



■ Features

- Built-in battery charger and UPS function
- TTL signals for status detection:
AC OK, Battery disconnect, Battery reverse polarity, Battery low, Battery full and Discharge
- Built-in AC and battery circuit ON/OFF switches enhance safety during maintenance
- Forced UPS mode for battery maintenance
- Protections: Short circuit / Overload / Over voltage / Over temperature / Battery low voltage / Battery reverse polarity (No damage)
- -20 ~ +60°C wide operating temperature
- Output voltage adjustable (-20%~+5%) for CH1 by VR
- Suitable for lead acid and lithium-ion batteries
- Design refer to GB17945 system requirement
- 1U low profile (30 mm)
- 3 years warranty

■ Applications

- Fire emergency and evacuation system
- Public safety battery back-up
- Security system
- Uninterruptible DC-UPS system
- Central monitoring system
- Industrial automation

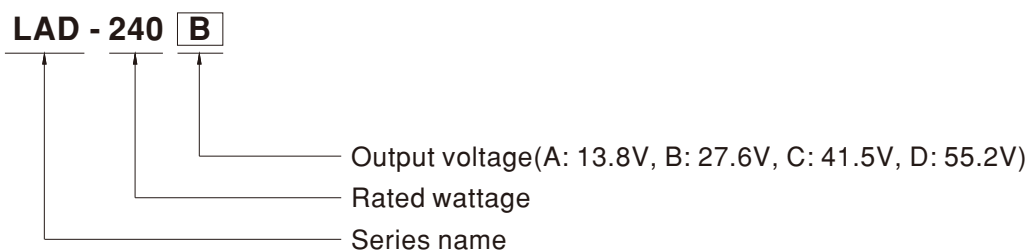
■ GTIN CODE

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

■ Description

LAD-240 series is a 240W economical AC/DC low profile security power supply with UPS function. Adopting the input range from 90Vac to 264Vac (115Vac/230Vac selectable by switch) and supports output 13.8V, 27.6V, 41.5V and 55.2Vdc. With high efficiency up to 88% and built-in AC, battery switch for easy maintenance. In addition, LAD-240 series also provide TTL signals for AC OK, battery disconnect, battery reverse polarity (No damage), battery low detection, battery full and discharge, to allow easy integration into security and fire systems directly.

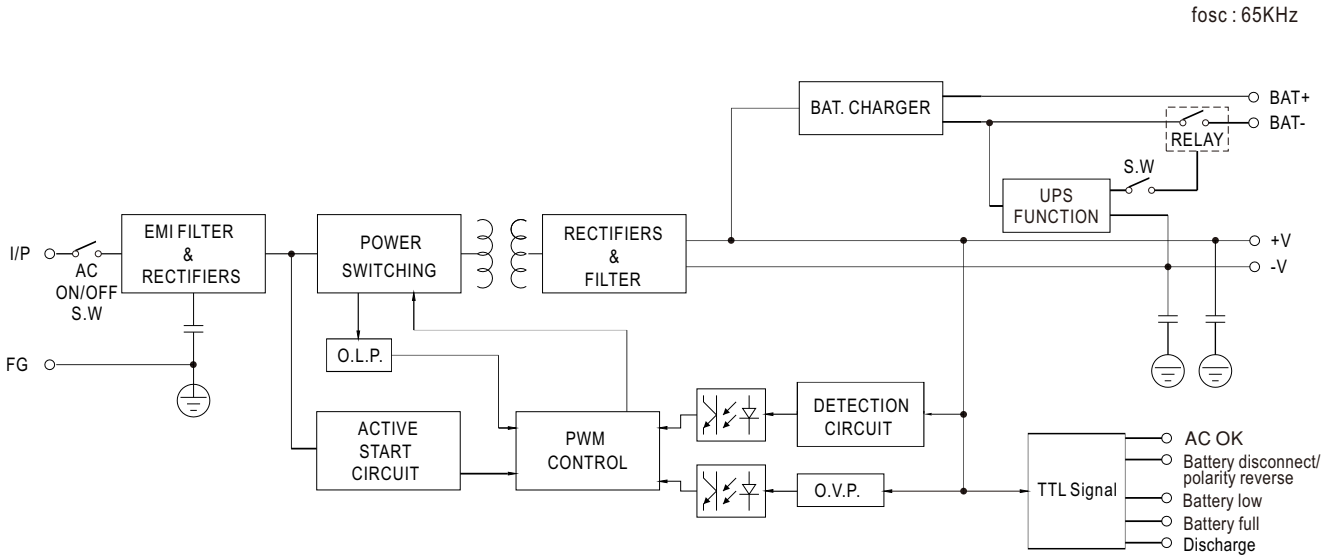
■ Model Encoding



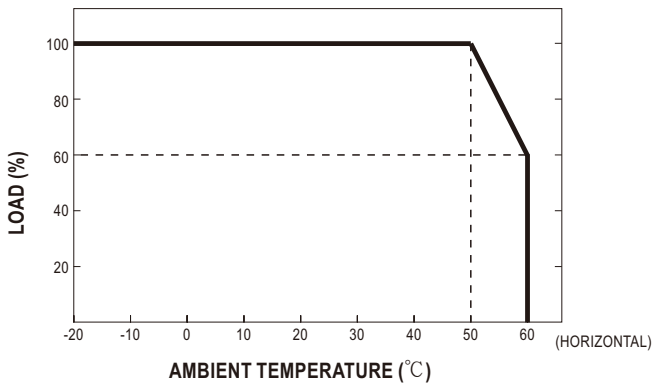
SPECIFICATION

| MODEL | | LAD-240A | | LAD-240B | | LAD-240C | | LAD-240D | | |
|--------------------------------------|---|--|--|--|---|---|---------------------|---|---------------------|--|
| OUTPUT | OUTPUT NUMBER | CH1 | CH2 | CH1 | CH2 | CH1 | CH2 | CH1 | CH2 | |
| | DC VOLTAGE | 13.8V | 13.8V | 27.6V | 27.6V | 41.5V | 41.5V | 55.2V | 55.2V | |
| | RATED CURRENT | 16.4A | 1A(Battery Charger) | 7.7A | 1A(Battery Charger) | 4.78A | 1A(Battery Charger) | 3.4A | 1A(Battery Charger) | |
| | CURRENT RANGE | 0 ~ 17.4A | ----- | 0 ~ 8.7A | ----- | 0 ~ 5.78A | ----- | 0 ~ 4.4A | ----- | |
| | RATED POWER | 240.12W | | 240.12W | | 239.87W | | 242.88W | | |
| | RIPPLE & NOISE (max.) Note.2 | 150mVp-p | ----- | 150mVp-p | ----- | 240mVp-p | ----- | 240mVp-p | ----- | |
| | VOLTAGE ADJ. RANGE | CH1: 10.8 ~ 14.5V | | CH1: 21.6 ~ 29V | | CH1: 32.4 ~ 43.5V | | CH1: 43.5 ~ 58V | | |
| | VOLTAGE TOLERANCE Note.3 | ±1.5% | ----- | ±1.0% | ----- | ±1.0% | ----- | ±0.5% | ----- | |
| | LINE REGULATION | ±0.5% | ----- | ±0.5% | ----- | ±0.5% | ----- | ±0.5% | ----- | |
| | LOAD REGULATION | ±1.0% | ----- | ±0.5% | ----- | ±0.5% | ----- | ±0.5% | ----- | |
| | SETUP, RISE TIME | 2000ms, 50ms/230VAC | | 2000ms, 50ms/115VAC at full load | | | | | | |
| | HOLD UP TIME (Typ.) | 16ms/230VAC | 12ms/115VAC at full load | | | | | | | |
| | BATTERY STATIC DISCHARGE CURRENT | <100µA | | | | | | | | |
| INPUT | VOLTAGE RANGE | 90 ~ 132VAC / 180 ~ 264VAC by switch | | 240 ~ 370VDC | | (Default switch at 230VAC) | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | | |
| | EFFICIENCY (Typ.) | 85.5% | | 87.5% | | 88% | | 88% | | |
| | AC CURRENT (Typ.) | 4.4A/115VAC | | 2.4A/230VAC | | | | | | |
| | INRUSH CURRENT (Typ.) | COLD START 60A/115VAC | | 60A/230VAC | | | | | | |
| | LEAKAGE CURRENT | <0.5mA / 240VAC | | | | | | | | |
| PROTECTION | OVERLOAD | CH1:105 ~ 135% CH2:90 ~ 110% | | Protection type : CH1 OLP, CH2 with battery: The unit will enter to UPS mode when CH1 is around 105%~120%, when total output of CH1 + CH2 reach around 125%~135% output shuts down | | CH1 OLP, CH2 without battery: Shut down o/p voltage, re-power on to removed | | CH2 : Constant current limiting; fault condition does not affect CH1 working, recovers automatically after fault condition is removed (External fuse is mandatory in series connection with battery for protection) | | |
| | OVER VOLTAGE | CH1:15.5 ~ 18V | | CH1:31 ~ 36V | | CH1:47 ~ 55V | | CH1:59 ~ 69V | | |
| | OVER TEMPERATURE | Protection type : Shut down o/p voltage, re-power on to removed | | | | | | | | |
| | BATTERY REVERSE POLARITY | Protected when reverse polarity , no damage , recovers automatically after fault condition is removed | | | | | | | | |
| | BATTERY CUTOFF | 9.5V±0.5V | | 21.5V±0.5V | | 32V±0.5V | | 43V±0.5V | | |
| | FUNCTION | AC OK | TTL signal, High / Open : AC Fail ; Low : AC OK ; Ice : max. 30mA@ 50VDC | | | | | | | |
| BATTERY DISCONNECT/ REVERSE POLARITY | | TTL signal, High / Open : Battery connect/normal ; Low : Battery disconnect/reverse polarity; Ice : max. 30mA@ 50VDC | | | | | | | | |
| BATTERY LOW | | TTL signal, High / Open : Battery normal ; Low : Battery low; Ice : max. 30mA@ 50VDC | | | | | | | | |
| BATTERY FULL | | TTL signal, High / Open : Battery charging ; Low : Battery full ; Ice : max. 30mA@ 50VDC | | | | | | | | |
| DISCHARGE | | TTL signal, High / Open : Charge ; Low : Discharge ; Ice : max. 30mA@ 50VDC | | | | | | | | |
| ENVIRONMENT | | WORKING TEMP. | -20 ~ +60°C (Refer to "Derating Curve") | | | | | | | |
| | WORKING HUMIDITY | 20 ~ 95% RH non-condensing | | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -30 ~ +85°C, 10 ~ 95% RH non-condensing | | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 50°C) | | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 5G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | | | | |
| SAFETY & EMC (Note 4 & 5) | SAFETY STANDARDS | UL62368-1, BS EN/EN62368-1, AN/ASZ62368.1, EAC TP TC 004 approved; Design refer to GB 17945-2010 | | | | | | | | |
| | WITHSTAND VOLTAGE | I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC | | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C/ 70% RH | | | | | | | | |
| | EMC EMISSION | Parameter | Standard | | Test Level / Note | | | | | |
| Conducted | | BS EN/EN55032 (CISPR32), EAC TP TC 020 | | Class A | | | | | | |
| Radiated | | BS EN/EN55032 (CISPR32), EAC TP TC 020 | | Class A | | | | | | |
| Harmonic Current | | ----- | | ----- | | | | | | |
| Voltage Flicker | | ----- | | ----- | | | | | | |
| EMC IMMUNITY | | Parameter | Standard | | Test Level / Note | | | | | |
| | | ESD | BS EN/EN61000-4-2 | | Level 3, 8KV air ; Level 2, 6KV contact; criteria A | | | | | |
| | | Radiated | BS EN/EN61000-4-3 | | Level 3, 10V/m ; criteria A | | | | | |
| | | EFT / Burst | BS EN/EN61000-4-4 | | Level 3, 2KV ; criteria A | | | | | |
| | | Surge | BS EN/EN61000-4-5 | | Level 3, 1KV/Line-Line ; 2KV/Line-FG ; criteria A | | | | | |
| | Conducted | BS EN/EN61000-4-6 | | Level 3, 10V ; criteria A | | | | | | |
| Magnetic Field | BS EN/EN61000-4-8 | | Level 4, 30A/m ; criteria A | | | | | | | |
| OTHERS | MTBF | 1394.9K hrs min. Telcordia SR-332 (Bellcore); 156.7K hrs min. MIL-HDBK-217F (25°C) | | | | | | | | |
| | DIMENSION | 215*115*30mm (L*W*H) | | | | | | | | |
| | PACKING | 0.75Kg; 15pcs/12.25Kg/0.7CUFT | | | | | | | | |
| NOTE | <p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>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.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. Radiation testing requires adding 13*26*30NIZN magnetic loops or buckles to the battery output wire. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on https://www.meanwell.com/Upload/PDF/EML_statement_en.pdf)</p> <p>5. This power supply does not meet the harmonic current requirements outlined by BS EN/EN61000-3-2. Please do not use this power supply under the following conditions:</p> <ul style="list-style-type: none"> a) the end-devices is used within the European Union, and b) the end-devices is connected to public mains supply with 220Vac or greater rated nominal voltage, and c) the power supply is: <ul style="list-style-type: none"> - installed in end-devices with average or continuous input power greater than 75W, or - belong to part of a lighting system <p>Exception: Power supplies used within the following end-devices do not need to fulfill BS EN/EN61000-3-2</p> <ul style="list-style-type: none"> a) professional equipment with a total rated input power greater than 1000W; b) symmetrically controlled heating elements with a rated power less than or equal to 200W <p>6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx</p> | | | | | | | | | |

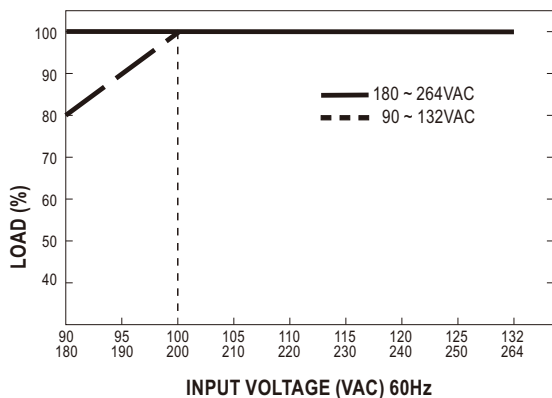
Block Diagram



Derating Curve



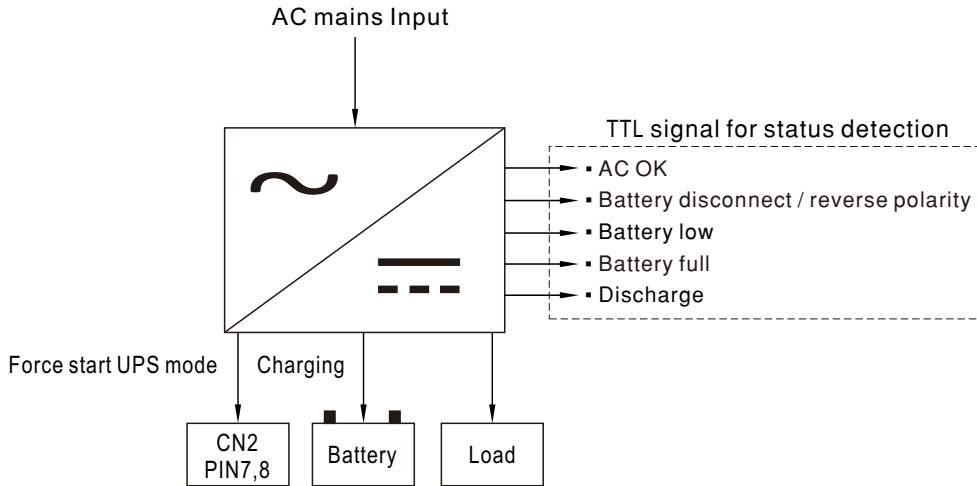
Static Characteristics



■ Suggested Application

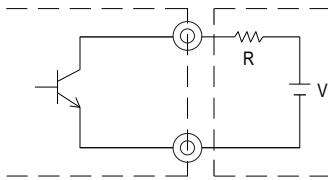
1.DC-UPS function

When AC voltage is abnormal, The UPS function will activate and power source switch battery backup.



2.Function signals by TTL

- TTL Signal is sent out through pins from CN2.
- External voltage source is required for the TTL signal. The maximum voltage is 50VDC and the maximum sink current is 30mA.



External voltage and resistor
(The max. sink current is 30mA at 50VDC)

2.1 AC OK : Detection of AC status

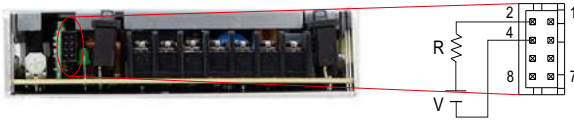
| Between pin 1 and pin 4 | Description |
|---|---|
| Low (0.3V max. at 30mA) | The signal is "Low" when the AC input is normal |
| High or open (External applied voltage 50V max.) | The signal turns to be "High" when the AC input is abnormal |



2.2 Battery Disconnected/Reverse Polarity: Battery status detection

| Between pin 2 and pin 4 | Description |
|---|--|
| Low (0.3V max. at 30mA) | The signal is "Low" when the battery is not connected or inversely connected |
| High or open (External applied voltage 50V max.) | The signal turns to be "High" when the battery is connected or normal |

Note. The signals of battery disconnected and reverse polarity can only be detected during the first power transmission , it is can not be detected at any time.



2.3 Battery Low: Battery low detection

| Between pin 3 and pin 4 | Description |
|---|---|
| Low (0.3V max. at 30mA) | The signal is "Low" when the battery is under voltage protected |
| High or open (External applied voltage 50V max.) | The signal turns to be "High" when the battery is normal |



2.4 Battery Full : Battery full detection

| Between pin 4 and pin 5 | Description |
|---|---|
| Low (0.3V max. at 30mA) | The signal is "Low" when the battery is fully charged |
| High or open (External applied voltage 50V max.) | The signal turns to be "High" when the battery is charged |



2.5 Discharge: Discharge detection

| Between pin 4 and pin 6 | Description |
|---|--|
| Low (0.3V max. at 30mA) | The signal is "Low" when the power supply is discharging |
| High or open (External applied voltage 50V max.) | The signal is "High" when the main power is working |



2.6 Forced Start: Forced start UPS mode

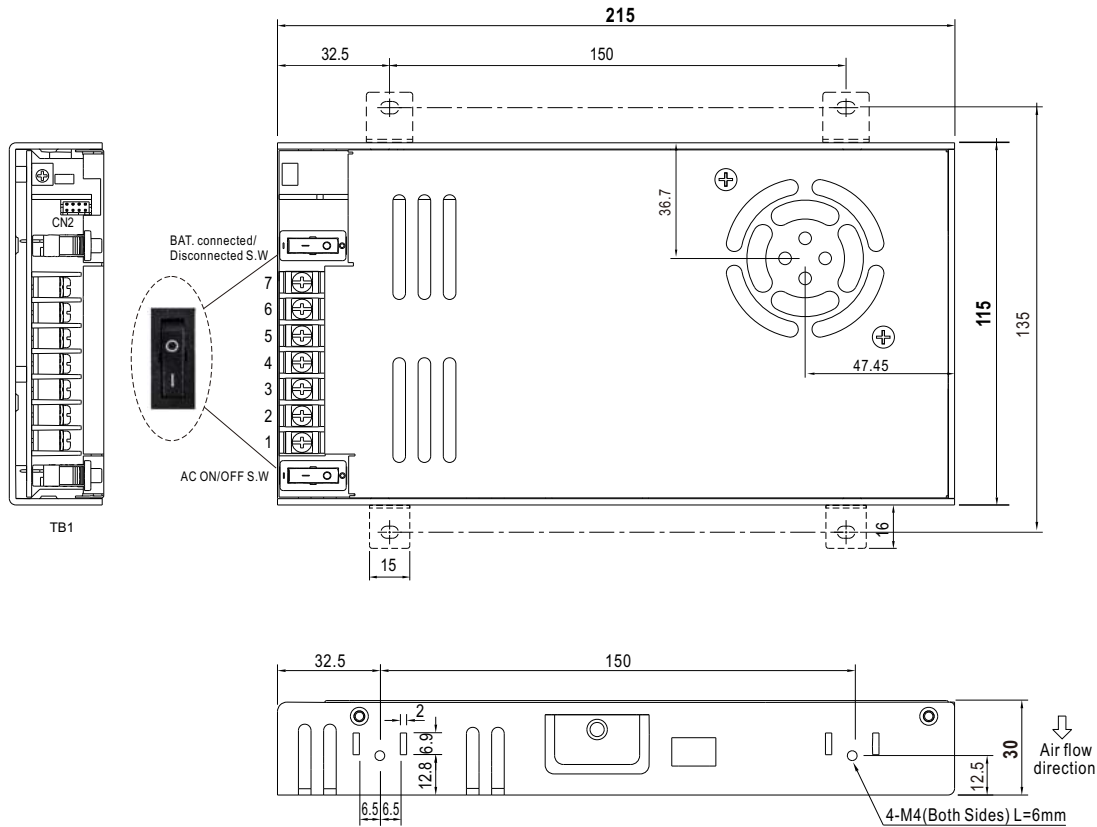
| Pin 7 & 8 | Status |
|-----------|-----------------------|
| Short | Forced start UPS mode |
| Open | Normal |



Mechanical Specification

(Unit: mm , tolerance ± 1 mm)

Case No. 207



※ Connector Pin No. Assignment(CN2)

| Pin No. | Assignment(TTL Signal) | Mating Housing | Terminal |
|---------|--|--------------------------|---------------------------------|
| 1 | AC OK | TKP DH2 or equivalent | TKP DHT-1S(LF) or equivalent |
| 2 | Battery disconnect/ reverse polarity | | |
| 3 | Battery low | | |
| 4 | GND | | |
| 5 | Battery full | | |
| 6 | Discharge | | |
| 7,8 | Open : normal Short : forced start UPS mode | | |

※ Terminal Pin No. Assignment(TB1)

| Pin No. | Assignment |
|---------|--------------|
| 1 | AC/L |
| 2 | AC/N |
| 3 | FG \perp |
| 4 | DC OUTPUT -V |
| 5 | DC OUTPUT +V |
| 6 | BAT - |
| 7 | BAT + |



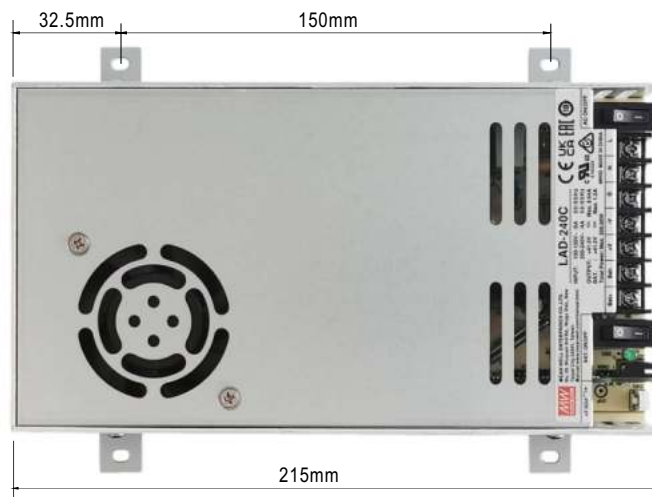
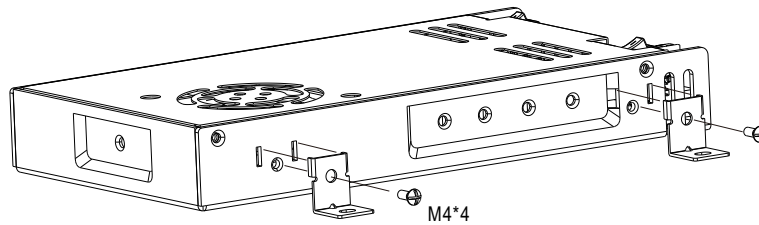
DC OUTPUT -V and BAT - can not be shorted.

Accessory List

※ Bracket (Optional accessory, Should ordered separately)

| MW's Order No. | Item | Quantity |
|----------------|------|----------------|
| PGG2MHS012 | | 4pcs/per model |

■ Installation Diagram



■ Installation Manual

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