

DC/DC Converter

PV350-29Bxx Series

MORNSUN®

350W isolated DC-DC converter with ultra-wide, ultra-high 300 -1500VDC input for Renewable Energy



FEATURES

- Input voltage up to 1700VDC (Transient, duration: 10s)
- Ultra-wide input voltage range of 300 - 1500VDC
- Industrial grade operating temperature -40°C to +85°C
- High I/O isolation test voltage of 4000VAC
- High efficiency, low ripple & noise
- High reliability, long lifespan
- Input under-voltage protection, reverse input voltage protection, over-temperature protection, output short circuit, over-current, over-voltage protection
- Operating up to 5000m altitude

PV350-29Bxx 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, EN62109, UL1741. 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. 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*	Nominal Output Voltage and Current (Vo/Io)		Output Voltage Adjustable Range ADJ (V)	Efficiency at 1100VDC (%) Typ.	Capacitive Load (μF) Max.
			Constant voltage mode	Constant current mode (75%Vo-95%Vo)			
/	PV350-29B24	350.4W	24V/14.6A	16.5A	21.6-26.4	92	2200
	PV350-29B28	350.0W	28V/12.5A	14.0A	25.2-30.8		1500
	PV350-29B32	350.4W	32V/10.95A	12.2A	28.8-35.2		1500

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	Transient (10s)	--	--	1700	VDC
		300	--	1500	
Input Current	300VDC	--	--	2	A
	1100VDC	--	--	0.75	
	1500VDC	--	--	0.6	
Inrush Current	1500VDC	--	300	--	
Input Under-voltage Protection	Lockout activation range	240	--	295	VDC
	Lockout deactivation range	265	--	305	
Reverse Input Voltage Protection		Available			
External Input Fuse		6A/1500VDC, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range, constant voltage mode	--	±2	--	%
Output Current Accuracy	75%-95% Vo, constant current mode	--	±10	--	
Line Regulation	Rated load	--	±1	--	
Load Regulation	0% - 100% load	--	±2	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	300	mV
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup or constant current, continuous, self-recovery			

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Over-voltage Protection	24V output		≤35VDC		Output voltage clamp or hiccup	
	28V output		≤40VDC			
	32V output		≤45VDC			
Over-load Protection	24V output		Constant current 16.5A output or hiccup			
	28V output		Constant current 14.0A output or hiccup			
	32V output		Constant current 12.2A output or hiccup			
Over-temperature Protection**		Output voltage turn off, self-recovery				
Minimum Load			0	--	--	%
Hold-up Time		Room temperature, full load	1100VDC input	--	8	--ms
Start-up Delay Time***		Room temperature		--	3	5s

Note: * The “Tip and barrel method” is used for ripple and noise test, please refer to PV Converter Application Notes for specific information.
**Output voltage turn off, self-recovery after fault conditions is removed.
***Start-up delay time test conditions: voltage input range, full output load range (The cooling-time between input power-off and power-on again is greater than 15s.)

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric Strength Test for 1min., leakage current <10mA		4000	--	--	VAC
	Input - PE			4000	--	--	
	Output - PE			4000	--	--	
Insulation Type		Primary and secondary meet reinforced insulation					
Insulation	Input - output	500VDC		≥50x10 ⁶			Ω
Operating Temperature				-40	--	+85	°C
Storage Temperature				-40	--	+85	
Storage Humidity				--	--	95	%RH
Power Derating		-40°C to 0°C	300-400VDC	0.50	--	--	% / °C
		+50°C to +70°C	300-400VDC	2.50	--	--	
		+55°C to +70°C	400-1400VDC	3.33	--	--	
		+50°C to +70°C	1400-1500VDC	2.50	--	--	
		+70°C to +85°C	300-1500VDC	3.00	--	--	
		300-400VDC		0.20	--	--	% / VDC
		1400-1500VDC		0.20	--	--	
		3000- 5000m		10.00	--	--	% / Km
Switching Frequency				--	65	--	kHz
Safety Standard				Design refer to UL1741 , EN62109 -1, CSA-C22.2 No.107.1.H6			
MTBF				MIL-HDBK-217F@25°C ≥ 300,000 h			

Mechanical Specifications

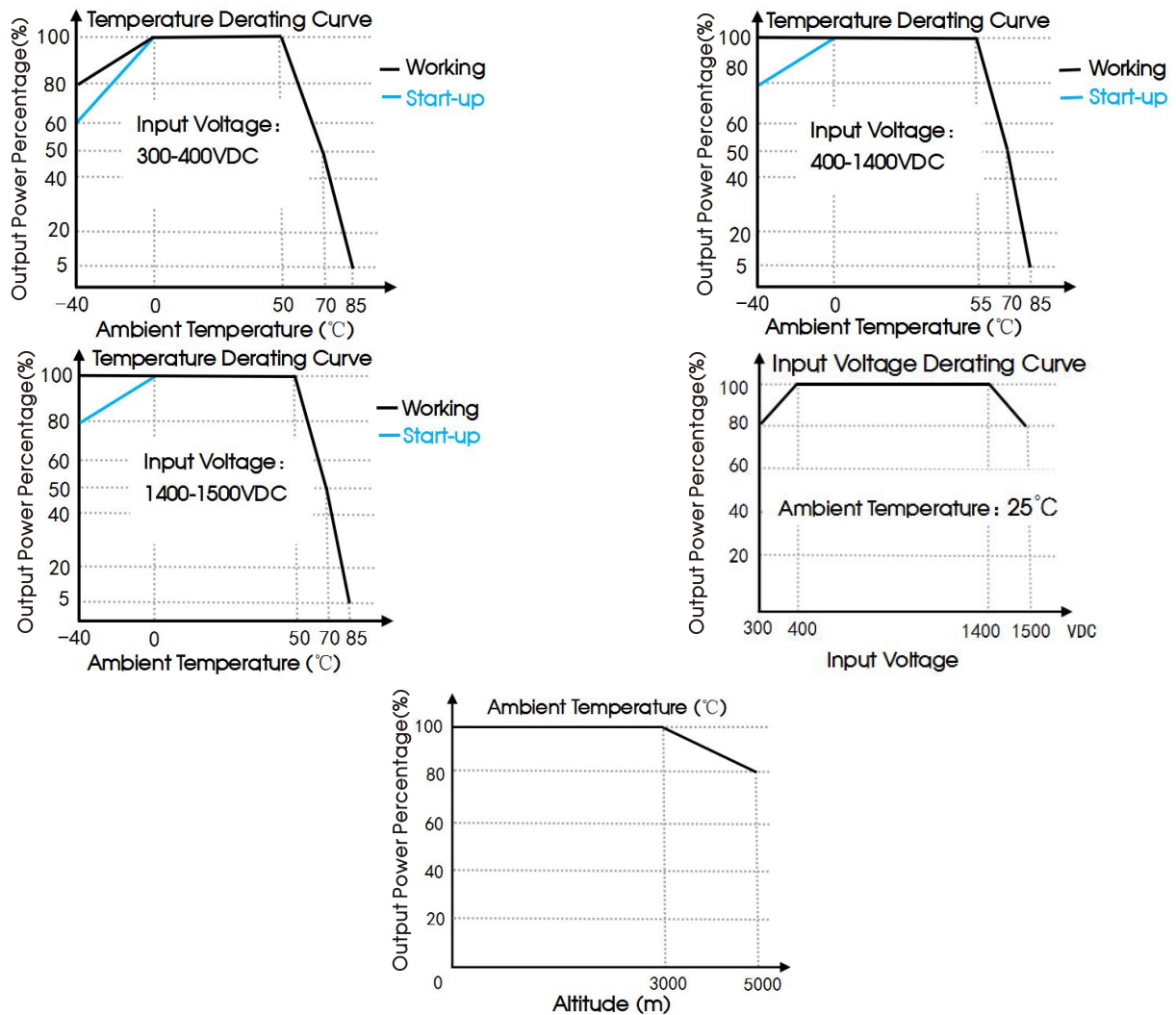
Case Material	Metal
Dimensions	215.00 x 125.00 x 50.00 mm
Weight	1500g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

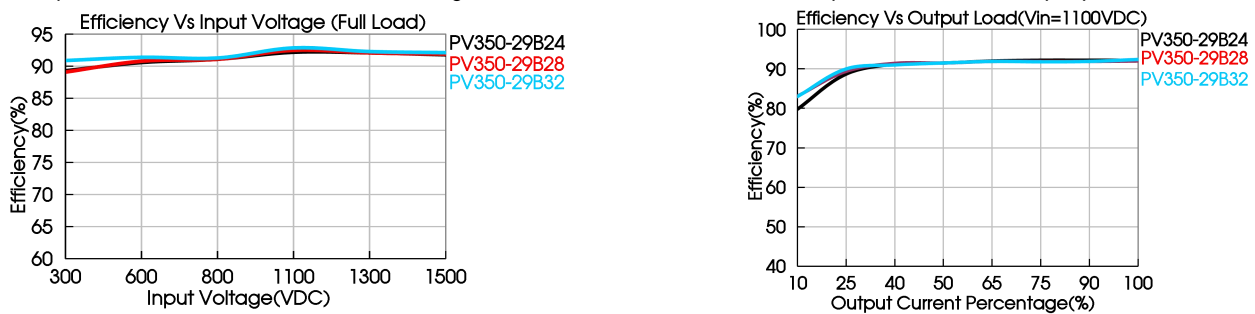
Emissions*	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line ±1KV/line to ground±2KV	perf. Criteria A
	CS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

Note: *During conduction and radiation testing, in order to avoid new interference brought by the input line, it is necessary to cover the input line with a nickel-zinc ferrite or nanocrystalline magnetic ring.

Product Characteristic Curve



Note: ① With an input between 300 -400VDC/1400 -1500VDC, the output power of PV350-29Bxx parts must be derated as per temperature derating curves;
② This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.



Design Reference

1. Typical application circuit

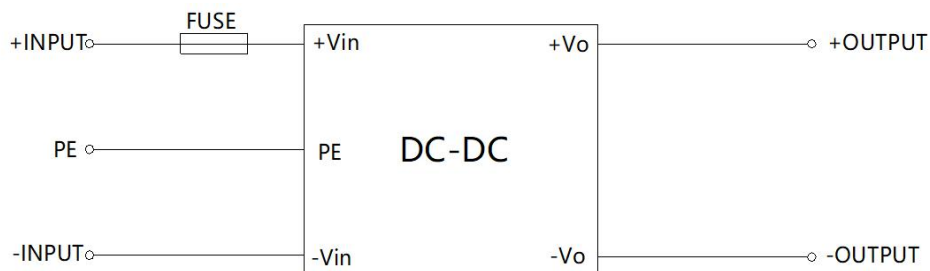
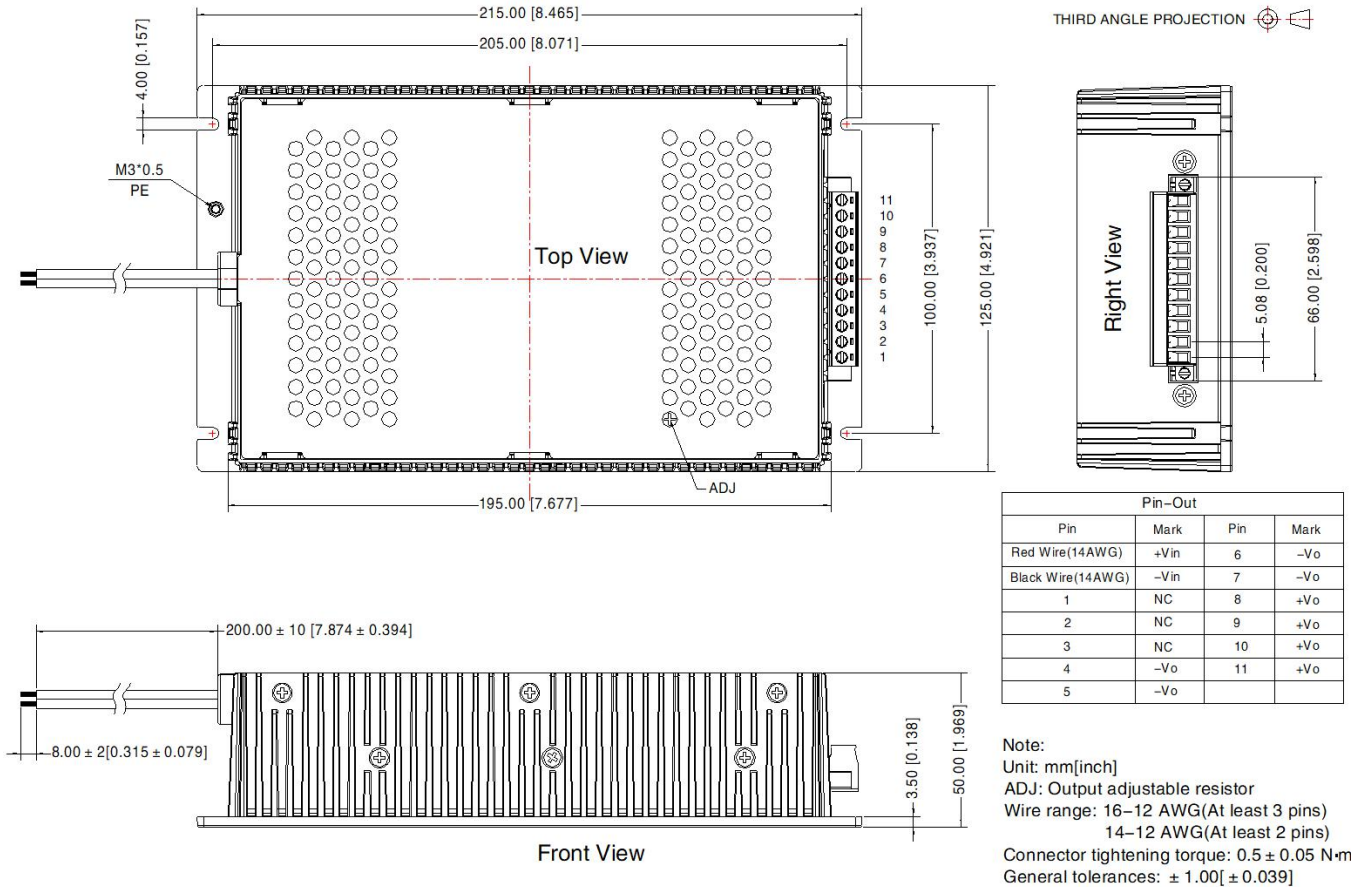


Fig. 1

Model	Recommended value
FUSE	6A/1500VDC, required

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

Dimensions and Recommended Layout



Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220053;
- 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;
- 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.

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