FEATURES:

- **Compact 6.0" x 3.2" x 1.6" Size**
- **3 Year Warranty**
- **Universal 85-264V Input**
- **Dual, Triple or Quad Outputs**
- **90% Peak Efficiency**
- **86% Average Efficiency**
- **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**
- **-20 to +70°C Operating Temperature**
- **RoHS Compliant**

SAFETY SPECIFICATIONS

c UL us	Underwriters Laboratories File E137708	UL 62368-1:2014, 2nd Edition CAN/CSA-C22.2 No. 62368-1-14
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	OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4
GRN-200-4002-FN	+5V/30A	+3.3V/8A	+12V/2A	-12V/2A
GRN-200-4003-FN	+5V/30A	+24V/3A	+12V/2A	-12V/2A
GRN-200-4004-FN	+5V/30A	+24V/3A	+15V/2A	-15V/2A
GRN-200-4005-FN	+24V/6A	+5V/8A	+12V/2A	-12V/2A
GRN-200-3001-FN	+5V/30A	+12V/6A		-12V/2A
GRN-200-3002-FN	+5V/30A	+15V/5A		-15V/2A
GRN-200-3003-FN	+5V/30A		+24V/1.5A	-24V/1.5A
GRN-200-2001-FN	+5V/30A	+24V/3A		
GRN-200-2002-FN	+5V/30A	+12V/6A		
GRN-200-2003-FN	+12V/12A	-12V/6A		
GRN-200-2004-FN	+15V/10A	-15V/5A		

ORDERING INFORMATION

Consult factory for alternate output configurations.
Please specify the following optional features when ordering:
IO - Isolated Outputs
BF - Type BF

All specifications are maximum at 25°C, 200W unless otherwise stated, may vary by model and are subject to change without notice.

Output Power at 50°C	200W	
Voltage Centering(10)	Output 1:	± 0.5% (all outputs at 50% load)
	Outputs 2-4:	± 5.0% (all outputs at 50% load)
Voltage Adjust Range	Output 1:	95-105%
Load Regulation	Output 1:	± 0.5% (0-100% load change)
	Outputs 2:	± 6.0% (4002 20-100% load change)
	Outputs 2-4:	± 5.0% (10-100% load change)
Source Regulation	Outputs 1-4:	0.5%
Cross Regulation	Outputs 2-4:	5.0%
Ripple & Noise(4)	Outputs 1-4:	1.0% or 100mV p-p, 20MHz BW
Turn on Overshoot	None	
Transient Response	Output recovers to within 1% of initial set point due to a 50-100-50% step load change, 500µs maximum, 4% maximum deviation.	
Overvoltage Protection	Latching, between 110% and 150% of rated output voltage.	
Overpower Protection	110-150% rated P_{OUT}, cycle on/off, auto recovery	
Hold Up Time	16ms minimum, full power	
Start Up Time	<1 sec., 115/230V Input	
Output Rise Time	25ms typical	
Minimum Load (3)	No minimum load required	

INPUT SPECIFICATIONS

Protection Class	I
Source Voltage	85 – 264 Volts AC (see derating chart)
Frequency Range	47 – 63 Hz
Input Protection	Dual internal 5A time delay fuses, 1500A breaking capacity
Peak Inrush Current	40A max
Peak Efficiency	Up to 90%
Average Efficiency	86% (Avg. of 25%, 50%, 75%, 100% rated load)

ENVIRONMENTAL SPECIFICATIONS

Ambient Operating Temp. Range	-20 to +70°C, Derating (see derating Chart)
Ambient Storage Temp. Range	-40 to +85°C
Operating Relative Humidity Range	20-90% non-condensing
Altitude	3,000m ASL Operating
Temperature Coefficient	0.02%/°C
Vibration (MIL-STD-810G)	2.5G swept sine, 10-2000Hz, 1octave/min, 3 axis, 1 hour each
Shock (MIL-STD-810G)	20G, 11ms, 3 axis.

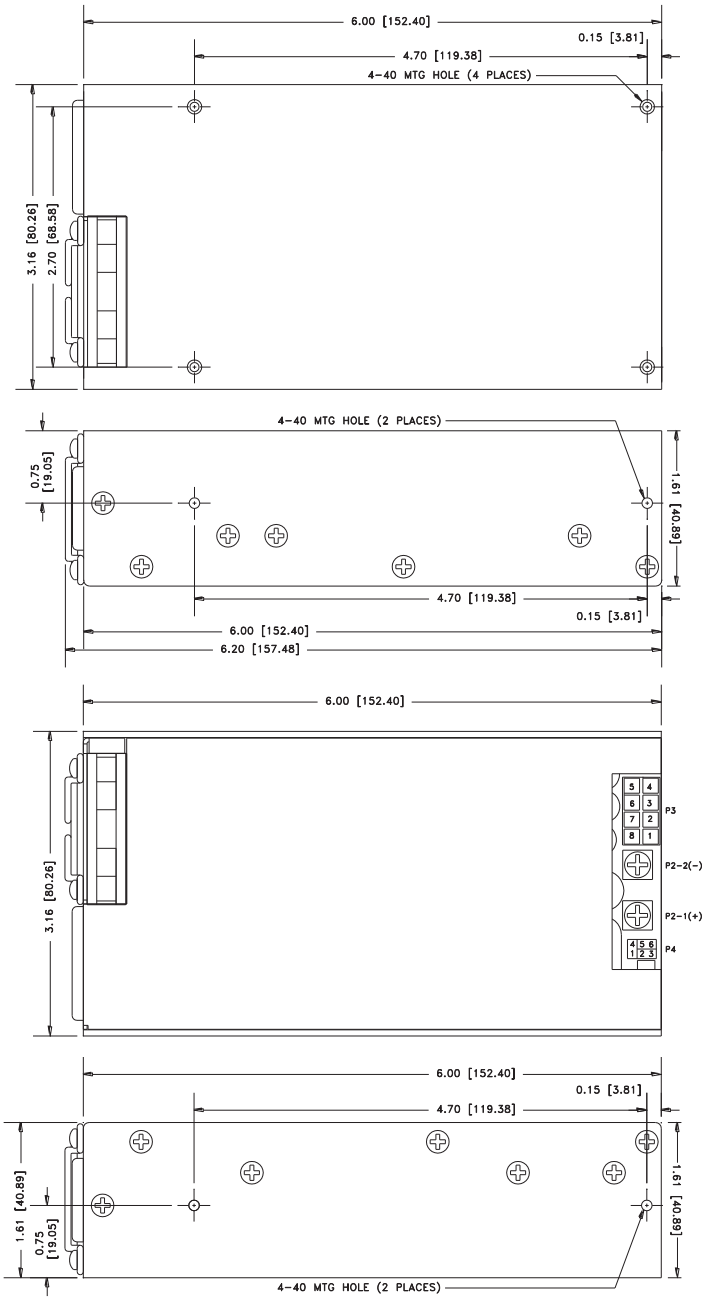
GENERAL SPECIFICATIONS

Means of Protection	
Primary to Secondary	2MOPP (Means of Patient Protection)
Primary to Ground	1MOPP (Means of Patient Protection)
Secondary to Ground	Operational Insulation (1MOPP w/ Option BF)
Dielectric Strength(5, 6)	
Reinforced Insulation	5656 VDC (4000VAC)
Basic Insulation	2121 VDC (1500VAC)
Operational Insulation	707 VDC (500VAC)/2121VDC(1500VAC) w/ Option BF
Leakage Current	
Earth Leakage	<300µA NC, <1000µA SFC
Touch Current	<100µA NC, <500µA SFC
Patient Leakage Current	<100µA NC, <500µA SFC w/Option BF
Switching Frequency	PWM:65 KHz/PFC:Variable
Remote Sense(7)	250mV compensation of output cable losses (output 1)
Mean-Time Between Failures	>200,000 HOURS, MIL-HDBK-217F, 25° C, GB
Weight	1.39 lb.

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

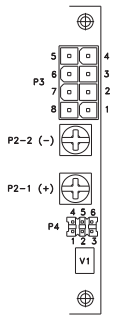
Electrostatic Discharge	EN 61000-4-2	±8KV contact / ±15KV air discharge	A
Radiated Electromagnetic Field	EN 61000-4-3	80MHz-2.7GHz, 10V/m, 80% AM	A
Electrical Fast Transients/Bursts	EN 61000-4-4	±2 KV, 5KHz/100KHz	A
Surge Immunity	EN 61000-4-5	±2 KV line to earth / ±1 KV line to line	A
Conducted Immunity	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	

GRN-200-FN SERIES MECHANICAL SPECIFICATIONS



CONNECTOR SPECIFICATIONS

AC INLET: IEC 320 C14 mates with AC power cable C13 or equivalent AC power cable.



P3: 5566 Mini-Fit Jr. header mates with 5557 Mini-Fit Jr. or equivalent crimp housing with 5556 Mini-Fit or equivalent crimp terminal.

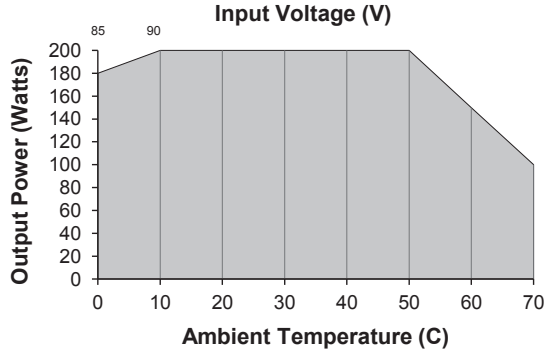
P2: 6-32 screw down terminal mates with #6 ring tongue terminal. (10 in-lb Max)

P4: 0.100 friction lock header mates with Molex 22-55-2041 or equivalent crimp terminal housing with Molex 71851 or equivalent crimp terminal.

APPLICATIONS INFORMATION

1. Each output can deliver its rated current but Total Output Power must not exceed 200W.
2. 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.
3. Minimum load is not required for reliable operation; however, a 10% load may be required on Output 1 when loading Outputs 2, 3 or 4.
4. 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), 20MHz bandwidth.
5. 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 ensure 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.
6. 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.
7. Remote-Sense terminals may be used to compensate for cable losses up to 400mV, depending on model. The use of a twisted pair, decoupling capacitors and an appropriately-rated low-impedance capacitor connected across the load will increase noise immunity.
8. Maximum screw penetration into bottom chassis mounting holes is 0.100 inches. Maximum screw penetration into side chassis mounting holes is 0.188 inches.
9. Common RF shielding precautions may need to be taken to assure emissions compliance. Refer to Operating Instructions for additional information.
10. A 3% increase above nominal voltage of Output 1 is required to meet ±5% centering of Output 2 on 4002 only.

MAX P_{OUT} vs. AMBIENT TEMPERATURE/INPUT VOLTAGE



- Derate Total Output Power linearly from 100% load at 50ºC to 50% load at 70ºC.
- Derate Total Output Power linearly from 100% load at 90V_{IN} to 90% load at 85V_{IN}.

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