

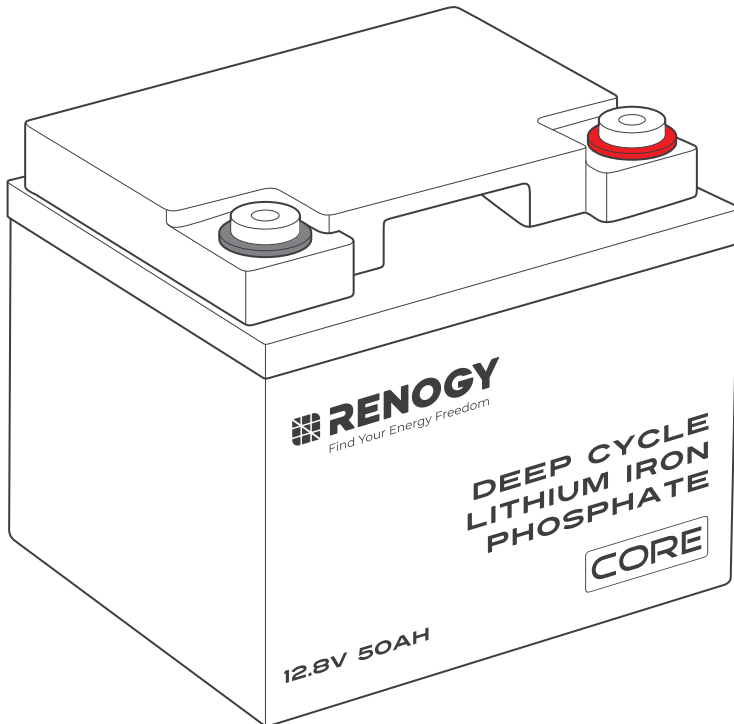
# RENOGY Core Series

Deep Cycle Lithium Iron Phosphate Battery

12.8V | 50Ah

RBT1250LFP

VERSION A0



USER MANUAL

## Before Getting Started

The user manual provides important operation and maintenance instructions for Renogy Core Series 12.8V 50Ah Deep Cycle Lithium Iron Phosphate Battery (hereinafter referred to as battery).

Read the user manual carefully before operation and save it for future reference. Failure to observe the instructions or precautions in the user manual can result in electrical shock, serious injury, or death, or can damage the battery, potentially rendering it inoperable.

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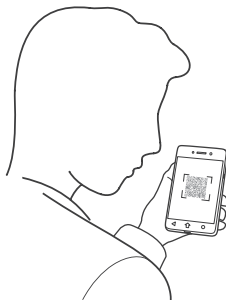
## Disclaimer

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## Online Manual



User Manual



 <p><b>Danger</b> High Voltage</p>	 <p><b>Eye Protection</b> Must Be Worn</p>	 <p><b>Emergency</b> Eye Wash</p>	 <p><b>Caution</b> Risk Of Fire Highly Flammable Material</p>
<p>DO NOT touch any terminals or connectors to avoid electric shock.</p>	<p>ALWAYS wear protective clothing and eyeglasses while working with the Lithium Iron Phosphate Battery.</p>	<p>Any uncovered battery material such as electrolyte or powder on the skin or in the eyes must be flushed out with plenty of clean water immediately. Seek medical attention afterwards. Spillages on clothing should be rinsed out with water.</p>	<p>Terminals of the Lithium Iron Phosphate Battery are always live. DO NOT place tools on them. DO NOT short circuit or use outside of the specified electrical ratings.</p>

## Safety Precautions

- Please use circuit breakers, fuses, or disconnects that are appropriately sized by certified electricians, licensed installers, or regional code authorities to protect all the electrical equipment in your system. The battery contains a battery management system (BMS) that protects the battery cells from over-charge, over-discharge, and over-current, however this alone will not protect your system from severe electrical conditions.
- Please verify the polarity before connecting wiring. Reverse polarity can and will destroy the battery.
- DO NOT short-circuit the battery terminals. Doing so can cause bursts in amperage and lead to irreversible damage to the system and the battery (and possibly cause an explosion).
- Please wear proper personal protective equipment when working on the battery.
- Please ONLY connect identical batteries in parallel or in series to ensure the best battery performance.
- If the battery shuts off due to low state of charge, please disconnect the battery from your equipment to eliminate parasitic loads and charge the battery as soon as possible.
- It is highly recommended to pair the battery with low voltage disconnect devices in the system setup.

## Battery Installation

Safe and reliable installation requires trained and certified technicians. This section can only serve as a guideline as all scenarios cannot be covered.

- **Step 1: Plant a mounting site.**  
For optimal battery performance, it is recommended to install the battery in a clean, cool, and dry location, free from any accumulation of water, oil, or dirt. Accumulation of such materials on the battery can lead to current leakage, self-discharge, and even short-circuiting.
- **Step 2: Wear protective clothing and eyeglasses.**
- **Step 3: Check the battery.**  
Reverse polarity can and will destroy the battery. Use a multimeter to determine proper

Inspect the battery for any visible damage including cracks, dents, deformation, and other visible abnormalities. All connector contacts shall be clean, free of dirt and corrosion, and dry.

- **Step 4: Size the battery cables appropriately.**

Use high stranded copper and heavy gauge cables to handle possible loads from the battery. Make sure to maintain identical cable lengths.

- **Step 5: Install battery terminals.**

Verify the battery polarity. Reverse polarity can and will destroy the battery. Use a multimeter to determine proper polarity.

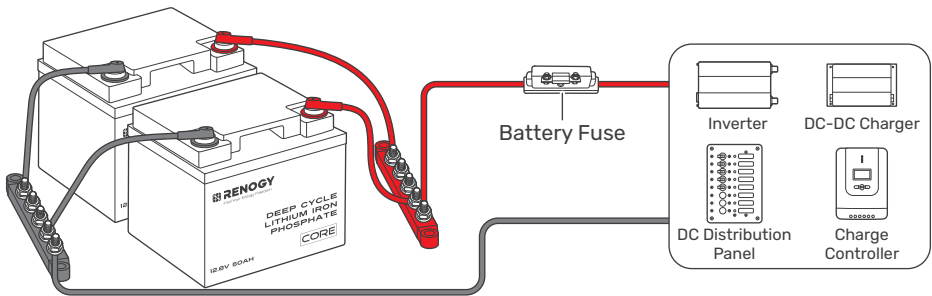
Always finish the negative terminals before positive ones. Connect batteries in series or parallel as needed.

- **Step 6: Connect the battery to other devices.**

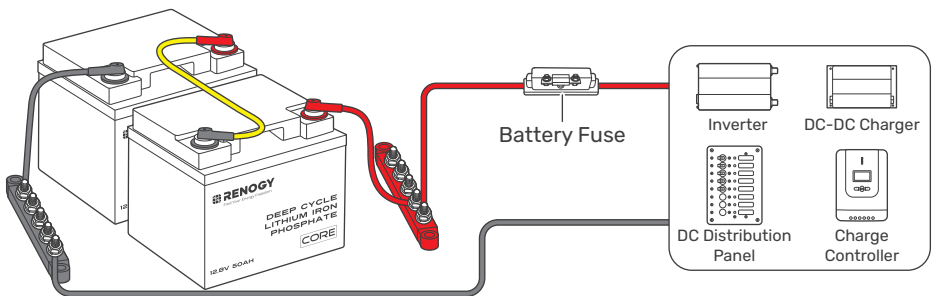
- **Step 7: Tighten the cable connections.**

Over-tightening cable connections can cause terminal breakage and loose cable connections can cause terminal meltdown or fire.

### ■ For Batteries in Parallel



### ■ For Batteries in Series



## Battery Operation

- Depending on shipping times and the time since manufacture, the battery may be received at a partial state of charge. Please fully charge the battery prior to the first use.
- Standard charging consists of charging at 0.5C constant current until the battery reaches 14.4V. The battery is then charged at a constant voltage of 14.4V while tapering the charging current. Charging is considered complete when the charging current has tapered to 0.05C. Safe charging requires temperatures between 0°C and 55°C (32°F and 131°F) and takes approximately 2.5 hours.
- For standard discharging, the battery is discharged at 0.5C constant current until the battery reaches 10V. Safe discharging requires temperatures between -20°C and 60°C (-4°F and 131°F).

## Battery Storage

- Please charge the battery to 30%-50% and store the battery in an open, well-ventilated, dry, clean area with temperatures of around 25°C (77°F).
- Long periods of storage can deteriorate the battery performance. It is recommended to charge the battery at least once every three months to prevent over-discharge.

## Battery Management System (BMS)

The BMS will protect and shut the battery down when it is over-discharged or short circuited. In these rare cases, the battery will show 0V voltage. Please activate the battery using an external charging source that has lithium battery activation function. Please contact our Tech Support team at (909)287-7111 for more information about the BMS.

## Battery Specifications

Model	RBT1250LFP		
<b>Electric Characteristics</b>	Nominal Voltage	12.8V	
	Rated Capacity (0.5C)	50Ah	
	Energy	640Wh	
	Specific Energy	116.36Wh/kg	
	Internal Resistance	≤20mΩ	
	Cycle Life	≥3500 Cycles (25°C, 0.5C, DOD 80%, EOL 80%)	
<b>Charging Parameters</b>	Charge Voltage	14.4V (±0.2V)	
	Maximum Continuous Charge Current	50A	
	Charge Cut-off voltage	14.6V	
<b>Discharging Parameters</b>	Maximum Continuous Discharge Current	50A	
	Discharge Cut-off Voltage	10V	
<b>Temperature Parameters</b>	Operation Temperature Range (60±25% R.H.)	Charge	0°C to 55°C / 32°F to 131°F
		Discharge	-20°C to 60°C / -4°F to 140°F
		Recommended	23°C (±5°C) / 73.4°F (±9°F)
	Storage Temperature Range (60±25% R.H.)	-25°C to 65°C / -13°F to 149°F	

<b>Mechanical Properties</b>	Dimensions	Length	198 mm / 7.8 in
		Width	165 mm / 6.5 in
		Height	169 mm / 6.7 in
	Weight		5.35 kg / 11.8 lbs
	Housing Material		ABS+PC
	Terminal Model		M8 x 1.25 x 16 mm
	Additional Terminal Model		M8 x 1.25 x 20 mm

## Protection Circuit Module (PCM) Specifications

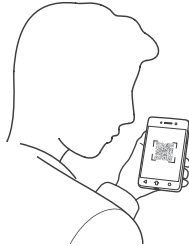
Battery Operating Status		Condition (For Reference Only)	
Battery Cell Overvoltage	Protection	Trigger	Battery Cell Voltage $\geq 3.65V$
		Recover	Battery Cell Voltage $\leq 3.55V$ / Discharge current $\geq 1A$
Battery Cell Undervoltage	Protection	Trigger	Battery Cell Voltage $\leq 2.3V$
		Recover	Battery Cell Voltage $\geq 2.7V$ / Charge current $\geq 1A$
Charge High Temperature	Protection	Trigger	Battery Temperature $\geq 131^{\circ}F$ ( $55^{\circ}C$ )
		Recover	Battery Temperature $\leq 122^{\circ}F$ ( $50^{\circ}C$ )
Discharge High Temperature	Protection	Trigger	Battery Temperature $\geq 149^{\circ}F$ ( $65^{\circ}C$ )
		Recover	Battery Temperature $\leq 131^{\circ}F$ ( $55^{\circ}C$ )
Charge Low Temperature	Protection	Trigger	Battery Temperature $\leq 32^{\circ}F$ ( $0^{\circ}C$ )
		Recover	Battery Temperature $\geq 41^{\circ}F$ ( $5^{\circ}C$ )
Discharge Low Temperature	Protection	Trigger	Battery Temperature $\leq -4^{\circ}F$ ( $-20^{\circ}C$ )
		Recover	Battery Temperature $\geq 5^{\circ}F$ ( $-15^{\circ}C$ )
Charge Overcurrent	Protection	Trigger	Charge current $\geq 65A$ (Delay 5s)
		Recover	Disconnect the charger or Discharge current $\geq 1A$
Discharge Overcurrent	Protection	Trigger	Discharge current $\geq 165A$ (Delay 0.5s)
		Recover	Disconnect the load or Charge current $\geq 1A$
Short Circuit	Protection	Trigger	Discharge current $\geq 600A$
		Recover	Remove Short Circuit ( $400\mu s$ ) or Charge current $\geq 1A$

# Renogy Support

To discuss inaccuracies or omissions in this quick guide or user manual, visit or contact us at:

[G | renogy.com/support/downloads](https://renogy.com/support/downloads)

 [contentservice@renogy.com](mailto:contentservice@renogy.com)



Questionnaire Investigation




To explore more possibilities of solar systems, visit Renogy Learning Center at:

[G | renogy.com/learning-center](https://renogy.com/learning-center)

For technical questions about your product in the U.S., contact the Renogy technical support team through:

[G | renogy.com/contact-us](https://renogy.com/contact-us)

 1(909)2877111

For technical support outside the U.S., visit the local website below:

**Canada** |  | [ca.renogy.com](https://ca.renogy.com)

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Renogy aims to empower people around the world through education and distribution of DIY-friendly renewable energy solutions.

We intend to be a driving force for sustainable living and energy independence.

In support of this effort, our range of solar products makes it possible for you to minimize your carbon footprint by reducing the need for grid power.



## Live Sustainably with Renogy

Did you know? In a given month, a 1 kW solar energy system will...



Save 170 pounds of coal from being burned



Save 300 pounds of CO<sub>2</sub> from being released into the atmosphere



Save 105 gallons of water from being consumed



## Renogy Power PLUS

Renogy Power Plus allows you to stay in the loop with upcoming solar energy innovations, share your experiences with your solar energy journey, and connect with like-minded people who are changing the world in the Renogy Power Plus community.

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