LithiumWerks™

Preliminary Specifications

CONFIDENTIAL

AER32140 Lithium Ion Energy Cell

Lithium Iron Phosphate Technology

Lithium Werks' AER32140 energy cells are best for Power.Safety.Life.® applications. They deliver high energy and long life due to their use of lithium iron phosphate ($LiFePO_4$) battery technology. The cells are inherently safe over a wide range of temperatures and conditions. Whether the application requires superior **high-temperature cycle life** or stable float reliability, the Lithium Werks' AER32140 cells are suitable for a wide variety of e-mobility, energy storage, and industrial applications.

Lithium Werks' Lithium Iron Phosphate battery technology offers thermal-stable chemistry, faster charging, consistent output, low capacity loss over time, and superior total cost of ownership (TCO). It provides the foundation for safe systems while meeting the most demanding customer requirements. Multiple layers of protection are employed at the chemistry, cell and system level to achieve an energy storage solution with superior safety and abuse tolerance compared to metal oxide lithium-ion chemistries.

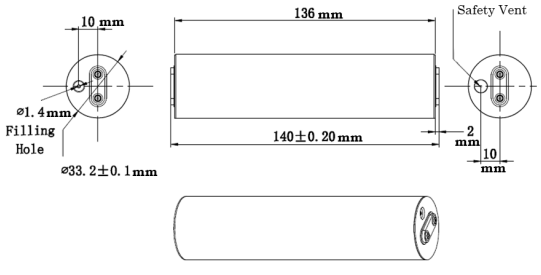
> *"...batteries using LFP cathode materials reduce to a minimum the likelihood of a fire event because they are technically safer*"*

* The resurgence of LFP cathodes, Roskill White Paper (June 2020)

Applications

- Electric 2 & 3 Wheelers
- Light Commercial Vehicles (eLCV)
- Electric Utility Vehicles
- Hybrid-Electric Marine
- UPS and Telecom Backup
- Residential Energy Storage
- Material Handling and AGVs
- Industrial Equipment

Dimensions



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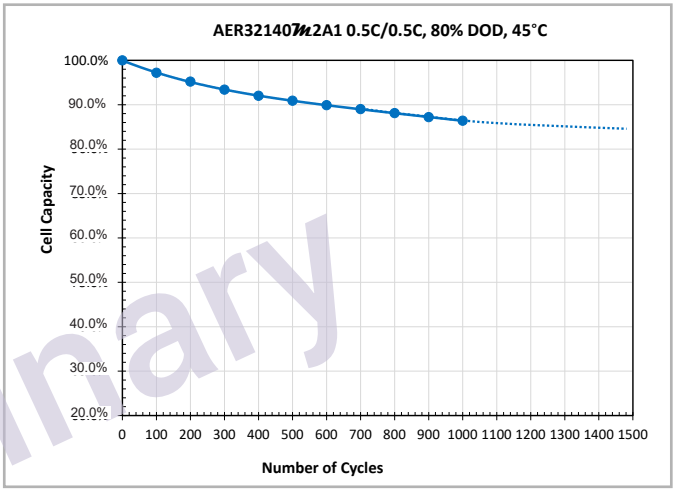
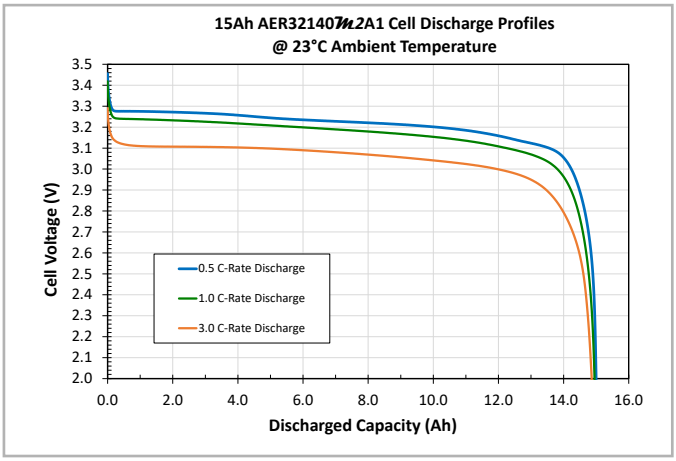
Specifications (at 23°C, unless stated)

Nominal Ratings	
Voltage	3.2 V
Capacity @ C/5 Typical	15.0 Ah
Energy	48 Wh
Specific Energy	185 Wh/kg
Energy Density	396 Wh/L
Impedance (1kHz ACIR) Typ	< 3 mΩ
Cycle Life at 0.5C/0.5C, 80% DOD	> 3,500 cycles
Cycle Life at 0.5C/0.5C, 80% DOD 45ºC	> 2,000 cycles
Discharging	
Max Continuous Discharge Current	45 A (3C) @ 23ºC to 60ºC
Max Pulse Discharge Current, 10s	60 A (4C)
Minimum Voltage	2.0 V
Temperature	-20ºC to 70ºC
Charging	
Recommended Charge Voltage	3.65 V
Recommended Charge Current	≤ 7.5 A (C/2)
Fast charge (20-80% SOC)	30 A (2C)
Charging Profile	CC/CV
Float Voltage	3.45 V
Temperature	0ºC to 60ºC
Storage	
Temperature	-20ºC to 70ºC
Mechanical	
Diameter	Ø33.2 +/- 0.2 mm
Length	140.0 +/- 0.4 mm
Mass	268 g +/- 2 g
Target Certifications	
Transportation shipped @ ≤ 30% SOC	UN 3480 UN 38.3
Safety	UL 1973, IEC 62620
Part Number TBD	

Cell Data





Abuse

Nail penetration	Pass - EUCAR4
Over-Discharge	Pass - EUCAR3
Thermal Stability	Pass - EUCAR4
External Short	Pass - EUCAR3
Crush	Pass - EUCAR3
Overcharge	Pass - EUCAR2

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