

## AD-1500

1500W Programmable Digital Power Supply



### ■ Features:

- Universal AC input/Full range (90~264Vac)
- Programmable output voltage & current 0~105%
- Current sharing at parallel operation (Coming Soon!)
- Constant current limit
- AUX POWER : +5.0V/1.0A auxiliary
- Built-in OR'ing FETs
- Support Parallel operation via CANBUS (Coming Soon!)
- Built-in isolation circuit (A23, A24 Version)
- Power OK signal (built-in isolation circuit)
- Remote on/off & sense
- Remote on/off & sense
- Support PMBus(meet), MODBUS, RS232/485, and I<sup>2</sup>C protocol
- Protection: OVP, OLP, OTP, UTP, AC Failure, Power and Fan Failures
- Built-in VR to adjust output voltage & current (C11 version)
- Built-in EEPROM to memorize power supply settings
- Optional Changeable interface cards: A23, A24, C11 and Ethernet (coming soon!)
- Intelligent GUI to set and monitoring parameter (Coming Soon!)

### ■ Model Naming Rule:

**AD-1500-XX- ①②③**

**AD** : Product Series

**1500** : Wattage

**XX** : Output voltage

①②③ : can be A23, A24, or C11

#### Hardware (Interface changeable):

A23 / A24 : Support Parallel connection (Coming Soon!)

C11 : Single unit only

#### Communication protocol :

A23 : UART (RS-485), and Meet PMBUS

A24 : MODBUS & Meet PMBUS

C11 : UART (RS-485)

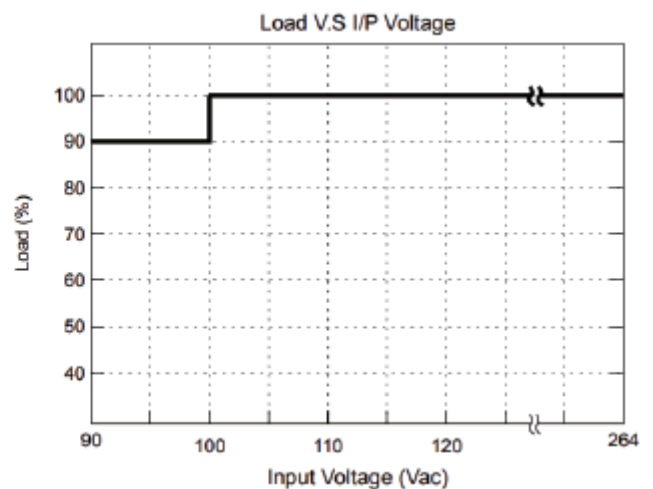
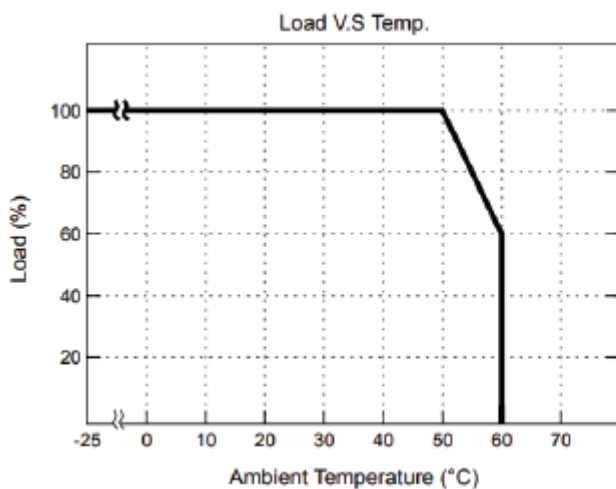
|               |                                 | AD-1500-12                                 | AD-1500-15 | AD-1500-24 | AD-1500-30 | AD-1500-36 | AD-1500-48 | AD-1500-60 |       |
|---------------|---------------------------------|--|------------|------------|------------|------------|------------|------------|-------|
| <b>Output</b> | DC Voltage Rated                | 12V  | 15V        | 24V        | 30V        | 36V        | 48V        | 57V        |       |
|               | Rated Current                   | 125A                                       | 100A       | 62.5A      | 50A        | 41.7A      | 31.3A      | 26.3A      |       |
|               | Current Range                   | 0 ~ 125A                                   | 0 ~ 100A   | 0 ~ 62.5A  | 0 ~ 50A    | 0 ~ 41.7A  | 0 ~ 31.3A  | 0 ~ 26.3A  |       |
|               | Voltage Range                   | 0~105% vs. rated                           |            |            |            |            |            |            |       |
|               | Rated Power                     | 1500W                                      | 1500W      | 1500W      | 1500W      | 1500W      | 1500W      | 1500W      | 1500W |
|               | Ripple & Noise (Max.) (Note. 2) | 150mVp-p                                   | 150mVp-p   | 240mVp-p   | 300mVp-p   | 360mVp-p   | 480mVp-p   | 570mVp-p   |       |
|               | Voltage Adj. Range              | ±5.0% Typical adjustment                   |            |            |            |            |            |            |       |
|               | Voltage Tolerance (Note. 3)     | ±2.0% (rate output voltage of single unit) |            |            |            |            |            |            |       |
|               | Current Tolerance               | ±3.0% (rate output current of single unit) |            |            |            |            |            |            |       |
|               | Line Regulation                 | ±1.0%                                      |            |            |            |            |            |            |       |
|               | Load Regulation                 | ±1.0%                                      |            |            |            |            |            |            |       |
|               | Setup, Rise Time                | 1300ms, 100ms at full load (230V ac)       |            |            |            |            |            |            |       |
|               | Hold Up Time (Typ.)             | 14ms / 230VAC at full load                 |            |            |            |            |            |            |       |
| <b>Input</b>  | Voltage Range (Note. 4)         | 90 ~ 264VAC, 250~370VDC *                  |            |            |            |            |            |            |       |
|               | Frequency Range                 | 47 ~ 63Hz                                  |            |            |            |            |            |            |       |
|               | Power Factor (Typ.)             | 0.95 / 230VAC, 0.99 / 115VAC at full load  |            |            |            |            |            |            |       |
|               | Efficiency (Typ.)               | 89%  | 90%        | 92%        | 92%        | 92%        | 92%        | 93%        |       |
|               | AC Current (Typ.)               | 18A / 115VAC, 9A / 230VAC                  |            |            |            |            |            |            |       |
|               | Inrush Current (Typ.)           | 30A / 115VAC, 45A / 230VAC (cold start)    |            |            |            |            |            |            |       |
|               | Leakage Current                 | < 3.5mA / 240VAC                           |            |            |            |            |            |            |       |

|                         |  | AD-1500-12  | AD-1500-15                       | AD-1500-24   | AD-1500-30 | AD-1500-36 | AD-1500-48 | AD-1500-60 |
|-------------------------|--|---|----------------------------------|--|------------|------------|------------|------------|
| <b>Protection</b>       | Over Load  | 105% rated output power   |                                  | Protection type: Constant current limit                                    |            |            |            |            |
|                         | Over Voltage                                     | Programmable OVP, 120 ± 7% Vout.  |                                  | Protection type: Latch-style (Recovery after reset AC power ON or inhibit) |            |            |            |            |
|                         | Over Temperature                                 | Detect on NTC, Protection type: Auto recovery after temperature goes down                                       |                                  |  |            |            |            |            |
| <b>Function</b>         | Auxiliary Power                                  | +5.0V / 1.0A  |                                  |  |            |            |            |            |
|                         | Remote ON / OFF Control                          | By external switch / communication  |                                  |  |            |            |            |            |
|                         | Power OK Signal                                  | Open drain signal low when PSU turns on, Max. sink current: 20mA, Max. drain voltage: 40V                       |                                  |  |            |            |            |            |
|                         | Output Voltage Trim                              | Adjustment of output voltage is between 0% ~ 105% of rated output (C11 Version)                                 |                                  |  |            |            |            |            |
|                         | Output Current Trim                              | Adjustment of output current is between 0% ~ 105% of rated output (C11 Version)                                 |                                  |  |            |            |            |            |
|                         | Parallel Connection (Note. 5)                    | Current sharing via CANBUS (A23 & A24 Version)  |                                  |  |            |            |            |            |
| <b>Environment</b>      | Working Temp.                                    | -25 ~ +60°C (Refer to load de-rating curve)   |                                  |  |            |            |            |            |
|                         | Working Humidity                                 | 20 ~ 90% RH non-condensing  |                                  |  |            |            |            |            |
|                         | Storage Temp. & Humidity                         | -40 ~ +85°C, 10 ~ 95% RH  |                                  |  |            |            |            |            |
|                         | Temp. Coefficient                                | ±0.02% / °C (0 ~ 50°C)  |                                  |  |            |            |            |            |
|                         | Vibration  | 10 ~ 500Hz, 2G 10min. / 1cycle, period for 60min. each along X, Y, Z axes Compliance to IEC 68-2-6, IEC 68-2-64 |                                  |  |            |            |            |            |
| <b>Safety &amp; EMC</b> | Safety Standards                                 | UL 62368-1; EN 62368-1  |                                  |  |            |            |            |            |
|                         | Withstand Voltage (Note. 7)                      | I/P-O/P: 3KVAC (4242VDC), I/P-FG: 1.5KVAC (2121VDC), O/P-FG: 0.5KVAC (707VDC)                                   |                                  |  |            |            |            |            |
|                         | Isolation Resistance                             | I/P-O/P, I/P-FG, O/P-FG: 100M Ohms / 500VDC   |                                  |  |            |            |            |            |
|                         | EMI Conduction & Radiation                       | EN 55032; EN 61204-3; EN 61000-6-3  |                                  |  |            |            |            |            |
|                         | Power Harmonic & Voltage Fluctuation and Flicker | EN 61000-3-2; EN 61000-3-3  |                                  |  |            |            |            |            |
|                         | EMS Immunity (Note. 6)                           | EN55035: 2017 / A11: 2020 ; IEC 61000-4-2,3,4,5,6,8,11  |                                  |  |            |            |            |            |
|                         | <b>Others</b>                                    | Cooling   | Load and temperature control fan |  |            |            |            |            |
| Dimension (WxHxD)       |  | 127.8x64x280.4 mm / 5.03x2.52x11.04 inch  |                                  |  |            |            |            |            |
| Packing                 |  | 2.2kg; 6pcs / 16kg / 1.86CUFT   |                                  |  |            |            |            |            |

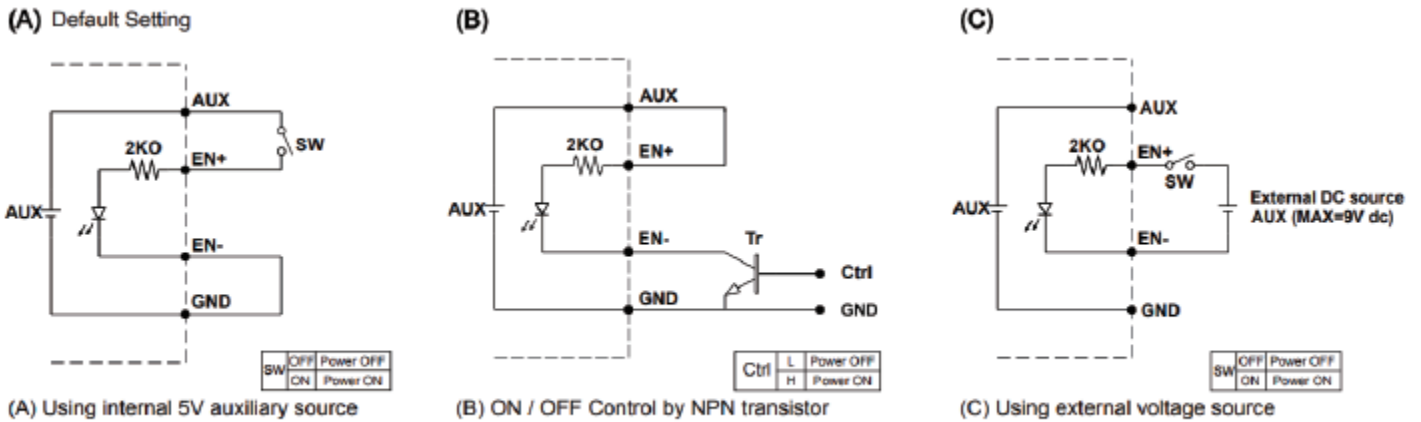
\*Note:

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.
3. Tolerance: includes setup time tolerance, line regulation and load regulation.
4. De-rating may apply in low input voltage. Please check the de-rating curve for more details.
5. In parallel connection, only one unit will operate if the total output load is less than 10% of the rated power.
6. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
7. This test is done without enclosure: I/P-O/P 4242VDC. If with enclosure: I/P-O/P 2121VDC, I/P-FG: 2121VDC, O/P-FG: 707VDC

## ■ De-rating Curve

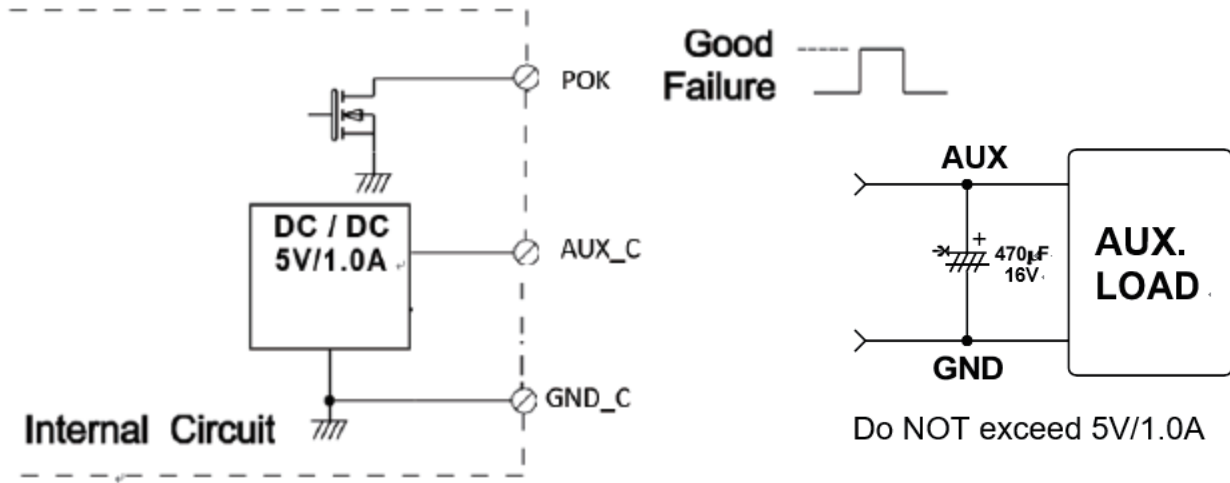


■ **REMOTE ON/OFF**



\*GND shown in above diagram is referring to the GND of CN2, not the Grounding from main power(NEG-).\*

■ **Power OK Signal & Auxiliary Power Setting**



**AUX and P.O.K. Signal**

Open drain signal low when PSU turns on, Max. P.OK sink current: 20mA, Max. drain voltage: 40V

To ensure better auxiliary power operation performance, place an additional capacitor per diag. as shown above

\*GND shown in above diagram is referring to the GND of Connect, not the Grounding from main power(NEG-).\*

## ■ Function LED

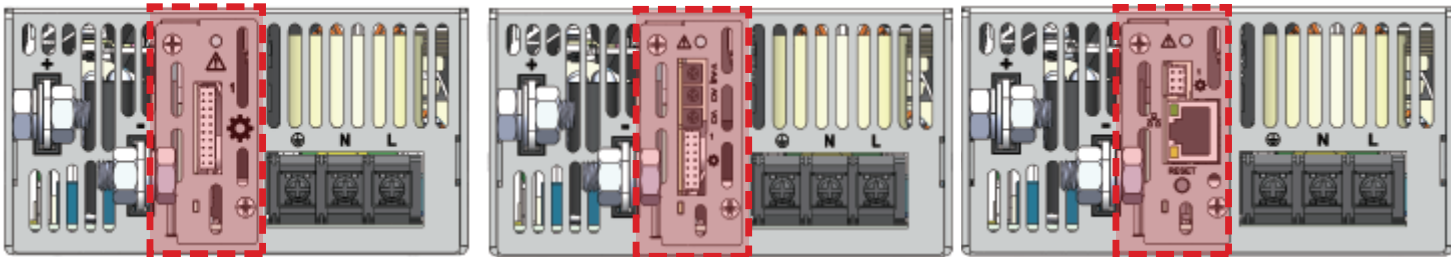
| LED                     | LED Signal | Status                                    |
|-------------------------|------------|---|
| Solid(Green)            |            | Power OK (Local mode)                     |
| Solid(Orange)           |            | Power OK (Remote mode)                    |
| Slow Blink(Green)       |            | Power Standby                             |
| Fast Blink(Red)         |            | Over Voltage Protection ( OVP)            |
| Solid(Red)              |            | Over Load Protection ( OLP)               |
| Slow Blink(Red)         |            | Over Temperature Protection ( OTP / UTP ) |
| Intermittent Blink(Red) |            | Fan Failure                               |
| Interlace Blink (Red)   |            | Power Failure                             |
| Slow Blink (Red)        |            | AC Failure                                |

## ■ Interface card (Changeable)

### 1. A23&A24 (Support Parallel Connection)

### 2. C11 (Single unit)

### 3. Ethernet (Coming soon!)



### PIN Function Description:

#### 1. A23 & A24 Support Parallel Connection (Coming Soon!)

| Pin No. | Function | Description                                  | Pin No. | Function | Description                               | Mating Housing / Contact    |
|---------|----------|--|---------|----------|---|-----------------------------|
| 1       | VS+      | Remote sense (+)                             | 2       | VS -     | Remote sense (-)                          | JST PHDR-20VS or equivalent |
| 3       | X        | Reserve                                      | 4       | X        | Reserve                                   |                             |
| 5       | EN+      | Inhibit ON/OFF (+)                           | 6       | AUX      | 5V / 1A Auxiliary power                   |                             |
| 7       | EN-      | Inhibit ON/OFF (-)                           | 8       | GND_C    | Communication Ground                      |                             |
| 9       | H_TERM   | CAN Termination                              | 10      | L_TERM   | CAN Termination                           |                             |
| 11      | CANH     | Dedicated in parallel (CAN BUS High-level)   | 12      | CANL     | Dedicated in parallel (CAN BUS Low-level) |                             |
| 13      | SCL      | Serial Clock used in the I2C interface       | 14      | SDA      | Serial Data used in the I2C interface     |                             |
| 15      | POK      | Power OK (40V / 20mA / <0.5W Open collector) | 16      | GND_C    | Communication Ground                      |                             |
| 17      | RS485-A  | Driver Output / Receiver Input Non-inverting | 18      | RS485-B  | Driver Output / Receiver Input Inverting  |                             |
| 19      | AUX_C    | 5V / 1A Auxiliary power                      | 20      | GND_C    | Communication Ground                      |                             |

JST SPHD-002T-P0.5 or equivalent

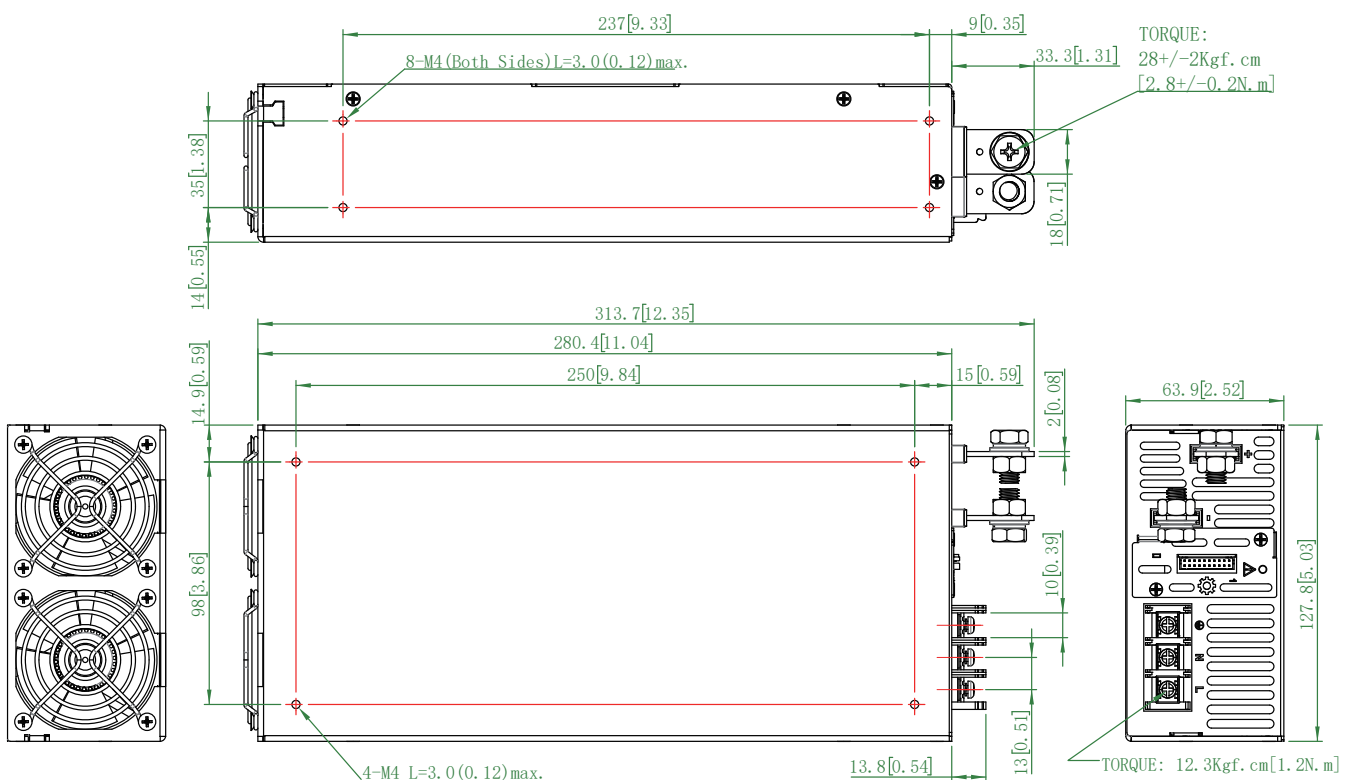
### 2. C11 (Single Unit)

| Pin No. | Function | Description                                  | Pin No. | Function | Description                            | Mating Housing / Contact    |                                  |
|---------|----------|--|---------|----------|--|-----------------------------|----------------------------------|
| 1       | VS+      | Remote sense (+)                             | 2       | VS -     | Remote sense (-)                       | JST PHDR-14VS or equivalent | JST SPHD-002T-P0.5 or equivalent |
| 3       | ENB+     | Inhibit ON/OFF (+)                           | 4       | AUX      | 5V / 1A Auxiliary power                |                             |                                  |
| 5       | ENB-     | Inhibit ON/OFF (-)                           | 6       | GND      | Communication Ground                   |                             |                                  |
| 7       | A_TERM   | RS-485 Termination                           | 8       | B_TERM   | RS-485 Termination                     |                             |                                  |
| 9       | RS485_A  | Driver Output / Receiver Input Non-inverting | 10      | RS485_B  | Driver Output/Receiver Input Inverting |                             |                                  |
| 11      | POK      | Power OK (40V / 20mA / <0.5W Open collector) | 12      | GND      | Communication Ground                   |                             |                                  |
| 13      | AUX      | 5V / 1A Auxiliary power                      | 14      | GND      | Communication Ground                   |                             |                                  |

### 3. Ethernet (Coming soon!)

| Pin No. | Function | Description                                | Pin No. | Function | Description                               | Mating Housing / Contact   |                                  |
|---------|----------|--|---------|----------|---|----------------------------|----------------------------------|
| 1       | H_TERM + | Remote sense (+)                           | 2       | L_TERM   | CAN Termination                           | JST PHDR-6VS or equivalent | JST SPHD-002T-P0.5 or equivalent |
| 3       | CANH     | Dedicated in parallel (CAN BUS High-level) | 4       | CANL     | Dedicated in parallel (CAN BUS Low-level) |                            |                                  |
| 5       | GND_C    | Communication Ground                       | 6       | GND_C    | Communication Ground                      |                            |                                  |

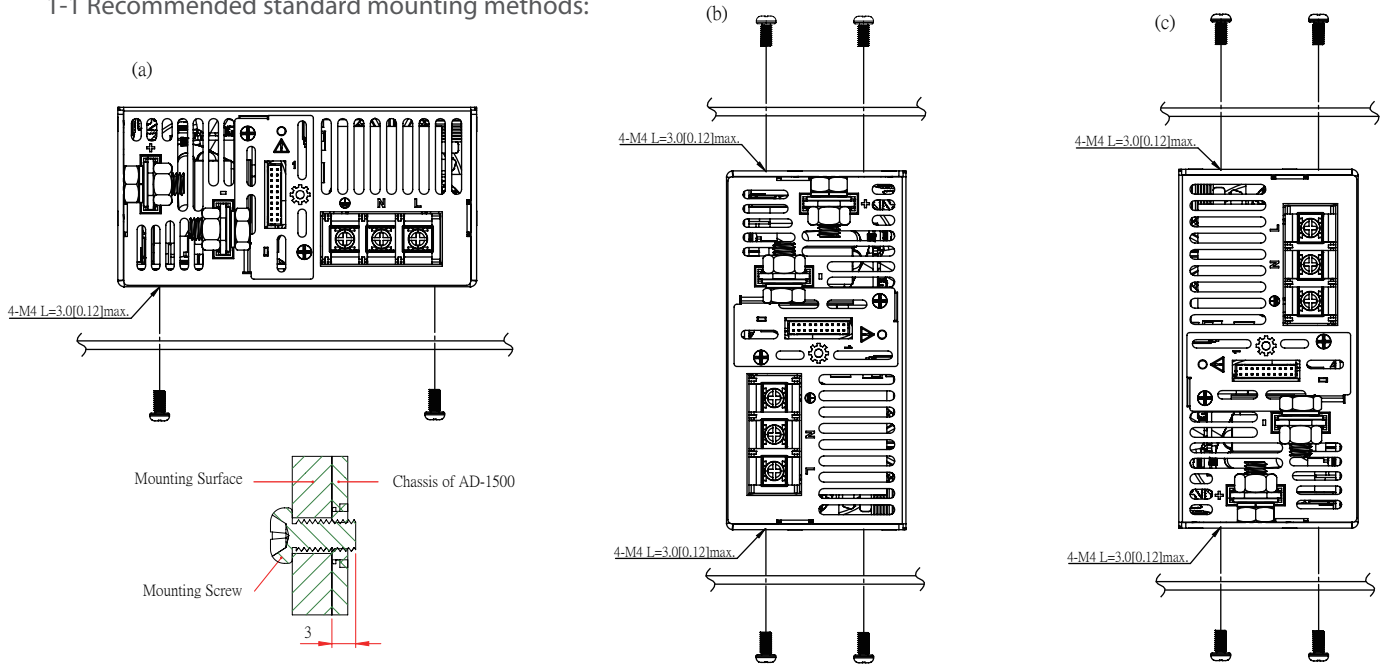
### ■ Mechanical Drawings : Unit: mm [inch]



## Installation Instruction

### 1. Mounting Directions

1-1 Recommended standard mounting methods:



Recommended screw length is measured from the power supply surface

### 2. Mounting Method

2-1 There are ventilating holes on the front and back side panels, do not obstruct; allow 50mm at least for air flow.

2-2 Recommended the torque of mounting screw: M4 screw: 1.27N • m (13.0kgf • cm)

