

200W isolated AC-DC/DC-DC converter with ultra-wide, ultra-high 176-456VAC or 300- 1500VDC input for Energy storage converters



FEATURES

- Specially designed for electrical equipment in energy storage and wind power industries
- AC input voltage range: 176 - 456VAC
- Input voltage up to 528VAC (Transient, duration: 30s)
- DC input voltage range: 300 - 1500VDC
- Input voltage up to 1600VDC (Transient, duration: 30s)
- When AC and DC are supplied at the same time, the AC input takes priority
- Industrial grade operating temperature -40°C to +85°C
- High I/O isolation voltage up to 4000VAC
- High efficiency, high reliability
- DC input reverse polarity protection, output short circuit, over-current, over-voltage protection
- EFT/Surge immunity meets Level 4
- Design refer to UL1741, EN/BS EN62109

PVA200-29B24-PCS is specially designed for applications to be compatible with isolating two inputs at the same time: AC (176-456VAC), DC (300-1500VDC). It features high efficiency, high reliability and high isolation voltage. It meets the needs of customers to supply power for the auxiliary power supply of the energy storage inverter, and its built-in multiple protection functions can improve the safety performance of the power supply and its load under abnormal working conditions.

Selection Guide

Part No.	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VDC/380VAC (%) Typ.	Capacitive Load (μF) Max.
PVA200-29B24-PCS	200	24V/8.333A	90/91	2000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	Transient (30s)	--	--	528	VAC
		Steady	176	--	456	
	DC input	Transient (30s)	--	--	1600	VDC
		Steady	300	--	1500	
Input Voltage Frequency			47	--	63	Hz
Input Current	220VAC		--	--	3.2	A
	380VAC		--	--	2.0	
	600VDC		--	--	0.8	
	800VDC		--	--	0.65	
Inrush Current	220VAC	Cold start	--	60	--	
	380VAC		--	100	--	
	1500VDC		--	250	--	
Start-up Delay Time			--	1	3	s
Input Under-voltage Protection	Lockout activation range		160	--	290	VDC
	Lockout deactivation range		170	--	300	
Input Reverse Polarity Protection			Available			
External Input Fuse			4A/600VAC, 4A/1500VDC, required (AC、DC input)			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range	AC	--	±2	--	%
		DC	--	±3	--	
Line Regulation	Rated load		--	±1	--	
Load Regulation	220VAC/800VDC	AC	--	±1	--	
		DC	--	±3	--	
Stand-by Power Consumption	300VDC		--	0.5	1.5	W
	850VDC		--	1	2	
	1500VDC		--	1	3	
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			≥ 120 %Io, hiccup, self-recovery			
Over-voltage Protection			≤ 36V	Output voltage clamp		
Minimum Load			0	--	--	%
Hold-up Time	Room temperature, full load	800VDC input	--	10	--	ms

Note: *The "parallel cable" method is used for ripple and noise test, output parallel 220uF electrolytic capacitor and 1uF ceramic capacitor, 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(AC) - Input(DC)		4000	--	--	
	Input - PE		4000	--	--	
	Output - PE		2000	--	--	
Insulation Resistance	Input - output	Test voltage: 2500VDC	100	--	--	MΩ
	Input - PE					
	Output - PE					
Operating Temperature			-40	--	+85	°C
Storage Temperature			-40	--	+85	
Storage Humidity	Non-condensing		--	--	95	%RH
Power Derating	Operating temperature derating	-40°C to 0°C	1.25	--	--	% / °C
		+50°C to +85°C	2	--	--	
	Altitude derating	2000m - 5000m	10	--	--	%/Km
Switching Frequency			--	65	--	KHz
Safety Standard			Design refer to UL1741, EN/BS EN62109-1			
MTBF	MIL-HDBK-217F@25°C		≥ 100,000 h			

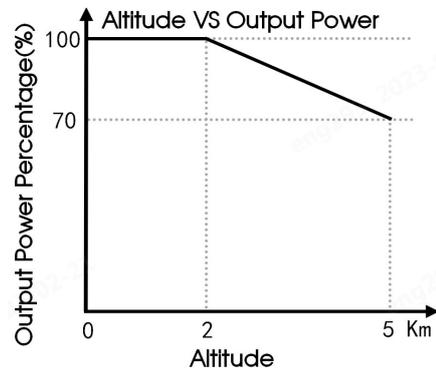
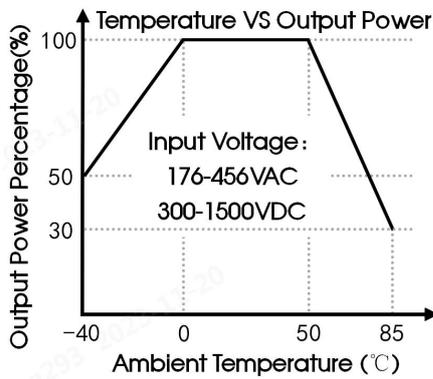
Mechanical Specifications

Dimensions	199.00 x 110.00 x 42.00mm
Weight	1100g (Typ.)
Cooling Method	Free air convection

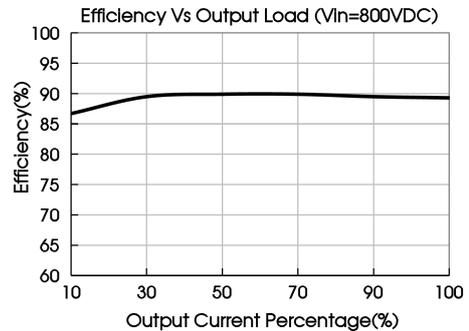
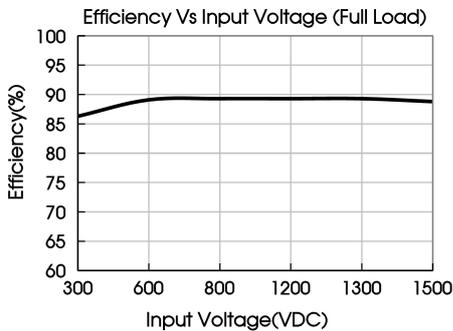
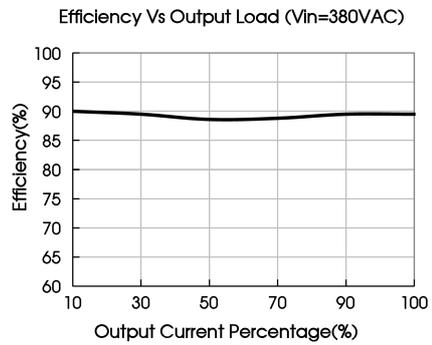
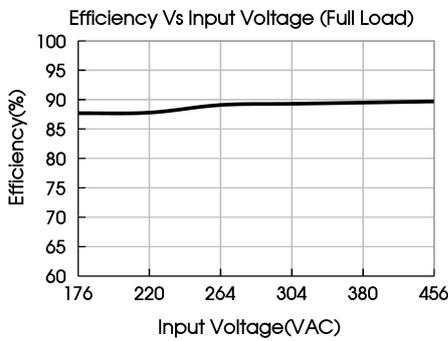
Electromagnetic Compatibility (EMC)

Emissions	CE (220VAC input)	CISPR32/EN55032 EN61000-6-4	CLASS A	
	RE (220VAC input)	CISPR32/EN55032 EN61000-6-4	CLASS A	
Immunity	EN55035、EN61000-6-2			
	ESD	IEC/EN61000-4-2	Contact $\pm 6KV$ /Air $\pm 8KV$	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	$\pm 4KV$	Perf. Criteria A
	Surge	IEC/EN61000-4-5	Line to line $\pm 2KV$ / line to PE $\pm 4KV$	Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A

Product Characteristic Curve



Note: 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 circuit

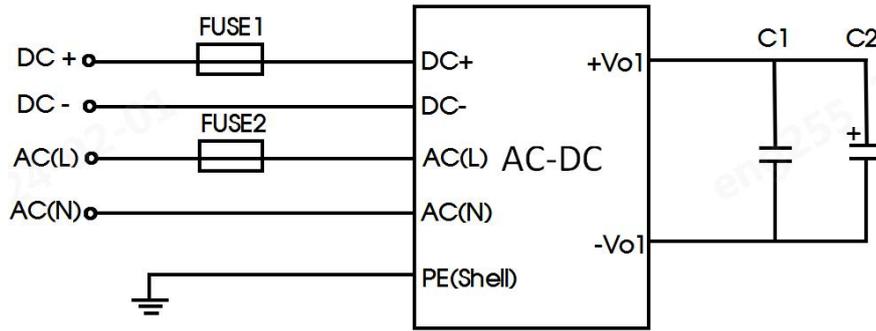


Fig. 1

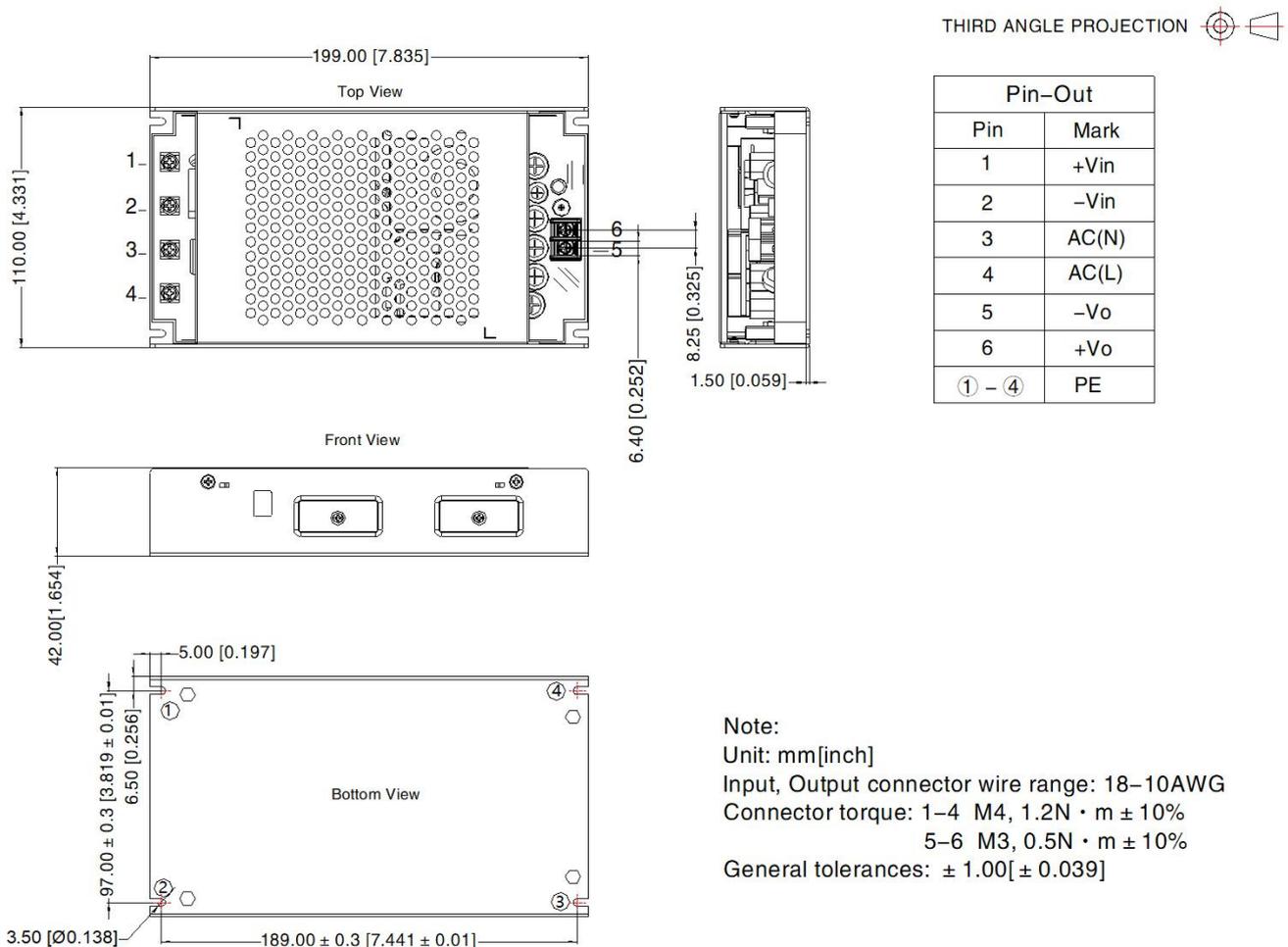
Part No.	FUSE1(DC input)	FUSE2(AC input)	C1	C2
PVA200-29B24-PCS	4A/1500VDC, required	4A/600VAC, required	1uF/50V	10uF/50V

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor, used to filter high-frequency noise.

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

Dimensions and Recommended Layout



Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220644;
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;

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