



**1200W**  
Powerful  
**18.8 W/In.<sup>3</sup>**  
Small  
**1.46kg**  
Light

As a new generation of industrial-grade programmable power supply, AZ1200-HV series has digital design, which makes it have ultra-high programmable accuracy, Comprehensive parameter monitoring, multi-functional analog and digital interfaces, making your power system design more accurate and efficient.

The AZ1200-HV series is designed to comply with IEC/EN62368-1, IEC6061-1, EN55032 and relevant international standards

It empowers high-end industries and medical equipment continuously.

#### FEATURES:

• Programmable output Voltage (0% ~ 107.5%)

• Programmable output Current (0% ~ 107.5%)

• Analog and digital interface control

• I<sup>2</sup>C, Modbus, CAN bus communication protocol Selectable

• Constant current function

• Built-in OR-ing Diode

• Selectable 5V, 2A or 12V, 0.83A auxiliary output

• Intelligent GUI to set and monitoring parameter

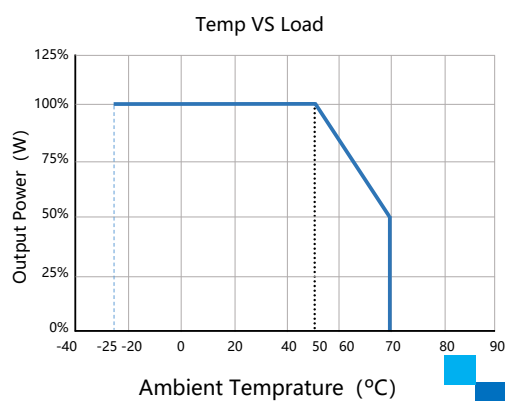
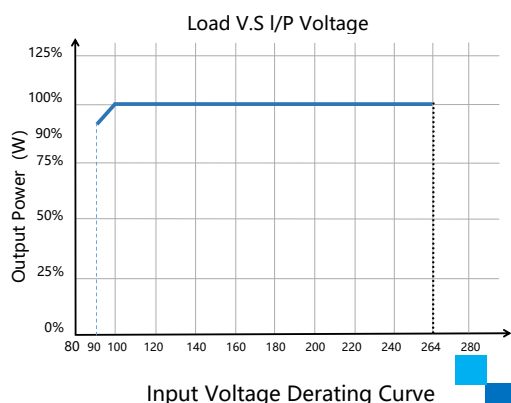
| MODEL                                                                                                                                                                                                                    | AZ1200-150 | AZ1200-400 | AZ1200-650 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|
| DC Voltage Rated                                                                                                                                                                                                         | 150        | 400        | 650        |
| Rated Current                                                                                                                                                                                                            | 8          | 3          | 1.85       |
| Rated Power                                                                                                                                                                                                              | 1200W      |            |            |
| Ripple & Noise(Max.)                                                                                                                                                                                                     | 750mVp-p   | 2000mVp-p  | 3500mVp-p  |
| Efficiency(Typ.)                                                                                                                                                                                                         | 93.0%      | 93.5%      | 93.5%      |
| Note<br>1.All parameters NOT specially mentioned are measured at 230VAC input, full load, 25°C of ambient temperature.<br>2.De-rating may apply in low input voltage. Please check the de-rating curve for more details. |            |            |            |

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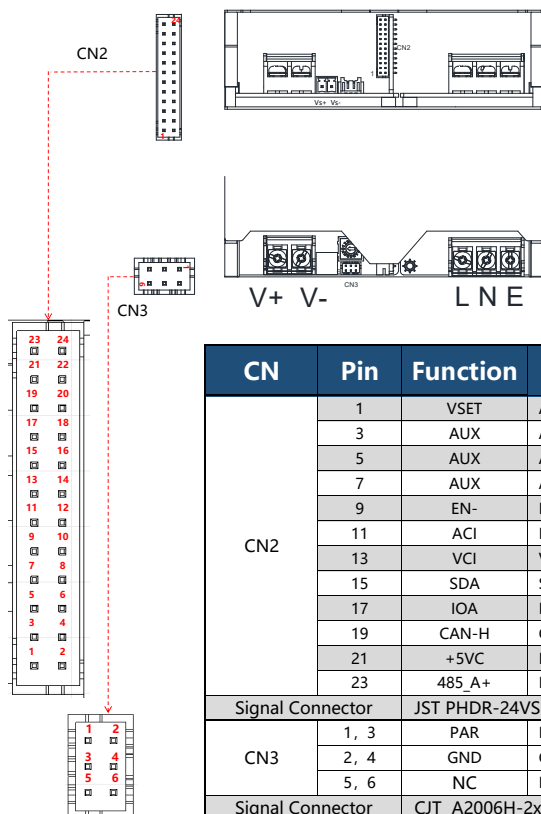
| MODEL                                                                                                                                                                                                                                                                                                |       | AZ1200-150                                                                                                             | AZ1200-400 | AZ1200-650 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------|------------|------------|
| Output Specifications                                                                                                                                                                                                                                                                                |       |                                                                                                                        |            |            |
| DC Voltage Rated                                                                                                                                                                                                                                                                                     | V     | 150                                                                                                                    | 400        | 650        |
| DC Current Rated                                                                                                                                                                                                                                                                                     | A     | 8                                                                                                                      | 3          | 1.85       |
| Programming And Readback (I <sup>2</sup> C,RS485,CAN)                                                                                                                                                                                                                                                |       |                                                                                                                        |            |            |
| Vout programming accuracy                                                                                                                                                                                                                                                                            | --    | 0.3% of Vset +0.2% of rated output Voltage                                                                             |            |            |
| Iout programming accuracy                                                                                                                                                                                                                                                                            | --    | 0.3% of Iset +0.2% of rated output current                                                                             |            |            |
| Vout programming resolution (Note.1)                                                                                                                                                                                                                                                                 | --    | 3mV                                                                                                                    |            |            |
| Iout programming resolution                                                                                                                                                                                                                                                                          | --    | 3mA                                                                                                                    |            |            |
| Vout readback accuracy                                                                                                                                                                                                                                                                               | --    | 0.3% of actual +0.2% of rated output Voltage                                                                           |            |            |
| Iout readback accuracy (Note.1)                                                                                                                                                                                                                                                                      | --    | 0.3% of actual +0.2% of rated output current                                                                           |            |            |
| Vout readback resolution                                                                                                                                                                                                                                                                             | --    | 1mV                                                                                                                    |            |            |
| Iout readback resolution                                                                                                                                                                                                                                                                             | --    | 1mA                                                                                                                    |            |            |
| Analog Programming And Monitoring (0~5V/0~5KΩ)                                                                                                                                                                                                                                                       |       |                                                                                                                        |            |            |
| Vout voltage programming                                                                                                                                                                                                                                                                             | --    | 0~107.5%, 0~5V,Accuracy and linearity: ±0.5% of rated Vout.                                                            |            |            |
| Iout voltage programming (Note.1)                                                                                                                                                                                                                                                                    | --    | 0~107.5%, 0~5V ,Accuracy and linearity: ±1% of rated Iout.                                                             |            |            |
| Vout resistor programming                                                                                                                                                                                                                                                                            | --    | 0~107.5%, 0~5Kohm . Accuracy and nonlinearity: ±1% of rated Vout.                                                      |            |            |
| Iout resistor programming                                                                                                                                                                                                                                                                            | --    | 0~107.5%, 0~5Kohm .Accuracy and nonlinearity: ±1% of rated Iout.                                                       |            |            |
| Output current monitor                                                                                                                                                                                                                                                                               | --    | 0~3.3V user selectable. Accuracy: ±1%.                                                                                 |            |            |
| Output voltage monitor                                                                                                                                                                                                                                                                               | --    | 0~3.3V user selectable. Accuracy: ±1%.                                                                                 |            |            |
| Constant Voltage Mode                                                                                                                                                                                                                                                                                |       |                                                                                                                        |            |            |
| DC Voltage Rated                                                                                                                                                                                                                                                                                     | V     | 150                                                                                                                    | 400        | 650        |
| Programming Voltage Range                                                                                                                                                                                                                                                                            | V     | 0~161.25                                                                                                               | 0~430      | 0~698.75   |
| Ripple & Noise(P-P),Full load                                                                                                                                                                                                                                                                        | mVp-p | 750mVp-p                                                                                                               | 2000mVp-p  | 3500mVp-p  |
| Line Regulation (Note.2) ,Full load                                                                                                                                                                                                                                                                  | --    | ±0.2%                                                                                                                  |            |            |
| Load Regulation (Note.3)                                                                                                                                                                                                                                                                             | --    | ±0.2%                                                                                                                  |            |            |
| Remote sense compensation/wire                                                                                                                                                                                                                                                                       | V     | Max 2.5% of rate Vout                                                                                                  |            |            |
| Hold-up time,Full load, 100%~90%                                                                                                                                                                                                                                                                     | --    | 16ms                                                                                                                   |            |            |
| Constant Current Mode                                                                                                                                                                                                                                                                                |       |                                                                                                                        |            |            |
| DC Current Rated                                                                                                                                                                                                                                                                                     | A     | 8                                                                                                                      | 3          | 1.85       |
| Programming Current Range                                                                                                                                                                                                                                                                            | A     | 0~8.6                                                                                                                  | 0~3.22     | 0~1.98     |
| Line regulation (Note.2)                                                                                                                                                                                                                                                                             | --    | ±0.2%                                                                                                                  |            |            |
| Load regulation                                                                                                                                                                                                                                                                                      | --    | ±0.2%                                                                                                                  |            |            |
| Protective &Alarm Functions                                                                                                                                                                                                                                                                          |       |                                                                                                                        |            |            |
| Input Over-voltage protection                                                                                                                                                                                                                                                                        | --    | AC input over 275VAC shutdown, auto recovery below 260VAC; Reset by AC input or by EN Singal or by communication port. |            |            |
| Input under-voltage protection                                                                                                                                                                                                                                                                       | --    | AC input under 85VAC shutdown, auto recovery above 90VAC                                                               |            |            |
| AC fail Alarm                                                                                                                                                                                                                                                                                        | --    | AC input voltage below 50V for 50ms                                                                                    |            |            |
| Output Over-voltage protection                                                                                                                                                                                                                                                                       | --    | Shut down, Reset by AC input or by EN Singal or by communication port.                                                 |            |            |
| Over temperature Alarm(OTA)                                                                                                                                                                                                                                                                          | °C    | Ambient temperature over 53°C; auto-recovery under 48°C                                                                |            |            |
| Over temperature protection(OTP)                                                                                                                                                                                                                                                                     | °C    | Heat-sink temperature over 95°C,shut down and auto-recovery under 75°C                                                 |            |            |
| Over current protection(OCP)                                                                                                                                                                                                                                                                         | --    | Constant Current Limit                                                                                                 |            |            |
| Short circuit protection(SCP)                                                                                                                                                                                                                                                                        | --    | shut down and auto-recovery after the short-circuit removed                                                            |            |            |
| Note:<br>1.Ripple & noise are measured at 20MHz of bandwidth by using 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor<br>2.At 85~132Vac or 170~265VAC, constant load.<br>3.From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense. |       |                                                                                                                        |            |            |
| Function                                                                                                                                                                                                                                                                                             |       |                                                                                                                        |            |            |
| Local Remote control                                                                                                                                                                                                                                                                                 | --    | By electrical Voltage: 5V/12V or dry contact                                                                           |            |            |
| DC-OK signal                                                                                                                                                                                                                                                                                         | --    | Open Dragin singal, sink current ≤20mA, max drain voltage 40V                                                          |            |            |
| Parallel operation                                                                                                                                                                                                                                                                                   | --    | Possible, up to 16 units with single wire current balance connection.                                                  |            |            |
| Series operation                                                                                                                                                                                                                                                                                     | --    | Possible                                                                                                               |            |            |
| Auxiliary Power                                                                                                                                                                                                                                                                                      | --    | Selectable +5V/2A or +12V/0.83A auxiliary output                                                                       |            |            |
| IOA                                                                                                                                                                                                                                                                                                  | --    | High speed I/O port (digital signal input/output)                                                                      |            |            |
| IOB                                                                                                                                                                                                                                                                                                  | --    | Low speed I/O port (analog singal input/output)                                                                        |            |            |
| Temperature measurement accuracy                                                                                                                                                                                                                                                                     | °C    | 1                                                                                                                      |            |            |
| Temperature display resolution                                                                                                                                                                                                                                                                       | °C    | 0.1                                                                                                                    |            |            |
| Input Specifications                                                                                                                                                                                                                                                                                 |       |                                                                                                                        |            |            |
| AC Input (Note.1)                                                                                                                                                                                                                                                                                    | Vac   | 90~264,Normal input 115VRMS/230VRMS                                                                                    |            |            |
| DC Input                                                                                                                                                                                                                                                                                             | Vdc   | 127~370                                                                                                                |            |            |
| Input freq                                                                                                                                                                                                                                                                                           | HZ    | 47~63HZ,50/60HZ Typ<br>360~800,Contact factory for 400Hz application                                                   |            |            |
| Input Current                                                                                                                                                                                                                                                                                        | --    | 230V/6A; 115V/15A                                                                                                      |            |            |
| Input Fuse                                                                                                                                                                                                                                                                                           | A     | 20,Each line fused 20A Slow acting                                                                                     |            |            |
| Inrush Current                                                                                                                                                                                                                                                                                       | A     | 15A,115VAC; 30A,230VAC; 25°C cold start                                                                                |            |            |

|                                                                                                                                                             |     |                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Factor                                                                                                                                                | --  | 0.99,115VAC,full load, 0.98,230VAC,full load                                                                                                                                         |
| AC voltage measurement accuracy                                                                                                                             | --  | $\leq \pm (V_{in} \cdot 1\% + 0.5V) / V_{in}$                                                                                                                                        |
| AC voltage measurement resolution                                                                                                                           | mV  | 10                                                                                                                                                                                   |
| AC voltage measurement refresh rate                                                                                                                         | --  | 2.5 Times/Sec                                                                                                                                                                        |
| AC voltage measurement range                                                                                                                                | V   | 80~310VAC 113~450VDC                                                                                                                                                                 |
| Static Power consumption                                                                                                                                    | W   | $\leq 8W$ , 25°C                                                                                                                                                                     |
| Equipment class                                                                                                                                             | --  | 'Class I                                                                                                                                                                             |
| Note:<br>1.For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).                  |     |                                                                                                                                                                                      |
| <b>Environmental Conditions</b>                                                                                                                             |     |                                                                                                                                                                                      |
| Operating temperature                                                                                                                                       | °C  | -25~ +70°C . Supports cold start from -40°C (Note.1)                                                                                                                                 |
| Storage temperature                                                                                                                                         | °C  | -40~ +85°C                                                                                                                                                                           |
| Operating humidity                                                                                                                                          | %   | 10~90 (Relative,Non-condensing)                                                                                                                                                      |
| Storage humidity                                                                                                                                            | %   | 5~95 (Relative,Non-condensing)                                                                                                                                                       |
| Operating Altitude                                                                                                                                          | m   | -200~3000                                                                                                                                                                            |
| Non-Operating Altitude                                                                                                                                      | m   | -200~5000                                                                                                                                                                            |
| 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                                                                                |
| Shock                                                                                                                                                       | --  | <196m/s2,With Package                                                                                                                                                                |
| Note:<br>1.50% load start up at -40°C is possible. However, it may not fulfil all the specifications after 10min later,it could be working as the full load |     |                                                                                                                                                                                      |
| <b>Safety/EMC</b>                                                                                                                                           |     |                                                                                                                                                                                      |
| Safety                                                                                                                                                      | --  | Meets IEC 60601-1:2005, IEC 60601-1:2005/AMD1:2012, IEC 60601-1:2005/AMD2:2020<br>Meets IEC 62368-1:2018, EN 62368-1:2014/A11:2017                                                   |
| EMC                                                                                                                                                         | --  | Meets<br>EN 60601-1-2:2015/A1:2021<br>IEC 60601-1-2:2014/A1:2020<br>EN 55032:2015/A1:2020,<br>EN 55035:2017/A11:2020,<br>EN IEC 61000-3-2:2019/A1:2021,<br>EN 61000-3-3:2013/A2:2021 |
| Conducted emission                                                                                                                                          | --  | Meets EN 55032 Class B                                                                                                                                                               |
| Radiated emission                                                                                                                                           | --  | Meets EN 55032 Class A                                                                                                                                                               |
| Isolation Voltage                                                                                                                                           | --  | I/P-O/P: 4KVac(5656Vdc), I/P-FG: 1.5KVac (2121Vdc), O/P-FG: 0.5KVac (707Vdc)                                                                                                         |
| Insulation resistance                                                                                                                                       | --  | I/P-O/P,I/P-FG,O/P-FG:100M Ohms/500Vdc                                                                                                                                               |
| Earth Leakage Current                                                                                                                                       | --  | <300uA Normal condition, 240Vac, 63Hz, 25°C                                                                                                                                          |
| <b>Mechanical</b>                                                                                                                                           |     |                                                                                                                                                                                      |
| Dimensions (WxHxD)                                                                                                                                          | mm  | 127*41*201.2 / (5.00*1.61*7.92 inch)                                                                                                                                                 |
| Weight                                                                                                                                                      | KG  | 1.46KG/PCS; 15PCS/Carton, 26KG                                                                                                                                                       |
| Cooling                                                                                                                                                     | --  | Forced air cooling by internal fan                                                                                                                                                   |
| Fan Speed                                                                                                                                                   | RPM | 0~9000±10%, Intelligent fan control                                                                                                                                                  |
| Fan Noise Level                                                                                                                                             | dB  | 48.7,Fan Independent testing Note.1                                                                                                                                                  |
| <b>Others</b>                                                                                                                                               |     |                                                                                                                                                                                      |
| Warranty                                                                                                                                                    | --  | 3Years,                                                                                                                                                                              |
| MTBF                                                                                                                                                        | h   | 250000,MIL-HDBK-217F@25°C                                                                                                                                                            |

## DE-Rating Curve



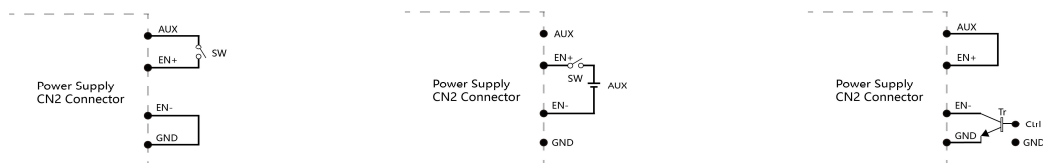
## PIN Definition



| Pin | Function      |
|-----|---------------|
| L   | AC Input L    |
| N   | AC Input N    |
| E   | AC Input FG   |
| V+  | DC Output (+) |
| V-  | DC Output (-) |

| CN               | Pin             | Function                                                           | Description                      | Pin | Function | Description               |
|------------------|-----------------|--------------------------------------------------------------------|----------------------------------|-----|----------|---------------------------|
| CN2              | 1               | VSET                                                               | Aux output setting 5V/12V        | 2   | POK      | Power OK                  |
|                  | 3               | AUX                                                                | Auxiliary output positive        | 4   | GND      | Ground                    |
|                  | 5               | AUX                                                                | Auxiliary output positive        | 6   | GND      | Ground                    |
|                  | 7               | AUX                                                                | Auxiliary output positive        | 8   | EN+      | Inhibit ON/OFF (+)        |
|                  | 9               | EN-                                                                | Inhibit ON/OFF (-)               | 10  | GND      | Ground                    |
|                  | 11              | ACI                                                                | I Program                        | 12  | GND      | Ground                    |
|                  | 13              | VCI                                                                | V Program                        | 14  | GND      | Ground                    |
|                  | 15              | SDA                                                                | Serial Data Line                 | 16  | SCL      | Serial Clock Line         |
|                  | 17              | IOA                                                                | High speed I/O port              | 18  | IOB      | Low speed I/O port        |
|                  | 19              | CAN-H                                                              | Controller Area Network-H        | 20  | CAN-L    | Controller Area Network-L |
|                  | 21              | +5VC                                                               | Isolation 5V positive            | 22  | GNDI     | Isolation 5V Ground       |
|                  | 23              | 485_A+                                                             | RS485_A+                         | 24  | 485_B-   | RS485_B-                  |
| Signal Connector |                 | JST PHDR-24VS or equivalent; JST SPHD-002T-P0.5 or equivalent      |                                  |     |          |                           |
| CN3              | 1, 3            | PAR                                                                | Parallel operation current share |     |          |                           |
|                  | 2, 4            | GND                                                                | Ground                           |     |          |                           |
|                  | 5, 6            | NC                                                                 | NC                               |     |          |                           |
| Signal Connector |                 | CJT A2006H-2x3P or equivalent; JST SPHD-002T-P0.5 or equivalent    |                                  |     |          |                           |
| VS +             | Remote sense(+) |                                                                    |                                  |     |          |                           |
| VS -             | Remote sense(-) |                                                                    |                                  |     |          |                           |
| Signal Connector |                 | Phoenix Contact MC 1.5/ 2-ST-3.81 Order No.: 1803578 or equivalent |                                  |     |          |                           |

## Remote ON/OFF



(a) Using internal 5V auxiliary source (Default Setting)

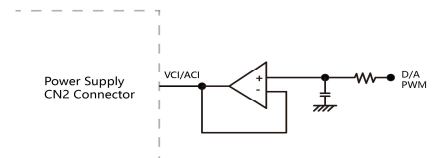
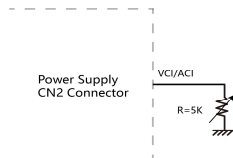
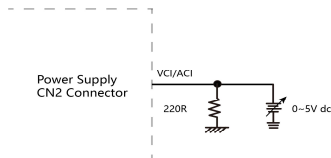
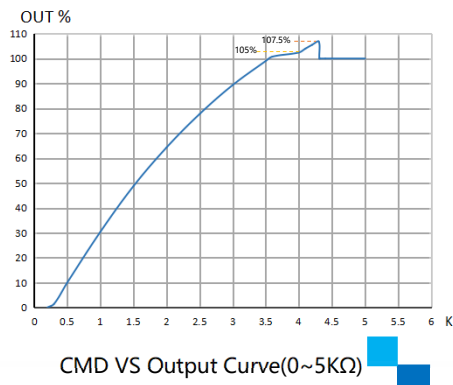
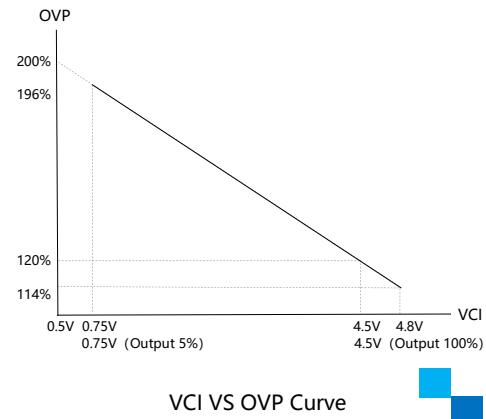
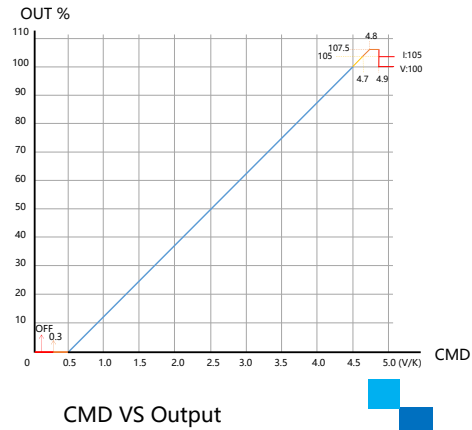
(b) Using external voltage source

(c) ON / OFF Control by NPN transistor

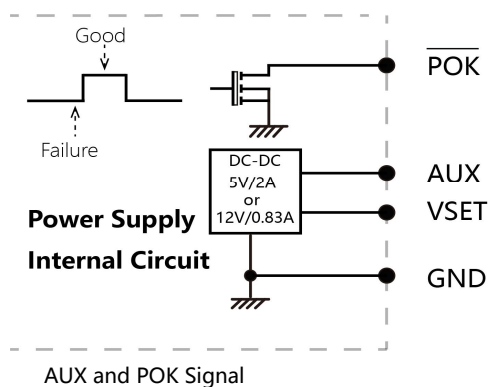
Note:

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

## Output Voltage/Current Programming



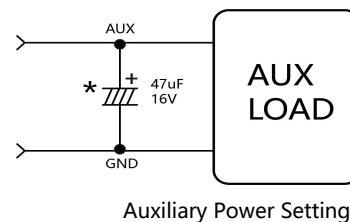
## Power OK Signal & Auxiliary Power Setting



The grounding of "AUX" power and P.OK signal should be connected to "GND" port. If "V-" is connected as Grounding, make sure to short the GND and V- ports.

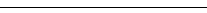
Note:  
GND shown in above diagram is referring to the GND of CN2, not the Grounding from main power(V-).

Do not exceed 5V/2A or 12V/0.83A

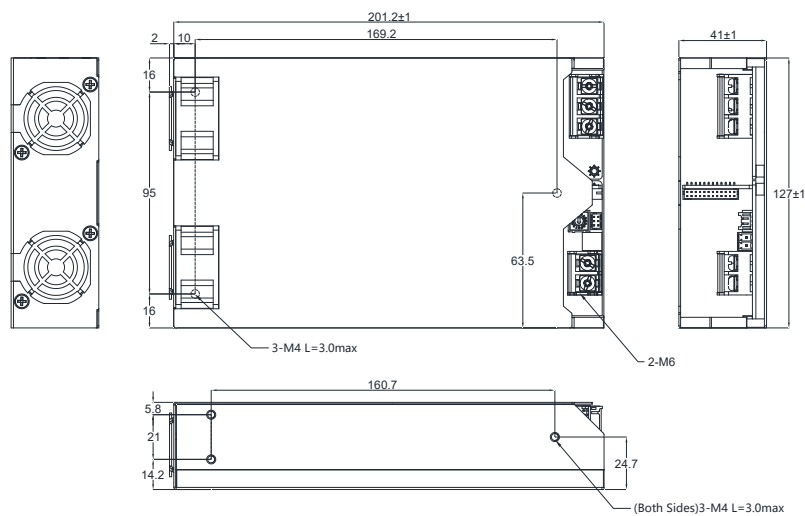


\*Place an additional capacitor to have a better performance of auxiliary power operation.

### LED status indication

| mode              | Description                              | LED Signal                                                                        | LED<br>Slow=750ms; Fast=250ms    |
|-------------------|------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------|
| Local mode        | Power Standby                            |  | Slow Blink (Green )              |
|                   | Power OK                                 |  | Solid (Green )                   |
| Remote mode       | Power Standby                            |  | Slow Blink (Orange )             |
|                   | Power OK                                 |  | Solid (Orange )                  |
| Local/Remote mode | AC Failure                               |  | Alternating flicker (Red&Green ) |
|                   | FAN Failure                              |  |                                  |
|                   | OTA                                      |  |                                  |
|                   | AC Input Over /Under Voltage Protection  |  | Fast Blink (Red)                 |
|                   | BUS Over Voltage Protection ( OVP)       |  | Intermittent Blink (Red)         |
|                   | Over Load Protection ( OLP )             |  | Interlace Blink (Red)            |
|                   | Over Temperature Protection (OTP )       |  | Slow Blink (Red )                |
|                   | DC Output Over Voltage Protection ( OVP) |  | Solid (Red )                     |

### Mechanical Drawings

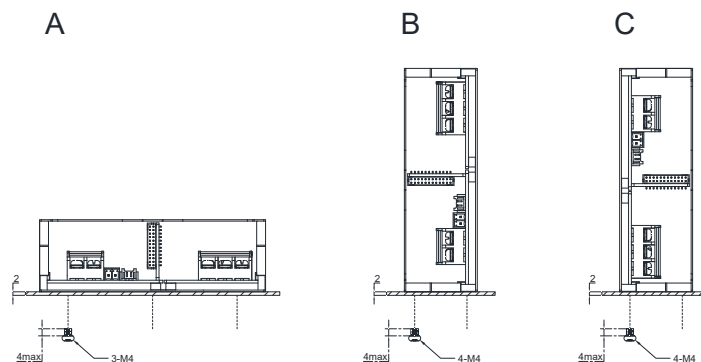


#### Notes:

- 1, Input: terminal block type. M4 screw torque value of 16kgf-cm using wire gauge 18-10 (13mm centers)
- 2, Output terminal block, M6 screw in 2 positions, torque 3.5N m (35kgf cm)

### Installation precautions

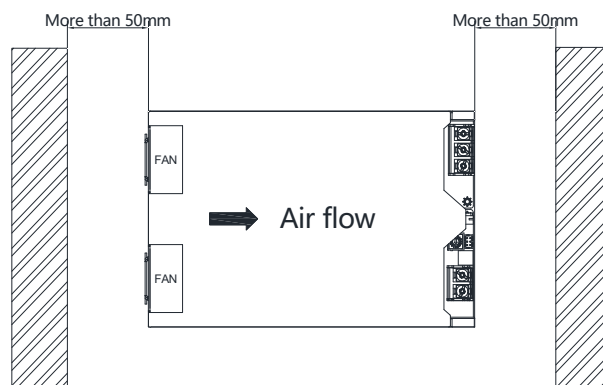
unit:mm



#### Notes:

- 1, Recommended standard mounting methods A, B, C
- 2, The Maximum allowable penetration of screw is 4mm. Incomplete threading should not be penetrated

## Installation precautions



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