LDX-U20

20 A DIN Rail
High Performance DC-UPS

LDX-U20 is a microprocessor controlled DC-UPS rated 20 A usable in 12 V or 24 V systems.

LDX-U20 monitors the voltage supplied by a DC source and in case of power failure a backup battery is connected to the load.

When powered externally the unit charges the battery by an integrated battery charger supporting various battery chemistries.

FEATURES

- Digital power regulation, LCD interface
- Multiple user settable parameters
- BI VOLTAGE: 12 V or 24 V (intermediate voltages possible)
- Battery chemistry: Lead acid, nickel and lithium
- Maximum battery capacity 150 Ah
- Load current: 20 A max.
- Multiple protections
- Remote ON/OFF or other remote control functions possible through INHIBIT input
- Cold start
- Automatic sensing of input voltage, load and battery current
- Battery protection against reverse polarity connection and over current
- Battery health monitoring system: measuring battery internal resistance, battery temperature, charge/discharge cycles and Coulomb counter
- User settable maximum backup time

EMBEDDED USER INTERFACE

- 4 keys and 1 color graphic CSTN LCD display
- Allows online device configuration
- Displays the LDX-U20 status and alarms
- USB communication port for remote monitoring & configuration
- Dry contacts

SUITABLE FOR POWERMASTER SOFTWARE

- Connection through USB interface
- Remote monitoring and configuration
- Firmware upgrade
- Same functionalities of the embedded user interface with the ease of the PC benefits
- Available for Windows and Android

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1. MODEL SELECTION

MODEL	INPUT VOLTAGE RANGE	INPUT CURRENT	BATTERY VOLTAGE	MAX BATTERY CHARGE CURRENT	BATTERY CAPACITY	EFFICIENCY [1]
LDX-U20	10 - 29 VDC	20 A	12 / 24 VDC	5 A	150 Ah	97.5 %

[1] At full load, depending on operating mode

2. INPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
DC Input Voltage	Nominal (UL certified) Range	11 - 28 VDC 10 - 29 VDC
DC Input Current		20 A
Standby Power		< 3 W

3. BATTERY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Battery Voltage	Other voltages possible by request	12 VDC 24 VDC
Battery Chemistries	Lead Acid Nickel Lithium	
Maximum Battery Charge Current		5 A
Allowed Battery Capacity		up to 150 Ah
Maximum Battery Current	Up to 35 A for 5 s	20 A
Load to Battery Switch Time		< 5 µs
Battery Protections	Over current Deep discharge Reverse polarity	
BATTERY HEALTH MONITORING		
Battery Internal Resistance Range	Using Kelvin connection	1 - 300 mΩ
Additional Monitoring Functions	Coulomb counter Battery temperature through 10 kΩ NTC sensor (optional) Battery operating time since installation Number of cycles	

4. USER INTERFACE

PARAMETER	DESCRIPTION / CONDITIONS
1.5 inch color graphic LCD	Used to display the unit's status and to access the configuration menus
4 keys	Used to program the unit and to access various menus
Red LED	Constantly ON: generic failure on the system, details on the LCD Blinking: battery backup function active
2 dry contact relays (NO, 24 VDC / 1A)	May indicate units status (READY or on BACKUP model), battery failure (by toggling at 1 Hz) Configurable for remote PC shutdown
Other interfaces	INHIBIT - Isolated remote ON/OFF input, active for 5 - 30 VDC BATTERY SENSE - recommended to have an accurate measurement of the battery internal resistance Mini USB-B - connector to be used with POWERMASTER software T SENSE - optional, remote temperature sensor for battery charging

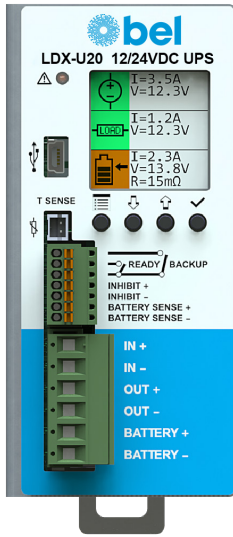## 5.　ENVIRONMENTAL, EMC & SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Operating Temperature [2]	UL certified up to 60°C Start-up type tested: - 40°C, possible at Vnom with load deration.	-40 to +60　°C
Storage Temperature		-40 to +80　°C
Efficiency	Power supply, at full load Battery, at full load Battery charge mode	> 97.5　% > 96.5　% > 90　%
Power Loss	UPS mode Battery mode Battery charge mode	< 13　W < 18　W < 16　W
Maximum backup time	User programmable, up to battery deep discharge threshold	
Humidity	Non-condescending	5 - 95　% RH
Life Time Expectancy	Ta = 25°C, full load	253 142 (28.9)　hrs (years)
MTBF	MIL-HDBK-217F at Ta = 25°C, full load	> 600 000　hrs
Overvoltage Category	EN 50178	I
Pollution Degree	IEC 60664-1	2
Isolation against Enclosure		0.75　kVDC
Safety Standards & Approvals	UL 508 (certified) IEC/EN 61010-1 IEC/EN 61010-2-201 IEC/EN 60950	
EMC Emissions	EN 61000-6-4	
EMC Immunity	EN 61000-6-2	
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

[2] For temperature ≤ - 20°C the LCD is not operating, but the unit will operate correctly.

6.　MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	SPECIFICATION
Dimensions		54 x 115 x 110　mm 2.13 x 4.53 x 4.33　in
Weight		500　g
Mounting Rail	IEC 60715/H15/TH35-7.5(-15)	
In/Out/Batt Connection Terminals	Screw type pluggable (24 - 12 AWG)	2.5　mm²
Auxiliary Connection Terminals	Fast type pluggable (20 AWG)	up to 0.5　mm²
Temperature Sensor Connector	Friction lock connector	
Communication Interface Connector	Mini USB-B Type	
Case Material	Aluminum	

7. PIN LAYOUT & DESCRIPTION

| MAIN CONNECTIONS	AUXILIARY CONNECTIONS	MINI USB TYPE
IN: connect to power supply • + = Positive DC • - = Negative DC	**BATTERY SENSE:** (connect to battery) • + = Positive DC • - = Negative DC	
BATTERY: connect to battery • + = Positive DC • - = Negative DC	**INHIBIT:** (5 – 30 VDC) • + = Positive DC • – = Negative DC	1 = VBUS (+5V) 2 = Data (D-) 3 = Data (D+) 4 = Not connected (ID) 5 = GND
OUT: connect to load • + = Positive DC • - = Negative DC	**READY:** (programmable dry contact) • NO • COM	
	BACKUP: (close when running on battery) • NO • COM	
	T SENSE (remote temp. sensor for battery charging) • Optional WNTC-2MT	

MECHANICAL DRAWING
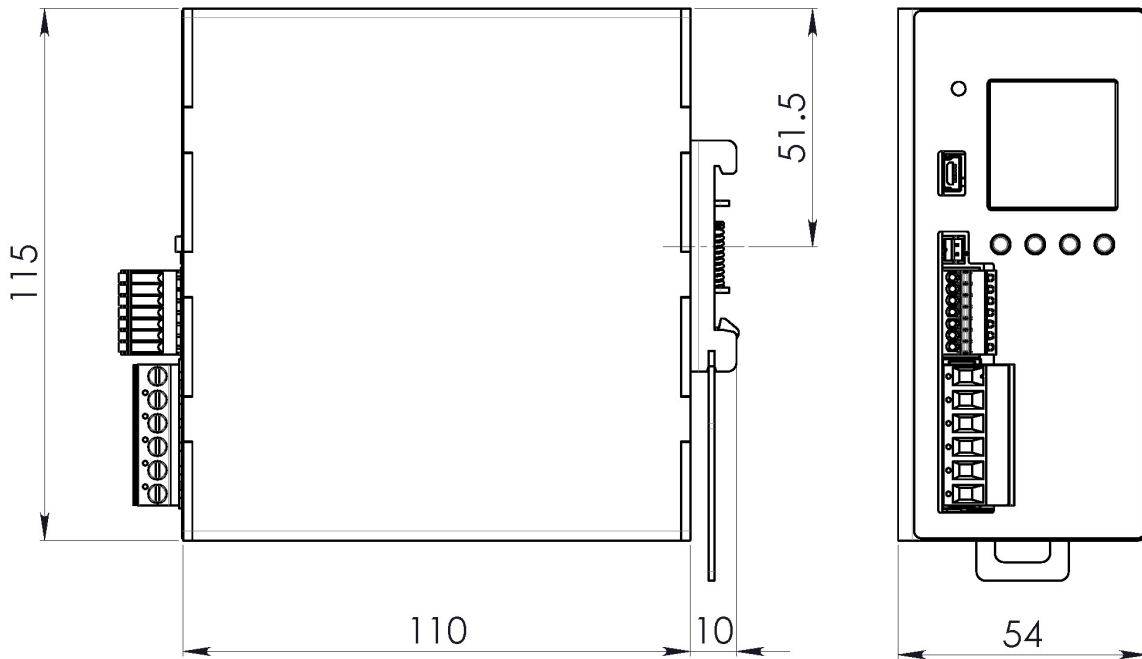
Figure 2. Mechanical Drawing

Notes:

Technical parameters are typical, measured in laboratory environment at 25°C, 24 VDC input and 24 V lead acid battery, at nominal values, after min. 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 descriptions regarding all parameters not indicated in the above table, please refer to the *User manual*.

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