



## 30W AC-DC High Reliable PCB-Mount Green Industrial Power Module **IRM-30** series



(IRM-30)



(IRM-30-xxST)

User's Manual



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### ■ Features

- 2.74"x1.54"compact size
- PCB, chassis or screw terminal mounting version
- 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(except for 5V)
- 3 years warranty

### ■ Applications

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

### ■ GTIN CODE

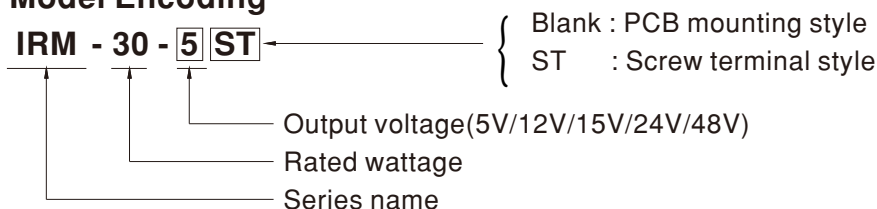
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### ■ Description

IRM-30 is a 30W miniature (69.5\*39\*24mm) 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. PCB mounting style model(Blank) meet the anti-vibration demand up to 2G and screw terminal style model (ST) meet the anti-vibration demand up to 5G; moreover, it provides the fundamental resistance to dust and moisture.

With the high efficiency up to 90% and the extremely low no-load power consumption below 0.1W, IRM-30 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. In addition to module-type model, IRM-30 series also offers the screw terminal style model (ST).

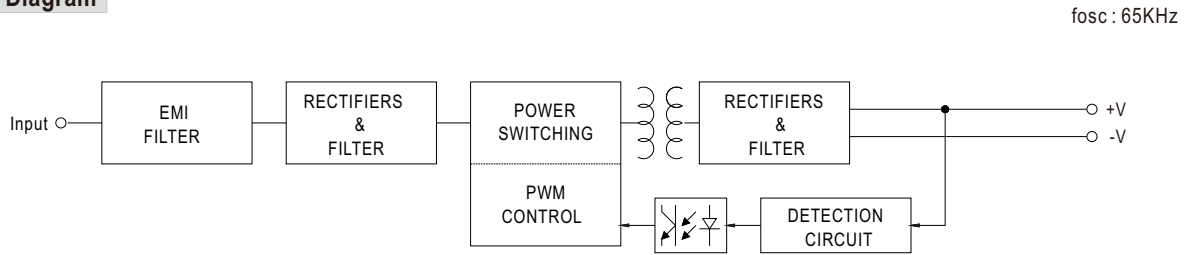
### ■ Model Encoding



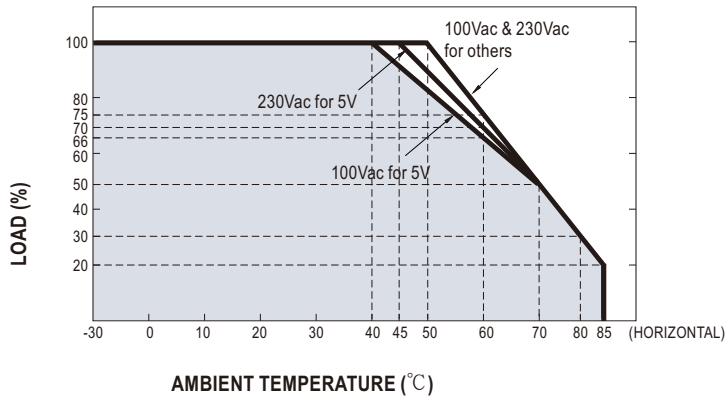
**SPECIFICATION**

| MODEL                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | IRM-30-5 □                                                                                                                                                  | IRM-30-12 □                      | IRM-30-15 □                                                                 | IRM-30-24 □                                        | IRM-30-48 □ |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------|-------------|
| OUTPUT                         | DC VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5V                                                                                                                                                          | 12V                              | 15V                                                                         | 24V                                                | 48V         |
|                                | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 6A                                                                                                                                                          | 2.5A                             | 2A                                                                          | 1.3A                                               | 0.63A       |
|                                | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0 ~ 6A                                                                                                                                                      | 0 ~ 2.5A                         | 0 ~ 2A                                                                      | 0 ~ 1.3A                                           | 0 ~ 0.63A   |
|                                | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30W                                                                                                                                                         | 30W                              | 30W                                                                         | 31.2W                                              | 30.2W       |
|                                | RIPPLE & NOISE (max.) Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 120mVp-p                                                                                                                                                    | 150mVp-p                         | 200mVp-p                                                                    | 240mVp-p                                           | 300mVp-p    |
|                                | VOLTAGE TOLERANCE Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ±2.5%                                                                                                                                                       | ±2.5%                            | ±2.5%                                                                       | ±2.5%                                              | ±2.5%       |
|                                | LINE REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ±0.5%                                                                                                                                                       | ±0.5%                            | ±0.5%                                                                       | ±0.5%                                              | ±0.5%       |
|                                | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ±1.0%                                                                                                                                                       | ±0.5%                            | ±0.5%                                                                       | ±0.5%                                              | ±0.5%       |
|                                | SETUP, RISE TIME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1000ms, 30ms/230Vac      1500ms, 30ms/115Vac at full load                                                                                                   |                                  |                                                                             |                                                    |             |
|                                | HOLD UP TIME (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 40ms/230Vac      12ms/115Vac at full load                                                                                                                   |                                  |                                                                             |                                                    |             |
| INPUT                          | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 85 ~ 305Vac                                                                                                                                                 |                                  |                                                                             |                                                    |             |
|                                | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 47 ~ 440Hz                                                                                                                                                  |                                  |                                                                             |                                                    |             |
|                                | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 83%                                                                                                                                                         | 88%                              | 88%                                                                         | 88.5%                                              | 90%         |
|                                | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.75A/115Vac      0.5A/230Vac      0.375A/277Vac                                                                                                            |                                  |                                                                             |                                                    |             |
|                                | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | COLD START 25A/115Vac      45A/230Vac                                                                                                                       |                                  |                                                                             |                                                    |             |
|                                | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | < 0.25mA/277Vac                                                                                                                                             |                                  |                                                                             |                                                    |             |
| PROTECTION                     | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 105% ~ 160% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed                                    |                                  |                                                                             |                                                    |             |
|                                | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.25 ~ 6.75V                                                                                                                                                | 12.6 ~ 16.2V                     | 15.75 ~ 20.25V                                                              | 25.2 ~ 32.4V                                       | 50.4 ~ 64V  |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Protection type : Shut off o/p voltage, clamping by zener diode                                                                                             |                                  |                                                                             |                                                    |             |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 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 |                                  |                                                                             |                                                    |             |
|                                | SOLDERING TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Wave soldering: 265℃, 5s (max.); Manual soldering: 390℃, 3s (max.)                                                                                          |                                  |                                                                             |                                                    |             |
|                                | OVER VOLTAGE CATEGORY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | III; According to EN62368-1; altitude up to 2000 meters                                                                                                     |                                  |                                                                             |                                                    |             |
|                                | OPERATING ALTITUDE Note.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2000 meters                                                                                                                                                 |                                  |                                                                             |                                                    |             |
| SAFETY & EMC (Note.5)          | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | IEC62368-1, IEC61558-1/-2-16, UL62368-1, TUV BS EN/EN62368-1, BS EN/EN60335-1, 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 III, altitude up to 2000m)                                                       |                                  |                                                                             |                                                    |             |
|                                | 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 4, 2KV/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, > 95% interruptions 250 periods |                                                    |             |
| OTHERS                         | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 7713.0K hrs min.      Telcordia SR-332 (Bellcore) ; 593.4K hrs min.      MIL-HDBK-217F (25℃)                                                                |                                  |                                                                             |                                                    |             |
|                                | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PCB mounting style : 69.5*39*24mm (L*W*H)      Screw terminal style : 91*39.5*28.5mm (L*W*H)                                                                |                                  |                                                                             |                                                    |             |
|                                | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PCB mounting style : 0.094Kg; 144pcs/14.5Kg/0.94CUFT      Screw terminal style : 0.113Kg; 120pcs/14.6Kg/0.83CUFT                                            |                                  |                                                                             |                                                    |             |
| 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. 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>5. 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> |                                                                                                                                                             |                                  |                                                                             |                                                    |             |

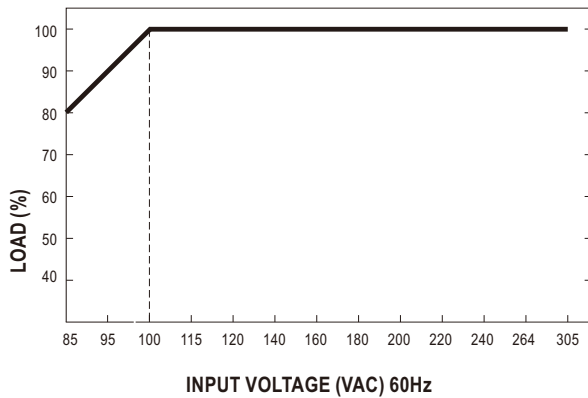
## ■ Block Diagram



## ■ Derating Curve



## ■ Output Derating VS Input Voltage

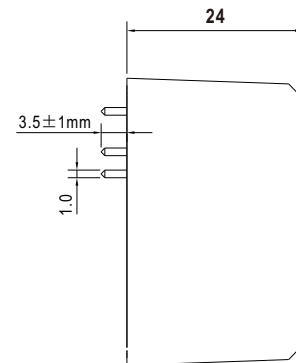
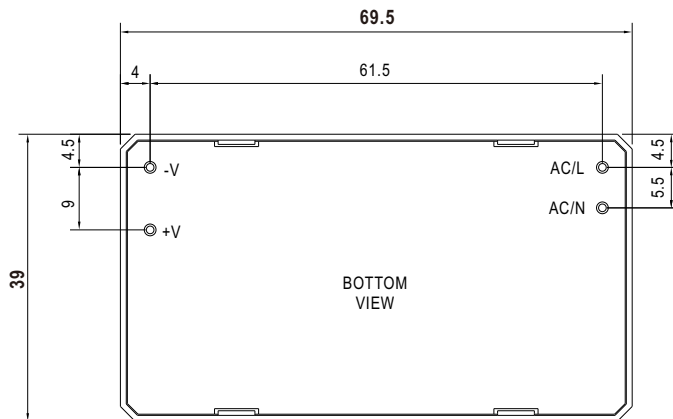


## ■ Mechanical Specification

(Unit:mm, Tolerance:±1mm)

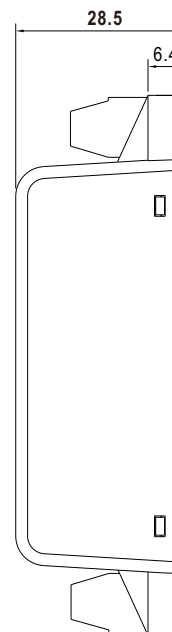
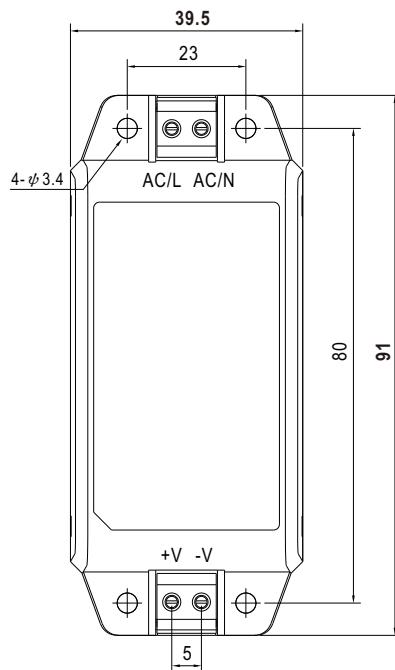
Case No.IRM30

### • PCB mounting style (IRM-30)



P/N diameter:1.0

### • Screw terminal style (IRM-30-xxST)



## ■ Installation Manual

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