

# EPÖCH

B A T T E R I E S

## USER MANUAL

GC2-R-B4830



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888-501-1846

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## THANK YOU

Dear Valued Customer,

Thank you for choosing Epoch Batteries. We greatly appreciate your support. Our team works diligently behind the scenes to create advanced battery systems and provide top-notch service to our customers. Support and feedback from our customers along with the hard work and dedication of our staff allow us to deliver exceptional products, competitive prices, and an overall excellent experience. Thanks again for giving us your vote of confidence. We hope that you'll enjoy using our products as much as we've enjoyed creating them. Please feel free to reach out to us anytime.

Sincerely,



Epoch Batteries

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Literature updates will be published and made available for download on our website and apps.



# SAFETY INFORMATION

## Precautions

Failure to follow these instructions / guidelines can result in property damage, personal injury, or worse. Please read the following information carefully before installation and keep available for future reference:

- Do not use if any of the components (battery, cables, connections, charger, etc.) are damaged.
  - If any of the components are damaged upon arrival, please contact vendor for product support.
- Do not attempt to charge or discharge the battery in climates exceeding the specifications of the battery.
- Do not connect the battery to any other batteries with different specifications or chemistry.
- Do not place conductive materials near the battery terminals or connections.
  - The area surrounding the battery should be kept clear from debris.
- Do not operate the battery near fire or flammable / explosive materials.
- Do not attempt to disassemble or modify the battery.
- Do not leave batteries charging while unattended.
- Do not overcharge or over-discharge the battery.
- Do not float / trickle charge the battery.

## Disclaimers

- Buyer is responsible for any damages resulting from the mishandling or misuse of our products, and/or failure to follow the safety guidelines.
- Mishandling and/or misuse of the products will void the warranty.

## Disposal & Recycling

- Ensure that batteries are disposed of properly, in accordance with laws and regulations in your area.
- This product contains lithium ion batteries and other recyclable materials.
- We strongly encourage our customers to recycle retired batteries.
  - Please feel free to contact us for more information regarding how to do so.



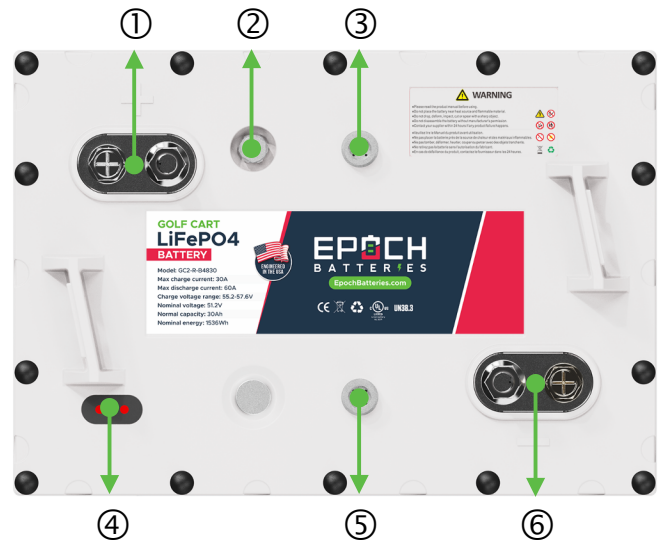
## PRODUCT OVERVIEW

### Key Features

- Lithium Iron Phosphate (LiFePO<sub>4</sub>) chemistry provides exceptional stability and consistent performance.
- Advanced Battery Management System (BMS) provides safety features and protections.
- Heat dissipation and pressure release for high current charging and discharging.
- IP67 Rated for dust and water resistance. UL94 Grade V-0 fireproof.
- Constant voltage and full usable capacity at any state of charge.

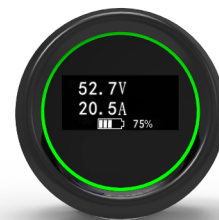
### External Features

1. Positive Terminals
2. Pressure Release
3. CANbus Connection 1
4. LED Status Display
5. CANbus Connection 2
6. Negative Terminals



### Battery Gauge

- System Voltage
- Current
- Capacity

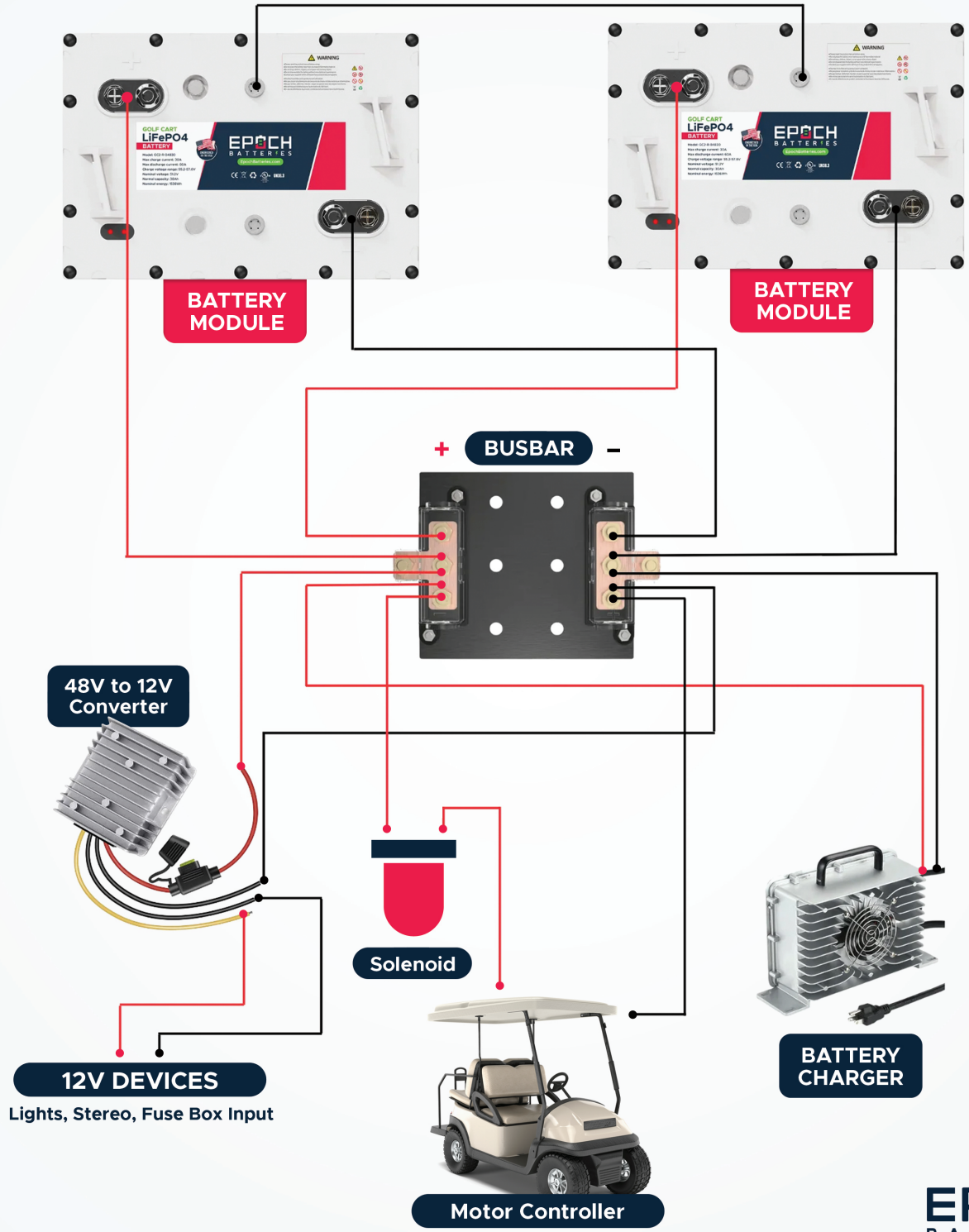


## SPECIFICATIONS

Rated Voltage	51.2V	Size	260*180*272mm (10.2" x 7.1" x 10.7")
Rated Capacity	30Ah	Communications	CAN/RS485
Standard Charging Voltage	55.2V~57.6V	Weight	~15.5 kg (34.17 lbs)
Max Continuous Charging Current	30A	Working Temperature (Low / High)	Charging: 0°C/45°C (32°F/113°F)
Standard Charging Current	10A		Discharging: -20°C/65°C (-4°F/149°F)
Maximum Continuous Discharge Current	60A	Short Circuit Protection	500A @ 366ms
Peak Discharge Current (30 sec)	65A	Self Discharge Rate	<3%/month
Peak Discharge Current (10 sec)	100A	Cycle Life	6000 Cycles @ 80% DOD
Discharge Cut-off Voltage	44.8V	Case Material	ABS+PC / UL94-V0
IP Rating	IP67	Pack Certifications	UL2271/CE/UN38.3/Class 9
Series & Parallel Connections	10 Parallel (Max) Series connections not supported.	Cell Certifications	UL1642/UL2580/UN38.3

## 48V GOLF BATTERY CONNECTION DIAGRAM

### CANBus Connection



# CHARGING

Note: The batteries should be powered on while charging.

## Charging with AC-DC Battery Charger

Check the AC-DC battery charger you intend to use has a dedicated lithium charge setting that meets the above charging requirements. A lot of battery chargers are designed for charging lead-acid batteries only and may not have a suitable charge setting for lithium.

## Charging Specifications

Model	Max Charge Voltage	Cut-off Voltage	Maximum C Rate	Recommended C Rate	Temperature	
48V	57.6V	40V	1C	0.3C	Charge:	0~45°C (32~113°F)
					Discharge:	-20~65°C (-4~149°F)

## LED Charging Indicator

Each battery has pair of LED indicators (as seen on External Features, page 4). While charging, a green LED will illuminate intermittently to indicate the state of charge (SOC) of the battery:

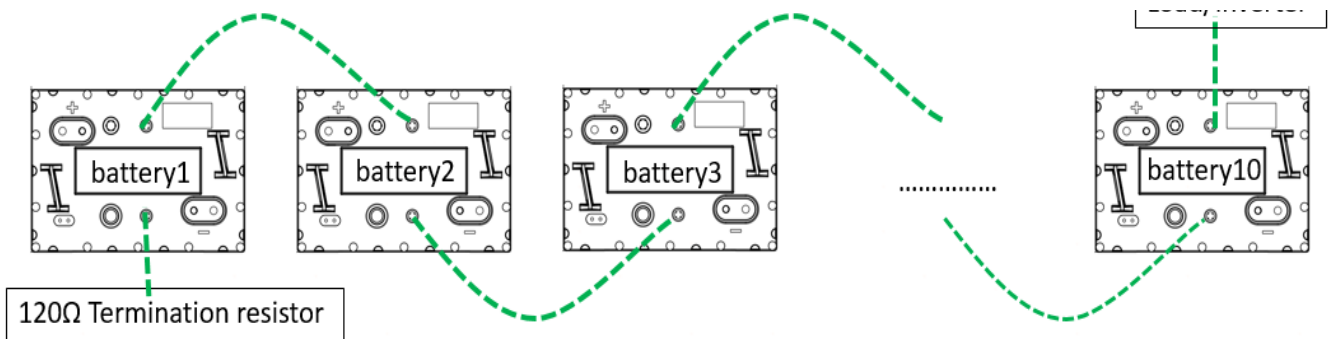
SOC	Lighting mode
< 20%	On: 0.3s – Off: 0.7s
20% - 90%	On: 1s – Off: 1s
> 90%	Constant



## COMMUNICATIONS

### CANbus

Each battery has 2 communication ports. These ports utilize the CANbus (Controller Area Network bus) protocol. CANbus improves the efficiency, reliability, and safety of the system, and it is also responsible for the SOC gauge. In the box with the battery meter, there is also a 120ohm resistor that is used as a terminator. This is to be installed on the battery opposite of the gauge, as demonstrated in the image below. The gauge itself can be powered by the same battery it is connected to.



### Fault Codes

The Battery Management System (BMS) protects the battery and ensures optimal performance. If the BMS activates protection, a red LED will illuminate on the battery and a message will be displayed on the gauge to indicate the cause. The following is a list of codes that may be displayed:

Code	Description
Alarm 1	Cell high voltage
Alarm 2	Cell low voltage
Alarm 3	System high voltage
Alarm 4	System low voltage
Alarm 5	Large voltage difference between cells
Alarm 6	Over-current (discharge)
Alarm 7	Over-current (charge)
Alarm 8	High temperature
Alarm 9	Low temperature
Alarm 10	Large temperature difference
Err	Abnormal communication



# WARRANTY

## Registration

Product(s) must be registered at <https://www.epochbatteries.com/pages/product-registration> within 60 days of purchase to receive full warranty coverage. Any Epoch Batteries system not registered within 60 days from date of purchase shall be covered by the conditions of our warranty policy for a period of one (1) year from date of purchase. This warranty is extended to the original purchaser only and is non-transferable.

## Exclusions

- Damage due to being unsecured or insufficiently secured
- Improper installation, use, maintenance, or service
- Loose battery terminal connections
- More than 4 batteries connected in series (above 48V)
- More than 4 batteries connected in parallel
- Reverse polarity connections
- Inappropriate storage conditions as defined by Battery Owner's Manual including but not limited to, exposure to extreme ambient temperatures above 140°F or below -40°F, fire, or water submersion, and/or storing Battery in a completely discharged state
- Any short circuit caused by accidental, intentional, or inadvertent connection of the positive and negative terminals
- Damage caused by impact, accident, collision, or drop
- Under/over charging the Battery as defined in its respective Battery Owner's Manual
- Use with other third-party product(s) which fail
- High resistance as a result of corroded terminals, poor crimps, or insufficient cable size
- Battery that fails as a result of a faulty electrical system
- Battery that has been opened, modified or tampered with in any way.
- Battery that was used for applications other than which it was designed and intended for, including repeated engine starting, or drawing more amps than the battery is rated to continually discharge in its respective specifications
- Battery that has not been charged for over 1 year (batteries need to be charged periodically to maintain Battery cell health)
- Battery that has been used in a commercial application where it is cycled to more than 80% depth of discharge repeatedly within 24 hour periods.

For additional information, please visit: <https://www.epochbatteries.com/pages/11-year-warranty>