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E-FAST 12V 20A LiFePO4 Battery Charger

E-FAST 12V 20A LiFePO4 Battery Charger Instruction Manual

Model: 12V 20A LiFePO4 Battery Charger

1. Introduction

Thank you for choosing the E-FAST 12V 20A LiFePO4 Battery Charger. This charger is specifically designed for 12V lithium iron phosphate (LiFePO4) batteries, offering efficient and safe charging with advanced features like 0V activation for depleted batteries. It is suitable for various applications including golf carts, RVs, marine vessels, boats, and trolling motors. Please read this manual thoroughly before use to ensure proper operation and to maximize the lifespan of your battery and charger.

2. Safety Information

Always observe the following safety precautions to prevent injury or damage to the charger and battery:

- **Read all instructions:** Before using the charger, read all instructions and cautionary markings on the charger, the battery, and the product using the battery.
- **Ventilation:** Ensure adequate ventilation during charging. Do not cover the charger.
- **Compatibility:** This charger is designed exclusively for 12V LiFePO4 batteries. Do not use it with other battery types (e.g., lead-acid, Ni-Cd, Ni-MH) as this may cause explosion, personal injury, or damage.
- **Electrical connections:** Ensure all connections are secure and correct before plugging the charger into a power outlet. Incorrect polarity can cause damage.
- **Avoid moisture:** Do not expose the charger to rain, snow, or excessive moisture.
- **Damaged equipment:** Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged.
- **Children:** Keep the charger and battery out of reach of children.
- **Disconnect power:** Always disconnect the AC power supply before connecting or disconnecting the battery.
- **Over-temperature protection:** The charger features over-temperature protection. If it overheats, it will automatically reduce current or shut down. Ensure the cooling fan is not obstructed.



Image: Multiple safety protections integrated into the E-FAST 12V 20A LiFePO4 Battery Charger.

3. Product Overview

The E-FAST 12V 20A LiFePO4 Battery Charger is engineered for optimal performance and durability. Key features include:

- **Dedicated LiFePO4 Charging:** Specifically designed for 12V lithium iron phosphate batteries.
- **0V Activation:** Capable of reactivating deeply discharged batteries.
- **Fast Charging:** Delivers up to 20A constant current, significantly reducing charging time.
- **Multi-Stage Charging:** Utilizes CC/CV/Float-cut off modes for efficient and safe charging.
- **Comprehensive Safety:** Built-in protections against over-voltage, short-circuit, over-temperature, reverse polarity, over-current, and over-rate.
- **Durable Construction:** Features a premium aluminum alloy housing for enhanced durability.
- **Integrated Cooling Fan:** Prevents overheating during continuous operation, maintaining stable performance.
- **Versatile Connectors:** Includes both M8 terminals and a 50A Anderson connector for flexible battery connections.
- **LED Indicators:** Clear dual-state LED for charging status (Red for charging, Green for fully charged).



Image: The E-FAST charger with its AC power cable and DC output cable featuring both Anderson and M8 terminal connectors.

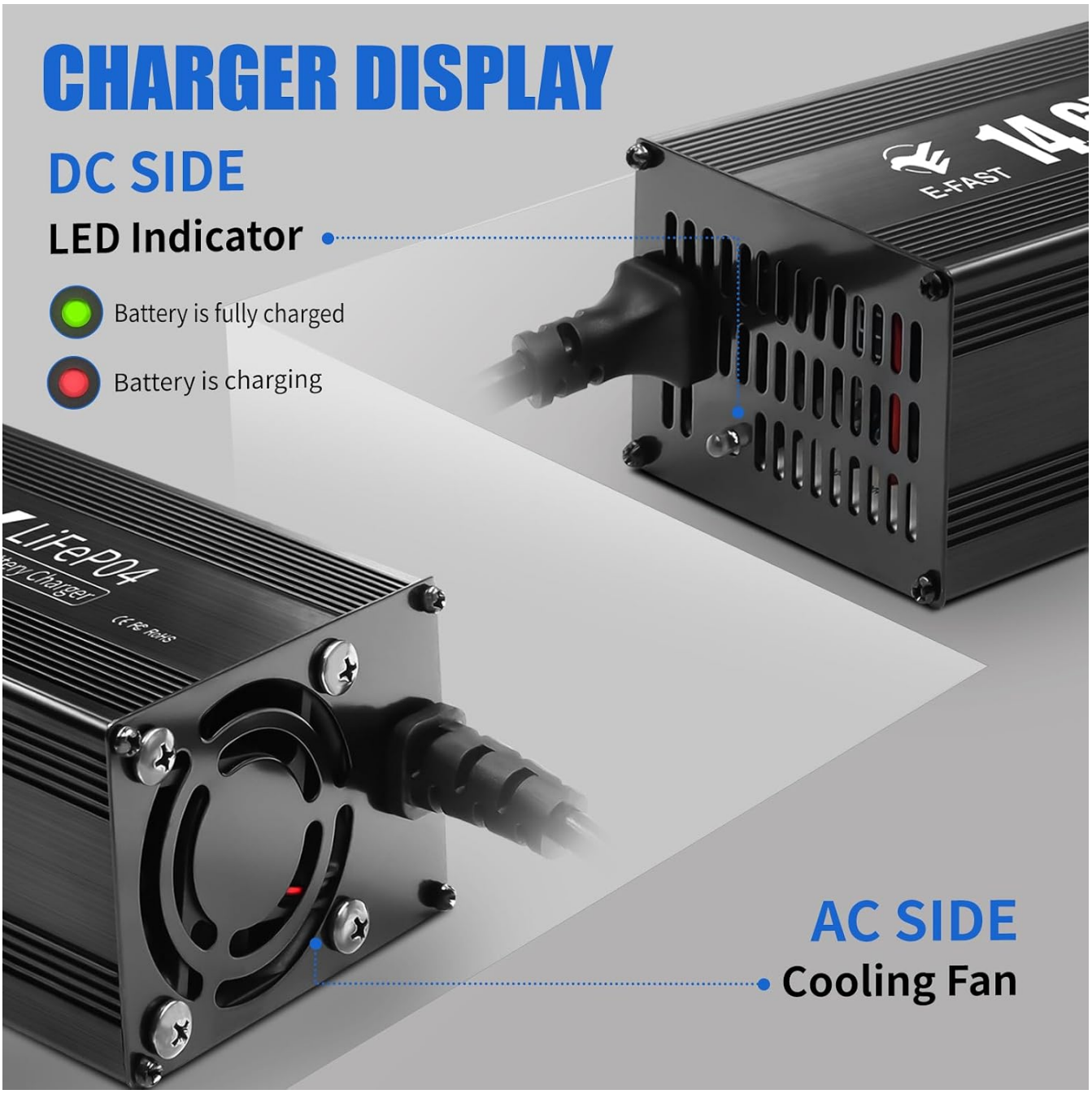

Image: Detailed view of the charger's LED indicator and cooling fan.

4. Specifications

Feature	Specification
Brand	E-FAST
Color	Black
Product Dimensions (L x W x H)	8.3" x 3.5" x 2.6" (21.1cm x 8.9cm x 6.6cm)
Item Weight	2 Pounds (0.91 kg)
Output Voltage	14.6 Volts DC
Input Voltage	100-240 Volts AC (50Hz/60Hz)
Current Rating	20 Amps

Feature	Specification
Compatible Battery Type	12V LiFePO4 (40Ah-300Ah recommended)
Typical 100Ah Battery Charge Time	Approximately 5 Hours
Compatible Devices	Golf Cart, RV, Marine, Boat, Trolling Motor
Connector Type	Anderson, M8 Terminals
Manufacturer	E-FAST
Certification	UL Compliant

5. Setup

Follow these steps to set up your E-FAST LiFePO4 Battery Charger:

1. **Inspect the Charger:** Before each use, check the charger, cables, and connectors for any signs of damage. Do not use if damaged.
2. **Ensure Compatibility:** Confirm that the battery you intend to charge is a 12V LiFePO4 battery within the recommended capacity range (40Ah-300Ah).
3. **Connect to Battery:**
    - Choose the appropriate connector (Anderson or M8 terminals) for your battery.
    - Connect the positive (+) charger cable (red) to the positive (+) battery terminal.
    - Connect the negative (-) charger cable (black) to the negative (-) battery terminal.
    - Ensure connections are firm and secure.
4. **Connect to AC Power:** Plug the charger's AC power cord into a standard 100-240V AC wall outlet.
5. **Placement:** Place the charger on a stable, flat surface, ensuring adequate space around it for ventilation. Do not place it on or near flammable materials.



Image: Proper connection of the E-FAST charger to a LiFePO4 battery and AC power source.

6. Operating Instructions

Once the charger is properly connected, it will automatically begin the charging process. The charger employs a 3-stage charging method to optimize battery life and performance.

6.1. Charging Process

1. **Pre-Charge Stage (T1 - Activating):** If the battery voltage is very low (0V activation), the charger will apply a small current to safely bring the battery voltage up to a level where it can accept a full charge.
2. **Constant Current (CC) Charging Stage (T2 - 20A Current Charging):** The charger delivers a constant 20A current to the battery until its voltage reaches approximately 14.6V. During this stage, the battery gains most of its charge rapidly.
3. **Constant Voltage (CV) Charging Stage (T3 - Current Reducing & Charging Completed):** Once the battery voltage reaches 14.6V, the charger maintains this voltage while gradually reducing the current. Charging is complete when the current drops to a very low level, indicating the battery is fully charged.

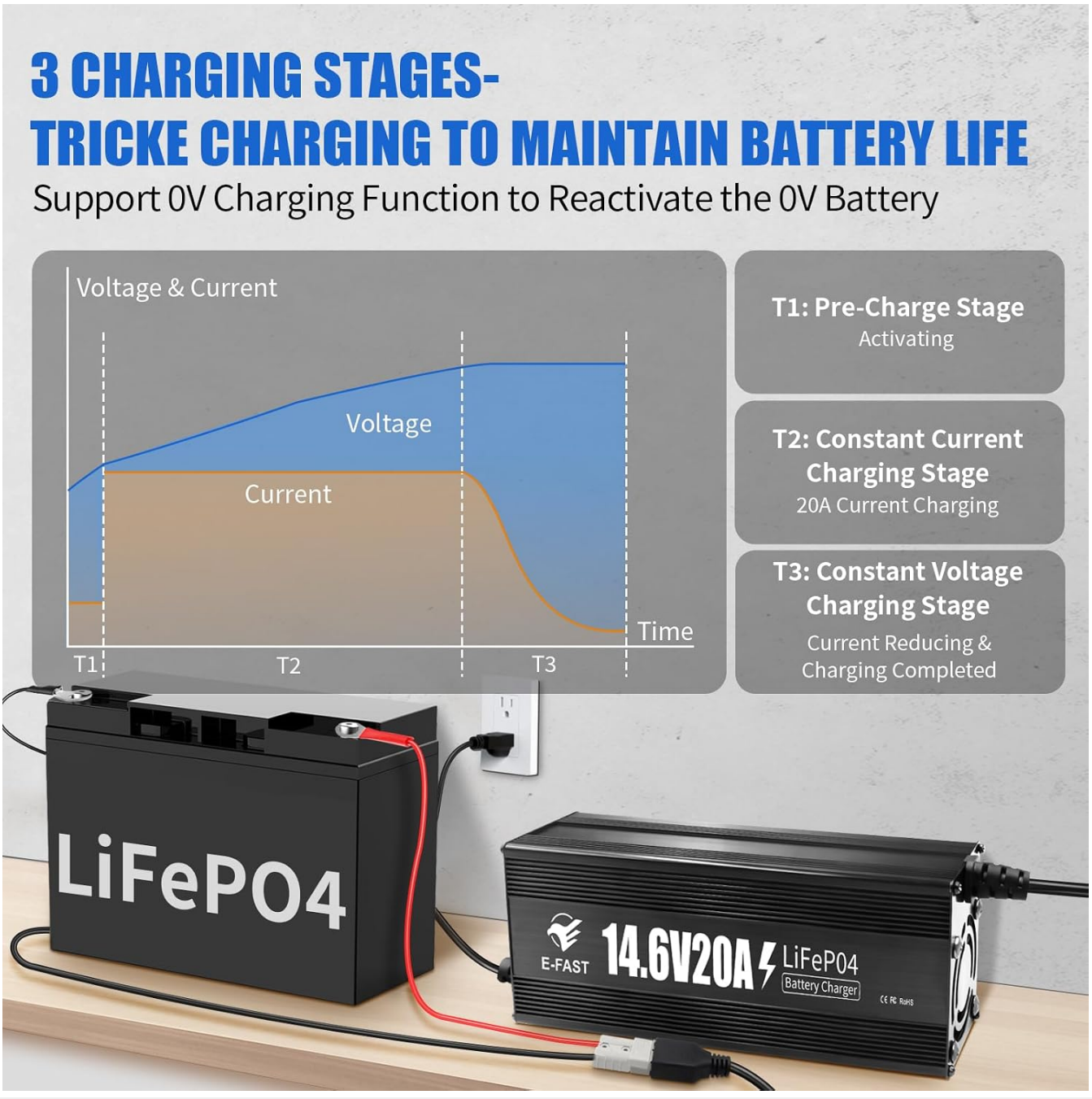

Image: Illustration of the 3-stage charging cycle.

6.2. LED Indicator

The charger features a clear LED indicator on the DC side to show the charging status:

- **Red LED:** Indicates the battery is currently charging.
- **Green LED:** Indicates the battery is fully charged.

6.3. Charging Time

The charging time depends on the battery's capacity and its initial state of charge. As a general guide:

- A 50Ah LiFePO4 battery will charge in approximately 2.5 hours.
- A 100Ah LiFePO4 battery will charge in approximately 5 hours.
- A 200Ah LiFePO4 battery will charge in approximately 10 hours.



Image: Estimated charging times for various battery capacities.

6.4. Video Demonstration

▶ **Watch video online**
20A Lithium Battery Charger

Video: A demonstration of the E-FAST 20A Lithium Battery Charger in use, showing connections and operation.

7. Maintenance

Proper maintenance ensures the longevity and optimal performance of your charger:

- **Cleaning:** Disconnect the charger from both AC power and the battery before cleaning. Wipe the exterior with a soft, dry cloth. Do not use solvents or abrasive cleaners.
- **Ventilation:** Regularly check that the cooling fan and ventilation openings are free from dust and debris. Blocked vents can lead to overheating.
- **Cable Inspection:** Periodically inspect the AC and DC cables for cuts, fraying, or damage. Replace if necessary.

- **Storage:** Store the charger in a cool, dry place when not in use. Avoid extreme temperatures and high humidity.

8. Troubleshooting

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

Problem	Possible Cause	Solution
Charger LED does not light up.	No AC power; Loose connections; Faulty outlet.	Check AC power cord connection; Ensure wall outlet is functional; Verify battery connections.
Charger LED is red, but battery is not charging or charges slowly.	Poor battery connection; Battery is severely depleted (0V); Battery BMS protection activated; Charger overheating.	Check battery terminal connections; Allow charger to attempt 0V activation; Ensure charger ventilation is clear; If battery BMS is active, consult battery manual.
Charger LED is green immediately after connecting.	Battery is already fully charged; Incorrect battery type connected.	Verify battery charge level; Ensure you are charging a 12V LiFePO4 battery.
Charger feels hot during operation.	Normal operation; Blocked cooling fan/vents; Overload.	Some heat is normal. Ensure cooling fan is running and vents are clear. If excessively hot, disconnect and allow to cool. Do not use if fan is not working.

If the problem persists after trying these solutions, please contact E-FAST customer support.

9. Warranty and Support

The E-FAST 12V 20A LiFePO4 Battery Charger comes with a **1-year warranty** from the date of purchase, covering defects in materials and workmanship under normal use. This warranty does not cover damage caused by misuse, accident, unauthorized modification, or improper installation.
For warranty claims, technical support, or any questions regarding your product, please contact E-FAST customer service through the retailer where you purchased the product or visit the official E-FAST website for contact information.

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