

# 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**



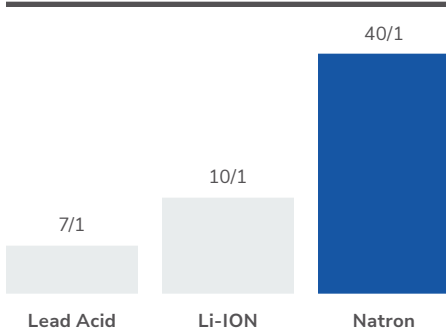
##### **Nonflammable Chemistry & Construction**

Industry leading system-level availability

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

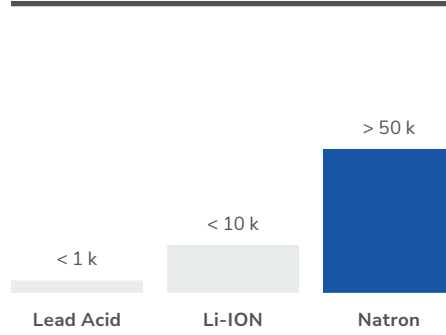
## High Power

Max Sustained Power per Energy (W/Wh)



## Long Life

Deep Discharge Cycle Life



## Safe and Fault Tolerant

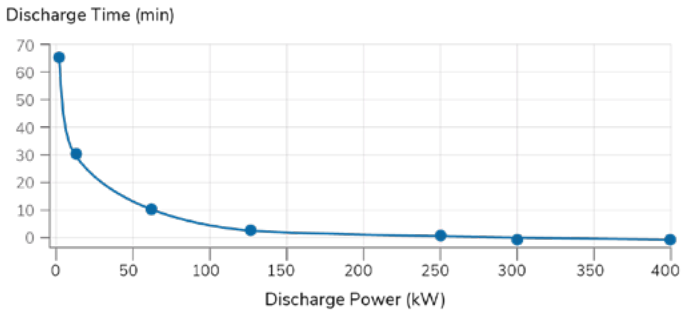
No Fire or Explosion During

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

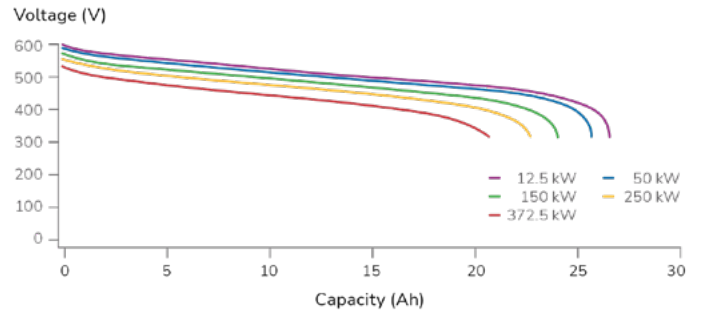
## High Power

Over 250 kW sustained discharge

### Power vs. Run Time



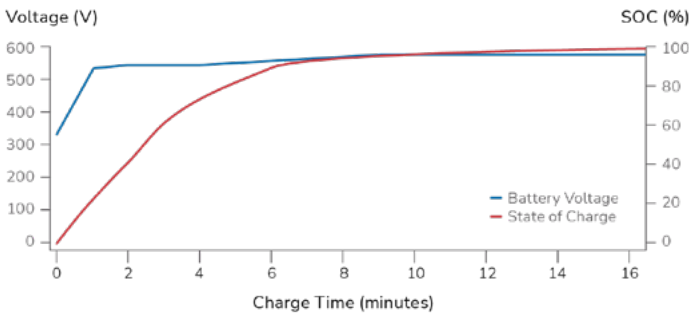
### Discharge Performance



## Fast Recharge

Full 0 to >99% recharge in just 15 minutes

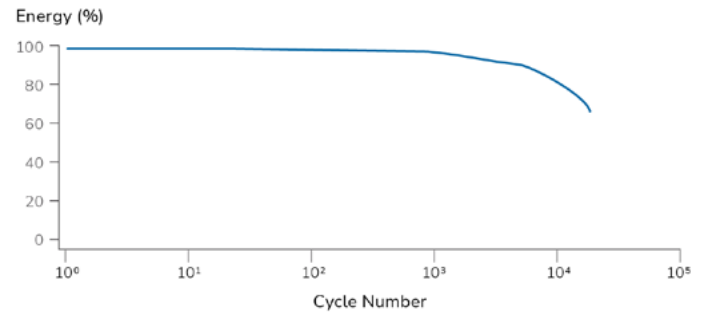
### Fast Charge Performance (16C, CC - CV)



## Long Life Cycle

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

### Cycle Life >90% Energy Utilization

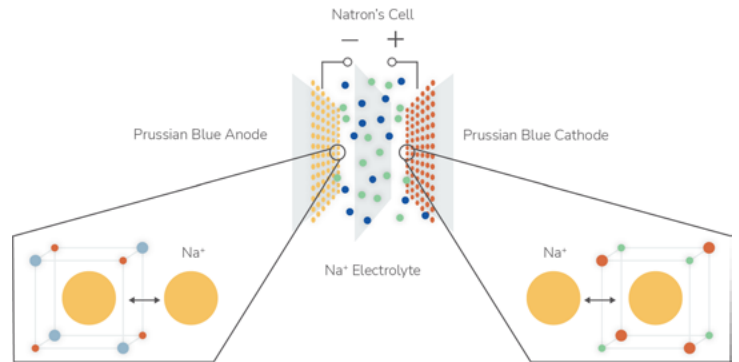


Preliminary specification subject to final product release.

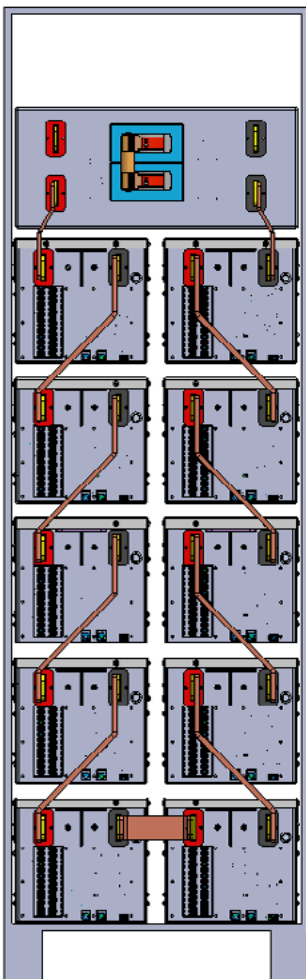
\* Battle Hardened – Battery Packs and Cells survive ballistic penetration test with no Fire, acid, or dangerous chemical exposure

# 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

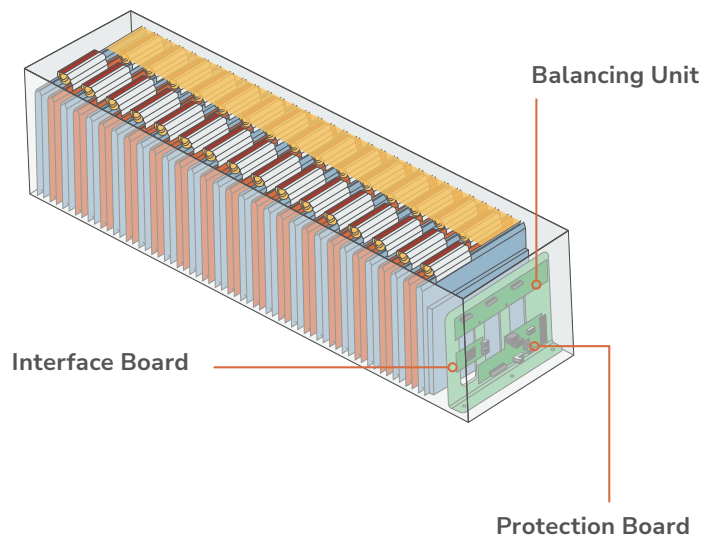
Size 253mm x 275mm x 960mm  
9.9"L x 10.8" H x 37.8" W

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	080 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 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

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](http://natron.energy/product)

### Contact:

**General inquiries:**  
[www.natron.energy](http://www.natron.energy) Contact button

**Careers:** [jobs@natron.energy](mailto: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.