FEATURES:

- Compact 3.0" x 5.0" x 1.25" Size
- 3 Year Warranty
- Universal 85-264V Input
- · Dual, Triple or Quad Outputs
- 87% Peak Efficiency
- 85% Average Efficiency <1W 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

2012 SI No. 3032 + 2019 SI No.492

OPEN FRAME

SAFETY SPECIFICATIONS UL 62368-1:2014, 2nd Edition Underwiners Laborate us 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 Restriction of the Use of Certain Hazardous Substances in EEE Regulations

| MODEL LISTING | | | | | |
|---------------|-----------|----------|----------|----------|--|
| MODEL | OUTPUT 1 | OUTPUT 2 | OUTPUT 3 | OUTPUT 4 | |
| GRN-110-4001 | +3.3V/10A | +5V/5A | +12V/2A | -12V/2A | |
| GRN-110-4002 | +5V/10A | -5V/5A | +12V/2A | -12V/2A | |
| GRN-110-4003 | +5V/10A | +24V/2A | +12V/2A | -12V/2A | |
| GRN-110-4004 | +5V/10A | +24V/2A | +15V/2A | -15V/2A | |
| GRN-110-3001 | +5V/12A | | +12V/3A | -12V/3A | |
| GRN-110-3002 | +5V/12A | | +15V/3A | -15V/3A | |
| GRN-110-2001 | +5V/12A | +24V/3A | | | |
| GRN-110-2002 | +5V/12A | +12V/5A | | | |
| GRN-110-2003 | +12V/5A | -12V/5A | | | |
| GRN-110-2004 | +15V/4A | -15V/4A | | | |

ORDERING INFORMATION

Consult factory for alternate output configurations. Consult factory for positive, negative or floating outputs. (13) Please specify the following optional features when ordering:

CH - Chassis OVP - Overvoltage Protection CO - Cover I/O - Isolated Outputs

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

| | JKN-1 | IU | |
|---|-----------------------------|----------------------------|--|
| | UT SPECIF | ICATIONS | S |
| Output Power at 50°C ₍₁₎ | 110W | 85-264 Vin | |
| (See Derating Chart) | | | |
| Voltage Centering | Output 1: | ±0.5% | (All outputs at 50% load |
| Valtage Adjust Desse | Outputs 2 - 4: | ±5.0% | , p |
| Voltage Adjust Range Load Regulation | Output 1: Output 1: | 95-105% ±0.5% | (0.1009/ load shangs) |
| Load Regulation | Output 1. Outputs 2 - 4: | ±0.5% ±5.0% | (0-100% load change) (10-100% load change |
| Source Regulation | Outputs 1 - 4: | 0.5% | (10-100 / load change |
| Cross Regulation | Outputs 2 - 4: | 5.0% | |
| Ripple & Noise | Outputs 1 - 4 | 1.0% | |
| Turn On Overshoot | <1% | 1.070 | |
| Transient Response | | to within 1% of | initial set point due to a |
| | | | naximum, 4% maximum |
| | deviation. | | |
| Overvoltage Protection | | | % and 150% of rated out |
| | voltage (optional) | | |
| Overpower Protection | | | n/off, auto recovery |
| Hold-Up Time | 16ms typical, full | | iput |
| Start-Up Time | 1 sec., 115/230V | input | |
| Output Rise Time | 25ms typical | d required | |
| Minimum Load(5) | No minimum load | | |
| | T SPECIFIC | CATIONS | |
| Protection Class | 95 264 VAC (c. | oo dorotin = =l | |
| Source Voltage | 85 – 264 VAC (se | ee derating cha | ιπ) |
| Frequency Range Input Protection(6) | 47 – 63 Hz | dalay fuca 150 | 0A breaking capacity |
| Peak Inrush Current | 40A max at 230 \ | | on breaking capacity |
| Peak Efficiency | 87% | V | |
| Average Efficiency | | % 50% 75% ar | nd 100% rated load) |
| Light Load Efficiency | 85%, 115/230 VII | | 100701010010001 |
| No Load Input Power | <1W, 115/230 Vi | | |
| ENVIRONM | IENTAL SP | ECIFICAT | TIONS |
| Cooling | Free air convecti | | |
| Ambient Operating | 0°C to + 70°C | | |
| Temperature Range | Derating: see por | wer rating chart | t |
| 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-Operatin | g |
| Temperature Coefficient | 0.02%/°C | | |
| Vibration | | | tave/min, 3 axis, 1 hour ea |
| Shock | 20g, 11 ms, 3 ax | | |
| | RAL SPECII | FICATION | IS |
| Means of Protection | OMODD (M | (D.: .D. | (' \ |
| Primary to Secondary | 2MOPP (Means | | |
| Primary to Ground Secondary to Ground | 1MOPP (Means | | ection) actory for 1MOPP) |
| Dielectric Strength(8, 9) | Operational insul | iauon(consult la | iciory IOI TIVIOPP) |
| Reinforced Insulation | 5656 VDC, Prima | ary to Secondar | v |
| Basic Insulation | 2121 VDC, Prima | | J |
| Operational Insulation | 707 VDC, Seco | | d |
| Leakage Current | | . , | |
| Earth Leakage | <300µA NC, <10 | 00μA SFC | |
| Touch Current | <100µA NC, <50 | | |
| Switching Frequency | 100 KHz | | |
| Mean-Time Between Failures | >250,000 hours, | | |
| Weight | | | lbs. Chassis and cover |
| EMC SPECIFICATIONS | | | |
| Electrostatic Discharge | EN 61000-4-2 | | t / ±15KV air discharge |
| Radiated Electromagnetic Field | EN 61000-4-3 | | Hz, 10V/m, 80% AM |
| Electrical Fast Transients/Bursts | EN 61000-4-4 | ±2 KV, 5KHz/ | |
| Surge Immunity | EN 61000-4-5 | | earth / ±1 KV line to line |
| Conducted Immunity | EN 61000-4-6 | | z, 10V, 80% AM |
| Magnetic Field Immunity | EN 61000-4-8 | 30A/m, 60 Hz | |
| Voltage Dips | EN 61000-4-11 | 0% U _T , 0.5 cy | |
| | | 0% U _T , 1 cycl | es, 0° 100/240V / |
| | | 40% U _T , 10/1 | |
| | | 70% U _T , 25/3 | |
| Voltage Interruptions | EN 61000-4-11 | 0% U _T , 300 c | ycles, 0° 100/240V E |
| Radiated Emissions | EN 55011/32 | Class B | |
| Conducted Emissions | EN 55011/32 | Class B | |
| Harmonic Current Emissions | EN 61000-3-2 | Class A (<100 | 2M D) |

Voltage Fluctuations/Flicker

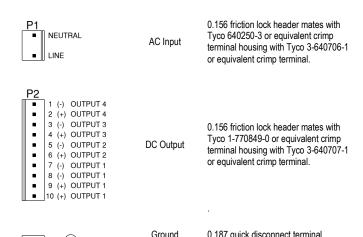
Compliant

EN 61000-3-3

ALL DIMENSIONS IN INCHES (mm)

4-40 MTG HOLE (4 PLACES)

CONNECTOR SPECIFICATIONS

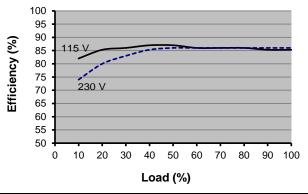


APPLICATIONS INFORMATION

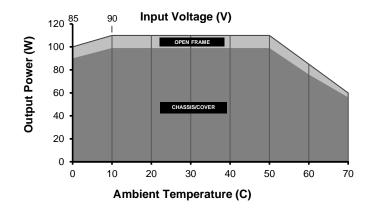
- 1. Each output can deliver its rated current but Total Output Power must not exceed 110W.
- 2. Generally, adequate cooling is provided when semiconductor case temperatures do not exceed 70°C rise and transformer temperature does not exceed 60°C rise at any specified ambient temperature.
- 3. Sufficient 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.
- 5. 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.
- 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.
- 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 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.
- 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. Optional Output Configuration (consult factory).
 - V2 can be configured positive, negative or floating with respect to V1.
 - V3 can be configured positive or floating with respect to V1.
 - V4 can be configured positive, negative or floating with respect to V1.

TYPICAL EFFICIENCY vs. LOAD

(Model GRN-110-3001 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/Cover option.

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