

185 WATTS

SINGLE/MULTI OUTPUT AC-DC

FEATURES:

- Compact 4.2" x 7.0" x 1.5" Size
- 2 Year Warranty
- Universal 85-264V Input
- One to Four Outputs
- High Efficiency
- 0-70°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
- RoHS Compliant
- Optional Remote Inhibit/Enable
- Optional Chassis/Cover



CHASSIS/COVER

OPEN FRAME

SAFETY SPECIFICATIONS

 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

 CB Reports/Certificates (including all National and Group Deviations) IEC 62368-1:2014, 2nd Edition

IEC 60601-1:2005/A1:2012

 TUV SUD America EN 62368-1:2014, 2nd Edition
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 2012 SI No. 3032 + 2019 SI No.492

MODEL LISTING

MODEL NO. OUTPUT 1₍₂₁₎ OUTPUT 2₍₂₁₎ OUTPUT 3₍₂₀₎ OUTPUT 4₍₂₀₎

REL-185-4001	+3.3V/20A ₍₂₂₎	+5V/10A	+12V/2A	-12V/2A
REL-185-4002	+5V/20A ₍₂₂₎	+3.3V/10A	+12V/2A	-12V/2A
REL-185-4003	+5V/20A ₍₂₂₎	+3.3V/10A	+15V/2A	-15V/2A
REL-185-4004	+5V/20A ₍₂₂₎	-5V/10A	+12V/2A	-12V/2A
REL-185-4005	+5V/20A ₍₂₂₎	-5V/10A	+15V/2A	-15V/2A
REL-185-4006	+5V/20A ₍₂₂₎	+24V/3A	+12V/2A	-12V/2A
REL-185-4007	+5V/20A ₍₂₂₎	+24V/3A	+15V/2A	-15V/2A
REL-185-3001	+5V/20A ₍₂₂₎	+12V/5A		-12V/3A
REL-185-3002	+5V/20A ₍₂₂₎	+15V/4A		-15V/3A
REL-185-2001	+3.3V/20A ₍₂₂₎	+5V/10A		
REL-185-2002	+5V/20A ₍₂₂₎	+12V/8A		
REL-185-2003	+5V/20A ₍₂₂₎	+24V/4A		
REL-185-2004	+12V/10A	-12V/6A		
REL-185-2005	+15V/8A	-15V/5A		
REL-185-2006	+15V/6A	+24V/4A		
REL-185-2007	+35V/3.5A	+12V/5.2A		
REL-185-1001	2.5V/37A ₍₂₃₎			
REL-185-1002	3.3V/37A ₍₂₃₎			
REL-185-1003	5V/37A ₍₂₃₎			
REL-185-1004	12V/15.4A			
REL-185-1005	15V/12.3A			
REL-185-1006	24V/7.7A			
REL-185-1007	28V/6.6A			
REL-185-1008	48V/3.8A			
REL-185-1009	6.3V/29A ₍₂₃₎			

ORDERING INFORMATION

Consult factory for alternate output configurations.

Consult factory for positive, negative or floating outputs.

Please specify the following optional features when ordering:

CH – Chassis
CO – Cover
TS – Terminal Strip

RE – Remote Inhibit
I/O – Isolated Outputs

REL-185

OUTPUT SPECIFICATIONS

Total Output Power at 50°C ₍₁₎ (See Derating Chart)	135W 185W	Convection Cooled ₍₁₆₎₍₁₈₎ Forced-Air Cooled ₍₁₅₎₍₁₇₎₍₁₉₎
Output Voltage Centering	Output 1: ± 0.5% Output 2: ± 5.0% Output 3: ± 5.0% Output 4: ± 5.0%	(All outputs at 50% load)
Output Voltage Adjust Range	Output 1: 95 – 105%	
Load Regulation	Output 1: 0.5% (10-100% load change) (4001,4,5, 2001) 10.0% (4002,4003) 15.0%	(10-100% load change)
Source Regulation	Outputs 1 – 4: 0.5%	
Cross Regulation	Outputs 2 – 4: 6.0%	
Output Noise	Outputs 1 – 4: 1.0%	
Turn on Overshoot	None	
Transient Response	Outputs 1 – 4 Voltage Deviation 5.0% Recovery Time 500µS 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	16ms min., Full Power, 85V Input	
Start Up Time	5 Seconds, 120V Input	

INPUT SPECIFICATIONS

Protection Class	I
Source Voltage	85 – 264 Volts AC
Frequency Range	47 – 63 Hz
Peak Inrush Current	40A
Efficiency	82% Typical, Full Power, 230V, varies by model
Power Factor	0.95 (Full Power, 230V)

ENVIRONMENTAL SPECIFICATIONS

Ambient Operating	0°C to + 70°C
Temperature Range	Derating: See Power Rating Chart
Ambient Storage Temp. Range	- 40°C to + 85°C
Temperature Coefficient	Outputs 1 – 4: 0.02%/ [°] C
Altitude	3,000m ASL – Operating – Medical 60601-1 5,000m ASL – Operating – ITE/AV – 62368-1 12,192m ASL – Non-Operating

GENERAL SPECIFICATIONS

Means of Protection	2MOPP (Means of Patient Protection) 1MOPP (Means of Patient Protection) Operational Insulation(Consult factory for 1MOPP)
Dielectric Strength _(8, 9)	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
Power Fail Signal ₍₁₄₎	Logic low with input power failure 10 ms minimum prior to Output 1 dropping 1%
Remote Inhibit (optional)	Contact closure inhibits all outputs

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Remote Sense ₍₁₀₎	250mV compensation of output cable losses
Mean-Time Between Failures	100,000 Hours min., MIL-HDBK-217F, 25°C, GB

Weight	1.70 Lbs. Open Frame/ 2.70 Lbs. Chassis and Cover
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EMC SPECIFICATIONS (IEC 60601-1-2:2014, 4TH ed./IEC 61000-6-2:2005)

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% Ut, 0.5 cycles, 0-315° 100/240V A/A 0% Ut, 1 cycles, 0° 100/240V A/A 40% Ut, 10/12 cycles, 0° 100/240V B/A 70% Ut, 25/30 cycles, 0° 100/240V B/A	
Voltage Interruptions	EN 61000-4-11 0% Ut, 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	

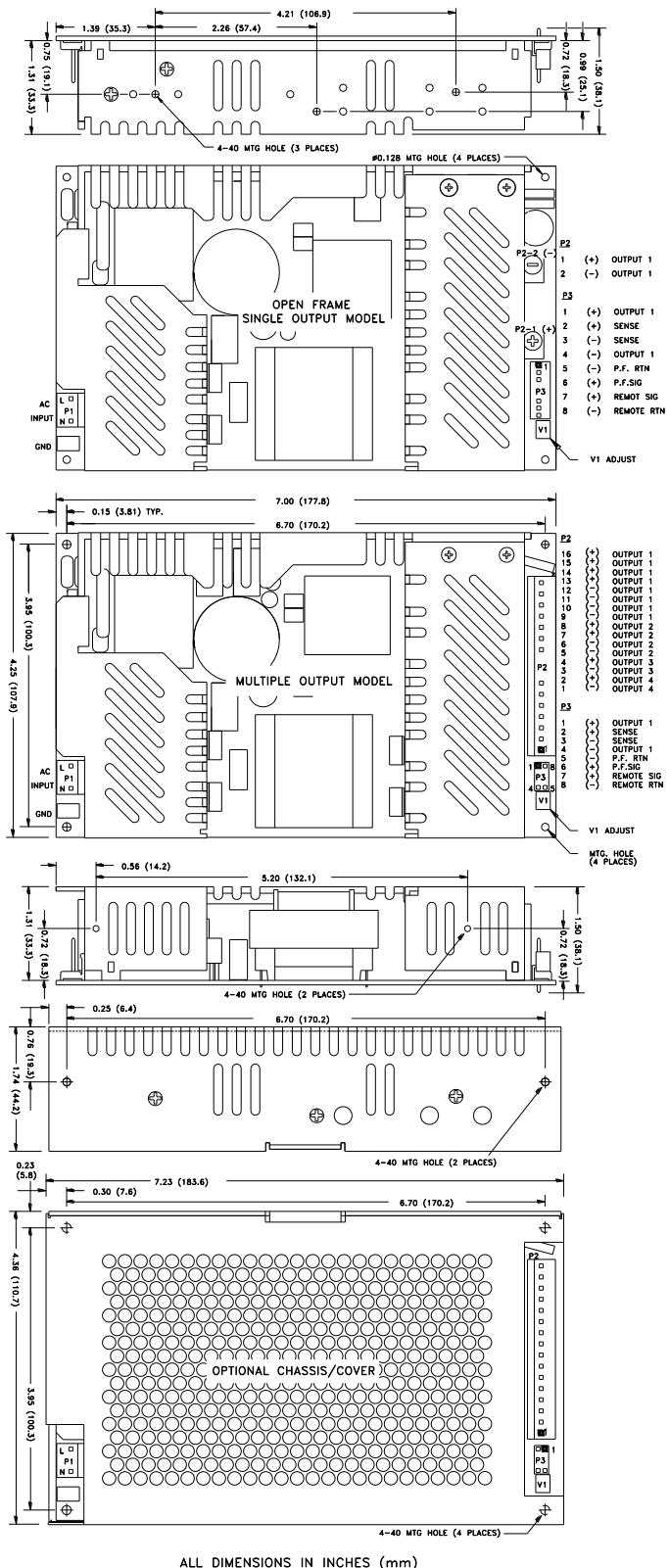
All specifications are maximum at 25°C/185W unless otherwise stated, may vary by model and are subject to change without notice.



INTEGRATED
POWER DESIGNS

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EL-185 SERIES MECHANICAL SPECIFICATIONS

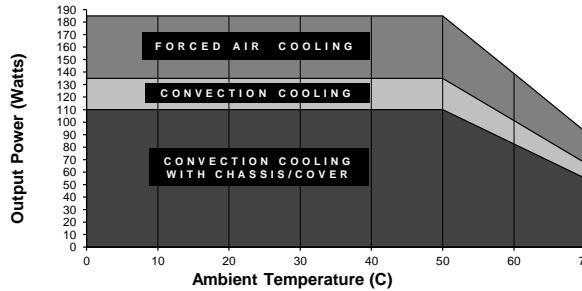


ALL DIMENSIONS IN INCHES (mm)

APPLICATIONS INFORMATION

- Each output can deliver its rated current but Total Output Power must not exceed 185W, as determined by the cooling method.
- 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.
- 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.
- A minimum load of 10% is required on Output 1 to ensure proper regulation of remaining outputs.
- This product includes only one fuse in the input circuit. In consideration of Clause 8.11.5 of IEC 60601-1:2005, a second fuse may be required in neutral conductor of the end product.
- 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.
- This product was type-tested and safety-certified using the dielectric strength test voltages listed in Table 6 of IEC 60601-1:2005. 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 test on the power supply or the end 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 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 250mV. The use of a twisted pair, decoupling capacitors and an appropriately-rated low-impedance capacitor connected across the load will increase noise immunity.
- Maximum screw penetration into bottom chassis mounting holes is 0.100 inches. Maximum screw penetration into side chassis mounting holes is 0.250 inches.
- To comply with emissions specifications, all four mounting hole ground pads must be electrically connected to a common metal chassis. Chassis/Cover option recommended. Refer to Operating Instructions for additional information.
- Common RF shielding precautions may need to be taken to assure emissions compliance. Refer to Operating Instructions for additional information.
- Power-Fail (AC-Good) feature provides a logic-low warning signal from an open collector transistor output 10ms prior to loss of output from AC failure, 5V/10mA.
- 300LFM minimum of airflow must be maintained one inch above all points of top-side components or cover when forced-air cooling is required.
- Total power must not exceed 135W with convection cooling on open-frame models except where noted.
- Total power must not exceed 185W with 300LFM forced-air cooling on open-frame models.
- Total power must not exceed 110W with convection cooling and Chassis/Cover option.
- Total power must not exceed 185W with 300LFM forced-air cooling and Chassis/Cover option.
- Total current from Outputs 3 & 4 must not exceed 3A with convection cooling.
- Total current from Outputs 1 & 2 must not exceed 20A with convection cooling.
- Rated 15A maximum with convection cooling.
- Rated 27A maximum with convection cooling.

MAXIMUM OUTPUT POWER vs. AMBIENT TEMPERATURE



CONNECTOR SPECIFICATIONS

P1	AC Input	0.156 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)	6-32 screw down terminal mates with #6 ring tongue terminal. (10 in-lb max)
P2	DC Output (Multiple)	0.156 friction lock header mates with Molex 09-50-3161 or equivalent crimp terminal housing with Molex 2478 or equivalent crimp terminal.
G	Ground	0.187 quick disconnect terminal.
P3	Option/Sense (Single)	0.100 friction lock header mates with Molex 50-57-9008 or equivalent crimp terminal housing with Molex type 71851 or equivalent crimp terminal.
P3	Option/Sense (Multiple)	0.100 breakaway header mates with Molex 22-55-2081 or equivalent crimp terminal housing with Molex type 71851 or equivalent crimp terminal.