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# DCx40 DC/DC Converters

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## FEATURES

- 40 W dc/dc converter
- Same size as ac input version
- Drop-in replacement for GLC40 series
- Two input ranges: 24 V and 48 V
- Two-year warranty
- Full off-line isolation
- Single and multiple output versions available
- ⚡ marked to LVD

## SPECIFICATIONS:

### Input

DCD models: 24 Vdc, 18-32 Vdc; DCG models: 48 Vdc, 36-72 Vdc.

### Hold-up Time

6mSec minimum from loss of dc input at full load, nominal line.

### Output Power

Normal continuous output power is 40 W (45 W Pk) for 60 sec.

### Output Regulation

Regulation for multiple-output models measured by  $\pm 40\%$  load change from 60% rated load with all other outputs at 60% full rated load and a line voltage change from low line to high line. Initial set tolerance is measured with all outputs at 60% of full rated load. Output voltage V1 requires 20% load for proper regulation of multiple-output models. Regulation for single-output models measured by changing load from 5% load to 50% load or 50% load to full load in either direction.

### Remote Sense

Standard on single-output versions. Capable of compensating for 0.25 V total of cabling losses in the output voltage.

### Overload Protection

Fully protected against short circuit and output overload. Short circuit protection is cycling type power limit on outputs #1 and #2; foldback type on output #3. Factory set to begin power limiting at approximately 55 W.

### No Load Turn-on/Standby

No degradation of reliability will occur; however, regulation may be affected.

### Output Noise and Ripple

0.5% RMS, 1.5% Pk-Pk, 20 MHz bandwidth, differential mode. Measured with scope probe directly across output terminals of the power supply with load terminated with 0.1  $\mu$ f capacitor.

### Transient Response

Main output; 500  $\mu$ sec typical response time for return to within 0.5% of final value for a 50% load step within the regulation limits of minimum and maximum load,  $\Delta i/\Delta t < 0.2/\mu$ sec. Maximum voltage deviation is 3.5%.

### Overvoltage Protection

Built in on V1 with firing point set per output ratings table. OVP firing reduces outputs 1 and 2 to less than 50% of nominal voltage in 50 msec.

### Voltage Adjustment

Factory set on standard units. However, optional potentiometer adjusts voltage from 4.7 V to OVP point (6.2 V nominal) on the +5 V output. Note: output #1 must not be more than 1% below nominal to achieve full output voltage range on output #2. Output regulation limits in some models may be exceeded when the main output is adjusted beyond  $\pm 1\%$  of nominal voltage. See output ratings chart for additional notes and conditions. High voltage settings may degrade the reliability of the unit due to excessive

power dissipation in some outputs. Consult factory for application assistance.

### Efficiency

68% minimum at full rated load, nominal input voltage, depending upon model and load distribution. Single-output models = 72% to 80% depending upon model.

### Overshoot

Less than 3% at turn-on under nominal conditions, inversely proportional to input voltage and temperature. Less than 2% overshoot at turn-off under all conditions.

### Turn-on Time

Less than 1 sec. At nominal line, 25°C (inversely proportional to input voltage and thermistor temperature).

### Input Protection

Internal fuse provided on all units. Inadvertent reverse voltage application will blow fuse without risk of fire or shock hazard. Otherwise, internal fuse is designed to protect against catastrophic circuit failures. Fuse does not blow on overload or short circuit.

### Inrush Current

Inrush is limited by internal thermistors to 22 A pk @ 24 Vdc and 44 A pk @ 48 Vdc.

### Temperature Coefficient

0.03%/°C typical on all outputs.

### Environmental

Designed for 0 to 50°C operation at full rated output power; derate output current and total output power by 2.5% per °C above 50°C. See Environmental and Packing Specification on next page.

### Storage

-40 to +85 °C.

### EMI Compliance

All models include built-in EMI filtering to meet or exceed the emissions requirements of FCC Class B. CISPR 22-Class B. Typical margins >3dB at all frequencies and line/load conditions.

### Safety

All DCx models are approved to UL 1950 (with no D4 deviations), CSA22.2 No. 234 Level 3, IEC950, EN60950.

# DCx40 DC/DC Converters

| Model (B) | Output No. | Output | Minimum Load | Current | Total Regulation | OVP          | Ripple and Noise | Notes |
|-----------|------------|--------|--------------|---------|------------------|--------------|------------------|-------|
| DCx40A    | 1          | +5.1 V | 0.4 A        | 4 A     | 2%               | 6.2 ± 0.6 V  | 1%               |       |
|           | 2          | +12 V  | 0.2 A        | 2 A     | 6%               |              | 1%               | A     |
|           | 3          | -12 V  | 0 A          | 0.4 A   | 5%               |              | 1%               |       |
| DCx40B    | 1          | +5.1 V | 0.4 A        | 4 A     | 2%               | 6.2 ± 0.6 V  | 1%               |       |
|           | 2          | +15 V  | 0.2 A        | 2 A     | 6%               |              | 1%               | A     |
|           | 3          | -15 V  | 0 A          | 0.4 A   | 5%               |              | 1%               |       |
| DCx40D    | 1          | +5.1 V | 0.4 A        | 4 A     | 2%               | 6.2 ± 0.6 V  | 1%               |       |
|           | 2          | +24 V  | 0.1 A        | 1 A     | 6%               |              | 1%               | A     |
|           | 3          | -12 V  | 0 A          | 0.4 A   | 5%               |              | 1%               |       |
| DCx40-5   | 1          |        |              | 7.8 A   | 2%               | 6.2 ± 0.6 V  | 1%               |       |
| DCx40-12  | 1          |        |              | 3.3 A   | 2%               | 14 ± 1.1 V   | 1%               |       |
| DCx40-15  | 1          |        |              | 2.7 A   | 2%               | 18.5 ± 1.5 V | 1%               |       |
| DCx40-24  | 1          |        |              | 1.7 A   | 2%               | 28 ± 2.5 V   | 1%               |       |
| DCx40-28  | 1          |        |              | 1.4 A   | 2%               | 34 ± 2.8 V   | 1%               |       |

A. To maintain these regulation conditions, the 5.1 V current must be at least 20% of V2 and not greater than five times the V2 current, and requires +5.1 V to be adjusted within ±1%, with at least a 0.4 A load.

B. Replace "x" with "D" for 24 Vdc input or "G" for 48 Vdc input.

## DCx40 MECHANICAL SPECIFICATIONS

J1 CONNECTOR: AMP P/N 640445-3 W/CENTER PIN  
REMOVED 0.156 CTR HEADER

J2 CONNECTOR: AMP P/N 640445-6 0.156 CTR HEADER

J3 CONNECTOR: REMOTE SENSE (SINGLE OUTPUT MODELS ONLY)

INPUT: J1

PIN 1) +DC  
PIN 2) DC RETURN

| J2    | MULTI-OUTPUT MODELS | SINGLE-OUTPUT MODELS |
|-------|---------------------|----------------------|
| PIN 1 | OUTPUT #2           | OUTPUT #1            |
| PIN 2 | OUTPUT #1           | OUTPUT #1            |
| PIN 3 | OUTPUT #1           | OUTPUT #1            |
| PIN 4 | COMMON              | COMMON               |
| PIN 5 | COMMON              | COMMON               |
| PIN 6 | OUTPUT #3           | COMMON               |

MATING CONNECTORS MOLEX P/N

|        | HOUSING  | CONTACT  |
|--------|----------|----------|
| INPUT  | 640250-3 | 770476-1 |
| OUTPUT | 640250-6 | 770476-1 |
| SENSE  | 640250-2 | 770476-1 |

NOTE: 5A MAXIMUM RECOMMENDED CURRENT CONNECTOR PIN

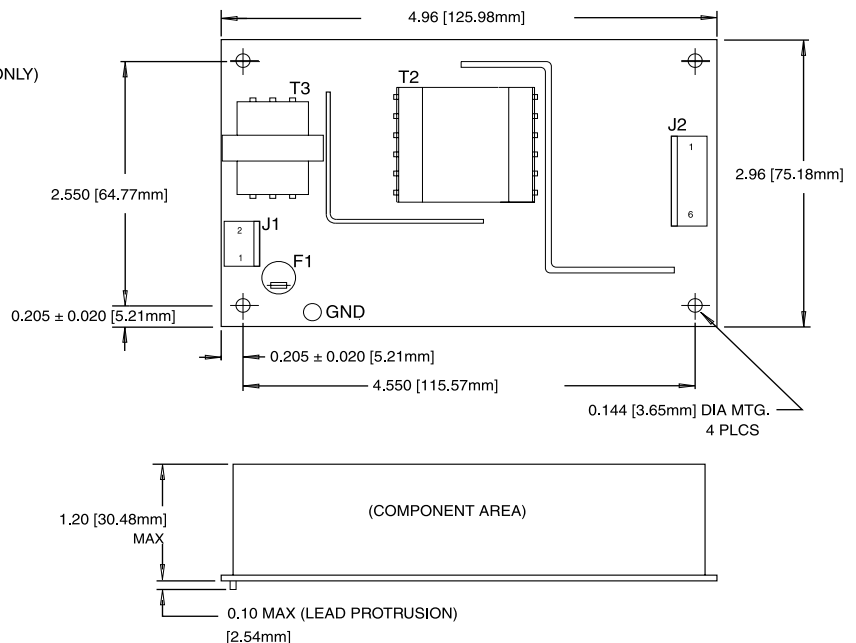
WEIGHT: 1.0 LBS MAX. (0.45 kg)

TOLERANCE: X.XX = ±0.030 (0.76mm)

X.XXX = ±0.010 (0.25mm)

Dimensions: Inches  
Millimeters

| Environmental Specification | Operating                                       | Non-operating                                 |
|-----------------------------|---|---|
| Temperature (A)             | 0 to 50°C                                       | -40 to +85°C                                  |
| Humidity (A)                | 0 to 95% RH                                     | 0 to 95% RH                                   |
| Shock (B)                   | 20 g <sub>pk</sub>                              | 40 g <sub>pk</sub>                            |
| Altitude                    | -500 to 10,000 ft                               | -500 to 40,000 ft                             |
| Vibration (C)               | 1.5 g <sub>rms</sub> , 0.003 g <sup>2</sup> /Hz | 5 g <sub>rms</sub> , 0.026 g <sup>2</sup> /Hz |



A. Units should be allowed to warm up/operate under non-condensing conditions before application of power. Derated output current and total output power by 2.5% per °C above 50°C.

B. Random vibration—10 to 2000Hz, 6dB/octave roll-off from 350 to 2000Hz, 3 orthogonal axes. Tested for 10 min./axis operating and 1 hr./axis non-operating.

C. Shock testing—half-sinusoidal, 10 ± 3 ms duration, ± direction, 3 orthogonal axes, total 6 shocks.



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