

# 110 WATTS

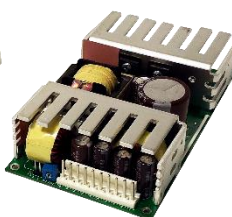
## SINGLE/MULTI OUTPUT DC-DC

### FEATURES:

- Compact 3" x 5" 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-110 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, 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 <sup>(20)</sup>	OUTPUT 2 <sup>(20)</sup>	OUTPUT 3 <sup>(19)</sup>	OUTPUT 4 <sup>(19)</sup>
DC2-110-4001	+3.3V/10A <sub>(17)</sub>	+5V/6A	+12V/2A	-12V/2A
DC2-110-4002	+5V/10A <sub>(17)</sub>	+3.3V/6A	+12V/2A	-12V/2A
DC2-110-4003	+5V/10A <sub>(17)</sub>	+3.3V/6A	+15V/2A	-15V/2A
DC2-110-4004	+5V/10A <sub>(17)</sub>	-5V/6A	+12V/2A	-12V/2A
DC2-110-4005	+5V/10A <sub>(17)</sub>	-5V/6A	+15V/2A	-15V/2A
DC2-110-4006	+5V/10A <sub>(17)</sub>	+24V/2A	+12V/2A	-12V/2A
DC2-110-4007	+5V/10A <sub>(17)</sub>	+24V/2A	+15V/2A	-15V/2A
DC2-110-3001	+5V/10A <sub>(17)</sub>	+12V/3A		-12V/3A
DC2-110-3002	+5V/10A <sub>(17)</sub>	+15V/2A		-15V/2A
DC2-110-2001	+3.3V/10A <sub>(17)</sub>	+5V/6A		
DC2-110-2002	+5V/10A <sub>(17)</sub>	+12V/5A		
DC2-110-2003	+5V/10A <sub>(17)</sub>	+24V/3A		
DC2-110-2004	+12V/5A	-12V/4A		
DC2-110-2005	+15V/4A	-15V/3A		
DC2-110-1001	2.5V/22A <sub>(18)</sub>			
DC2-110-1002	3.3V/22A <sub>(18)</sub>			
DC2-110-1003	5V/22A <sub>(18)</sub>			
DC2-110-1004	12V/9.2A			
DC2-110-1005	15V/7.3A			
DC2-110-1006	24V/4.6A			
DC2-110-1007	28V/3.9A			
DC2-110-1008	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



INTEGRATED  
POWER DESIGNS

300 Stewart Road ■ Wilkes-Barre, PA 18706 ■ Phone: (570) 824-4666 ■ Fax: (570) 824-4843 ■ Email: [sales@ipdpower.com](mailto:sales@ipdpower.com) ■ Web: [www.ipdpower.com](http://www.ipdpower.com)

# DC2-110

## OUTPUT SPECIFICATIONS

Total Output Power at 50°C <sub>(1)</sub> (See Derating Chart)	80W 110W	Convection Cooled <sup>(13, 15)</sup> 300LFM Forced-Air Cooled <sup>(12, 14, 16)</sup>
Output Voltage Centering	Output 1: Output 2: Output 3: Output 4:	± 0.5% ± 5.0% ± 5.0% ± 5.0% (All outputs at 50% load)
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% 5.0% 8.0% 6.0% 5.0% 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	8.5 A
Reflected Ripple Current	5 %
Efficiency	82% Typ., Full Power, 24VDC, 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

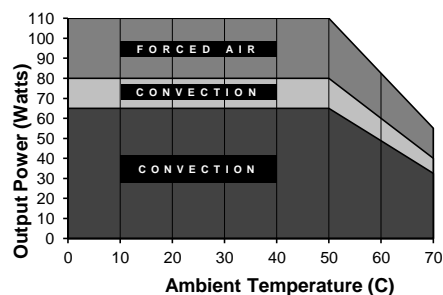
## GENERAL SPECIFICATIONS

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 <sup>(7, 8)</sup>	
Reinforced Insulation	4242 VDC, Primary to Secondary
Basic Insulation	2121 VDC, Primary to Ground
Operational Insulation	707 VDC, Secondary to Ground
Power Good Signal <sup>(11)</sup>	Logic high with input voltage above Vin min.
Remote Sense (singles only) <sup>(9)</sup>	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

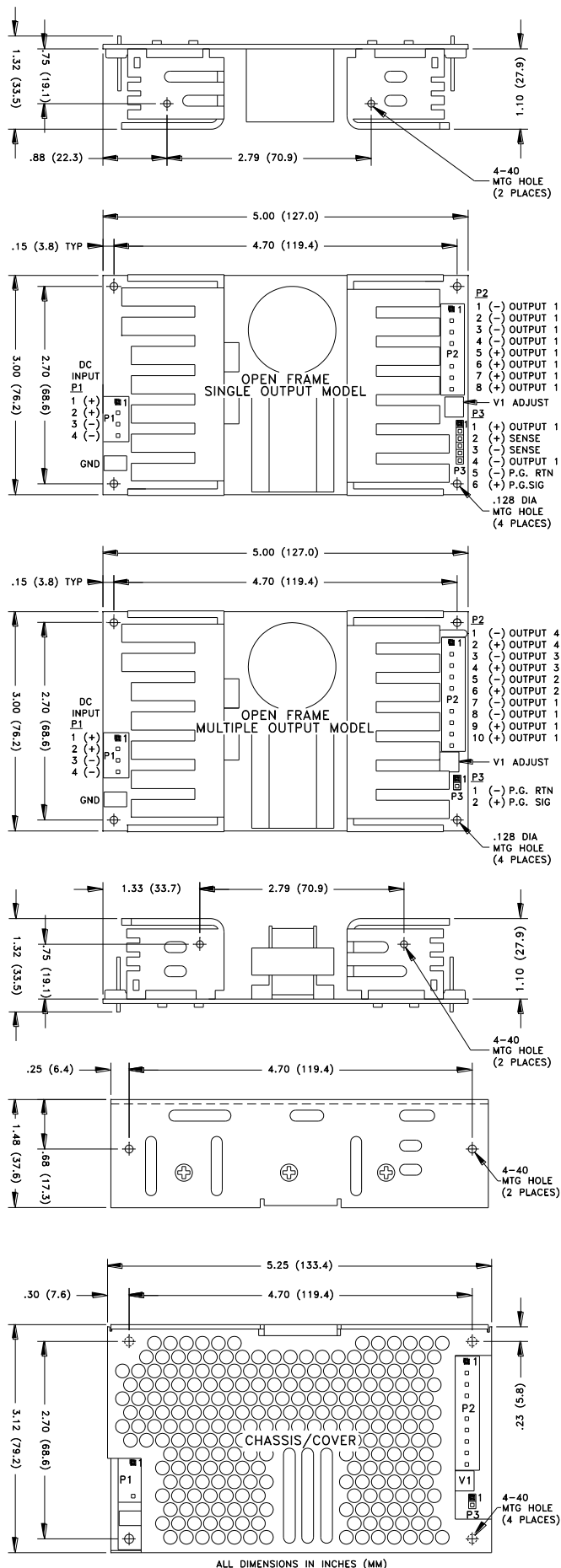
Electrostatic Discharge	EN61000-4-2	±8KV contact/ ±15KV air discharge	A
Electrical Fast Transients/Bursts	EN61000-4-4	±2KV, 5KHz/100KHz	A
Surge Immunity	EN61000-4-5	±2KV line to earth/ ±1KV line to line	A

## 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.

## DC2-110 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 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 (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.

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