

# LDN120 Series

## 120W DIN Rail Switching Power Supply

LDN120 Series are single phase DIN Rail Switching Power Supplies, suitable for worldwide applications such as process control, heavy duty applications, but also building automation.

These units have received excellent market approval for their high efficiency, excellent reliability and compactness. Simple but elegant look and ease of installation due to pluggable connectors make them ideal for various industrial applications.

LDN120 Series are Class I isolation devices suitable for SELV and PELV circuitry and are designed to be mounted on DIN rail and installed inside a protective enclosure.



### Key Features & Benefits

- Single phase AC input 90 – 264 VAC (110 - 345 VDC)
- High efficiencies and in compact size
- 150% overload capability
- Only 40 mm width aluminum enclosure
- Up to 60°C operating temperature with no derating
- Short circuit, overload and over temperature protection
- RoHS Compliant

### Applications

- Automation
- Process Control
- Communication
- Instrumentation Equipment

## 1. MODEL SELECTION

MODEL	INPUT VOLTAGE	# of PHASES	OUTPUT VOLTAGE	OUTPUT CURRENT	REDUNDANCY
LDN120-12	120 - 240 VAC (110 - 345 VDC)	1	12 VDC	7 A	No ORing diode
LDN120-24	120 - 240 VAC (110 - 345 VDC)	1	24 VDC	5 A	No ORing diode
LDN120-24P	120 - 240 VAC (110 - 345 VDC)	1	24 VDC	5 A	Internal ORing diode
LDN120-48P	120 - 240 VAC (110 - 345 VDC)	1	48 VDC	2.5 A	Internal ORing diode

## 2. INPUT SPECIFICATIONS

Technical parameters are typical, measured in laboratory environment at 25°C and 240 VAC / 50 Hz, at nominal values, after minimum 5 minutes of operation.

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Input AC Voltage Range	Rated, UL certified Operating	120 - 240 VAC 90 - 264 VAC
Input DC Voltage Range	Rated	110 - 345 VDC
Input Frequency Range		47 - 63 Hz
Input AC Current	LDN120-12	Vin = 120 VAC 1.9 A Vin = 240 VAC 1.1 A
	LDN120-24 / LDN120-24P / LDN120-48P	Vin = 120 VAC 2.1 A Vin = 240 VAC 1.2 A
	LDN120-12	Vin = 110 VDC 1.3 A Vin = 345 VDC 0.5 A
	LDN120-24 / LDN120-24P / LDN120-48P	Vin = 110 VDC 1.4 A Vin = 345 VDC 0.6 A
Inrush Peak Current		≤ 40 A
Touch (Leakage) Current		≤ 0.45 mA
Internal Protection Fuse	Not user replaceable	Fuse 3.15 AT
External Protection on AC Line	It is strongly recommended to provide external surge arresters (SPD) according to local regulations	Fuse 6AT or MCB 6 A C curve

## 3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Output Power		120 W
Rated Voltage (Adjustable Voltage Range)	LDN120-12	12 VDC (12 - 15 VDC)
	LDN120-24 / LDN120-24P	24 VDC (23 - 28 VDC)
	LDN120-48P	48 VDC (45 - 55 VDC)
Continuous Current	LDN120-12	7 A
	LDN120-24 / LDN120-24P	5 A
	LDN120-48P	2.5 A
Overload Limit	LDN120-12	11 - 9.5 A
	LDN120-24 / LDN120-24P	7 A
	LDN120-48P	3.7 A
Short Circuit Peak Current		30 A
Load Regulation	LDN120-12	≤ 2%
	LDN120-24	≤ 1%
	LDN120-24P	≤ 2.5%
	LDN120-48P	≤ 1.5%
Ripple & Noise <sup>1</sup>	LDN120-12	≤ 120 mVpp
	LDN120-24 / LDN120-24P / LDN120-48P	≤ 60 mVpp
Hold up Time	LDN120-12	Vin = 120 VAC ≥ 10 ms
		Vin = 240 VAC ≥ 60 ms

	LDN120-24	Vin = 120 VAC	≥ 20 ms
		Vin = 240 VAC	≥ 50 ms
	LDN120-24P / LDN120-48P	Vin = 120 VAC	≥ 10 ms
		Vin = 240 VAC	≥ 50 ms
Protections	Overload, short circuit: Hiccup mode Thermal protection Output overvoltage		
Output Over Voltage Protection	LDN120-12		≥ 18 VDC
	LDN120-24 / LDN120-24P		≥ 33 VDC
	LDN120-48P		≥ 68 VDC
Status Signals	DC OK - green LED DC OK - dry contact (NO, 24 VDC / 1 A)		
Parallel Connection	Possible for redundancy (with external ORing module) P (models) - include internal ORing circuit		
Efficiency	LDN120-12		> 84%
	LDN120-24		> 87%
	LDN120-24P		> 85%
	LDN120-48P		> 86%
Dissipated Power	LDN120-12		< 20 W
	LDN120-24		< 18 W
	LDN120-24P		< 21 W
	LDN120-48P		< 19 W

<sup>1</sup> Ripple and Noise are measured with 20MHz bandwidth, probe terminated with a 0.1µF MKP parallel capacitor.

**NOTE:** Power rating, losses, efficiency, ripple, thermal behaviour and start-up may change outside of the nominal rated input range. Contact factory for details.

## 4. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Operating Temperature	UL certified up to 60°C (Start-up type tested: - 40°C) <sup>2</sup>	- 40 to + 70°C
Storage Temperature		- 40 to + 80°C
Derating		- 2.4 W / °C over 60°C
Humidity	Non-condensing	5 - 95% RH
Life Time Expectation	At 25°C ambient full load	106880 h (12.2 years)
Overvoltage Category		III (EN50178)
Pollution Degree		2 (IEC60664-1)
Protection Class		Class I
Isolation Voltage	Input to Output Input to Ground Output to Ground	4.2 kVDC 2.2 kVDC 0.75 kVDC
Safety Standards & Approvals	UL508 (certified) EN60950 (reference) EN50178 (reference)	
EMC Emission	EN55011 (CISPR11) EN55022 (CISPR22)	Class A Class A
EMC Immunity	EN61000-4-2 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-11	Level 3 Level 3 Level 3 Level 3 Level 2
Protection Degree	EN60529	IP20
Vibration sinusoidal	IEC 60068-2-6	5 - 17.8 Hz: ±1.6 mm; 17.8 - 500 Hz: 2 g 2 Hours / axis (X, Y, Z)
Shock	IEC 60068-2-27	30 g 6 ms, 20 g 11 ms; 3 bumps / direction, 18 bumps total

<sup>2</sup> Possible with load derating.

### 5. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Weight		450 g
Dimensions		40 x 115 x 110 mm
Mounting Rail		IEC 60715/H15/TH35-7.5(-15)
Connection Terminals	Screw type pluggable (24 - 12 AWG)	2.5 mm <sup>2</sup>
Case Material	Aluminum	



Figure 1. Mechanical Drawing

### 6. PIN LAYOUT & DESCRIPTION



PIN	DESCRIPTION
1	AC/DC input
2	DC output (load)
3	Diagnostic Output (dry contact, NC output OK)
4	Green LED: Output OK
5	Output voltage adjustment

INPUT CONNECTION	OUTPUT CONNECTION
Single phase: L = Line N = Neutral ⊕ = Earth ground	+ = Positive DC - = Negative DC
DC: L = + Positive DC N = - Negative DC ⊕ = Earth ground	Signaling: DC OK: dry contact NO COM

For more information on these products consult: [tech.support@psbel.com](mailto:tech.support@psbel.com)

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

