

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 10-45°C (50-113°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.



HIGH ENERGY DENSITY AT 10KWH

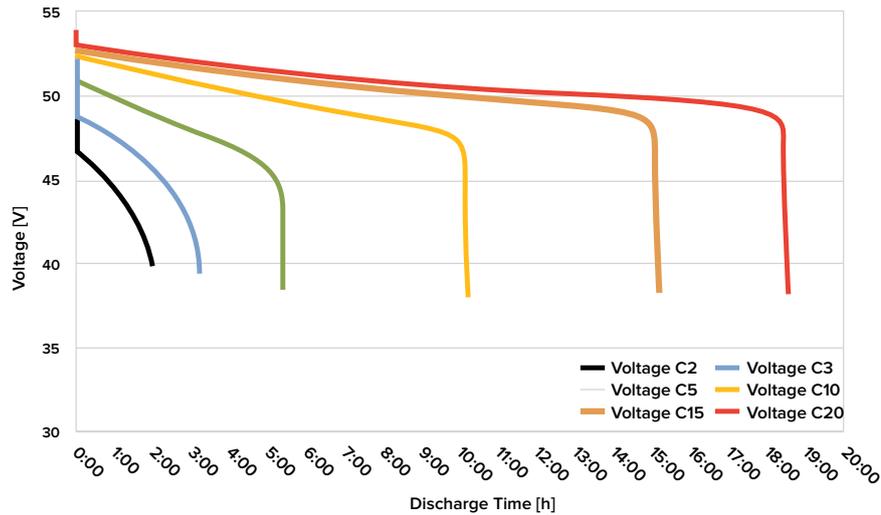


48 VOLT DC NOMINAL BATTERIES



POWER RATING 3KW (5KW PEAK)

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 peak 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 zinc-bromine 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, self-protecting 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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