Natron Energy

DATASHEET

Part Number ZZ-0011-00

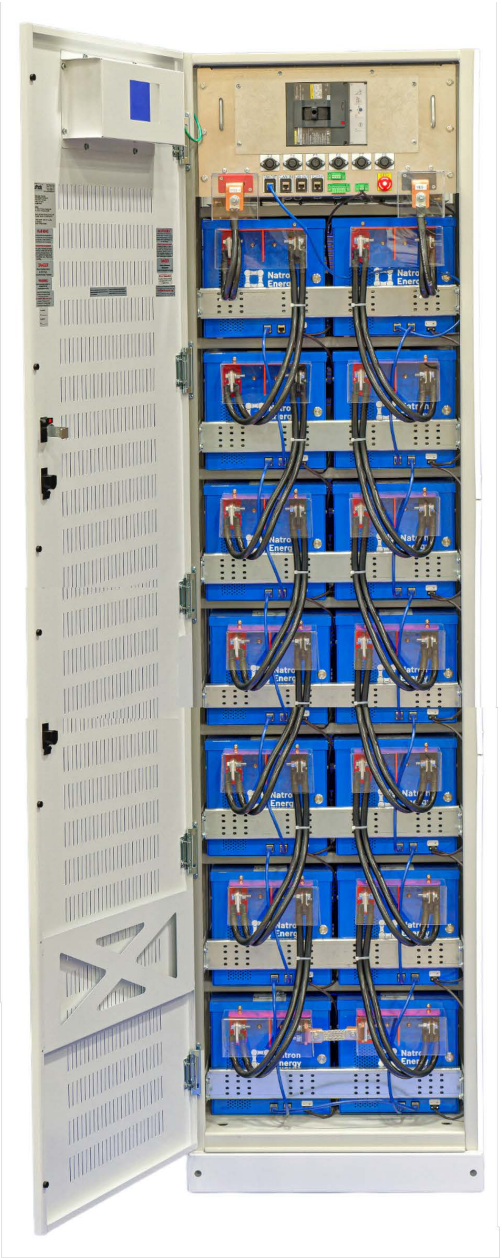
BlueRack™ 350

672 VDC Industrial 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

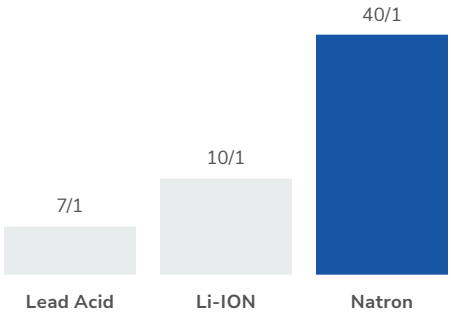
Rapid Cycle-Rate
100-0-100% SOC repeatedly with no wait, settling, or rest periods

Industry leading power capacity & performance

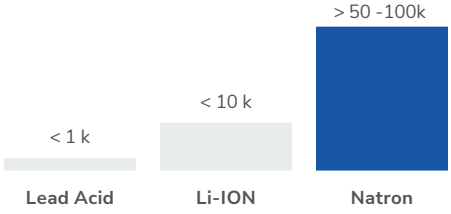
Nonflammable Chemistry & Construction
Industry leading system-level availability

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



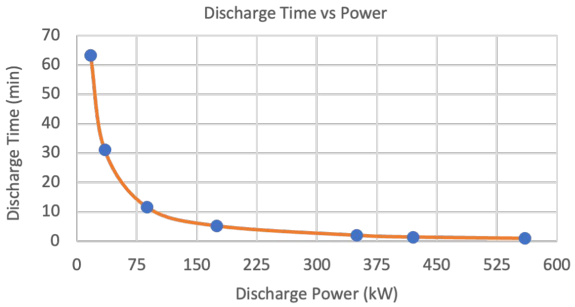
Safe and Fault Tolerant
No Fire or Explosion During

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

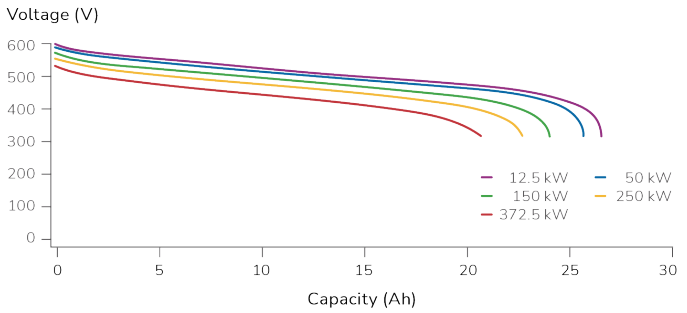
High Power

Over 350 kW sustained discharge

Power vs. Run Time



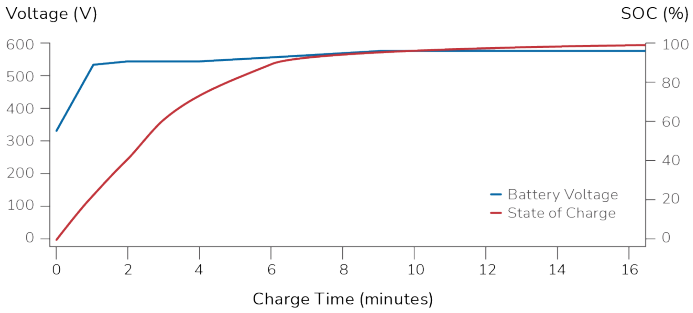
Discharge Performance



Fast Recharge

Full 0 to >99% recharge in just 15 minutes

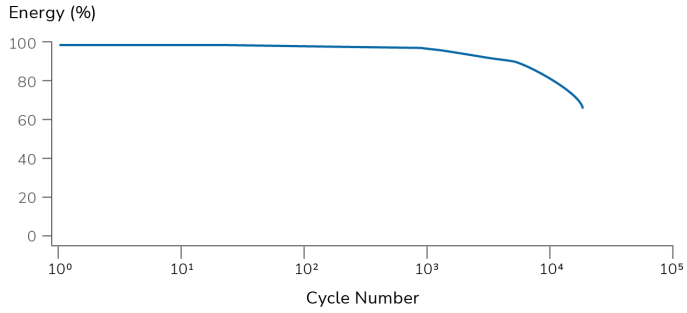
Fast Charge Performance (16C,CC - CV)



Long Life Cycle

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

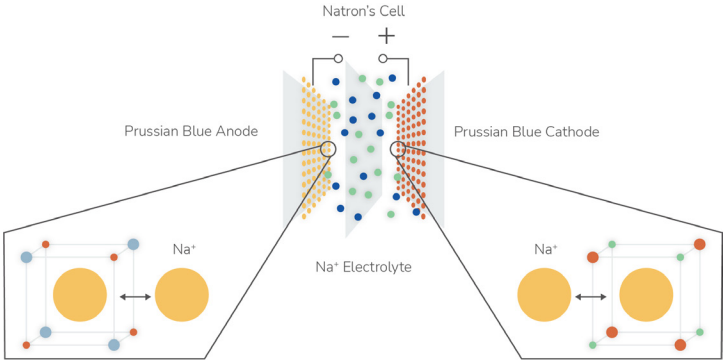
Cycle Life >90% Energy Utilization



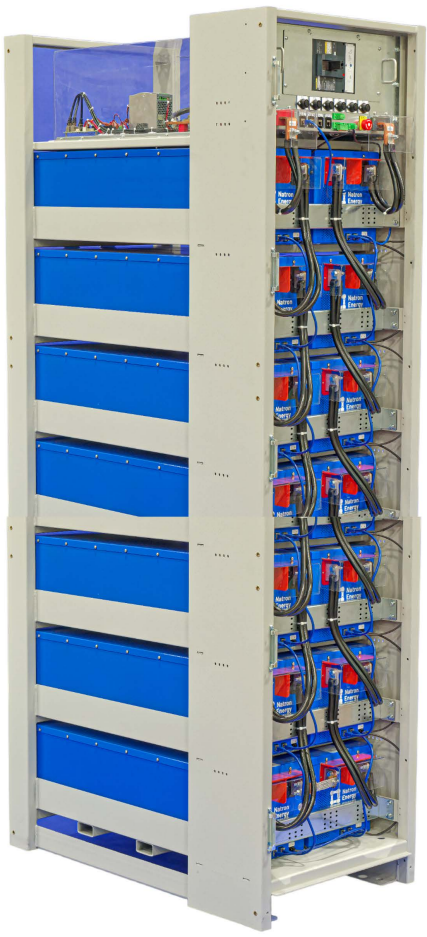
Preliminary specification subject to final product release.
* Battle Hardened – Battery Packs and Cells survive ballistic penetration test with no Fire, acid, or dangerous chemical exposure

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.



350 kW Cabinet



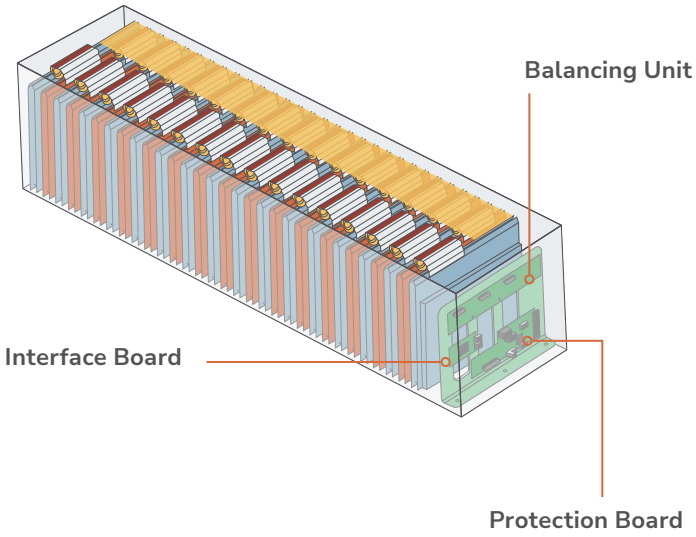
Cabinet Size	2489mm x 660.4mm x 1170mm 98" H x 26" W x 46" D

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	560 kW
	2 min	350 kW
	3 min	266 kW
	4 min	210 kW
	5 min	189 kW
0-99% Recharge Time	<15 min	
Energy, 1 hour (1C rate)	17.8 kWh	
Energy Efficiency (1C-1C)	>97%	
Coulombic Efficiency (1C-1C)	>98%	
Cycle Life (90% Energy Utilization)	>50,000-100,000	

Electrical

Nominal Voltage	672Vdc
Recommended Float Voltage	812 to 826 Vdc
Operating Range	448 to 826 Vdc
Survival Voltage Range	0 to 1120 Vdc
Maximum Discharge Current	800 Amps
Maximum Charge Current	800 Amps
Single System Parallel Capacity	7 mW Nominal 12 13 for N+1
Emergency Power Off (EPO)	Optional

Thermal

Operating Temperature Range	-0 ° to +45 °C / 32° to 113°F
Transportation Temperature Range	-20 ° to +45° C / -4° to 113°F
Nominal Temperature Range	10 ° to 20 °C / 50° to 68°F
Humidity (Non-Condensing)	10-90% Rh

Monitoring and Communications

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

Mechanical

Exterior Rack Dimensions (H x W x D)	2489 x 660.4 x 11700 mm / 98 x 26 x 46 in
Mass	1433 kg / 3160 lbs
Seismic mounts available	
Top cable entry, others optional	
Busbar/stud terminations	

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:

General inquiries: info@natron.energy

Careers: jobs@natron.energy

Natron Energy, Inc.
3542 Bassett Street
Santa Clara, CA 95054

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.