

PRODUCT INFORMATION

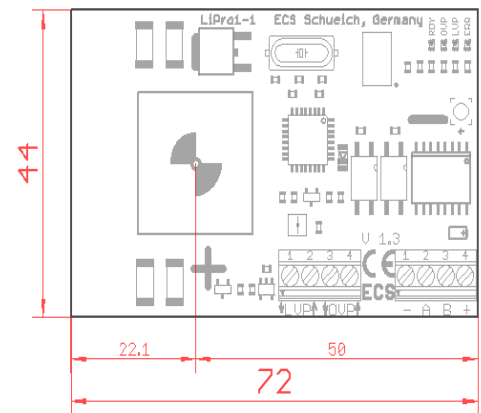
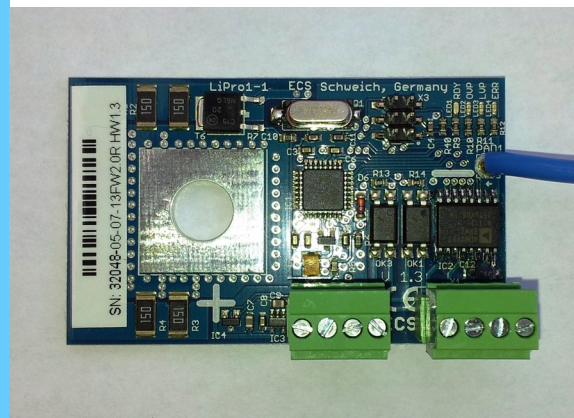
LIPRO 1-1

Battery Management System (BMS) for LiFeYPO₄ and LiFePo₄ Cells

New version: Fits also on smaller cells now!

*ECS
 ...weil es uns Spaß
 macht, das Unmögliche
 zu tun.*

The **LiPro1-1** by ECS is used to monitor the charge and discharge of lithium cells so that individual cells in a series-connected battery pack are neither overcharged nor over-discharged. It includes a built-in balancer to balance unequal charged cells. The LiPro1-1 has two separate safety loops for deep discharge and overcharge protection, so that the load and charge termination can be controlled separately.



Features:

- ◆ 2 separate safety loops against deep discharge or overcharge
- ◆ Microprocessor controlled
- ◆ Easily expandable, one LiPro1-1 per cell
- ◆ Mounting directly on each positive battery terminal
- ◆ Balancer current 0 to 1000 mA
- ◆ Balancer voltage 3,65 V
- ◆ Deep discharge protection (LVP) delayed at 2,8 V (LiFeYPO₄)
- ◆ Deep discharge protection (LVP) delayed at 2,7 V (LiFePo₄)
- ◆ Delay to avoid early response at high inrush or cold cells
- ◆ Overcharge protection (OVP) at 3,9 V (LiFeYPO₄ Version)
- ◆ Overcharge protection (OVP) at 3,7 V (LiFePo₄ Version)
- ◆ 4 LEDs to display: Function, error, ovp, lvp
- ◆ Temperature protection 80 °C
- ◆ Maximum tolerance of limits better than 0,5%
- ◆ Board is lacquered to protect against environmental influences

Also available with electrically isolated RS485 interface:

- ◆ RS485 interface with the open Modbus protocol
- ◆ Read all data possible
- ◆ Thresholds programmable
- ◆ Up to 32 devices on bus

ECS
 Electronic Construction Service
 Isseler Str. 49
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www.ecs-online.org

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Mechanical data:

- ◆ Dimension: 72 mm x 44 mm x 25 mm
Mounting hole M10
- ◆ Wight 15 gr.
- ◆ Cable size AWG 26 - 16 (0,1 mm² - 1,5 mm²)
- ◆ Protection class IP00, Board is lacquered to protect against environmental influences

Electrical data:

- ◆ Operating voltage range 2,30 V to 6 V
- ◆ Overcharge protection (OVP disconnect) 3,90 V (LiFeYPO₄ Version)
3,70 V (LiFePo₄ Version)
- ◆ Overcharge protection (OVP reconnect) 3,50 V
- ◆ Deep discharge protection (LVP disconnect delayed) 2,80 V (LiFeYPO₄ Version)
2,70 V (LiFePo₄ Version)
- ◆ Deep discharge protection (LVP disc. non delayed) 2,60 V (LiFeYPO₄ Version)
2,50 V (LiFePo₄ Version)
- ◆ Deep discharge protection (LVP reconnect) 3,20 V
- ◆ Balancer voltage 3,65 V
- ◆ LVP Alarm (red LED) 2,60 V (LiFeYPO₄ Version)
2,50 V (LiFePo₄ Version)
- ◆ OVP Alarm (red LED) 4,00 V (LiFeYPO₄ Version)
3,80 V (LiFePo₄ Version)
- ◆ Maximum tolerance of limits < 0,5 %
- ◆ Balancer current 0 mA - 1000 mA
- ◆ Temperature protection 80 °C (+- 5 °C)

Environmental Data

- ◆ Ambient temperature -20 °C to +45 °C
- ◆ Storage temperature -20 °C to +85 °C

Outputs

- ◆ Functions 1 x safety loop LVP
1 x safety loop OVP
- ◆ Contact type and design NC (normally closed), optocoupler with collector, emitter output
- ◆ Max. switch current 50 mA
- ◆ Max. switch voltage 80 V
- ◆ Uce (collector emitter voltage, on state) about 1 V at 50 mA/0,5 V at 25 mA

RS 485 BUS (optional)

- ◆ Open modbus protocol
- ◆ Up to 32 devices on bus
- ◆ Galvanically isolated
- ◆ Large number of parameters (eg, cell voltage, cell temperature, min and max values, actual balancer current, ...)

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