

DIN Rail Power Supply

48V 120W 1 Phase / DRL-48V120W1AA



Highlights & Features

- Universal AC input voltage
- Built-in constant current circuit for reactive loads
- Up to 90.0% efficiency
- Full power from -10°C to +50°C operation at 230Vac @ 5000 meters or 16400 feet altitude
- Compliance to SEMI F47 @ 200Vac
- Conformal coating on PCBAs to protect against common dust and chemical pollutants

Safety Standards



CB Certified for worldwide use

Model Number:	DRL-48V120W1AA
Unit Weight:	0.54 kg (1.19 lb)
Dimensions (L x W x D):	123.6 x 40 x 117.6 mm (4.86 x 1.57 x 4.62 inch)

General Description

The DRL-48V120W1AA is designed for cost sensitive users who need to fulfill essential features needed for many general industrial applications, without compromising on quality and reliability. The convection-cooled product will operate between -20°C to +70°C, with full rated power available from -10°C to +50°C at 230Vac. The overcurrent protection is designed to operate in constant current mode, which makes the power supply suitable for inductive and capacitive load applications. The product is certified according to safety standards IEC/EN/UL 60950-1 for Information Technology Equipment (ITE) and UL 508 for Industrial Control Equipment (ICE). Electromagnetic radiated and conducted emissions are compliant to EN 55022, Class B; and, the product is fully compliant for environmental protection requirements per RoHS Directive 2011/65/EU.

Model Information

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Model Number	Input Voltage Range	Rated Output Voltage	Rated Output Current
DRL-48V120W1AA	85-264Vac (120-375Vdc)	48Vdc	2.50A

Model Numbering

DRL –	48V	120W	1	A	A	D
DIN Rail Power Supply	Output Voltage	Output Power	Single Phase	Delta Standard	A – Without DC OK Contact	D – Dahua

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Specifications

Input Ratings / Characteristics

Nominal Input Voltage	100-240Vac
Input Voltage Range	85-264Vac
Nominal Input Frequency	50-60Hz
Input Frequency Range	47-63Hz
DC Input Voltage Range*	120-375Vdc
Input Current	2.2A typ. @ 115Vac, 1.2A typ. @ 230Vac
Efficiency at 100% Load	89% typ. @ 115Vac, 90% typ. @ 230Vac
Max Power Dissipation	0% load 1.21W @ 115Vac & 230Vac 100% load 13.3W @ 115Vac & 230Vac
Max Inrush Current (Cold Start)	20A typ. @ 115Vac, 40A typ. @ 230Vac
Leakage Current	< 0.25mA @ 264Vac

*Fulfills test conditions for DC input. Safety approval for DC input can be obtained upon request.

Output Ratings / Characteristics**

Nominal Output Voltage	48Vdc
Factory Set Point Tolerance	48Vdc \pm 2%
Output Voltage Adjustment Range	44-56Vdc
Output Current	2.50A (120W max.)
Output Power	120W
Line Regulation	< 0.5% (@ 85-264Vac, 100% load)
Load Regulation	< 1% (0-100% load)
PARD*** (20MHz)	< 150mVpp @ > -10°C to +70°C < 300mVpp @ \leq -10°C to -20°C
Rise Time	30ms typ. @ nominal input (100% load)
Start-up Time	200ms typ. @ 115Vac & 230Vac (100% load)
Hold-up Time	20ms typ. @ 115Vac (100% load) 90ms typ. @ 230Vac (100% load)
Dynamic Response (Overshoot & Undershoot O/P Voltage)	\pm 10% @ 85-264Vac input, 0-100% load (Slew Rate: 0.1A/ μ s)
Start-up with Capacitive Loads	4,000 μ F Max

**For power de-rating from -10°C to -20°C, and 40°C to 70°C @ 115Vac & 50°C to 70°C @ 230Vac, and V_{in} < 100Vac, see power de-rating on page 3.

***PARD is measured with an AC coupling mode, 5cm wires, and in parallel with 0.1 μ F ceramic capacitor & 47 μ F electrolytic capacitor.

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Mechanical

Case Cover / Chassis	SGCC / Aluminium	
Dimensions (L x W x D)	123.6 x 40 x 117.6 mm (4.86 x 1.57 x 4.62 inch)	
Unit Weight	0.54 kg (1.19 lb)	
Indicator	Green LED (DC OK)	
Cooling System	Convection	
Terminal	Input	3 Pins (Rated 600V/35A)
	Output	4 Pins (Rated 300V/28A)
Wire	Input	AWG 18-8
	Output	AWG 24-12
Mounting Rail	Standard TS35 DIN Rail in accordance with EN 60715	
Noise (1 Meter from power supply)	Sound Pressure Level (SPL) < 25dBA	

Environment

Surrounding Air Temperature	Operating	-20°C to +70°C
	Storage	-40°C to +85°C
Power De-rating	-10°C to -20°C de-rate power by 2%/°C > 40°C de-rate power by 1.67% / °C @ 115Vac > 50°C de-rate power by 2.5% / °C @ 230Vac < 100Vac de-rate power by 1% / Vac	
Operating Humidity	5 to 95% RH (Non-Condensing)	
Operating Altitude	0 to 5,000 Meters (16,400 ft.) for ITE application 0 to 2,000 Meters (6,560 ft.) for ICE application	
Shock Test	Non-Operating	IEC 60068-2-27, 27, Half Sine Wave: 50G for duration of 11ms; 3 times per direction, 9 times in total
	Operating	IEC 60068-2-27, 27, Half Sine Wave: 10G for duration of 11ms; 1 time in X axis
Vibration	Non-Operating	IEC 60068-2-6, Random: 5Hz to 500Hz; 2.09G _{rms} ; 20 min per axis for all X, Y, Z directions
	Operating	IEC 60068-2-6, Sine Wave: 10Hz to 500Hz @ 19.6m/s ² (2G peak); displacement of 0.35mm; 10 min per cycle, 60 min for X direction
Pollution Degree	2	

Protections

Overvoltage	57.0V-67.2V, SELV Output, Latch Mode
Overload / Overcurrent	105-150% of rated load current, Continuous current
Over Temperature	Latch Mode
Short Circuit	Hiccup Mode, Non-Latching (Auto-Recovery when the fault is removed)
Internal Fuse	T4A / 250V
Degree of Protection	IP20 Compliance
Protection Against Shock	Class I with PE* connection

*PE: Primary Earth

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Reliability Data

MTBF	Telcordia SR-332	> 700,000 hrs	I/P: 100Vac, O/P: 100% load, Ta: 25°C
Expected Cap Life Time		10 years (115Vac & 230Vac, 50% load @ 40°C)	

Safety Standards / Directives

Safety Entry Low Voltage		SELV (EN 60950-1)
Electrical Safety	TUV Bauart	EN 60950-1
	UL/cUL recognized	UL 60950-1 and CSA C22.2 No. 60950-1 (File No. E131881)
	CCC	GB4943.1
	CB scheme	IEC 60950-1
Industrial Control Equipment	UL/cUL listed	UL 508 and CSA C22.2 No. 107.1-01 (File No. E338991)
CE		In conformance with EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC
Material and Parts		RoHS Directive 2011/65/EU Compliant
Galvanic Isolation	Input to Output	3.0KVac
	Input to Ground	2.0KVac
	Output to Ground	0.5KVac

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EMC

EMC / Emissions		Generic Standards: EN 61000-6-3, EN 61000-6-4 CISPR 22, EN 55022, EN 55011, FCC Title 47: Class B; GB9254.1	
Component Power Supply for General Use		EN 61204-3	
Immunity to		Generic Standards: EN 61000-6-1, EN 61000-6-2, EN 55024	
Electrostatic Discharge	IEC 61000-4-2	Level 4 Criteria A ¹⁾ Air Discharge: 15kV Contact Discharge: 8kV	
Radiated Field	IEC 61000-4-3	Level 3 Criteria A ¹⁾ 80MHz-1GHz, 10V/M with 1kHz tone / 80% modulation 1.4GHz-2GHz, 3V/M with 1kHz tone / 80% modulation 2GHz-2.7GHz, 1V/M with 1kHz tone / 80% modulation	
Electrical Fast Transient / Burst	IEC 61000-4-4	Level 3 Criteria A ¹⁾ 2kV	
Surge	IEC 61000-4-5	Level 4 Criteria A ¹⁾ Common Mode ³⁾ : 4kV Differential Mode ⁴⁾ : 2kV	
Conducted	IEC 61000-4-6	Level 3 Criteria A ¹⁾ 150kHz-80MHz, 10Vrms	
Power Frequency Magnetic Fields	IEC 61000-4-8	Level 4 Criteria A ¹⁾ 30A/m	
Voltage Dips and Interruptions	IEC 61000-4-11	0% of 100Vac, 20ms 40% of 100Vac, 200ms 70% of 100Vac, 500ms 0% of 100Vac, 5000ms 0% of 240Vac, 20ms 40% of 240Vac, 200ms 70% of 240Vac, 500ms 0% of 240Vac, 5000ms	Criteria A ¹⁾ Criteria B ²⁾ Criteria A ¹⁾ Criteria B ²⁾ Criteria A ¹⁾ Criteria A ¹⁾ Criteria A ¹⁾ Criteria B ²⁾
Low Energy Pulse Test (Ring Wave)	IEC 61000-4-12	Level 3 Criteria A ¹⁾ Common Mode ³⁾ : 2kV Differential Mode ⁴⁾ : 1kV	
Harmonic Current Emission	IEC/EN 61000-3-2, Class A; GB17625.1		
Voltage Fluctuation and Flicker	IEC/EN 61000-3-3		
Voltage Sag Immunity SEMI F47 - 0706	80% of 200Vac 70% of 200Vac 50% of 200Vac	160Vac, 1000ms 140Vac, 500ms 100Vac, 200ms	Criteria A ¹⁾ Criteria A ¹⁾ Criteria A ¹⁾

1) Criteria A: Normal performance within the specification limits

2) Criteria B: Temporary degradation or loss of function which is self-recoverable

3) Asymmetrical: Common mode (Line to earth)

4) Symmetrical: Differential mode (Line to line)