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› ExpertPower 12V 20A Smart Charger Instruction Manual

ExpertPower EPC1220

ExpertPower 12V 20A Smart Charger Instruction Manual

Model: EPC1220

For Lithium LiFePO4 Deep Cycle Rechargeable Batteries

1. INTRODUCTION

Thank you for choosing the ExpertPower 12V 20A Smart Charger. This charger is specifically designed for 12V Lithium Iron Phosphate (LiFePO4) deep cycle rechargeable batteries. It employs an advanced 2-stage constant current/constant voltage (CC/CV) charge algorithm to ensure efficient and safe charging, maximizing battery lifespan.

This manual provides detailed instructions for the proper setup, operation, maintenance, and troubleshooting of your ExpertPower Smart Charger. Please read this manual thoroughly before use to ensure optimal performance and safety.

2. SAFETY PRECAUTIONS

WARNING: Failure to follow these safety instructions may result in electric shock, fire, or serious injury.

- Use this charger only with 12V LiFePO4 batteries. Do not attempt to charge other battery types (e.g., lead-acid, Ni-Cd, Ni-MH) as this may cause damage to the charger or battery, or lead to fire or explosion.
- Ensure the charger is disconnected from the AC power outlet before making or breaking connections to the battery.
- Operate the charger in a well-ventilated area. Do not cover the charger during operation.
- Keep the charger away from water, moisture, and flammable materials.
- Do not operate the charger if it has been dropped, damaged, or exposed to excessive moisture.
- Do not disassemble or modify the charger. Refer all servicing to qualified personnel.
- Always connect the positive (+) charger clip (red) to the positive (+) battery terminal and the negative (-) charger clip (black) to the negative (-) battery terminal. Ensure correct polarity.
- The charger features multi-purpose protection including short circuit, over-voltage, over-current, overload, and reverse polarity protection. However, always exercise caution.

Multi-Purpose Protection 30A Blade Fuse

Latest Upgrade - 30A Blade Fuse provides added safety and easy serviceability

- Short Circuit
- Over-Voltage
- Over-Current
- Overload
- Polarity Reverse



Image: The ExpertPower Smart Charger features a 30A blade fuse for multi-purpose protection against short circuit, over-voltage, over-current, overload, and reverse polarity. This fuse enhances safety and serviceability.

3. SETUP AND CONNECTION

Follow these steps to properly connect your ExpertPower Smart Charger to your LiFePO4 battery:

1. **Prepare the Battery:** Ensure the battery terminals are clean and free of corrosion.
2. **Connect Charger to Battery:**
 - Connect the **red** positive (+) alligator clip from the charger to the **positive** (+) terminal of the LiFePO4 battery.
 - Connect the **black** negative (-) alligator clip from the charger to the **negative** (-) terminal of the LiFePO4 battery.
 - Ensure a secure connection.
3. **Connect Charger to AC Power:** Plug the AC power cord of the charger into a standard 120V AC wall outlet.
4. **Verify Connection:** The charger's LED indicators will illuminate to show the charging status.

CHARGING TIME

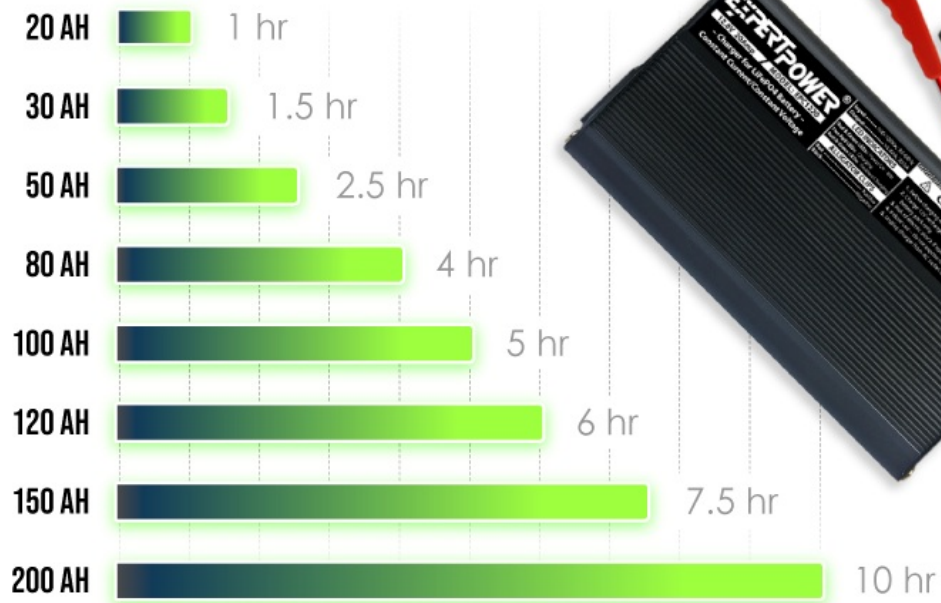


Image: Step-by-step diagram illustrating the correct connection procedure for the ExpertPower Smart Charger, including connecting alligator clips to the battery and plugging into an AC outlet.



Image: The ExpertPower 12V 20A Smart Charger, showing its main components: the charger unit, detachable AC power cord, and battery connection cables with red and black alligator clips.

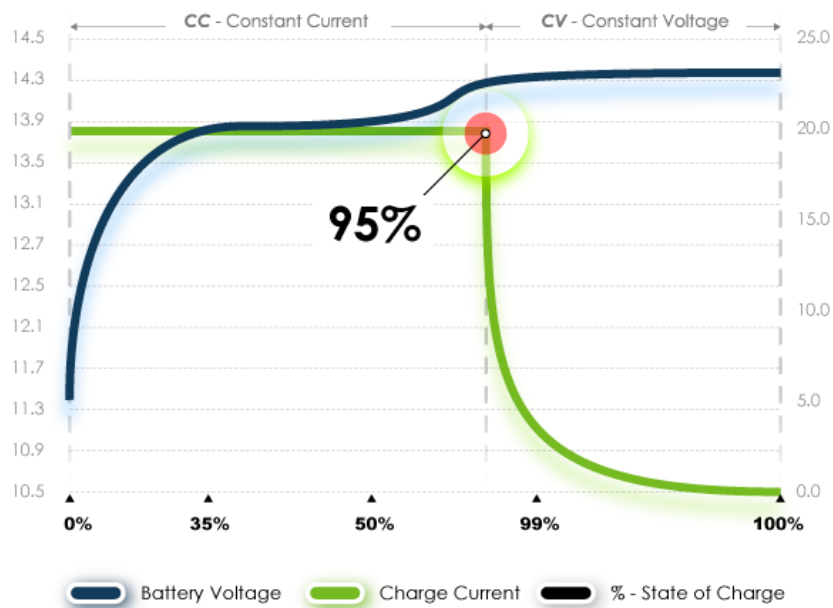
4. OPERATING INSTRUCTIONS

4.1. Charging Process

The ExpertPower Smart Charger utilizes a specialized 2-stage Constant Current (CC) / Constant Voltage (CV) charge algorithm, optimized for 12V LiFePO4 batteries. This algorithm ensures efficient charging while protecting the battery's delicate structure and maximizing its lifespan.

- **Constant Current (CC) Stage:** The charger delivers a constant current (up to 20A for this model) to the battery until it reaches approximately 95% state of charge.
- **Constant Voltage (CV) Stage:** Once the battery voltage reaches 14.4V, the charger switches to constant voltage mode, where the current gradually tapers down until the battery is fully charged.

2-STAGE CHARGING ALGORITHM



ExpertPower EPC1220 charger

is uniquely designed for **12V LiFePO4 batteries**, implementing the special **2-stage constant current/constant voltage (CC/CV)** charge algorithm, it protects your LiFePO4 battery's delicate structure by boosting charging efficiency and maximizing lifespan through its careful utilization.

Image: A graph illustrating the 2-stage Constant Current (CC) and Constant Voltage (CV) charging algorithm used by the ExpertPower EPC1220 charger, showing how battery voltage and charge current change over time.

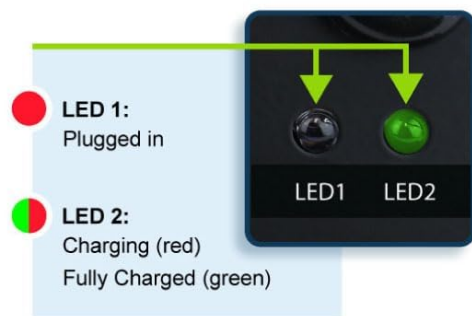
4.2. LED Indicators

The charger is equipped with smart LED indicators to display the charging status:

- **LED 1 (Power Indicator):**
 - **Green:** Charger is plugged into AC power and idle (not connected to battery or battery is fully charged).
- **LED 2 (Charging Status Indicator):**
 - **Red:** Battery is charging.
 - **Green:** Battery is fully charged.

Smart BMS Reset & Charge Technology

- The LiFePO4 Smart Charger is uniquely designed for 12V LiFePO4 batteries, implementing the special 2-stage constant current/constant voltage (CC/CV) charge algorithm with smart LED indicators.



- Additionally, the LiFePO4 Smart Charger is designed to reset battery BMS when active by allowing current into batteries reading from down to 0V.

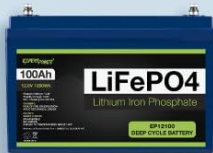


Image: Close-up view of the ExpertPower Smart Charger's LED indicators (LED 1 and LED 2) and their corresponding statuses (Plugged in, Charging, Fully Charged). It also highlights the 0V reset feature for battery management systems (BMS).

4.3. BMS Reset Function

The ExpertPower Smart Charger is designed to reset various types of Battery Management Systems (BMS) when active. It achieves this by allowing current into batteries that are reading down to 0V, which can reactivate a BMS that has triggered a low-voltage cutoff.

4.4. Estimated Charging Times

The following table provides approximate charging times for various LiFePO4 battery capacities when using the 20A ExpertPower Smart Charger:

FEATURES

Our **LiFePO4 Smart Charger** is uniquely designed for **12V LiFePO4 batteries**, implementing the special **2-stage constant current/constant voltage (CC/CV)** charge algorithm with smart LED indicators.



Additionally, the **LiFePO4 Smart Charger** is designed to reset battery BMS when active by allowing current into batteries reading from down to **0V**.

Image: A bar chart illustrating the estimated charging duration for different LiFePO4 battery capacities (from 20Ah to 200Ah) when charged with the ExpertPower 20A Smart Charger.

Estimated Charging Times (20A Charger)

Battery Capacity (Ah)	Approximate Charging Time (hours)
20 Ah	1 hr
30 Ah	1.5 hrs
50 Ah	2.5 hrs
80 Ah	4 hrs
100 Ah	5 hrs
120 Ah	6 hrs
150 Ah	7.5 hrs
200 Ah	10 hrs

Note: Charging times are approximate and may vary based on battery's initial state of charge, age, temperature, and other factors.

5. MAINTENANCE

Proper maintenance ensures the longevity and reliable operation of your ExpertPower Smart Charger:

- **Cleaning:** Disconnect the charger from both AC power and the battery before cleaning. Use a dry, soft cloth to wipe the exterior. Do not use abrasive cleaners or solvents.
- **Storage:** Store the charger in a cool, dry place when not in use. Avoid extreme temperatures and direct sunlight.
- **Cable Inspection:** Regularly inspect the AC power cord and battery connection cables for any signs of damage,

fraying, or exposed wires. Do not use the charger if any cables are damaged.

- **Ventilation:** Ensure the cooling fan and ventilation openings are free from dust and debris to prevent overheating. The unibody aluminum alloy casing also functions as a heat sink.

6. TROUBLESHOOTING

If you encounter issues with your ExpertPower Smart Charger, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Charger not turning on (no LEDs)	No AC power; Faulty AC outlet; Damaged charger.	Check AC power connection and outlet. Try a different outlet. If still no power, contact support.
LED 1 (Power) is Green, but LED 2 (Charging) is not Red when connected to battery.	Incorrect battery connection (reverse polarity); Battery voltage too low (below 0V); Battery is already fully charged; Faulty battery.	◦ Verify correct polarity (+ to +, - to -). ◦ Ensure battery terminals are clean and connections are secure. ◦ If battery is at 0V, the charger is designed to attempt a BMS reset; allow some time. If it doesn't start charging, the battery may be severely damaged. ◦ Check if the battery is already fully charged (LED 2 should be green).
Charger gets excessively hot.	Poor ventilation; Overload; Internal fault.	◦ Ensure charger is in a well-ventilated area and not covered. ◦ Check that the battery capacity is appropriate for a 20A charger (ideal for 40Ah and above). ◦ If overheating persists, disconnect immediately and contact support.
Charger does not reach "Fully Charged" (LED 2 stays Red).	Battery capacity too large for charger; Battery fault; Charger fault.	◦ Verify battery capacity is within reasonable limits for a 20A charger (see charging times table). ◦ Test the battery with another known-good charger if possible. ◦ If the issue persists, the battery or charger may be faulty.

For issues not listed here or if troubleshooting steps do not resolve the problem, please contact ExpertPower customer support.

7. SPECIFICATIONS

Feature	Specification
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Feature	Specification
Model Number	EPC1220
Input Voltage	100-120V AC, 50/60Hz
Output Voltage	14.4V DC
Charging Current	20A
Cut-off Current	1.5-2.5A
Ideal for Battery Capacity	40 Ah and above
Dimensions (L x W x H)	6.3 x 4.2 x 2.4 inches (16.0 x 10.7 x 6.1 cm)
Weight	2.7 pounds (1.22 kg)
Color	Black (with green/red indicators)
Protection Features	Short Circuit, Over-Voltage, Over-Current, Overload, Polarity Reverse

Smart LiFePO4 Charger Features

Dimensions: 6.3 x 4.1 x 2.4 in

Weight: 2.62 lbs

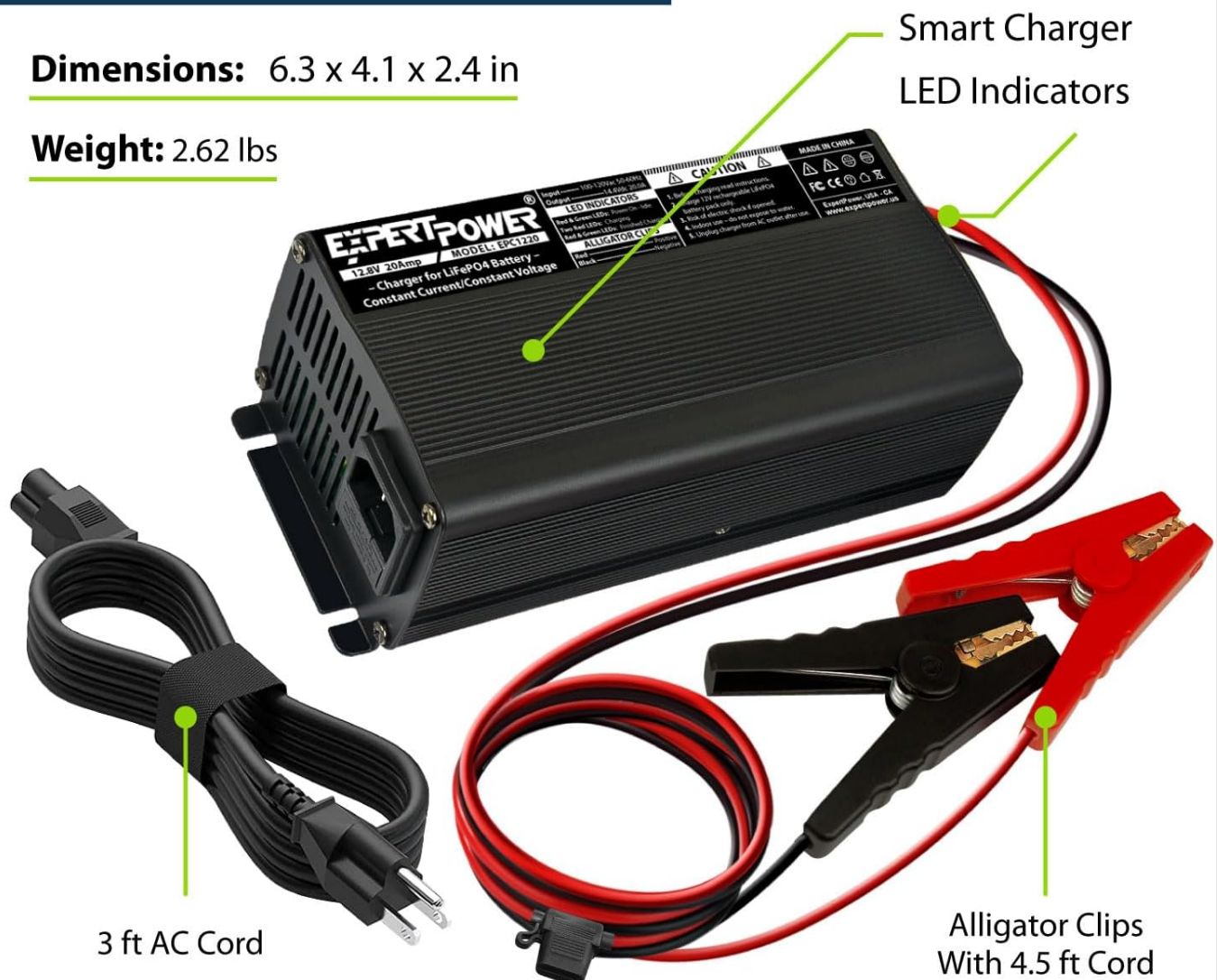


Image: The ExpertPower Smart Charger highlighting its physical features, including dimensions (6.3 x 4.1 x 2.4 inches), weight (2.62 lbs), 3 ft AC cord, and 4.5 ft alligator clips.

8. WARRANTY INFORMATION

ExpertPower products are manufactured to high-quality standards. Specific warranty terms and conditions for your ExpertPower 12V 20A Smart Charger are typically provided with the product packaging or can be found on the official ExpertPower website. Please retain your proof of purchase for warranty claims. For detailed warranty information, please visit the ExpertPower official website or contact customer support.

9. CUSTOMER SUPPORT

If you have any questions, require technical assistance, or need to report an issue with your ExpertPower Smart Charger, please contact ExpertPower customer support through the following channels:

- **Online Store:** Visit the official ExpertPower Store on Amazon for product information, FAQs, and contact options: [ExpertPower Amazon Store](#)
- Refer to your product packaging for additional contact details such as phone numbers or email addresses.

Our dedicated support team is ready to assist you.

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Question

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Model number, symptoms, what you tried, or the section of the manual you are using.

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