DC/DC Converter

PV75-2YBxxR3 Series

MORNSUN®

75W isolated DC-DC converter with ultra-wide, ultra-high 80 -1000VDC input for Renewable Energy





CE Report RoHS

EN62109-1

FEATURES

- Ultra-wide input voltage range of 80 - 1000VDC
- Transient power 120W last for 3s
- Industrial grade operating temperature: -40℃ to +85℃
- High I/O isolation voltage up to 4000VAC
- High efficiency, low ripple & noise
- High reliability, long lifespan, low power consumption
- Input under-voltage protection, input reverse polarity protection, over-temperature protection, output short circuit, over-current, over-voltage protection
- Safety according to IEC62109

PV75-2YBxxR3 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 CSA-C22.2 No.107.1, UL1741, 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.

Selection Guide

Certification	Part No.*	Output Power		Nominal Output Voltage and Current (Vo/Io)	Efficiency at 500VDC (%) Typ.	Capacitive Load (μF) Max.
		Steady	Transient (duration 3s)			
EN	PV75-2YB12R3	75W	120W	12V/6.25A	87	3000
	PV75-2YB15R3			15V/5.00A	87	3000
	PV75-2YB24R3			24V/3.125A	89	1500

Note: *12V/24V use suffix "W" for lead type version.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		80	--	1000	VDC
Input Current	150VDC	--	--	0.70	A
	750VDC	--	--	0.15	
Inrush Current	1000VDC	--	--	150	
Input Under-voltage Protection	Lockout activation range	20	--	70	VDC
	Lockout deactivation range	30	--	80	
Input Reverse Polarity Protection		Available			
Required External Input Fuse		4A/1000VDC, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range	--	±2	--	%
Line Regulation	Rated load	--	±1	--	
Load Regulation	500VDC	--	±2	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	300	mV
Stand-by Power Consumption	500VDC	--	--	0.5	W
	1000VDC	--	--	1	
Temperature Coefficient		--	±0.02	--	%/℃
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-voltage Protection	12V output	≤20VDC	Output voltage clamp or hiccup		
	15V output	≤23VDC			
	24V output	≤32VDC			

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Over-current Protection			⩾170%Io, self-recovery			
Over-temperature Protection	Full load	Over-temperature protection start	60	--	75	℃
		Over-temperature protection release	55	--	70	
Minimum Load			0	--	--	%
Hold-up Time	Room temperature, full load	750VDC input	--	20	--	ms
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 ＜10mA		4000	--	--	VAC
	Input - PE			4000	--	--	
	Output - PE	Electric Strength Test for 1min., leakage current ＜5mA		2000	--	--	
Insulation Resistance	Input - output	500VDC		100	--	--	MΩ
	Input - PE						
	Output - PE						
Operating Temperature				-40	--	+85	℃
Storage Temperature				-40	--	+85	
Storage Humidity				--	--	95	%RH
Power Derating		-40℃ to -25℃		2.67	--	--	%/℃
		+50℃ to +55℃	80-200VDC	2.00	--	--	
		+55℃ to +85℃	80-200VDC	2.56	--	--	
		+55℃ to +85℃	200-1000VDC	2.90	--	--	
		80-100VDC		1.50	--	--	%/VDC
		100-150VDC		0.80	--	--	
		2000- 5000m		10	--	--	%/Km
Switching Frequency				--	65	--	kHz
Safety Standard				Design refer to UL1741 & EN62109-1, CSA-C22.2 No.107.1-16, IEC62109-1			
MTBF		MIL-HDBK-217F@25℃		⩾300,000 h			

Mechanical Specifications

Case Material	Metal
Dimensions	140.00 x 70.00 x 42.00mm
Weight	420g (Typ.)
Cooling Method	Free air convection

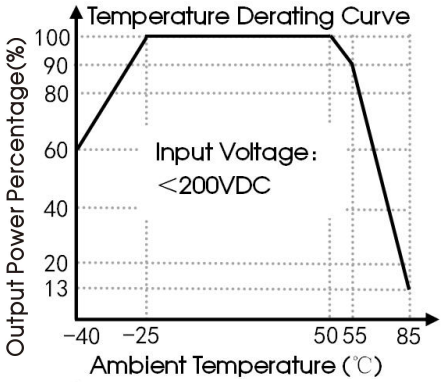
Electromagnetic Compatibility (EMC)

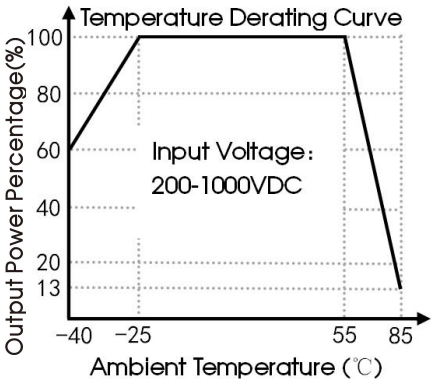
Emissions	CE	CISPR32/EN55032	CLASS A	
		CISPR32/EN55032	CLASS B*	
	RE	CISPR32/EN55032	CLASS A	
		CISPR32/EN55032	CLASS B*	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	Perf. Criteria B
	Surge	IEC/EN61000-4-5	Line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

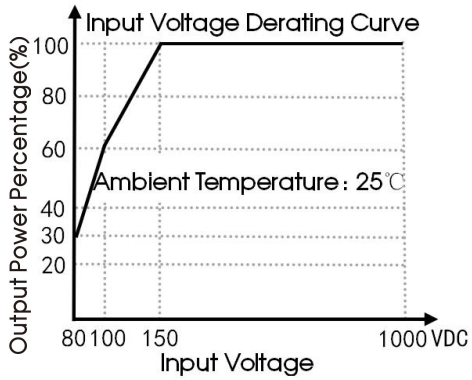
Note: *Class B tested with 60% load.

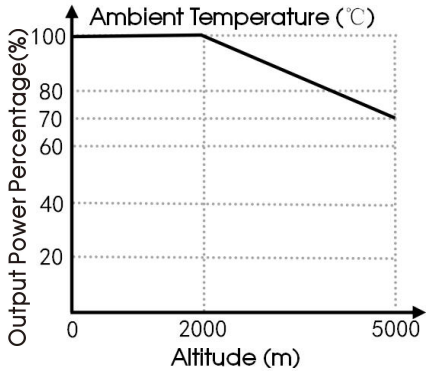
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Product Characteristic Curve

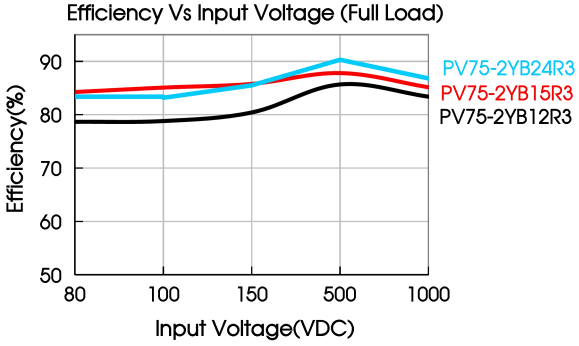


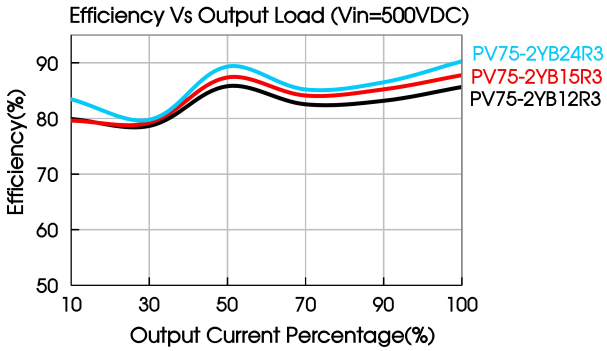






Note: ① With an input between 80 -150VDC, the output power of PV75-2YBxxR3 parts must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.





Design Reference

1. Typical application circuit

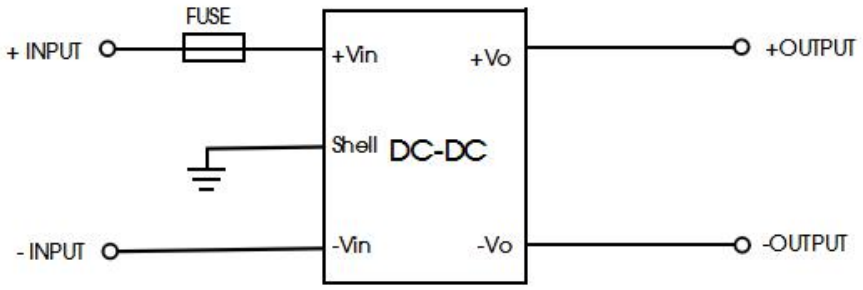


Fig. 1

Model	Recommended value
FUSE	4A/1000VDC, required

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2. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS – This manual contains important instructions for Models PV75-2YBxxR3 series that Shall be followed during installation of the DC-DC converter.

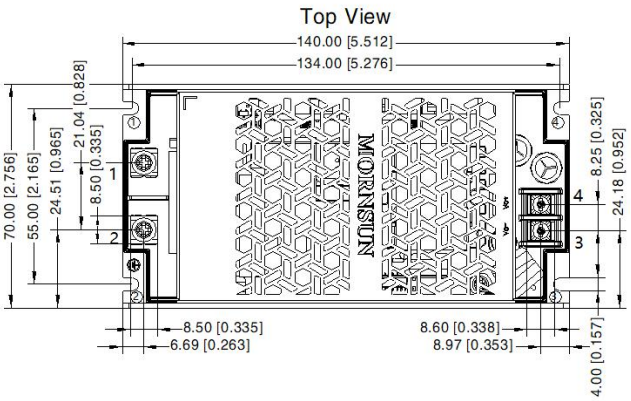
① Additional protective devices, such as lightning protector need to be added if there is an transient pulse voltage greater than 6KV at the input of PV products in system applications.

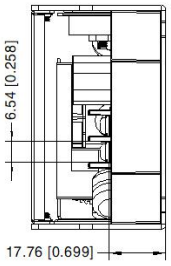
② For symbol ⎓, it means circuit shall be connected to a dc circuit.

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

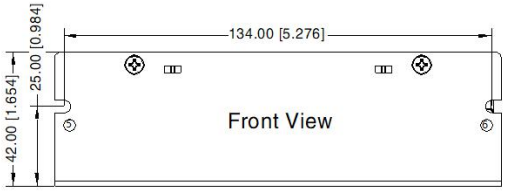
Dimensions and Recommended Layout (PV75-2YBxxR3)

THIRD ANGLE PROJECTION





Pin–Out	
Pin	Mark
1	Vin+
2	Vin–
3	Vo–
4	Vo+
Mounting hole	PE



Position	Screw Spec.	T	Torque(max)	
① – ⑥	M3	1.5mm	0.4N·m	Power Case, Screw, Customer System

Spade terminal:

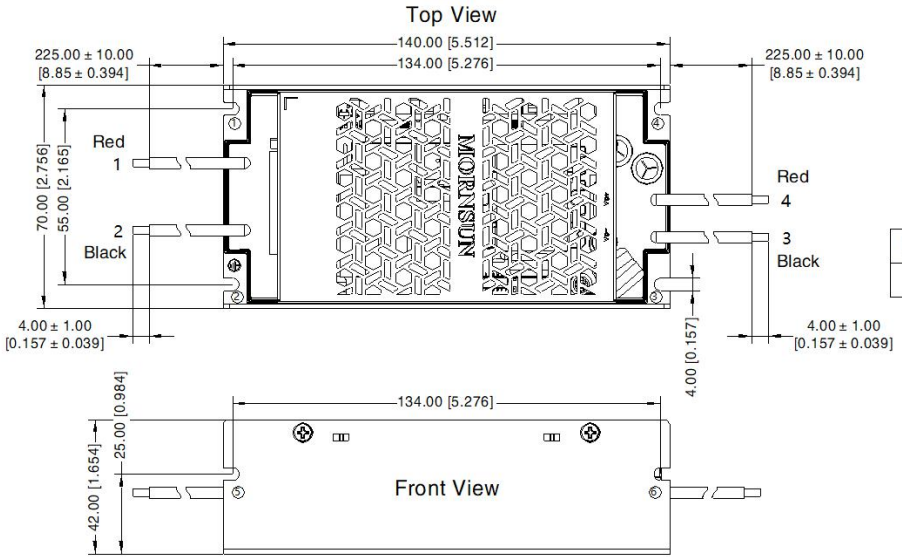
Customer intput Spade terminal	Customer output Spade terminal
8.3 [0.327]max 4.3 [0.169]min 4.25 [0.167]max Screw/torque M4, Max 0.9N·m	6.5 [0.256]max 3.3 [0.130]min 4.5 [0.177]max Screw/torque M3, Max 0.4N·m

Note:
Unit: mm[inch]
Wire range: 24–12AWG
Tightening torque: Max 0.4N·m
General tolerances: ± 1.00[± 0.039]
The mounting hole can be connected to PE

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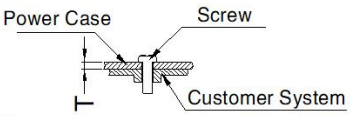
Dimensions and Recommended Layout (PV75-2YBxxWR3)

THIRD ANGLE PROJECTION



Pin–Out	
Pin	Mark
1	Vin+
2	Vin–
3	Vo–
4	Vo+
Mounting hole	PE

Position	Screw Spec.	T	Torque(max)
① – ⑥	M3	1.5mm	0.4N·m



Note:
Input wire spec. ① ②: UL3239 18AWG
Output wire spec. ③ ④: UL1015 14AWG
Unit: mm[inch]
General tolerances: ± 1.00[± 0.039]
The mounting hole can be connected to PE

⚠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: 58220276;
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. Products are related to laws and regulations: see "Features" and "EMC";
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
6. 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;

Mornsun Guangzhou Science & Technology Co., Ltd.
Address: No.8 Nanyun 4th Road, Huangpu District, Guangzhou, China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com

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