Natron Energy

DATASHEET
Part Number ZZ-0007-00

BluePack™ Critical Power Battery

Safe, Reliable, High-Power on Demand

Critical Power Applications 48v to 480v*

- Breakthrough sodium-ion cells based on Prussian blue electrodes
- Full recharge in 15 minutes or less, 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-ion
- Round-trip efficiency >97%
- Designed for data centers critical power backup and more

Features

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

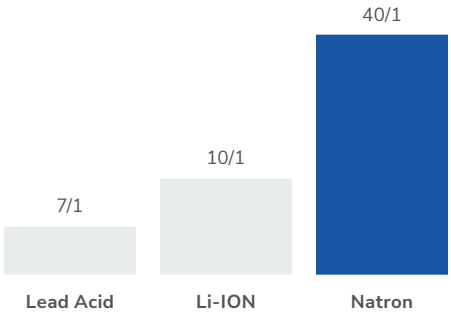
Nonflammable Chemistry & Construction
UL listed and independent safety study confirmed

Industry leading power capacity & performance

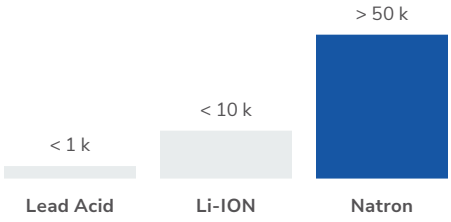
* For other voltages, please consult factory.

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



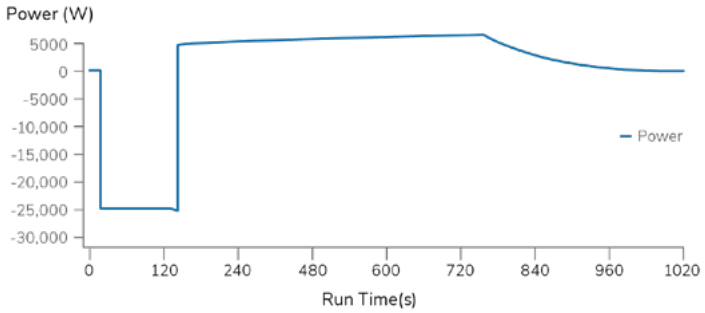
Safe and Fault Tolerant
No Fire or Explosion During

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

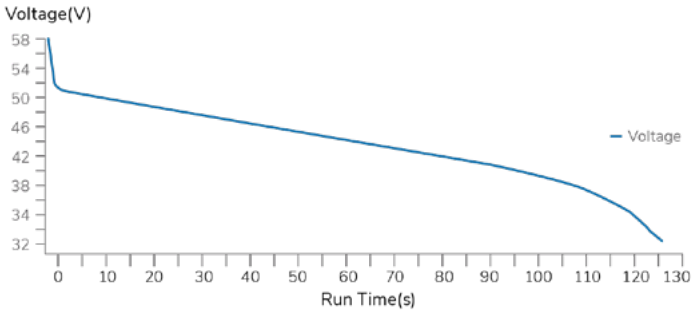
High Power

Over 25 kW sustained discharge

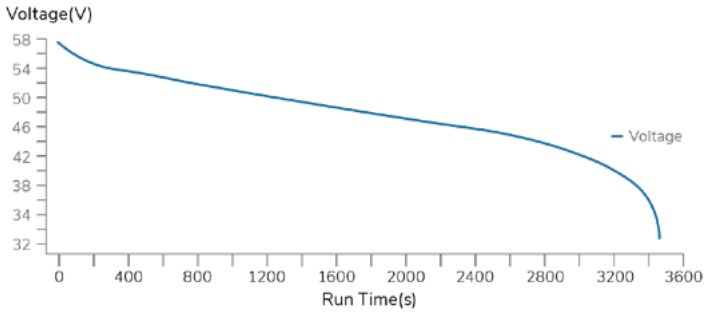
Power vs. Run Time(s)



25kw Discharge Curve



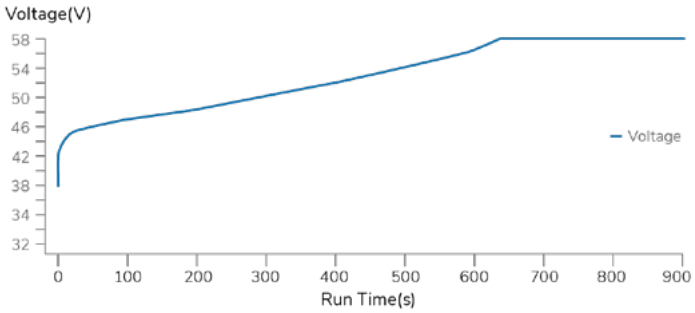
1 Hour Discharge Performance @27A



Fast Recharge

Full 0 to >99% recharge in ≤15 minutes

Fast Charge Performance (16C,CC - CV)

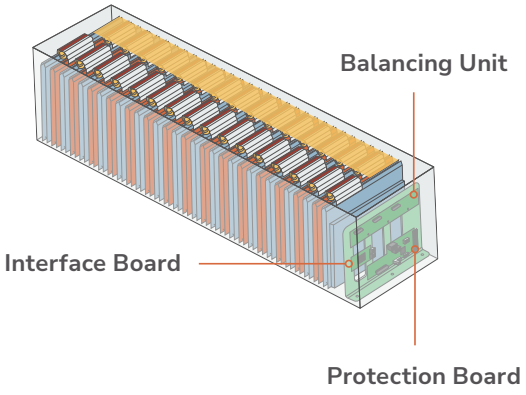


Preliminary specification subject to final product release.

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

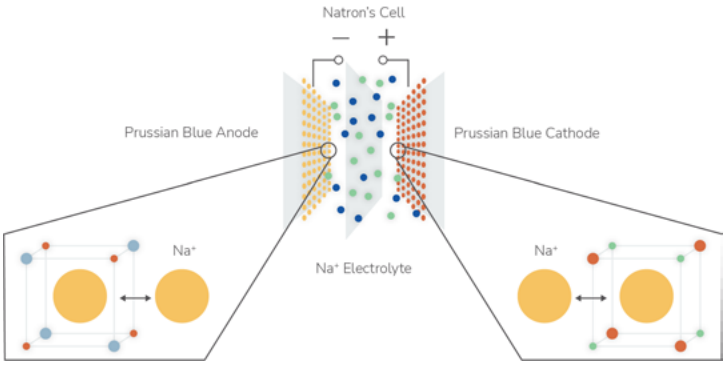
Example shown is a 100 amp charge current.

Controls



No BMS necessary! Natron's chemistry is so safe that thermal runaway is not possible. Our onboard circuitry provides only for charging, cell balancing and communications.

Sodium-ion and Prussian Blue Chemistry



Sodium-ion is 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.

Specifications

Performance

Run Time, Load	1 min	34 kW
	2 min	25 kW
	3 min	17.4 kW
	4 min	14.1 kW
	5 min	12.5 kW
0-99% Recharge Time	<15 min*	
Energy, 1 hour (1C rate)	1235 Wh	
Energy Efficiency (1C-1C)	>97%	
Coulombic Efficiency (1C-1C)	>99%	
Cycle Life (90% Energy Utilization)	>50,000	
Watt Hours per liter	19.6 Wh/L	
Peak Power per liter, 1 minute discharge	79 Wh/L	
Self Discharge Rate	.6% SOC/day	
Temperature Rise - 1st 25kW Discharge	10°C/50°F	
Temperature Rise - 1st 100A Charge	-4°C/-24.8°F	
Watt hours per Kg	16.5 Wh/Kg	
Peak power per Kg	427 W/Kg	

*Depending on charge current

Electrical

Nominal Voltage	48 Vdc
Recommended Float Voltage	58 to 59 Vdc
Operating Range	38 to 59 Vdc
Survival Voltage Range	0 to 80 Vdc
Maximum Discharge Current	800 Amps
Maximum Charge Current	800 Amps
Maximum Allowable Voltage	58 Volts
50% SOC Voltage	50 Volts
Cutoff Voltage	38 Volts
Nominal Energy, 1 hour	1250 Wh
Nominal Capacity, 1 hour	26.0 Ah
Charge Capabilities (25°C)	0-99% Recharge Time
0-99% Recharge Time	≤15 minutes
Maximum Charge Voltage	58.5 Volts
Maximum Inrush Current (1s)	4500 Amps
Series Operation	48V to 480V (10 pack string)
	Consult factory for other voltages
Parallel Operation	Up to 10Mw
	Consult factory for system configuration

Specifications

Thermal

Operating Temperature Range	-20° to +50°C / -4° to 122°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
Nominal Temperature Range	10° to 20°C / 50° to 68°F
Reated Transportation Temperature Range*	-20° to +50°C / -4° to 122°F
Humidity (Non-condensing)	10-90% Rh

Monitoring and Communications

Battery, Voltage, Charge, Power, Temperature	
Supported communication protocols	Modbus TCP/IP

Mechanical

Exterior Dimensions (HxWxD)	246x269x951mm / 9.7x10.6x37.4in
Mass	75 kg / 165 lbs
Lifting mechanism available	
Front terminal connections	

*Up to 2 weeks at >50°C / >122°F

Applications

UPS	Data Centers, Mission Critical Facilities
Telecom	Backup power on and off-grid sites

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.