

# 150 WATTS

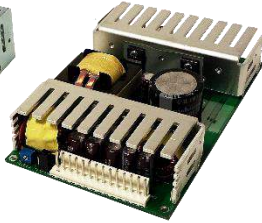
## SINGLE/MULTI OUTPUT DC-DC

### FEATURES:

- Compact 3.8" x 6" x 1.3" Size
- 2 Year Warranty
- 18-36VDC Input
- One to Four Outputs
- 4242VDC Reinforced Insulation
- Under/Overvoltage Lockout
- Size/Pin Compatible with REL-150 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<br>File E137708/E140259  | UL 62368-1:2014, 2 <sup>nd</sup> Edition<br>CAN/CSA-C22.2 No. 62368-1-14<br>AAMI/ANSI ES60601-1:2005(R) 2012<br>CAN/CSA-C22.2 No. 60601-1:2014 |
| CB Reports/Certificates (including all National and Group Deviations)  | IEC 62368-1:2014, 2 <sup>nd</sup> Edition<br>IEC 60601-1:2005/A1:2012  |
| TUV SUD America  | EN 62368-1:2014, 2 <sup>nd</sup> Edition<br>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<br>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> |
|--------------|---------------------------|--------------------------|--------------------------|--------------------------|
| DC2-150-4001 | +3.3V/15A <sub>(17)</sub> | +5V/8A                   | +12V/2A                  | -12V/2A                  |
| DC2-150-4002 | +5V/15A <sub>(17)</sub>   | +3.3V/8A                 | +12V/2A                  | -12V/2A                  |
| DC2-150-4003 | +5V/15A <sub>(17)</sub>   | +3.3V/8A                 | +15V/2A                  | -15V/2A                  |
| DC2-150-4004 | +5V/15A <sub>(17)</sub>   | -5V/8A                   | +12V/2A                  | -12V/2A                  |
| DC2-150-4005 | +5V/15A <sub>(17)</sub>   | -5V/8A                   | +15V/2A                  | -15V/2A                  |
| DC2-150-4006 | +5V/15A <sub>(17)</sub>   | +24V/3A                  | +12V/2A                  | -12V/2A                  |
| DC2-150-4007 | +5V/15A <sub>(17)</sub>   | +24V/3A                  | +15V/2A                  | -15V/2A                  |
| DC2-150-3001 | +5V/15A <sub>(17)</sub>   | +12V/4A                  |                          | -12V/3A                  |
| DC2-150-3002 | +5V/15A <sub>(17)</sub>   | +15V/3A                  |                          | -15V/2A                  |
| DC2-150-2001 | +3.3V/15A <sub>(17)</sub> | +5V/8A                   |                          |                          |
| DC2-150-2002 | +5V/15A <sub>(17)</sub>   | +12V/5A                  |                          |                          |
| DC2-150-2003 | +5V/15A <sub>(17)</sub>   | +24V/3A                  |                          |                          |
| DC2-150-2004 | +12V/7.5A                 | -12V/5A                  |                          |                          |
| DC2-150-2005 | +15V/5A                   | -15V/5A                  |                          |                          |
| DC2-150-1001 | 2.5V/30A <sub>(18)</sub>  |                          |                          |                          |
| DC2-150-1002 | 3.3V/30A <sub>(18)</sub>  |                          |                          |                          |
| DC2-150-1003 | 5V/30A <sub>(18)</sub>    |                          |                          |                          |
| DC2-150-1004 | 12V/12.5A                 |                          |                          |                          |
| DC2-150-1005 | 15V/10.0A                 |                          |                          |                          |
| DC2-150-1006 | 24V/6.3A                  |                          |                          |                          |
| DC2-150-1007 | 28V/5.4A                  |                          |                          |                          |
| DC2-150-1008 | 48V/3.1A                  |                          |                          |                          |

### 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

# DC2-150

## OUTPUT SPECIFICATIONS

|   |   |  |
|---|---|--|
| Total Output Power at 50°C <sub>(1)</sub><br>(See Derating Chart) | 100W<br>150W  | Convection Cooled <sub>(13, 15)</sub><br>300LFM Forced-Air Cooled <sub>(12, 14, 16)</sub>  |
| Output Voltage Centering  | Output 1:<br>Output 2:<br>Output 3:<br>Output 4:                                    | ± 0.5% (All outputs at 50% load)<br>± 5.0%<br>± 5.0%<br>± 5.0%   |
| Output Voltage Adjust Range                                       | Output 1:   | 95 - 105%  |
| Load Regulation   | Output 1:<br>Output 2:<br>(4001-5 Models)<br>(2001 Model)<br>Output 3:<br>Output 4: | 0.5% (10-100% load change)<br>5.0% (10-100% load change)<br>8.0% (20-100% load change)<br>6.0% (20-100% load change)<br>5.0% (10-100% load change)<br>5.0% (10-100% load change) |
| Source Regulation   | Outputs 1 - 4:  | 0.5%   |
| Cross Regulation  | Outputs 2 - 4:  | 5.0%   |
| 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         | 18-36 VDC                                     |
| Input Under-Voltage Lockout |   |
| Turn-On Voltage             | 14.5-17.5 VDC                                 |
| Turn-off Voltage            | 14.0-17.0 VDC                                 |
| Input Overvoltage Shutdown  | 37.0-43.0 VDC                                 |
| Maximum Input Current       | 11.5 A  |
| Reflected Ripple Current    | 5 %   |
| Efficiency                  | 82% Typ., Full Power, 24 VDC, 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<br>5,000m ASL - Operating - ITE/AV - 62368-1<br>12,192m ASL - Non-Operating |

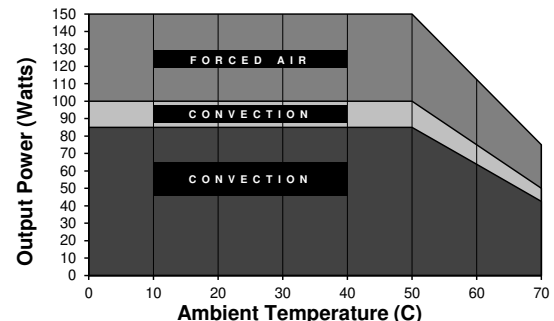
### GENERAL SPECIFICATIONS

|                                       |   |
|---------------------------------------|---|
| Means of Protection                   |   |
| Primary to Secondary                  | 2MOOP (Means of Operator Protection)                |
| Primary to Ground                     | 1MOOP (Means of Operator Protection)                |
| Secondary to Ground                   | 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 <sub>(9)</sub>           | 250mV compensation of output cable losses           |
| Mean-Time Between Failures            | 100,000 Hours min., MIL-HDBK-217F, 25° C, GB        |
| Weight                                | 0.90 Lbs. Open Frame<br>1.60 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/150W unless otherwise stated, may vary by model and are subject to change without notice.

# DC2-150 SERIES MECHANICAL SPECIFICATIONS

# APPLICATIONS INFORMATION

- Each output can deliver its rated current but Total Output Power must not exceed 150W 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 100W with convection cooling on open-frame models except where noted.
- Total Power must not exceed 150W with 300LFM forced-air cooling on open-frame models.
- Total Power must not exceed 85W with convection cooling and Chassis/Cover option.
- Total Power must not exceed 150W with 300LFM forced-air cooling and Chassis/Cover option.
- Rated 12A maximum with convection cooling.
- Rated 20A 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 15A with convection cooling.

## CONNECTOR SPECIFICATIONS

|    |                       |   |
|----|-----------------------|---|
| P1 | DC Input              | 0.156 friction lock header mates with Molex 09-50-3061 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 09-50-3141 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 50-57-9006 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 22-55-2061 or equivalent crimp terminal housing with Molex type 70058 or equivalent crimp terminal. |

