

# EG4 24V LiFePOWER4 V2 Server Rack Product Launch White Paper



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# 1. INTRODUCTION

EG4 Electronics is excited to introduce the latest edition to our LiFePOWER4 series- The 24V LiFePOWER4 Battery Version 2 (V2). We've taken the reliable architecture of our original 24V LiFePOWER4 (V1) and enhanced it with cutting-edge upgrades. The result is a simple, durable, and adaptable battery that meets the needs of today's evolving energy demands.

The 24V LiFePOWER4 V2 Lithium Iron Phosphate battery features a 200AH internal BMS and is composed of (16) UL recognized 3.2V prismatic cells in series/parallel (8s2p) which have been tested at 6,000 deep discharge cycles to 80% Depth of Discharge (DoD). The cell composition, UL recognition, and DoD remain consistent with the original 24V LiFePOWER4 V1. Each V2 battery module operates at 25.6V (24V), 200AH, and provides 5.12kWh energy storage capacity. Additionally, each 24V LiFePOWER4 V2 comes with a 10-year Limited Warranty as well as integrated BMS communication and monitoring.

Some significant change to the V2 when compared with the V1 include the following:

The image shows two battery modules side-by-side for comparison. The top module is the V2, and the bottom is the V1. Callouts highlight specific differences:

- Upgraded double Positive/Negative terminals that can accept 2-AWG compression lugs.** (Points to the larger orange terminals on the V2)
- DC Breaker has been upgraded to a double pole breaker.** (Points to the larger blue breaker on the V2)
- Positive/Negative terminal only accepts 6-AWG compression lugs.** (Points to the smaller red terminal on the V1)
- Dipswitch can support 64 batteries in closed-loop communication.**
- Added a RJ45 CAN communication port.**
- External LCD port.**
- Isolated On/Off button.**
- Added a chassis ground screw.**
- Only supports RS485 communication.**
- Can only communicate up to 16 other batteries in closed-loop communication.**

<b>Lifepower4 25.6V 200ah V2</b>	<b>Specifications</b>	<b>Lifepower4 25.6V 200ah V1</b>
Yes	<i>Fire suppression</i>	Yes
Yes	<i>CANBUS Communication</i>	No
Yes	<i>RS485 Communication</i>	Yes
64	<i>Supported number of batteries in closed-loop communication</i>	16
2-AWG	<i>Positive/Negative Terminal conductor size</i>	6-AWG
<b>BMS Parameters</b>		
25.6V	<i>Voltage</i>	25.6V
200ah	<i>Capacity</i>	200ah
200A	<i>Charging Current (Max. continuous)</i>	100A
200A	<i>Discharging Current (Max. continuous)</i>	100A
>220A for 10s	<i>Charging over current 1. protection</i>	>100A for 20s
≥250A for 3s	<i>Charging over current 2. protection</i>	≥120 for 2s
>220A for 30s	<i>Discharge over current 1. protection</i>	>100A for 10S
>300A for 5s	<i>Discharge over current 2. protection</i>	≥150A for 3s
>250A for <0.1s	<i>Short Circuit Protection</i>	>250A for 1s
3.8V	<i>Cell Over-Voltage Protection</i>	3.65V
2.3V	<i>Cell Under-Voltage Protection</i>	2.5V
120mA	<i>Cell Passive Balancing</i>	120mA
30V	<i>Total Over-Voltage Protection</i>	29.2V
22.4V	<i>Total Under-Voltage Protection</i>	20.0V

## 2. TECHNICAL BREAKDOWN OF 24V LIFEPOWER4 V2

### 2.1 BMS CYCLING

The addition of a dedicated BMS on/off switch and separate double pole breaker for battery power introduces a higher level of control over power management. Users can now independently troubleshoot BMS issues, should the need arise. Power the battery off using the double pole breaker, but still have access to interact with the BMS.

- **24V LiFePOWER4 V1**
  - Battery and BMS can only be turned on and off using a 125A breaker.
- **24V LiFePOWER4 V2**
  - Equipped with a BMS Communication on/off switch on the face of the battery as well as a double pole breaker for battery power on/off.

### 2.2 TERMINALS

The addition of extra positive and negative terminals enhances flexibility during installation, reducing the risks associated with double landing scenarios. Double landing, where multiple connections are made to a single terminal, increases resistance and the likelihood of electrical faults. By providing separate terminals, the V2 allows for a cleaner, safer installation, especially when paralleling batteries or adding peripherals such as surge protection devices (SPDs), EMP shields, or battery chargers.

- **24V LiFePOWER4 V1**
  - One positive and one negative terminal connection only.
- **24V LiFePOWER4 V2**
  - Two positive and two negative terminal connections allow dedicated point of connection for peripheral devices (such as chargers). This also helps reduce double landing scenarios, creating a safer and more efficient connection when paralleling batteries.

### 2.3 ADJUSTING SETTINGS & READOUTS

Designed with future expandability in mind, the 24V LiFePOWER4 V2 features an integrated USB port that supports future upgrades (coming soon), which will enable enhanced user interface and functionality. Stay tuned for updates!

- **24V LiFePOWER4 V1**
  - Limited monitoring functionality.
- **24V LiFePOWER4 V2**
  - LCD port reserved for future use (coming soon). A simple USB connection will upgrade monitoring and functionality.

## 2.4 BMS COMMUNICATION

Battery comms now have two dedicated ports, in addition to standalone ports for RS485 and CAN connections respectively. This allows users to parallel batteries without impeding connections to an inverter or outside monitoring device, such as a laptop. Additionally, the dedicated CAN port allows for streamlined communication with Victron 24V inverters, making it simple to get your system up and running.

- **24V LiFePOWER4 V1**
  - RS485 communication interface only, limiting the devices that can communicate with the battery.
- **24V LiFePOWER4 V2**
  - In addition to the RS385 (for upgrading and BMS tools) and battery comm ports for parallel communication, the added CAN port allows for easy communication with Victron inverters through autodetection.

## 2.5 E-STOP FUNCTIONALITY

The introduction of Emergency Stop (E-Stop) functionality is a major safety improvement in the V2 battery. E-Stop provides Rapid Shut Down (RSD) capability for the entire energy storage system, de-energizing the battery bank, inverter, and PV array within seconds. In addition to helping to secure the safety of your system and/or property, E-Stop offers peace of mind for first responders, allowing for quick, system-wide shut down in emergency situations.

- **24V LiFePOWER4 V1**
  - No RSD Capabilities.
- **24V LiFePOWER4 V2**
  - E-Stop RSD functionality ensures fail safe operation in high-risk environments. With an optional disconnect switch, batteries and inverters (if compatible and connected) can be shut down with the push of a button.

## 2.6 CLOSED LOOP BATTERY TO BATTERY COMMUNICATION

Thanks to the expanded dipswitch configuration, the 24V LiFePOWER4 V2 now supports closed loop communication between up to 64 batteries in parallel, compared to the 16 supported by the original V1. This enhancement allows for the creation of much larger battery banks, enabling up to 327.7 kWh of energy storage in a single system.

- **24V LiFePOWER4 V1**
  - Utilized 4 dipswitches. Can only communicate with up to 16 batteries in closed-loop communication.
- **24V LiFePOWER4 V2**
  - Utilizes 6 dipswitches. This upgrade allows for the support of up to 64 batteries in closed-loop communication.

### **3. SOME USE CASES FOR THE 24V LIFEPOWER4 V2**

#### **3.1 MOBILE APPLICATION AND OFF-GRID VEHICLES**

The 24V LiFePOWER4 V2 is an ideal choice for mobile applications, such as RVs, vans, buses, and boats. Due to its 24V architecture, it easily integrates with smaller-scale off-grid power setups that prioritize mobility. When combined with the right inverter, this battery can power essential appliances like refrigerators, water pumps, lighting systems, and even small air conditioning units without the need for frequent shore power connections. The compact form factor and reliable CAN communication with Victron inverters also make it perfect for adventure enthusiasts seeking dependable energy on the road.

#### **3.2 OPTIMIZED FOR VICTRON INVERTER COMMUNICATION**


Via the dedicated CAN port, the 24V LiFePOWER4 V2 is perfectly tailored for compatibility with Victron inverters, which are known for their superior performance in off-grid and mobile systems. This makes it a go-to option for customers who rely on Victron equipment. The closed-loop communication between the battery and the inverter ensures that energy usage is optimized, providing superior monitoring and protection capabilities in real time. This leads to more efficient system operation, longer battery life, and greater reliability in critical applications.

#### **3.3 REPLACE LEAD ACID IN CONTROLLED MARINE APPLICATIONS**

The 24V LiFePOWER4 V2 is well-suited for specific marine applications, particularly in controlled environments where the battery is securely housed to prevent exposure to moisture, salt, and other corrosive elements. While 24V systems are standard in many maritime setups, our battery is best utilized in locations such as cabins or other interior spaces that offer protection from the harsh marine environment. Following these recommendations, the 24V LiFePOWER4 V2 makes an excellent replacement for antiquated lead acid battery banks.

### 3.4 SIX DIPSWITCHES EQUALS GREATER POTENTIAL

With the expanded dipswitch configuration, the 24V LiFePOWER4 V2 offers greater scalability for users looking to build larger battery banks over time. The potential for 327.7kWh of storage capacity in a single system underscores EG4's commitment to delivering powerful, modular solutions for any size installation.



PIN	DESCRIPTION
1	RS485-B
2	RS485-A
3	CAN Ground (optional)
4	CAN High
5	CAN Low

#### DIP switch ID table – 6 Pin

ID:1	ID:2	ID:3	ID:4	ID:5	ID:6	ID:7	ID:8
ID:9	ID:10	ID:11	ID:12	ID:13	ID:14	ID:15	ID:16
ID:17	ID:18	ID:19	ID:20	ID:21	ID:22	ID:23	ID:24
ID:25	ID:26	ID:27	ID:28	ID:29	ID:30	ID:31	ID:32
ID:33	ID:34	ID:35	ID:36	ID:37	ID:38	ID:39	ID:40
ID:41	ID:42	ID:43	ID:44	ID:45	ID:46	ID:47	ID:48
ID:49	ID:50	ID:51	ID:52	ID:53	ID:54	ID:55	ID:56
ID:57	ID:58	ID:59	ID:60	ID:61	ID:62	ID:63	ID:64

**\*Pinouts are for battery side; please refer to the system manual for pinout configuration on system end**



## 4. CONCLUSION

The 24V LiFePOWER4 V2 represents the next step in EG4's commitment to innovation, safety, and performance. Designed to meet the needs of our users—particularly users with Victron inverters and/or mobile systems—the V2's enhanced features offer unmatched safety and reliability.

Want to learn more about the 24V LiFePOWER4 V2? Get in touch today to learn how the 24V LiFePOWER4 V2 can be the cornerstone of your energy storage solution, whether you are upgrading an existing system or building from scratch. Power your future with EG4 and the 24V LiFePOWER4 V2 battery!