

# LDT2400 Series

## 2400W Multipurpose Digital DIN Rail Power Supply

LDT2400 Series are high power multipurpose digital power supplies with three phase input voltage 400 – 500 VAC, delivering 2400 W of output power, covering output voltages from 24 to 170 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.

LDT2400 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.



### Key Features & Benefits

- 3 phase AC input: 400 – 500 VAC
- Overload 150% (3600 W peak)
- Active PFC for optimal efficiency
- Active input surge suppressor for improved reliability
- CPU control allows flexibility and multiple programmable features
- Battery charger function included
- Thermally regulated fan optimal cooling in harsh operating conditions
- Wide output voltages range
- Two phase operation possible with power derating

### Applications

- Automation
- Process Control
- Communication
- Instrumentation Equipment



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## 1. MODEL SELECTION

MODEL	INPUT VOLTAGE	# of PHASES	OUTPUT VOLTAGE	OUTPUT CURRENT
LDT2400-24	400 - 500 VAC / 520 - 725 VDC	3	24 VDC	100 A
LDT2400-48	400 - 500 VAC / 520 - 725 VDC	3	48 VDC	50 A
LDT2400-72	400 - 500 VAC / 520 - 725 VDC	3	72 VDC	33 A
LDT2400-170	400 - 500 VAC / 520 - 725 VDC	3	170 VDC	14 A

## 2. INPUT SPECIFICATIONS

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.

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Input AC Voltage Range <sup>1</sup>	3 phase (UL certified) Operating	400 – 500 VAC 340 – 550 VAC
Input DC Voltage Range		520 – 725 VDC
Input Frequency		47 - 63 Hz
Input AC Current	Vin = 400 VAC Vin = 500 VAC	4.5 A 3.5 A
Input DC Current	Vin = 520 VDC Vin = 725 VDC	5.2 A 3.8 A
Power Factor Correction	Active	> 0.9
Inrush Peak Current	Active Inrush current limiter	≤ 10 A
Touch (Leakage) Current		≤ 0.6 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 AT 10 A or 3x MCB 10 A C curve

<sup>1</sup> In case of 2 phase operation, reduce the output load to 50% of the nominal value.

## 3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Output Power		2400 W
Rated Voltage (Adjustable Voltage Range)	LDT2400-24 LDT2400-48 LDT2400-72 LDT2400-170	24 VDC (11.9 - 29 VDC) 48 VDC (23 - 56 VDC) 72 VDC (50 - 87 VDC) 170 VDC (85 - 175 VDC)
Continuous Current	LDT2400-24 LDT2400-48 LDT2400-72 LDT2400-170	100 A 50 A 33 A 14 A
Overload Limit (Constant Current Mode)	LDT2400-24 LDT2400-48 LDT2400-72 LDT2400-170	150 A / 5 s 75 A / 5 s 50 A / 5 s 21 A / 5 s
Overload Limit (Hiccup Mode) (max. 5s)	LDT2400-24 LDT2400-48 LDT2400-72 LDT2400-170	150 A 75 A 50 A 21 A
Load Regulation	with Remote Sense active and at Vout nom	≤ 1%
Ripple & Noise <sup>2</sup>		≤ 400 mVpp

Hold up Time		≥ 10 ms
Output Protections	Overload (with user settable threshold) Short circuit Thermal protection Output overvoltage	
Output Over Voltage Protection	LDT2400-24 LDT2400-48 LDT2400-72 LDT2400-170	≥ 33 VDC ≥ 68 VDC ≥ 100 VDC ≥ 200 VDC
Parallel Connection	Possible for power or redundancy (includes internal ORing circuit)	
Efficiency	LDT2400-24 / LDT2400-48 LDT2400-72 LDT2400-170	> 92% > 93% > 92%
Dissipated Power	LDT2400-24 / LDT2400-48 LDT2400-72 LDT2400-170	< 200 W < 180 W < 200 W

<sup>2</sup> Ripple and Noise are measured with 20 MHz bandwidth, probe terminated with a 0.1µF MKP parallel capacitor.

<sup>3</sup> Pay attention, set the current limitation mode jumper on C.C. mode when connecting more units in parallel.

**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. USER INTERFACE, SIGNALING & CONTROL

PARAMETER	DESCRIPTION / CONDITION
Status Signals	DC OK / CHARGE - green LED ALARM - red LED Dry contact (SPDT, 24 VDC / 1 A) Alphanumeric LCD display
User Interface	LCD with 4 keys 0 – 10 V voltage and 4 - 20 mA current output for output current 0 - 100% IN Auxiliary 12 V / 100 mA isolated power supply Load voltage sense Optoisolated remote shut down input USB communication interface via communication module (COMM-BOX) Optional: remote temperature sensor for battery charging (WNTC-2MT)
Operating Modes	Overboost: allows 150% output power for 5 sec, then off for 10 sec Constant current: adjustable 10 - 100% load Battery charger: for lead acid, nickel and lithium batteries

## 5. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Operating Temperature <sup>4</sup>	UL certified up to 50°C (Start-up type tested: - 40°C) <sup>5</sup>	- 40 to + 70°C
Storage Temperature		- 40 to + 80°C
Derating	Automatic power derating (1200 W) for 2 phase operation	- 60 W/°C over 50°C
Humidity	Non-condensing	5 - 95% RH
Life time Expectancy	At 25°C ambient full Load	458253 h (52.3 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
Standards & Approvals	UL508 (certified) EN60950 (reference) EN50178 (reference)	



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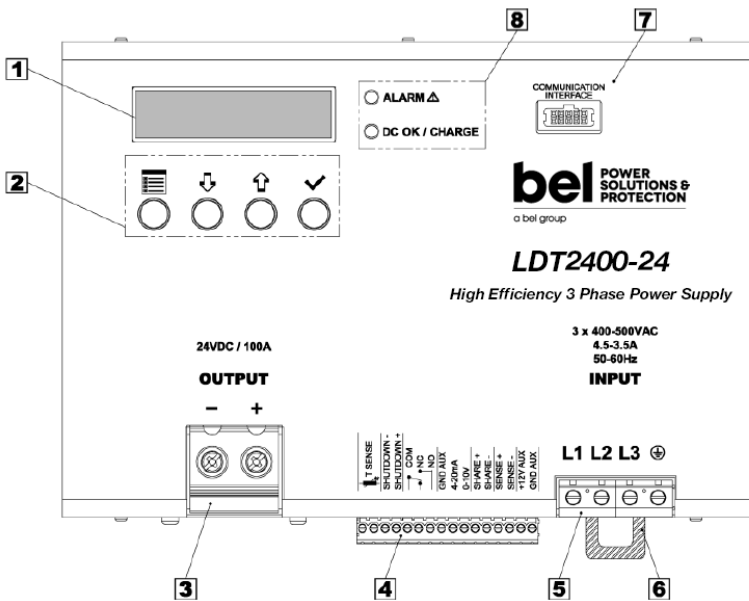
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EMC Standards	EMC Emission	EN55011 (CISPR11) EN55022 (CISPR22) EN61000-3-2 EN61000-4-2	Class A Class A Class A Level 3
	EMC Immunity	EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-11	Level 3 Level 4 Level 4 Level 2
	Protection Degree	EN60529	IP20
	Vibration sinusoidal	IEC 60068-2-6	5-17.8 Hz: ±1.6 mm; 17.8-500 Hz: 2g 2Hours / axis (X,Y,Z)
	Shock	IEC 60068-2-27	30g 6 ms, 20 g 11 ms; 3 bumps / direction, 18 bumps total

<sup>4</sup> For temperature < - 20°C the LCD is not operating, but the unit will operate correctly  
<sup>5</sup> Possible at nominal voltage with load derating.

## 6. PIN LAYOUT & DESCRIPTION



PIN	DESCRIPTION
1	Display
2	Control Keys
3	Output Connector
4	Auxiliary Connector
5	Input Connector
6	DIN rail fixing Clamp
7	Communication Interface
8	Status LEDs
9	Buzzer (Internal)

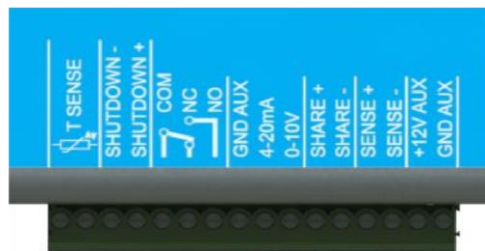


Figure 1. Detail of Auxiliary Connector (4)

INPUT CONNECTIONS	OUTPUT CONNECTIONS	AUXILIARY CONNECTION I/Os
3 phase: L1 = Phase 1 L2 = Phase 2 L3 = Phase 3 ⊕ = earth ground  DC: L1 = + Positive DC L2 = - Negative DC L3 = do not connect ⊕ = earth ground	+ = Positive DC - = Negative DC	TSENSE = Temperature Sensor Shutdown = Remote Shutdown (+/-) Dry contact = COM / NC / NO Contact GND AUX = Auxiliary Supply GND 4-20 mA = Output Current Measurement 4-20 mA 0-10 V = Output Current Measurement 0-10 V SHARE = Load Share BUS (+/-) SENSE = Remote Voltage Sense (+/-) +12 V AUX = Auxiliary +12Vdc/100mA GND AUX = Auxiliary Supply GND

## 7. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION		SPECIFICATION
Weight			2.8 kg
Dimensions			233 x 160 x 101 mm
Rail Mounting			IEC 60715/H15/TH35-7.5(-15)
Connection Terminals	Input	Screw type header (16 - 10 AWG)	1.5 – 6 mm <sup>2</sup>
	Output	Screw type header (2 AWG)	Up to 35 mm <sup>2</sup>
	Auxiliary	Screw type pluggable 16 pin (16 AWG)	1.5 mm <sup>2</sup>
Case Material	Aluminum		

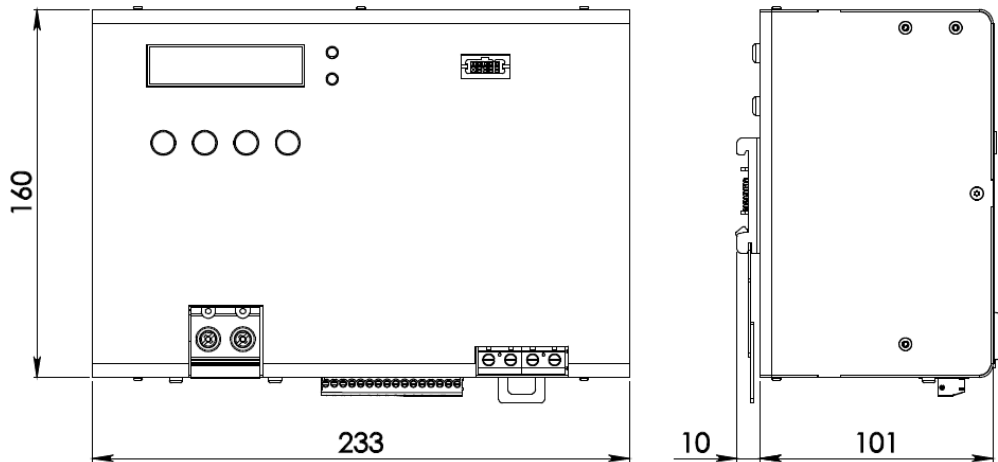


Figure 2. Mechanical Drawing

**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.



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