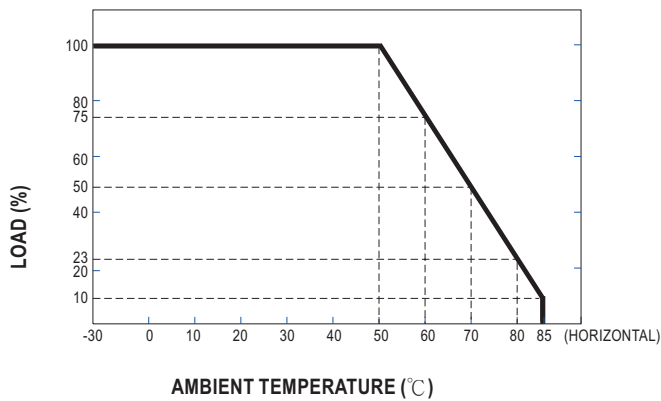
| MODEL                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | IRM-10-3.3                                                                                             | IRM-10-5                                                                                                                   | IRM-10-12     | IRM-10-15                                                                    | IRM-10-24                                          |  |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------|----------------------------------------------------|--|
| OUTPUT                | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3.3V                                                                                                   | 5V                                                                                                                         | 12V           | 15V                                                                          | 24V                                                |  |
|                       | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2.5A                                                                                                   | 2A                                                                                                                         | 0.85A         | 0.67A                                                                        | 0.42A                                              |  |
|                       | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0 ~ 2.5A                                                                                               | 0 ~ 2A                                                                                                                     | 0 ~ 0.85A     | 0 ~ 0.67A                                                                    | 0 ~ 0.42A                                          |  |
|                       | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 8.25W                                                                                                  | 10W                                                                                                                        | 10.2W         | 10.05W                                                                       | 10.08W                                             |  |
|                       | RIPPLE & NOISE (max.) <small>Note.2</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 200mVp-p                                                                                               | 200mVp-p                                                                                                                   | 200mVp-p      | 200mVp-p                                                                     | 200mVp-p                                           |  |
|                       | VOLTAGE TOLERANCE <small>Note.3</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ±2.5%                                                                                                  | ±2.5%                                                                                                                      | ±2.5%         | ±2.5%                                                                        | ±2.5%                                              |  |
|                       | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ±0.3%                                                                                                  | ±0.3%                                                                                                                      | ±0.3%         | ±0.3%                                                                        | ±0.3%                                              |  |
|                       | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ±0.5%                                                                                                  | ±0.5%                                                                                                                      | ±0.5%         | ±0.5%                                                                        | ±0.5%                                              |  |
|                       | SETUP, RISE TIME <small>Note.4</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 600ms, 30ms at full load                                                                               |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | HOLD UP TIME (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 30ms/230Vac                                                                                            | 8ms/115Vac at full load                                                                                                    |               |                                                                              |                                                    |  |
| INPUT                 | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 85 ~ 305Vac                                                                                            | 120 ~ 430Vdc                                                                                                               |               |                                                                              |                                                    |  |
|                       | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 47 ~ 440Hz                                                                                             |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 74%                                                                                                    | 77%                                                                                                                        | 82%           | 82%                                                                          | 82%                                                |  |
|                       | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.25A/115Vac                                                                                           | 0.15A/230Vac                                                                                                               | 0.125A/277Vac |                                                                              |                                                    |  |
|                       | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | COLD START 20A/115Vac      40A/230Vac                                                                  |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | < 0.25mA/277Vac                                                                                        |                                                                                                                            |               |                                                                              |                                                    |  |
| PROTECTION            | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 115%~190% rated output power                                                                           |                                                                                                                            |               |                                                                              |                                                    |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Protection type : Hiccup mode, recovers automatically after fault condition is removed                 |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3.8 ~ 4.95V                                                                                            | 5.75 ~ 6.75V                                                                                                               | 13.8 ~ 16.2V  | 17.25 ~ 20.25V                                                               | 27.6 ~ 32.4V                                       |  |
| ENVIRONMENT           | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -30 ~ +85℃ (Refer to "Derating Curve")                                                                 |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20 ~ 90% RH non-condensing                                                                             |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -40 ~ +85℃, 10 ~ 95% RH                                                                                |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ±0.03%/℃ (0 ~ 50℃)                                                                                     |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes                                |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | SOLDERING TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Wave soldering: 265℃,5s (max.); Manual soldering: 390℃,3s (max.)                                       |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | OPERATING ALTITUDE <small>Note.5</small>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2000 meters                                                                                            |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | SAFETY & EMC<br>(Note.6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SAFETY STANDARDS                                                                                       | IEC62368-1,IEC61558-1/-2-16,UL62368-1,TUV BS EN/EN62368-1,TUV BS EN/EN61558-1/-2-16,EAC TP TC 004,BSMI CNS15598-1 approved |               |                                                                              |                                                    |  |
| OVER VOLTAGE CATEGORY |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | IEC/EN 61558-1/-2-16(OVC III , altitude up to 2000m); IEC/EN/UL 62368-1(OVC II , altitude up to 5000m) |                                                                                                                            |               |                                                                              |                                                    |  |
| WITHSTAND VOLTAGE     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | I/P-O/P:4.2KVac                                                                                        |                                                                                                                            |               |                                                                              |                                                    |  |
| ISOLATION RESISTANCE  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | I/P-O/P:100M Ohms / 500Vdc / 25℃ / 70% RH                                                              |                                                                                                                            |               |                                                                              |                                                    |  |
| EMC EMISSION          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Parameter                                                                                              | Standard                                                                                                                   |               |                                                                              | Test Level / Note                                  |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Conducted                                                                                              | BS EN/EN55032(CISPR32), CNS15936                                                                                           |               |                                                                              | Class B                                            |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Radiated                                                                                               | BS EN/EN55032(CISPR32), CNS15936                                                                                           |               |                                                                              | Class B                                            |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Harmonic Current (Note 5)                                                                              | BS EN/EN61000-3-2                                                                                                          |               |                                                                              | Class A                                            |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Voltage Flicker                                                                                        | BS EN/EN61000-3-3                                                                                                          |               |                                                                              | -----                                              |  |
| EMC IMMUNITY          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | BS EN/EN55035, BS EN/EN61000-6-2                                                                       |                                                                                                                            |               |                                                                              |                                                    |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Parameter                                                                                              | Standard                                                                                                                   |               |                                                                              | Test Level / Note                                  |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ESD                                                                                                    | BS EN/EN61000-4-2                                                                                                          |               |                                                                              | Level 3, 8KV air; Level 2, 4KV contact, criteria A |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Radiated Susceptibility                                                                                | BS EN/EN61000-4-3                                                                                                          |               |                                                                              | Level 3, criteria A                                |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | EFT/Burest                                                                                             | BS EN/EN61000-4-4                                                                                                          |               |                                                                              | Level 3, criteria A                                |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Surge                                                                                                  | BS EN/EN61000-4-5                                                                                                          |               |                                                                              | Level 3,1KV/L-N, criteria A                        |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Conducted                                                                                              | BS EN/EN61000-4-6                                                                                                          |               |                                                                              | Level 3, criteria A                                |  |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Magnetic Field                                                                                         | BS EN/EN61000-4-8                                                                                                          |               |                                                                              | Level 4, criteria A                                |  |
|                       | Voltage Dips and interruptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | BS EN/EN61000-4-11                                                                                     |                                                                                                                            |               | >95% dip 0. 5 periods, 30% dip 25 periods,<br>>95% interruptions 250 periods |                                                    |  |
| OTHERS                | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 9094.9K hrs min.      Telcordia SR-332 (Bellcore) ; 1495.8K hrs min.      MIL-HDBK-217F (25℃)          |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 45.7*25.4*21.5 mm (L*W*H)                                                                              |                                                                                                                            |               |                                                                              |                                                    |  |
|                       | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.033Kg;270pcs/ 9.8Kg/0.94CUFT                                                                         |                                                                                                                            |               |                                                                              |                                                    |  |
| NOTE                  | 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.<br>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μ F & 47 μ F parallel capacitor.<br>3. Tolerance : includes set up tolerance, line regulation and load regulation.<br>4. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.<br>5. 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>6. The power supply is considered as an independent unit ,but the final equipment still need to re-confirm that the whole system complies with the 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="https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf">https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf</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

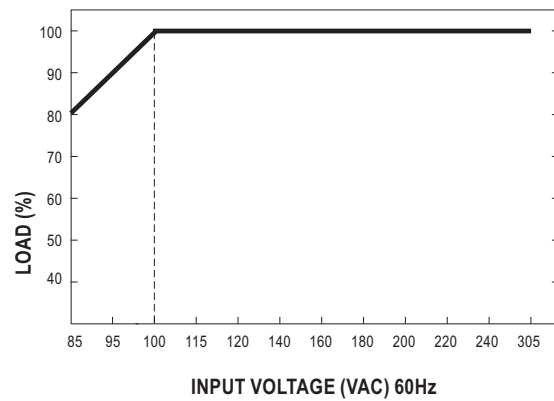
fosc : 65KHz



## Derating Curve



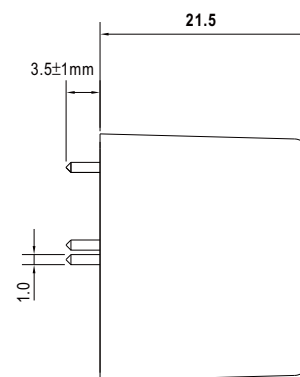
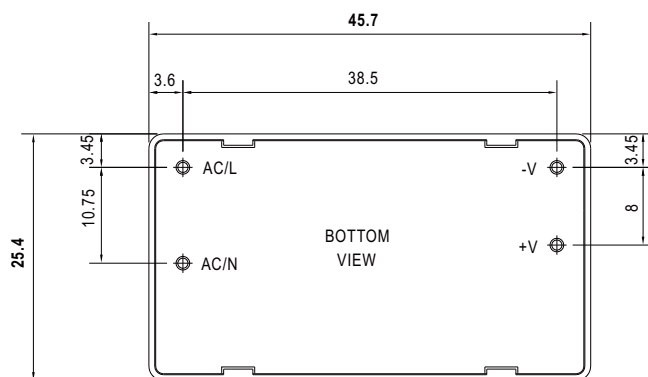
## Output Derating VS Input Voltage



## Mechanical Specification

(Unit:mm[inch], Tolerance:±0.5[±0.02])

Case No.222A



P/N diameter:1.0

## Installation Manual

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