110 WATTS

SINGLE/MULTI OUTPUT DC-DC

DC4-110

FEATURES:

- **Compact 3" x 5" x 1.3" Size**
- **2 Year Warranty**
- **36-72VDC Input**
- **One to Four Outputs**
- **4242VDC Reinforced Insulation**
- **Under/Overvoltage 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

c UL us	Underwriters Laboratories File E137708/E140259	UL 62368-1:2014, 2nd Edition CAN/CSA-C22.2 No. 62368-1-14, 2nd Edition AAMI/ANSI ES60601-1:2005/(R) 2012(R)2021 CAN/CSA-C22.2 No. 60601-1:2014:2022
IECEE CB SCHEME	CB Reports/Certificates (including all National and Group Deviations)	IEC 62368-1:2014, 2nd Edition IEC 60601-1:2005/A1:2012/A2:2020
TUV SUD	TUV SUD America	EN 62368-1:2014, 2nd Edition EN 60601-1:2006/A1:2013/A2:2021
CE	RoHS Directive (Recast)	(2015/863/EU of March 2015)
UK CA	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

OUTPUT SPECIFICATIONS

Total Output Power at 50°C(1)	80W	Convection Cooled(13, 15)
(See Derating Chart)	110W	300LFM Forced-Air Cooled(12, 14, 16)
Output Voltage Centering	Output 1:	±0.5% (All outputs
	Output 2:	±5.0% at 50% load)
	Output 3:	±5.0%
	Output 4:	±5.0%
Output Voltage Adjust Range	Output 1:	95 - 105%
Load Regulation	Output 1:	0.5% (10-100% load change)
	Output 2:	5.0%
	(4001-5 Models)	8.0%
	(2001 Model)	6.0%
	Output 3:	5.0%
	Output 4:	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 Temperature Range	0°C to + 70°C 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

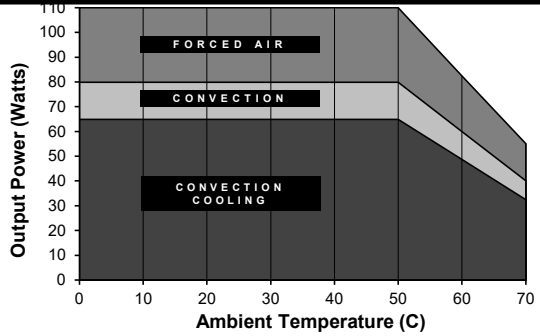
GENERAL SPECIFICATIONS

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

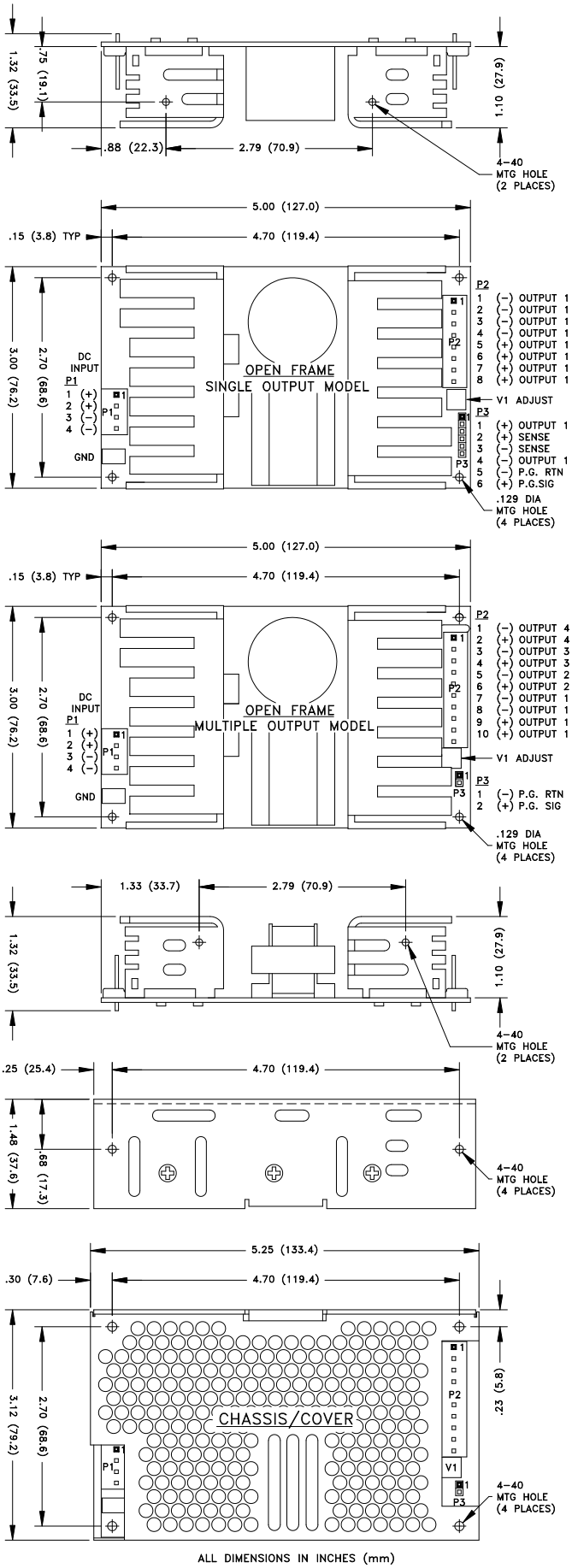
MAXIMUM OUTPUT POWER vs. AMBIENT TEMPERATURE



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

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DC4-110 SERIES MECHANICAL SPECIFICATIONS



ALL DIMENSIONS IN INCHES (mm)

APPLICATIONS INFORMATION

1. Each output can deliver its rated current but Total Output Power must not exceed 110W as determined by the cooling method.
2. 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.
3. Sufficient area must be provided around power supply to allow natural movement of air to develop in convection-cooled applications.
4. 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.
5. A minimum load of 10% is required on Output 1 to ensure proper regulation of remaining outputs.
6. 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.
7. 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.
8. 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.
9. 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.
10. Maximum screw penetration into bottom chassis mounting holes is 0.100 inches. Maximum screw penetration into side chassis mounting holes is 0.250 inches.
11. Power Good feature provides a logic-high signal from an open collector transistor when DC input reaches minimum operating voltage.
12. 300LFM minimum of airflow must be maintained one inch above all points of top-side components or cover when forced-air cooling is required.
13. Total Power must not exceed 80W with convection cooling on open-frame models except where noted.
14. Total Power must not exceed 110W with 300LFM forced-air cooling on open-frame models.
15. Total Power must not exceed 65W with convection cooling and Chassis/Cover option.
16. Total Power must not exceed 110W with 300LFM forced-air cooling and Chassis/Cover option.
17. Rated 8A maximum with convection cooling.
18. Rated 16A maximum with convection cooling.
19. Total current from Outputs 3 & 4 must not exceed 3A with convection cooling.
20. 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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