LDT960 Series

960 W 3-Phase DIN Rail Switching Power Supply

LDT960 Series is a high power switching mode power supplies with three phase input voltage 400 – 500 VAC, delivering 960 W of output power, covering output voltages from 24 to 72 V (model dependent).

Their compact size, high efficiency and excellent reliability together with easy installation make them fit demanding applications where compactness and high power are needed.

LDT960 Series are Class I isolation devices suitable for SELV and PELV circuitry (up to 48 VDC models) and are designed to be mounted on DIN rail and installed inside a protective enclosure.

FEATURES

- Three phase AC input 400 - 500 VAC
  or DC input 520 - 725 VDC
- Output voltages 24 V, 48 V, 72 V (adjustable)
- Operating ambient temperature range -40°C to +70°C
- Efficiency up to 93%
- Overload 150%
- Constant current or hiccup mode limitation (user settable)
- Low noise thermally regulated “long life” fan
- 72 V output model as standard
- Compact size in aluminum enclosure
- Dimensions: 80 x 127 x 137.5 mm

APPLICATIONS

- Automation
- Process control
- Communication
- Instrumentation equipment

1. MODEL SELECTION

MODEL	INPUT VOLTAGE RANGE	# OF PHASES	OUTPUT VOLTAGE	MAX OUTPUT CURRENT	EFFICIENCY	MAX OUTPUT POWER
LDT960-24	400 - 500 VAC (520 - 725 VDC)	3	24 V	40 A	92.5 %	960 W
LDT960-48	400 - 500 VAC (520 - 725 VDC)	3	48 V	20 A	92.5 %	960 W
LDT960-72	400 - 500 VAC (520 - 725 VDC)	3	72 V	13.3 A	93.0 %	960 W

Discontinued model

2. INPUT SPECIFICATIONS.

PARAMETER		DESCRIPTION / CONDITIONS	SPECIFICATION
AC Input Voltage [1]		Nominal, 3 phases (UL certified) Range	400 - 500 VAC 340 - 550 VAC
DC Input Voltage			520 - 725 VDC
Input Frequency			47 - 63 Hz
AC Input Current	Vin = 400 VAC		2.4 A
	Vin = 500 VAC		2.1 A
DC Input Current	Vin = 520 VDC		2.2 A
	Vin = 725 VDC		1.7 A
Inrush Peak Current I^2t		Peak Current measured after 0.2 ms from main connection; 400 VAC / 50 Hz; Ta = 25°C; Cold Start	≤ 50 A 1.86 A^2s
Touch (Leakage) Current			≤ 0.1 mA
Internal Protection Fuse		None, external fuse must be provided	
Recommended External Protection		It is strongly recommended to provide external surge arresters (SPD) according to local regulations.	Fuse 3x 10 AT or 3x MCB 10 A C curve

[1] In case of 2-phase-operation, reduce the output load to 50% of the nominal value.

3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Output Voltage (Adjustable)	24 V model 48 V model 72 V model	23 - 28 VDC 45 - 55 VDC 72 - 85 VDC
Output Current (Continuous)	24 V model 48 V model 72 V model	40 A 20 A 13.3 A
Load Regulation	24 V model 48 V & 72 V models	≤ 1.0 % ≤ 0.5 %
Ripple & Noise [2]		≤ 150 mVpp
Hold-up Time		≥ 15 ms
Status Signals	DC OK - green LED OVERLOAD - red LED DC OK - dry contact (NO, 24 VDC / 1 A)	
Parallel Connection [3]	Possible for redundancy (with external ORing module)	

[2] Ripple and Noise are measured with 20 MHz bandwidth, probe terminated with a 0.1 µF MKP parallel capacitor.
[3] Pay attention, set the current limitation mode jumper on C.C. mode when connecting more units in parallel.

4. PROTECTIONS

PARAMETER	DESCRIPTION / CONDITIONS		SPECIFICATION
Short Circuit Protection	Constant current or Hiccup mode (user settable)		
Overload Protection	Overload Limit in constant current mode	24 V model 48 V model 72 V model	44 A 22 A 15 A
	Overload Limit in hiccup mode (max. 5 s)	24 V model 48 V model 72 V model	60 A 30 A 20 A
Thermal Protection			
Over Voltage Protection		24 V model 48 V model 72 V model	≥ 33 VDC ≥ 68 VDC ≥ 100 VDC

5. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

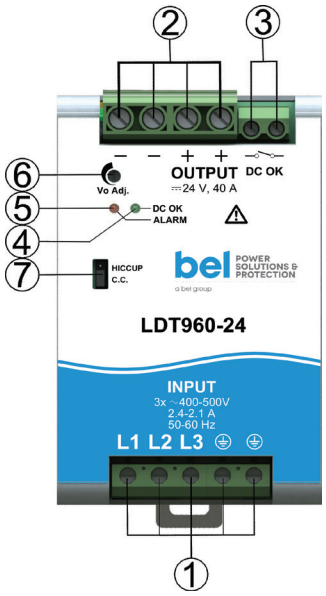
PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Operating Temperature	UL certified up to 45°C Start-up type tested: - 40°C, possible at Vnom with load deration.	-40 to +70 °C
Storage Temperature		-40 to +80 °C
Derating	Over 45°C	- 15 W/°C
Dissipated Power	24 V & 48 V models 72 V model	< 78 W < 73 W
Humidity	Non-condescending	5 - 95 % RH
Life Time Expectancy	Ta = 25°C, full load	63 200 (7.2) hrs (years)
MTBF	MIL-HDBK-217F at Ta = 25°C, full load	> 500 000 hrs
Overvoltage Category	EN 50178	III
Pollution Degree	IEC 60664-1	2
Protection Class	Class I	
Isolation	Input to Output Input to Ground Output to Ground	4.2 kVDC 2.2 kVDC 0.75 kVDC
Safety Standards & Approvals	UL 508 (certified) IEC/EN 61010-1 IEC/EN 61010-2-201 IEC/EN 60950	
EMC Emissions	EN 55011 / CISPR 11 EN 61000-3-2	Class A Class A
EMC Immunity	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-11	Level 3 Level 3 Level 3 Level 4 Level 2
Protection Degree	EN 60529	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

© 2022 Bel Power Solutions & Protection

6. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Dimensions		80 x 127 x 137.5 mm 3.15 x 5.00 x 5.41 in
Weight		1300 g
Mounting Rail	IEC 60715/H15/TH35-7.5(-15)	
Connection Terminals	Screw type header (16 - 10 AWG) Screw type header (10 - 6 AWG) for output on 24 V model	1.5 - 6 mm² 6 - 16 mm²
Case Material	Aluminum	

7. 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	Red LED: Overload
6	Output voltage adjustment
7	Selectable limitation mode

INPUT CONNECTION	Three-phase	DC Input
	L1 = Phase 1 L2 = Phase 2 L3 = Phase 3 ⏚ = Earth ground	L1 = + Positive DC L2 = - Negative DC L3 = do not connect ⏚ = Earth ground
OUTPUT CONNECTION	+ = Positive DC - = Negative DC	
SIGNALLING	DC OK: dry contact • NO • COM	

8. MECHANICAL DRAWING

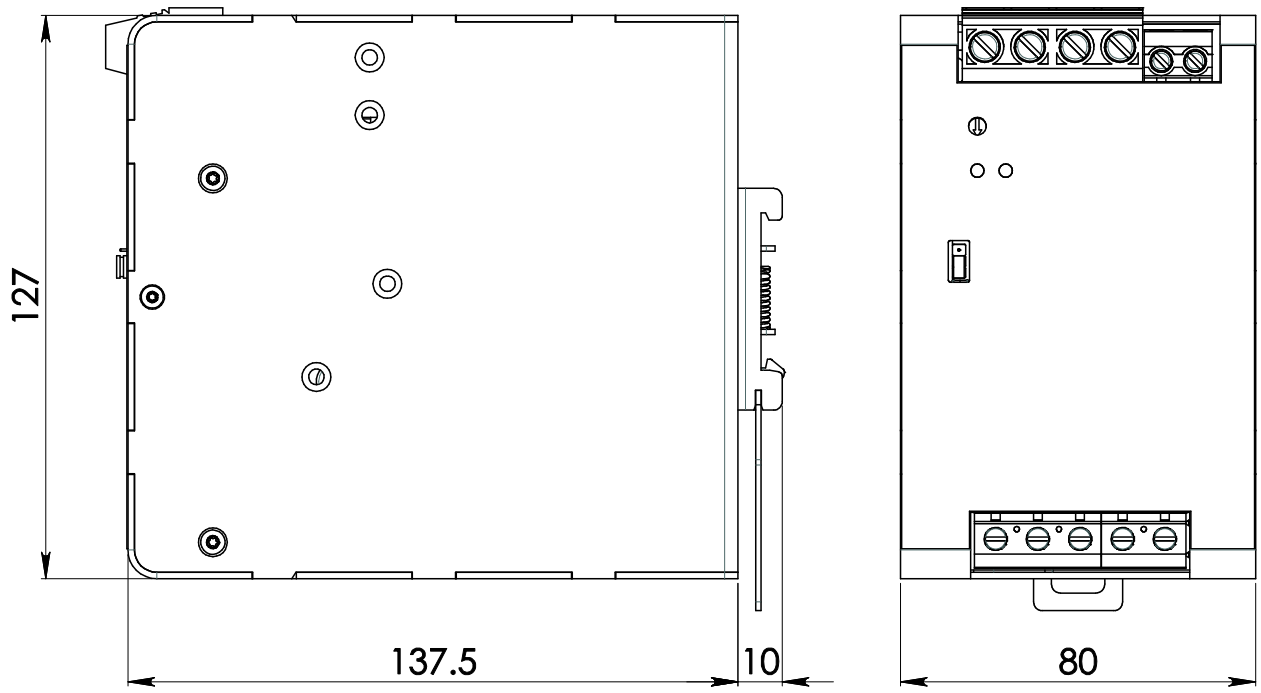


Figure 1. Mechanical Drawing

Notes:

Technical parameters are typical, measured in laboratory environment at 25°C and 400 VAC / 50 Hz, at nominal values, after minimum 5 minutes of operation. Power rating, losses, efficiency, ripple, thermal behaviour and start-up may change outside of the nominal rated input range. Contact factory for details.

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.

© 2022 Bel Power Solutions & Protection