GREENROCK
THE SALTWATER ENERGY STORAGE SYSTEM

Datasheet
AIB – Aqueous Ion Exchange Battery

Ideal substitute for lead-acid batteries.

Safe and absolutely environmentally friendly technology offers alternative to common lithium-ion batteries.

Operating in wide temperature range from -5°C to 50°C.

BLUESKY ENERGY
Fornacher Straße 12
4870 Vöcklamarkt
Austria

Tel. 0043 720 010 188
E-Mail: office@bluesky-energy.eu
www.bluesky-energy.eu

GREENROCK
THE SALTWATER ENERGY STORAGE SYSTEM

Product Specification Sheet

The Sodium-Ion based aqueous battery is a modular building block for clean energy storage systems. Saltwater technology is the safest and most environmentally-friendly way of storing electric power. It is particularly suitable for long-lasting stationary applications as in residential, off-grid, micro-grid and industrial applications.

Some of the advantages of Sodium-Ion based batteries are:

- ✓ Non-toxic
- ✓ Non-corrosive
- ✓ Non-flammable
- ✓ Non explosive
- ✓ PH neutral electrolyte
- ✓ Safe to touch
- ✓ Safe to transport and store (no ADR handling)
- ✓ Operating in a wide temperature range
- ✓ Absolutely maintenance-free

Product Performance

Testing performed at 25°C

Operation & Performance

Nominal Energy	2.7 kWh (4A charge/discharge)	2.7 kWh (8A charge/discharge)
Nominal Voltage	DC **48 V**	DC **24 V**
Voltage Range	35 V – 60 V	17.5 V – 30 V
Charging	CC (constant current)	CC (constant current)
Depth of Discharge	100%	100%
Efficiency	88.5	88.5
Maximum charge current	20A	40A
Maximum discharge current	20A	40A
Operating temperature	-5°C – 50°C	-5°C – 50°C
Storage temperature	-5°C – 50°C	-5°C – 50°
Cycle Life	5,000 cycles @ 80% DOD	5,000 cycles @ 80% DOD

Physical Characteristics

Height	929mm
Width	313mm
Depth	329mm
Weight	140kg

Warranty

8 years	5 years full warranty plus 3 years warranty for current value

BLUESKY ENERGY
Fornacher Straße 12
4870 Vöcklamarkt
Austria

Tel. 0043 720 010 188
E-Mail: office@bluesky-energy.eu
www.bluesky-energy.eu

48V Battery

Capacity (Ah)		Charge Current (A)		
		5A	10A	15A
Discharge Current (A)	5A	53.1	42.8	35.8
	10A	46.7	39.0	32.5
	15A	42.9	35.8	31.3

Energy (Wh)		Charge Current (A)		
		5A	10A	15A
Discharge Current (A)	5A	2565	2004	1619
	10A	2258	1827	1467
	15A	2071	1676	1414

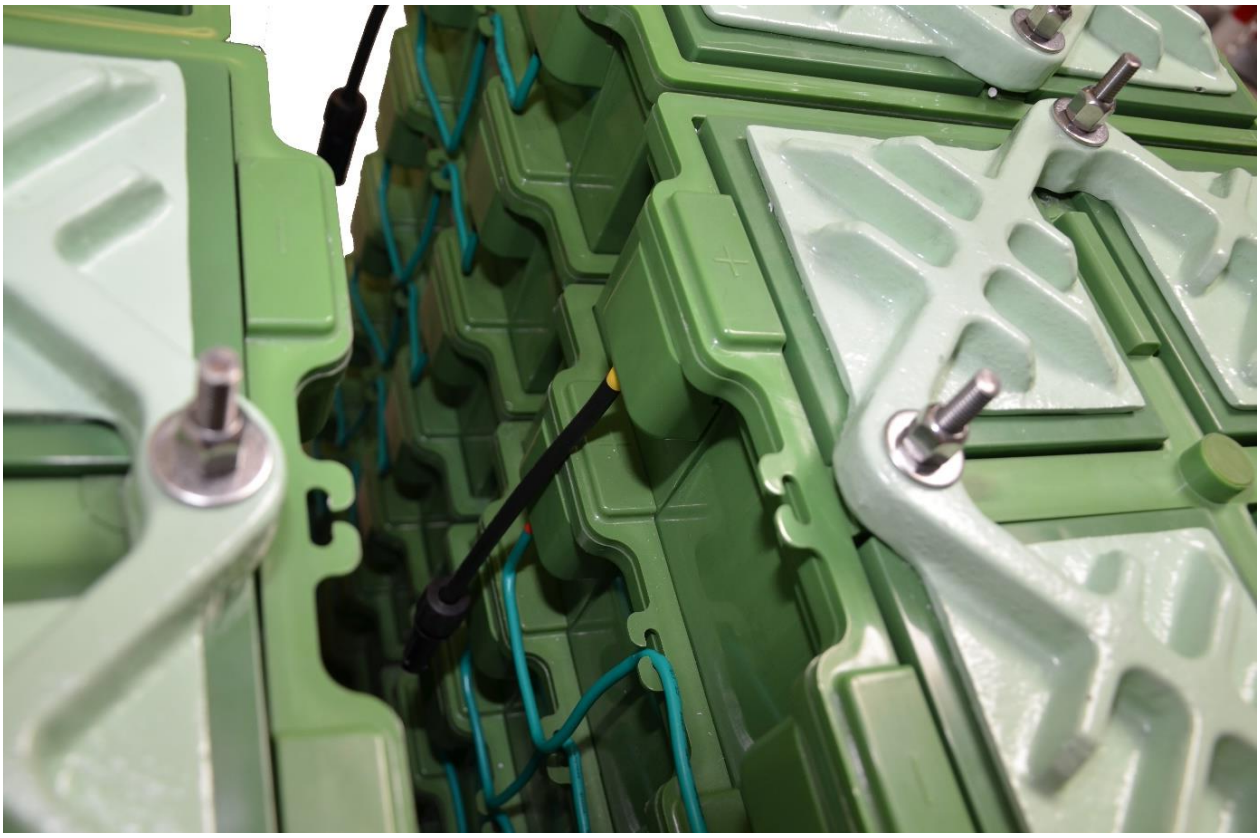
Energy efficiency (%)		Charge Current (A)		
		5A	10A	15A
Discharge Current (A)	5A	88.5	87.6	86.2
	10A	85.0	84.2	82.0
	15A	83.8	82.0	80.0

24V Battery

Capacity (Ah)		Charge Current (A)		
		10A	20A	30A
Discharge Current (A)	10A	106.2	85.6	71.6
	20A	93.4	78.0	65.0
	30A	85.8	71.6	62.6

Energy (Wh)		Charge Current (A)		
		10A	20A	30A
Discharge Current (A)	10A	2565	2004	1619
	20A	2258	1827	1467
	30A	2071	1676	1414

Energy efficiency (%)		Charge Current (A)		
		10A	20A	30A
Discharge Current (A)	10A	88.5	87.6	86.2
	20A	85.0	84.2	82.0
	30A	83.8	82.0	80.0



BLUESKY ENERGY
Fornacher Straße 12
4870 Vöcklamarkt
Austria

Tel. 0043 720 010 188
E-Mail: office@bluesky-energy.eu
www.bluesky-energy.eu

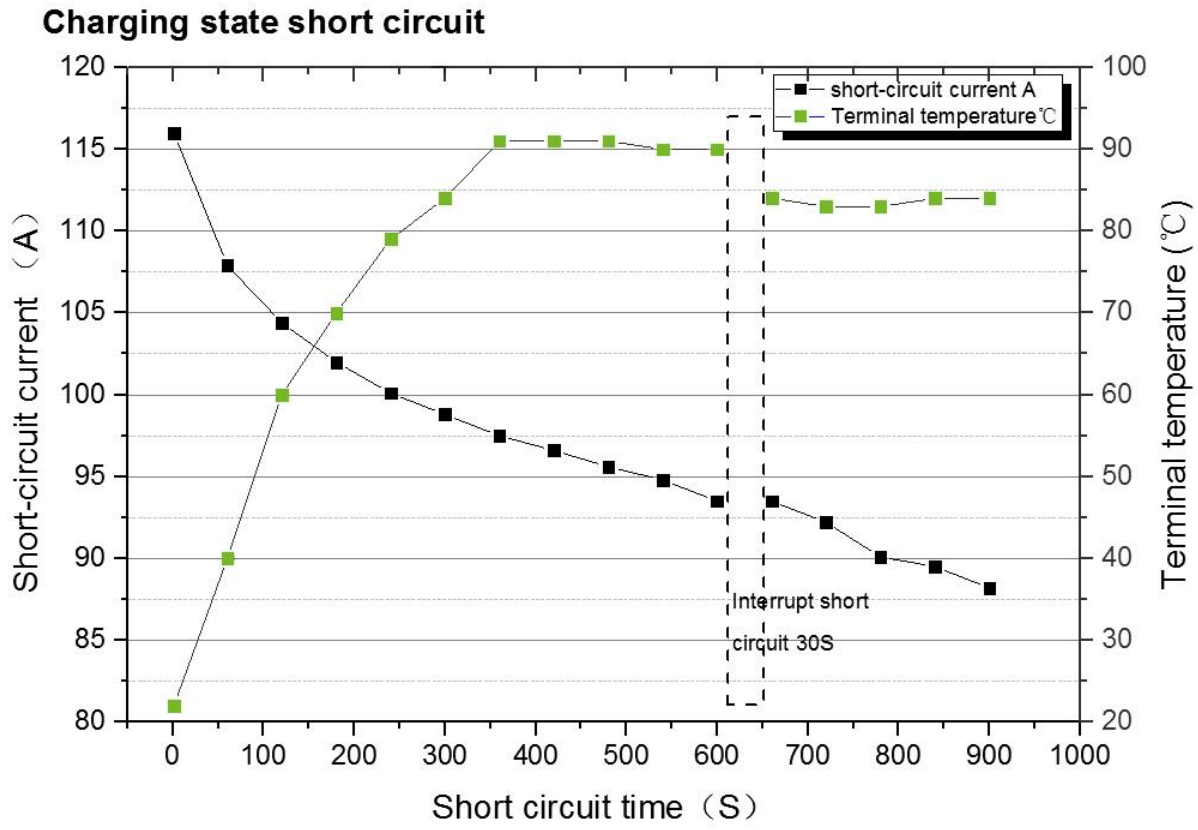
Product Tests

Below please find some testing results which outline the behaviour of the product under certain, specific test environments.

Overcharge Test

During and after the overcharge test of 500 hours constant charging at 8.0V and an average current of 0.35A the battery met all test parameters.

Short Circuit Test



Resistance of the wire was 2 mΩ in the short circuit. Neither fire nor explosion, or any battery deformation occurred during short circuit test.

Operation in high temperature ranges

At higher temperatures between 40°C and 50°C the battery's efficiency improves and the capacity increases. If 50°C is exceeded, the high temperatures cause evaporation of the electrolyte and lead to increased gas evolution. In consequence the battery's lifetime may shorten.

.

BLUESKY ENERGY
Fornacher Straße 12
4870 Vöcklamarkt
Austria
Tel. 0043 720 010 188
E-Mail: office@bluesky-energy.eu
www.bluesky-energy.eu

Imbalanced Charging

Tested at 25°C with
5A charge/discharge current and charging and discharging voltage: 35.2V – 60V

Outcome	**No explosion**	**No fire**
	No release of toxic gases	**No voltage out of control**
	No accumulation of combustible gases	

Energy throughput

Under constant conditions of 5A charging/discharging current, constant temperature according to performance data and 2.5 kWh loading / unloading per unit, there are 9,957 cycles and an energy throughput of 22,030 kWh.

Current charge/discharge	Discharging per battery stack kWh	cycles	Roundtrip efficiency	Throughput in kWh
5A	**2.50**	**9,957**	**88.5%**	**22,030**

Available from June 2018.

BLUESKY ENERGY
Fornacher Straße 12
4870 Vöcklamarkt
Austria

Tel. 0043 720 010 188
E-Mail: office@bluesky-energy.eu
www.bluesky-energy.eu

GREENROCK
THE SALTWATER ENERGY STORAGE SYSTEM

12V Storage Unit

The 12V saltwater battery is especially designed for smaller power storage and power supply applications. Areas of application are e.g. camping, boats or energy self-sufficient micro consumers.

Product Performance Testing performed at 25°C

Operation & Performance

Nominal Energy	675 Wh (4A charge/discharge)
Nominal Voltage	DC **12 V**
Voltage Range	8.8 – 15 V
Charging	CC (constant current)
Depth of Discharge	100%
Efficiency	88.5%
Maximum charge current	20A
Maximum discharge current	20A
Operating temperature	-5°C – 50°C
Storage temperature	-5°C – 50°C
Cycle Life	5,000 cycles @ 80% DOD

Physical Characteristics

Height	235mm
Width	313mm
Depth	329mm
Weight	35 kg

Warranty

8 years	5 years full warranty plus 3 years warranty for current value

Capacity (Ah)		Charge Current (A)		
		5A	10A	15A
Discharge Current (A)	5A	53.1	42.8	35.8
	10A	46.7	39.0	32.5
	15A	42.9	35.8	31.3

Energy efficiency(%)		Charge Current (A)		
		5A	10A	15A
Discharge Current (A)	5A	88.5	87.6	86.2
	10A	85.0	84.2	82.0
	15A	83.8	82.0	80.0

Energy (Wh)		Charge Current (A)		
		5A	10A	15A
Discharge Current (A)	5A	641.3	501.0	404.8
	10A	564.5	456.8	366.8
	15A	517.8	419.0	353.5

BLUESKY ENERGY
Fornacher Straße 12
4870 Vöcklamarkt
Austria

Tel. 0043 720 010 188
E-Mail: office@bluesky-energy.eu
www.bluesky-energy.eu