

ZBM3 flow battery

Redflow's ZBM3 battery is the world's smallest commercially available zinc bromine flow battery.

Its modular, scalable design means that it is suitable for a wide range of applications from small commercial installations to large GWh storage solutions.

The ZBM3 is smaller, simpler and more compatible than previous versions. The compact and flexible design includes a smaller stack design and a bi-directional DC-DC converter built into the Battery Control Module, allowing flexibility of energy flow of 0-60 volts. This makes it compatible with a wide range of applications without needing any external voltage conversion.

Benefits

Competitive capex

 100% of the capacity is usable over its lifetime, resulting in low levelized cost of storage and no oversizing required.

Excellent longevity

 Warranted electrode stack lifetime 36,500 kWh energy delivered or 10 years (whichever comes first).

Hibernation mode

+ Can be left at 100% state of charge for months and started up rapidly.

Recyclable

+ All battery components and electrolyte are either recycled or repurposed at end of life.

Constant power

 Charge 100% of the capacity with constant power, due to a flat voltage curve and simple one stage charge profile.

High energy density

 + 34kWh per sq.m / 3.2kWh sq.ft* with expected electrode stack throughput of 36,500kWh. (* Based on Energy Pod 200 design).

Unparalleled safety

 Water based electrolyte proven to have no thermal runaway in accordance with UL9540a.

No HVAC required

 + Systems can be specified to operate in ambient temperatures of 10°C-50°C (39°F to 122°F).

Intuitive battery management system

+ 24/7 remote self-monitoring with real-time data capture accessed via the cloud-based system or direct network connection.

Supply chain security

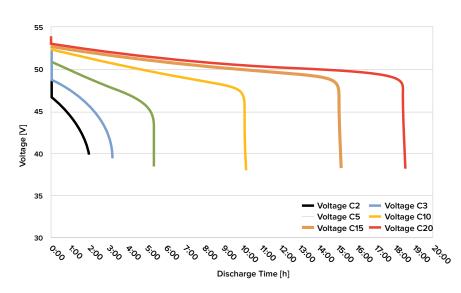
+ Designed and developed in Australia, manufactured in our Thailand facility.



48 VOLT DC NOMINAL BATTERIES



Discharge Curves



Technical Specifications

- + **Voltage:** 48 Volt DC nominal batteries (typical operating range 40-60V).
- Capacity: Maximum 10kWh energy output per daily cycle. No reserved battery capacity requirement – full 10kWh cycle depth available.
- + Degradation: Energy capacity does not degrade with use.
- + Dimensions: 861L x 747H x 400W (mm); 34L x 29H x 16W (in)
- + Weight: 240kg (530 lb) with electrolyte; 90kg (198 lb) without electrolyte
- + Electrolyte volume: 100L (26Gal)
- + Stack energy efficiency: 80% DC-DC Max
- Internal electrolyte operating temperature: range of 10°C to 50°C (32°F to 122°F), ZBM3 can operate at ambient temperatures outside this range depending on enclosure design. Additional cold weather kit available.

- + Communication: MODBUS RS485 MODBUS-TCP, CANBUS
- + Safety data sheet: DG Class 8 for electrolyte
- + Power rating: 3kW (5kW peak)
- + 3kW continuous: current up to 75A (40V disconnection point)
- + **5kW duration depending on the State of Charge (SOC):** current up to 125A (40V disconnection point)
- + Regulatory compliance: CE and RCM pending.
- Performance: No cycle depth limitations battery performance and lifetime not sensitive to cycle depth.
- Warranty: Electrode stack: 36,500 kWh of energy delivered or 10 years (whichever comes first).

About Redflow

Redflow Limited, a publicly listed Australian company (ASX: RFX), produces zincbromine flow batteries for stationary energy storage applications. Redflow batteries are designed for high cycle-rate, long time-base energy storage, and are scalable from small commercial systems through to grid-scale deployments. Redflow's smart, selfprotecting batteries offer unique advantages including secure remote management, 100 per cent daily depth of discharge, tolerance of high ambient temperatures, a simple recycling path, no propensity for thermal runaway and sustained energy delivery throughout their operating life.



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