

New energy 200-1500VDC over wide and over high input voltage isolation converter



PV15-29BxxL series ——is 200-1500VDC ultra wide input voltage regulated DC-DC converter, which has advantages such as high efficiency, high reliability and high safety isolation. The series products are widely used in industries such as photovoltaic power generation and high voltage frequency conversion, provide a stable operating voltage for the load device, its multiple protection features can enhance the safety performance of the module power supply and the load under abnormal working conditions.

FEATURES

- Ultra wide input voltage range: 200 - 1500VDC
- Industrial grade operating temperature: -25℃ to +70℃
- 4000VAC high isolation voltage
- High efficiency, Low ripple & noise
- Input under-voltage protection, reverse input voltage protection, Output short circuit, over-current, over-voltage protection
- Mounting: PCB mounting, Chassis mounting, DIN-Rail mounting available

Selection Guide

Part No.	Output Power	nominal Output Voltage and Current(Vo/Io)	Efficiency (800VDC, %/Typ.)	Max. Capacitive Load(μF) (Normal temperature full load)
PV15-29B05L	10W	5V/2000mA	70	6000
PV15-29B12L	15W	12V/1250mA	76	2000
PV15-29B15L		15V/1000mA	77	1500
PV15-29B24L		24V/625mA	79	470

Note: *Part No. with suffix of "A5" means chassis mounting and suffix of "A6" means DIN-Rail mounting (e.g. PV15-29B05LA5 means chassis mounting; PV15-29B05LA6 means DIN-Rail mounting)

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		200	--	1500	VDC
Input current	200VDC	--	--	130	mA
	1500VDC	--	--	25	
Inrush current	200VDC	--	--	50	A
	1500VDC	--	--	150	
Under-voltage protection		Under voltage protection range: 170 - 185VDC Under voltage release range: 180 - 195VDC			
External input fuse		15A/1500VDC			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±2	--	%
Line Regulation	Full load	--	±1	--	
Load Regulation	0% -100% load	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	--	150	300	mV
Temperature Drift Coefficient		--	±0.02	--	%/℃
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		≥ 120%Io, self-recovery			
Over-voltage Protection	5V Output	≤ 8VDC			
	12/15V Output	≤ 20VDC			
	24V Output	≤ 30VDC			
Min. Load		0	--	--	%
Delay Time**	200-1500VDC	--	--	2	s

Note: * Ripple and noise are measured by "parallel cable" method, please see AC-DC Converter Application Notes for specific operation.

**Delay Time test condition: Full input voltage range, full output load range (The cooling time between Input power-off and the next input Power-on is bigger than 15s).

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	Test time: 1min	4000	--	--	VAC
Operating Temperature			-25	--	+70	°C
Storage Temperature			-25	--	+85	
Storage Humidity			--	--	95	%RH
Welding Temperature	Wave-soldering		260 ± 5°C; time:5 - 10s			
	Manual-welding		360 ± 10°C; time:3 - 5s			
Power Derating	+50°C to +70°C		2	--	--	%/°C
Switching Frequency			--	65	--	kHz
Altitude			--	--	5000	m
MTBF			MIL-HDBK-217F@25°C ≥ 300,000 h			

Physical Specifications

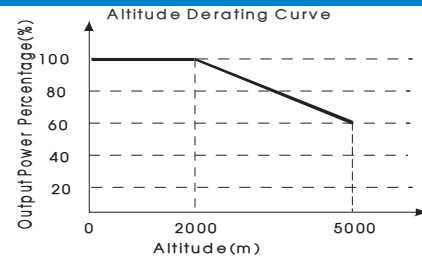
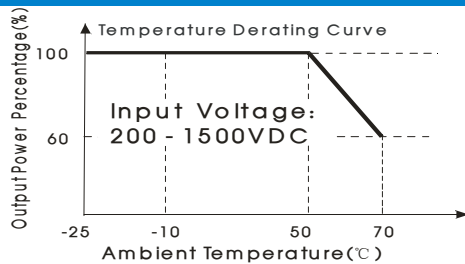
Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)	
Dimension	Horizontal package	109.00*58.50*30.00mm
	A5 chassis mounting	135.00*70.00*38.50mm
	A6 Din-Rail mounting	137.00*70.00*44.00mm
Weight	Horizontal package	270g (Typ.)
	A5 chassis mounting	350g (Typ.)
	A6 Din-Rail mounting	425g (Typ.)
Cooling method	Free air convection	

Note: Avoid washing the shell with the PCB water directly, We recommend to use alcohol to clean or wipe it.

EMC Specifications

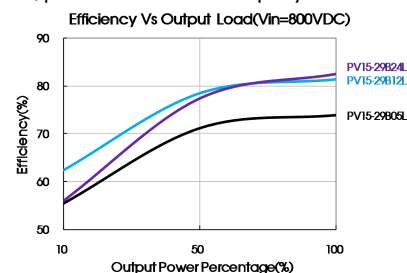
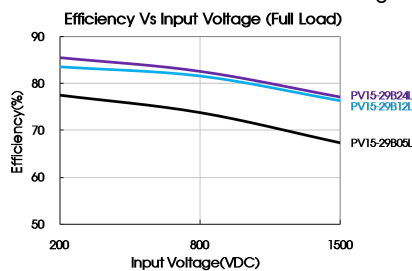
EMI	CE	CISPR22/EN55022 CLASS A(See Fig. 2 for recommended circuit)	
	RE	CISPR22/EN55022 CLASS A(See Fig. 2 for recommended circuit)	
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV /Air ±8KV Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV (See Fig. 2 for recommended circuit) perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line±1KV (See Fig. 2 for recommended circuit) perf. Criteria B
	CS	IEC/EN61000-4-6	10 Vr.m.s perf. Criteria A

Product Characteristic Curve



Note: ①For the PV15-29BxxL, altitude should be derated based on temperature derating when it is 2000 - 5000m;

②This 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

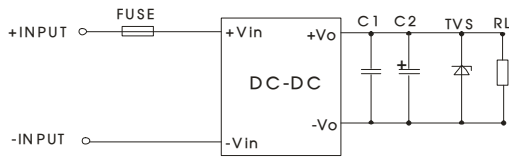


Fig. 1: Typical application circuit

Model	C1(μF)	C2(μF)	TVS tube
PV15-29B05L	1	120	SMBJ7.0A
PV15-29B12L		120	SMBJ20A
PV15-29B15L		120	SMBJ20A
PV15-29B24L		68	SMBJ30A

Note:
Output filtering capacitor C2 is electrolytic capacitor, it is recommended to apply electrolytic capacitor with high frequency and low resistance. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitance withstand voltage derating should be 80% or above. C1 is ceramic capacitor, which is used to filter high-frequency noise. TVS is a recommended component to protect post-circuits if converter fails.

2. EMC solution-recommended circuit

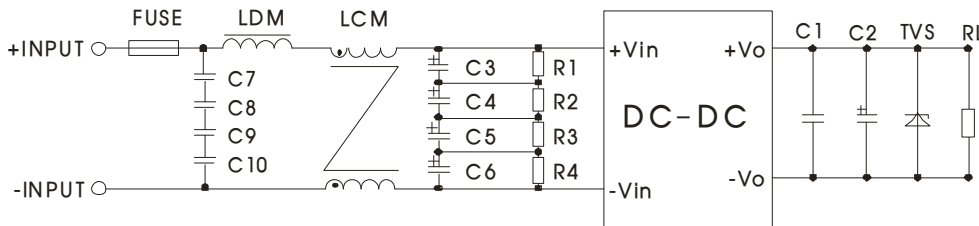
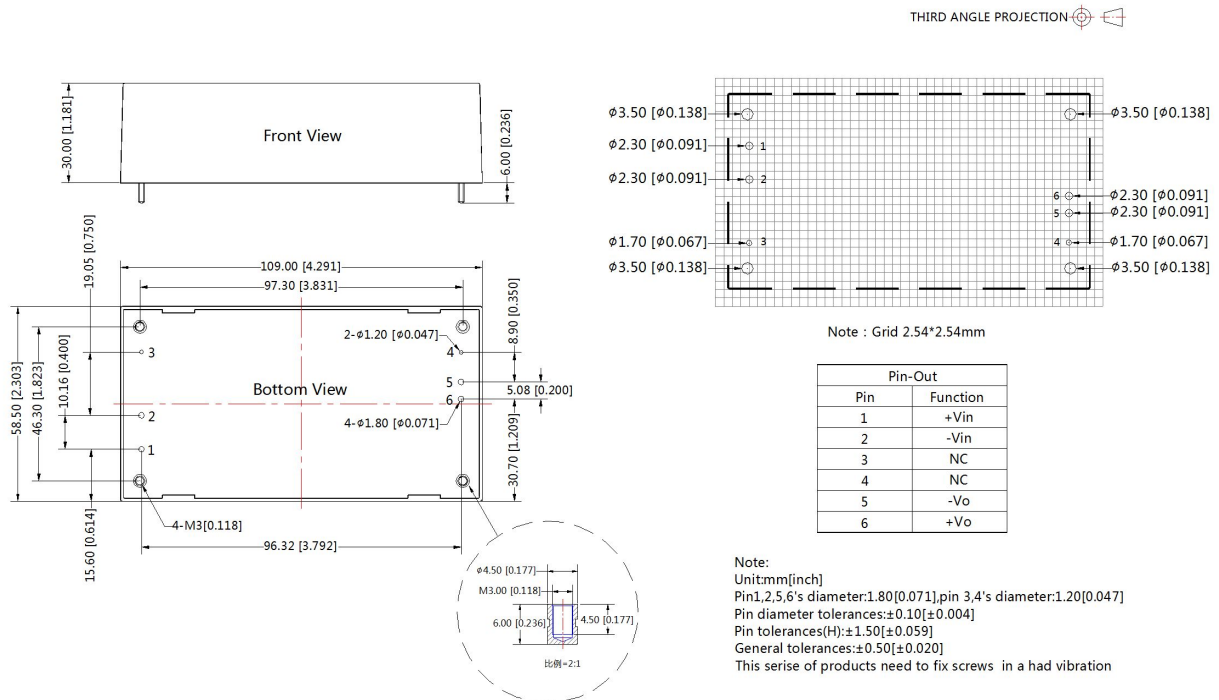


Fig 2: EMC application circuit with higher requirements (The output circuit parameters show in Figure 1)

Element model	Recommended value
C7、C8、C9、C10	0.1uF /275VAC
C3、C4、C5、C6	47uF/450VDC
R1、R2、R3、R4	1MΩ/2W
LDM	330uH/0.38A
LCM	7mH/1A
FUSE	15A/1500VDC , necessary

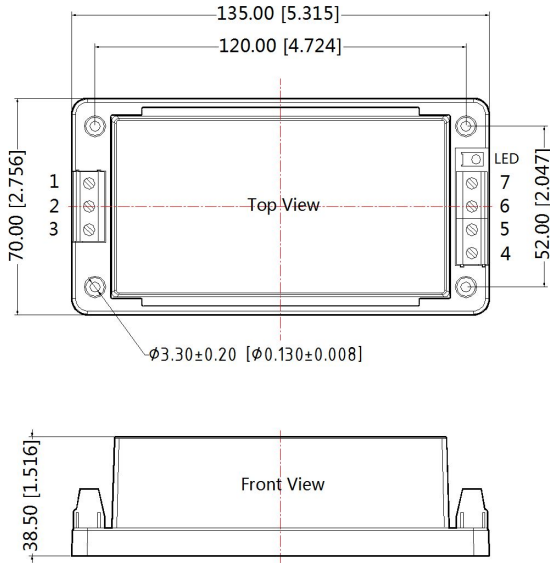
3. For more information Please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout



A5 Chassis mounting Dimensions

THIRD ANGLE PROJECTION 

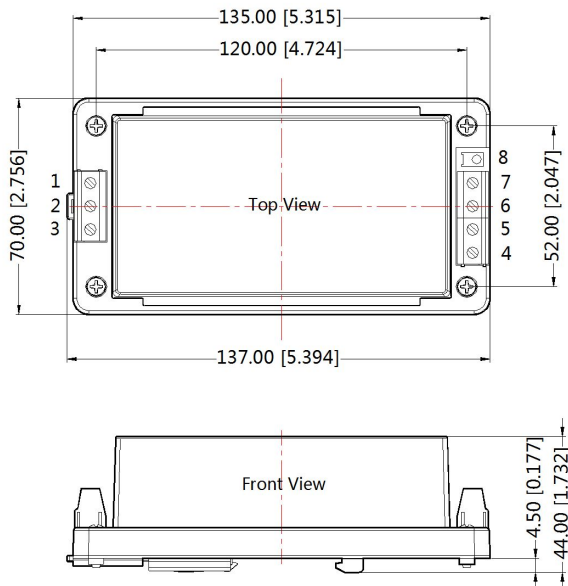


Pin-Out	
Pin	Function
1	+Vin
2	NC
3	-Vin
4	NC
5	NC
6	-Vo
7	+Vo

Note:
Unit: mm[inch]
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±1.00[±0.040]

A6 Din-Rail mounting Dimensions

THIRD ANGLE PROJECTION 



Pin-Out	
Pin	Function
1	+Vin
2	NC
3	-Vin
4	NC
5	NC
6	-Vo
7	+Vo

Note:
Unit: mm[inch]
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N·m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ±1.00[±0.039]

Note:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58220020 (Horizontal package); 58220031(A5/A6 package);
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% when inputting nominal voltage and outputting rated load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. In order to improve the conversion efficiency, when the module is working under high pressure, the module may have certain audio noise, but does not affect the reliability of the product;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Specifications are subject to change without prior notice.

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