LITE BLOX

high performance accumulator
- LiFePO4 / 13,2VDC / 99Wh –

version: 1.0

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specifications

	value	annotation
height [mm]	100	±1mm
width [mm]	123	±1mm
length [mm]	149	±1mm
weight [g]	14XX	± 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]	30	
current discharging (continuously) [A]	150	
current discharge (10s pulse) [A]	360	
capacity (nom / Pb-eq) [Ah]	7,5 / 15-35	
cell chemistry	LiFePO4	
cell type	ANR26650M1-B	LithiumWerks
cell configuration	4s3p	
total battery pack impedance [mOhm]	8	
protection class	IP65	
temperature range for use [°C]	(- 20) – (+ 80)	
recommend storage temperature [°C]	(0) – (+ 40)	

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functions

function	description
balancing	Balancing between the cell banks while the LITE BLOX is being charged (to prevent long term cell deviation)
data transfer	A connection between the LITE BLOX and an external device (smartphone/tablet/laptop) can be made via Bluetooth. Over this connection operation data can be displayed and changes in the configuration of the thresholds can be made.
warning	When running outside the intended operation limits, the integrated electronics, emits a alarm signal to highlight misuse or malfunction via CAN bus and APP.
BMS	In accordance with the configured parameters the integrated electronic switches the output power off. In this condition no energy can be drawn from the LITE BLOX.
Ext. power out (optional)	Provided by a 12V relais (included in the delivery scope)
shut off signal	Extra shut off signal output for modern ECU`s with shut down routine

Protection modes 12V System (optional 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	yellow	Threshold (soft close*)	Threshold hard
Model	LB12MS	LB12MS	LB12MS
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	-	-	900A
Maximum charge current	-	-	200A
Maximum temperature	75°C	80°C	85°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 (chapter 3) or if already being ran outside this range. This self protection is working on three levels:

1. **Soft Close (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 a current less than 1 A (charge or discharge) and no active Bluetooth connection for at least 60 seconds. 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. **Instant cut off:** 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 is active 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'.

CAN Communication:

- CAN Baud Rate = 1Mbaud
- No termination of CAN inside the battery
- CAN communication only active if data send on 0X600

Bits	Size	Gain	Engineering Range	Describtion
[0]	1	1	[0 – 1]	Charge override
[1]	1	1	[0 – 1]	BT On
[2]	1	1	[0 – 1]	BT Off
[3]	1	1	[0 – 1]	Disable Crash
[4]	1	1	[0 – 1]	Reset Killswitch
Bits	Size	Gain	Engineering Range	Describtion
[0 - 11]	12	0.001	[0 – 4.095] V	Voltage cell 1
[12 - 23]	12	0.001	[0 – 4.095] V	Voltage cell 2
[24 - 35]	12	0.001	[0 – 4.095] V	Voltage cell 3
[36 - 47]	12	0.001	[0 – 4.095] V	Voltage cell 4
[48 - 63]	16	0.001	[0 – 65.535] V	Voltage Pack 14V
Bits	Size	Gain	Engineering Range	Describtion
[0-3]	4	-	-	Alive Counter
[4]	1	1	[0-1]	Warnlevel 1
[5]	1	1	[0-1]	Warnlevel 2
[6]	1	1	[0-1]	Warnlevel 3
[7 - 14]	8	0.5	[0-100] %	SOC
[15 - 30]	16	0.1	[-3276.7 – 3276.8] A	Current Pack 14V

[31 - 38]	8	10	[0 – 2550] A	Max Current Charge
[39 - 46]	8	10	[0 – 2550] A	Min Current Discharge
[47 – 54]	8	1		Error flags

Connector Layout (DEUTSCH ASL006-05SN):

Optional a Deutsch DTM connector with only 2 pins for CAN Bus can be used.

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

cell overview

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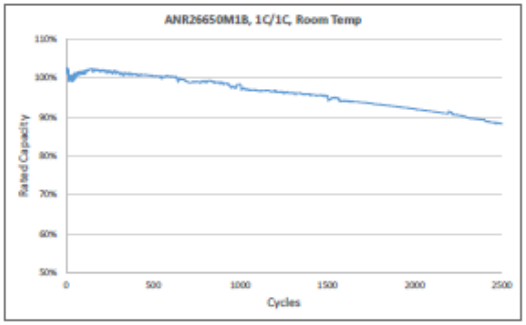
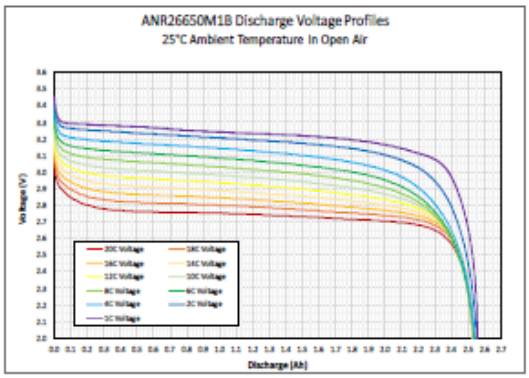
Nominal Ratings	
Voltage	3.3 V
Capacity @ 25 ºC Typ (Min)	2.6 Ah (2.5)
Energy @ 25 ºC	8.25 Wh
Specific Power @ 25 ºC, 2 sec pulse	> 4000 W/kg
Impedance (1KHz AC) Typ	6 mΩ
Cycle Life at 1C/1C, 100% DOD	> 4000 cycles
Discharging	
Max Continuous Discharge Current	50 A
Max Pulse Discharge Current (10s)	120 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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