

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			

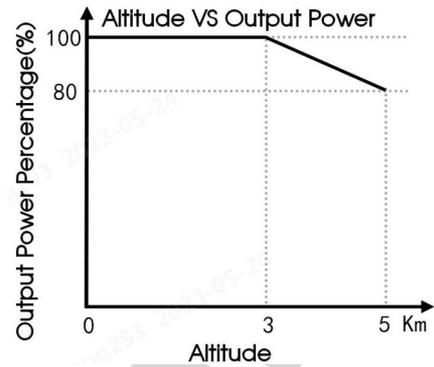
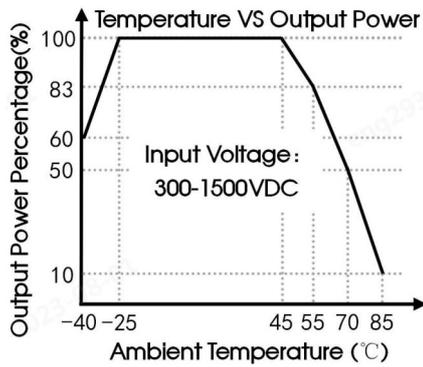
Mechanical Specifications

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

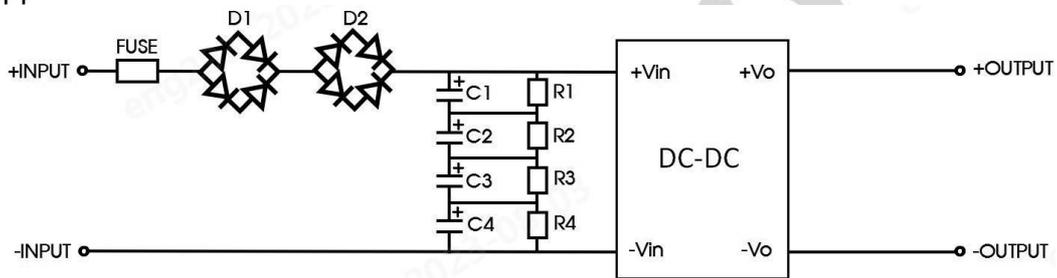
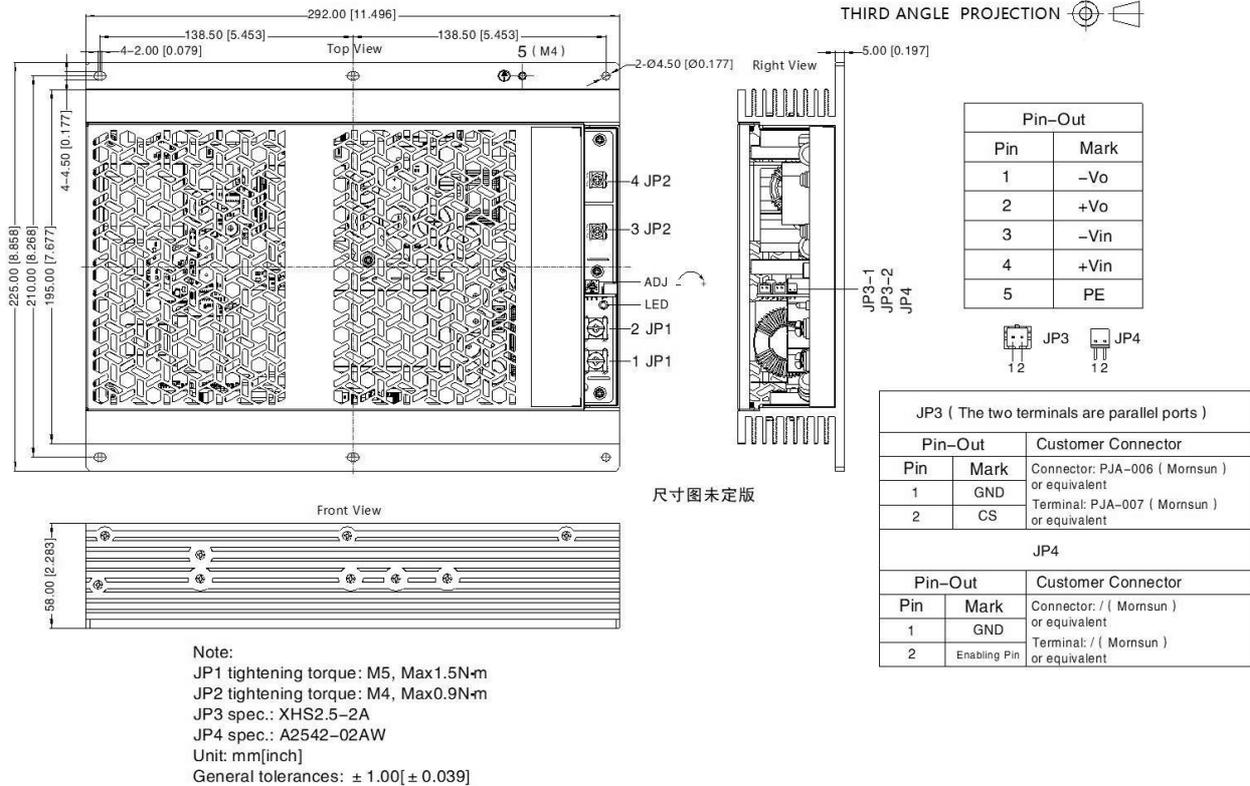


Fig. 1

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.

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