Natron Energy

Blue Rack™ 500

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
- >10,000 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

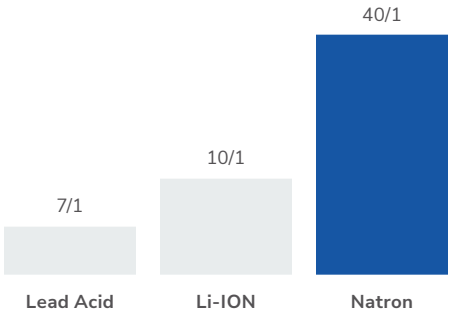
Rapid Cycle-Rate
100-0-100% SOC repeatedly with no wait, settling, or rest periods

Industry leading power capacity & performance

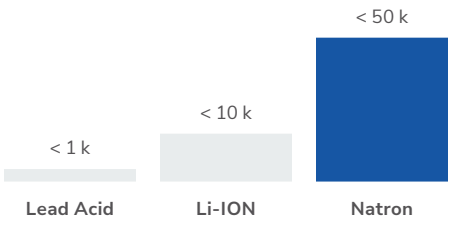
Nonflammable Chemistry & Construction
Industry leading system-level availability

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



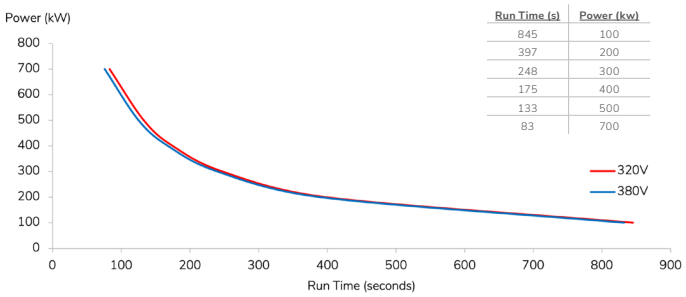
Safe and Fault Tolerant
No Fire or Explosion During

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

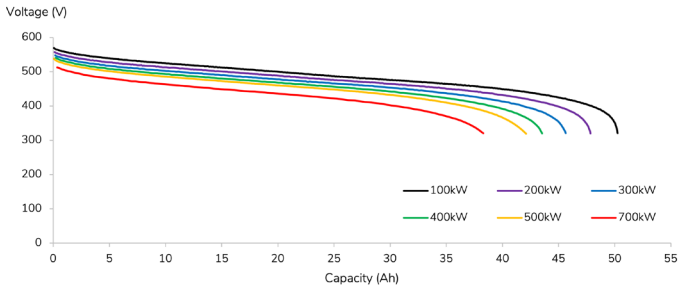
High Power

Over 500 kW sustained discharge

Power vs. Run Time



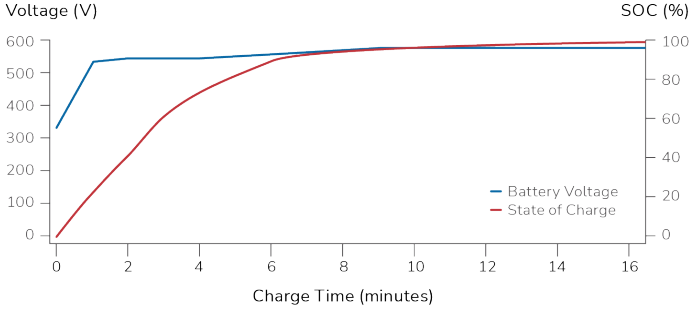
Discharge Performance



Fast Recharge

Full 0 to >99% recharge in just 15 minutes

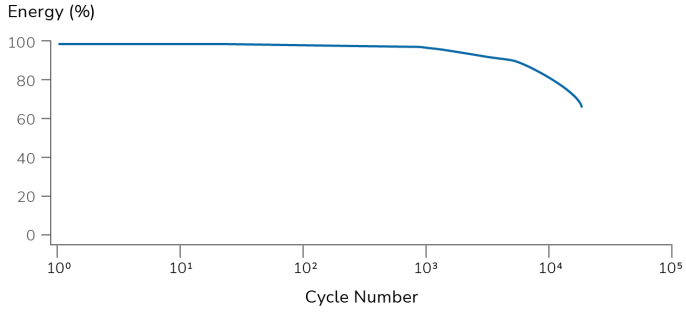
Fast Charge Performance (16C,CC - CV)



Long Life Cycle

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

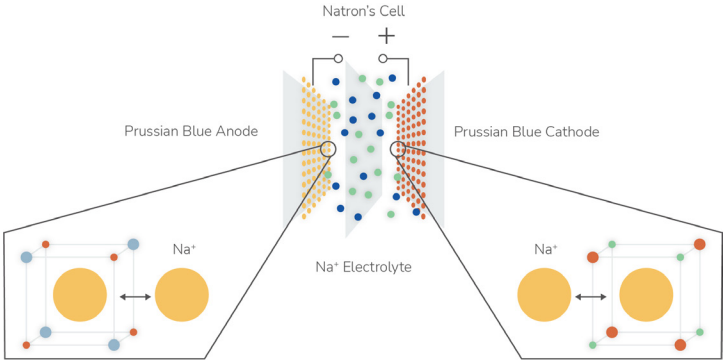
Cycle Life >90% Energy Utilization



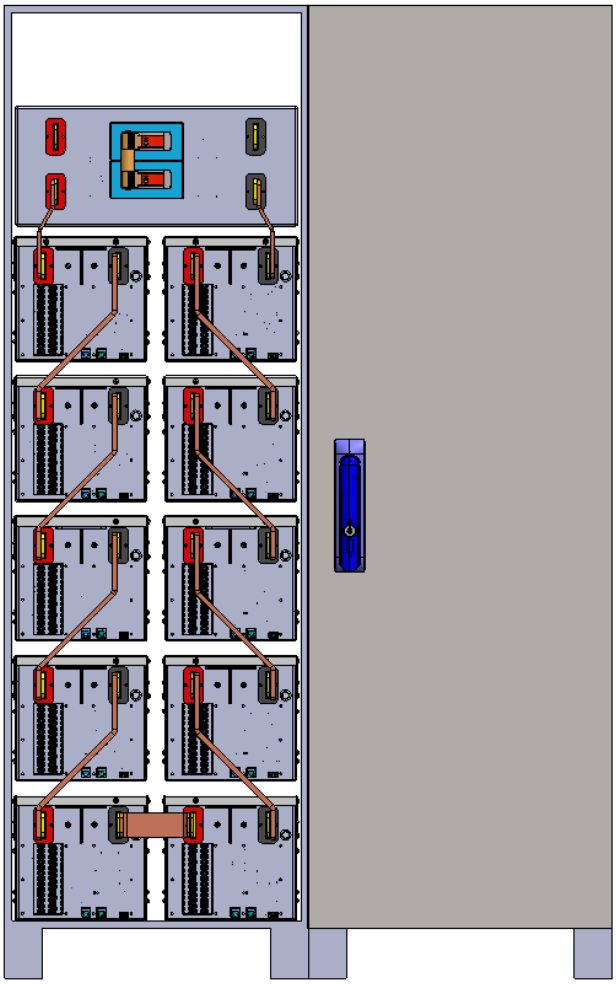
Preliminary specification subject to final product release.
* Battle Hardened – Battery Packs and Cells survive ballistic penetration test with no Fire, acid, or dangerous chemical exposure

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.



500kW Cabinet (2 Strings of 10)

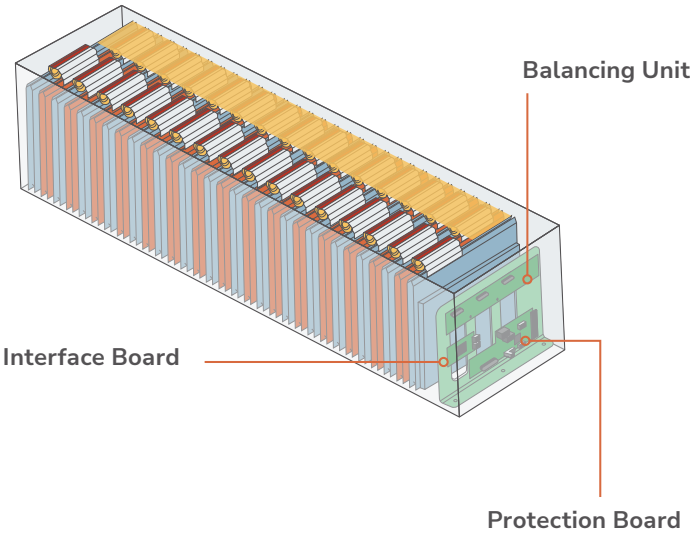


BluePack© Spec

48 V, 25 kW, 2 Minutes	
Voltage Rating Swing	58 V to 32V
Maximum Current Rating	1100 A
Size	37.8"L x 10" H x 10.8" 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	700 kW
	2 min	500 kW
	3 min	400 kW
	4 min	330 kW
	5 min	250 kW
0-99% Recharge Time	15 min	
Energy, 1 hour (1C rate)	26.8 kWh	
Energy Efficiency (1C-1C)	>97%	
Coulombic Efficiency (1C-1C)	>98%	
Cycle Life (90% Energy Utilization)	>10,000	

Electrical

Nominal Voltage	480 Vdc
Recommended Float Voltage	580 to 600 Vdc
Operating Range	320 to 600 Vdc
Survival Voltage Range	0 to 800 Vdc
Maximum Discharge Current	1,100 Amps
Maximum Charge Current	1,100 Amps
Single System Parallel Capacity	3,000 kW
	Nominal 6 cabinets or 7 cabinets to make 6 (N+1)
Emergency Power Off (EPO)	Optional

Thermal

Operating Temperature Range	-20 ° to +45 °C
Survival Temperature Range (1 hr)	-20 ° to +50° C
Optimal (Consult factory for rating/duration)	-10 ° to +35 °C

Monitoring and Communications

Battery, Voltage, Charge, Power, Temperature	
Supported communication protocols	Modbus ethernet
Consult factory for other protocols	
Front Panel Display	Optional

Mechanical

Exterior Rack Dimensions (H x W x D)	1950 x 850 x 1000 mm
Mass	2000 kg
Seismic mounts available	
Top cable entry	
Busbar/stud terminations	

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:

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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.