

**70 WATTS**

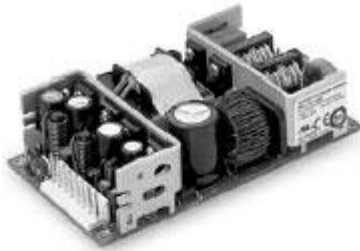
**NO MINIMUM ORDER REQUIRED**

**REL-70 SERIES**

**OUTPUT SPECIFICATIONS**

**Features**

- RoHS Compliant
- Universal 85-264 VAC Input
- Advanced SMT Design
- Compact 2.5" X 4.5" X 1.2" Size
- Class B Emissions Per EN 55011/22
- EMC to EN 61000-6-2 & EN 60601-1-2
- 2 Year Warranty
- Fits 1U Application
- One to Four Outputs
- EN 60950-1 ITE Certification
- EN 60601-1 Medical Certification
- Optional Chassis & Cover
- Harmonic Current per EN 61000-3-2
- High Efficiency



**OPEN FRAME**



**CHASSIS/COVER**

Total Output Power	50W Convection Cooled 70W Forced Air Cooled
Output Voltage Centering	Output 1: +/-0.5% Output 2,3,4: +/-5.0% (All outputs at 50% load)
Source Regulation	Outputs 1-4: 0.5%
Load Regulation	Output 1: 0.5% (10-100% Load Change) Output 2: 5.0% (20-100% Load Change) (4001-5) 8.0% (20-100% Load Change) (2001) 8.0% (20-100% Load Change) Output 3: 5.0% (20-100% Load Change) Output 4: 5.0% (20-100% Load Change)
Cross Regulation	Output 2-4: 5.0%
Output Voltage Adjust Range	Output 1: 95% to 105%
Output Noise	Outputs 1-4: 1.0%
Turn On Overshoot	None
Transient Response	Outputs 1-4
Volt. Deviation	5.0%
Recovery Time	500 MicroS
Load Change	50% To 100%
Output Overvoltage Protection	Output 1: 110% to 150%
Output Overpower Protection	110-160% rated Pout, cycle on/off, auto recovery
Hold Up Time	16 mS Min, Full Power 85 V Input
Start Up Time	4 Second, 120 V Input

**INPUT SPECIFICATIONS**

Source Voltage	85-264 Voltage AC
Frequency Range	47-63 Hz
Peak Inrush	40A
Efficiency	.78% Typ., Full Power, 230V (Varies by model)
Power Factor	0.95(Full Power, 230V)

**ENVIRONMENTAL SPECIFICATIONS**

Ambient Operating Temperature Range	0°C to +70°C Derating: See Power Rating Chart
Ambient Storage Temperature Range	-40°C to +85°C
Temperature Coefficient	Outputs 1-4: 0.02%/°C

ELECTROMAGNETIC COMPATIBILITY			GENERAL SPECIFICATIONS	
Electrostatic Discharge	EN 61000-4-2	+/-8kV Contact Discharge +/-8kVAir Discharge	Dielectric Strength	Reinforced Insulation 5656 VDC, Primary to Secondary, 1 Sec. Basic Insulation 2121 VDC, Primary to Ground, 1 Sec.
Radiated Electro-magnetic Field	EN 61000-4-3	80MHz-2.5GHz, 10V/m, 80% AM	Operational Insulation	500 VDC, Secondary to Ground, 1 Sec.
EFT/Bursts	EN 61000-4-4	+/-2kV	Leakage Current	<300 ÅµA Earth Leakage Current
Surges	EN 61000-4-5	+/-1 kV Common Mode +/-2 kV Differential Mode	Power Fail Signal	Logic low with input power failure 10mS minimum prior to output 1 dropping 1%
Conducted Immunity	EN 61000-4-6	.15-80MHz., 10V, 80% AM	Remote Sense(singles only)	250mV compensation of output cable losses
Voltage Dips and Interruptions	EN 61000-4-11	30% Dip,500mS 95% Dip,10mS 60% Reduction,1s (Criteria B) 95% Reduction,5000ms	Mean Time Between Failures	100,000 Hours min., MIL-HDBK-217F, 25°C, GB
Radiated Emissions	EN55011/22	Class B	Weight	1.00 Lbs. Chassis and Cover 0.60 Lbs. Open Frame
Conducted Emissions	EN55011/22	Class B	<b>Notes</b>	
Harmonic Current Emissions	EN 61000-3-2		Consult factory for alternate output configuration. Consult factory for positive, negative or floating output.	
Voltage Fluctuations and Flicker	EN 61000-3-3		Refer to Application Information for complete output power ratings.	

All specifications are maximum at 25C unless otherwise stated and are subjected to change without notice.  
Specify optional chassis and cover when ordering.

MODEL LISTING				
Model	Output 1	Output 2	Output 3	Output 4
REL-70-4001	+3.3V/6A	+5V/5A	+12V/2A(6)	-12V/2A(6)
REL-70-4002	+5V/6A	+3.3V/5A	+12V/2A(6)	-12V/2A(6)
REL-70-4003	+5V/6A	+3.3V/5A	+15V/2A(6)	-15V/2A(6)
REL-70-4004	+5V/6A	-5V/5A	+12V/2A(6)	-12V/2A(6)
REL-70-4005	+5V/6A	-5V/5A	+15V/2A(6)	-15V/2A(6)
REL-70-4006	+5V/6A	+24V/2A	+12V/2A(6)	-12V/2A(6)
REL-70-4007	+5V/6A	+24V/2A	+15V/2A(6)	-15V/2A(6)
REL-70-4009	6.7V/5A	5V/4A	+15V/2A	-15V/2A
REL-70-3001	+5V/6A	+12V/2A		-12V/2A
REL-70-3002	+5V/6A	+15V/2A		-15V/2A
REL-70-3003	5.1V/6A	+7.5V/2A		-7.5V/2A
REL-70-3004	+3.3V/6A	+7V/5A	+12V/2A	
REL-70-2001	+3.3V/6A	+5V/5A		
REL-70-2002	+5V/6A	+12V/4A		
REL-70-2003	+5V/6A	+24V/2A		
REL-70-2004	+12V/3A	-12V/3A		
REL-70-2005	+15V/3A	-15V/2A		
REL-70-2006	+5.5V/6A	-5.5V/5A		
REL-70-1001	2.5V/14A			
REL-70-1002	3.3V/14A			
REL-70-1003	5V/14A			
REL-70-1004	12V/5.8A			
REL-70-1005	15V/4.7A			

REL-70-1006	24V/2.9A
REL-70-1007	28V/2.5A
REL-70-1008	48V/1.5A



## SAFETY SPECIFICATIONS

General	Protection Class:	I
	Overvoltage Category:	II
	Pollution Degree:	2

Underwriters Laboratories File E137708	UL 60950-1 First Edition UL 60601-1 First Edition	
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	CB Report Per IEC 60950-1(2001) All National Deviations CB Report Per IEC 60601-1(1988) Second Edition, A1, A2	First Edition
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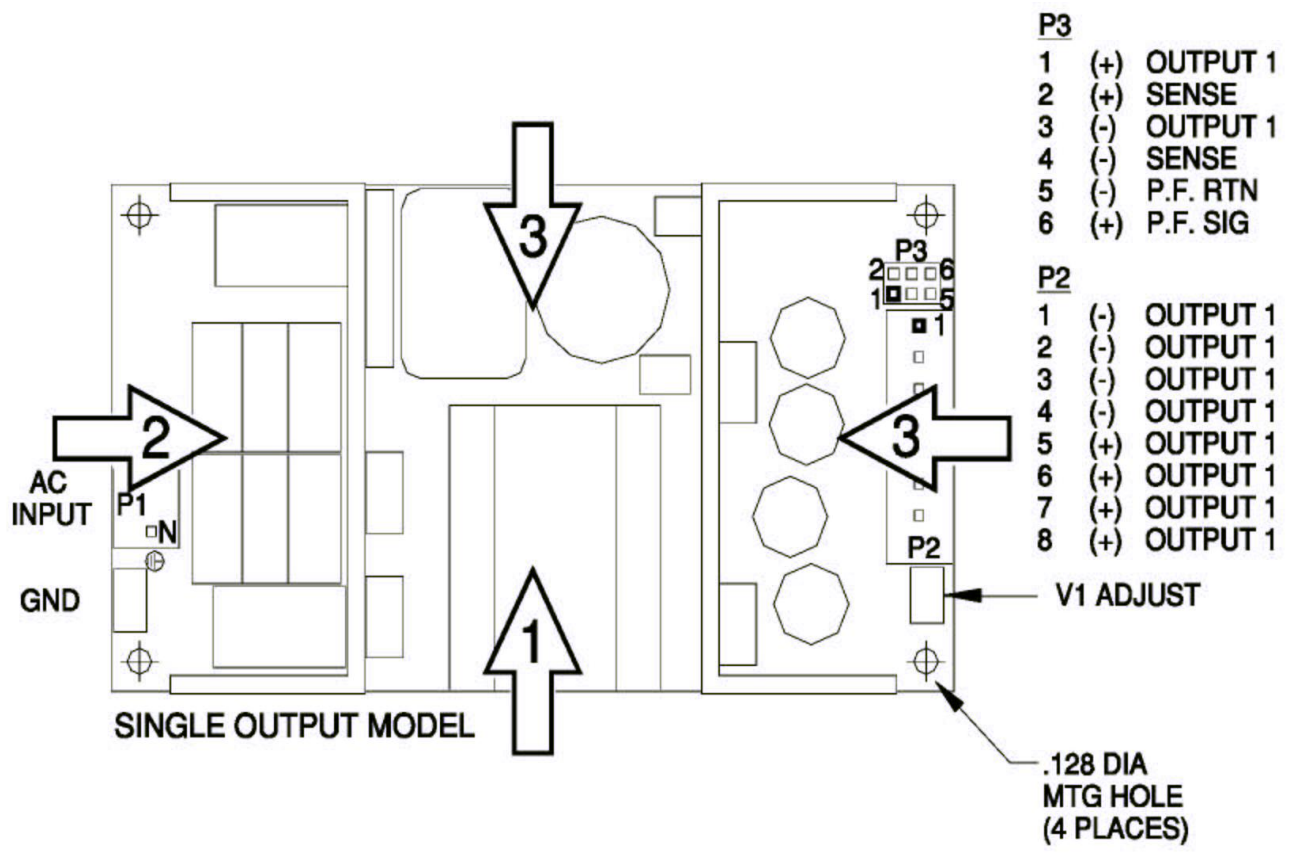
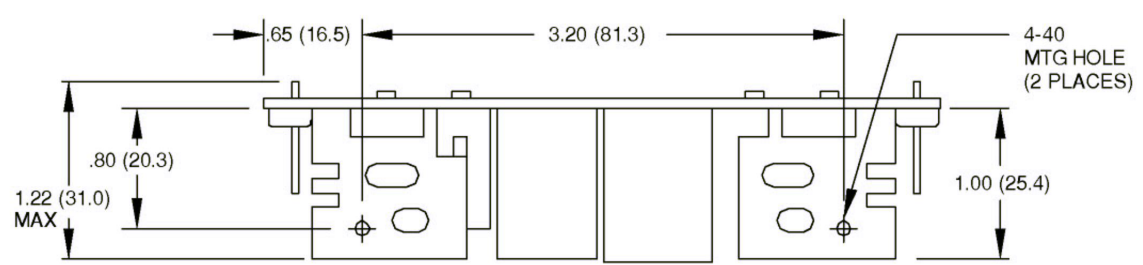
UL Recognition Mark for Canada File E137708	CAN/CSA-C22.2 No. 60950-1-03 CAN/CSA-C22.2 No. 601-1-M90 2	with updates 1 and 2
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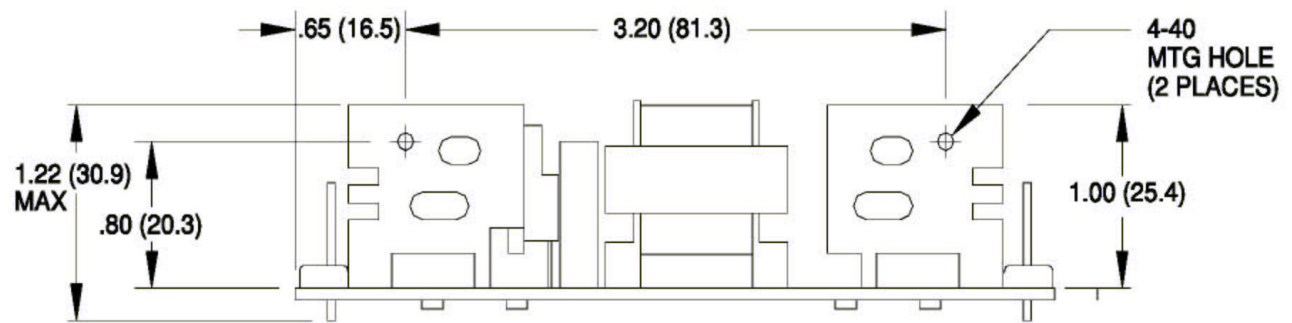
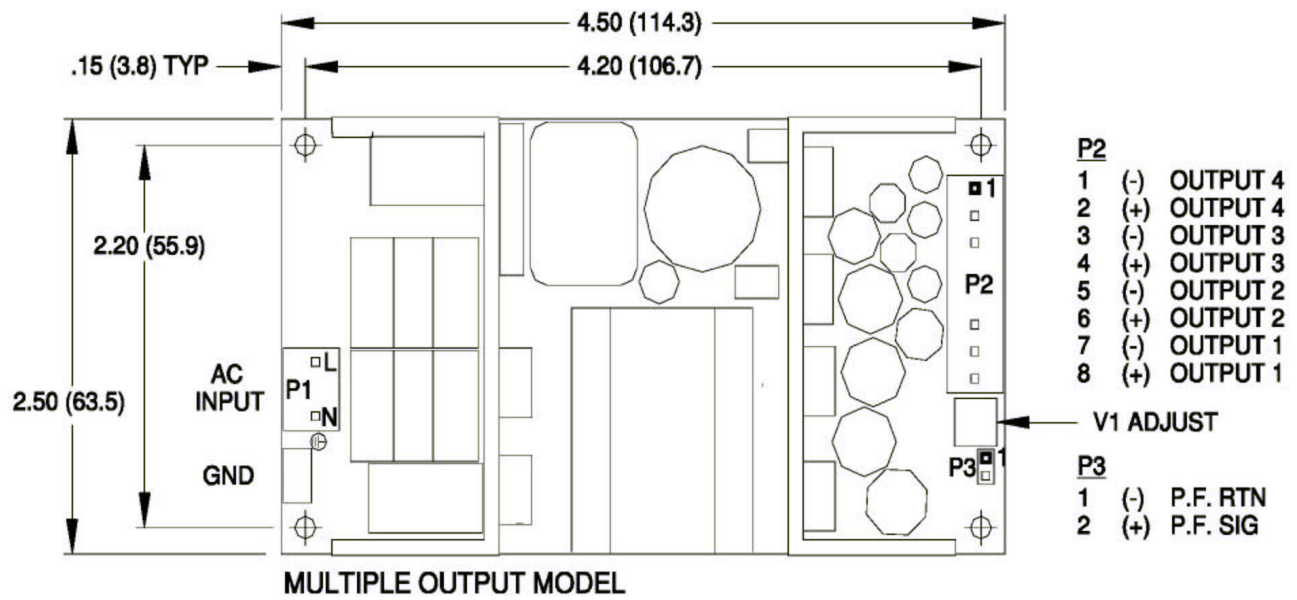
TUV	EN 60950-1:2001 EN 60601-1/A2: 1995	
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	Low Voltage Directive	
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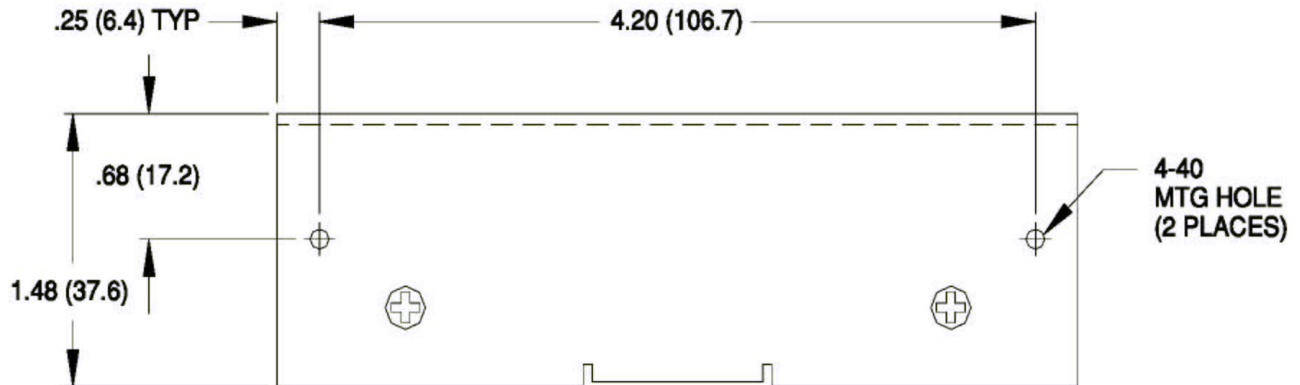
## REL-70 SERIES MECHANICAL SPECIFICATIONS

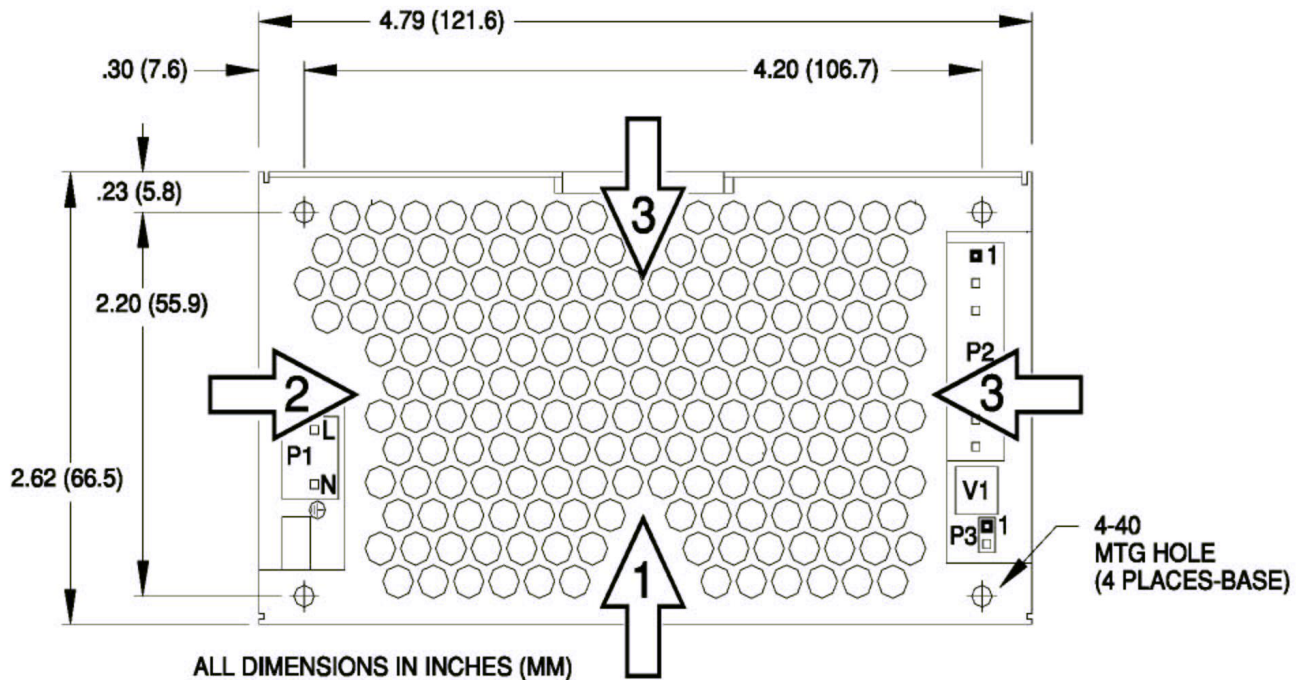
### OPEN FRAME





**OPTIONAL CHASSIS/COVER**

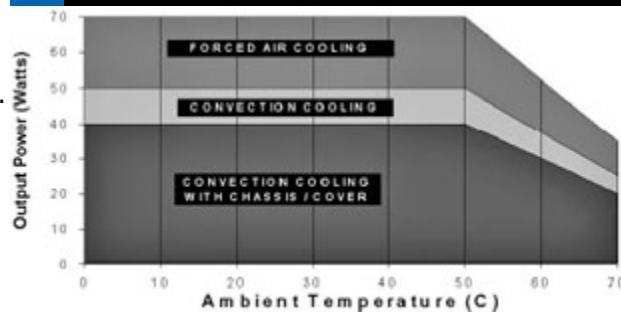




## APPLICATIONS INFORMATION

1. Rated 10A with convection cooling.
2. Total power must not exceed 50 watts with convection cooling on open frame models.
3. Total power must not exceed 70 watts with 300LFM forced air cooling on open frame models.
4. Total power must not exceed 40 watts with convection cooling and chassis/cover option.
5. Total power must not exceed 70 watts with 300LFM forced air cooling and chassis/cover option.
6. Each output can deliver its rated current but total output power must not exceed maximum power as determined by the cooling method state above.
7. Rated 1.5 A with convection cooling.
8. Sufficient area must be provided around convection cooled power supplies to allow natural movement of air develop.
9. 300 linear feet per minute of airflow must be maintained one inch above any point of the heatsink in the direction shown when forced air cooling is required.
10. A minimum load of 10% is required on output one to insure proper regulation of remaining outputs.
11. 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, 20 MHz bandwidth.
12. This product was type tested and safety certificated using the the dielectric strength test voltages listed in Table V of UL 60601-1. In consideration of clause 20.4g, care must be taken to insure the voltage applied to a reinforced insulation does not over stress basic insulation. Secondary to ground capacitors may need to be removed prior to performing a dielectric strength type test on the end product. It is highly recommended that the DC test voltages listed in DVB.1. Annex DVB are not exceeded during a production-line dielectric strength test of the assembled end product. Please consult factory for further information.
13. This product is intended for use as a professionally installed component within information technology and medical equipment.
14. Remote sense terminals may be used to compensate for cable losses up to 250mV. The use of a twisted pair is recommended as well as a decoupling capacitor (0.1 0 10 $\mu$ F) and a capacitor of 100 $\mu$ F/amp connected across the load.
15. This power supply has been safety approved and final tested using a DC dielectric strength test. Please consult factory before performing AC dielectric strength test.
16. Maximum screw penetration into bottom chassis mounting holes is .100 inches.
17. Maximum screw penetration into side chassis mounting holes is .250 inches.
18. To meet emissions specifications, all four mounting hole ground pads must be electrically connected to a common metal chassis. Chassis/cover option recommended.
19. This product is use only one fuse in the input circuit. In consideration of clause 57.6 of UL 60601-1, a second fuse may be required in the end product.

### Maximum Output Power vs. Ambient Temperature



### CONNECTOR SPECIFICATIONS

P1 AC Input	.156 friction lock header mates with Molex 09-50-3031 or equivalent crimp terminal housing with Molex 2478 or equivalent crimp terminal.
P2 DC Output(Single)	.156 friction lock header mates with Molex 09-50-3081 or equivalent crimp terminal housing with Molex 2478 or equivalent crimp terminal.
P2 DC Output(Multiple)	.156 friction lock header mates with Molex 09-50-3081 or equivalent crimp terminal housing with Molex 2478 or equivalent crimp terminal.
G Ground	.187 quick disconnect terminal.
P3 P.F./Sense(Single)	.100 breakaway header mates with Molex 22-55-2061 or equivalent crimp terminal housing with Molex type 71851 or equivalent crimp terminal.
P3 Power Fail (Multiple)	.100 breakaway header mates with Molex 50-57-9002 or equivalent crimp terminal housing with Molex type 71851 or equivalent crimp terminal.

### RECOMMENDED AIR FLOW DIRECTION

- 1.Optimum
- 2.Good
- 3.Fair