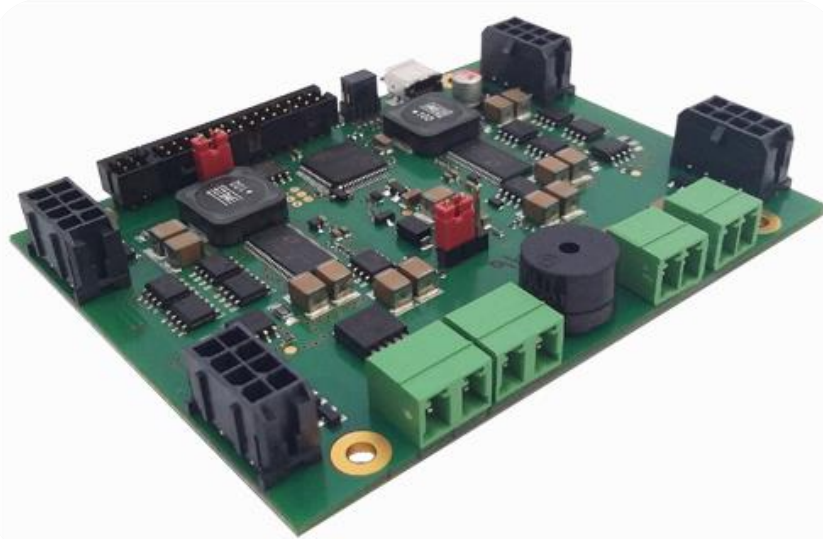


QSBMS

Quad Smart Battery Management System

Modular, scalable, ultra-high efficiency smart battery pack manager for mobile, portable electronic equipment and robotic applications



High-efficient charging, right-sized, modular, scalable, future proof with abundant battery power to source your demanding OEM applications in the field of civil & military communications, robotic (UGV, ROV, UAV, GCS), police, oceanographic, oil and gas and others.

- 1-4 Smart Battery operation
- On-demand scaling of 1 to 128 batteries
- Includes all SMBus Level 3 Charger V1.1 safety features
- Fully customizable embedded software (firmware)
- Stand-alone battery charger/discharge or MCU based intelligent management system
- Simultaneously charging of up to all 4 batteries
- Simultaneously power connected systems and batteries charging
- CAN Bus and I2C/SMBus for system expansion and further enhancements

Features and Benefits

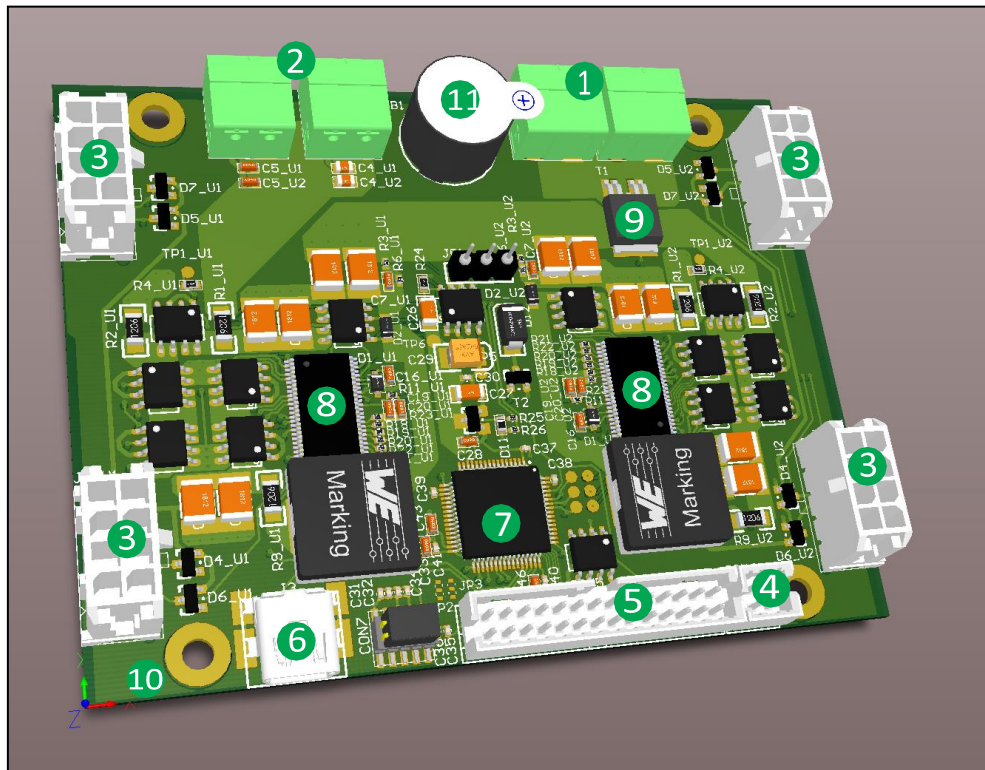
The right-sized BMS for demanding business critical applications

The LikeAbird QSBMS is a world-class, ultra-high efficiency SMBus and SBS smart battery management system (BMS) designed to cost-effectively provide high levels of battery power availability while simplifying the power management of your electronic equipment or robotic application. QSBMS is a true modular system consisting of a stackable intelligent management modules (the Controller), up to 4 swappable battery packs, a power conditioning and distribution module, and various configuration and data visualization modes that facilitate easy and efficient integration, operation and service.

This architecture can scale power and runtime as demand grows or as higher levels of availability are required. The QSBMS systems can scale in increments of 360Wh (four battery packs) up to 12 kWh (128 battery pack in a battARRAY™ configuration). With industry-leading power density, the QSBMS has the ability to fit seamlessly inside your robotic application (ROV, UGV, GCS), on your desktop to power various electronic equipments or in a compact Portable Energy Storage Unit (rugged 19" and Pelicase also available) to be a standalone portable energy source in the field or a lead acid replacement for various civil and military applications.

Highly manageable, the QSBMS features self-diagnostic capabilities, various auto-shutdown and power on modes that mitigate the risk of human error. Other features include remote data visualization, command & control of power conditioning modules, seamless customer application integration, and on-the-fly firmware upgrades resulting in increased overall application availability and reliability.

QSBMS Main Controller Features



QSBMS-NP

1 Main Battery Voltage Outputs

Connected in parallel provides the flexibility to scale power capacity in 360 Wh increments for providing more real power and availability.

2 External DC Input/Output

Easy controller daisy chain to build large power sources, power DC loads and simultaneously charge battery modules.

3 SMBus/SBS Battery Inputs

Accept up to four SMBus and SBS rev 1.1 rechargeable Lithium Ion smart batteries. Standard and custom SMBus battery cable are available to best suite your application.

4 Spare Custom GPIO's

Allows further control signals in order to control application specific equipment.

5 User I/O Header

Offers various command & control and bus expansion capabilities, such power switch, LEDs, I2C, serial and CAN bus.

6 Controller Firmware Updates

A USB port enables on-the-fly upgrades, making firmware updates easy and increasing system availability.

7 32-Bit MCU Intelligence

Depending on requested application features, the system can be used in a stand-alone or MCU controlled mode and be upgraded via software License-Keys.

8 Dual Intelligent Battery System Manager

Highly-integrated SMBus Level 3 battery charger and selector featuring advanced battery monitoring and PowerPath architecture for simultaneous charging or discharging of both batteries.

9 Smart Main Output Power Switch

Provides embedded protective functions with current controlled input and diagnostic feedback with load current sense.

10 High-density Footprint

Space-saving footprint allows more flexibility on where you place the QBMS. Available also as PC/104 form factor.

11 Audible Alarm

Provides an audible alarm and feedback about various configured system and load parameters.

QSBMS Features and Benefits

Main Features	Benefits
■ Hot-swappable batteries ■ Intelligent Battery Management ■ Automatic internal bypass ■ Scalable runtime ■ Automatic self-test ■ Audible Alarms ■ Modular design ■ Serial Connectivity	■ Ensures clean, uninterrupted power to protected equipment while batteries are being replaced ■ Maximizes battery performance, life, and reliability through intelligent, precision charging ■ Supplies external power to the connected loads and simultaneously charge batteries (when external DC power source are available) ■ Allows additional run time to be quickly added as needed ■ Periodic battery self-test ensures early detection of a battery that needs to be replaced ■ Actively let you know if the unit is on battery, if the battery is low or if there is an overload condition ■ Provides high scalability from 1 to 120 battery packs, various options, expansion modules and software tools ■ Provides local and remote management of the QSBMS via a serial port

QSBMS Accessories

Smart Battery Packs (SBP)

The SBP Series are compact rechargeable 14.6V Lithium Ion smart batteries that has been specifically designed with energy density, functionality and safety in mind. Each pack is SMBus and SBS rev 1.1 compliant and features worldwide approvals, longest lifetime, impedance tracking and cell balancing, advanced temperature-dependent charging profiles and no manual recalibration are necessary. The packs fulfill JEITA standards and meet the requirements of UN38.3 (transportation), UL2054 and IEC62133 (safety).



SMBus Battery Cabel

5-way and 6-way battery adapter cables are used in system designs to connect the Smart Battery Packs to the QSBMS controller module. Contact LikeAbird directly for different cable lengths and adapter plates available and for custom versions.



Power Conditioning and Distribution Board (PCDB)

LikeAbird offers a full range of DC-DC converters which output regulated voltages when added to one of the QSBMS controller modules. Standard PCDB converts from battery power or charge power and offer voltages of 5V, 9V, 12V and raw battery voltage output. The PCDB are very efficient to conserve battery power for your DC load.



battARRAY™

Portable modular energy storage units are designed to provide abundant battery power on desktop of field applications. To increase the number of minutes your load can remain on battery, add optional Battery Extended Runtime (XR) Frames. A maximum of 29 XR frames can be connected to the QSBMS Master Controller to extend runtime. battARRAYs can be configured as desktop, 19" or rugged Pelicase versions.



Evaluation Kit

Complete set composed of AC/DC adapter, controller module, DC-DC board, nylon standoffs, four smart battery packs, cables and software to add a battery power system and integrated smart charger to your device or application.

Customization and Integration Service

Development and production of custom solutions to meet unique technical requirements and features of target markets. Host and user interface realization and application specific configuration (safety mechanisms, charging parameters). LikeAbird adopts state-of-the-art tools for mechanics and industrial design

Technical Specifications

QSBMS NP & HP Specifications		
Model Number	QSBMSNP	QSBMSHP
Power Output		
Output Capacity	170 Watts	340 Watts
Output Voltage Battery only	12-16V (raw battery pack)	
Output Voltage with Charger	18-20V	
Output Connections	2x VBAT-Out (Phoenix 5.08), 1x VDC-Out for stacking purpose (Phoenix 3.51)	
I/O Header		
Expansion Bus's	1x I2C/SMBus, 1x CAN	
User I/O	1x On/Off Power Switch, 4x GPIO, 3x LED	
FW Update	1x USB DFU	
Serial Ports	1x Serial CLI, 1x Remote Display/Telemetry	
Power Input		
Input Voltage for Charging	18-20V, 90W (minimum required)	
Input Connection	1x VDC-In (Phoenix 3.51) with VDC-Out pass through	
Physical		
Unit Dimensions (H x W x D)	90 x 70 x 20 mm	90 x 98 x 20 (PC/104)
Unit Weight	46 g	75 g
Battery		
Battery Type	11.25V - 14.4V Lithium-Ion (Li-Ion) Smart Battery, SMBus and SBS compliant	
Battery Connector	5-way or 6-way	
Management		
Configuration	Serial CLI, CAN Bus	
Data Visualization	PC GUI, Remote Serial Display	
Firmware Update	USB DFU	
Auto-Shutdown	Configurable	
Alarms	Visual (LCD) and audible alarms	
Expansion		
I2C/SMBus	Command & control of slave application boards	
CAN Bus	QSBMS stackable up to 32 controllers	
Safety		
Certification/Approvals	CE (pending)	

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