225 Watts

TRC Electronics, Inc.
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CE-225 SERIES

Features

- **Universal 85-264 V AC Input**
- **Harmonic Current Per EN 61000-3-2**
- **Compact 4.75"X8"X2.0" Size**
- **Standard U Shaped Chassis**
- **Optional Perforated Cover**
- **Optional Remote On/Off**
- **Optional Power Fail Signal**
- **Conducted Emissions Per EN 55022,1 1**
- **EMC Compliant to EN 61000-4-2, 3,4,5,6&1 1 and EN 60601-1-2**
- **2 Y ear Warranty**
- **EN 60950 ITE Certification**
- **EN 60601-1 Medical Cert.**

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

SAFETY SPECIFICATIONS

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

MODEL LISTING

MODEL	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4
CE-225-4001	+3.3/25A(1)	+5V/8A(1)	+12V/2A(1)	-12V/2A(1)
CE-225-4002	+5V/25A(1)	+3.3V/8A(1)	+12V/2A	-12V/2A
CE-225-4003	+5V/25A(1)	+3.3V/8A(1)	+15V/2A	-15V/2A
CE-225-4004	+5V/25A(1)	-5.2V/8A(1)	+12V/2A	-12V/2A
CE-225-4005	+5V/25A(1)	-5.2V/8A(1)	+15V/2A	-15V/2A
CE-225-4006	+5V/25A(1)	+12V/8A(1)	+12V/2A	-12V/2A
CE-225-4007	+5V/25A(1)	+12V/8A(1)	+15V/2A	-15V/2A
CE-225-4101	+5V/25A(1)	+24V/8A(1)	+12V/2A	-12V/2A
CE-225-4102	+5V/25A(1)	+24V/8A(1)	+15V/2A	-15V/2A
CE-225-3001	+5V/25A(1)	+12V/8A(1)		-12V/2A
CE-225-3002	+5V/25A(1)	+15V/8A(1)		-15V/2A
CE-225-2001	+12V/10A(1)	-12V/8A(1)		
CE-225-2002	+15V/10A(1)	-15V/8A(1)		
CE-225-2003	+5V/25A(1)	+12V/8A(1)		
CE-225-2004	+5.2V/30A	-9V/6A		
CE-225-2101	+5V/25A(1)	+24V/8A(1)		
CE-225-1001	3.3V/45A(6)			
CE-225-1002	5V/45A(6)			
CE-225-1003	12V/18.8A(1)			
CE-225-1004	15V/15A(1)			
CE-225-1005	24V/9.4A(1)			
CE-225-1006	28V/8A(1)			
CE-225-1007	48V/4.7A(1)			

Refer to " Applications Information " on page 21.

OUTPUT SPECIFICATIONS

Total Output Power	150W , Convection Cooled 225W, 300 LFM Forced Air
Output Voltage Centering	Output 1: ±0.25% Output 2: ±0.25% (X0XX) Output 2: ±5.0% (X1XX) Output 3: ±2.0% Output 4: ±2.0% (All outputs at 50% rated load)
Source Regulation	Outputs 1-4: 0.5%
Load Regulation	Output 1: 0.5% (10-100% Load Change) Output 2: 0.5% (X0XX Models,0-100%) Output 2: 5.0% (X1XX Models,10-100%) Output 3-4: 2.0% (0-100% Load Change)
Cross Regulation	Output 2: 0.2% (X0XX) Output 2: 5.0% (X1XX) Outputs 3-4: 2.0% (Output 1 load varied 50-100%)
Output Voltage Adjust Span Resolution	Outputs 1-2: 95-105% (X0XX Models) Output 1: 95-105% (X1XX Models) Output 1: 85-105% (1001 & 4001) Output 2: 85-105% (4002 & 4003) 1%
Output Noise Source Freq. Switching Freq. Total (20MHz)	 Outputs 1-4: 0.5% Outputs 1-4: 1% Outputs 1-4: 1%
Turn On Overshoot	None
Transient Response Voltage Deviation Recovery Time Load Change	Outputs 1-4 5% 500 µS 50% To 100%
Output Overvoltage Protection (Optional)	Output 1: 110% to 150%, Shuts down all outputs Cycle input to restart
Output Overpower Protection	250 Watts Min.,Output 1 Outputs cycle on/off, auto recovery
Output Overcurrent Protection	110% Min., Outputs 2,3 & 4
Hold Up Time	20 mS Min., 225W Output, 120V Input
Start Up Time	3 Seconds

INPUT SPECIFICATIONS

Source Voltage	85 - 264 Volts AC
Frequency Range	47-63 Hz
Source Current True RMS Peak Inrush Peak Repetitive Harmonic Distortion	 4.25A at 85V Input 30A 6.0A at 85V Input 0.05
Efficiency	.68 -.80 (varies by model)
Power Factor	0.92 (225 Watts, 230V)

ENVIRONMENTAL SPECIFICATIONS

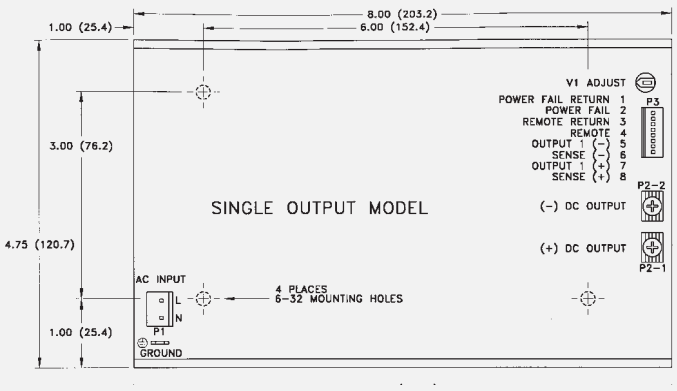
Ambient Operating Temperature Range	0° C to +70° C Derating: See Power Rating Chart
Ambient Storage Temperature Range	-40° C To +85° C
Temperature Coefficient	Outputs 1-4: 0.02%/°C
Vibration	MIL-STD-810E, Method 514.4 Category 1
Shock	Transit Drop per MIL-STD-810E Method 516.4 Procedure IV

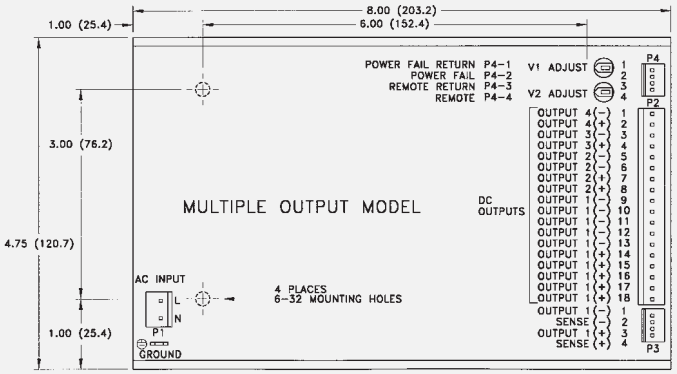
GENERAL SPECIFICATIONS

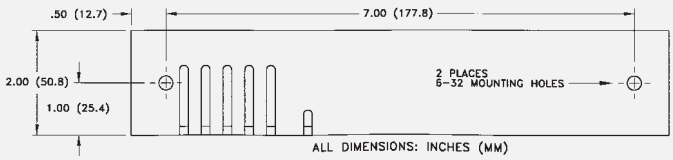
Dielectric Strength	5656 VDC, Primary to Secondary, 1 Sec. 2121 VDC, Primary to Ground, 1 Sec. 707 VDC, Secondary to Ground, 1 Sec.
Leakage Current	<300 µA Earth Leakage Current <100 µA Patient Leakage Current
Remote On/Off (Optional)	Contact closure shuts off all outputs
Power Fail Signal (Optional)	Logic low with input power failure 10mS minimum prior to output one dropping 1%
Remote Sense	250mV compensation of output cable losses
Mean-Time Between Failures	100,000 Hours min., MIL-HDBK-217F, 25° C, GB
Weight	3.00 Lbs.

Electromagnetic compatibility specifications located on page 21.

CE-225 SERIES MECHANICAL SPECIFICATIONS







ACInput 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 09-50-3181 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 22-01-2087 or equivalent crimp terminal housing with Molex type 6459 or equivalent crimp terminal.

Option/Sense Connector P3/P4: (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 2.00 to 2.15 inches.

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ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS

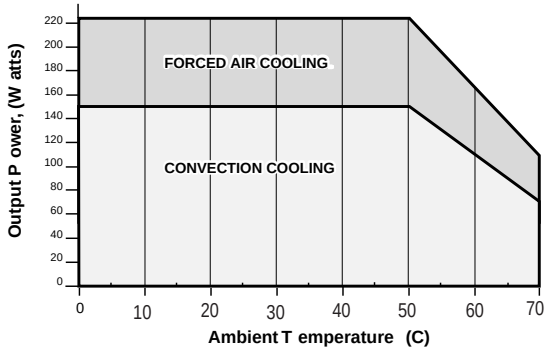
Electrostatic Discharge	EN 61000-4-2	6kV Contact Discharge
Radiated Electromagnetic Field	EN 61000-4-3	3V/M, 26-1000MHz
EFT/Bursts	EN 61000-4-4	2kV
Surges	EN 61000-4-5	1 kV Differential Mode 2 kV Common Mode
Conducted Immunity	EN 61000-4-6	3V,150KHz-80MHz
ltage Dips	EN 61000-4-11	30% Reduction, 10mS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

Specifications are typical across product line and may vary by model.

APPLICATIONS INFORMATION

1. Derated 20% when convection cooled
2. Consult factory for alternate output configurations.
3. Consult factory for positive, negative, or floating outputs.
4. Specify optional overvoltage protection, remote on/off, power fail signal or cover when ordering.
5. Each output can deliver its rated current but total output power must not exceed 150 or 225 watts as determined by the cooling method.
6. Rated 30 amps maximum when convection cooled only.
7. This product is intended for use as a professionally installed component within the medical and information technology equipment.
8. Free air convection cooling, 150 watts maximum output power.
9. Forced air cooling rating of 225 watts requires an air speed of 300 linear feet per minute flowing past a point one inch above the main isolation transformer.
10. A minimum load of 10% is required on output one to ensure proper regulation of remaining outputs.
11. 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 (0.1-10µF) and a capacitor C_L of 100µF/Amp connected across the load side.
12. 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.
13. This power supply has been safety approved and final tested using a DC dielectric strength test. Please consult factory before performing AC dielectric strength test.
14. 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 Output P ower vs. Ambient Temperature



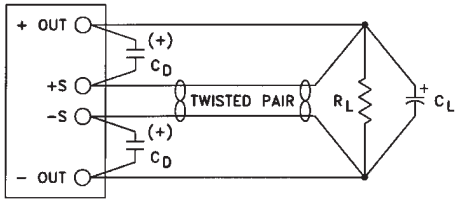


Figure 1 - Output sense connections