

30W-40W

DC-DC CONVERTERS

- ✓ Single and Triple Output Models
- ✓ Wide Input Ranges
- ✓ 5V, 12V, 15V Outputs
- ✓ Pi Input Filters—Built-in EMI Suppression
- ✓ UL/CSA/VDE/EN Safety Standards
- ✓ 850-1500V Input/Output Isolation
- ✓ Short-Circuit/Over-Voltage Protection
- ✓ Remote Load Sensing
- ✓ Remote Shutdown/Output Adjustment
- ✓ 3"×3" Six-Sided Metal Case
- ✓ 2-Year Warranty
- ✓ 700,000-Hour Minimum MTBF



CHARACTERISTICS

EMI Suppression	Pi input filter, standard.		
Base-Plate Temperature	Operating temperature of +100°C, max. with built-in thermal shutdown.		
Isolation Voltage	D-input models: 1500V, input to output, for one minute. A- and B-input models: 850V, input to output, for one minute.		
Output Adjustment	Primary output adjustable ±10%.		
Continuous Output Power	HD1-30 and HD3-30 total output power should not exceed 30W. HD1-40 and HD3-40 total output power should not exceed 40W. Maximum output current for individual outputs of triple output models appear in the ratings table.		
Minimum Load Requirement	Single output models, no minimum. Triple output models, 150 mA, minimum on 5V output, 50 mA, minimum, on auxiliary outputs.		
Output Noise and Ripple	5V output, 50 mVpp, maximum. 12V and 15V outputs, 75 mVpp, maximum. (See Note 2.)		
Short-Circuit Protection	Cycle-by-cycle current limiting.		
Over-Voltage Protection	V1 output only: 125% of rated output, typical. Single output models with 5V outputs and all triple output models have latching OVP; RESET = 0V. All other models are diode protected.		
Under-Voltage Lockout	Nom. Input	Off (Typ.)	On (Typ.)
	12V	7.5V	8.5V
	24V	16.5V	17.5V
	48V	34.0V	35.5V
Transient Response	200 µs recovery after half-load to full load step change to within 1% of the regulation band with no more than 5% deviation.		
Frequency of Operation	300 kHz.		
Remote Shutdown	CMOS and open-collector TTL compatible: ON = 2.4V to VIN(MAX); OFF = 0.8V or less. Logic reference is -VIN.		
Temperature Range	-40°C to +85°C (ambient). See Package Power De-Rating graph.		
Temperature Coefficient	±0.02%/°C over the entire operating temperature range.		
Relative Humidity	0 to 95%, non-condensing.		
Altitude	0 to 10,000 feet.		
Cooling	Convection cooling is adequate. Moving air is recommended for operation in a confined area. See Package Power De-Rating graph.		
Storage Temperature	-40°C to +100°C.		
Storage Humidity	0 to 95%, non-condensing.		
Mean Time Between Failures	>700,000 hours. (See Note 4.)		

Model	Input Voltage			Nominal Input DC		Max. Output Current (A)	Output Voltage Tolerance	Line/Load Reg.	Efficiency
	Min.	Nom.	Max.	Current (A)	Output (V)				

DC-DC 30W Singles

HD1-30-5A	9.0	12	25	3.16	V1 5.0	6.00	1.0%	0.3%	79%
HD1-30-5B	18	24	36	1.52	V1 5.0	6.00	1.0%	0.3%	82%
HD1-30-5D	36	48	75	0.75	V1 5.0	6.00	1.0%	0.3%	83%
HD1-30-12A	9.0	12	25	3.09	V1 12	2.50	1.0%	0.3%	81%
HD1-30-12B	18	24	36	1.51	V1 12	2.50	1.0%	0.3%	83%
HD1-30-12D	36	48	75	0.75	V1 12	2.50	1.0%	0.3%	83%
HD1-30-15A	9.0	12	25	3.01	V1 15	2.00	1.0%	0.3%	83%
HD1-30-15B	18	24	36	1.51	V1 15	2.00	1.0%	0.3%	83%
HD1-30-15D	36	48	75	0.73	V1 15	2.00	1.0%	0.3%	86%

DC-DC 30W Triples[†]

HD3-30-1A	9.0	12	25	3.21	V1 5.0	6.00	1.0%	0.3%	78%
					V2 +12	0.50	2.5%	5.0%	
					V3 -12	0.50	2.5%	6.0%	
HD3-30-1B	18	24	36	1.54	V1 5.0	6.00	1.0%	0.3%	81%
					V2 +12	0.50	2.5%	5.0%	
					V3 -12	0.50	2.5%	6.0%	
HD3-30-1D	36	48	75	0.76	V1 5.0	6.00	1.0%	0.3%	82%
					V2 +12	0.50	2.5%	5.0%	
					V3 -12	0.50	2.5%	6.0%	
HD3-30-2A	9.0	12	25	3.21	V1 5.0	6.00	1.0%	0.3%	78%
					V2 +15	0.40	2.5%	5.0%	
					V3 -15	0.40	2.5%	7.0%	
HD3-30-2B	18	24	36	1.54	V1 5.0	6.00	1.0%	0.3%	81%
					V2 +15	0.40	2.5%	5.0%	
					V3 -15	0.40	2.5%	7.0%	
HD3-30-2D	36	48	75	0.76	V1 5.0	6.00	1.0%	0.3%	82%
					V2 +15	0.40	2.5%	5.0%	
					V3 -15	0.40	2.5%	7.0%	

DC-DC 40W Singles

HD1-40-5A	9.0	12	25	4.20	V1 5.0	8.00	1.0%	0.3%	79%
HD1-40-5B	18	24	36	2.03	V1 5.0	8.00	1.0%	0.3%	82%
HD1-40-5D	36	48	75	1.00	V1 5.0	8.00	1.0%	0.3%	83%
HD1-40-12A	9.0	12	25	4.12	V1 12	3.33	1.0%	0.3%	81%
HD1-40-12B	18	24	36	2.01	V1 12	3.33	1.0%	0.3%	83%
HD1-40-12D	36	48	75	1.00	V1 12	3.33	1.0%	0.3%	83%
HD1-40-15A	9.0	12	25	4.02	V1 15	2.67	1.0%	0.3%	83%
HD1-40-15B	18	24	36	2.01	V1 15	2.67	1.0%	0.3%	83%
HD1-40-15D	36	48	75	0.97	V1 15	2.67	1.0%	0.3%	86%

[†] HD3-30 models with tightly regulated auxiliary outputs are available. For more information, contact Power General applications engineering.

30W-40W

DC-DC CONVERTERS

Model	Input Voltage			Nominal Input Current (A)	DC Output Output (V)	Max. Output Current (A)	Output Voltage Tolerance	Line/ Load Reg.	Effi- ciency
	Min. (V)	Nom. (V)	Max. (V)						
DC-DC 40W Triples [†]									
HD3-40-1A	9.0	12	25	4.27	V1 5.0	8.00	1.0%	0.3%	78%
					V2 +12	0.50	2.5%	5.0%	
					V3 - 12	0.50	2.5%	6.0%	
HD3-40-1B	18	24	36	2.06	V1 5.0	8.00	1.0%	0.3%	81%
					V2 +12	0.50	2.5%	5.0%	
					V3 - 12	0.50	2.5%	6.0%	
HD3-40-1D	36	48	75	1.02	V1 5.0	8.00	1.0%	0.3%	82%
					V2 +12	0.50	2.5%	5.0%	
					V3 - 12	0.50	2.5%	6.0%	
HD3-40-2A	9.0	12	25	4.27	V1 5.0	8.00	1.0%	0.3%	78%
					V2 +15	0.40	2.5%	5.0%	
					V3 - 15	0.40	2.5%	7.0%	
HD3-40-2B	18	24	36	2.06	V1 5.0	8.00	1.0%	0.3%	81%
					V2 +15	0.40	2.5%	5.0%	
					V3 - 15	0.40	2.5%	7.0%	
HD3-40-2D	36	48	75	1.02	V1 5.0	8.00	1.0%	0.3%	82%
					V2 +15	0.40	2.5%	5.0%	
					V3 - 15	0.40	2.5%	7.0%	
† HD3-40 models with tightly regulated auxiliary outputs are available. For more information, contact Power General applications engineering.									

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30W AND 40W HD SERIES

- A. Dimensions shown are in inches.
 B. Tolerances = 0.00 ±0.01 inch.
 0.000 ±0.005 inch.
 C. HD1-40 and HD3-40 models are normally supplied with a flat base plate. To specify an HD1-40 or HD3-40 model with the optional cross-cut heat sink, add the letter "H" to the end of the part number (e.g., HD1-40-5AH).
 D. Module weight:
 HD1-30, HD3-30, HD1-40 and HD3-40, no heat sink = 4 oz. (113g).
 HD1-40 and HD3-40 with cross-cut heat sink = 5 oz. (142g).

Pin-Out

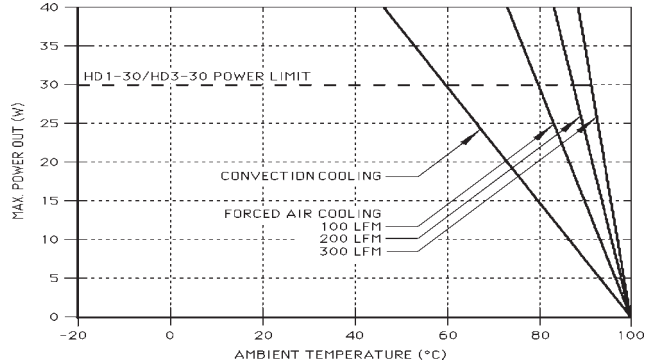
Pin	HD1-30/HD1-40	HD3-40/HD3-40
1	- VIN	- VIN
2	+VIN	+VIN
3	Case	Case
4	Remote On/Off	Remote On/Off
5	Output Adjust	Output Adjust
6	+V1OUT	V1OUT
7	- V1OUT	Return
8	+Sense	V2OUT
9	- Sense	V3OUT

Notes

- Use of an external input line fuse is recommended:
 For HD1-30 and HD3-30 models with 12V input, use an 6.0A/125V slow-blow fuse.
 For HD1-30 and HD3-30 models with 24V input, use a 3.0A/125V slow-blow fuse.
 For HD1-30 and HD3-30 models with 48V input, use a 2.0A/125V slow-blow fuse.
 For HD1-40 and HD3-40 models with 12V input, use an 8.0A/125V slow-blow fuse.
 For HD1-40 and HD3-40 models with 24V input, use a 4.0A/125V slow-blow fuse.
 For HD1-40 and HD3-40 models with 48V input, use a 2.0A/125V slow-blow fuse.
- Peak-to-peak and RMS metering equipment must have a 20 MHz frequency response with probes and cables that maintain a frequency response of 20 Hz to 20 MHz. Output ripple and spikes are measured directly at the output terminals of the dc-to-dc converter with a 0.1 µF ceramic capacitor. The instruments' probe ground bands must make direct contact with the output return pin or the common terminal of the converter in order to prevent erroneous noise measurements.
- All measurements are at nominal input, full load, and +25°C unless otherwise specified.
- MTBF is calculated using the parts stress method in MIL-HDBK 217F (ground benign, T_A = +25°C).

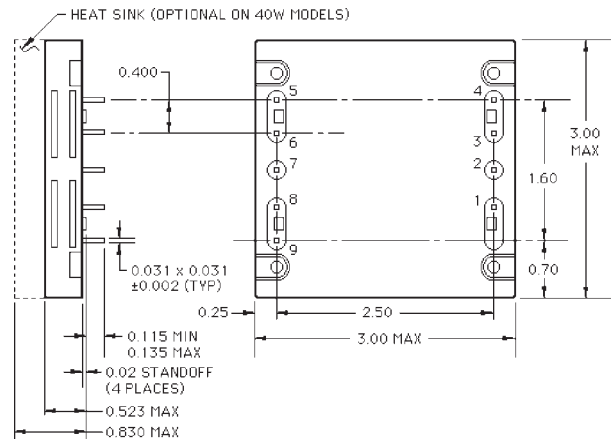
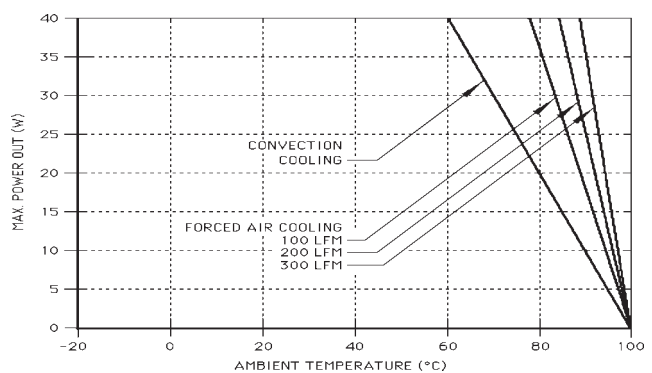
PACKAGE POWER DE-RATING

— Flat Base Plate —



PACKAGE POWER DE-RATING

— Cross-Cut Heat Sink —



Output Adjustment

