

100W DUAL OUTPUT DC-DC CONVERTER

— Independent Dual Low-Voltage Outputs —

Features

- Independently Regulated Outputs
5V and 3.3V
5V and 2.5V
3.3V and 2.5V
3.3V and 1.8V
2.5V and 1.8V
- 36-75 VDC Input (48V Nominal)
- 84% Efficiency (Typ.)
- Remote On/Off
- Built-in EMI Suppression Filter
- Fixed Operating Frequency
- Under-Voltage Lockout
- Over-Voltage Shutdown
- Short-Circuit Protection
- Thermal Protection
- 1500V I/O Isolation
- International Safety Standards
- Compact 2.4"×2.3"×0.5" Package
- Aluminum Base Plate
- Two-Year Warranty
- 600,000-Hour Minimum MTBF



HD2-100 Characteristics

Input Voltage.....	36-75 VDC (48V, nominal).
Input Current.....	2.5A, typical at nominal input (Note 1).
EMI Suppression	Pi input filter, standard.
Input/Output Isolation	1500 VDC, input to output, for one minute.
Continuous Output Power	Total output power should not exceed 100W.
DC Output.....	See Electrical Characteristics table.
Base-Plate Temperature	+100°C, maximum: Internal thermal shutdown circuitry; automatic recovery.
Output Voltage Adjustment.....	Outputs V1 and V2 adjustable by ±5%, minimum. (See Note 7.)
Short-Circuit Protection	Continuous cycle-by-cycle current limiting, each output, with automatic recovery
Under-Voltage Protection	Lockout activated at 34V-35.5V input; automatic recovery with 2V-3V hysteresis (typical).
Over-Voltage Protection	5V output, shutdown at 6.5V, typical; 3.3V output, shutdown at 3.9V, typical; 2.5V output, shutdown at 3.2V, typical. RESET at VIN = 0V.
Transient Response.....	200µs 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.....	400 kHz, fixed.

HD2-100 Characteristics (Continued)

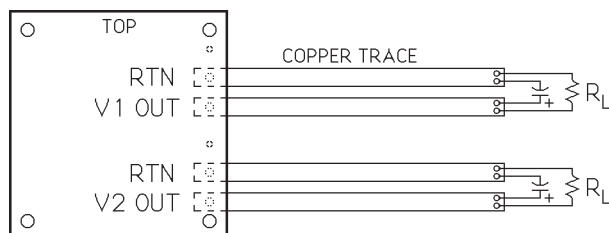
Design Topology	Forward converter with secondary side controller. Each output regulated by an independent control loop.
Efficiency	84%, typical, at nominal input voltage, full load (Note 3).
Remote Shutdown	OFF = Pin 3 at 1.4V or less. ON = Pin 3 >1.4V (to $V_{IN(MAX)}$) or open.
Operating Temperature Range.....	-40°C to +100°C (baseplate).
Temperature Coefficient	$\pm 0.02\%/^{\circ}\text{C}$ over the operating temperature range.
Relative Humidity	0% to 95%, non-condensing.
Altitude	0 to 10,000 feet.
Storage Temperature Range.....	-40°C to +100°C.
Storage Humidity.....	0% to 95%, non-condensing.
Mean Time Between Failures	>600,000 hours, calculated using Bellcore TR-NWT-000332 ($T_A = +40^{\circ}\text{C}$).

Electrical Characteristics

Model Number	Output Voltage		Output Current		Output Voltage Tolerance	Ripple & Noise ⁵ (mV _{pp})	Line Regulation	Load Regulation
	Output	(V)	Min. (A)	Max. (A)				
HD2-100-1D	V1	5.0	1.0	20	$\pm 1.0\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
	V2	3.3	0.0	25	$\pm 1.5\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
HD2-100-2D	V1	5.0	1.0	20	$\pm 1.0\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
	V2	2.5	0.0	25	$\pm 1.5\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
HD2-100-3D	V1	3.3	1.0	25	$\pm 1.0\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
	V2	2.5	0.0	25	$\pm 1.5\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
HD2-100-4D ^{6,7}	V1	2.5	1.0	25	$\pm 1.0\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
	V2	1.8	0.0	25	$\pm 1.5\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
HD2-100-5D ⁷	V1	3.3	1.0	25	$\pm 1.0\%$	100	$\pm 0.2\%$	$\pm 0.5\%$
	V2	1.8	0.0	25	$\pm 1.5\%$	100	$\pm 0.2\%$	$\pm 0.5\%$

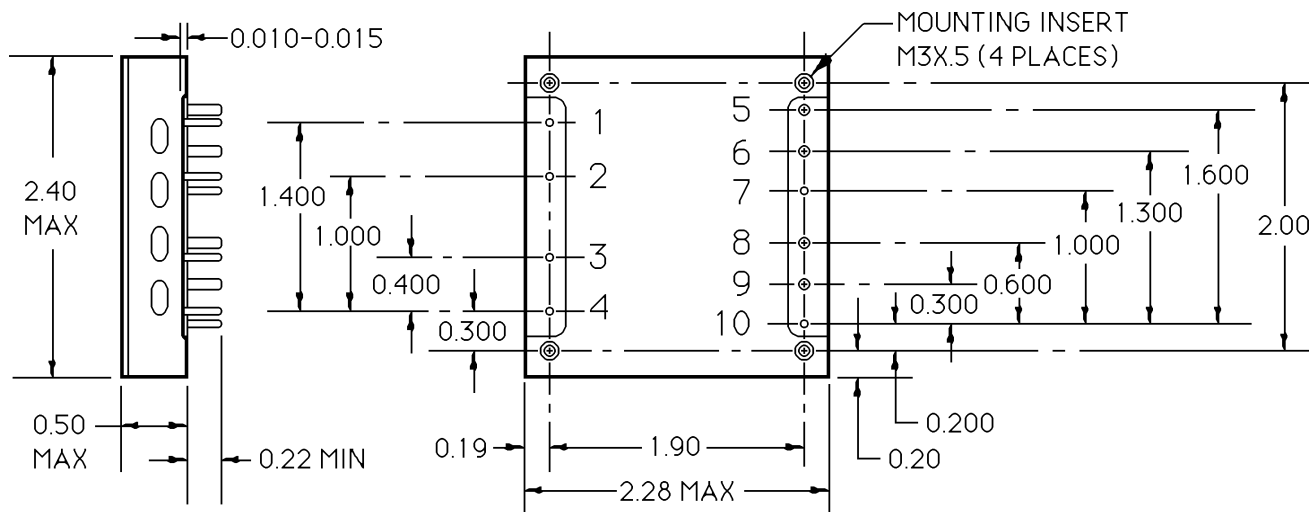
Notes

1. Use of an external input line fuse is recommended: Use a 5.0A/125V slow-blow fuse.
2. 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 converter with a 0.1 μF ceramic capacitor. The probe ground band must make direct contact with the output return or the common terminal of the converter to prevent erroneous noise measurements.
3. Output = 5V/20A.
4. All measurements are at nominal input, full load, and +25°C, unless otherwise specified.
5. Ripple and noise figures are maximum values. See application note below.
6. Preliminary data.
7. V2 output voltage trim for models HD2-100-4D and HD2-100-5D is limited to upward voltage adjustment.

**Ripple/Noise Reduction**

In applications with loads between two and three inches from the HD2-100 module, the circuit board's trace inductance can be used in conjunction with a 47 μF , low-ESR capacitor across each load to lower ripple and noise to 50 mV_{pp}.

Mechanical Outline and Output Configuration

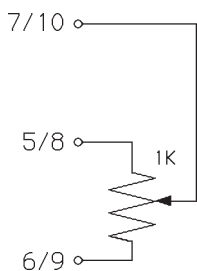


Pin-Out

Pin	Function	Diameter*
1	-VIN	0.040 in.
2	Case	0.040 in.
3	On/Off	0.040 in.
4	+VIN	0.040 in.
5	V2 Out	0.080 in.
6	V2 Rtn	0.080 in.
7	V2 Adj	0.040 in.
8	V1 Out	0.080 in.
9	V1 Rtn	0.080 in.
10	V1 Adj	0.040 in.

* ±0.002 inches

Output Adjustment



Dimension Notes

1. Dimensions above are in inches.
2. Tolerances: 0.000 = ±0.007 inches.
0.00 = ±0.010 inches.