

110 WATTS

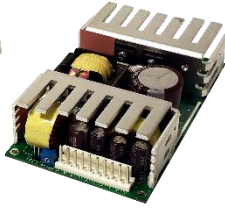
SINGLE/MULTI OUTPUT DC-DC

FEATURES:

- Compact 3" x 5" x 1.3" Size
- 2 Year Warranty
- 36-72VDC Input
- One to Four Outputs
- 4242VDC Reinforced Insulation
- Under/Overshoot Lockout
- Size/Pin Compatible with REL-110 Series
- IEC 60601-1 3rd ed. Medical Cert.
- IEC 62368-1 2nd 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, 2nd Edition
CAN/CSA-C22.2 No. 62368-1-14, 2nd Ed
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



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 ⁽²⁰⁾ | OUTPUT 2 ⁽²⁰⁾ | OUTPUT 3 ⁽¹⁹⁾ | OUTPUT 4 ⁽¹⁹⁾ |
|--------------|---------------------------|--------------------------|--------------------------|--------------------------|
| DC4-110-4001 | +3.3V/10A ₍₁₇₎ | +5V/6A | +12V/2A | -12V/2A |
| DC4-110-4002 | +5V/10A ₍₁₇₎ | +3.3V/6A | +12V/2A | -12V/2A |
| DC4-110-4003 | +5V/10A ₍₁₇₎ | +3.3V/6A | +15V/2A | -15V/2A |
| DC4-110-4004 | +5V/10A ₍₁₇₎ | -5V/6A | +12V/2A | -12V/2A |
| DC4-110-4005 | +5V/10A ₍₁₇₎ | -5V/6A | +15V/2A | -15V/2A |
| DC4-110-4006 | +5V/10A ₍₁₇₎ | +24V/2A | +12V/2A | -12V/2A |
| DC4-110-4007 | +5V/10A ₍₁₇₎ | +24V/2A | +15V/2A | -15V/2A |
| DC4-110-3001 | +5V/10A ₍₁₇₎ | +12V/3A | | -12V/3A |
| DC4-110-3002 | +5V/10A ₍₁₇₎ | +15V/2A | | -15V/2A |
| DC4-110-2001 | +3.3V/10A ₍₁₇₎ | +5V/6A | | |
| DC4-110-2002 | +5V/10A ₍₁₇₎ | +12V/5A | | |
| DC4-110-2003 | +5V/10A ₍₁₇₎ | +24V/3A | | |
| DC4-110-2004 | +12V/5A | -12V/4A | | |
| DC4-110-2005 | +15V/4A | -15V/3A | | |
| DC4-110-1001 | 2.5V/22A ₍₁₈₎ | | | |
| DC4-110-1002 | 3.3V/22A ₍₁₈₎ | | | |
| DC4-110-1003 | 5V/22A ₍₁₈₎ | | | |
| DC4-110-1004 | 12V/9.2A | | | |
| DC4-110-1005 | 15V/7.3A | | | |
| DC4-110-1006 | 24V/4.6A | | | |
| DC4-110-1007 | 28V/3.9A | | | |
| DC4-110-1008 | 48V/2.3A | | | |

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

DC4-110

OUTPUT SPECIFICATIONS

| | | |
|---|---|---|
| Total Output Power at 50°C ₍₁₎ (See Derating Chart) | 80W 110W | Convection Cooled ^(13, 15) 300LFM Forced-Air Cooled ^(12, 14, 16) |
| 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: (4001-5 Models) (2001 Model) Output 3: Output 4: | 0.5% (10-100% load change) 5.0% 8.0% 6.0% 5.0% 5.0% |
| 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 | 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 | 4.2 A |
| Reflected Ripple Current | 5 % |
| Efficiency | 82% 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 |

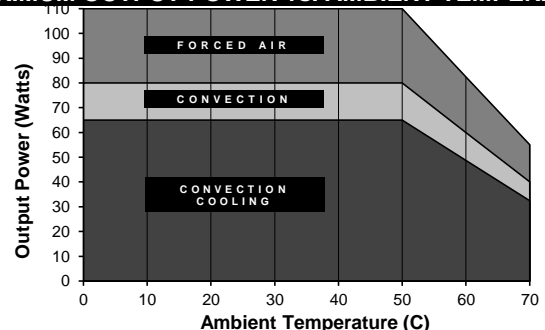
GENERAL SPECIFICATIONS

| | |
|--|---|
| Means of Protection | |
| 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 ^(7, 8) | |
| Reinforced Insulation | 4242 VDC, Primary to Secondary |
| Basic Insulation | 2121 VDC, Primary to Ground |
| Operational Insulation | 707 VDC, Secondary to Ground |
| Power Good Signal ⁽¹¹⁾ | Logic high with input voltage above Vin min. |
| Remote Sense (singles only) ⁽⁹⁾ | 250mV compensation of output cable losses |
| Mean-Time Between Failures | 100,000 Hours min., MIL-HDBK-217F, 25° C, GB |
| Weight | 0.65 Lbs. Open Frame 1.15 Lbs. Chassis and Cover |

EMC SPECIFICATIONS

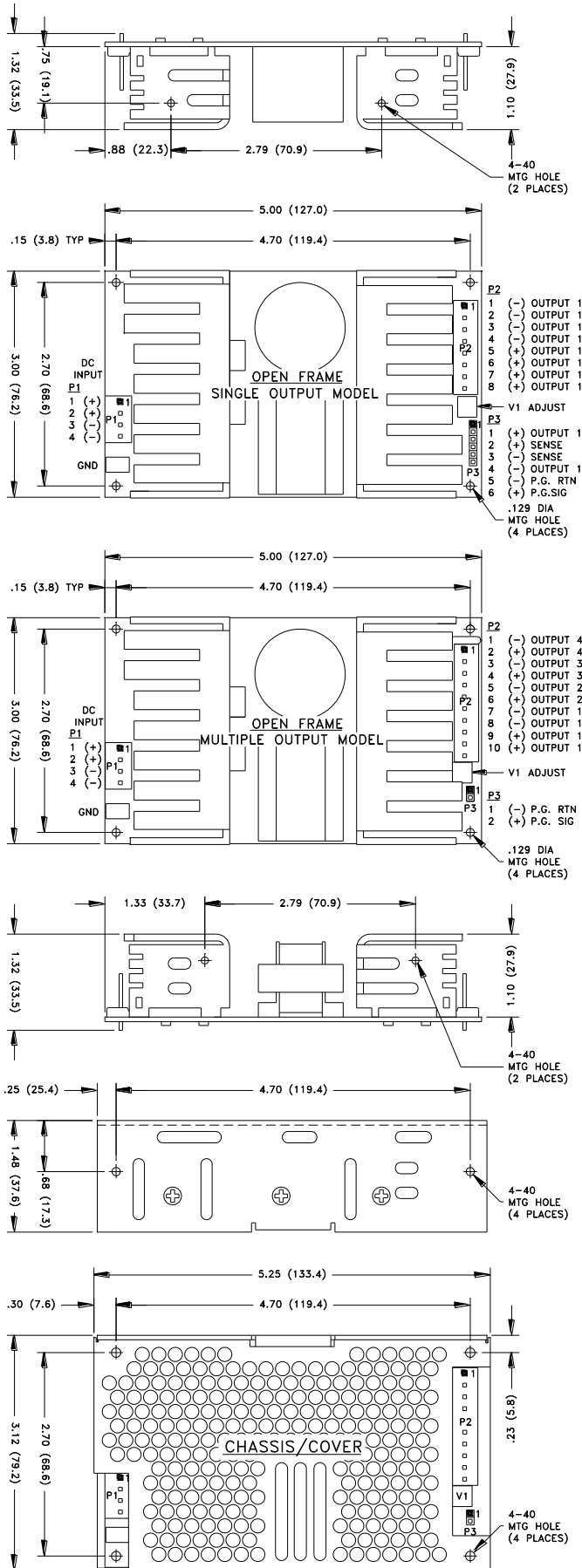
| | | | |
|-----------------------------------|-------------|---------------------------------------|---|
| Electrostatic Discharge | EN61000-4-2 | ±8KV contact/ ±15KV air discharge | A |
| Electrical Fast Transients/Bursts | EN61000-4-4 | ±2KV, 5KHz/100KHz | A |
| Surge Immunity | EN61000-4-5 | ±2KV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

MAXIMUM OUTPUT POWER vs. AMBIENT TEMPERATURE



All specifications are maximum at 25°C/110W unless otherwise stated, may vary by model and are subject to change without notice.

DC4-110 SERIES MECHANICAL SPECIFICATIONS



APPLICATIONS INFORMATION

- Each output can deliver its rated current but Total Output Power must not exceed 110W 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 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 (single output models only). 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 80W with convection cooling on open-frame models except where noted.
- Total Power must not exceed 110W with 300LFM forced-air cooling on open-frame models.
- Total Power must not exceed 65W with convection cooling and Chassis/Cover option.
- Total Power must not exceed 110W with 300LFM forced-air cooling and Chassis/Cover option.
- Rated 8A maximum with convection cooling.
- Rated 16A 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 12A with convection cooling.

CONNECTOR SPECIFICATIONS

| | | |
|----|----------------------|---|
| P1 | DC Input | 0.156 friction lock header mates with Tyco 640250-4 or equivalent crimp terminal housing with Tyco 3-640706-1 or equivalent crimp terminal. |
| P2 | DC Output (Single) | 0.156 friction lock header mates with Tyco 770849-8 or equivalent crimp terminal housing with Tyco 3-640707-1 or equivalent crimp terminal. |
| P2 | DC Output (Multiple) | 0.156 friction lock header mates with Tyco 1-770849-0 or equivalent crimp terminal housing with Tyco 3-640707-1 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. (Multiple) | 0.100 breakaway header mates with Molex 50-57-9002 or equivalent crimp terminal housing with Molex type 71851 or equivalent crimp terminal. |