

RoyPow C1420

RoyPow 12V 20A LiFePO4 Battery Charger

MODEL: C1420

User Manual

1. Introduction

The RoyPow 12V 20A LiFePO4 Battery Charger, Model C1420, is designed for efficient and safe charging of 12V LiFePO4 batteries. It also supports various other 12V battery types, including lead-acid, flooded, AGM, gel cell, and deep cycle batteries. This charger features multiple protection mechanisms, a fully sealed IP65 waterproof design, and a 0V charging function to reactivate deeply discharged batteries. Its automatic charging process simplifies operation, making it suitable for a wide range of applications from marine to RVs.

2. Safety Information

Please read and understand all safety instructions before operating the charger. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- **Electrical Safety:** Ensure the charger is connected to a grounded outlet. Do not expose the charger to rain or wet conditions. Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged.
- **Ventilation:** The sealed shell design will generate heat during use. Always use the charger with the provided stand in an open and well-ventilated area to prevent overheating.
- **Battery Compatibility:** This charger is primarily designed for 12V LiFePO4 batteries but is compatible with other 12V battery types as listed in the specifications. Do not attempt to charge batteries with incompatible voltages or chemistries.
- **Connection:** Ensure correct polarity when connecting to the battery. Reverse connection protection is built-in, but incorrect connection should be avoided.
- **Children and Pets:** Keep the charger and batteries out of reach of children and pets.
- **Protection Features:** The charger includes built-in short circuit protection, overload protection, over-current protection, over-voltage protection, over-temperature protection, and reverse connection protection to ensure safe operation.

3. Package Contents

Verify that all items are present in the package:

- 1 x RoyPow 14.4V 20A LiFePO4 Battery Charger (Model C1420)
- 1 x 100cm AC Power Cable
- 1 x 100cm M8 Ring Terminals Cable
- 1 x Battery Charger Stand
- 1 x User Manual

4. Product Overview

The RoyPow C1420 charger is engineered for durability and performance. It features a fully sealed housing, providing IP65 waterproof protection, making it suitable for marine environments and outdoor use. The fan-less design ensures silent operation and contributes to a longer lifespan.



Figure 4.1: Front view of the RoyPow C1420 battery charger, showcasing its compact design and LED indicators.



Figure 4.2: Diagram illustrating the charger's strong and compact internal structure, highlighting the AC power cord, battery connection cable (M8), and charging LED indicators.

Key Features:

- **Dedicated LiFePO4 Charging:** Optimized for 12V LiFePO4 batteries, maximizing performance and extending battery life.
- **Multi-Battery Compatibility:** Also charges 12V lead-acid, flooded, AGM, gel cell, and deep cycle batteries.
- **Fast Charging:** Delivers 20A current, charging a 12V 100Ah lithium battery to 100% in approximately 5 hours.
- **Advanced Protection:** Comprehensive safety features including short circuit, overload, over-current, over-voltage, over-temperature, and reverse connection protection.
- **IP65 Waterproof:** Fully sealed design for use in challenging environments, including marine applications.
- **0V Charging Function:** Capable of reactivating dead or sleeping LiFePO4 batteries.
- **Automatic Operation:** Simple plug-and-charge functionality with automatic transition through charging stages.

5. Setup

Follow these steps to set up your RoyPow C1420 battery charger:

1. **Placement:** Place the charger on a stable surface using the provided stand. Ensure the area is open and well-ventilated to allow for heat dissipation.
2. **Battery Connection:** Connect the M8 ring terminals cable to your 12V battery. Ensure the red terminal is connected to the positive (+) battery post and the black terminal to the negative (-) battery post.
3. **Charger Connection:** Connect the M8 ring terminals cable to the charger's output port.
4. **Power Connection:** Plug the AC power cable into the charger's input port, then plug the other end into a standard 100V-240V AC wall outlet.

6 Safety Protection Functions

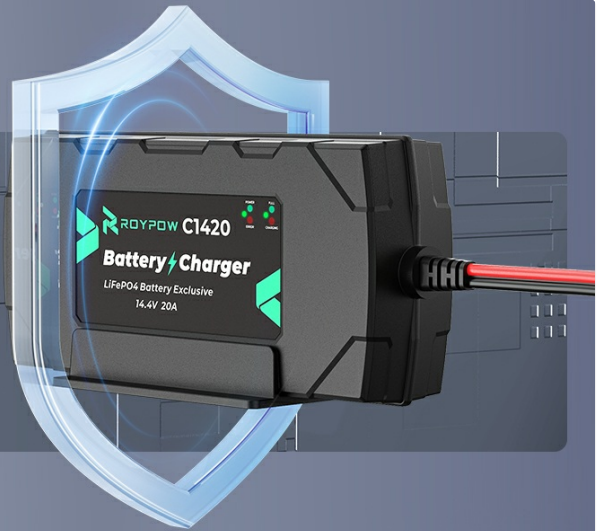
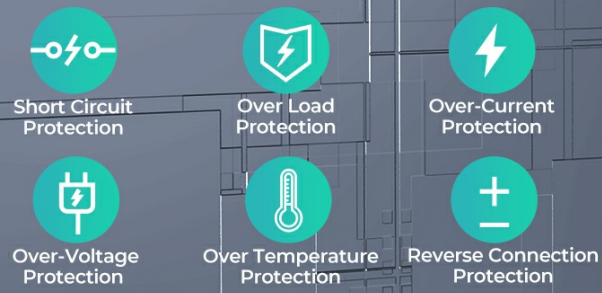


Figure 5.1: The RoyPow C1420 charger connected to a battery using M8 ring terminals, with the AC power cable plugged in.



Figure 5.2: The charger placed on its stand next to a battery, with a note advising use in an open and ventilated area due to heat generation.

6. Operating Instructions

The RoyPow C1420 charger operates automatically once connected correctly.

Charging Process:

- Once connected to the battery and power outlet, the charger will automatically begin the charging process.
- The charger employs a smart 3-stage charging process (Pre-Charge, Constant Current, Constant Voltage) to optimize battery health and extend its lifespan.
- When the battery is nearly fully charged, the charger will automatically switch to a trickle charge mode to prevent overcharging.

LED Indicators:

The charger features LED indicators to display its status:



Figure 6.1: Detailed diagram explaining the different states of the LED indicators on the charger.

- **Power (Green):** Illuminates when the charger is connected to an AC power source.
- **Full (Green):** Illuminates when the battery is fully charged.
- **Charging (Red):** Illuminates when the battery is actively charging.
- **Error (Red):** Illuminates to indicate a fault condition. Refer to the Troubleshooting section.

0V Charging Function:

The charger can reactivate 0V dead or sleeping LiFePO4 batteries. When a LiFePO4 battery is protected by its Battery Management System (BMS) due to low voltage, this charger can reactivate the BMS and restore the battery to its normal operating voltage. This function is compatible with most LiFePO4 batteries on the market.

Restores Dead Battery to Life



Figure 6.2: The charger's 0V charging function capable of reactivating dead or sleeping LiFePO4 batteries.

7. Maintenance

Proper maintenance ensures the longevity and optimal performance of your charger and batteries.

- **Cleaning:** Disconnect the charger from power and the battery before cleaning. Wipe the exterior with a soft, dry cloth. Do not use harsh chemicals or abrasive cleaners.
- **Storage:** Store the charger in a cool, dry place when not in use. Ensure cables are neatly coiled and not kinked.
- **Battery Health:** The charger's trickle charge function helps maintain battery health during long-term storage by preventing overcharging and keeping the battery at an optimal level.
- **Ventilation:** Always ensure adequate ventilation during operation to prevent heat buildup.

8. Troubleshooting

If you encounter issues with your RoyPow C1420 charger, refer to the following table:

Problem	Possible Cause	Solution
Charger not turning on (No Power LED)	No AC power; Faulty power cable/outlet.	Check AC power connection and outlet. Try a different outlet. Ensure power cable is securely connected.
Charging LED not illuminating (No charging)	Incorrect battery connection; Battery fully charged; Battery fault.	Verify battery connections (positive to positive, negative to negative). Check if the battery is already full (Full LED might be on). If Error LED is on, refer to Error conditions.
Error LED is on	Reverse connection; Excessive battery voltage; Short circuit; Over-temperature.	Reverse Connection: Disconnect and reconnect battery with correct polarity. Excessive Battery Voltage: Ensure battery voltage is compatible (12V). Short Circuit: Check for short circuits in the battery or cables. Over-temperature: Ensure charger is in a well-ventilated area and not covered. Allow to cool down.
Slow charging speed	Battery capacity is very high; Battery deeply discharged.	Charging time is proportional to battery capacity and discharge level. A 12V 100Ah battery takes approximately 5 hours from empty. This is normal operation.

9. Specifications

Technical specifications for the RoyPow 12V 20A LiFePO4 Battery Charger C1420:

Feature	Specification
Brand	RoyPow
Model Number	C1420
Input Voltage	100V-240V AC; 47Hz to 63Hz
Output Voltage	14.4 Volts (DC)
Current Rating	20 Amps
Battery Charge Time (100Ah LiFePO4)	Approximately 5 Hours
Product Dimensions (D x W x H)	8.8" x 4.2" x 1.97" (22.3cm x 10.7cm x 5cm)
Weight	3.3 lbs (1500 g)
Waterproof Rating	IP65
Certifications	CE, RoHS
Included Cables	100cm AC Power Cable, 100cm M8 Ring Terminals Cable

10. Warranty and Support

Warranty: The RoyPow 12V 20A LiFePO4 Battery Charger (Model C1420) comes with a 2-year warranty from the date of purchase. This warranty covers defects in materials and workmanship under normal use.

Support: For technical assistance, troubleshooting, or warranty claims, please contact RoyPow customer support through the official RoyPow website or your retailer. Please have your model number (C1420) and proof of purchase ready when contacting support.