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

2. INPUT SPECIFICATIONS.

PARAMETER		DESCRIPTION / CONDITIONS	SPECIFICATION
AC Input Voltage [1]		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	Vin = 400 VAC		4.5 A
	Vin = 500 VAC		3.5 A
DC Input Current	Vin = 520 VDC		5.2 A
	Vin = 725 VDC		3.8 A
Power Factor Correction		Active	> 0.9
Inrush Peak Current I^2t		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^2s
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

[1] Automatic power derating (1200 W) for 2-phase operation.

3. OUTPUT SPECIFICATIONS

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

[2] 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	24 V model 48 V model 72 V model 170 V model	100 A 50 A 33 A 14 A
	Overload Limit in hiccup mode (max. 5 s)	24 V model 48 V model 72 V model 170 V model	150 A 75 A 50 A 21 A
Thermal Protection			
Over Voltage Protection		24 V model 48 V model 72 V model 170 V model	≥ 33 VDC ≥ 68 VDC ≥ 100 VDC ≥ 200 VDC

6. ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Operating Temperature [3]	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	24 V, 48 V & 170V models 72 V model	< 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 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	

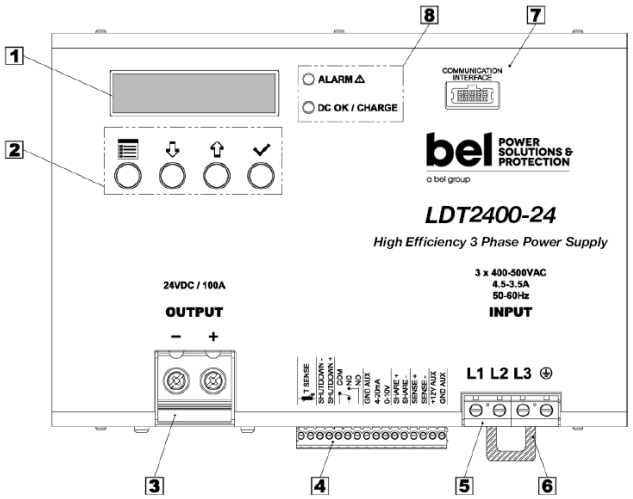
EMC Emissions	EN 55011 / CISPR 11 EN 55022 / CISPR 22 EN 61000-3-2	Class A Class A Class A
EMC Immunity	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-11	Level 3 Level 3 Level 4 Level 4 Level 2
Protection Degree	EN 60529	IP20
Vibration Sinusoidal	IEC 60068-2-6	5 - 17.8 Hz: ±1.6 mm; 17.8 - 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

[3] *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 Output Auxiliary	Screw type header (16 - 10 AWG) Screw type header (2 AWG) Screw type pluggable 16 pin (16 AWG)	1.5 - 6 mm² up to 35 mm² 1.5 mm²
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 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	
AUXILIARY CONNECTION	See details in Figure 1.	

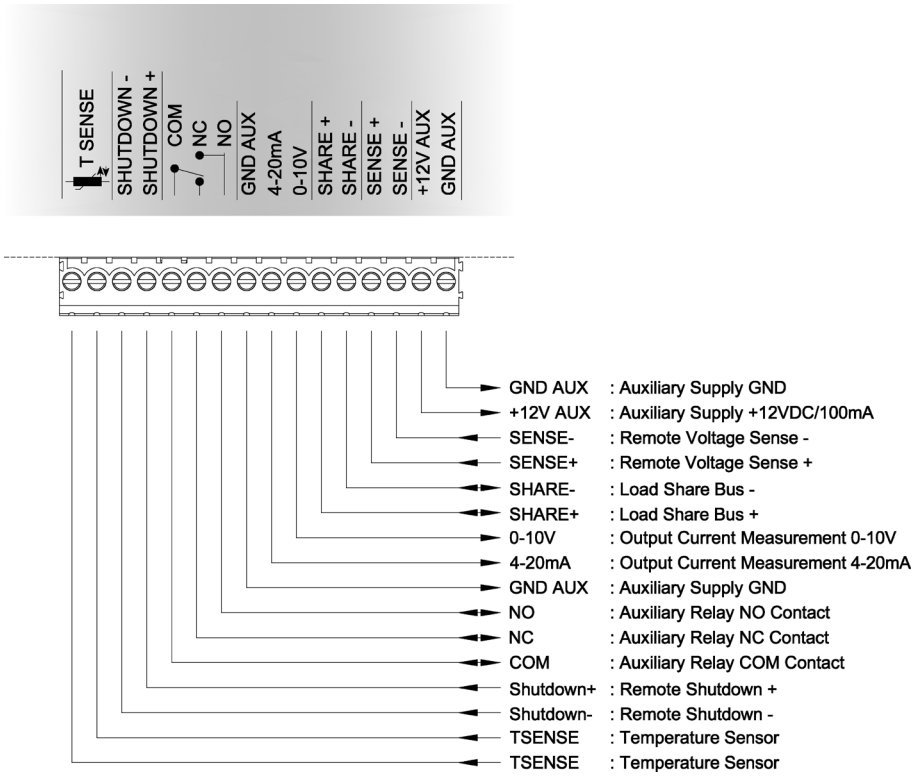


Figure 1. Auxiliary connector

9. MECHANICAL DRAWING

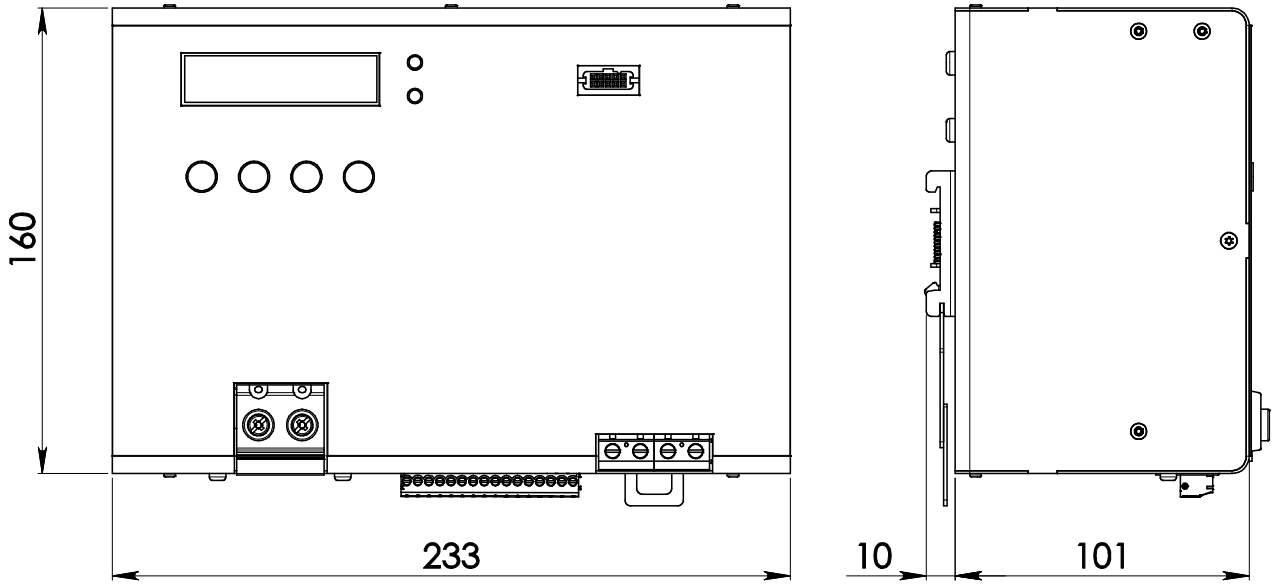


Figure 2. Mechanical Drawing

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.

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.