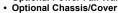
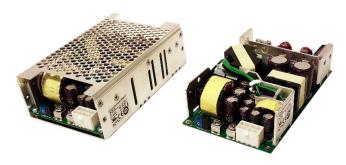
MULTI OUTPUT AC-DC

FEATURES:

- Compact 3.0" x 5.0" x 1.3" Size
- 3 Year Warranty
- Universal 85-264V Input
- Dual, Triple or Quad Outputs
- 90% Peak Efficiency
- 86% Average Efficiency
- <300mW No Load Input Power
- RoHS Compliant

- IEC 60601-1 3rd ed. Medical Cert.
- IEC 60950-1 2nd ed. ITE Certification
- 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
- · Optional Power Fail Warning





CHASSIS/COVER

OPEN FRAME

SAFETY SPECIFICATIONS



CTUs File E137708/E140259 Underwriters Laboratories

UL 62368-1:2014, 2nd Edition CAN/CSA-C22.2 No. 62368-1-14, 2nd Edition AAMI/ANSI ES60601-1:2005/(R) 2012(R)2021 CAN/CSA-C22.2 No. 60601-1:2014:2022



CB Reports/Certificates (including all IEC 62368-1:2014, 2nd Edition National and Group Deviations) IEC 60601-1:2005/A1:2012/A2:2020



EN 62368-1:2014, 2nd Edition **TUV SUD America** EN 60601-1:2006/A1:2013/A2:2021



Low Voltage Directive (2014/35/EU of February 2014) RoHS Directive (Recast) (2015/863/EU of March 2015)



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-200-4001	+3.3V/30A	+5V/8A	+12V/2A	-12V/2A	
GRN-200-4002	+5V/30A	+3.3V/8A	+12V/2A	-12V/2A	
GRN-200-4003	+5V/30A	+24V/3A	+12V/2A	-12V/2A	
GRN-200-4004	+5V/30A	+24V/3A	+15V/2A	-15V/2A	
GRN-200-4005	+24V/6A	+5V/8A	+12V/2A	-12V/2A	
GRN-200-3001	+5V/30A	+12V/6A		-12V/2A	
GRN-200-3002	+5V/30A	+15V/5A		-15V/2A	
GRN-200-3003	+5V/30A		+24V/1.5A	-24V/1.5A	
GRN-200-2001	+5V/30A	+24V/3A			
GRN-200-2002	+5V/30A	+12V/6A			
GRN-200-2003	+12V/12A	-12V/6A			
GRN-200-2004	+15V/10A	-15V/5A			

ORDERING INFORMATION

Consult factory for alternate output configurations.

Please specify the following optional features when ordering:

CH - Chassis PF - Power Fail Warning CO - Cover IO - Isolated Outputs BF - Type BF WT - Low Temperature Turn On

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

(GRN-	200		
		FICATIONS		
Output Power at 50°C ₍₁₎	135W	Convection Cooled, Open Frame		
(See Derating Chart)	200W	300LFM Forced Air, Open Frame(14)		
Voltage Centering(15)	Output 1:	± 0.5% (all outputs at 50% load)		
Voltago Contolling(15)	Output 2:	± 6.0% (4005, all outputs at 50% load)		
	Outputs 2-4:	\pm 5.0% (all outputs at 50% load)		
Voltage Adjust Range	Output 1:	95-105%		
Load Regulation	Output 1:	± 0.5% (0-100% load change)		
Lodd Negalation	Output 2:	±6% (4001,4002,4005 20-100%		
	Output 2.	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 ₍₆₎	Outputs 1-4:	1.0% or 100mV p-p, 20MHz BW		
Turn on Overshoot	None	р р, =		
Transient Response		s to within 1% of initial set point due to a		
u.i.o.o.iii i toopoiloo		50-100-50% step load change, 500µs maximum, 4% dev.		
Overvoltage Protection		en 110% and 150% of rated output voltage.		
Overpower Protection		I P _{OUT} , cycle on/off, auto recovery		
Hold Up Time	16ms minimum			
Start Up Time	<1 sec., 115/23			
Output Rise Time	25ms typical	•		
Minimum Load ₍₅₎	No minimum loa	ad required		
INPU	T SPECIF	CATIONS		
Protection Class	ı			
Source Voltage	85 – 264 Volts /	AC (see derating chart)		
Frequency Range	47 – 63 Hz	3 · · · · ·		
Input Protection	Dual internal 5A	time delay fuses, 1500A breaking capacity		
Peak Inrush Current	40A max	, , ,		
Peak Efficiency	Up to 90%			
Average Efficiency		5%, 50%, 75%, 100% rated load)		
No Load Input Power	<300mW, 115/2			
•	<500mW, 115/2	230 V _{IN} , no load (PF Option)		
ENVIRONM		PECIFICATIONS		
Ambient Operating Temp. Range	-20°C to + 70°C	C, Derating (see derating Chart)		
Ambient Storage Temp. Range	- 40°C to + 85°	C		
Operating Relative Humidity Range	20-90% non-co	ndensing		
Altitude	5,000m ASL - Operating / 12,192m ASL - Non-Operating			
Temperature Coefficient	0.02%/°C			
Vibration (MIL-STD-810G)	2.5G swept sine	, 10-2000Hz, 1octave/min, 3 axis, 1 hour each		

ENVIRONMENTAL SPECIFICATIONS				
Ambient Operating Temp. Range	-20°C to + 70°C, Derating (see derating Chart)			
Ambient Storage Temp. Range	- 40°C to + 85°C			
Operating Relative Humidity Range	20-90% non-condensing			
Altitude	5,000m ASL – Operating / 12,192m ASL – Non-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			
CENERAL EDECIFICATIONS				

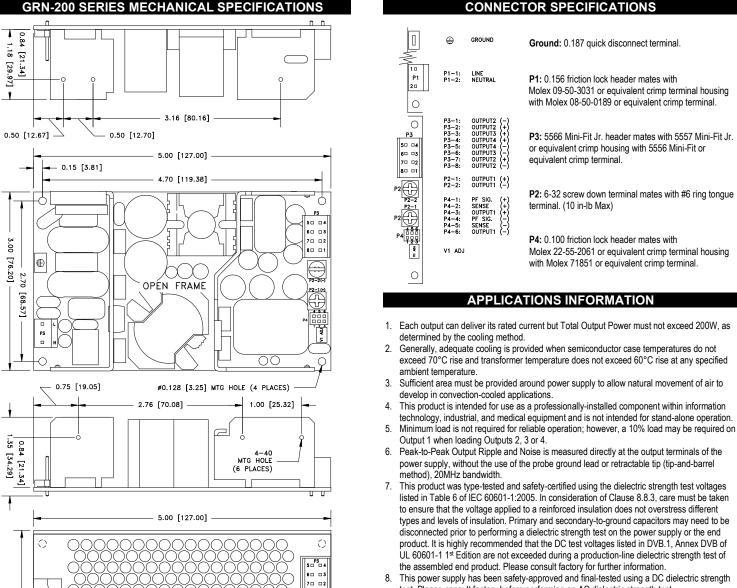
GENERAL SPECIFICATIONS				
Means of Protection				
Primary to Secondary	2MOPP (Means of Patient Protection)			
Primary to Ground	1MOPP (Means of Patient Protection)			
Secondary to Ground	Operational Insulation (1MOPP w/ Option BF)			
Dielectric Strength(7, 8)				
Reinforced Insulation	5656 VDC (4000VAC)			
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			
Power Fail Signal	Logic low with input power failure 9ms prior to loss of			
	Output 1 ₍₁₃₎			
Switching Frequency	PWM:65 KHz/PFC:Variable			
Remote Sense(9)	250mV compensation of output cable losses (output 1)			
Mean-Time Between Failures	>200,000 HOURS, MIL-HDBK-217F, 25° C, GB			
Weight	1.0 lb. Open frame / 1.16 lb. Chassis and cover			
EMC SPECIFICATION	NS (IEC 60601-1-2:2014, 4 TH ed./IEC 61000-6-2:2005)			

Radiated Electromagnetic Field	EN 61000-4-3	80MHz-2.7GHz, 10V/m, 80% AM	Α
Electrical Fast Transients/Bursts	EN 61000-4-4	±2 KV, 5KHz/100KHz	Α
Surge Immunity	EN 61000-4-5	±2 KV line to earth / ±1 KV line to lin	ne A
Conducted Immunity	EN 61000-4-6	0.15 to 80MHz, 10V, 80% AM	Α
Magnetic Field Immunity	EN 61000-4-8	30A/m, 60 Hz.	Α
Voltage Dips	EN 61000-4-11	0% U _T , 0.5 cycles, 0-315° 100/240	V A/A
		0% U _T , 1 cycles, 0° 100/240	V A/A
		40% U _T , 10/12 cycles, 0° 100/240	V B/A
		70% U _T , 25/30 cycles, 0° 100/240	V B/A
Voltage Interruptions	EN 61000-4-11	0% U _T , 300 cycles, 0° 100/240	V 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	

EN 61000-4-2

±8KV contact / ±15KV air discharge

Electrostatic Discharge



80 01

P2-2(-)

4-40 MTG HOLE

(4 PLACES)

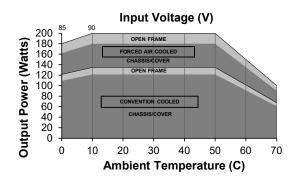
[38.10]

.50

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

- test. Please consult factory before performing an AC dielectric strength test. 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 appropriatelyrated low-impedance capacitor connected across the load will increase noise immunity.
- 10. Maximum screw penetration into bottom chassis mounting holes is 0.100 inches. Maximum screw penetration into side chassis mounting holes is 0.188 inches
- 11. 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.
- 12. Common RF shielding precautions may need to be taken to assure emissions compliance. Refer to Operating Instructions for additional information.
- 13. Power Fail (AC-Good) feature provides a logic-low warning signal from an open collector transistor output 9-15ms prior to loss of output from AC failure.
- 14. 300LFM minimum of airflow must be maintained one inch above all points of top-side components or cover when forced-air cooling is required.
- 15. A 3% increase above nominal voltage of Output 1 is required to meet ±5% centering of Output 2 on 4002 only

MAX Pout vs. AMBIENT TEMPERATURE/INPUT VOLTAGE



INTEGRATED

⊕ 3.14 [79.86]

1.65

[41.91]

0.75

0.15 [3.81]

- Derate Output 1 current rating 33% when convection cooled

- Derate Outputs 2-4 current rating 25% when convection cooled

CHASSIS/COVER

4.70 [119.38]

<u>A-A-</u>

- Derate Total Output Power linearly from 100% load at 50°C to 50% load at 70°C.

- Derate Total Output Power linearly from 100% load at 90VIN to 90% load at 85VIN.

ALL DIMENSIONS IN INCHES (MM)

- Derate Total Output Power 10% when convection cooled using Chassis or Chassis/Cover.

- Derate Total Output Power 10% when forced-air cooled using Chassis or Chassis/Cover.

DERATING REQUIREMENTS

4-40 MTG HOLE (4 PLACES)

Rev. SS 3/20/2025

POWER DESIGNS 300 Stewart Road ■ Wilkes-Barre, PA 18706 ■ Phone: (570) 824-4666 ■ Fax: (570) 824-4843 ■ Email: sales@ipdpower.com ■ Web: www.ipdpower.com