

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



FEATURES

- Input voltage up to 1700VDC (Transient, duration: 10s)
- Ultra-wide input voltage range of 250 - 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, output short circuit, over-current, over-voltage protection
- Operating up to 5000m altitude

PV150-29BxxL 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 EN62109, UL1741, CSA-C22.2 No.107.1. 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.

Selection Guide

Certification	Part No.*	Output Power(W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VDC(%) Typ.	Capacitive Load (μF) Max.
/	PV150-29B24L	150	24V/6250mA	90	2000
	PV150-29B28L		28V/5360mA	90	1500
	PV150-29B32L		32V/4690mA	91	1500

Note: *PV150-29BxxL input-output lead wire length is 11cm, PV150-29BxxL-22 input-output lead wire length is 22.5cm, PV150-29BxxL-50 input lead wire length is 22.5cm, output lead wire length is 52.5cm, the rest of the performance is the same.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		250	--	1500	VDC
Input Current	250VDC	--	--	0.8	A
	800VDC	--	--	0.4	
Inrush Current	800VDC	--	--	100	
	1500VDC	--	--	200	
Input Under-voltage Protection	Lockout activation range	150	--	220	VDC
	Lockout deactivation range	180	--	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	±2	%
Line Regulation	Rated load	--	±0.1	±0.25	
Load Regulation	0% - 100% load	--	±0.5	±1	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	300	mV
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥110%Io, hiccup, self-recovery			
Over-voltage Protection	24V output	≤32VDC	Output voltage clamp or hiccup		
	28V output	≤35VDC			
	32V output	≤45VDC			
Minimum Load		0	--	--	%

Hold-up Time	Room temperature, full load	800VDC input	--	10	--	ms
		1500VDC input	--	30	--	
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
	Output - PE		4000	--	--	
	Input - PE		3000	--	--	
	Input - PE	Electric Strength Test for 1min., leakage current <10mA	4000	--	--	
Insulation Resistance	Input - output	500VDC	500	--	--	MΩ
Operating Temperature			-40	--	+85	°C
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	95	%RH
Power Derating	-40°C to -25°C		3.33	--	--	% / °C
	+55°C to +85°C		2.33	--	--	
	250VDC - 300VDC		0.8	--	--	% / VDC
	1400VDC - 1500VDC		0.2	--	--	
	2000m - 5000m		6.67	--	--	% / Km
Switching Frequency			--	65	--	kHz
Safety Standard			Design refer to UL1741, CSA-C22.2 No.107.1 & EN62109-1			
MTBF		MIL-HDBK-217F@25°C	≥ 300,000 h			

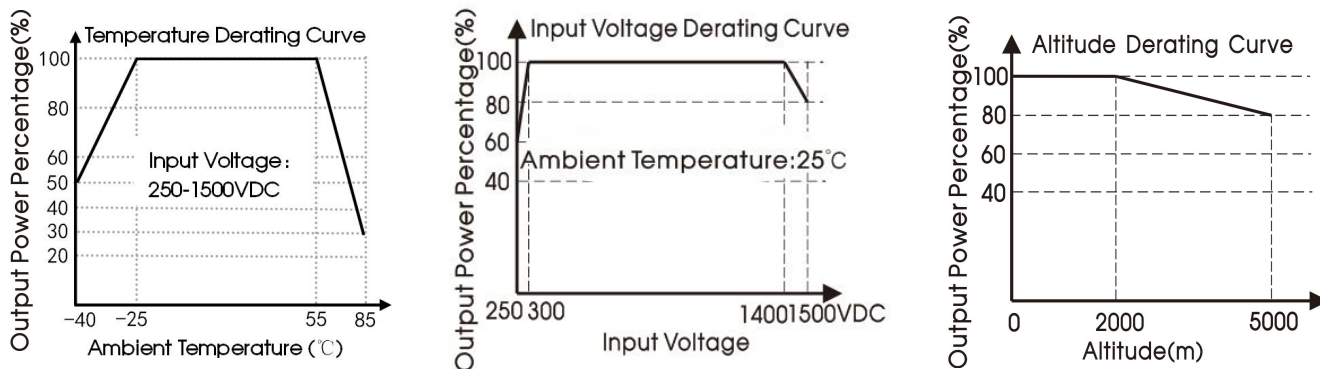
Mechanical Specifications

Case Material	Metal
Dimensions	201.00 x 70.00 x 42.00mm
Weight	550g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

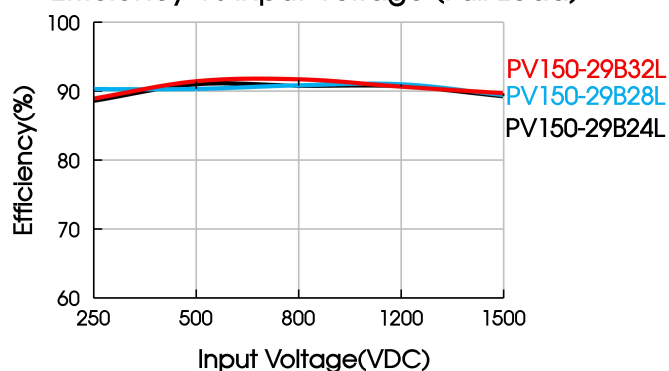
Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	Perf. Criteria A
	Surge	IEC/EN61000-4-5	Line to line ±1KV/ line to ground ±2KV	Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A

Product Characteristic Curve

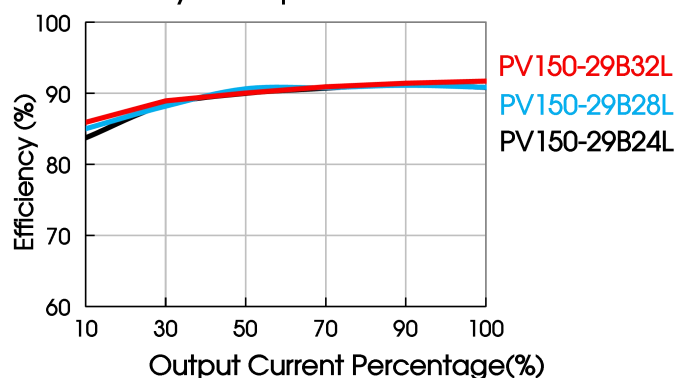


Note: ① With an input between 250 - 300VDC/1400 - 1500VDC, the output power of PV150-29BxxL parts must be derated as per temperature derating curves;
② This product is suitable for applications using natural free air convection; for applications in closed environment please consult Mornsun FAE.

Efficiency Vs Input Voltage (Full Load)



Efficiency Vs Output Load (Vin=800VDC)



Design Reference

1. Typical application circuit

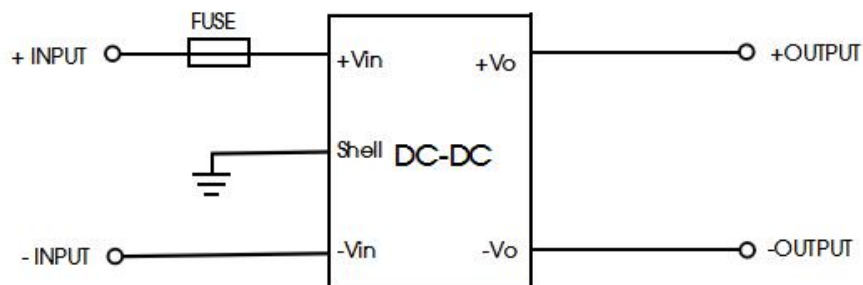
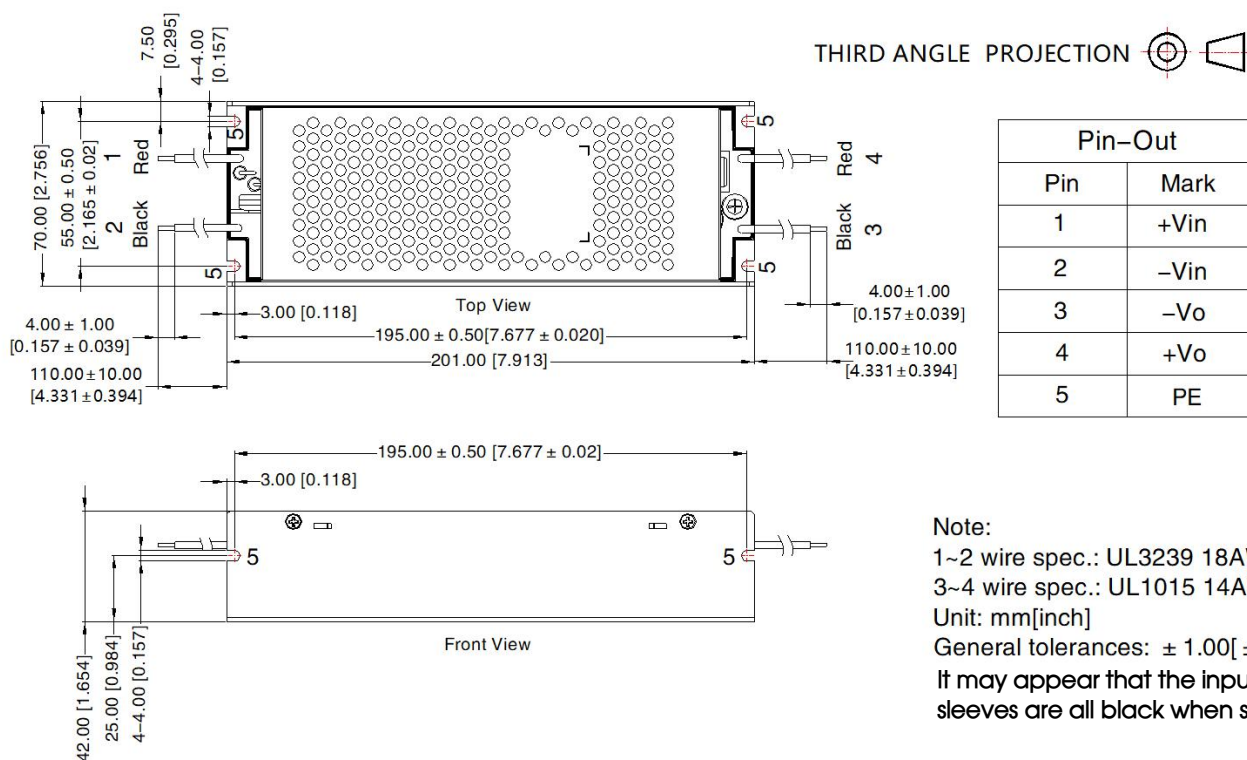


Fig. 1

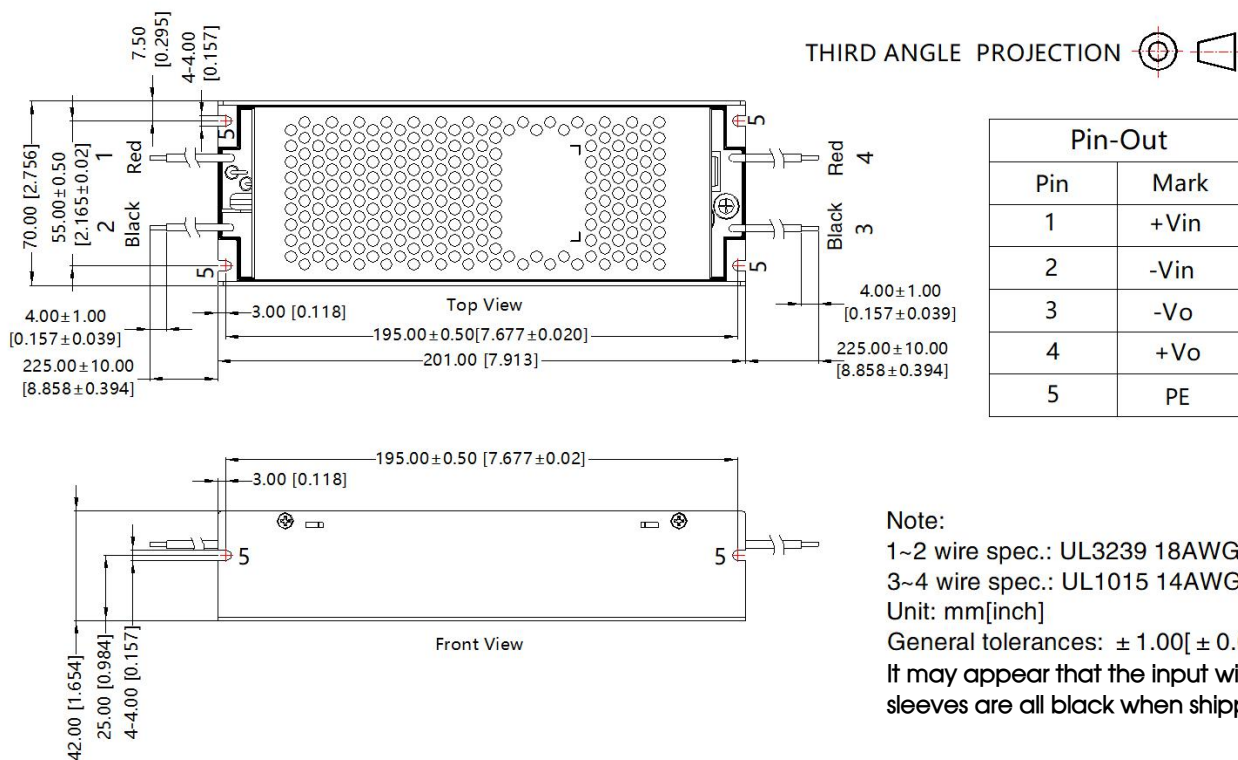
Model	Recommended value
FUSE	4A/1500VDC, required

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

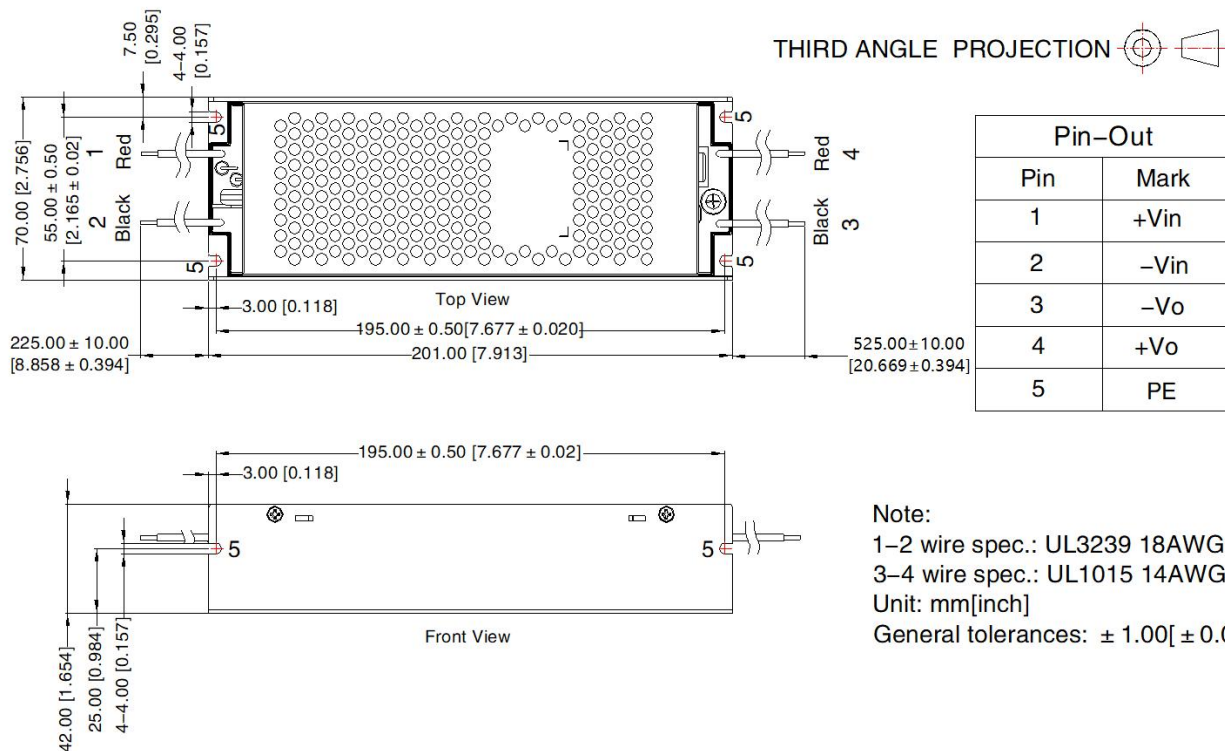
Dimensions and Recommended Layout (PV150-29BxxL)



Dimensions and Recommended Layout (PV150-29BxxL-22)



Dimensions and Recommended Layout (PV150-29BxxL-50)



- 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 MÊME CALIBRE ET DE MÊME TYPE QUE LE FUSIBLE D'ORIGINE.
 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: 58220211;
 2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, 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;
 8. External fuse is UL or VDE certificate that specification is 4A of 1500VDC used in end system.

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