

# LDT2400 Series

## 2400 W 3-Phase 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 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, 170 V
- Operating ambient temperature range -40°C to +70°C
- Active PFC
- Overload 150% (3600 W peak)
- Active input surge suppression circuit for reliability
- Digital Power regulation
- CPU control allows flexibility & multiple programmable features
- Battery charger function included
- Up to 4 units can be paralleled for increased power (9600 W)
- Thermally regulated “long life” fan for optimal cooling in harsh operating conditions
- 2-phase operation possible with power derating
- Compact size in aluminum enclosure: 233 x 160 x 101 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
LDT2400-24	400 - 500 VAC (520 - 725 VDC)	3	24 V	100 A	92 %	2400 W
LDT2400-48	400 - 500 VAC (520 - 725 VDC)	3	48 V	50 A	92 %	2400 W
LDT2400-72	400 - 500 VAC (520 - 725 VDC)	3	72 V	33 A	93 %	2400 W
LDT2400-170	400 - 500 VAC (520 - 725 VDC)	3	170 V	14 A	92 %	2400 W

*Discontinued model*

## 2. INPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
AC Input Voltage <sup>1</sup>	Nominal 2 / 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	V <sub>in</sub> = 400 VAC	4.5 A
	V <sub>in</sub> = 500 VAC	3.5 A
DC Input Current	V <sub>in</sub> = 520 VDC	5.2 A
	V <sub>in</sub> = 725 VDC	3.8 A
Power Factor Correction	Active	> 0.9
Inrush Peak Current I <sub>pt</sub>	Active Inrush current limiter; Peak Current measured after 0.2 ms from main connection; 400 VAC / 50 Hz; Ta = 25°C; Cold Start	≤ 12.5 A 0.63 A <sup>2</sup> s
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 10 AT or 3x MCB 10 A C curve

<sup>1</sup> Automatic power derating (1200 W) for 2-phase operation.

## 3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Output Voltage (Adjustable)	LDT2400-24	11.9 - 29 VDC
	LDT2400-48	23 - 56 VDC
	LDT2400-72	50 - 87 VDC
	LDT2400-170	85 - 175 VDC
Output Current (Continuous)	LDT2400-24	100 A
	LDT2400-48	50 A
	LDT2400-72	33 A
	LDT2400-170	14 A
Load Regulation	At V <sub>out</sub> nom and Remote Sense active	≤ 1.0 %
Ripple & Noise <sup>2</sup>		≤ 200 mVpp
Hold-up Time		≥ 10 ms
Parallel Connection	Possible for power or redundancy (includes internal ORing circuit)	

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

## 4. USER INTERFACE, SIGNALLING & CONTROL

PARAMETER	DESCRIPTION / CONDITIONS
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 Optional: remote temperature sensor for battery charging
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. PROTECTIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION	
Short Circuit Protection			
Overload Protection	Overload Limit in constant current mode	LDT2400-24	100 A
		LDT2400-48	50 A
		LDT2400-72	33 A
		LDT2400-170	14 A
	Overload Limit in hiccup mode (max. 5 s)	LDT2400-24	150 A
		LDT2400-48	75 A
Thermal Protection			
Over Voltage Protection		LDT2400-24	≥ 33 VDC
		LDT2400-48	≥ 68 VDC
		LDT2400-72	≥ 100 VDC
		LDT2400-170	≥ 200 VDC

## 6. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Operating Temperature <sup>3</sup>	UL certified up to 50°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 50°C, Automatic power derating (1200 W) for 2P operation	- 60 W/°C
Dissipated Power	LDT2400-24 / LDT2400-48 / LDT2400-170 LDT2400-72	< 200 W < 180 W
Humidity	Non-condescending	5 - 95 % RH
Life Time Expectancy	Ta = 25°C, full load	458 253 (52.3) hrs (years)
MTBF	MIL-HDBK-217F at Ta = 25°C, full load	> 700 000 hrs
Overvoltage Category	EN 50178	III
Pollution Degree	IEC 60664-1	2
Protection Class	Class I	
Isolation	Input to Output	4.2 kVDC
	Input to Ground	2.2 kVDC
	Output to Ground	0.75 kVDC

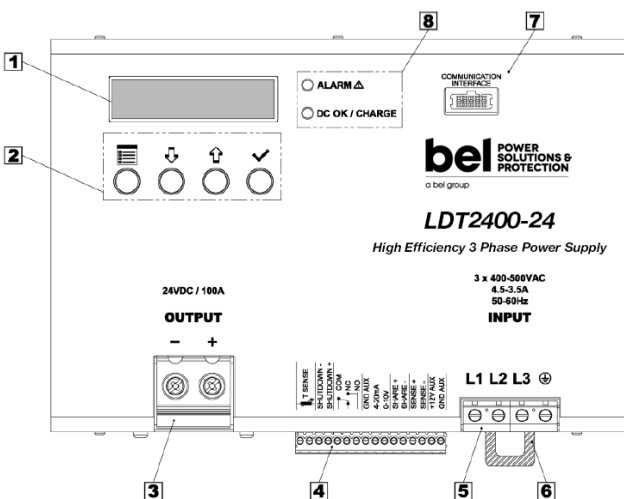
Safety Standards & Approvals	UL 508 (certified)	
	IEC/EN 61010-1	
	IEC/EN 61010-2-201	
	IEC/EN 60950	
EMC Emissions	EN 55011 / CISPR 11	Class A
	EN 55022 / CISPR 22	Class A
	EN 61000-3-2	Class A
EMC Immunity	EN 61000-4-2	Level 3
	EN 61000-4-3	Level 3
	EN 61000-4-4	Level 4
	EN 61000-4-5	Level 4
	EN 61000-4-11	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

<sup>3</sup> For temperature ≤ -20°C the LCD is not operating, but the unit will operate correctly.

## 7. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Dimensions		233 x 160 x 101 mm 9.17 x 6.3 x 3.98 in
Weight		2800 g
Mounting Rail	IEC 60715/H15/TH35-7.5(-15)	
Connection Terminals	Input	Screw type header (16 - 10 AWG)
	Output	Screw type header (2 AWG)
	Auxiliary	Screw type pluggable 16 pin (16 AWG)
Case Material	Aluminum	

## 8. 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)

INPUT CONNECTION	Three-phase	DC Input
	L1 = Phase 1	L1 = + Positive DC
	L2 = Phase 2	L2 = - Negative DC
	L3 = Phase 3	L3 = do not connect
	⊕ = Earth ground	⊕ = Earth ground

<b>OUTPUT CONNECTION</b>	+ = Positive DC - = Negative DC
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<b>AUXILIARY CONNECTION</b>	See details in Figure 1.
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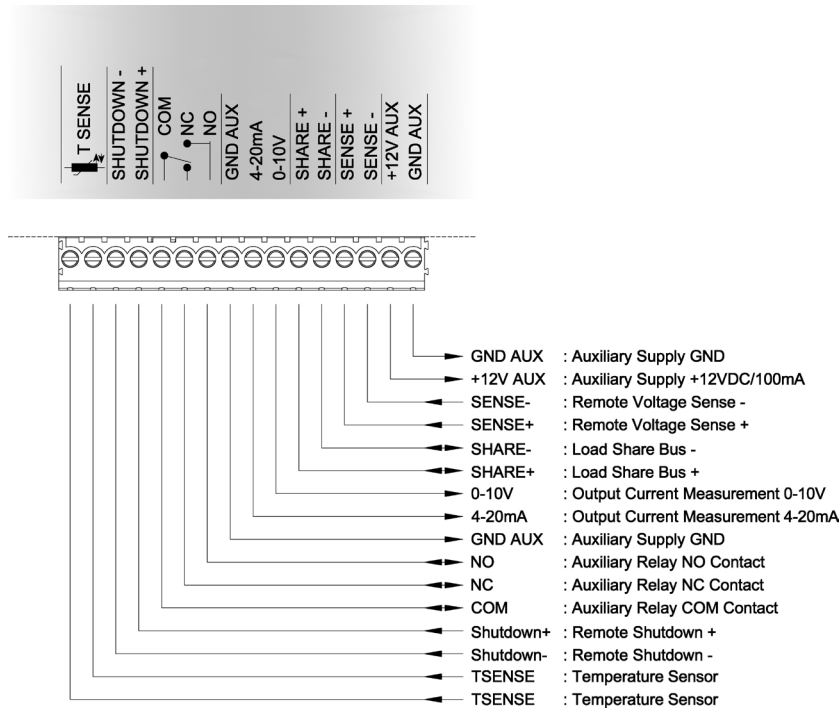


Figure 1. Auxiliary connector

## 9. MECHANICAL DRAWING

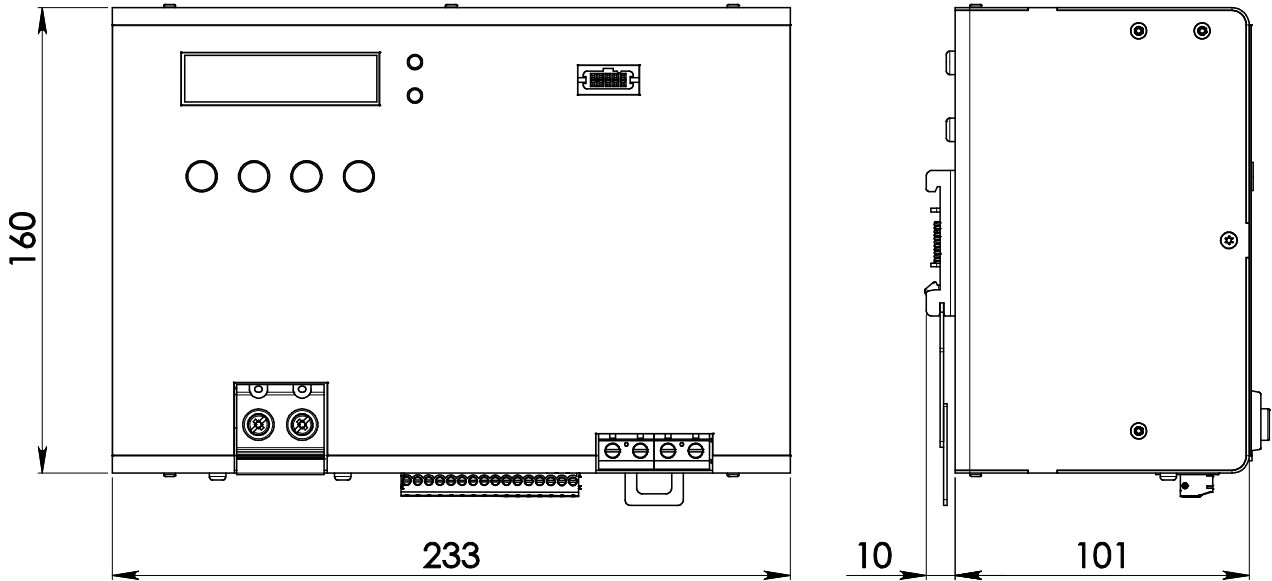


Figure 2. Mechanical Drawing

**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. For more details, performance and description regarding all parameters not indicated in the above table, please refer to the [User manual](#).

**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.