DESCRIPTIONS

40W, DC/DC Converter





RoHS

CE Report EN62109-1

UKCA Report BS EN62109-1

FEATURES

- Input voltage up to 1700VDC (Transient, duration: 30s)
- Ultra wide input voltage range: 250 - 1500VDC
- Output 50W available under specific input voltage range
- Industrial grade operating temperature: -40℃ to +85℃
- 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
- Reinforced insulation

APPLICATIONS

- Photovoltaic
- High voltage frequency conversion

Selection Guide

CERTIFICATION	Part No.*	Output Power (W)	Static Power Margin (W)**	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VDC (%) Typ.	Capacitive Load (μF) Max. (Normal temperature full load)
EN/BS EN	DPV40-15B-12	40	50 (400 - 1100VDC)	12V/3.34A	86	3000
	DPV40-15B-24		50 (400 - 1500VDC)	24V/1.67A	89	820
	DPV40-15B-28			28V/1.43A	89	820
--	DPV40-15B-48			48V/0.833A	91	410

Note: 1.*Use suffix "E5" for chassis mounting and suffix "D6" for DIN-Rail mounting;
2.**Up to 125% (50W) continuous static power margin at 55℃ under specific input voltage range.
3.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			250	--	1500	VDC
		Transient (30s)		--	--	1700	
	Input Current	300VDC		--	--	0.20	A
		800VDC		--	--	0.08	
	Inrush Current	800VDC		--	60	--	
		1500VDC		--	90	--	
	Under-voltage Protection	Under-voltage protection start	12V/24V/28V	140	--	240	VDC
			48V	130	--	240	
		Under-voltage protection release		180	--	250	
		Hysteresis voltage typical value		50			
	Input Reverse Polarity Protection			Available			
	External Input Fuse Required			4A/1500VDC (CCN:JFGA/JFGA7), required			
	Hot Plug			Unavailable			
Output Specifications	Output Voltage Accuracy	All load range		--	±1	±2	%
	Line Regulation	Rated load		--	±0.5	--	
	Load Regulation	800VDC		--	±0.5	--	
	Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	150	200	mV
	Temperature Coefficient			--	±0.02	--	%/℃
	Short Circuit Protection			Hiccup, continuous, self-recovery			
	Over-current Protection			≥110%Io, self-recovery			
	Over-voltage Protection	12V		≤20VDC	Output voltage clamp or hiccup		
		24V		≤30VDC			
		28V		≤35VDC			
		48V		≤60VDC			
	Minimum Load			0	--	--	%
	Start-up Delay Time**	250 - 1500VDC		--	0.5	1.0	s
	Hold-up Time	Room temperature, full load	800VDC input	--	10	--	ms
General Specifications	Isolation	Input - output	Electric Strength Test for 1min., leakage current <3mA	4000	--	--	VAC
	Operating Temperature			-40	--	+85	℃
	Storage Temperature			-40	--	+85	
	Storage Humidity			--	--	95	%RH
	Soldering Temperature	Wave-soldering		260 ± 5℃; time: 5 - 10s			
		Manual-welding		360 ± 10℃; time: 3 - 5s			
	Power Derating	-40℃ to -25℃	250 - 300VDC	2.67	--	--	%/℃
		+55℃ to +70℃		2.00	--	--	
		+70℃ to +85℃		3.33	--	--	
		250VDC - 300VDC		0.8	--	--	%/VDC
		2000m - 5000m		6.7	--	--	%/Km

	Switching Frequency		--	65	--	kHz
	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	109.00 x 58.50 x 30.00 mm			
		E5 chassis mounting	135.00 x 70.00 x 38.50 mm			
		D6 DIN-Rail mounting	137.00 x 70.00 x 44.00 mm			
	Weight	Horizontal package	270g (Typ.)			
		E5 chassis mounting	350g (Typ.)			
		D6 DIN-Rail mounting	420g (Typ.)			
	Cooling Method		Free air convection			

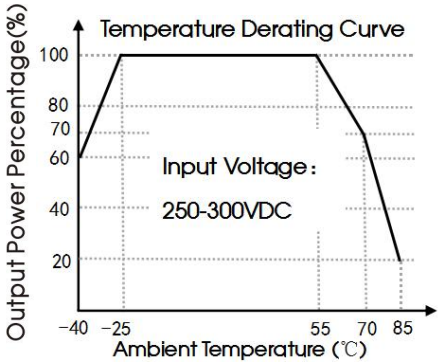
Note: *The "Tip and barrel method" is used for ripple and noise test;

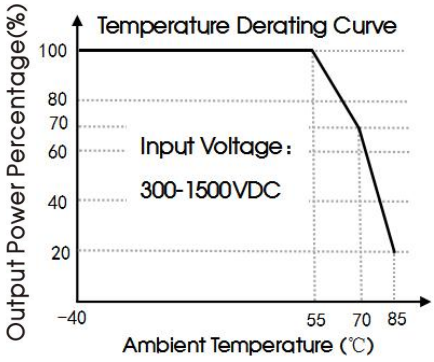
**Full input voltage / output load range (The cooling-time between input power-off and power-on again is greater than 15s).

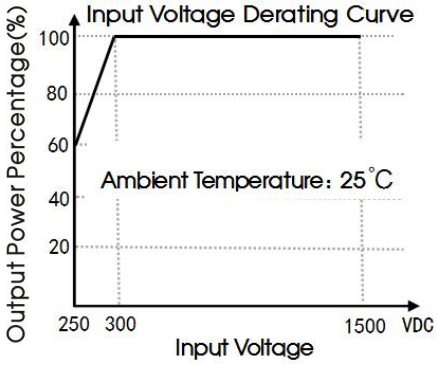
Electromagnetic Compatibility (EMC)

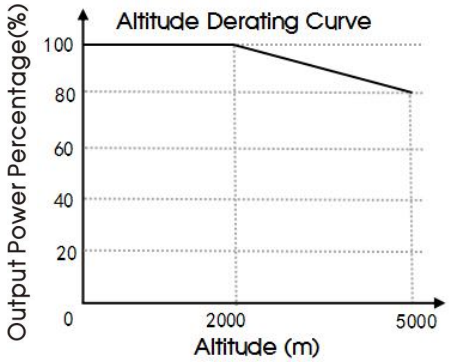
Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS A (See Fig. 2 for recommended circuit)	
		RE	CISPR32/EN55032 CLASS A (See Fig. 2 for recommended circuit)	
	Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	Perf. Criteria A
		RS	IEC/EN61000-4-3 10V/m	Perf. Criteria A
		EFT	IEC/EN61000-4-4 ±2KV ±4KV (See Fig. 2 for recommended circuit)	Perf. Criteria A
		Surge	IEC/EN61000-4-5 Line to line ±1KV Line to line ±2KV (See Fig. 2 for recommended circuit)	Perf. Criteria A
		CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A

Characteristic Curve



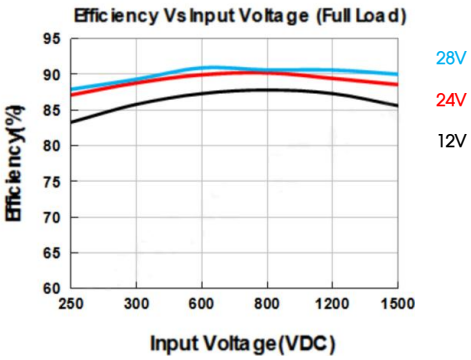


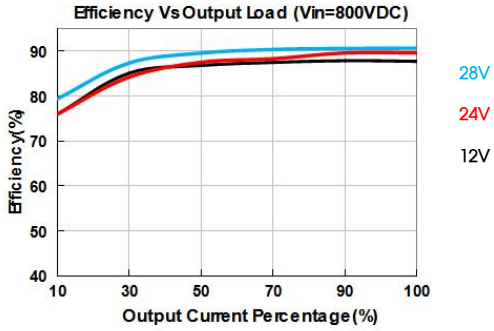




Note: ① With an input between 250-300VDC, the output power must be derated as per temperature derating curves;

② This product is suitable for applications using natural air cooling;





Design Reference

1. Typical application

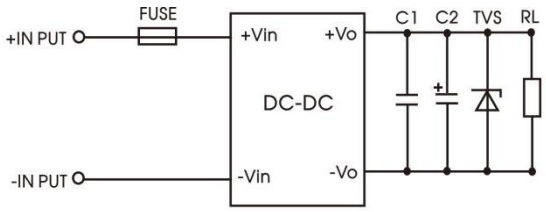


Fig. 1: Typical application circuit

Model	FUSE	C1(μF)	C2(μF)	TVS
DPV40-15B-12	4A/1500 VDC (CCN:JFG A/JFGA7)	1μF/35V	120μF/25V	SMBJ20A
DPV40-15B-24			68μF/35V	SMBJ30A
DPV40-15B-28			68μF/50V	SMBJ36A
DPV40-15B-48		1μF/100V	47μF/63V	SMBJ58A

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

2. EMC compliance recommended circuit

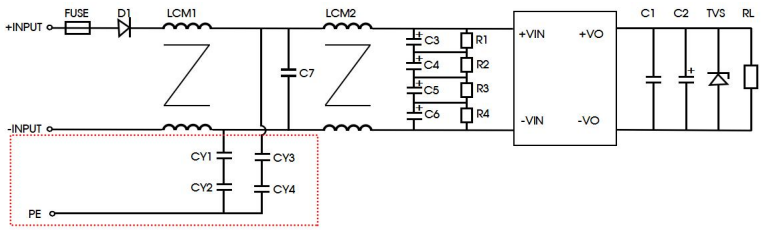


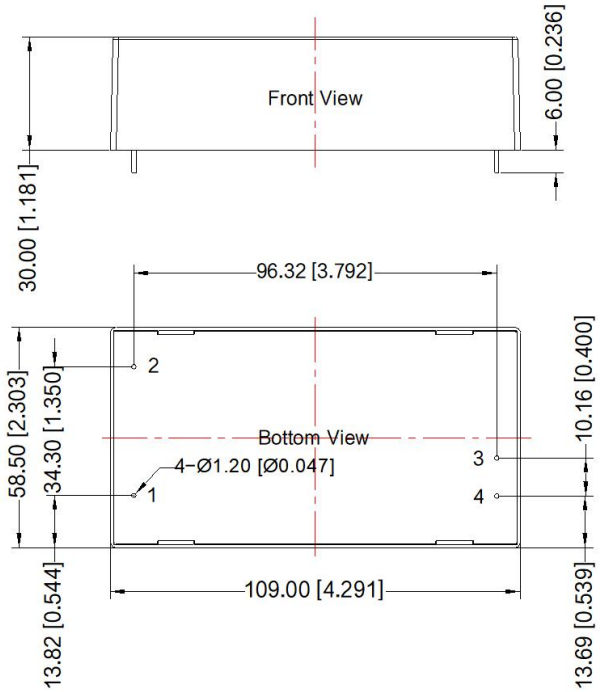
Fig 2: EMC application for higher compliance requirements (output parameters are show in Figure 1)

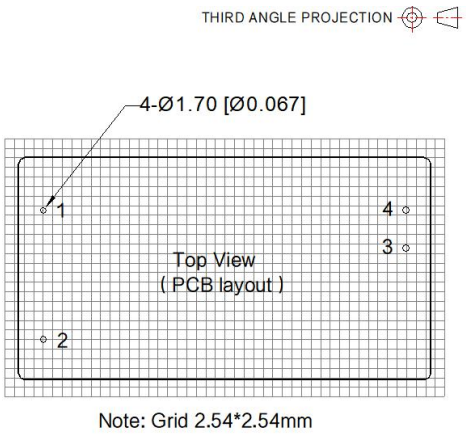
Component	Recommended value
C7	Safety capacitor 474K/ > 1500VDC
C3、C4、C5、C6	10uF/450VDC
R1、R2、R3、R4	1MΩ/2W
LCM1、LCM2	20mH
CY1、CY2、CY3、CY4	102M/1500VDC
FUSE	4A/1500VDC (CCN:JFGA/JFGA7), required
D1	4A/3000V
Note: ① Adding D1 if there is a requirement of input reverse polarity protection for C3-C6; ② Move off red part if there is no requirement for emissions.	

3. Important safety instructions

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 HV products in system applications.

Dimensions and Recommended Layout





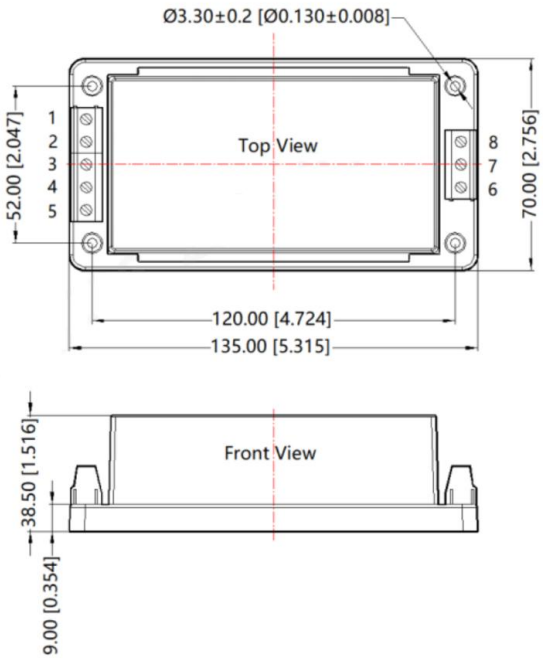
Note: Grid 2.54*2.54mm

Pin	Mark
1	-Vin
2	+Vin
3	+Vo
4	-Vo

Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]
Pin tolerances(H): ± 1.50[± 0.059]
General tolerances: ± 0.50[± 0.020]

Dimensions and Recommended Layout(E5)

THIRD ANGLE PROJECTION

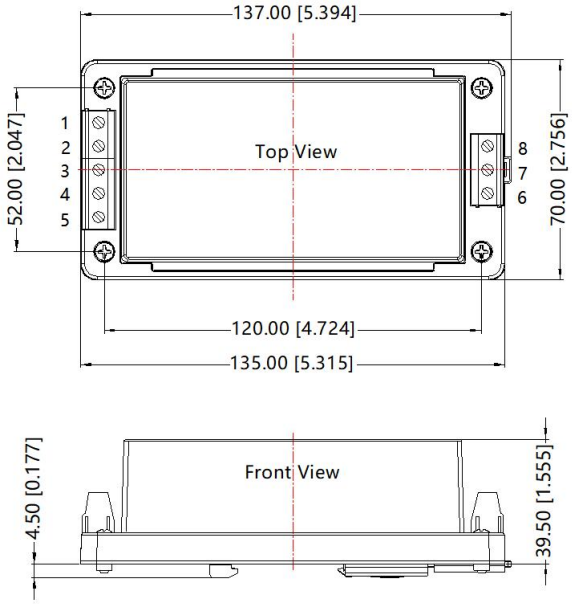


Pin	Mark
1	-Vin
2	NC
3	NC
4	NC
5	+Vin
6	NC
7	-Vo
8	+Vo

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

Dimensions and Recommended Layout(D6)

THIRD ANGLE PROJECTION



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

Note:
Unit: mm[inch]
Mounting rail: TS35, rail needs to connect safety ground
Wire range: 24~12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±1.00[±0.040]

⚠WARNING:

AVERTISSEMENT:

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.WARNING: REPLACE ONLY WITH THE SAME RATINGS AND TYPE OF FUSE.

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

3. DANGER – HIGH VOLTAGE.

3. DANGER : HAUTE TENSION.

4.CAUTION: RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.

4.ATTENTION: RISQUES D'ÉLECTROCUTION. NE PAS RETIRER LE COUVERCLE. NE CONTIENT AUCUNE PIÈCE POUVANT ÊTRE RÉPARÉE PAR L' UTILISATEUR.

5.CAUTION: DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.

5.ATTENTION: COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT DE FAIRE L'ENTRETIEN ET LESL RÉPARATIONS.

6.CAUTION: RISK OF ELECTRIC SHOCK FROM STORED ENERGY. WAIT 5 MIN AFTER DISCONNECTING ALL SOURCES OF SUPPLY BEFORE ACCESSING.

6.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.For additional information on Product Packaging please refer to product shipping packaging information;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 1500 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.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.