POWER GENERAL

HD3-100 Series

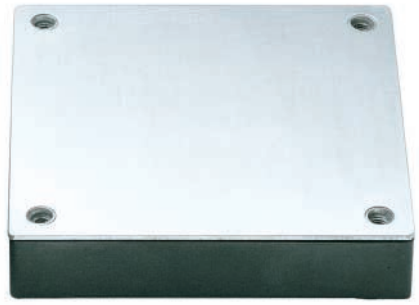
100W TRIPLE OUTPUT DC-DC CONVERTERS

— Independent Outputs —

PRELIMINARY

Features

- Isolated, Independently Regulated Outputs:
  3.3V, 12V and 12V
  5V, 12V and 12V
- 36-75 VDC Input (48V Nominal)
- 86% Efficiency (Typ.)
- Adjustable Output Voltage
- Primary and Secondary Side Remote On/Off Controls
- Built-in EMI Suppression Filter
- Fixed Operating Frequency
- Frequency Synchronization
- 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



HD3-100 Characteristics

Input Voltage	36-75 VDC (48V, nominal).
Input Current	2.5A, typical at nominal input (Note 1).
EMI Suppression	Low-pass input filter, standard.
Input/Output Isolation	1500 VDC, input to output, for one minute.
Channel to Channel Isolation	500 VDC, any channel to any channel, 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	V1, HD3-100-1D = 3.1 to 3.5V; HD3-100-2D = 4.6 to 5.6V
Short-Circuit Protection	Continuous cycle-by-cycle current limiting, each output, with automatic recovery
Over-Voltage Protection	HD3-100-1D, 3.3V output, shutdown at 4.0V, typical. HD3-100-2D, 5V output, shutdown at 6.3V, typical. RESET at V_{IN} = 0V.
Transient Response	50µs, maximum, 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	350 kHz, fixed.

POWER GENERAL
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HD3-100 Characteristics (Continued)

Design Topology	Flyback converter with primary side controller.
External Frequency Synchronization	±10% (200-400 ns input pulse width).
Efficiency	86%, typical, at nominal input voltage, full load, baseplate temperature = +25°C.
Remote Shutdown	Primary Side: Unit OFF with application of logic LOW to ON/OFF (Pin 1). Compatible with TTL open-collector and CMOS open-drain logic. See Figure 1.
	Secondary Side: Unit OFF with Pin 10 pulled up (minimum source current of 0.5 mA). See Figure 2.
Operating Temperature Range	0°C to +100°C (baseplate).
Temperature Coefficient	±0.02%/°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.

Electrical Characteristics

Model Number	Output	Output Voltage (V)	Output Current Min. (A)	Output Current Max. (A)	Output Voltage Tolerance	Ripple & Noise[4] (mV_{pp})	Line Regulation	Load Regulation
HD3-100-1D	V1	3.3	3.0	30	±1.0%	200	±0.05%	±0.4%
	V2	12.5	0	4.2	±5.0%	250	±0.8%	±5.0%
	V3	12.5	0	4.2	±5.0%	250	±0.8%	±5.0%
HD3-100-2D	V1	5.1	3.0	20	±1.0%	200	±0.05%	±0.4%
	V2	12.5	0	4.2	±5.0%	250	±0.8%	±5.0%
	V3	12.5	0	4.2	±5.0%	250	±0.8%	±5.0%

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. All measurements are at nominal input, full load, and +25°C, unless otherwise specified
4. Ripple and noise figures are maximum values.

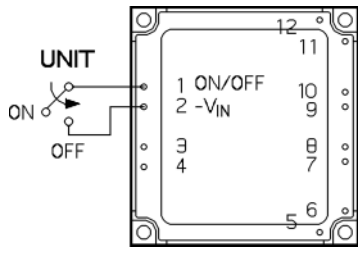


Figure 1. Open-collector/open-drain sink current at $V_{IN(MAX)}$ = 7 mA, max. OFF: Pin 1 <= 1V; ON: Pin 1 => 6V; reference = -VIN.

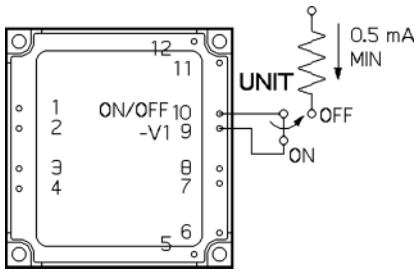
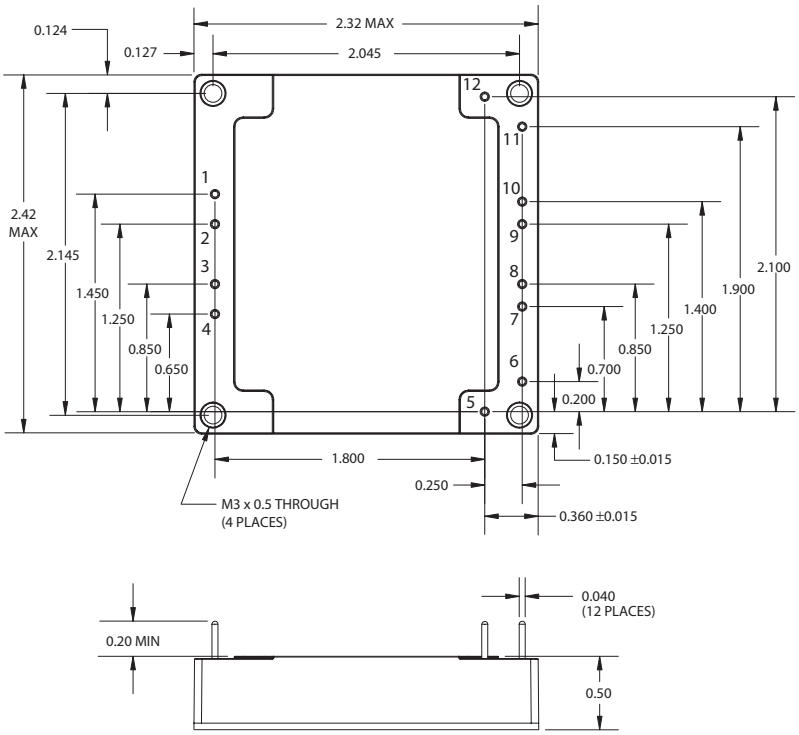


Figure 2. Pin 10 pull-up turns unit OFF (minimum source current of 500 µA). Unit ON with Pin 10 at -V1OUT.

Mechanical Outline and Output Configuration



Pin-Out

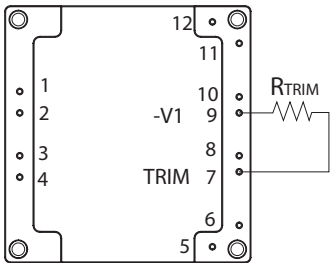
Pin	Function	Diameter*
1	Unit On/Off	0.040 in.
2	-VIN	0.040 in.
3	+VIN	0.040 in.
4	Sync In	0.040 in.
5	-V2	0.040 in.
6	+V2	0.040 in.
7	Trim	0.040 in.
8	+V1	0.040 in.
9	-V1	0.040 in.
10	Unit On/Off	0.040 in.
11	+V3	0.040 in.
12	-V3	0.040 in.

* +0.003/-0.001 inches.

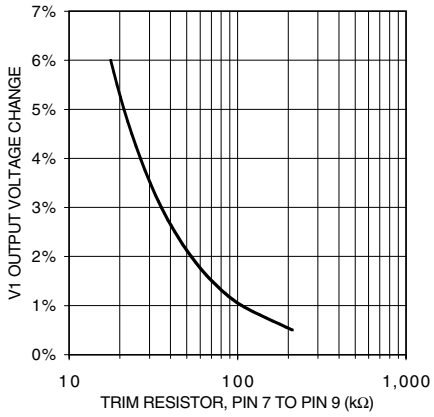
Dimension Notes

1. Dimensions are in inches.
2. Tolerances: 0.000 = ±0.005 inches.
   0.00 = ±0.01 inches.

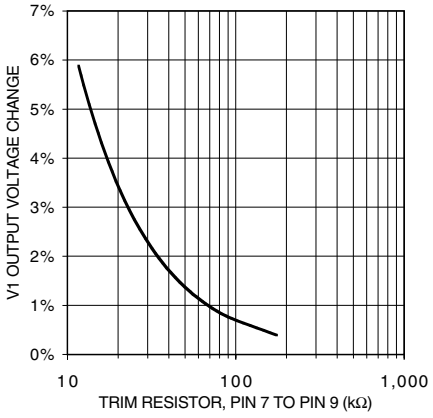
Upward Output Voltage Adjustment



$$V1_{OUT} = V_{OUT(NOM)} + \frac{3500}{R_{TRIM}}$$

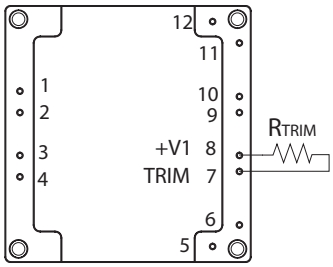


HD3-100-1D



HD3-100-2D

Downward Output Voltage Adjustment

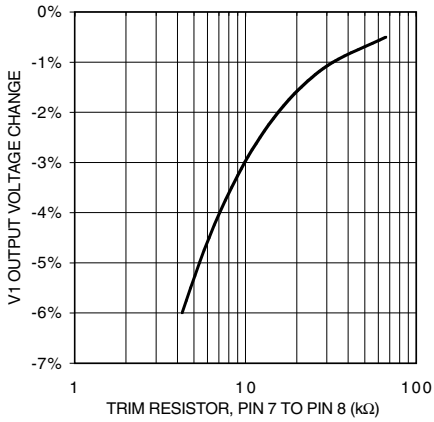


HD3-100-1D:

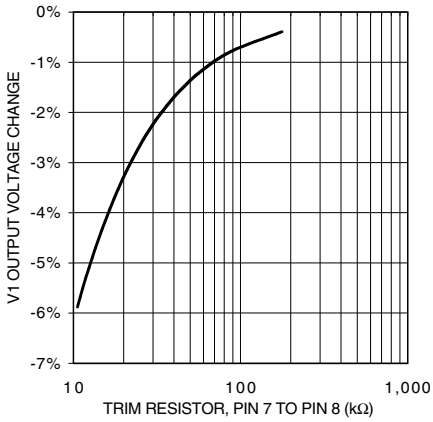
$$V1_{OUT} = V_{OUT(NOM)} - \frac{1120}{R_{TRIM} + 1400}$$

HD3-100-2D:

$$V1_{OUT} = V_{OUT(NOM)} - \frac{3580}{R_{TRIM} + 1370}$$



HD3-100-1D



HD3-100-2D