DPV15-15B-xx Series

DESCRIPTIONS

15W，DC-DC Converter







RoHS

3 Years Warranty

CE Report UKCA Report

EN62109-1 BS EN62109-1

FEATURES

- Input voltage up to 1600VDC (Transient, duration: 10s)
- Ultra wide input voltage range: 200 - 1500VDC
- Industrial grade operating temperature: -40℃ to +70℃
- High I/O isolation voltage up to 4000VAC
- High efficiency, low ripple & noise
- Input under-voltage protection, input reverse polarity protection, output short circuit, over-current, over-voltage protection
- OVC II
- Reinforced insulation

APPLICATIONS

- Photovoltaic inverters
- Storage

Selection Guide

Certification	Part No*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VAC (%) Typ.	Capacitive Load (uF) Max.
EN/BS EN	DPV15-15B-05	10	5V/2000mA	68	6000
	DPV15-15B-12	15	12V/1250mA	78	2000
	DPV15-15B-15		15V/1000mA	80	1200
	DPV15-15B-24		24V/625mA	83	470

Note:1. *Use suffix “E5” for chassis mounting and suffix “D6” for DIN-Rail mounting.
2.The product picture is for reference only. For details, please refer to the actual product.

Specifications

Product Specifications	Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range		200	800	1500	VDC
		Transient (10s)	--	--	1600	
	Input Current	200VDC	--	--	120	mA
		800VDC	--	--	30	
		1500VDC	--	--	16	
	Inrush Current	200VDC	--	30	--	A
		1500VDC	--	90	--	
	Under-voltage Protection		Lockout activation range: 130 - 175V Lockout deactivation range: 155 - 200V			
	Input Reverse Polarity Protection		Available			
	External Input Fuse Required		4A/1500VDC, required			
	Hot Plug		Unavailable			
Output Specifications	Output Voltage Accuracy		--	±1.0	±1.5	%
	Line Regulation	Full load	--	±0.25	±0.5	
	Load Regulation	0% - 100% load	--	±0.25	±0.5	
	Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	150	mV
	Temperature Coefficient		--	±0.02	±0.15	%/℃
	Minimum Load		0	--	--	%
	Hold-up Time	Room temperature, full load 800VDC input	--	20	--	ms
	Short Circuit Protection		Continuous, self-recovery			
	Over-current Protection		≥120%Io, self-recovery			
	Over-voltage Protection	DPV15-15B-05	≤8VDC , Output voltage clamp or hiccup			
		DPV15-15B-12	≤20VDC , Output voltage clamp or hiccup			
		DPV15-15B-15	≤20VDC , Output voltage clamp or hiccup			
		DPV15-15B-24	≤30VDC , Output voltage clamp or hiccup			
	Start-up Delay Time**	200 - 1500VDC	--	--	2	s
General Specifications	Isolation Input - output	Electric Strength Test for 1min., leakage current <3mA	4000	--	--	VAC
	Operating Temperature		-40	--	+70	℃
	Storage Temperature		-40	--	+85	
	Storage Humidity		--	--	95	%RH
	Switching Frequency		--	65	--	kHz

	Soldering Temperature	Wave-soldering			260 ± 5℃; time: 5 - 10s			
		Manual-welding			360 ± 10℃; time: 3 - 5s			
	Power Derating	-40℃ to 0℃	200 - 300VDC	5V/12V/15V	0.75	--	--	%/℃
		+50℃ to +70℃			1.5	--	--	
		2000m - 5000m			6.7	--	--	%/Km
	Altitude				--	--	5000	m
	MTBF	MIL-HDBK-217F@25℃			≥300,000 h			
Mechanical Specifications	Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)						
	Dimensions	Horizontal package	89.00 x 63.50 x 25.00 mm					
		D5 chassis mounting	135.00 x 70.00 x 33.50 mm					
		D6 DIN-Rail mounting	135.00 x 70.00 x 39.00 mm					
	Weight	Horizontal package	200g (Typ.)					
		D5 chassis mounting	280g (Typ.)					
		D6 DIN-Rail mounting	350g (Typ.)					
	Cooling Method	Free air convection						

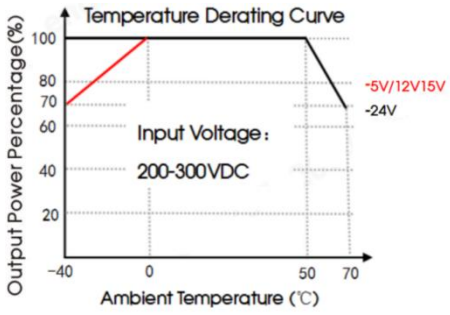
Note: *The "parallel cable" method is used for ripple and noise test;

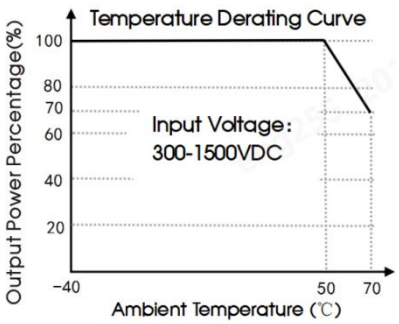
** Full input voltage / output load range (The cooling-time between input power-off and power-on again is greater than 15s).

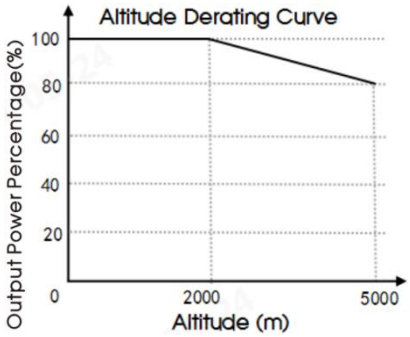
Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS A (See Fig. 2 for recommended circuit)	
		RE	CISPR32/EN55032 CLASS A (See Fig. 2 for recommended circuit)	
	Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV / Air ±8KV	perf. Criteria A
		RS	IEC/EN61000-4-3 10V/m	perf. Criteria B
		EFT	IEC/EN61000-4-4 ±4KV	perf. Criteria B
		Surge	IEC/EN61000-4-5 line to line ±2KV	perf. Criteria A
		CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A

Product Characteristic Curve



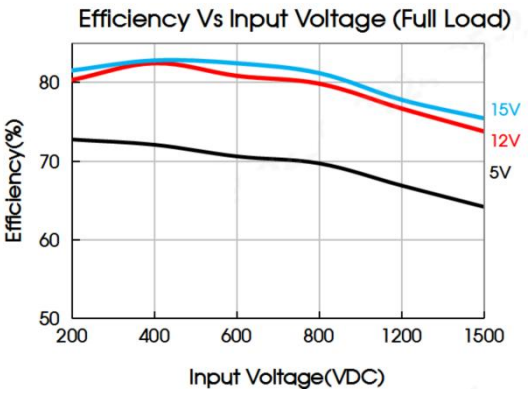


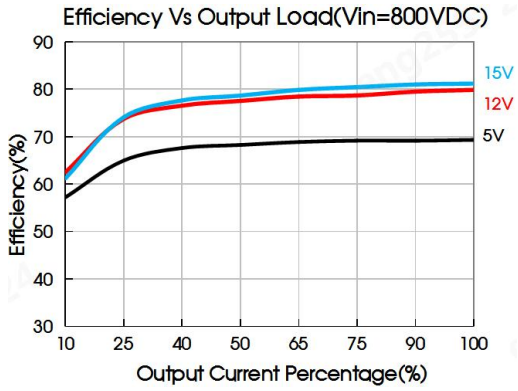


Note:

① For operation of this converter series in an altitude between 2000 - 5000m above sea level, the output power must be derated as per the altitude derating curve;

② This product is suitable for applications using natural free air convection.





Design Reference

1. Typical application

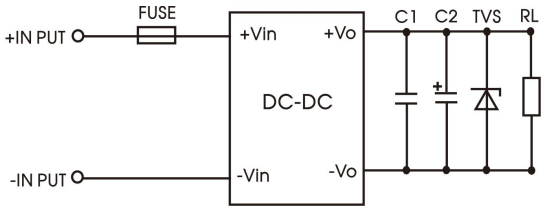


Fig. 1: Typical application circuit

Model	FUSE	C1(μF)	C2(μF)	TVS
DPV15-15B-05	4A/1500VDC, required	1μF/35V	120μF/35V	SMBJ7.0A
DPV15-15B-12			120μF/35V	SMBJ20A
DPV15-15B-15			120μF/35V	SMBJ20A
DPV15-15B-24			68μF/35V	SMBJ30A

Note on 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. TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2.EMC compliance recommended circuit

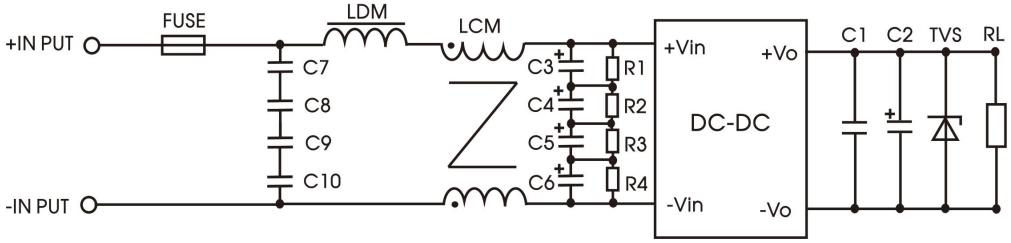


Fig 2: EMC application for higher compliance requirements (output parameters are show in Figure 1)

Component	Recommended value
C7, C8, C9, C10	Safety capacitor 104K/275VAC
C3, C4, C5, C6	10uF/450VDC
R1, R2, R3, R4	1MΩ/2W
LDM	330uH/1A
LCM	7mH/1A (recommended to use EFL2D-1-702B, three insulated wire)
FUSE	4A/1500VDC, required

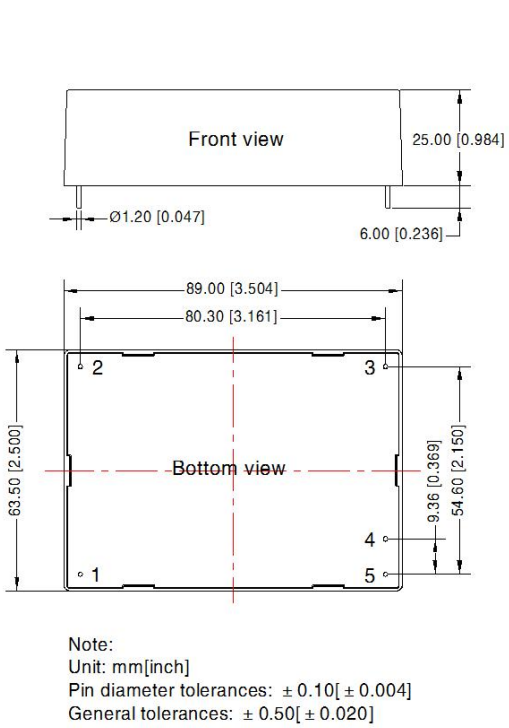
3.IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS – This manual contains important instructions for Models DPV15-15B-xx series that Shall be followed during installation of the DC-DC converter.

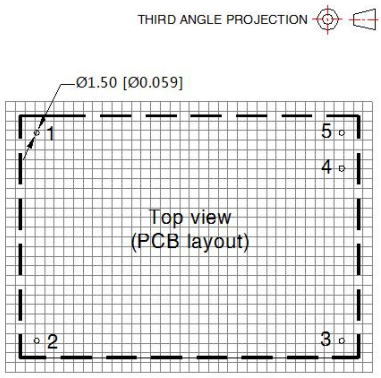
① Additional protective devices, such as lightning protector need to be added if there is an transient pulse voltage greater than 6KV at the input of products in system applications.

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

Dimensions and Recommended



Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]

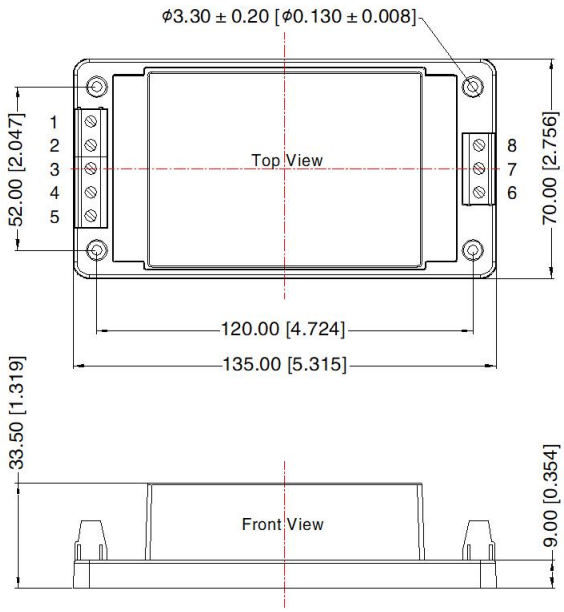


Note: Grid 2.54*2.54mm

Pin–Out	
Pin	Mark
1	-Vin
2	+Vin
3	NC
4	-Vo
5	+Vo

E5 Chassis Mounting Dimensions

THIRD ANGLE PROJECTION

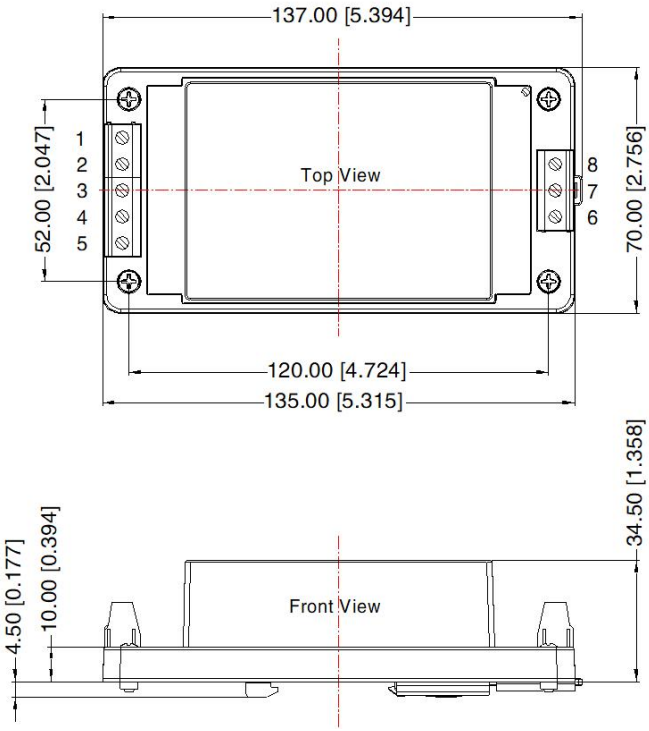


Pin–Out	
Pin	Mark
1	–Vin
2	NC
3	NC
4	NC
5	+Vin
6	NC
7	–Vo
8	+Vo

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

D6 Din-Rail Mounting Dimensions

THIRD ANGLE PROJECTION



Pin–Out	
Pin	Mark
1	–Vin
2	NC
3	NC
4	NC
5	+Vin
6	NC
7	–Vo
8	+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[± 0.040]

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."
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..CAUTION: RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.
2..ATTENTION: RISQUES D'ÉLECTROCUTION. NE PAS RETIRER LE COUVERCLE. NE CONTIENT AUCUNE PIÈCE POUVANT ÊTRE RÉPARÉE PAR L'UTILISATEUR.
3.CAUTION: DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.
3.ATTENTION: COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT DE FAIRE L'ENTRETIEN ET LESL RÉPARATIONS.
4..CAUTION: RISK OF ELECTRIC SHOCK FROM STORED ENERGY. WAIT 5 MIN AFTER DISCONNECTING ALL SOURCES OF SUPPLY BEFORE ACCESSING.
4..ATTENTION:RISQUE D'ÉLECTROCUTION EN RAISON DE L'ÉLECTRICITÉ EMMAGASINÉE. ATTENDRE 5 MINUTES APRÈS AVOIR DÉBRANCHÉ TOUTES LES SOURCES D'ALIMENTATION AVANT D'Y ACCÉDER.

Note:

1. Unless otherwise specified, E5/D6 products performance are consistent with Horizontal package products;
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. In order to improve the efficiency, there will be audible noise generated when working at input voltage higher than 1000 VDC, but it does not affect product performance and reliability;
5. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;
6. We can provide product customization service;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
9. 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 1500Vdc;
10. Input short circuit current Max. 4A.
11. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.