DESCRIPTIONS

DC/DC Converter

RoHS

CE Report EN62109-1

UKCA Report BS EN62109-1

FEATURES

- Ultra-wide input voltage range of 300-1000VDC (Full voltage range without derating, support transient 1100VDC/60s)
- Industrial grade operating temperature -40℃ to +70℃ (Free air convection)
- Rated power 1008W, 110% over-load for 1 hour
- High I/O isolation voltage up to 4000VAC
- High reliability, efficiency up to 93%
- Input under-voltage protection, input reverse polarity protection, over-temperature protection, output short circuit, over-current, over-voltage protection
- Support 2+1 parallel redundancy, current sharing
- Operating altitude up to 5000m
- Safety according to UL1741, IEC62109

APPLICATIONS

- Photovoltaic inverter
- Energy storage systems
- Charging pile
- Industrial control

Selection Guide

Certification	Part No.*	Output Power (W)**	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range ADJ (V)	Efficiency at 600VDC(%) Typ	Capacitive Load (μF) Max.
EN/BS EN	DPV1000-10B-24	1008W	24V/42A	21.6-26.4	93	8800
	DPV1000-10B-48		48V/21A	43.2-52.8		4400

Note: 1.*When using the current sharing function for all models, do not directly increase the load on the system beyond the rated load of a single unit when the power is turned on for the first time;
2.**Products meet 110% over-load for 1 hour, 30min break after 1 hour.
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		300	--	1000	VDC
	Input Current	300VDC	--	--	4	A
		600VDC	--	--	2	
	Inrush Current	1000VDC	--	300	--	
	Input Under-voltage Protection	Lockout activation range	260	--	295	VDC
		Lockout deactivation range	275	--	305	
	Input Reverse Polarity Protection		Available			
	Required External Input Fuse		10A/1500VDC, required			
	Hot Plug		Unavailable			
Output Specifications	Output Voltage Accuracy	All load range	--	±1	--	%
	Line Regulation	Rated load	--	±1	--	
	Load Regulation	0% - 100% load	--	±2	--	
	Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	300	mV
	Temperature Coefficient		--	±0.02	--	%/℃
	Short Circuit Protection		Hiccup, continuous, self-recovery			
	Over-current Protection	24V output	≥110%Io, hiccup			
		48V output				
	Over-voltage Protection	24V output	≤32VDC	Output voltage clamp or hiccup		
		48V output	≤58VDC			
	Over-temperature Protection**	Full voltage, rated load, self-recover; Over-temperature protection start	--	--	75	℃
		Over-temperature protection release	55	--	--	
	Minimum Load		0	--	--	%
	Hold-up Time	Room temperature, full load 600VDC	--	5	--	ms
	Start-up Delay Time***	Room temperature	--	3	5	s
General Specifications	Isolation	Input - output	Electric Strength Test for 1min., leakage current ＜10mA	4000	--	--	VAC
		Input - PE		4000	--	--	
		Output - PE		4000	--	--	
	Insulation Resistance	Input - output	500VDC	50	--	--	MΩ
		Input - PE					
		Output - PE					
	Operating Temperature			-40	--	+70	℃
	Storage Temperature			-40	--	+85	
	Storage Humidity			--	--	95	%RH
	Power Derating	-40℃ to -10℃		1.33	--	--	%/℃
		+55℃ to +70℃		2	--	--	
		3000- 5000m		10	--	--	%/Km
	Switching Frequency			--	72	--	kHz
	MTBF	MIL-HDBK-217F@25℃	≥300,000 h			

Functional Specifications	Current Sharing Accuracy	When units in parallel, each power supply needs to carry a rated load of more than 50%		--	±5	--	%
	LED Signal	Output status indication	Normal output	Green on			/
			Output protection	Flicker/light off			
			Power off	Light off			
Mechanical Specifications	Case Material	Metal					
	Dimensions	292.00 x 225.00 x 58.00mm					
	Weight	3850g (Typ.)					
	Cooling Method	Free air convection					

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

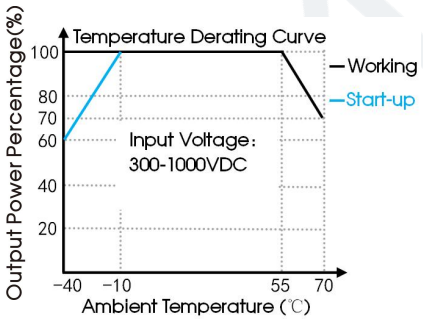
**Output voltage turn off, self-recovery after fault conditions is removed, the over-temperature point is the ambient temperature of the product;

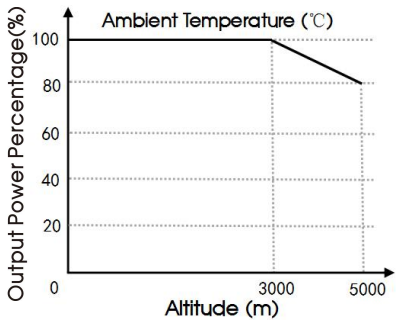
***Full input voltage / output load range (The cooling-time between input power-off and power-on again is greater than 15s).

Electromagnetic Compatibility (EMC)

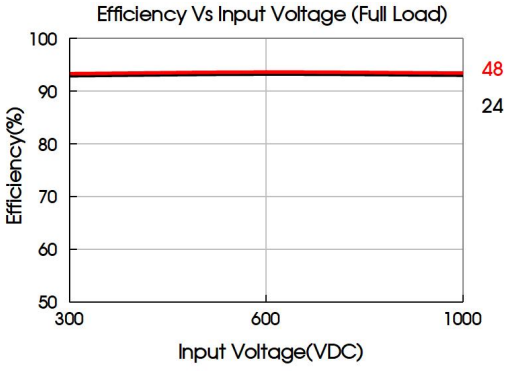
EMC	Emissions	CE	CISPR32/EN55032 CLASS A	
		RE	CISPR32/EN55032 CLASS A	
	Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	Perf. Criteria A
		RS	IEC/EN61000-4-3 10V/m	Perf. Criteria A
		EFT	IEC/EN61000-4-4 ±4KV	Perf. Criteria B
		Surge	IEC/EN61000-4-5 Line to line ±2KV/line to PE ±4KV	Perf. Criteria B
		CS	IEC/EN61000-4-5 10Vr.m.s	Perf. Criteria A
		PFMF	IEC/EN61000-4-8 30A/m	Perf. Criteria A

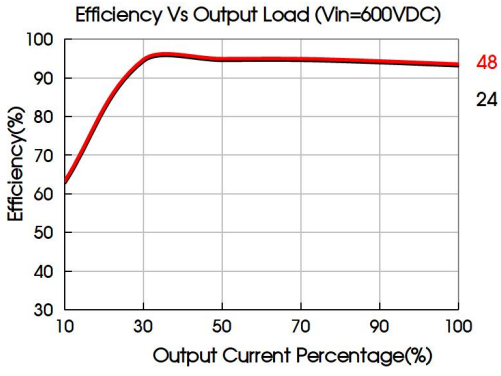
Product Characteristic Curve





Note: This product is suitable for applications using natural air cooling.





Design Reference

1. Typical application circuit

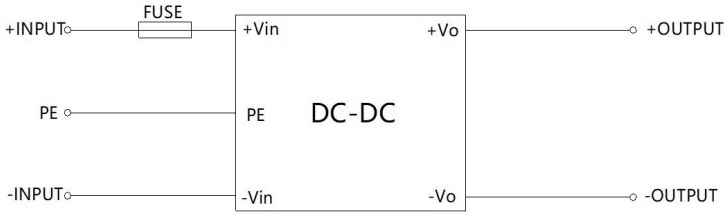
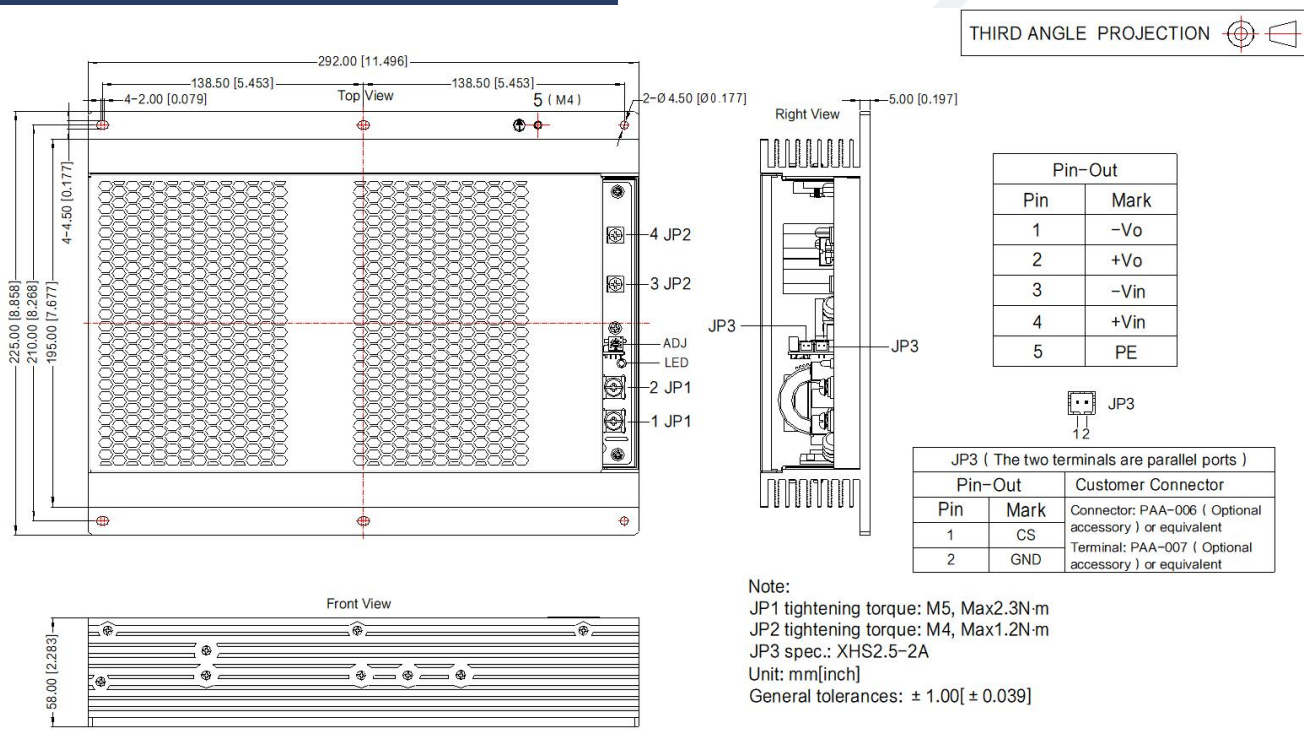


Fig. 1

Model	Recommended value
FUSE	10A/1500VDC, required

Dimensions and Recommended Layout



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

JP3
1 2

JP3 (The two terminals are parallel ports)		
Pin-Out		Customer Connector
Pin	Mark	Connector: PAA-006 (Optional accessory) or equivalent Terminal: PAA-007 (Optional accessory) or equivalent
1	CS	
2	GND	

Note:
JP1 tightening torque: M5, Max2.3N·m
JP2 tightening torque: M4, Max1.2N·m
JP3 spec.: XHS2.5-2A
Unit: mm[inch]
General tolerances: ± 1.00[± 0.039]

Note:

1. 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;
2. All index testing methods in this datasheet are based on our company corporate standards;
3. We can provide product customization service, please contact our technicians directly for specific information;
4. Products are related to laws and regulations: see "Features" and "EMC";
5. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

DPV1000-10B-xx Series Parallel Redundancy and Current Sharing Application Notes

Parallel Operating

1. Redundancy

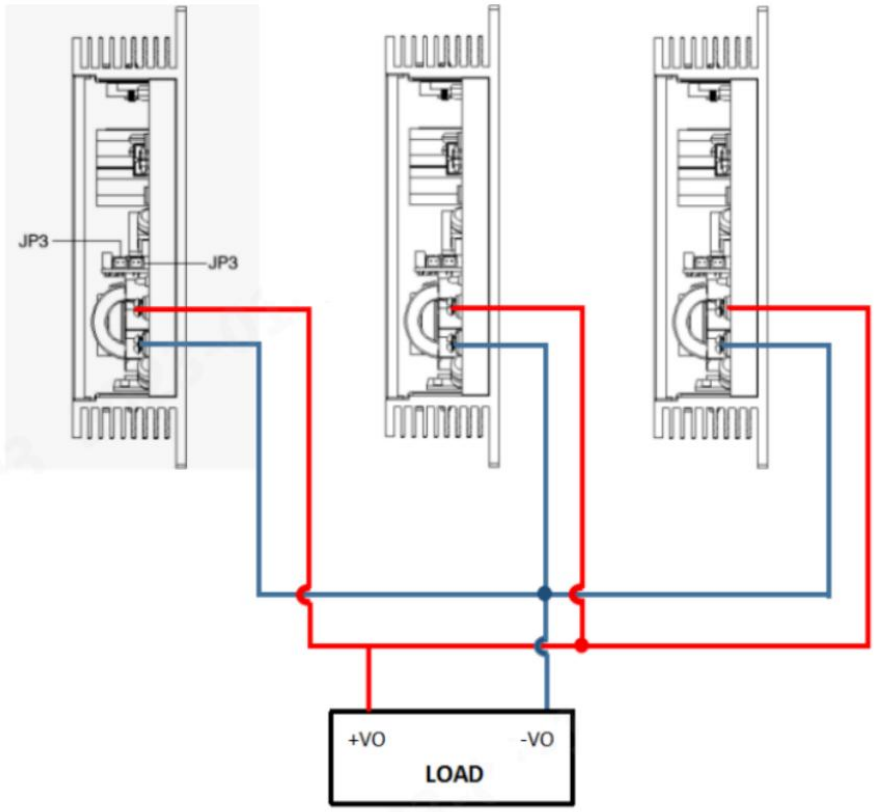
The output of the power module can be connected in parallel to achieve redundancy, thereby improving system reliability. The maximum power of the redundant system needs to be derated to ensure that the redundant system can still meet the rated load requirements when a power module fails. At present, the common practice is to build a redundant system using the N+1 method, that is, N+1 power supplies are connected in parallel. It supports the maximum load current N*Iomax, where Iomax is the rated output current of each power supply, for example, the rated output current of each power supply is 42A, and 2+1 are only connected in parallel to build a 2*42A=84A redundant system.

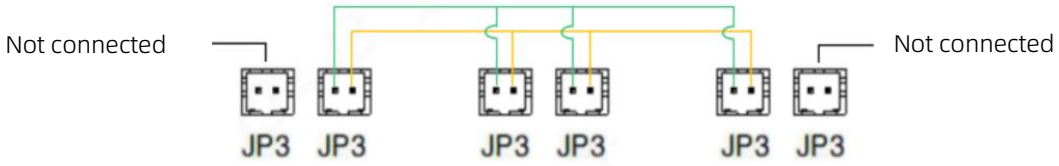
The power modules support 2+1 parallel redundant operation. When any power module in the parallel connection fails, other power modules can continue to work.

Note: When used in parallel, the maximum load current cannot exceed the maximum output current of a single power module at startup, otherwise the entire parallel power supply system will not be able to start and work normally. When any power supply in the parallel connection fails, its current-sharing connection terminal needs to be removed to prevent other power modules from being affected by it, resulting in a decrease in output voltage.

2. Current Sharing

The each power module has a current sharing connection terminal (JP3). If the current sharing function is required, the current sharing terminals of all power modules must be connected together when working in parallel. The wiring method of the current sharing function is shown in the figure below:





Note:

The JP3 ports of each power module have the same function, and there is no sequence.

The output voltage of each power module will affect the accuracy of current sharing. It is recommended that the output voltage of the power module be the rated voltage ±50mV. In practical applications, if the output voltage value needs to be adjusted, the output voltages of all parallel-connected power modules need to be adjusted to the same voltage. The recommended voltage range is: target voltage value ±50mV.

After the output load of each power module is greater than 50% of the rated load, the current sharing accuracy is required to be ±5%. The formula for calculating the average current is:

$$\text{Current Sharing Accuracy}=\frac{Io\max - Io\min}{Io\max}*100\%$$

Iomax: The maximum output current value of the power modules connected in parallel

Iomin: The minimum output current value of the power modules connected in parallel