Orion Jr. BMS2

Lithium Ion Battery Management System for 12V—48V Applications

Orion Jr 2

The Orion Jr. 2 BMS is a product of Ewert Energy Systems, Inc.

Ewert Energy Systems is a research and development company focused on developing solutions for plug-in hybrid and electric vehicles and other energy storage applications.

Designed Use

- Designed for Lithium Ion battery packs up to 48V nominal (60V max)
- Individual cell voltage rating: 0.2v to 5v per cell tap
- Supports from 1 to 16 cells in series
- -40C to 80C operating temperature range
- Integrated low loss passive cell balancing to within 5mV
- Cell voltage resolution of 0.1mV

Applications

- Light mobile applications (scooters, golf carts, etc.)
- Solar & wind energy storage
- Uninterruptible power supply
- Battery backup

Basic Functions

- Over-voltage and under-voltage protection
- Over-current protection
- Temperature protection
- Intelligent cell balancing
- State of charge monitoring
- State of health monitoring

Additional Functions

- Data logging capabilities
- Stored diagnostic information
- Programmable interfaces
- Current limit calculations (intelligent current limiting)
- Stored battery usage statistics including histogram data

Display Options

- Interfaces with third party smartphone software (CAN version only)
- Optional basic state of charge display
- Optional data logging display
- Optional remote monitoring via Orion Connect

EWERT
ENERGY SYSTEMS

Interfaces

- 2 digital signal outputs for controlling charge and discharge limiting mechanisms
- 1 digital signal output for controlling a battery charger
- 1 CANBUS 2.0B interface [optional] (both standard and extended IDs supported)
- 1 digital RS-232 interface for programming and diagnostics
- 3 multi-purpose outputs with software assignable functions
- 1 multi-purpose input with software assignable functions
- 3 analog 0-5v outputs that represent the following signals: Charge Current Limit (CCL), Discharge Current Limit (DCL), State of Charge (SOC).
- 3 thermistor inputs (additional monitoring possible with thermistor expansion module)

Features

- Centralized design allows for faster polling of data resulting in increased accuracy and resistance to EMI
- No cell boards (all electronics are contained within the unit.)
- Supports OBD2 protocol for storage of diagnostic trouble codes, freeze frame snapshots and polling of live data
- PC software can be used to monitor battery performance, read and reset trouble codes, program battery profile information, and update settings
- Accurate amp-hour and pack state of charge tracking (with correction based on cell open voltage)
- Retains data when power is lost (no always-on power source needed)
- Charger integration to allow for tapering of current during charge (if supported by charger)
- Battery profile information and settings are field programmable via PC utility.
- Internal resistance is measured for all individual cells
- Pre-calculated charge and discharge current limits
- Stores a snapshot of active data when faults occur for easy problem diagnosis.

Dimensions

- 7.14 in (W) x 4.01 in (L) x 1.50 in (H)

Weight (BMS Only)

7.6 ounces (0.21 kilograms)

Specification Item	Min	Typ.	Max	Units
Supply Voltage	10		60	Vdc
Supply Current—Active		1.1		W
Operating Temperature	-40		80	C
Digital Output Voltage (Open Drain)			60	V
Digital Output Sink Current (60v max)			175	mA
Analog Outputs Voltage	0		5	V
Cell Voltage Measurement Range	0.5		5	V
Cell Voltage Measurement Error (over 1-5v range)		0.25		%
Cell Balancing Current			150	mA
Cell Voltage Resolution		0.1		mV

Optional Specifications	
Item	**Value**
CANBUS speed (on supported units)	125, 250, 500, or 1000 Kbps
Current Sensor Values Supported +/- (Hall Effect)	200A, 500A, 800A and 1000A Dual current sensors can be used to achieve up to 2000A

161 E. Saint Charles Road
Carol Stream, IL 60188

Phone: (630) 868-3173
Fax: (866) 657-5667

www.orionbms.com
www.ewertenergy.com