LITE BLOX

high performance accumulator
- LiFePO4 / 13,2VDC / 264Wh –

version: 1.0

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specifications

	value	annotation
height [mm]	171	±1mm
width [mm]	96	±1mm
length [mm]	249	±1mm
weight [g]	32XX	± 2%
voltage (nominal) [V]	13,2	
voltage discharge / charge (maximum) [V]	10,0 / 15,2	
voltage (end of charge) [V]	14,6	
current charging (recommended) [A]	7 / 20	charger LB100 / LB300
current charging (max) [A]	80	
current discharging (continuously) [A]	350	
current discharge (10s pulse) [A]	960	
capacity (nom / Pb-eq) [Ah]	20/ 50-75	
cell chemistry	LiFePO4	
cell type	ANR26650M1-B	LithiumWerks
cell configuration	4s8p	
theoretical battery pack impedance [mOhm]	3,0	
protection class	IP65	
temperature range for use [°C]	(- 20) – (+ 80)	
recommended storage temperature [°C]	(0) – (+ 40)	

functions

function	Description
BMS	our technology leading battery management system provides free adjustment for all relevant battery thresholds to make sure that the battery pack is being used within its intended working space
telemetry	connection between the battery and an external device (tablet, PC, smartphone) via integrated Bluetooth interface (BLE) for monitoring, field data evaluation, firmware updates or threshold setup changes. Battery data will be sent to our data server for optimized remote service of all products in the field
protection	when leaving the intended operation limits (current, voltage, temperature…), the BMS warns via CAN or Bluetooth in three Levels.
BUS system	our BMS provides full CAN/LIN-bus integration and bespoke communication (dbc file) →
SOH analysis	BMS Board logs a Lifetime counter. Beside that, the total sum of all charges and discharges is logged to give a theoretical cycle counter.

Protection modes 12V System (with BMS)

The protection limits are implemented to protect the Li-ion battery from unintentional events that will damage the Li-ion battery. It is not advised to depend on these limits and the system itself should make sure that the Li-ion battery will always be within the specified working range.

Protection mechanism	Warning (yellow)	Soft close (red)	Threshold hard close
Model	LB32MS	LB32MS	LB32MS
Overvoltage (cell/pack)	15,4 V	3,9V / 15,6V	4V / 16V
Undervoltage (cell/pack)	3,15 V/ 12,6V	3,1V / 12,4V	2,5V /10V
Short circuit current	-	-	1300A
Maximum charge current	-	-	250A
Maximum temperature	80°C	85°C	90°C

Apart from I.K.O.S. and A.V.A.T., the LITE BLOX is autonomously protecting itself when leaving the intended operating range or if already being ran outside this range. This self protection is working on three levels:

1. **Warning (yellow):** When the LITE BLOX is in danger of leaving the intended operating range, the first level is active, indicated by the yellow-coloured values of the corresponding parameters. If for example the LITE BLOX suffers from over-temperature, the temperature value on the main page of the LITE BLOX Remote app will be displayed in yellow. There is no automatic deactivation on this level.
2. **Soft Close (red):** When the LITE BLOX has left the intended operating range, the second level is active, which is indicated by the red coloured values of the corresponding values. Furthermore, on this level an automatic deactivation takes place. This cut off takes place as soon as the BMS switches its operational mode from active to standby. The conditions mandatory for this switch are at least, a current less than 1 A (charge or discharge), no active Bluetooth connection for at least 60 seconds, and a cell pack voltage under 14V. This way it's ensured that the deactivation is performed when the vehicle isn't driven (motor not running). Prior to the next utilisation of the LITE BLOX (charge and discharge), it must be reactivated via the LITE BLOX Remote app by pressing the button 'Reset Error' (chapter 5.6.5).
3. **Threshold hard close:** when being used outside the intended operating range lithium cells may face permanent damage or internal cell failure which can result in outgassing or fire. Therefore, an instant cut off function (deactivation) is implemented, which deactivates as soon as the operating parameters of the LITE BLOX are critical. This way the LITE BLOX protects itself from overcharging, over-temperature and extensive current-draw. The instant deactivation on this level is performed without any delay (in comparison to soft close level 2) and prior to the next utilisation of the LITE BLOX (charge and discharge) it must be reactivated via the LITE BLOX Remote app by pressing the button 'Reset Error'.

Current consumption BMS:

If not in use the BMS switches into a sleeping mode. In this sleeping mode the current consumption of the internal BMS is 1mA.

When the battery is awake and in use (current > 1A, Voltage > 14V, CAN communication on, BT communication on) the current consumption is 70mA.

CAN Communication:

- CAN Baud Rate = 1Mbaud
- No termination of CAN inside the battery
- CAN communication only active if data send on 0X300

Connector Layout (DEUTSCH ASL006-05SN):

PIN	Name	description
1	Killswitch input	enables the LITE BLOX when connected to ground
2	Killswitch output	Transmits 12 Volt signal to shut down ECU, in disabled-state
3	CAN high	CAN-communication
4	CAN low	CAN-communication
5	Vbat +	Vbat +; max 200mA, please do not use without a fuse, This output still supplys power after a disconnections of the main plus pole.

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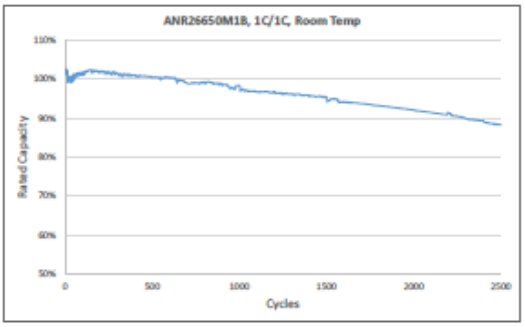
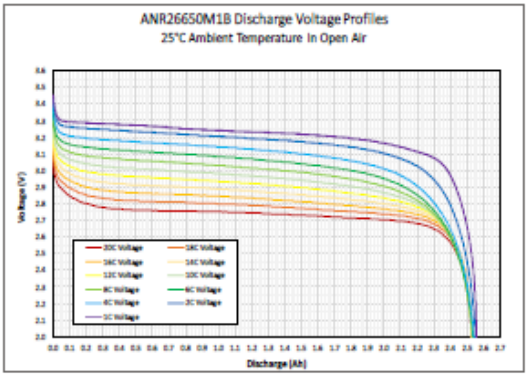
cell overview

Nominal Ratings	
Voltage	3.3 V
Capacity @ 25 ºC Typ (Min)	2.6 Ah (2.5)
Energy @ 25 ºC	8.25 Wh
Specific Power @ 25 ºC, 2 sec pulse	> 4000 W/kg
Impedance (1KHz AC) Typ	6 mΩ
Cycle Life at 1C/1C, 100% DOD	> 4000 cycles
Discharging	
Max Continuous Discharge Current	50 A
Max Pulse Discharge Current (10s)	120 A
Minimum Voltage / HPPC Pulse	2 V / 1.6 V
Temperature	-30 ºC to 55 ºC
Charging	
Recommended Charge Current	3 A
Max Continuous Charge Current	10 A
Max Pulse Charge Current (10s)	20 A
Float Voltage	3.45 V
Recommended charge V & Cut-off Current	3.6 V, taper to 125mA
Temperature Range (reduce charging current to 250mA when under 0 ºC)	0 ºC to 55 ºC
Storage	
Storage Temperature	-40 ºC to 60 ºC
Mechanical	
Diameter	Ø25.96 +/- 0.5 mm
Length	65.15 +/- 0.5 mm
Mass	76 g +/- 1.0 g
Certifications	
Transportation	UN 3480 (UN38.3), CIQ
Safety	UL 1642, IEC 62133-2
Transportation	
Shipping	Via Air @ 30% SOC Via Sea @ 50% SOC
Part Number 300732-006	





Abuse

Nail penetration	Pass - EUCAR4
Over-Discharge	Pass - EUCAR3
Thermal Stability	Pass - EUCAR4
External Short	Pass - EUCAR3
Crush	Pass - EUCAR3
Overcharge	Pass - EUCAR2
Vent Open Pressure	1.0 - 2.0 MPa

LITE↯BLOX App for download:

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