

# 185 WATTS

## SINGLE/MULTI OUTPUT DC-DC

### FEATURES:

- Compact 4.2" x 7.0" x 1.5" Size
- 2 Year Warranty
- 36-72VDC Input
- One to Four Outputs
- 4242VDC Reinforced Insulation
- Under/Overvoltage Lockout
- Size/Pin Compatible with REL-185 Series
- IEC 60601-1 3<sup>rd</sup> ed. Medical Cert.
- IEC 62368-1 2<sup>nd</sup> ed. Certification
- 0-70°C Operating Temperature
- RoHS Compliant
- Optional Chassis/Cover
- Power Good Signal



CHASSIS/COVER

OPEN FRAME

### SAFETY SPECIFICATIONS



Underwriters Laboratories  
File E137708/E140259

UL 62368-1:2014, 2<sup>nd</sup> Edition  
CAN/CSA-C22.2 No. 62368-1-14, 2<sup>nd</sup> Edition  
AAMI/ANSI ES60601-1:2005/(R) 2012/(R)2021  
CAN/CSA-C22.2 No. 60601-1:2014:2022



CB Reports/Certificates (including all National and Group Deviations)

IEC 62368-1:2014, 2<sup>nd</sup> Edition  
IEC 60601-1:2005/A1:2012



TUV SUD America

EN 62368-1:2014, 2<sup>nd</sup> Edition  
EN 60601-1:2006/A1:2013



RoHS Directive (Recast)

(2015/863/EU of March 2015)



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

### MODEL LISTING

MODEL	OUTPUT 1 <sub>(20)</sub>	OUTPUT 2 <sub>(20)</sub>	OUTPUT 3 <sub>(19)</sub>	OUTPUT 4 <sub>(19)</sub>
DC4-185-4001	+3.3V/20A <sub>(17)</sub>	+5V/10A	+12V/2A	-12V/2A
DC4-185-4002	+5V/20A <sub>(17)</sub>	+3.3V/10A	+12V/2A	-12V/2A
DC4-185-4003	+5V/20A <sub>(17)</sub>	+3.3V/10A	+15V/2A	-15V/2A
DC4-185-4004	+5V/20A <sub>(17)</sub>	-5V/10A	+12V/2A	-12V/2A
DC4-185-4005	+5V/20A <sub>(17)</sub>	-5V/10A	+15V/2A	-15V/2A
DC4-185-4006	+5V/20A <sub>(17)</sub>	+24V/3A	+12V/2A	-12V/2A
DC4-185-4007	+5V/20A <sub>(17)</sub>	+24V/3A	+15V/2A	-15V/2A
DC4-185-3001	+5V/20A <sub>(17)</sub>	+12V/5A		-12V/3A
DC4-185-3002	+5V/20A <sub>(17)</sub>	+15V/4A		-15V/3A
DC4-185-2001	+3.3V/20A <sub>(17)</sub>	+5V/10A		
DC4-185-2002	+5V/20A <sub>(17)</sub>	+12V/8A		
DC4-185-2003	+5V/20A <sub>(17)</sub>	+24V/4A		
DC4-185-2004	+12V/10A	-12V/6A		
DC4-185-2005	+15V/8A	-15V/5A		
DC4-185-1001	2.5V/37A <sub>(18)</sub>			
DC4-185-1002	3.3V/37A <sub>(18)</sub>			
DC4-185-1003	5V/37A <sub>(18)</sub>			
DC4-185-1004	12V/15.4A			
DC4-185-1005	15V/12.3A			
DC4-185-1006	24V/7.7A			
DC4-185-1007	28V/6.6A			
DC4-185-1008	48V/3.8A			

### 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  
BD – Reverse Input Protection

I/O – Isolated Outputs  
TS – Terminal Strip

# DC4-185

## OUTPUT SPECIFICATIONS

Total Output Power at 50°C <sub>(1)</sub> (See Derating Chart)	135W 185W	Convection Cooled <sub>(13, 15)</sub> 300LFM Forced-Air <sub>(12, 14, 16)</sub>
Output Voltage Centering	Output 1: Output 2: Output 3: Output 4:	± 0.5% (All outputs at 50% load) ± 5.0% ± 5.0% ± 5.0%
Output Voltage Adjust Range	Output 1:	95 - 105%
Load Regulation	Output 1: Output 2: (4001,4,5,2001) (4002,3) Output 3: Output 4:	0.5% (10-100% load change) 5.0% (20-100% load change) 10.0% (20-100% load change) 15.0% 5.0% 5.0%
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
Start Up Time		5 Seconds

### INPUT SPECIFICATIONS

Input Voltage Range	36-72 VDC
Input Under-Voltage Lockout	
Turn-On Voltage	29.0-35.0 VDC
Turn-Off Voltage	28.0-34.0 VDC
Input Overvoltage Shutdown	77.0-85.0 VDC
Maximum Input Current	7.0 A
Reflected Ripple Current	5 %
Efficiency	84% Typ., Full Power, 48VDC, varies by model

### 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

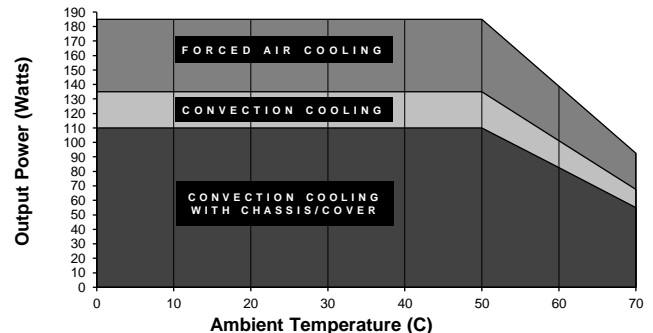
### GENERAL SPECIFICATIONS

Means of Protection	
Reinforced Insulation	2MOOP (Means of Operator Protection)
Reinforced Insulation	1MOOP (Means of Operator Protection)
Reinforced Insulation	Operational Insulation(Consult factory for 1MOPP)
Dielectric Strength <sub>(7, 8)</sub>	
Reinforced Insulation	4242 VDC, Primary to Secondary
Basic Insulation	2121 VDC, Primary to Ground
Operational Insulation	707 VDC, Secondary to Ground
Power Good Signal <sub>(11)</sub>	Logic high with input voltage above Vin min.
Remote Sense (singles only) <sub>(9)</sub>	250mV compensation of output cable losses
Mean-Time Between Failures	100,000 Hours min., MIL-HDBK-217F, 25° C, GB
Weight	1.28 Lbs. Open Frame 2.16 Lbs. Chassis and Cover

### EMC SPECIFICATIONS

Electrostatic Discharge	EN61000-4-2	±8KV contact/ ±15KV air discharge	A
Electrical Fast Transients/Bursts	EN61000-4-4	±2KV, 5KHz/100KHz	A
Surge Immunity	EN61000-4-5	±2KV line to earth/ ±1KV line to line	A

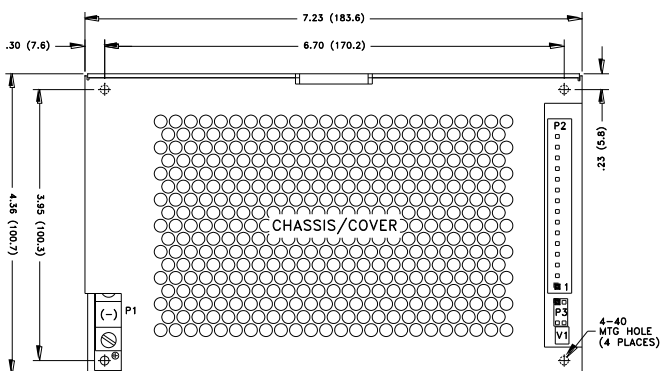
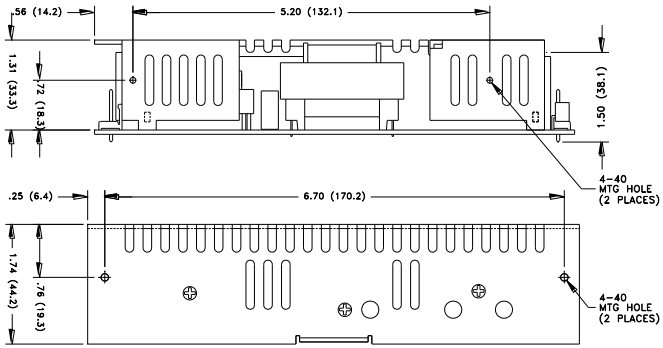
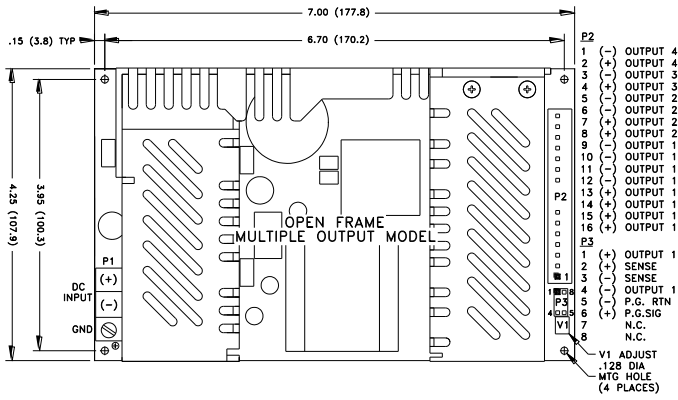
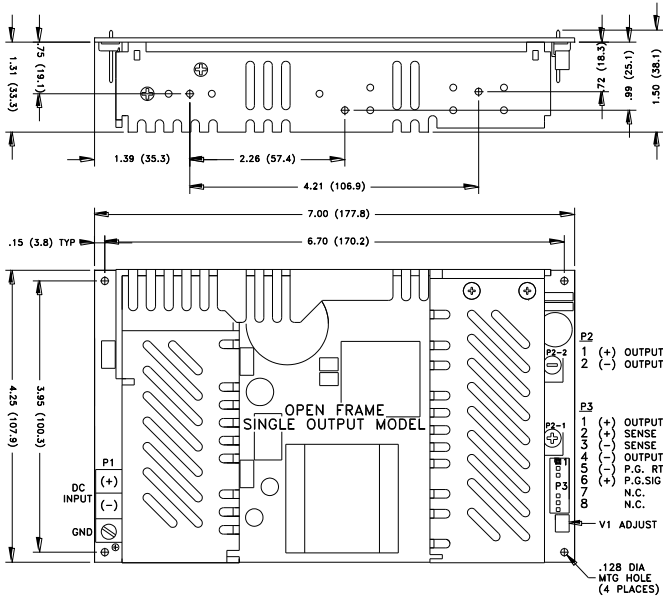
### MAXIMUM OUTPUT POWER vs. AMBIENT TEMPERATURE



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



# DC4-185 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.
- 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 1<sup>st</sup> 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.
- Power Good feature provides a logic-high signal from an open collector transistor when DC input reaches minimum operating voltage.
- 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.
- Rated 15A maximum with convection cooling.
- Rated 27A maximum with convection cooling.
- 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.

# CONNECTOR SPECIFICATIONS

P1	DC Input	#6 standard (3)position terminal block.
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	P.G./Sense (Single)	0.100 breakaway header mates with Molex 50-57-9008 or equivalent crimp terminal housing with Molex type 71851 or equivalent crimp terminal.
P3	P.G./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.