



Size: 4.6in x 2.4in x 0.55in
(116.8mm x 61mm x 13.9mm)

FEATURES

- Wide Input Voltage Ranges
- Parallel Current Share Function
- Input Over/Under Voltage Protection
- UL/IEC/EN60950/GB4943 and RoHS5
- High Reliability, High Efficiency, and High Power Density
- Over Current, Over Voltage, Over Temperature, and Short Circuit Protection

APPLICATIONS

- Radar
- Industrial
- Telecom
- Defense
- High Reliability Electronic Equip.

DESCRIPTION

The DCHPW2000 Series is a DC-DC converter with 380-850VDC input range and 2000W single output. This series consists of single output with wide input voltage ranges. Each model in this series offers high efficiency up to 96% with Over Current, Over Voltage, Over Temperature, and Short Circuit Protection. This series is CE marked and compliant to UL/IEC/EN60950/GB4943 and RoHS5. This series is suited for applications like Telecom, Defense, Industrial control and other high reliability electronic equipment.

MODEL SELECTION TABLE

Model Number	Input Voltage Range	Output Voltage ⁽¹⁾	Output Current	Trim Range	Efficiency	Output Power
DCHPW2000-270S24	180-425VDC	24VDC	83.33 A	-30 ~ +10%	94%	2000 Watts
DCHPW2000-270S28		28VDC	71.42 A	-30 ~ +10%	95%	
DCHPW2000-270S36		36VDC	55.55 A	-30 ~ +10%	95%	
DCHPW2000-270S48		48VDC	41.67 A	-30 ~ +10%	95%	
DCHPW2000-270S60		60VDC	33.33 A	-30 ~ +10%	95%	
DCHPW2000-540S24	380-850VDC	24VDC	83.33 A	-30 ~ +10%	95%	2000 Watts
DCHPW2000-540S28		28VDC	71.42 A	-30 ~ +10%	95%	
DCHPW2000-540S36		36VDC	55.55 A	-30 ~ +10%	95%	
DCHPW2000-540S48		48VDC	41.67 A	-30 ~ +10%	96%	
DCHPW2000-540S60		60VDC	33.33 A	-30 ~ +10%	96%	
DCHPW2000-540S72		72VDC	27.78 A	-30 ~ +10%	96%	

SPECIFICATIONS

All specifications are based on 25°C Baseplate Temperature, Rated Input Voltage, and Rated Output unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Input Voltage Range	270VDC Nominal Input Models		180	270	425	VDC
	540VDC Nominal Input Models		380	540	850	VDC
No Load Input Current	Typical Input, Output No Load, Tc=25°C			35	45	mA
Input Transient Inrush Current					20	A ² s
Standby Current	270VDC Nominal Input Models Turn off by ON/OFF				30	mA
	540VDC Nominal Input Models Turn off by ON/OFF			10	15	mA
Max. Input Current	270VDC Nominal Input Models				12.5	A
	540VDC Nominal Input Models				5.8	
OUTPUT SPECIFICATIONS						
Output Voltage Rise Time	270VDC Nominal Input Models 10%V _{o set} to 90%V _{o set} , Full load			20	50	ms
	540VDC Nominal Input Models 10%V _{o set} to 90%V _{o set} , Full load			30	50	ms
Output Voltage Accuracy					±1	%
Line Regulation					±0.20	%
Load Regulation					±0.50	%
Output Voltage Trim			-30		+10	%
Start-up Delay	Input voltage rising up to the under voltage lockout restart voltage and measure the time V _{in min} to 10%V _{o set}			450	600	ms
Transient Response	Overshoot	25%-50%-25%, Step Change Load, di/dt= 2.5A/μ			±5	%Vo
	Set Time				800	μs
	Overshoot	50%-75%-50% Step Change Load, di/dt=2.5A/μs			±5	%Vo
	Set Time				800	μs

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SPECIFICATION			TEST CONDITIONS		Min	Typ	Max	Unit			
ENVIRONMENTAL SPECIFICATIONS											
Thermal Management						Heatsink or convection cooling					
Altitude							5000	m			
Atmospheric Pressure						54	106	kPa			
Pin Solder Temp.		Wave Soldering, less than 10s					260	°C			
		Wave Soldering, less than 5s					425				
Storage Humidity		Non-condensation				5	95	%			
MTBF						2×10 ⁶		H			
Humidity		Non-condensation				5	95	%			
Storage Temp.		Ambient Temperature				-55	+125	°C			
Operating Baseplate Temp.		-55~+105°C for M-grade				-40	+100	°C			
Operating Ambient Temp.		-55~+85°C for M-grade				-40	+85	°C			
OTHER SPECIFICATIONS											
Switching Frequency							180	KHz			
Temperature Coefficient							±0.02	%/°C			
Current Share Accuracy		Vin=540Vdc, 50%~100% load					±	±8	%		
AUX Voltage		0~20mA				12	14	16	Vdc		
Current Share Bus (IOG) Voltage		Full Load					6.0		Vdc		
PC/NC Voltage						0		5	Vdc		
TURN ON/OFF											
Turn on/off Output Voltage over shoot								±5	%Vout		
Turn on/off Output Voltage over shoot via On/Off								±5	%Vout		
ON/OFF Turn-On Start-up Delay		Output rises to 10% Vnominal when recovering from input under voltage lock out.					100	200	ms		
PROTECTION											
Over-Temp. Shutdown		Base plate center temperature		Set Point		105		125	°C		
				Restart		100		115			
				Hysteresis		5					
Input Over Voltage Protection		Half Load, Tc=25°C		270VDC Nominal Input Models		Turn Off	430	450	470	VDC	
						Turn On	425	440	460		
						Hysteresis Voltage			10		
				540VDC Nominal Input Models		Turn Off	870	900	920		
						Turn On	850	885	905		
Input Under Voltage Lockout		Half Load, Tc=25°C		270VDC Nominal Input Models		Turn Off	125	140	155	VDC	
						Turn On	135	150	165		
						Hysteresis Voltage			10		
				540VDC Nominal Input Models		Turn Off	310	335	350		
						Turn On	320	345	360		
						Hysteresis Voltage			10		
PHYSICAL SPECIFICATIONS											
Weight						8.82~9.17oz (250~260g)					
Dimensions (L x W x H)						4.6in x 2.4in x 0.55in (116.8mm x 61mm x 13.9mm)					
SAFETY STANDARDS											
UL		UL 60950-1 ; C22.2 NO. 60950-1				Standard met, related certification according to customer 's demand					
CE		EN 60950-1									
CB		IEC 60950-1									
TUV		EN 60950-1									
CQC/CCC		GB 4943									
CSA		C22.2 NO. 60950-1									
Isolation Resistance			Humidity 90%, Standard Atmosphere Pressure, 500Vdc Voltage				≥100MΩ				
Electrical insulation	Input to output	Test Condition:1mA/60s, Rising rate: 500Vdc/s, No Breakdown、No Arc over				3750Vdc					
	Input to case					2250Vdc					
	Output to case					750Vdc					

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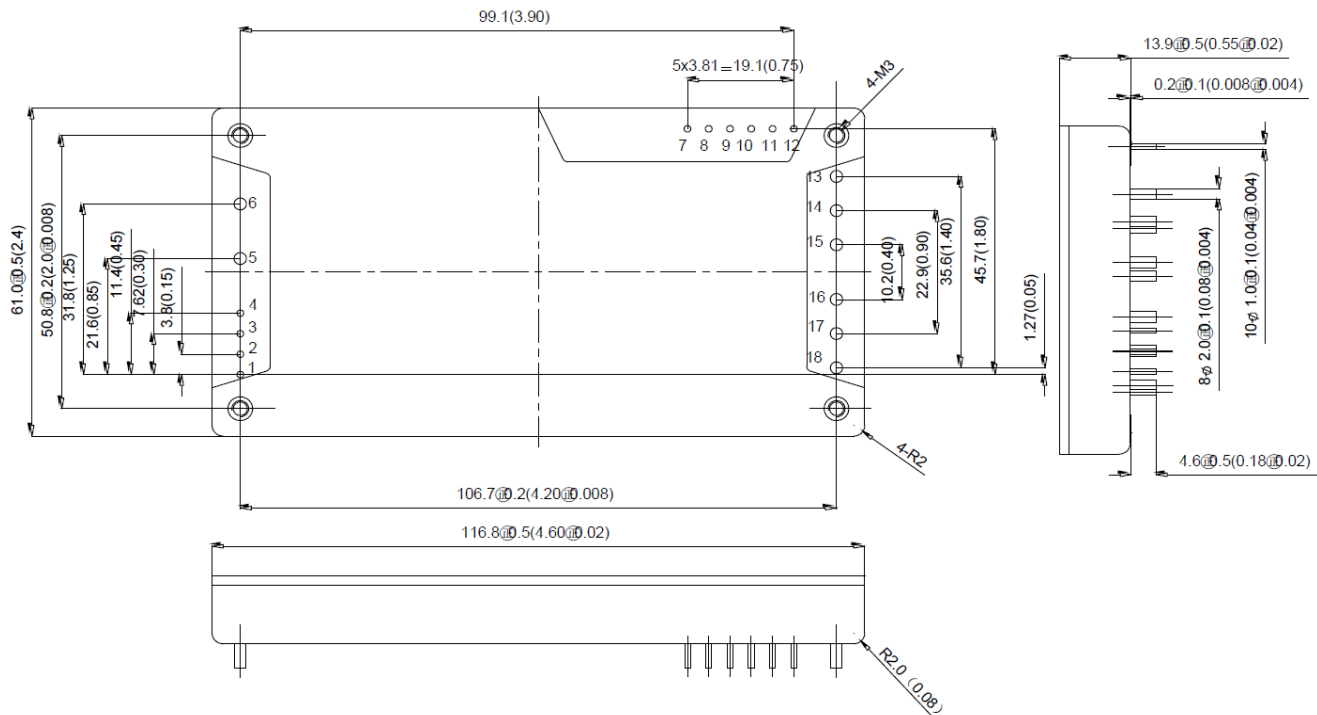
SPECIFICATION			TEST CONDITIONS		Min	Typ	Max	Unit
EMC CHARACTERISTICS								
Parameter			Specifications			Notes		
EMI	Radiated Interference	EN55022				Class A level I		
		RE102						
	Conducted Interference	EN55022				Class A, 6dB tolerance Test condition: battery input, EMI filter and input capacitor 470μF/1KV		
		CE102						
EMS	Electrostatic discharge	IEC/EN61000-4-2 Level 3				Class B		
	Surge	IEC/EN61000-4-5 Level 1				DC power source satisfying 0.6kV common mode/differential mode test requirements with input capacitor 470μF/1KV		
	Fast transient burst	IEC/EN61000-4-4 Level 3				Class B		
	Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-29				540Vdc Input		
ENVIRONMENTAL TESTS								
Parameter			Specifications			Notes		
Humidity and temperature test (M-grade only)			30°C-60°C:95% humidity, 24H/cycle, 10 cycles					
High Temp. Test	Storage	125°C, 48h;				270V: 180V, 270V, 425V, each 8h		
	Operation	85°C, 24h;				540V: 380V, 540V, 850V, each 8h		
Low Temp. Test	Storage	-55°C, 48h				270V: 180V, 270V, 425V, each 8h		
	Operation	-40°C, 24h;				540V: 380V, 540V, 850V, each 8h		
Temp. Cycling		-55°C~125°C; Hold time: 30min; Cycle: 10 times; Switching time less than 1min			GJB548B-2005 Method 1010.1 condition B			
Interchanging Temperature Humidity Test (M-grade only)		30°C~60°C; 95%; 24h/Cycle; Cycle:10 times			GJB150.9-36			
Salt Fog Test (M-grade only)		NaCl : 5±1%; PH:6.5~7.2 (35±2°C) ; 96h			GJB360A-96, Method 101 "Salt spray test", Test condition A			
Random Vibration (M-grade only)		15-2000Hz, (2m/s2), 100-300Hz, +64dB/OTC, 1000-2000Hz, -6dB/OTC, 3 perpendicular axis: 1h/each axis			GJB150.18-86 Vibration Test 2.3.5			
Shock Test (M-grade only)		Post-peak sawtooth wave 20g, 11ms, 3 impacts in 6 directions perpendicular to each other			GJB150.18-86, test 2, 5, 6, basic shock test			

NOTES

1. This product is Listed to applicable standards and requirements by UL.

**Due to advances in technology, specifications subject to change without notice.*

MECHANICAL DRAWINGS



Notes:

1. Baseplate materials: Aluminum + plastic case
2. Pins 1-4/7-12 Ø1.0mm (0.04in)
3. Other pins Ø2.0mm (0.08in)
4. No individual tolerance: x.x±0.5mm x (±0.02)m, x.xx±0.25mm (±0.01in)

PIN ASSIGNMENT



Pin No	Label	Function
1	NC	No Pin
2	NC	No Pin
3	ON/OFF (+)	ON/OFF Remote Control Input (+)
4	ON/OFF (-)	ON/OFF Remote Control Input (-)
5	Vin (+)	Input Voltage (+)
6	Vin (-)	Input Voltage (-)
7	Vaux	Auxiliary Power Input (+) (refer Vout (-))
8	Start_Sync	Synchronization Turn On (Optional)
9	Ishare	Current Share
10	Trim	Output Voltage Trim Pin
11	S(+)	Remote Sense (+)
12	S(-)	Remote Sense (-)
13, 14, 15	Vout (-)	Output Voltage (-)
16, 17, 18	Vout (+)	Output Voltage (+)

APPLICATION NOTES

For applications need to meet EMI standards, customers need to add external EMI filters at the input terminals as shown in Fig. 1.

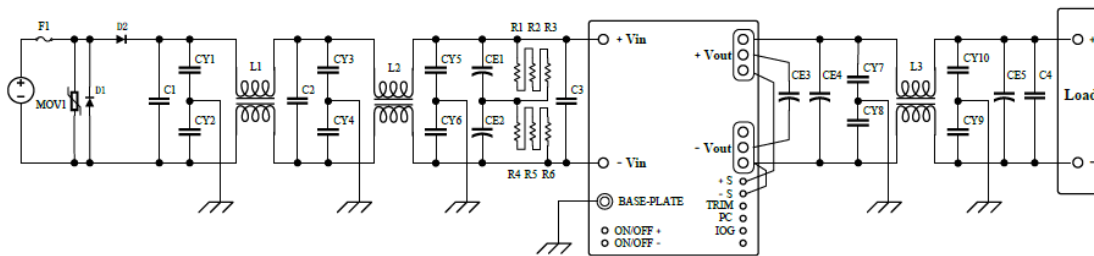


Figure (1) Typical Application Circuit

On/Off Control

ON/OFF Control: Negative Remote On/Off logic

Logic	Voltage at ON/OFF Pin		
	Logic Low (-0.7~0.8Vdc)	Input Current $\leq \pm 2\text{mA}$	Logic high (3.5~18Vdc)
Negative	Module Enable	Module Disable	Module Disable

Typical Application Circuit

If three-phase power is rectified to DC input source, the filter capacitor after rectification should be 1uF/W (for example, 2000W power output should be matched with a 2000uF capacitor). If the module is powered by a three-phase PFC module, the input filter capacitor should be 1uF/3W (for example, 2000W power should be matched with a 660uF capacitor). If an input drop and power failure test is conducted, a diode D2 should be connected in series at the F1 position and a heat sink should be attached to dissipate heat to prevent the output voltage from being reflected back through the transformer after the input is short-circuited and the voltage is removed. If this is not the case, it is not necessary to add it.

Output Voltage Trimming

Connect external resistor between the Trim and Sense(+) or between Trim and Sense(-) to adjust the output voltage between 70%~110%Vnom. Trim up voltage with a resistor connected between Trim and Sense(+) and trim down the voltage with a resistor connected between Trim and Sense(-). The trim resistor should be connected as close to the module pins as possible. Leave the Trim pin open if no voltage trimming is required.

Output Remote Sensing

The module built in remote voltage compensation function to compensate the line voltage drop (not more than 1.0V). For the line voltage drop more than 1.0V, the output voltage should be compensated by the trim up function. Just connect Sense(+) and Sense(-) to the terminals of the load through a twisted pair. The voltage at the terminals of the load is regulated at the nominal output voltage of the module. If no remote voltage compensation is required, connect Sense(+) to Vout(+) directly and connect Sense(-) to Vout(-) directly.

Parallel Operation

Connect the IOG pins of the modules together to achieve output current sharing in a parallel operation. Due to current sharing errors, parallel modules have output current derating limits. Please use within these limits. Exceeding these limits may trigger overcurrent protection and cause abnormal heating. When using in parallel, set the output voltage accuracy to within $\pm 1\%$ to minimize current sharing errors.

Output Over Current & Short Circuit Protection

When the module output is overloaded, the module enters constant current mode. The output voltage linearly drops to approximately 20-50% Vout and it enters intermittent hiccup mode. If the output is short-circuited, it enters hiccup mode directly. Once the fault is removed, the module resumes output automatically.

Output Overvoltage Protection (OVP)

When the output voltage of the module reaches 115-140% of the rated output voltage, the overvoltage protection circuit is activated. The output is shut down and the module enters an intermittent hiccup working state. After the overvoltage is released, the module resumes output automatically.

Over Temperature Protection

When the temperature of the baseplate triggers the over temperature protection, the output is shut down., and the power supply enters an intermittent hiccup working state. After the temperature drops to around 100oC, the module resumes output automatically.

Auxiliary Power (AUX)

This module has an auxiliary power output that can provide power to external application circuits. The output voltage/current capability is 12~16Vdc/20mA.

Thermal Management

To ensure the normal operation of the module, a heat sink should be attached to the module. It is recommended to use force air cooling to ensure that the baseplate temperature is within the normal operating temperature range. Thermal conductive silicone grease should be applied between the heat sink and the baseplate.

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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