225 WATTS

SINGLE/MULTI OUTPUT AC-DC

FEATURES:

- **Compact 4.75 x 8.0" x 2.0" Size**
- **2 Year Warranty**
- **Universal 85-264V Input**
- **1-4 Tightly-Regulated Outputs**
- **High Efficiency**
- **0-70°C Operating Temperature**
- **RoHS Compliant**
- **IEC 60601-1 3rd ed. Medical Cert.**
- **IEC 62368-1 2nd ed. Certification**
- **IEC 60601-1-2 4th ed. EMC**
- **Class B Emissions per EN55011/32**
- **Optional Remote Inhibit/Enable**
- **Optional Power Fail Warning**
- **Optional Perforated Cover**

CHASSIS/COVER

OPEN CHASSIS

SAFETY SPECIFICATIONS

c UL us	Underwriters Laboratories File E137708/E140259	UL 62368-1:2014, 2nd Edition CAN/CSA-C22.2 No. 62368-1-14, 2nd Edition AAMI/ANSI ES60601-1:2005/(R) 2012 CAN/CSA-C22.2 No. 60601-1:2014
IECEE CB SCHEME	CB Reports/Certificates (including all National and Group Deviations)	IEC 62368-1:2014, 2nd Edition IEC 60601-1:2005/A1:2012
TUV SUD	TUV SUD America	EN 62368-1:2014, 2nd Edition EN 60601-1:2006/A1:2013
CE	Low Voltage Directive RoHS Directive (Recast)	(2014/35/EU of February 2014) (2015/863/EU of March 2015)
UK CA	Electrical Equipment (Safety) Regulations 2016 SI No. 1101 Restriction of the Use of Certain Hazardous Substances in EEE Regulations 2012 SI No. 3032 + 2019 SI No.492	

MODEL LISTING

MODEL NO.	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4
CE-225-4001	+3.3V/25A(16)	+5V/8A(16)	+12V/2A	-12V/2A
CE-225-4002	+5V/25A(16)	+3.3V/8A(16)	+12V/2A	-12V/2A
CE-225-4003	+5V/25A(16)	+3.3V/8A(16)	+15V/2A	-15V/2A
CE-225-4004	+5V/25A(16)	-5.2V/8A(16)	+12V/2A	-12V/2A
CE-225-4005	+5V/25A(16)	-5.2V/8A(16)	+15V/2A	-15V/2A
CE-225-4006	+5V/25A(16)	+12V/8A(16)	+12V/2A	-12V/2A
CE-225-4007	+5V/25A(16)	+12V/8A(16)	+15V/2A	-15V/2A
CE-225-4008	+5V/25A(16)	+12V/8A(16)	+9V/2A	-9V/2A
CE-225-4101	+5V/25A(16)	+24V/8A(16)	+12V/2A	-12V/2A
CE-225-4102	+5V/25A(16)	+24V/8A(16)	+15V/2A	-15V/2A
CE-225-4104	+24V/6A(16)	+24V/3A(16)	+12V/2A	5V/2A
CE-225-3001	+5V/25A(16)	+12V/8A(16)		-12V/2A
CE-225-3002	+5V/25A(16)	+15V/8A(16)		-15V/2A
CE-225-2001	+12V/10A(16)	-12V/8A(16)		
CE-225-2002	+15V/10A(16)	-15V/8A(16)		
CE-225-2003	+5V/25A(16)	+12V/8A(16)		
CE-225-2004	+5.2V/30A(16)	-9V/6A		
CE-225-2005	+3.3V/25A(16)	+12V/8A(16)		
CE-225-2101	+5V/25A(16)	+24V/8A(16)		
CE-225-1001	3.3V/45A(17)			
CE-225-1002	5V/45A(17)			
CE-225-1003	12V/18.8A			
CE-225-1004	15V/15A			
CE-225-1005	24V/9.4A			
CE-225-1006	28V/8A			
CE-225-1007	48V/4.7A			
CE-225-1008	48V/4.7A			
CE-225-1009	39V/5.8A			

ORDERING INFORMATION

Consult factory for alternate output configurations.
Consult factory for positive, negative or floating outputs.
Please specify the following optional features when ordering:

CO – Cover
PF – Power Fail
TS – Terminal Strip
OVP – Overvoltage Protection
I/O – Isolated Outputs
RE – Remote Inhibit

CE-225

OUTPUT SPECIFICATIONS

Total Output Power(1)	150W	Convection Cooled(18)
(See Derating Chart)	225W	300LFM Forced-Air Cooled(15)
Output Voltage Centering	Output 1:	± 0.25% (All outputs at 50% load)
	Output 2:	± 0.25% (X0XX), ± 5.0% (X1XX)
	Output 3:	± 2.0%
	Output 4:	± 2.0%
Output Voltage Adjust Range	Outputs 1-2:	95 - 105% (X0XX)
	Output 1:	95 - 105% (X1XX)
	Output 1:	85 - 105% (1001, 4001)
	Output 2:	85 - 105% (4002, 4003)
Load Regulation	Output 1:	0.5% (10-100% load change)
	Output 2:	
	(XOXX)	0.5% (0-100% load change)
	(XIXX)	5.0% (10-100% load change)
	Output 3:	2.0% (0-100% load change)
	Output 4:	2.0% (0-100% load change)
Source Regulation	Outputs 1 – 4:	0.5%
Cross Regulation	Outputs 2:	0.2% (X0XX), 0.5% (X1XX)
	Output 3:	2.0%
	Output 4:	2.0%
Output Noise	Outputs 1 - 4:	1.0%
Turn on Overshoot	None	
Transient Response	Outputs 1 – 4	
Voltage Deviation	5.0%	
Recovery Time	500µS	
Load Change	50% to 100%	
Output Overvoltage Protection (Optional)	Output 1:	110% to 150%
	Shuts down all outputs	
	Cycle input to restart	
Output Overpower Protection	250 W Min., Output 1 and 2	
	Outputs, cycle on/off, auto recovery	
Output Overcurrent Protection	110% Min., Outputs 3 & 4	
Hold Up Time	20ms min., 225W Output, 120V Input	
Start Up Time	3 Seconds	

INPUT SPECIFICATIONS

Protection Class	I
Source Voltage	85 – 264 Volts AC
Frequency Range	47 – 63 Hz
Source Current	
True RMS	4.25A at 85V Input
Peak Inrush	30A
Peak Repetitive	6.0A at 85V Input
Harmonic Distortion	0.05
Efficiency	0.68-0.80 (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 Temp. Range	- 40°C to + 85°C
Temperature Coefficient	Outputs 1 – 4: 0.02%/°C
Altitude	3,000m ASL – Operating 12,192m ASL – Non-Operating

GENERAL SPECIFICATIONS

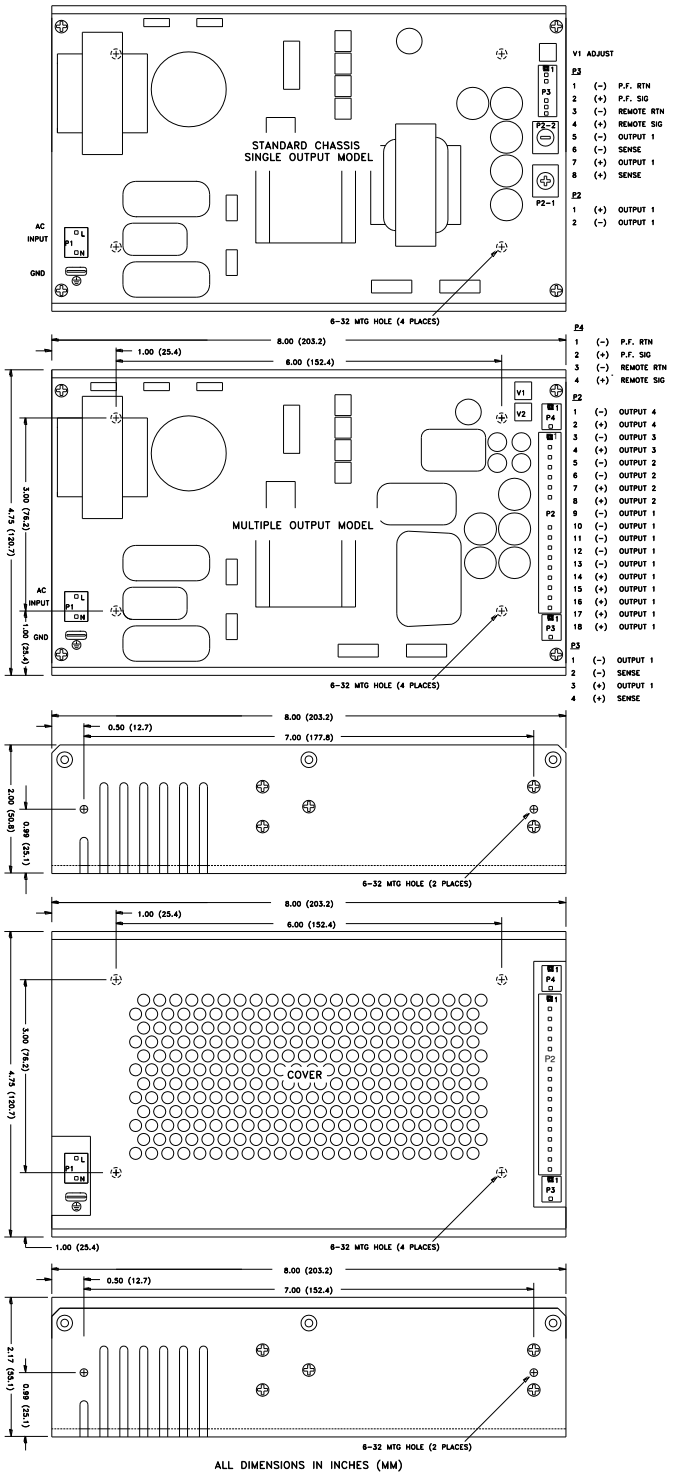
Means of Protection	
Primary to Secondary	2MOPP (Means of Patient Protection)
Primary to Ground	1MOPP (Means of Patient Protection)
Secondary to Ground	Operational Insulation(Consult factory for 1MOPP)
Dielectric Strength(8, 9)	
Reinforced Insulation	5656 VDC, Primary to Secondary
Basic Insulation	2121 VDC, Primary to Ground
Operational Insulation	707 VDC, Secondary to Ground
Leakage Current	
Earth Leakage	<300µA NC, <1000µA SFC
Touch Current	<100µA NC, <500µA SFC
Power Fail Signal (optional)(14)	Logic low with input power failure 10ms minimum prior to Output 1 dropping 1%
Remote Inhibit (optional)	Contact closure inhibits all outputs
Remote Sense(10)	250mV compensation of output cable losses
Mean-Time Between Failures	100,000 Hours min., MIL-HDBK-217F, 25° C, GB
Weight	3.00 Lbs.

All specifications are maximum at 25°C/225W unless otherwise stated, may vary by model and are subject to change without notice.

EMC SPECIFICATIONS (IEC 60601-1-2:2014, 4TH ed./IEC 61000-6-2:2005)

Electrostatic Discharge	EN 61000-4-2	±8KV contact / ±15KV air discharge	A
Radiated Electromagnetic Field	EN 61000-4-3	80MHz-2.7GHz, 10V/m, 80% AM	A
Electrical Fast Transients/Bursts	EN 61000-4-4	±2 KV, 5KHz/100KHz	A
Surge Immunity	EN 61000-4-5	±2 KV line to earth / ±1 KV line to line	A
Conducted Immunity	EN 61000-4-6	0.15 to 80MHz, 10V, 80% AM	A
Magnetic Field Immunity	EN 61000-4-8	30A/m, 60 Hz.	A
Voltage Dips	EN 61000-4-11	0% U_T, 0.5 cycles, 0-315°	100/240V A/A
		0% U_T, 1 cycles, 0°	100/240V A/A
		40% U_T, 10/12 cycles, 0°	100/240V B/A
		70% U_T, 25/30 cycles, 0°	100/240V B/A
Voltage Interruptions	EN 61000-4-11	0% U_T, 300 cycles, 0°	100/240V B/B
Radiated Emissions	EN 55011/32	Class B	
Conducted Emissions	EN 55011/32	Class B	
Harmonic Current Emissions	EN 61000-3-2	Class A	
Voltage Fluctuations/Flicker	EN 61000-3-3	Compliant	

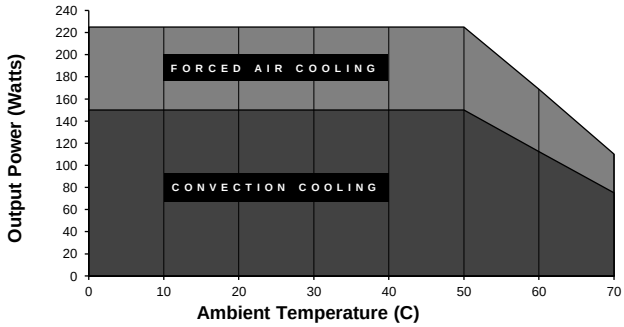
CE-225 SERIES MECHANICAL SPECIFICATIONS



APPLICATIONS INFORMATION

1. Each output can deliver its rated current but Total Output Power must not exceed 150 or 225W, as determined by the cooling method.
2. Generally, adequate cooling is provided when semiconductor case temperatures do not exceed 70°C rise and transformer temperature does not exceed 60°C rise at any specified ambient temperature.
3. Sufficient area must be provided around power supply to allow natural movement of air to develop in convection-cooled applications.
4. This product is intended for use as a professionally-installed component within information technology, industrial, and medical equipment and is not intended for stand-alone operation.
5. A minimum load of 10% is required on Output 1 to ensure proper regulation of remaining outputs.
6. This product includes only one fuse in the input circuit. In consideration of Clause 8.11.5 of IEC 60601-1:2005, a second fuse may be required in neutral conductor of the end product.
7. 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 (tip-and-barrel method), 20 MHz bandwidth.
8. This product was type-tested and safety-certified using the dielectric strength test voltages listed in Table 6 of IEC 60601-1:2005. In consideration of Clause 8.8.3, care must be taken to insure that the voltage applied to a reinforced insulation does not overstress different types and levels of insulation. Primary and secondary-to-ground capacitors may need to be disconnected prior to performing a dielectric strength test on the power supply or the end product. It is highly recommended that the DC test voltages listed in DVB.1, Annex DVB of UL 60601-1 1st Edition are not exceeded during a production-line dielectric strength test of the assembled end product. Please consult factory for further information.
9. 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.
10. Remote-Sense terminals may be used to compensate for cable losses up to 250mV. The use of a twisted pair, decoupling capacitors and an appropriately-rated low-impedance capacitor connected across the load will increase noise immunity.
11. Maximum screw penetration into chassis mounting holes is 0.250 inches.
12. To comply with emissions specifications, all four mounting hole pads must be electrically connected to a common metal chassis. Chassis/Cover option is recommended. Refer to Operating Instructions for additional information.
13. Common RF shielding precautions may need to be taken to assure emissions compliance. Refer to Operating Instructions for additional information.
14. Power Fail (AC-Good) feature provides a logic-low warning signal from an open collector transistor output 10ms prior to loss of output from AC failure, 5V/10mA.
15. Forced-Air cooling rating of 225W requires an air speed of 300LFM flowing past a point one inch above the main isolation transformer.
16. Derated 20% when convection cooled.
17. Rated 30A maximum when convection cooled only.
18. Free-Air convection cooling, 150W maximum output power.

MAXIMUM OUTPUT POWER vs. AMBIENT TEMPERATURE



CONNECTOR SPECIFICATIONS

	AC Input	0.156 friction lock header mates with Molex 09-50-3031 or equivalent crimp terminal housing with Molex 08-50-0189 or equivalent crimp terminal.
P2	DC Output (Single)	6-32 screw down terminal mates with #6 ring tongue terminal.
P2	DC Output (Multiple)	0.156 friction lock header mates with Molex 09-50-3181 or equivalent crimp terminal housing with Molex 08-50-0189 or equivalent crimp terminal.
G	Ground	0.187 quick disconnect terminal.
P3	Option/Sense (Single)	0.100 friction lock header mates with Molex 22-01-2087or equivalent crimp terminal housing with Molex 6459 or equivalent crimp terminal.
P3/P4	Option/Sense (Multiple)	0.100 friction lock header mates with Molex 22-01-2047or equivalent crimp terminal housing with Molex 6459 or equivalent crimp terminal.

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