DC/DC Converter

PV150-29Bxx Series

MORNSUN®

150W isolated DC-DC converter with ultra-wide, ultra-high 250 -1500VDC input for Renewable Energy



CSA-C22.2 No.107.1-16 | Report EN62109-1 | CB IEC62109-1 | RoHS

FEATURES

- Ultra-wide input voltage range of 250 - 1500VDC
- Industrial grade operating temperature -40℃ to +70℃
- 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, output short circuit, over-current, over-voltage protection
- Operating up to 5000m altitude
- Primary and secondary meet reinforced insulation (EN/IEC62109)

PV150-29Bxx series is a regulated DC-DC converter with an ultra-wide and ultra-high DC input of 250-1500VDC, which design based on standard of CSA-C22.2 No.107.1, EN/IEC62109, 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, charging pile, industrial control. The converters provide multiple protection features and guarantee stable and safe operating environments even under abnormal working conditions. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Output Power(W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VDC(%) Typ.	Capacitive Load (μF) Max.
CSA/EN/IEC	PV150-29B12	120	12V/10000mA	88	3500
	PV150-29B15		15V/8000mA	89	3000
	PV150-29B24	150	24V/6250mA	90	2000
	PV150-29B28		28V/5360mA	91	2000
	PV150-29B32		32V/4690mA	91	1500
	PV150-29B48		48V/3125mA	92	1000

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		250	--	1500	VDC
Input Current	250VDC	--	--	1.0	A
	800VDC	--	--	0.4	
Inrush Current	800VDC	--	--	100	
	1500VDC	--	--	200	
Input Under-voltage Protection	Lockout activation range	125	175	225	VDC
	Lockout deactivation range	150	210	250	
External Input Fuse		4A/1500VDC, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range	--	±1.0	±2.0	%
Line Regulation	Rated load	--	±0.25	±0.5	
Load Regulation	0% - 100% load	--	±0.5	±1.0	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	300	mV
Temperature Coefficient		--	±0.02	--	%/℃
Short Circuit Protection		Hiccup, continuous, self-recovery			

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Over-current Protection			⩾110%Io, hiccup, self-recovery			
Over-voltage Protection	12V output		⩽20VDC			
	15V output		⩽25VDC			
	24V output		⩽32VDC			
	28V output		⩽35VDC			
	32V output		⩽45VDC			
	48V output		⩽60VDC			
Minimum Load			0	--	--	%
Hold-up Time	Room temperature, full load	800VDC input	--	2	--	ms
		1500VDC input	--	10	--	
Start-up Delay Time	Room temperature		--	--	3	s

Note: * The " Tip and barrel method" is used for ripple and noise test, please refer to PV Converter Application Notes for specific information.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric Strength Test for 1min., leakage current ＜5mA	4000	--	--	VAC
	Input - PE		2000	--	--	
	Output - PE		2000	--	--	
Insulation	Input - output	500VDC	50	--	--	MΩ
Operating Temperature			-40	--	+70	℃
Storage Temperature			-40	--	+85	
Operating Humidity			--	--	85	%RH
Storage Humidity			--	--	95	
Power Derating		-40℃ to -25℃	3.33	--	--	%/℃
		+55℃ to +70℃	2.4	--	--	
		250VDC - 300VDC	0.8	--	--	%/VDC
		1400VDC - 1500VDC	0.2	--	--	
		2000m - 5000m	10	--	--	%/Km
Switching Frequency			--	65	--	kHz
Safety Standard			CSA-C22.2 No.107.1-16, IEC62109-1 safety approved & EN62109-1 (Report)			
MTBF		MIL-HDBK-217F@25℃	⩾ 300,000 h			

Mechanical Specifications

Case Material	Metal
Dimensions	168.00 x 111.20 x 42.50 mm
Weight	860g (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 B
	RS	IEC/EN61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	Perf. Criteria B
	Surge	IEC/EN61000-4-5 Line to line ±1KV/ line to ground ±2KV	Perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A

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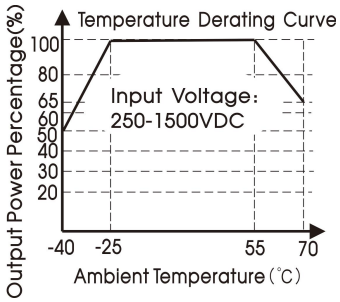
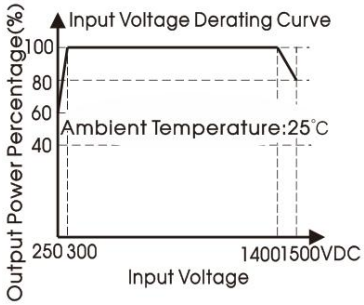
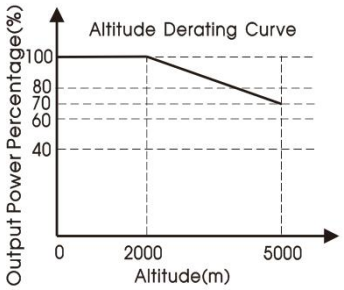
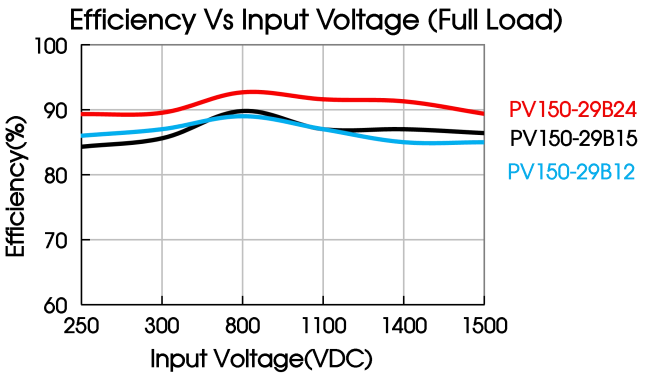
Product Characteristic Curve

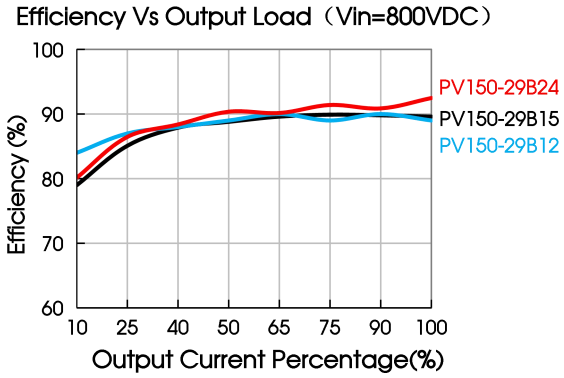






Note: ① With an input between 250 - 300VDC/1400 -1500VDC, the output power of PV150-29Bxx parts must be derated as per temperature derating curves;
② This product is suitable for applications using natural free air convection; For applications in closed environment please consult Mornsun FAE.





Design Reference

1. Typical application circuit

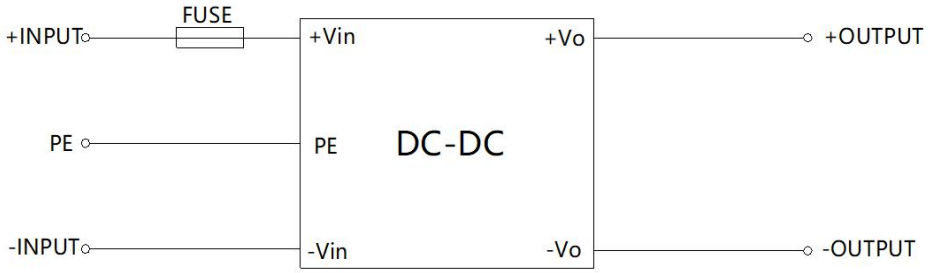


Fig. 1

Model	Recommended value
FUSE	4A/1500VDC (UL/VDE), required

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

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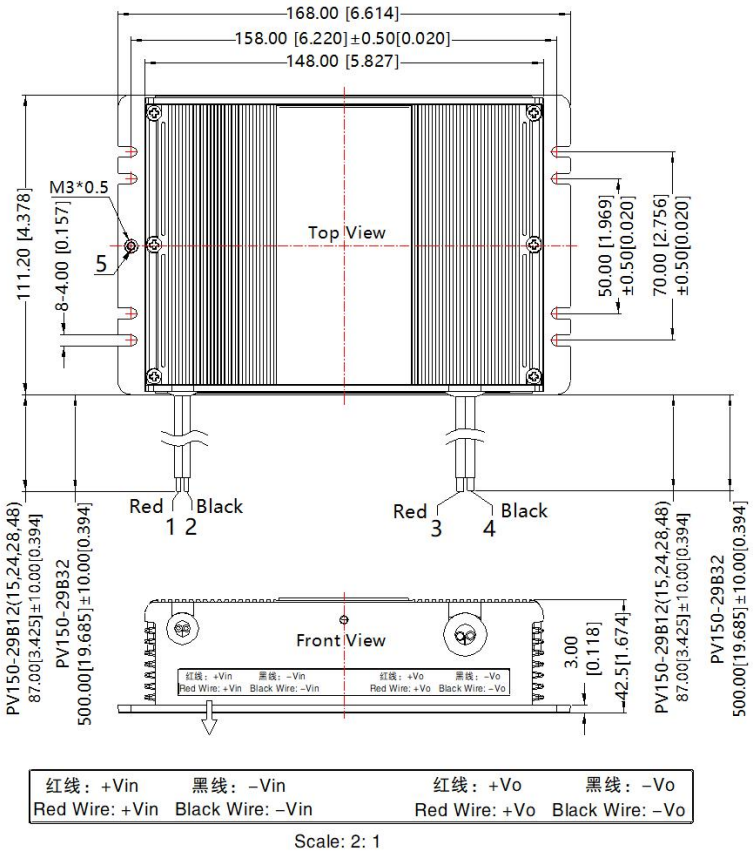
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

Pin-Out	
Pin	Mark
1	+Vin
2	-Vin
3	+Vo
4	-Vo
5	PE

Note:
Input wire spec.: UL3239 18AWG
Output wire spec.: UL1015 14AWG
Unit: mm[inch]
General tolerances: ± 1.00[± 0.039]
Warning: To reduce the risk of fire, connect only to a circuit provided with branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/ NFPA 70
Minimum installation space requirements: 168x121x52mm
Avertissement: Pour r é duire le risque d'incendie, veuillez connecter uniquement à des circuits de d é rivation avec protection contre les surintensit é s conformes au code é lectrique national ANSI/ NFPA 70
It may appear that the input wire sleeves are all black when shipped
There may be label paper without input and output marks when shipped

⚠WARNING:
1. WARNING: REPLACE ONLY WITH THE SAME RATINGS AND TYPE OF FUSE.
2. WARNING: SHOCK HAZARD. HORIZONTAL PACKAGE ONLY FOR MOUNTING IN A RACK OR ENCLOSURE FULLY ENCLOSING ALL LIVE PARTS.
3. DANGER — HIGH VOLTAGE.

AVERTISSEMENT:
1. AVERTISSEMENT : N'UTILISER QUE DES FUSIBLES DE MÊMECALIBRE ET DE MÊME TYPE QUE LE FUSIBLE DORIGINE.
2. AVERTISSEMENT: PAQUET HORIZONTAL RISQUE D'ÉLECTROCUTION. UNIQUEMENT POUR LE MONTAGE DANS UN RACK OU UN ENCEINTE ENFERMANT ENTIÈREMENT TOUTES LES PIÈCES SOUS TENSION.
3. DANGER : HAUTE TENSION.

Note:
1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220034;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
7. When the photovoltaic array is exposed to light, it supplies a d.c. voltage to the PCE.

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