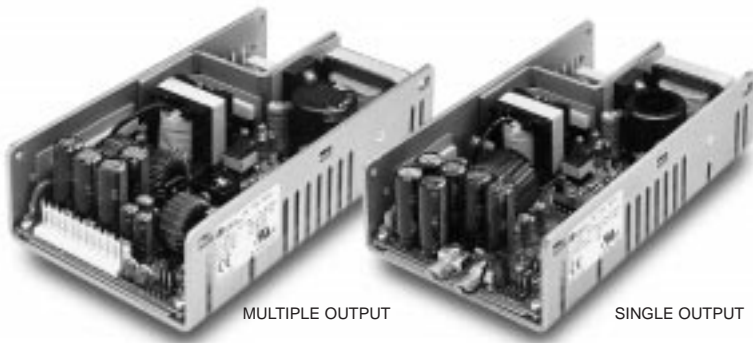


# 150 Watts

## CE-150 Series

### Features

- Universal 85-264 VAC Input
- Harmonic Current per EN 61000-3-2
- Compact 4" X 7" X 1.75" Size
- Standard "U" Shaped Chassis
- Optional Perforated Cover
- Optional Remote On/Off
- Class B Conducted Emissions Per EN 55022,11
- EMC Compliant to EN 61000-4-2, 3, 4, 5, 6 & 11 and EN 60601-1-2
- Optional Power Fail Signal
- 2 Year Warranty
- EN 60950 ITE Certification
- EN 60601-1 Medical Cert.



### Safety Specifications

|   |  |    |
|---|--|----|
| General                                     | Protection Class:  | I  |
|   | Voltage Category:  | II |
|   | Pollution Degree:  | 2  |
| Underwriters Laboratories File E137708      | UL1950 Third Edition<br>UL2601-1 Second Edition<br>CB Report per IEC 950 (1991)<br>Second Edition, A1, A2, A3, A4<br>All EN 60950 Deviations<br>CB Report Per IEC 601-1 (1988)<br>First Edition A1, A2 |    |
| UL Recognition Mark For Canada File E137708 | CAN/CSA-C22.2 No. 950-M95<br>CAN/CSA-C22.2 No. 601-1-M90   |    |
| TUV License B 98 05 30824 002               | EN 60950/A4:1997<br>EN 60601-1/A2:1995   |    |
|   | Low Voltage Directive  |    |

### Model Listing

| MODEL       | OUTPUT 1                | OUTPUT 2 | OUTPUT 3 | OUTPUT 4 |
|-------------|-------------------------|----------|----------|----------|
| CE-150-4001 | +3.3/15A                | +5V/5A   | +12V/2A  | -12V/2A  |
| CE-150-4002 | +5V/15A                 | +3.3V/5A | +12V/2A  | -12V/2A  |
| CE-150-4003 | +5V/15A                 | +3.3V/5A | +15V/2A  | -15V/2A  |
| CE-150-4004 | +5V/15A                 | -5.2V/5A | +12V/2A  | -12V/2A  |
| CE-150-4005 | +5V/15A                 | -5.2V/5A | +15V/2A  | -15V/2A  |
| CE-150-4006 | +5V/15A                 | +12V/5A  | +12V/2A  | -12V/2A  |
| CE-150-4007 | +5V/15A                 | +12V/5A  | +15V/2A  | -15V/2A  |
| CE-150-4101 | +5V/15A                 | +24V/5A  | +12V/2A  | -12V/2A  |
| CE-150-4102 | +5V/15A                 | +24V/5A  | +15V/2A  | -15V/2A  |
| CE-150-3001 | +5V/15A                 | +12V/5A  |          | -12V/2A  |
| CE-150-3002 | +5V/15A                 | +15V/5A  |          | -15V/2A  |
| CE-150-3003 | +15V/5A                 | -15V/5A  | +5V/2A   |          |
| CE-150-2001 | +12V/7.5A               | -12V/5A  |          |          |
| CE-150-2002 | +15V/5A                 | -15V/5A  |          |          |
| CE-150-2003 | +5V/15A                 | +12V/6A  |          |          |
| CE-150-2101 | +5V/15A                 | +24V/5A  |          |          |
| CE-150-1001 | 3.3V/30A <sup>(5)</sup> |          |          |          |
| CE-150-1002 | 5V/30A <sup>(5)</sup>   |          |          |          |
| CE-150-1003 | 12V/12.5A               |          |          |          |
| CE-150-1004 | 15V/10A                 |          |          |          |
| CE-150-1005 | 24V/6.25A               |          |          |          |
| CE-150-1006 | 28V/5.4A                |          |          |          |
| CE-150-1007 | 48V/3.1A                |          |          |          |

Refer to "Applications Information" on page 17.

All specifications are maximum at 25°C unless otherwise stated and are subject to change without notice.

### Output Specifications

|  |   |
|--|---|
| Total Output Power                       | 100W Convection Cooled<br>125W Convection Cooled<br>W/ 1 Sq. Ft. Baseplate<br>150W 300 LFM Forced Air   |
| Output Voltage Centering                 | Output 1: ± 0.25%<br>Output 2: ± 0.25% (X0XX) (All Outputs)<br>Output 2: ± 3.0% (X1XX) 50% Load<br>Output 3: ± 2.0%<br>Output 4: ± 2.0%             |
| Source Regulation                        | Outputs 1-4: 0.5%   |
| Load Regulation                          | Output 1: 0.5% (0-100% Load Change)<br>Output 2: 0.5% (X0XX Models, 0-100%)<br>3.0% (X1XX Models, 10-100%)<br>Output 3-4: 2.0% (0-100% Load Change) |
| Cross Regulation                         | Output 2: 0.2% (X0XX) (Output 1 load)<br>Output 2: 5.0% (X1XX) varied 50-100%<br>Output 3-4: 2.0%   |
| Output Voltage Adjust Span               | Output 1-2: 95-105% (X0XX Models)<br>Output 1: 95-105% (X1XX Models)<br>Output 1: 85-105% (1001, 4001)<br>Output 2: 85-105% (4002, 4003)            |
| Resolution                               | 1%  |
| Output Noise                             | Source Freq. Outputs 1-4: 0.5%<br>Switching Freq. Outputs 1-4: 1%<br>Total (20MHz) Outputs 1-4: 1% (Output under test at 100% rated load)           |
| Turn On Overshoot                        | None  |
| Transient Response                       | Outputs 1-4<br>Voltage Dev. 5%<br>Recovery Time 500 µS<br>Load Change 50% To 100%   |
| Output Overvoltage Protection (Optional) | Output 1: 110% To 150%<br>Shuts down all outputs. Cycle input to restart  |
| Output Overpower Protection              | 165 Watts Min., Outputs 1 and 2<br>Outputs cycle on/off, auto recovery  |
| Output Overcurrent Protection            | 110% Min. Outputs 3 And 4   |
| Hold Up Time                             | 20 mS Min., 150W Output<br>120V Input   |
| Start Up Time                            | 3 Seconds   |

### Input Specifications

|                 |   |
|-----------------|---|
| Source Voltage  | 85 - 264 Volts AC   |
| Frequency Range | 47-63 Hz  |
| Source Current  | True RMS 3A at 85V Input<br>Peak Inrush 30A<br>Peak Repetitive 4.25A at 85V Input<br>Harmonic Distortion 0.05 |
| Efficiency      | .68 -.80 (Varies by model)  |
| Power Factor    | 0.90 (150 watts, 230V)  |

### Environmental Specifications

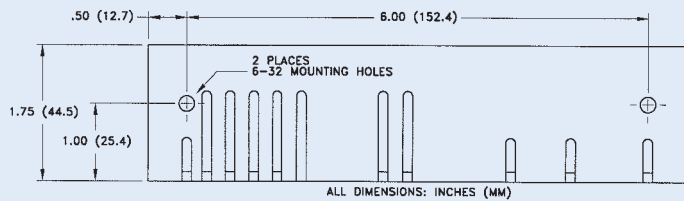
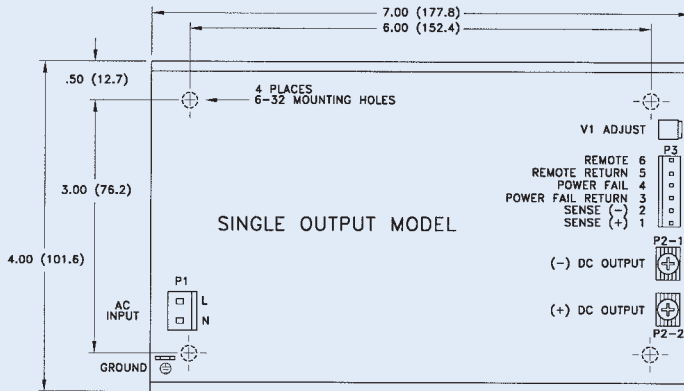
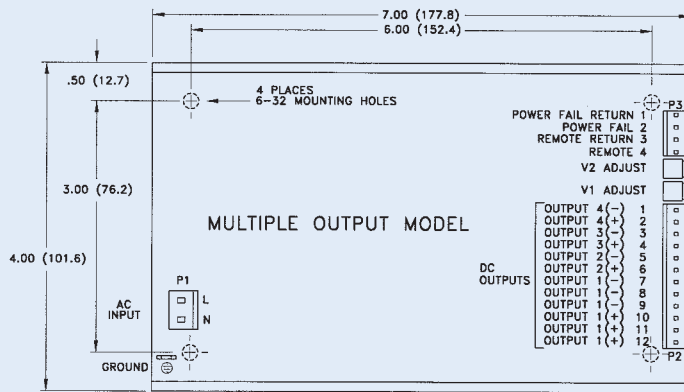
|                                     |   |
|-------------------------------------|---|
| Ambient Operating Temperature Range | 0° C to +70° C<br>Derating: See Power Rating Chart      |
| Ambient Storage Temperature Range   | -40° C To +85° C  |
| Temperature Coefficient             | Outputs 1-4: 0.02%/°C                                   |
| Vibration                           | MIL-STD-810E, Method 514.4 Category 1                   |
| Shock                               | Transit Drop per MIL-STD-810E Method 516.4 Procedure IV |

### General Specifications

|  |   |
|--|---|
| Dielectric Strength                      | 5656 VDC, Primary to Secondary, 1 Sec.<br>2121 VDC, Primary to Ground, 1 Sec.<br>500 VDC, Secondary to Ground, 1 Sec. |
| Leakage Current                          | <300 µA Earth Leakage Current<br><100 µA Patient Leakage Current  |
| Remote On/Off (Optional)                 | Contact closure shuts off all outputs   |
| Power Fail Signal (Optional)             | Logic low with input power failure 10 mS minimum prior to output one dropping 1%                                      |
| Remote Sense (Single Output Models Only) | 250mV compensation of output cable losses   |
| Mean-Time Between Failures               | 150,000 Hours min.,<br>MIL-HDBK-217F, 25° C, GB   |
| Weight                                   | 2.0 Lbs.  |

Electromagnetic compatibility specifications located on page 17.

## CE-150 Series Mechanical Specifications



### AC Input Connector P1:

- .156 inch friction lock header mates with Molex 09-50-3031 or equivalent crimp terminal housing with Molex 08-50-0189 or equivalent crimp terminal.

### DC Output Connector P2: (Single Output)

- 6-32 screw down terminal mates with # 6 ring tongue terminal.

### DC Output Connector P2: (Multi Output)

- .156 inch friction lock header mates with Molex 09-50-3121 or equivalent crimp terminal housing with Molex 08-50-0189 or equivalent crimp terminal.

### Ground Connector Ⓧ:

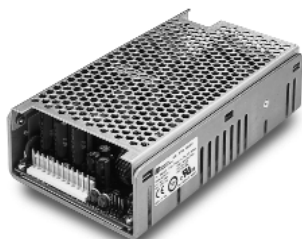
- Ground mates with .187 inch quick disconnect terminal.

### Option/Sense Connector P3: (Single Output)

- .100 inch friction lock header mates with Molex 22-01-2067 or equivalent crimp terminal housing with Molex type 6459 or equivalent crimp terminal.

### Option/Sense Connector P3: (Multi Output)

- .100 inch friction lock header mates with Molex 22-01-2047 or equivalent crimp terminal housing with Molex type 6459 or equivalent crimp terminal.



Optional cover increases height dimension from 1.75 to 1.92 inches.

## Electromagnetic Compatibility Specifications

|                                |               |   |
|--------------------------------|---------------|---|
| Electrostatic Discharge        | EN 61000-4-2  | 6kV Contact Discharge                       |
| Radiated Electromagnetic Field | EN 61000-4-3  | 3V/M, 26-1000 MHz                           |
| EFT/Bursts                     | EN 61000-4-4  | 2kV   |
| Surges                         | EN 61000-4-5  | 1kV Differential Mode<br>2 kV Common Mode   |
| Conducted Immunity             | EN 61000-4-6  | 3V,150KHz-80MHz                             |
| Voltage Dips                   | EN 61000-4-11 | 30% Reduction, 10mS<br>60% Reduction, 100mS |
| Voltage Interruptions          | EN 61000-4-11 | 95% Reduction, 5000mS                       |
| Radiated Emissions             | EN 55011      | Class B                                     |
|                                | EN 55022      | Class B                                     |
| Conducted Emissions            | EN 55011      | Class B                                     |
|                                | EN 55022      | Class B                                     |
| Harmonic Current Emissions     | EN 61000-3-2  |   |

## Applications Information

- Consult factory for alternate output configurations.
- Consult factory for positive, negative, or floating outputs.
- Specify optional overvoltage protection, remote on/off, power fail signal or cover when ordering.
- Each output can deliver its rated current but total output power must not exceed 100, 125 or 150 watts as determined by the cooling method.
- Rated 20 amps maximum when convection cooled only.
- Free air convection cooling, 100 watts maximum output power.
- Base plate cooled rating of 125 watts requires a one square foot .09" thick aluminum area attached to bottom four mounting holes.
- Forced air cooling rating of 150 watts requires an air speed of 300 linear feet per minute flowing past a point one inch above the main isolation transformer.
- This product is intended for use as a professionally installed component within medical and information technology equipment.
- A minimum load of 10% is required on output one to ensure proper regulation of remaining outputs.
- Remote sense terminals (Figure 1) may be used to compensate for cable losses up to 250mV (single output models only). The use of a twisted pair is recommended as well as a decoupling capacitor  $C_D$  (0.1-10 $\mu$ F) and a capacitor  $C_L$  of 100 $\mu$ F/Amp connected across the load side.
- Peak to peak output ripple and noise is measured directly at the output terminals of the power supply, without the use of the probe ground lead or retractable tip, 20 MHz bandwidth.
- This power supply has been safety approved and final tested using a DC dielectric strength test. Please consult factory before performing an AC dielectric strength test.
- The input circuit includes only one fuse in the "line" conductor. In consideration to paragraph 57.6 of UL 2601-1, when used in medical applications, a fuse should be added to the "neutral" conductor in the end product.
- Maximum screw penetration into chassis mounting holes is .250 inches.

### Maximum Output Power vs. Ambient Temperature

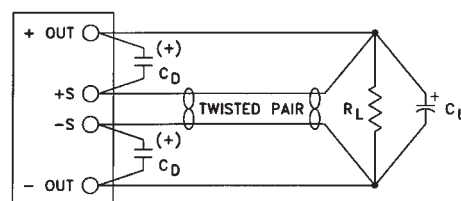
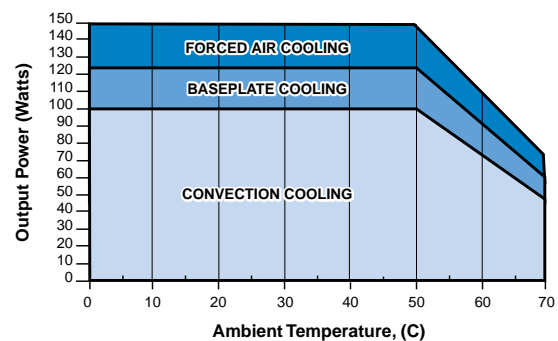


Figure 1 - Output sense connections