

1200W isolated DC-DC converter with ultra-wide, ultra-high 300 -1500VDC input for Renewable Energy

FEATURES

- Ultra-wide input voltage range of 300 - 1500VDC
- Industrial grade operating temperature -40°C to +85°C
- High I/O isolation voltage up to 4000VAC
- High efficiency, low ripple & noise
- High reliability, long lifespan
- Input under-voltage protection, input reverse polarity protection, over-temperature protection, output short circuit, over-current, over-voltage protection
- Operating up to 5000m altitude
- EFT/Surge immunity meets Level 4
- Design refer to CSA-C22.2 No.107.1, UL1741, EN/IEC/BS EN62109



PV1200-29Bxx is a regulated DC-DC series converter with an ultra-wide and ultra-high DC input of 300-1500VDC, which design based on standard of CSA-C22.2 No. 107.1, UL1741, EN/IEC/BS EN62109. The products feature high efficiency, high reliability, high insulation and a high level of safety protection. It is widely used in renewable energy industries, such as photovoltaic inverter, energy storage systems, industrial control. The converters provide multiple protection features and guarantee stable and safe operating environments even under abnormal working conditions.

Selection Guide

| Certification | Part No. | Output Power (W)* | Nominal Output Voltage and Current (Vo/Io) | Output Voltage Adjustable Range ADJ (V) | Efficiency at 1100VDC (%) Typ. | Capacitive Load (µF) Max. |
|---------------|--------------|-------------------|--|---|--------------------------------|---------------------------|
| / | PV1200-29B24 | 1200 | 24V/50A | 21.6-26.4 | 93 | 8800 |
| | PV1200-29B48 | | 48V/25A | 43.2-52.8 | 95 | 4400 |

Note: *if need parallel connection to increase the power, please consult Mornsun FAE for solution.

Input Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|-----------------------------------|----------------------------|----------------------|------|------|------|
| Input Voltage Range | | 300 | -- | 1500 | VDC |
| Input Current | 300VDC | -- | -- | 5 | A |
| | 800VDC | -- | -- | 2 | |
| Inrush Current | 1500VDC Cold start | -- | 150 | -- | |
| Input Under-voltage Protection | Lockout activation range | 285 | -- | 295 | VDC |
| | Lockout deactivation range | 290 | -- | 300 | |
| Input Reverse Polarity Protection | | Available | | | |
| External Input Fuse | | 8A/1500VDC, required | | | |
| Hot Plug | | Unavailable | | | |

Output Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|----------------------------|--|-----------------------------------|---------------------------------------|------|------|
| Output Voltage Accuracy | All load range | -- | ±1 | -- | % |
| Line Regulation | Rated load | -- | ±1 | -- | |
| Load Regulation | 800VDC | -- | ±2 | -- | |
| Ripple & Noise* | 20MHz bandwidth (peak-to-peak value) | -- | -- | 300 | mV |
| Temperature Coefficient | | -- | ±0.02 | -- | %/°C |
| Short Circuit Protection** | Recovery time < 15s after the short circuit disappear. | Hiccup, continuous, self-recovery | | | |
| Over-voltage Protection | 24V | ≤35V | Output voltage clamp or hiccup | | |
| | 48V | ≤60V | | | |
| Over-current Protection** | All input voltage range | Normal temperature | 110% - 200% Io, hiccup, self-recovery | | |
| | | Low temperature, high temperature | ≥110% Io, hiccup, self-recovery | | |

| | | | | | | | |
|---|-----------------------------|--------------|--|--|----|----|----|
| Over-temperature Protection*** | | | | Output voltage turn off, self-recovery | | | |
| Minimum Load | | | | 0 | -- | -- | % |
| Hold-up Time | Room temperature, full load | 800VDC input | | -- | 5 | -- | ms |
| Start-up Delay Time**** | Room temperature | | | -- | 1 | 3 | s |
| <p>Note: "The " Tip and barrel method" is used for ripple and noise test, please refer to PV Converter Application Notes for specific information. **For details of short circuit protection and over-current protection, please consult Mornsun FAE. ***Output voltage turn off, self-recovery after fault conditions is removed. ****Full input voltage / output load range (The cooling-time between input power-off and power-on again is greater than 15s).</p> | | | | | | | |

General Specifications

| Item | Operating Conditions | | Min. | Typ. | Max. | Unit |
|-----------------------|--------------------------------|---|--|------|------|--------|
| Isolation | Input - output | Electric Strength Test for 1min., leakage current <5mA | 4000 | -- | -- | VAC |
| | Input - PE | | 4000 | -- | -- | |
| | Output - PE | | 4000 | -- | -- | |
| Insulation Type | | | Primary and secondary meet reinforced insulation | | | |
| Insulation Resistance | Input - output | Testing voltage: 500VDC | 100 | -- | -- | MΩ |
| | Input - PE | | | | | |
| | Output - PE | | | | | |
| Operating Temperature | | | -40 | -- | +85 | °C |
| Storage Temperature | | | -40 | -- | +85 | |
| Storage Humidity | Non-condensing | | -- | -- | 95 | %RH |
| Output Power Derating | Operating temperature derating | -40°C to -25°C | 2.66 | -- | -- | % / °C |
| | | +45°C to +55°C | 1.7 | -- | -- | |
| | | +55°C to +70°C | 2.2 | -- | -- | |
| | | +70°C to +85°C | 2.66 | -- | -- | |
| | Altitude derating | 3000- 5000m | 10 | -- | -- | %/Km |
| Safety Standard | | | Design refer to CSA-C22.2 No.107.1-16, UL1741, EN/IEC/BS EN62109-1 | | | |
| MTBF | | | MIL-HDBK-217F@25°C ≥ 300,000 h | | | |

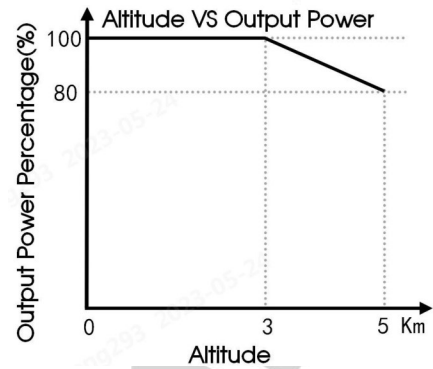
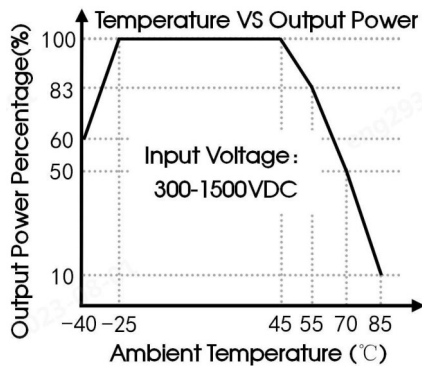
Mechanical Specifications

| | |
|----------------|---------------------------|
| Case Material | Metal |
| Dimensions | 292.00 x 225.00 x 58.00mm |
| Weight | 3850g (Typ.) |
| Cooling Method | Free air convection |

Electromagnetic Compatibility (EMC)

| | | | | |
|-----------|-------|-----------------|---|------------------|
| Emissions | CE | CISPR32/EN55032 | CLASS A | |
| | RE | CISPR32/EN55032 | CLASS A | |
| Immunity | ESD | IEC/EN61000-4-2 | Contact ±6KV/Air ±8KV | Perf. Criteria A |
| | RS | IEC/EN61000-4-3 | 10V/m | Perf. Criteria A |
| | EFT | IEC/EN61000-4-4 | ±4KV | Perf. Criteria A |
| | Surge | IEC/EN61000-4-5 | Line to line ±1KV/line to PE ±2KV | Perf. Criteria A |
| | | IEC/EN61000-4-5 | Line to line ±2KV/line to PE ±4KV (See Fig. 2 for recommended circuit) | Perf. Criteria A |
| | CS | IEC/EN61000-4-6 | 10Vr.m.s | Perf. Criteria A |

Product Characteristic Curve



Note: This product is suitable for applications using natural air cooling; For applications in closed environment please consult Mornsun FAE.

Design Reference

1. Typical application circuit

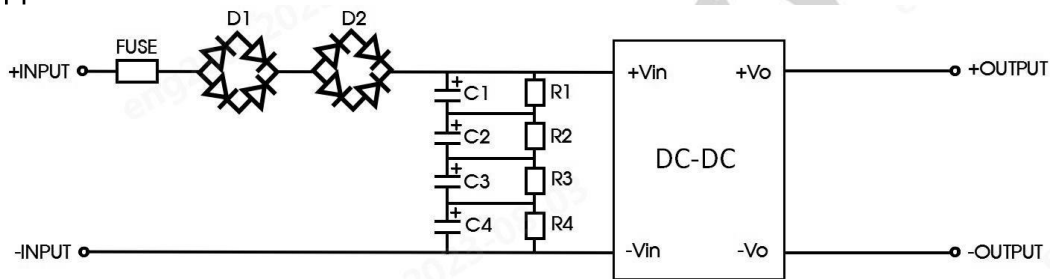
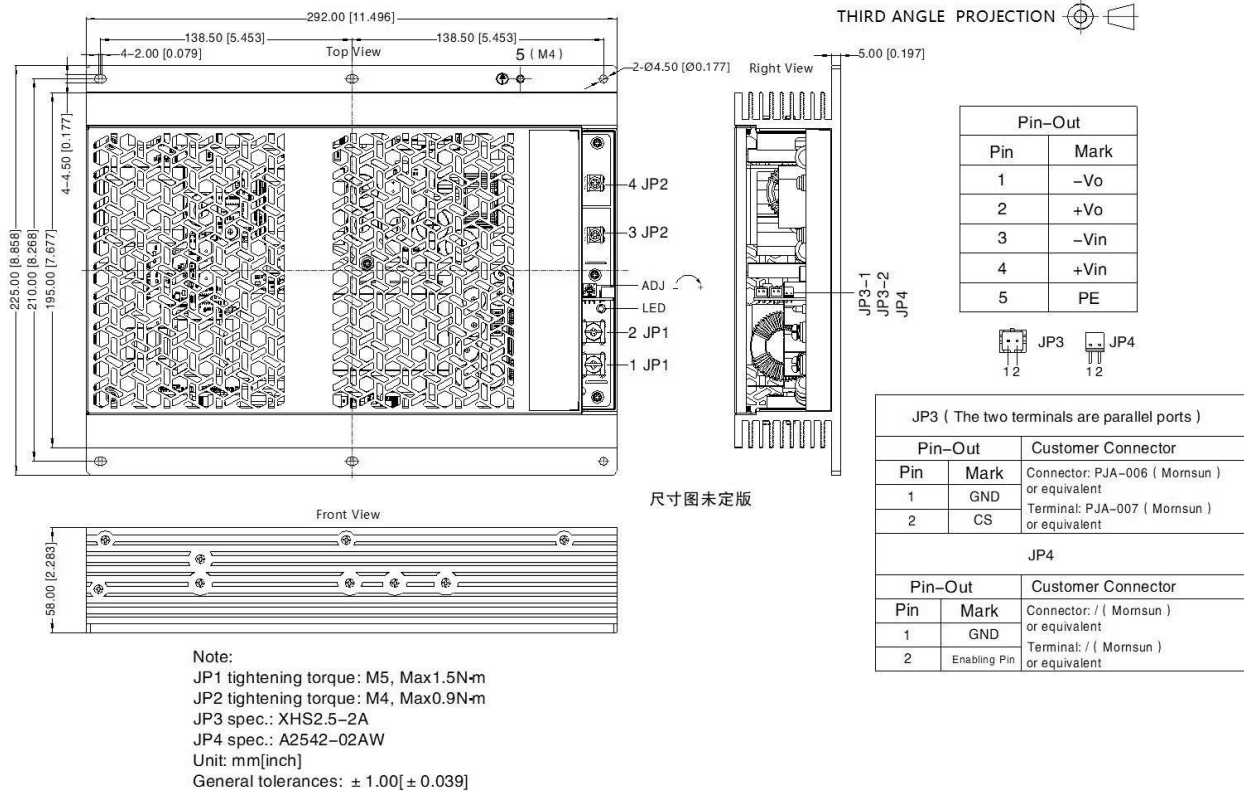


Fig. 1

| Model | Recommended value |
|-------------|----------------------|
| FUSE | 8A/1500VDC, required |
| D1/D2 | 50A/1000V |
| C1/C2/C3/C4 | 100μF/450VDC |
| R1/R2/R3/R4 | 1MΩ /2W |

2. For more information Please find the application notes on www.mornsun-power.com.

Dimensions and Recommended Layout



WARNING:

- CAUTION: To reduce the risk of fire, connect only to a circuit provided with 8 amperes maximum branch-circuit over-current protection in accordance with the National Electrical Code, ANSI/NFPA70.
- WARNING: REPLACE ONLY WITH THE SAME RATINGS AND TYPE OF FUSE.
- DANGER — HIGH VOLTAGE.

AVERTISSEMENT:

- Avertissement: Pour réduire le risque d'incendie, veuillez connecter uniquement à des circuits de dérivation avec protection contre les surintensités conformes au code électrique national ANSI/ NFPA 70.
- AVERTISSEMENT : N'UTILISER QUE DES FUSIBLES DE MÊME CALIBRE ET DE MÊME TYPE QUE LE FUSIBLE D'ORIGINE.
- DANGER : HAUTE TENSION.

Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220274;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75% with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
- If the final product application is connected to a photovoltaic array, the array needs to be grounded and The voltage between the positive and negative poles of the product shall not be greater than 1500VDC.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
 Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com