Victron & Redflow ZBM2 / ZCell

ZCell is a packaged bundle of the Redflow ZBM2 battery inside an external-rated enclosure, supplied with the Redflow CANbus BMS.

The Redflow ZBM2 battery is a 48V 10kWh DC Zinc-Bromide hybrid flow battery that is installed in parallel-wired DC clusters. It is the worlds smallest commercial flow battery. It uses the Redflow CANbus BMS as the control and communications interface for the battery system.

An overview of the technical specifications of this battery are provided here:
https://faq.zcell.com/content/1/11/en-us/what-are-the-technical-specifications-of-a-zcell-battery.html

Important information about installing and configuring ZBM2 systems with Victron Energy products is provided here: https://faq.zcell.com/category/10/victron-energy-interfacing.html

Compatible Victron products

- All 48V Multis and Quattros.
- All 48V solar chargers
- A Color Control GX or Venus GX using CANBus (preferred) or MODBUS interfacing to the Redflow BMS is required.

ZBM2 / ZCell Characteristics

- Designed to be charged up to 100% SOC and discharged right down to 0% SOC (and zero volts) regularly with no damage and no loss of output capacity over the battery lifetime
- You should configure the disconnect voltage on a Multi or Quattro right down to the minimum allowed to get all the energy out of each discharge cycle
- Set any SoC discharge limits to 0% to use the full energy in the battery
- Use the ESS mode “Optimised (without BatteryLife)” to allow full-depth discharge of the battery regularly.
- Clusters of multiple ZBM2 batteries are automatically controlled using the Redflow BMS to orchestrate their discharge cycles and maintenance cycles so that the overall energy system always has energy available even if one or more batteries is undertaking a maintenance cycle.

Color Control GX / Venus GX Interface

The Redflow ZCell BMS supports the same CAN-bus protocol connection to the Color Control GX that is used with many Lithium Battery BMS systems.

The best way to interface from a Redflow battery system to the CCGX is to use a canbus connection on the ZCell BMS and to follow the Color Control GX canbus interface procedure used for any other CAN-bus BMS based battery systems.

The Distributed Voltage and Current Control (DVCC) feature provides excellent outcomes and very tightly integrated operation and control and its use is strongly recommended for all new ZCell/ZBM2

installations.

Alternatively, you can follow the older procedure on the ZCell website to update the SOC on the Color Control GX using MODBUS-TCP over ethernet instead of using CAN-bus as the interface mechanism. For installations that are not using DVCC, you should limit the maximum charging voltage for all charging elements in the system to 56.5V.

This page on the ZCell web site explains how to interface and configure a system to use ESS (if needed) and to activate DVCC:

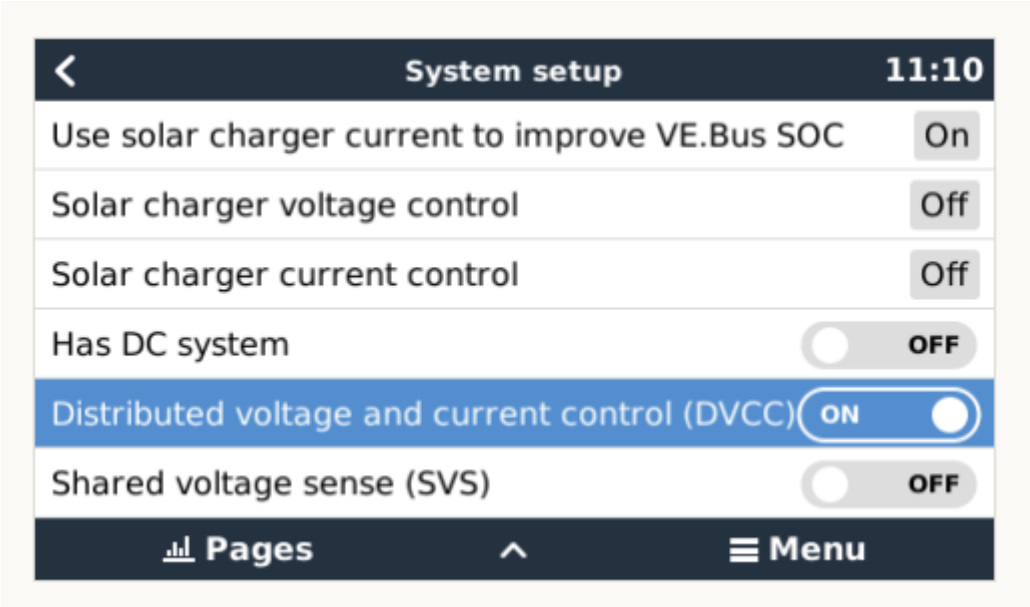
https://faq.zcell.com/content/10/65/en-us/configuring-ess-and-dynamic-voltage-and-current-control-dvcc-for-zcell-systems-with-canbus.html

Important Caveats:

1. At present when DVCC is turned on for Redflow ZBM2 based installations, it is required to turn the SVS (Shared Voltage Sense) function OFF. The SVS option appears under the DVCC item after DVCC is turned on. This limitation may be removed in a future DVCC release.

1. For successful operation on-grid of Redflow ZBM2 systems with the Victron Energy MultiGrid 48 product series (with AS4777 grid approval) in Australia, the minimum MultiGrid firmware revision required is version 424. Please read this Redflow FAQ page about MultiGrid interfacing for further information about how to install a MultiGrid product onto a grid connection in Australia.

1. The MODBUS-TCP interface mechanism is still required for new installations in one rare instance - for off-grid sites with no AC generator and where it is also required that the system can black-start from Ve.Direct Solarchargers alone. This is because the current solarcharger firmware has a startup deadlock present if it is the only system energy energy source (e.g. off-grid and no generator present or generator failed). In this case the solarcharger boots but then turns itself off before the Color Control GX and Redflow BMS have been able to complete their own boot processes and re-establish DVCC control of the solarcharger to keep it turned on. This may be resolved in future solarcharger firmware revision.



Disqus

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