

BlueRack™ 250

480 VDC Industrial Power Battery Cabinet

Safe, Reliable, High-Power on Demand

Scalable Power Platform From kW to multi MW

- Breakthrough sodium-ion cells based on Prussian blue electrodes
- Full recharge in <15 minutes, ready immediately
 - No settling or thermal waiting required
- UL9540A 'Champion' rated nonflammable with no thermal runaway under any condition
- 50,000-100,000 discharge cycles depending on application
- Wide temperature operating range
- Twice the power of lithium
- Round-trip efficiency >97%
- Designed for behind-the-meter grid storage, peak shaving, load balancing and mission critical applications

Features



Rapid Cycle-Rate

100-0-100% SOC repeatedly with no wait, settling, or rest periods



Industry leading power capacity & performance



Nonflammable Chemistry & Construction

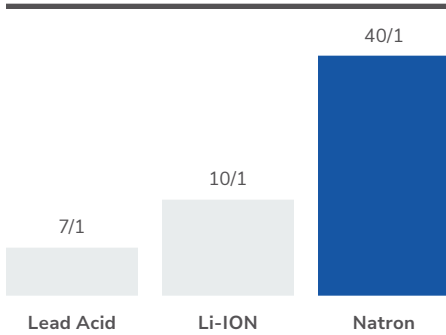
Industry leading system-level availability



Introducing the Industry's Highest Power, Longest Life, Safest Battery*

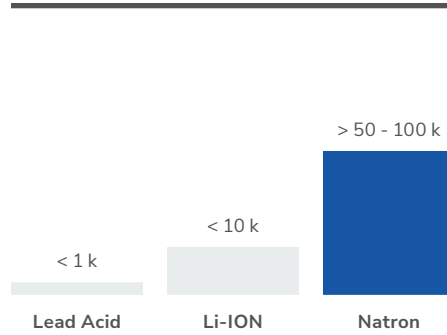
High Power

Max Sustained Power per Energy (W/Wh)



Long Life

Deep Discharge Cycle Life



Safe and Fault Tolerant

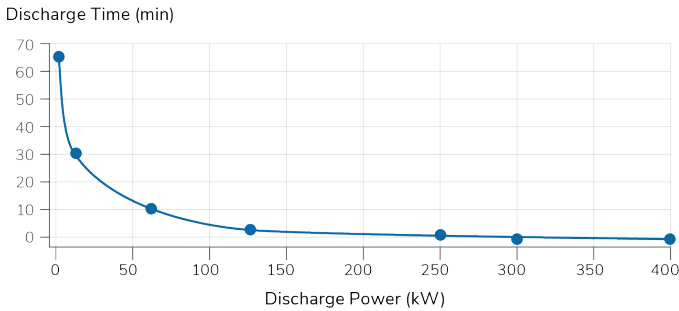
No Fire or Explosion During

Event	Lead Acid	Li-ION	Natron
Heating	✓	✗	✓
Overcharge	✗	✗	✓
Short Circuit	✗	✗	✓
Nail Penetration	✓	✓	✓

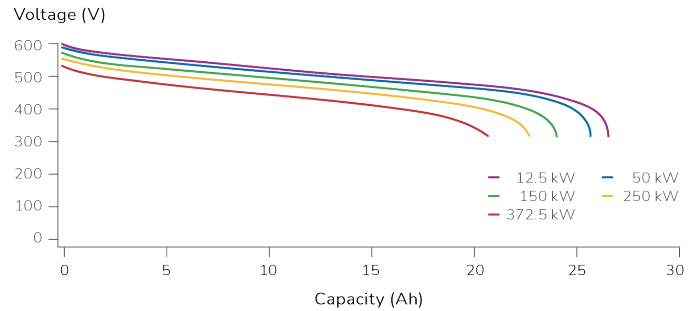
High Power

Over 250 kW sustained discharge

Power vs. Run Time



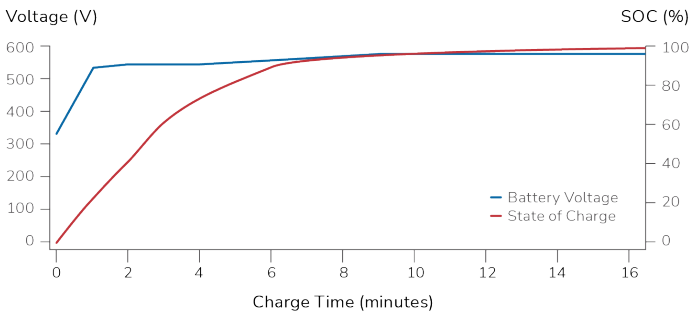
Discharge Performance



Fast Recharge

Full 0 to >99% recharge in just 15 minutes

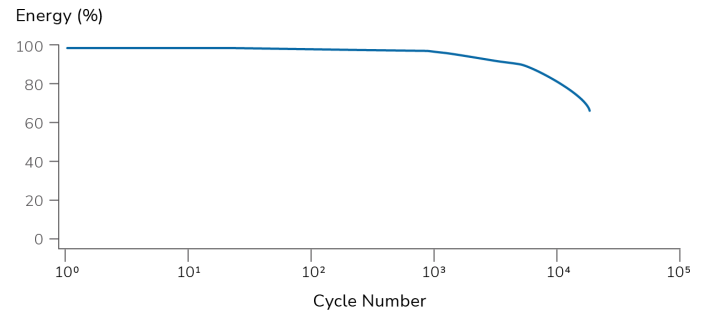
Fast Charge Performance (16C, CC - CV)



Long Life Cycle

Best-in-class cycle life: over 10 k cycles at >90% energy utilization

Cycle Life >90% Energy Utilization



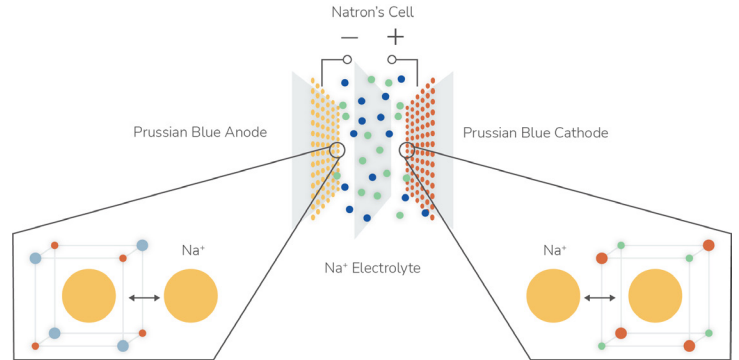
Preliminary specification subject to final product release.

* Battle Hardened – Battery Packs and Cells survive ballistic penetration test with no Fire, acid, or dangerous chemical exposure



Sodium-ion Inherently Safe and Fault Tolerant

- Nonflammable during and after nail penetration or flame test.
- No damage or loss in performance from short circuit or overcharge to 35% overvoltage.
- No rare-earth materials or caustic metals.



250 kW Cabinet



Cabinet Size: 1970mm x 660.4mm x 1170mm
77.6" H x 26" W x 46" D

Based on the BluePack Battery

See BluePack datasheet for details

48 V, 25 kW, 2 Minutes

Voltage Rating Swing 59 V to 32V

Maximum Current Rating 800 A

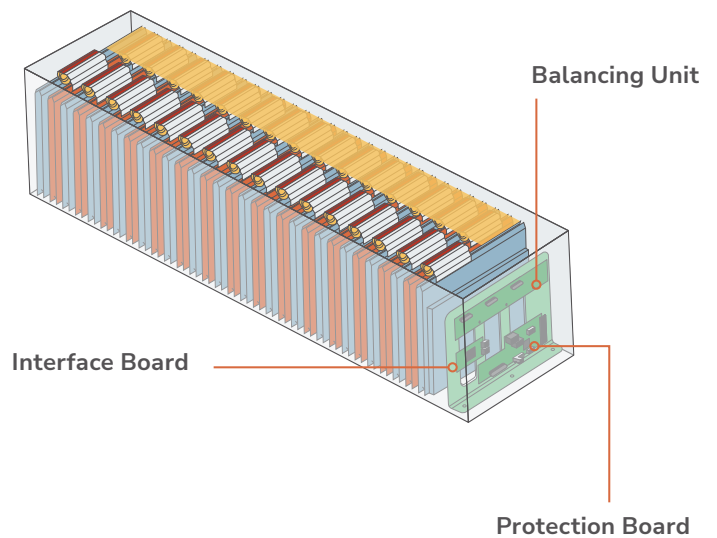
Size 246mm x 259mm x 951mm
9.7"H x 10.6" W x 37.4" D

Weight Approximately 75kg / 165 lbs

Communication

External MODBUS TCP/IP

Internal Communication CAN Bus 2.0B 1 MBS



Specifications

Performance

Run Time, Load	1 min	400 kW
	2 min	250 kW
	3 min	190 kW
	4 min	150 kW
	5 min	135 kW
0-99% Recharge Time	<15 min	
Energy, 1 hour (1C rate)	12.7 kWh	
Energy Efficiency (1C-1C)	>97%	
Coulombic Efficiency (1C-1C)	>98%	
Cycle Life (90% Energy Utilization)	>50,000 - 100,000	

Thermal

Operating Temperature Range	0° to +45 °C / 32° to 113°F	
Transportation Temperature Range	-20° to +50° C / -58° to 122°F	
Nominal Temperature Range	-10° to 20°C / 50° to 68°F	
Humidity (Non-Condensing)	10-90% Rh	

Mechanical

Exterior Rack Dimensions (H x W x D)	1970 x 660.4 x 1170 mm / 77.6 x 26 x 46 in	
Mass	1080 kg / 2381 lbs	
Seismic mounts available		
Top cable entry, others optional		
Busbar/stud terminations		

Electrical

Nominal Voltage	480 Vdc
Recommended Float Voltage	580 to 590 Vdc
Operating Range	320 to 590 Vdc
Survival Voltage Range	0 to 800 Vdc
Maximum Discharge Current	800 Amps
Maximum Charge Current	800 Amps
Single System Parallel Capacity	4.5 mW
	Nominal 12 13 for N+1
Emergency Power Off (EPO)	Optional

Monitoring and Communications

Parameters: Battery, Voltage, Charge, Power, Temperature	
Supported communication protocols	Modbus TCP/IP
Consult factory for other protocols	
Front Panel Display	Optional

Applications

Power Generation & Distribution	Behind-the-meter grid storage, dark start, load balancing
Industrial	Peak load shaving, frequency stabilization
EV Fast Charging	Bridging from grid
Fuel Cell	Bridging, power ramping, load balancing
Behind-the-meter energy storage and grid services	

Additional Information

natron.energy/product

Contact:

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About the company:

Natron Energy was founded by a group of Stanford scientists and engineers in 2012 to fulfill a singular mission: to offer safer, longer lasting batteries to underserved industrial and grid storage customers.

Today, Natron is a world leader in sodium-ion batteries and the first company to commercialize Prussian blue electrodes. Natron works with established pigment producers and Li-ion cell OEMs to deliver quality products via massively scalable manufacturing processes.