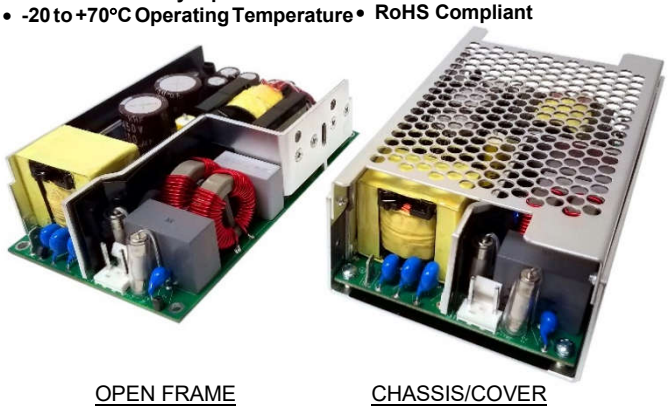
360 WATTS

GRN-360 SINGLE OUTPUT AC-DC

FEATURES:

- **Compact 3.0" x 5.0" x 1.49" size**
- **3 Year Warranty**
- **Universal 85-264V Input**
- **Single Output**
- **94% Peak/93% Average Efficiency**
- **<500mW Standby Input Power**
- **-20 to +70°C Operating Temperature**
- **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 Chassis/Cover**
- **Optional Fan supply 12V/0.6A**
- **RoHS Compliant**



OPEN FRAME CHASSIS/COVER

SAFETY SPECIFICATIONS

cULus	Underwriters Laboratories File E137708/E140259	UL 62368-1:2014, 2nd Edition CAN/CSA-C22.2 No. 62368-1-14 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)
UKCA	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	RATING
GRN-360-1001	12V/30A
GRN-360-1002	15V/24A
GRN-360-1003	18V/20A
GRN-360-1004	24V/15A
GRN-360-1005	36V/10A
GRN-360-1006	48V/7.5A
GRN-360-1007	56V/6.4A

ORDERING INFORMATION

Please specify the following optional features when ordering:

CH – Chassis
CO – Cover
A - 5000m
PF – Power fail warning
FN – Fan supply 12V/0.6A

All specifications are maximum at 25°C, 360W unless otherwise stated, may vary by model and are subject to change without notice.

GRN-360

OUTPUT SPECIFICATIONS

Output Power at 50°C(1)	180W	Convection Cooled, 90-180 V_{IN}, Open frame
	200W	Convection Cooled, 90-180 V_{IN}, Chassis
	250W	Convection Cooled, 180-264 V_{IN}, Open frame
(See derating chart)	360W	300 LFM Forced Air, 90-264 V_{IN}, Open frame
Voltage Centering	Output 1:	± 0.5% (output at 50% load)
Voltage Adjust Range	Output 1:	95-105%
Load Regulation	Output 1:	± 0.5% (0-100% load change)
Source Regulation	Outputs 1:	0.5%
Ripple & Noise	Outputs 1:	1.0% (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, 5% maximum deviation.	
Overvoltage Protection	Latching, between 110% and 150% of rated output voltage.	
Overpower Protection	110-150% rated P_{OUT}, cycle off/on, auto recovery	
Hold Up Time	20 ms min., Full Power	
Start Up Time	<1 Second, 115/230V Input	
Minimum Load	No minimum load required	
Remote Sense(9)	250mV compensation of output cable losses.	

INPUT SPECIFICATIONS

Protection Class	I
Source Voltage	85 – 264 Volts AC (see derating chart)
Frequency Range	47 – 63 Hz
Input Protection	Dual internal 8A time delay fuse, 1500A breaking capacity
Peak Inrush Current	40A max.
Peak Efficiency	Up to 94%
Average Efficiency	Up to 93% (Avg. of 25%, 50%, 75%, and 100% rated load)
Light Load Efficiency	>88%, 115/230V_{IN} 33% power
No Load Input Power	<500mW, 115/230 V_{IN}, no load

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	3,000m ASL Operating (-A Model is 5000m Consult Factory) 12,192m ASL – Non-Operating
Temperature Coefficient	0.02%/°C
Vibration (MIL-STD-810G)	2.5G swept sine, 10-2000Hz, 1octave/min, 3 axis, 1hour each
Shock (MIL-STD-810G)	20G, 11ms, 3 axis.

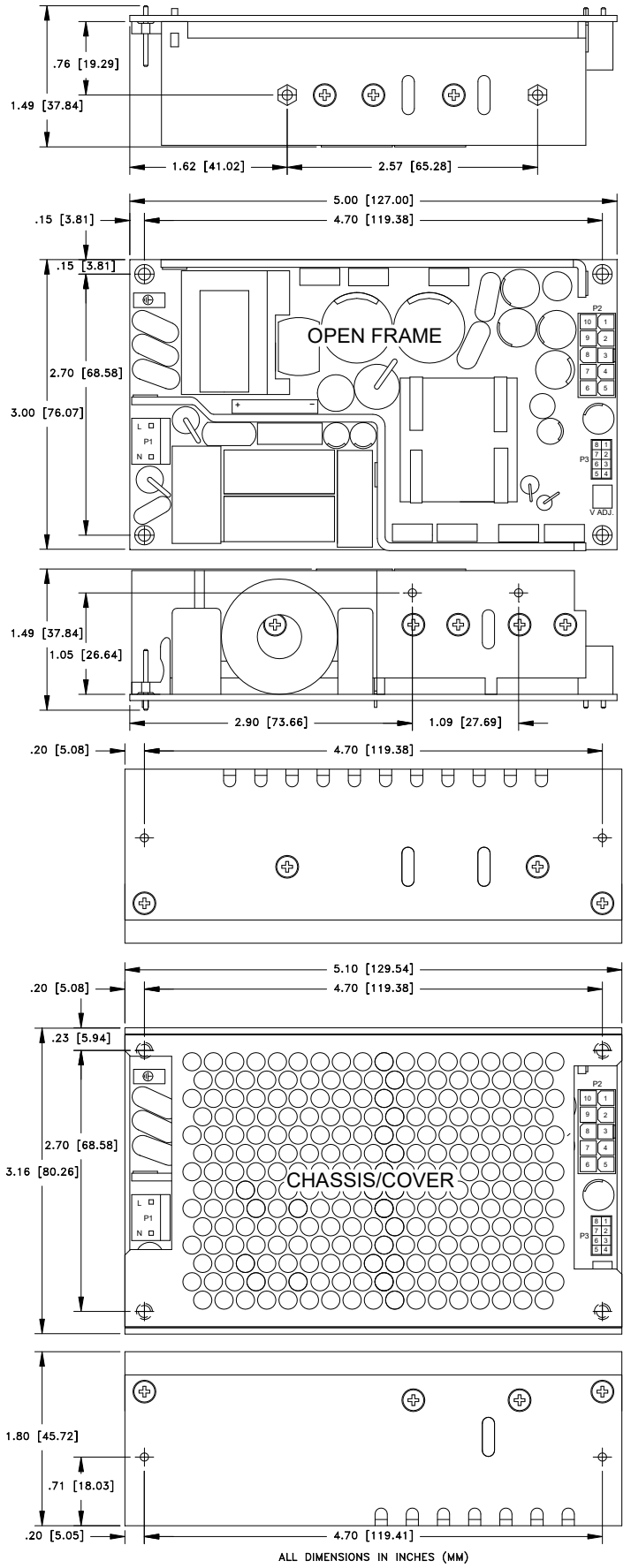
GENERAL SPECIFICATIONS

Means of Protection	
Primary to Secondary	2MOPP (Means of Patient Protection)
Primary to Ground	1MOPP (Means of Patient Protection)
Secondary to Ground	Operational Insulation
Dielectric Strength(7,8)	
Reinforced Insulation	5656 VDC (4000VAC)(7)
Basic Insulation	2121 VDC (1500VAC) (7)
Operational Insulation	707 VDC (500VAC) (7)
Leakage Current	
Earth Leakage	<300uA NC, <1000uA SFC
Touch Current	<100uA NC, <500uA SFC
AC Power Fail Signal	Logic low 10-15ms prior to V1 loss of regulation.
Fan Supply Output	12VDC/0.6A
Switching Frequency	PFC/LLC 65KHz Variable
Mean-Time Between Failures	>150,000 HOURS, MIL-HDBK-217F, 25° C, GB
Weight	1.00 Lbs. Open Frame/1.23 Lbs. Chassis and Cover

EMC SPECIFICATIONS (IEC 60601-1-2:2014, 4TH ed./IEC 61000-6-2:2016)

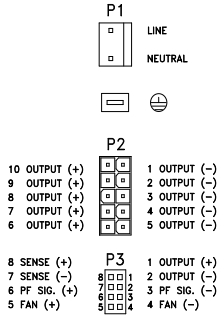
Electrostatic Discharge	EN 61000-4-2	±8KV contact / ±15KV air discharge	A
Radiated Electromagnetic Field	EN 61000-4-3	80MHz-2.7GHz, 10V/m, 80% AM	A
Electrical Fast Transients/Bursts	EN 61000-4-4	±2 KV, 5KHz/100KHz	A
Surge Immunity	EN 61000-4-5	±2 KV line to earth / ±1 KV line to line	A
Conducted Immunity	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-360 SERIES MECHANICAL SPECIFICATIONS



ALL DIMENSIONS IN INCHES (MM)

CONNECTOR SPECIFICATIONS



P1: 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.

Ground: 0.187 quick disconnect terminal

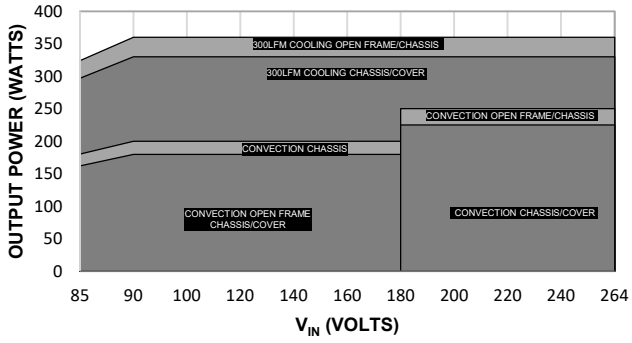
P2: 5566 Mini-Fit Jr. header mates with 5557 Mini-Fit Jr. or equivalent crimp housing with 5556 Mini-Fit or equivalent Crimp Terminal.

P3: .100 breakaway header mates with Molex 22-55-2081 or equivalent crimp housing with Molex 70058 or equivalent crimp terminal.

APPLICATIONS INFORMATION

1. Total Output power must not exceed 360W, 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. Minimum load is not required for reliable operation.
6. Peak-to-Peak Output Ripple and Noise is measured directly at the output terminals, without the use of the probe ground lead or retractable tip (tip-and-barrel method), 20 MHz.
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 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 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.
8. 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.
9. 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.
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 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 10-15ms prior to loss of output from AC failure, 5V/10mA.
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. GRN-360-1001 P2 crimp terminals require the use of 16 AWG wire.

MAX POUT vs. VIN @ 50 °C AMBIENT



DERATING REQUIREMENTS

	90-180VAC Input		180-264VAC Input	
Configuration	300LFM FA Cooling	Convection Cooling	300LFM FA Cooling	Convection Cooling
Open Frame	360W	180W	360W	250W
Chassis	360W	200W	360W	250W
Chassis/Cover	330W	180W	330W	225W

- Derate total output power linearly from 100% at 90Vin to 90% at 85Vin (Any Configuration)
- Derate total output power linearly from 100% at 50°C to 50% at 70°C (Any Configuration)

REV. RR 10/10/2022

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