

BlueRack™ 250

480 VDC Critical 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 deep discharge cycles
- Wide temperature operating range
- Twice the power of lithium
- Designed for Data Centers, behind-the-meter grid storage, and mission critical applications
- Round-trip efficiency >97%



Features



Rapid Cycle-Rate

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



Industry leading power capacity & performance



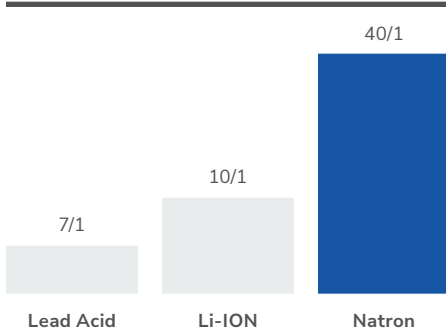
Nonflammable Chemistry & Construction

Industry leading system-level availability

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

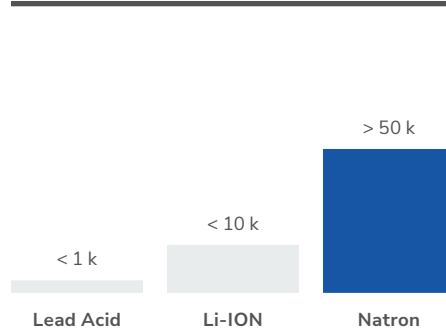
High Power

Max Sustained Power per Energy (W/Wh)



Long Life

Deep Discharge Cycle Life



Safe and Fault Tolerant

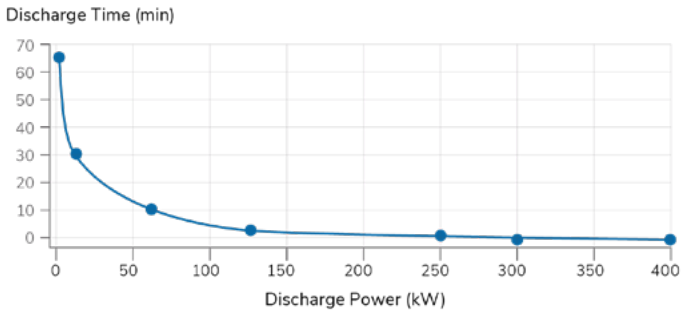
No Fire or Explosion During

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

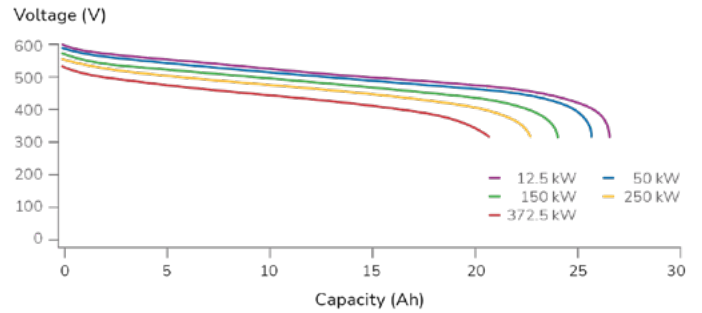
High Power

Over 250 kW sustained discharge

Power vs. Run Time



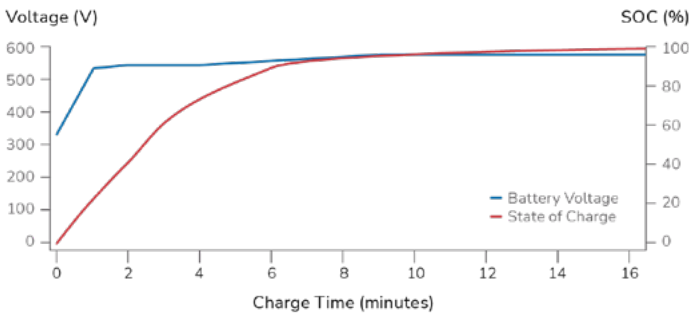
Discharge Performance



Fast Recharge

Full 0 to >99% recharge in just 15 minutes

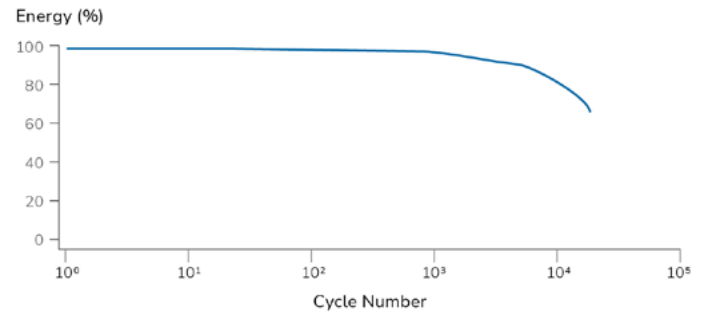
Fast Charge Performance (16C, CC - CV)



Long Life Cycle

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

Cycle Life >90% Energy Utilization

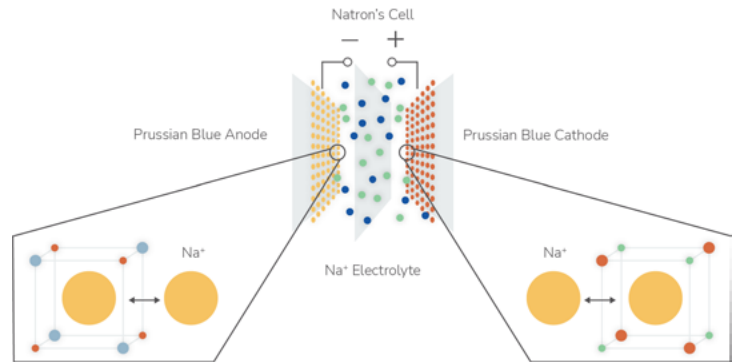


Preliminary specification subject to final product release.

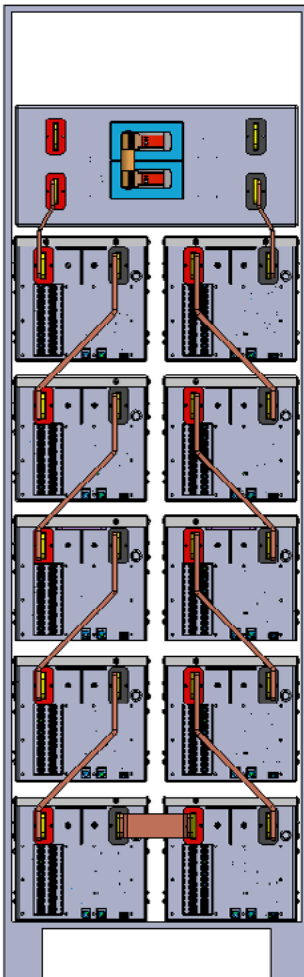
* Battle Hardened – Battery Packs and Cells survive ballistic penetration test with no Fire, acid, or dangerous chemical exposure

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 58 V to 32V

Maximum Current Rating 800 A

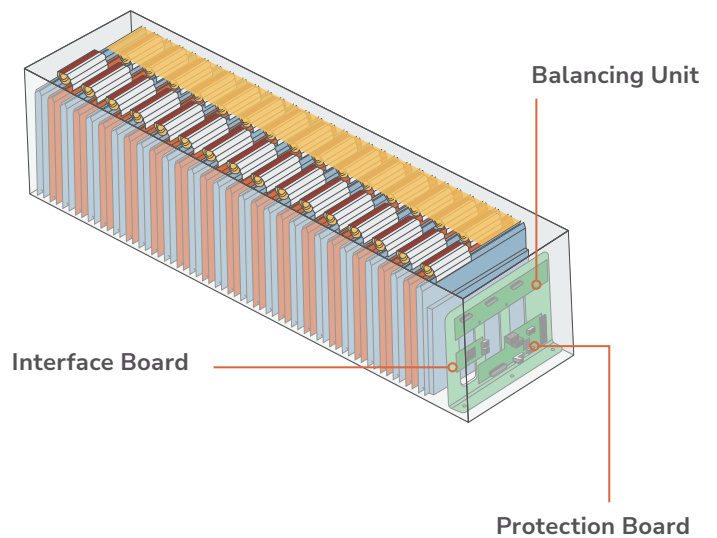
Size 253mm x 275mm x 960mm
9.9"L x 10.8" H x 37.8" W

Weight Approximately 165 lbs

Communication

External MODBUS TCP/IP

Internal Communication CAN Bus 2.0B 1 MBS



Specifications

Performance

| | | |
|-------------------------------------|----------|--------|
| Run Time, Load | 1 min | 340 kW |
| | 1.7 min | 250 kW |
| | 3 min | 174 kW |
| | 4 min | 141 kW |
| | 5 min | 125 kW |
| 0-99% Recharge Time | <15 min | |
| Energy, 1 hour (1C rate) | 12.4 kWh | |
| Energy Efficiency (1C-1C) | >97% | |
| Coulombic Efficiency (1C-1C) | >98% | |
| Cycle Life (90% Energy Utilization) | >50,000 | |

Thermal

| | | |
|---|---------------------------------|--|
| Operating Temperature Range | -20 ° to +45 °C / -4° to 113°F | |
| Survival Temperature Range (1 hr) | -50 ° to +50° C / -58° to 122°F | |
| Optimal (Consult factory for rating/duration) | -10 ° to +35 °C / 14° to 95°F | |

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 | 380 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 mWh |
| | 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

| | |
|---|---|
| UPS | Data Centers, Mission Critical Facilities |
| Telecom | Backup power on and off-grid sites |
| EV Fast Charging | |
| Fuel Cell | Bridging, power ramping, load balancing |
| Behind-the-meter energy storage and grid services | |

Additional Information

natron.energy/product

Contact:

General inquiries:
www.natron.energy Contact button

Careers: jobs@natron.energy

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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.