DC/DC Converter

PV150-2YBxxR3 Series

MORNSUN®

150W isolation DC-DC converter with ultra-wide, ultra-high 80 - 1000VDC input for Renewable Energy

CE Report EN62109-1 RoHS

FEATURES

- Ultra-wide 80 - 1000VDC input voltage range (Transient 1100VDC last for 30s)
- Operating ambient temperature range: -40℃ to +85℃
- High I/O isolation voltage up to 4000VAC
- High reliability, efficiency up to 91%
- Input under-voltage protection, input reverse polarity protection, output short circuit, over-current, over-voltage, Over-temperature protection
- Operating altitude up to 5000m
- Design refer to UL1741, IEC/BS EN62109, IEC62477

PV150-2YBxxR3 is a regulated DC-DC series converter with an ultra-wide and ultra-high DC input of 80-1000VDC, which design based on standard of UL1741, EN/IEC/BS EN62109, IEC62477. 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 1000VDC (%) Typ.	Capacitive Load (μF) Max.
EN	PV150-2YB24R3	150	24V/6.25A	90	2000
	PV150-2YB48R3		48V/3.125A	91	1000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Transient (30s)		--	--	1100	VDC
			80	--	1000	
Input Current	80VDC		--	--	2	A
	1000VDC		--	--	0.2	
Inrush Current	1000VDC	Cold start	--	200	--	
Input Under-voltage Protection	Under-voltage protection start		50	--	70	VDC
	Under-voltage protection release		60	--	80	
Input Reverse Polarity Protection			Available			
Start-up Delay Time*			--	3	5	s
External Input Fuse			4A/1500VDC, required (brand: Adler models: A841400b00 base models: BH200)			
Hot Plug			Unavailable			

Note: *Start-up delay time test conditions: full voltage input range, full output load range (the cooling-time between input power-off and power-on again is greater than 10s.)

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range		--	±1.5	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	1000VDC		--	±0.75	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	24V	--	--	240	mV
		48V	--	--	300	
Stand-by Power Consumption			--	--	3	W
Temperature Coefficient			--	±0.02	--	%/℃
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			110% - 330% Io, automatic recover after fault			

			condition is removed			
Over-voltage Protection	24V		≤35V	Output voltage clamp or hiccup		
	48V		≤62V			
Over-temperature Protection**			Output voltage turn off, self-recovery			
Minimum Load			0	--	--	%
Hold-up Time	Full load	1000VDC input	--	10	--	ms

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.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric strength test for 1min., leakage current <5mA		4000	--	--	VAC
	Input - PE			3000	--	--	
	Output - PE			2000	--	--	
Insulation Resistance	Input - output	Test voltage: 500VDC		100	--	--	MΩ
	Input - PE						
	Output - PE						
Operating Temperature				-40	--	+85	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Output Power Derating		Operating temperature derating	-40℃ to -25℃	3.33	--	--	%/℃
			+55℃ to +85℃	2.66	--	--	
		Input voltage derating	80 - 100VDC	0.5	--	--	%/VDC
			100 - 150VDC	0.6	--	--	
		Altitude derating	2000 - 5000m	10	--	--	%/Km
Safety Standard				EN62109-1 (Report); Design refer to UL1741, IEC/BS EN62109-1, IEC62477			
Safety Class				Class I			
MTBF		MIL-HDBK-217F@25℃		≥300,000 h			

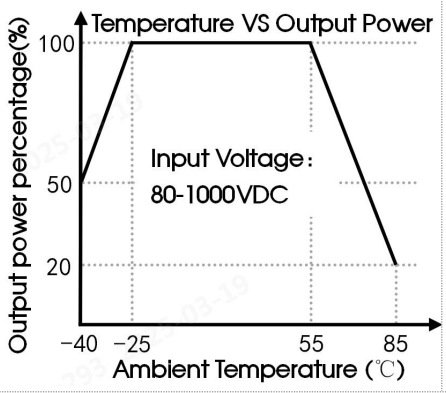
Mechanical Specifications

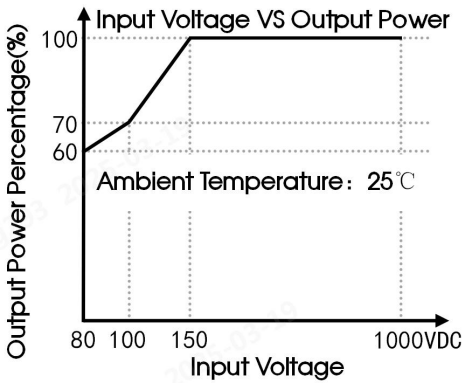
Case Material	Metal
Dimensions	201.00 x 70.00 x 42.00mm
Weight	600g (Typ.)
Cooling Method	Free air convection

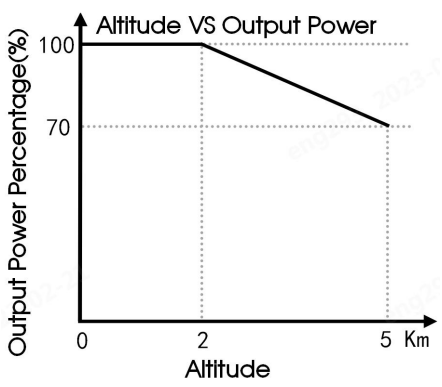
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	EN61000-6-4		
Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV/Air ±15KV	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
	CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A
	PFMF	IEC/EN61000-4-8 30A/m	Perf. Criteria A
	EN55035、EN61000-6-2		

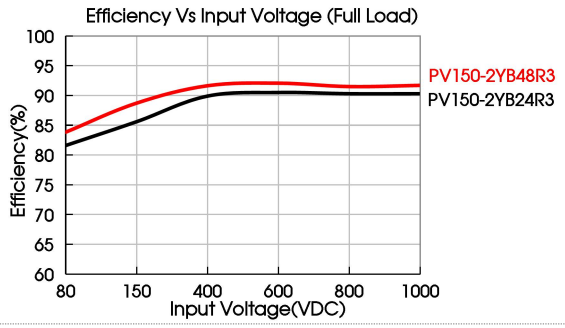
Product Characteristic Curve

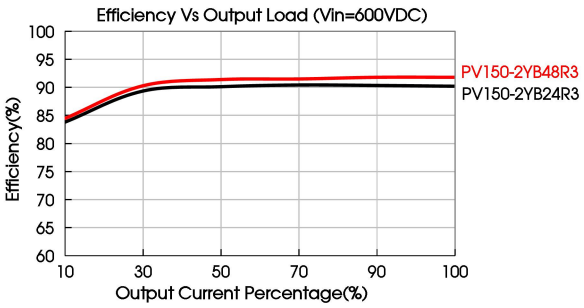






Note: 1.With an DC input between 80--150VDC, the output power must be derated as per temperature derating curves;
2.This product is suitable for applications using natural free air cooling; for applications in closed environment please consult Mornsun FAE.





Design Reference

1. Typical application

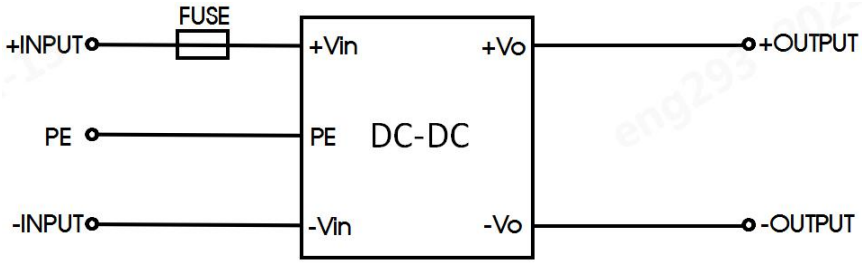
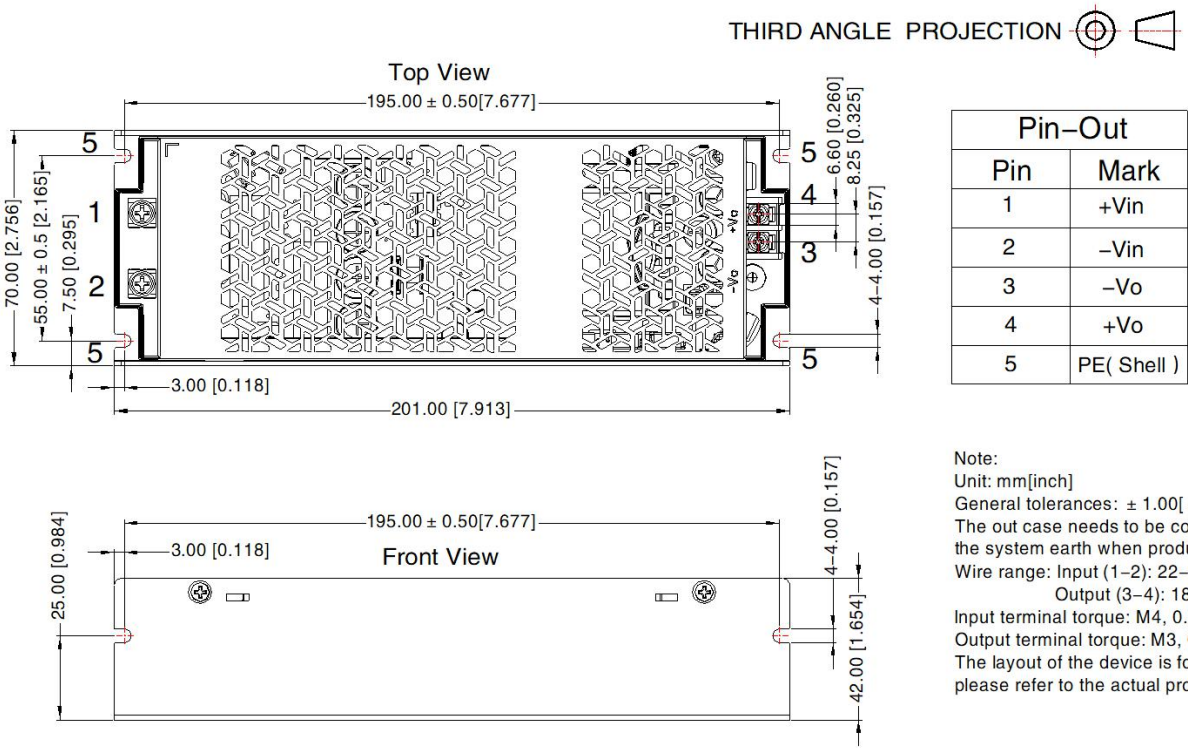


Fig. 1

Part No.	FUSE
PV150-2YBxxR3	4A/1500VDC, required (brand: Adler models: A841400b00 base models: BH200)

2. For additional information please refer to application notes on www.mornsun-power.com.

Dimensions and Recommended Layout



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

Note:
Unit: mm[inch]
General tolerances: ± 1.00[± 0.040]
The out case needs to be connected to the system earth when products in application
Wire range: Input (1-2): 22-10AWG
Output (3-4): 18-10AWG
Input terminal torque: M4, 0.9N・m(Max)
Output terminal torque: M3, 0.4N・m(Max)
The layout of the device is for reference only, please refer to the actual product

⚠WARNING:
1. CAUTION: "To reduce the risk of fire, connect only to a circuit provided with 4 amperes maximum branch-circuit over-current protection in accordance with the National Electrical Code, ANSI/NFPA70."
2. WARNING: REPLACE ONLY WITH THE SAME RATINGS AND TYPE OF FUSE.
3. DANGER — HIGH VOLTAGE.

AVERTISSEMENT:
1. 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.
2. AVERTISSEMENT : N'UTILISER QUE DES FUSIBLES DE MÊMECALIBRE ET DE MÊME TYPE QUE LE FUSIBLE DORIGINE.
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 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. 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 1000VDC.

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