

HiTRON

ON-BOARD DC-DC CONVERTER ENCAPSULATED MODULES 20 WATTS SINGLE & DUAL OUTPUT HDM20-S & HDM20-D SERIES



FEATURES:

- SINGLE & DUAL OUTPUT.
- 2:1 INPUT RANGE.
- 20W ISOLATED OUTPUT.
- SIX-SIDED METAL SHIELD.

SPECIFICATION

INPUT SPECIFICATION

Input Range: 2:1 DC input range
See Ratings Chart.

Input Voltage: Nominal 12/24/48 Vdc.

Input Current: Various with input range & load. See Ratings Chart.

Input Fuse: Use external fuse.

Input Filter: Pi-Network.

Undervoltage Shutdown: 8Vdc.

Isolation Resistor: 1,000 Mega Ohms.

Isolation Voltage: 1,500Vdc.

EMI: Six-sided metal shielding.

Remote On/Off: TTL/CMOS-Compatible Input Control.
Logic input reference to -Input/-Vin.
Logic [1]/Open(or 2.5-7.0Vdc above -Vin)=ON.
Logic [2]/Short(or 0-0.08Vdc above -Vin)=OFF.

OUTPUT SPECIFICATION

Output Voltage: See Ratings Chart.

Output Current: See Ratings Chart.

Voltage Accuracy: Main O/P $\pm 1.0\%$ typ.

Line Regulation: $\pm 0.5\%$ typ.

Load Regulation: Single $\pm 1.0\%$ typ.
Dual $\pm 2.0\%$ typ.

Noise & Ripple: Typ. 100mV for 3.3V/5.0V & 1.0% for others peak to peak.

OVP: Built-in on main output.

Adjustability: VO1 O/P may be optionally be external trimmed $\pm 3.0\%$ with a fixed resistors or trim-pot.

Short Circuit Protection: Power fold back, Self-recovering.

Overload Protection: About 130% of overrange foldback type.

GENERAL SPECIFICATION

Efficiency: Typ.80-81% various with input.

Switching Frequency: Fixed frequency 450K Hz.

Circuit Topology: 450K Hz. Forward Circuit.

Transient Response: Full to 1/2 load <200 μ Sec.

Case: Black coated steel with non-conductive metal base.

Weight: 65.0g (2.40 Oz.).

Power Density: 12.5Watts./ Cubic inch.

Operating Temperature: -40°C to +85°C range. -25°C to +71°C @ full load without derating. Derating linearly 3.5%/ °C from +71°C @ full load to +85°C @ half-load.

Storage Temperature: -55°C to +110°C.

Humidity: Up to 95% RH, Non-condensing.

Temperature Coefficient: 0.02% /°C.

Cooling: Convection cooling up to 60°C @F-L. At least 100LFM moving air is recommended for F-L >+60°C in a confined area.

Commercial Grade: Full load up to +71°C with moving air.

Industrial Grade: +71 to +85°C F-L to H-L with moving air.

NOTE:(1) All measurements are at nominal input, full load and +25°C unless otherwise specified.

(2) Line Regulation measured from High to Low Lines at full load.

(3) Load Regulation measured from Full Load (F-L) to Half-Load (H-L) at nominal input.

(4) Correct fuse size by calculating the max. DC current drain at low Line input & Load and then adding 20-25% for the desired fuse size.

INPUT/OUTPUT & VOLTAGE/CURRENT RATINGS CHART

SINGLE OUTPUT

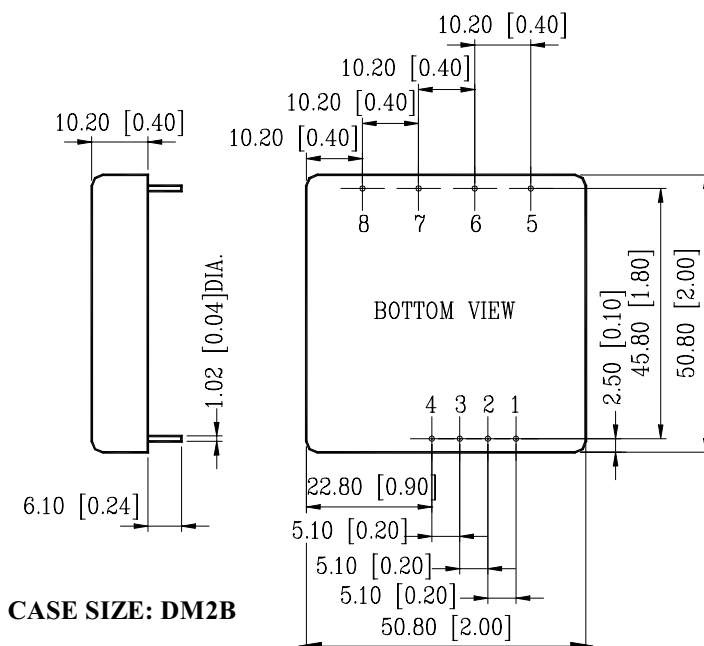
| MODEL NO. | INPUT Vdc | INPUT CURRENT | | OUTPUT VO1 (Vdc) | OUTPUT VO1(A) | CASE SIZE |
|---------------|------------|---------------|-------|------------------|---------------|-----------|
| | | N. L. (mA) | F.L. | | | |
| HDM20-12B-S03 | 9.0- 18.0 | 20 | 1,380 | 3.3V | 4.00A | DM2B |
| HDM20-12B-S05 | 9.0- 18.0 | 15 | 2,080 | 5.0V | 4.00A | DM2B |
| HDM20-12B-S09 | 9.0- 18.0 | 15 | 2,080 | 9.0V | 2.23A | DM2B |
| HDM20-12B-S12 | 9.0- 18.0 | 15 | 2,070 | 12.0V | 1.67A | DM2B |
| HDM20-12B-S15 | 9.0- 18.0 | 15 | 2,070 | 15.0V | 1.34A | DM2B |
| HDM20-24B-S03 | 18.0- 36.0 | 15 | 690 | 3.3V | 4.00A | DM2B |
| HDM20-24B-S05 | 18.0- 36.0 | 10 | 1040 | 5.0V | 4.00A | DM2B |
| HDM20-24B-S09 | 18.0- 36.0 | 10 | 1040 | 9.0V | 2.23A | DM2B |
| HDM20-24B-S12 | 18.0- 36.0 | 10 | 1035 | 12.0V | 1.67A | DM2B |
| HDM20-24B-S15 | 18.0- 36.0 | 10 | 1035 | 15.0V | 1.34A | DM2B |
| HDM20-48B-S03 | 36.0- 72.0 | 15 | 345 | 3.3V | 4.00A | DM2B |
| HDM20-48B-S05 | 36.0- 72.0 | 10 | 520 | 5.0V | 4.00A | DM2B |
| HDM20-48B-S09 | 36.0- 72.0 | 10 | 520 | 9.0V | 2.23A | DM2B |
| HDM20-48B-S12 | 36.0- 72.0 | 10 | 517 | 12.0V | 1.67A | DM2B |
| HDM20-48B-S15 | 36.0- 72.0 | 10 | 517 | 15.0V | 1.34A | DM2B |

DUAL OUTPUT

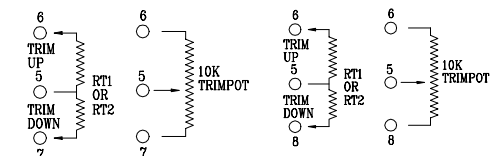
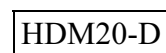
| MODEL NO. | INPUT Vdc | INPUT CURRENT | | OUTPUT (Vdc) | | OUTPUT(A) | | CASE SIZE |
|---------------|------------|---------------|------|--------------|--------|-----------|-------|-----------|
| | | N. L. (mA) | F.L. | +VO1 | -VO2 | +VO1 | -VO2 | |
| HDM20-12B-D03 | 9.0- 18.0 | 25 | 1380 | +3.3V | -3.3V | 2.00A | 2.00A | DM2B |
| HDM20-12B-D05 | 9.0- 18.0 | 20 | 2080 | + 5.0V | - 5.0V | 2.00A | 2.00A | DM2B |
| HDM20-12B-D12 | 9.0- 18.0 | 20 | 2070 | +12.0V | -12.0V | 0.83A | 0.83A | DM2B |
| HDM20-12B-D15 | 9.0- 18.0 | 20 | 2070 | +15.0V | -15.0V | 0.67A | 0.67A | DM2B |
| HDM20-24B-D03 | 18.0- 36.0 | 20 | 690 | +3.3V | -3.3V | 2.00A | 2.00A | DM2B |
| HDM20-24B-D05 | 18.0- 36.0 | 15 | 1040 | + 5.0V | - 5.0V | 2.00A | 2.00A | DM2B |
| HDM20-24B-D12 | 18.0- 36.0 | 15 | 1035 | +12.0V | -12.0V | 0.83A | 0.83A | DM2B |
| HDM20-24B-D15 | 18.0- 36.0 | 15 | 1035 | +15.0V | -15.0V | 0.67A | 0.67A | DM2B |
| HDM20-48B-D03 | 36.0- 72.0 | 20 | 345 | +3.3V | -3.3V | 2.00A | 2.00A | DM2B |
| HDM20-48B-D05 | 36.0- 72.0 | 15 | 520 | + 5.0V | - 5.0V | 2.00A | 2.00A | DM2B |
| HDM20-48B-D12 | 36.0- 72.0 | 15 | 517 | +12.0V | -12.0V | 0.83A | 0.83A | DM2B |
| HDM20-48B-D15 | 36.0- 72.0 | 15 | 517 | +15.0V | -15.0V | 0.67A | 0.67A | DM2B |

MECHANICAL DIMENSIONS: MM [INCHES]

Weight: 65.0g (2.4 Oz.)



CASE SIZE: DM2B



PIN ASSIGNMENT

| PIN NO. | SINGLE | DUAL |
|---------|---------------|---------------|
| PIN# 1. | Remote ON/OFF | Remote ON/OFF |
| PIN# 2. | NC | NC |
| PIN# 3. | - INPUT/-Vin | - INPUT/-Vin |
| PIN# 4. | + INPUT | + INPUT |
| PIN# 5. | OUTPUT TRIM | OUTPUT TRIM |
| PIN# 6. | DC-COM | - VO2 |
| PIN# 7. | VO1 | DC-COM |
| PIN# 8. | NC | +VO1 |

HiTRON

ON-BOARD DC-DC CONVERTER ENCAPSULATED MODULES 20 WATTS TRIPLE OUTPUT HDM20-T SERIES



FEATURES:

- 2:1 INPUT RANGE.
- 20W ISOLATED OUTPUT.
- TRIPLE OUTPUT.
- SIX-SIDED METAL SHIELD.

SPECIFICATION

INPUT SPECIFICATION

Input Range: 2:1 DC input range.
See Ratings Chart.
Input Voltage: Nominal 12/24/48Vdc.
Input Current: Various with input range
and load. See Ratings Chart.
Input Fuse: Use external fuse.
Input Filter: Pi-Network.
Undervoltage Shutdown: 8Vdc.
Isolation resistor: 1,000Mega Ohms.
Isolation voltage: 1,500Vdc.
EMI: Six-sided metal shielded.
Remote On/Off: TTL/CMOS-Compatible Input Control.
Logic input reference to -Input/-Vin.
Logic [1]/Open(or 2.5-7.0Vdc above -Vin)=ON.
Logic [2]/Short(or 0-0.08Vdc above -Vin)=OFF.

OUTPUT SPECIFICATION

Output Voltage: See Ratings Chart.
Output Current: See Ratings Chart
Line Regulation: $\pm 0.5\%$ typ.
Load Regulation: VO1 & VO3 $\pm 2.0\%$ typ.
VO2 $\pm 5.0\%$ typ.
Noise & Ripple: Typ. 100mV for 3.3V/5.0V &
1.0% for others peak to peak.
OVP: Built-in on main output.
Short Circuit Protection: Fold back.
Voltage Accuracy: $\pm 2.0\%$.
Short Circuit Protection: Power fold back,
Self-recovering.
Overload Protection: About 130% of overrange
foldback type.

GENERAL SPECIFICATION

Efficiency: Typ.80% various with input.
Switching Frequency: Fixed frequency 450K Hz.
Circuit Topology: 450K Hz. forward circuit.
Transient Response: Full to 1/2 load < 200 μ Sec.
Case: Black coated steel with non-conductive
metal base.
Weight: 65.0g(2.4 Oz.).
Power Density: 12.5Watts. / Cubic inch.

Operating Temperature: -40°C to +85°C range. -25°C to
+71°C @ full load without derating. Derating linearly
3.5%/°C from +71°C @ full load to +85°C @ half-load.
Storage Temperature: -55°C to +110°C.
Humidity: Up to 95% RH, Non-condensing.
Temperature Coefficient: 0.02%/°C.
Cooling: Convection cooling up to 60°C @F-L. At least
100LFM moving air is recommended for F-L >+60°C in
a confined area.
Commercial Grade: Full load up to +71°C with moving air.
Industrial Grade: +71 to +85°C F-L to H-L with moving air.

NOTE:(1) All measurements are at nominal input, full load and +25°C unless otherwise specified.

(2) Line Regulation measured from High to Low Lines at full load.

(3) Load Regulation measured from Full Load (F-L) to Half-Load (H-L) at nominal input.

(4) Correct fuse size by calculating the max. DC current drain at low Line input & Load and then adding 20-25% for the desired fuse size.

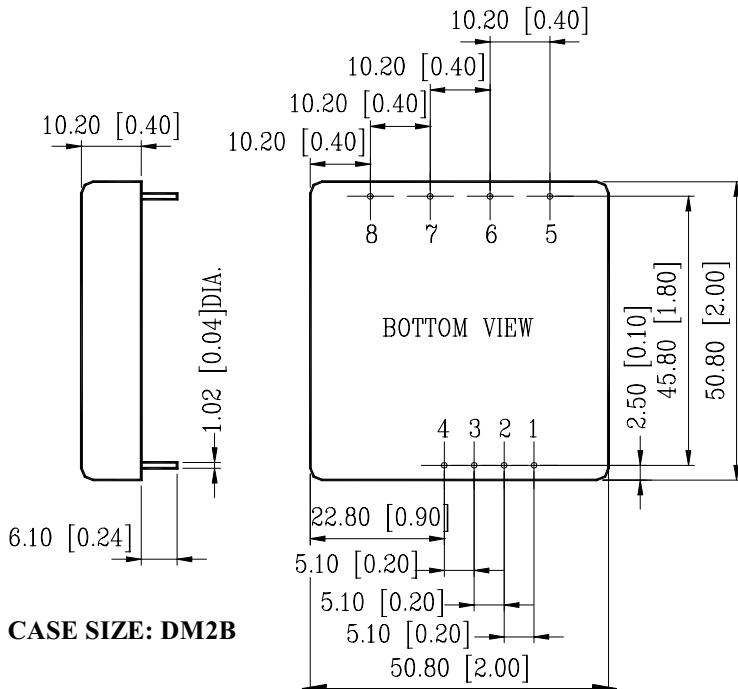
INPUT/OUTPUT & VOLTAGE/CURRENT RATINGS CHART

DUAL OUTPUT

| MODEL NO. | INPUT Vdc | INPUT CURRENT | | OUTPUT(Vdc) | | | OUTPUT(A) | | | CASE SIZE |
|---------------------|------------|---------------|-------|-------------|--------|--------|-----------|-------|-------|-----------|
| | | N. L. (mA) | F.L. | +VO1 | +VO2 | -VO3 | +VO1 | +VO2 | -VO3 | |
| HDM20-12B-T3/12 | 9.0- 18.0 | 30 | 1,850 | +3.3V | +12.0V | -12.0V | 3.00A | 0.30A | 0.30A | DM2B |
| HDM20-12B-T3/15 | 9.0- 18.0 | 30 | 1,850 | +3.3V | +15.0V | -15.0V | 3.00A | 0.25A | 0.25A | DM2B |
| HDM20-12B-T3/+12,-5 | 9.0- 18.0 | 30 | 1,850 | +3.3V | +12.0V | -5.0V | 3.00A | 0.30A | 0.75A | DM2B |
| HDM20-12B-T5/12 | 9.0- 18.0 | 30 | 2,070 | +5.0V | +12.0V | -12.0V | 2.50A | 0.31A | 0.31A | DM2B |
| HDM20-12B-T5/15 | 9.0- 18.0 | 30 | 2,060 | +5.0V | +15.0V | -15.0V | 2.50A | 0.25A | 0.25A | DM2B |
| HDM20-12B-T5/+12,-5 | 9.0- 18.0 | 30 | 2,080 | +5.0V | +12.0V | -5.0V | 2.50A | 0.31A | 0.75A | DM2B |
| HDM20-24B-T3/12 | 18.0- 36.0 | 30 | 925 | +3.3V | +12.0V | -12.0V | 3.00A | 0.30A | 0.30A | DM2B |
| HDM20-24B-T3/15 | 18.0- 36.0 | 30 | 925 | +3.3V | +15.0V | -15.0V | 3.00A | 0.25A | 0.25A | DM2B |
| HDM20-24B-T3/+12,-5 | 18.0- 36.0 | 30 | 925 | +3.3V | +12.0V | -5.0V | 3.00A | 0.30A | 0.75A | DM2B |
| HDM20-24B-T5/12 | 18.0- 36.0 | 30 | 1,035 | +5.0V | +12.0V | -12.0V | 2.50A | 0.31A | 0.31A | DM2B |
| HDM20-24B-T5/15 | 18.0- 36.0 | 30 | 1,030 | +5.0V | +15.0V | -15.0V | 2.50A | 0.25A | 0.25A | DM2B |
| HDM20-24B-T5/+12,-5 | 18.0- 36.0 | 30 | 1,040 | +5.0V | +12.0V | -5.0V | 2.50A | 0.31A | 0.75A | DM2B |
| HDM20-48B-T3/12 | 36.0- 72.0 | 30 | 462 | +3.3V | +12.0V | -12.0V | 3.00A | 0.30A | 0.30A | DM2B |
| HDM20-48B-T3/15 | 36.0- 72.0 | 30 | 462 | +3.3V | +15.0V | -15.0V | 3.00A | 0.25A | 0.25A | DM2B |
| HDM20-48B-T3/+12,-5 | 36.0- 72.0 | 30 | 462 | +3.3V | +12.0V | -5.0V | 3.00A | 0.30A | 0.75A | DM2B |
| HDM20-48B-T5/12 | 36.0- 72.0 | 30 | 517 | +5.0V | +12.0V | -12.0V | 2.50A | 0.31A | 0.31A | DM2B |
| HDM20-48B-T5/15 | 36.0- 72.0 | 30 | 515 | +5.0V | +15.0V | -15.0V | 2.50A | 0.25A | 0.25A | DM2B |
| HDM20-48B-T5/+12,-5 | 36.0- 72.0 | 30 | 520 | +5.0V | +12.0V | -5.0V | 2.50A | 0.31A | 0.75A | DM2B |

MECHANICAL DIMENSIONS: MM[INCHES]

Weight: 65.0g(2.4 Oz.)



PIN ASSIGNMENT

| PIN NO. | TRIPLE |
|---------|---------------|
| PIN #1 | Remote ON/OFF |
| PIN #2 | NC |
| PIN #3 | - INPUT/-Vin |
| PIN #4 | + INPUT |
| PIN #5 | - VO3 |
| PIN #6 | DC-COM |
| PIN #7 | + VO1 |
| PIN #8 | + VO2 |