FEATURES:

- Compact 3.0" x 5.0" x 1.25" Size
- 3 Year Warranty
- Universal 85-264V Input
- Single Output
- 90% Peak Efficiency
- 87% Average Efficiency
- <300mW No Load Input Power
- 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
- 0-70°C Operating Temperature
- RoHS Compliant
- · Optional Chassis/Cover





CHASSIS/COVER

OPEN FRAME

SAFETY SPECIFICATIONS UL 62368-1:2014, 2nd Edition Underwitters Laboration File E137708/E140259 Underwriters Laboratories CAN/CSA-C22.2 No. 62368-1-14 AAMI/ANSI ES60601-1:2005/(R) 2012 CAN/CSA-C22.2 No. 60601-1:2014 CB Reports/Certificates (including all IEC 62368-1:2014, 2nd Edition National and Group Deviations) IEC 60601-1:2005/A1:2012 EN 62368-1:2014. 2nd Edition TUV SUD America EN 60601-1:2006/A1:2013 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

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Restriction of the Use of Certain Hazardous Substances in EEE Regulations 2012 SI No. 3032 + 2019 SI No.492

MODEL LISTING					
MODEL	OUTPUT	P _{OUT}			
GRN-110-1001 GRN-110-1002 GRN-110-1003 GRN-110-1004 GRN-110-1005 GRN-110-1006 GRN-110-1007	3.3V/22A 5.0V/22A 12V/9.2A 15V/7.3A 24V/4.6A 28V/3.9A 48V/2.3A	73W 110W 110W 110W 110W 110W			

ORDERING INFORMATION

Consult factory for alternate output configurations. Please specify the following optional features when ordering:

CH - Chassis CO - Cover

OVP - Overvoltage Protection

	3RN-1	110	
	UT SPECIF		
Output Power at 50°C ₍₁₎	110W	85-264 V _{IN}	
(See Derating Chart)	0.50/	(0.1.1.1500/1.1)	
Voltage Centering	±0.5%	(Output at 50% load)	
Voltage Adjust Range	95-105%	(0.4000/	
Load Regulation	±0.5%	(0-100% load change)	
Source Regulation	0.5%	(4004, 4000, 100())	
Ripple & Noise	1.0%	(1001, 1002 < 3%)	
Turn On Overshoot	None	. '11' 40' 5' '11' 1 1 1 1 1	
Transient Response	Output recovers to within 1% of initial set point due to a		
	50% step load change, 500µS maximum, 5% maximum		
Our and the sea Deada office		mum deviation on 1001-8%, 1002-6%)	
Overvoltage Protection	Latching, Between 110% and 150% of rated output		
Overnower Protection	voltage (optional	⊤ min, cycle on/off, auto recovery	
Overpower Protection			
Hold-Up Time		power, 115V input	
Start-Up Time	1 sec., 115/230V	/ Input	
Output Rise Time	50ms typical	d as audio d	
Minimum Load	No minimum load	•	
INPU	T SPECIFIC	CATIONS	
Protection Class	1		
Source Voltage	85-264 VAC (see	e derating chart)	
Frequency Range	47-63 Hz		
Input Protection(5)	Internal 4A time	delay fuse, 1500A breaking capacity	
Peak Inrush Current	50A max. at 230		
Peak Efficiency	90%		
Average Efficiency	87% (1003-1007	7), 86% (1002), 82% (1001)	
Light Load Efficiency		n, 33% power (1001 >81%)	
No Load Input Power	<0.3W, 115/230	Vin, no load (1001<0.5W)	
-		PECIFICATIONS	
Cooling	Free air convecti		
Ambient Operating	0°C to + 70 C		
Temperature Range	Derating: see de	rating chart	
Ambient Storage Temp. Range	-40°C to +85°C		
Operating Relative Humidity Range	20-90% non-con	densing	
Altitude	3,000m ASL	Operating	
	12,192m ASL	Non-Operating	
Temperature Coefficient	0.02%/°C		
Vibration	2.5G swept sine,	7-2000Hz, 1 octave/min, 3 axis, 1 hour each	
Shock	20G 11 ms, 3 ax	is, 3 each direction.	
GENER	AL SPECI	FICATIONS	
Means of Protection			
	2MODD (Moons	of Patient Protection)	
Primary to Secondary Primary to Ground	2MOPP (Means of Patient Protection) 1MOPP (Means of Patient Protection)		
Secondary to Ground		lation(Consult factory for 1MOPP)	
Dielectric Strength(7, 8)	Operational IIIsu	ilation(Consult lactory for Two-FP)	
Reinforced Insulation	5656 VDC Prima	ary to Secondary	
Basic Insulation	2121 VDC, Prima		

SEREIGRE SI ESII ISATITSIS				
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(7, 8)				
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			
Switching Frequency	65 KHz			
Remote Sense(9)	400 mV compensation of output cable losses			
Mean-Time Between Failures	>250,000 hours, MIL-HDBK-217F, 25° C, GB			
Weight	0.65 lbs. Open frame / 0.85 lbs. Chassis and cover			

EMC SPECIFICATION	S (IEC 60601-1-	2:2014, 4 TH ed./IEC 61000-6-2:2	005)
Electrostatic Discharge	EN 61000-4-2	±8KV contact / ±15KV air discharge	Α
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 (<100W P _{IN})	
Voltage Fluctuations/Flicker	EN 61000-3-3	Compliant	

All specifications are maximum at 25°C/110W unless otherwise stated, may vary by model and are subject to change without notice.

ALL DIMENSIONS IN INCHES (mm) **CONNECTOR SPECIFICATIONS**

P1 NEUTRAL 0.156 friction lock header mates with Tyco 640250-3 or equivalent crimp AC Input housing with Tyco 640706-1 or equivalent crimp terminal. P2 6-32 screw down terminal mates with DC Output (+) OUTPUT **(4)** (-) OUTPUT #6 ring tongue terminal (10in-lb Max.) Р3 0.100 breakaway header mates with (-) SENSE 2 (+) SENSE Molex 22-55-2041 or equivalent crimp

Ground 0.187 quick disconnect terminal

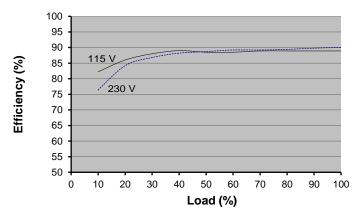
Remote Sense

APPLICATIONS INFORMATION

- Continuous Output Power must not exceed 110W.
- 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.
- 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.
- This product includes only one fuse in the input circuit. In consideration of clause 8.11.5 of IEC 60601-1-1:2005, a second fuse may be required in neutral conductor of the end product.
- 6. 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.
- 7. This product was type-tested and safety-certified using the dielectric strength test voltages listed in Table 6 of IEC60601-1:2005. 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 type test on the power supply or the end product. It is highly recommended that the DC test voltage listed in DVB.1, annex DVB of UL60601-1 1ST Edition are not exceeded during a production-line dielectric strength test of the assembled end product. Please consult factory for further information.
- 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.
- 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 lowimpedance 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.

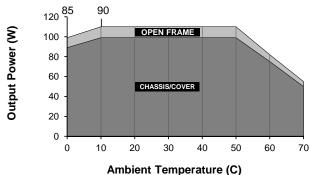
TYPICAL EFFICIENCY vs. LOAD

(Model GRN-110-1004 Efficiency shown)



MAX POUT VS. AMBIENT TEMPERATURE/INPUT VOLTAGE





Derating requirements - Derate from 100% load at 50°C to 50% load at 70°C.

- Derate from 100% load at 90VIN to 90% load at 85VIN.
- Derate 10% with chassis and cover.

(+) OUTPUT

(-) OUTPUT

terminal housing with Molex 71851 or equivalent crimp terminal.