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international
energy

POWERING THE FUTURE



BEMS **(Battery Equalizing & Monitoring System)**

Firefly International Energy, USA has developed a real-time & novel active battery management solution known as Battery equalizing and Monitoring System (BEMS). It equalizes old and new batteries connected in series string while extending battery life & provide more energy by preventing premature battery failure like battery dry up.

SALIENT FEATURES

- ▶ Auto calibration for number of batteries in string.
- ▶ Accurate balancing up to $\pm 5\text{mVpC}$.
- ▶ Voltage sense resolution of 0.5mV/VPC
- ▶ High balancing current up to 6A for faster equalization.
- ▶ Parallel & fast equalization of low batteries in string.
- ▶ Sub-strings can be cascaded for string voltages higher than 48V.
- ▶ Battery undervoltage & overvoltage fault indication.
- ▶ External relay compatibility for enabling shutdown.
- ▶ IP67 design.

BEMS

(Battery Equalizing & Monitoring System)

BEMS Models	Battery Block	Resolution / block^^	Balancing current
2EM06	2V	Up to ±5mV	Up to 6A
4EM06	4V & 6V	Up to ±10mV	Up to 6A
8EM02	8V & 12V	Up to ±20mV	Up to 2A



Advantages of Firefly BEMS

By equalizing individual batteries within the string, batteries are properly maintained and kept at the same state of charge. During charging, all batteries will receive a full charge, thus preventing under/overcharging.

- ▶ BEMS is a real time equalization system to maintain batteries balanced during charge, discharge, and idle modes and reduce its life cycle cost.
- ▶ High resolution ADC with 16 bit processor for voltage sense resolution of 0.5mV/ VPC, and immediate balancing response.
- ▶ Conventional active BMS balances between two batteries by slow sequential energy transfer from a charged battery of the pair to adjacent one. While Firefly BEMS enables fast, efficient, direct & parallel energy transfers to the low batteries, Consequentially balancing out in lesser cycles.
- ▶ With Firefly BEMS, other batteries in string are not loaded individually for balancing low battery in string.

Technical Specification :	
Nominal String Voltage	48V - 1000V
Battery block Voltage/Type	2V,4V,6V, 8V, 12V (Flooded & VRLA)
Max. Equalization Current	Up to 6A*
Standby Current Draw	≤ 5mA
Operating Temperature	-25oC – 50oC
Typical Efficiency	85%
Voltage Sense Resolution	0.5mV / VPC
Equalization Accuracy	Up to ± 5mV/ cell
Operating Modes	Equalizes during charge, discharge, and idle
Safety	<ul style="list-style-type: none"> • Under voltage & Over voltage • Reverse polarity protection • Resettable fuses • IP67 enclosure
Dimension (LxWxH)	(137x78x22) mm
Weight	0.35 lb. (160 g)
Design	Designed in USA

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