ROCKSOLAR Lithium Iron Phosphate Battery

User Manual – 12V 200Ah

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1. Product Overview

This manual provides important information regarding the safe use, installation, and maintenance of ROCKSOLAR lithium iron phosphate ($LiFePO_4$) batteries. Please read this manual carefully before use to ensure optimal performance and safety.

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2. Key Features of $LiFePO_4$ Battery

- Long service life with high cycle stability
- Lightweight and compact design
- Built-in Battery Management System (BMS) for enhanced protection
- High energy efficiency with stable output voltage
- Environmentally friendly and maintenance-free
- Superior safety compared to traditional battery technologies

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3. Applications

This battery is suitable for a variety of applications, including but not limited to:

- Solar energy storage systems
- Recreational vehicles (RVs) and campers
- Marine and boating applications
- Off-grid and backup power systems
- Portable power solutions

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4. Safety Instructions

To ensure safe operation, please follow these guidelines:

- Do not disassemble, puncture, or crush the battery
- Avoid exposure to fire, high temperatures, or water
- Do not short-circuit the battery terminals
- Use only compatible chargers designed for $LiFePO_4$ batteries
- Keep out of reach of children
- If the battery emits unusual odor, heat, or deformation, discontinue use immediately

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5. Battery Management System (BMS)

The battery is equipped with an advanced BMS that provides protection against:

- Overcharge
- Over-discharge
- Overcurrent
- Short circuit
- High and low temperature

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6. Charging Instructions

- Use a charger specifically designed for $LiFePO_4$ batteries
- Recommended charge voltage: **14.4V – 14.6V**
- Do not overcharge the battery
- Charge in a well-ventilated environment
- Disconnect the charger once fully charged

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7. Discharging Guidelines

- Avoid deep discharge beyond recommended limits
- Do not exceed maximum discharge current
- Recharge periodically if not in use

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8. Connection Methods

Series Connection

- Used to increase voltage

- Ensure batteries are identical (capacity, model, SOC)

Parallel Connection

- Used to increase capacity
- Use balanced wiring and equal cable lengths

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9. State of Charge (SOC)

Battery voltage corresponds to approximate SOC. Refer to SOC table for guidance.

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10. Storage Instructions

- Store in a cool, dry place (0°C to 25°C)
- Maintain 50%–70% charge during storage
- Recharge every 3–6 months

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11. Battery Activation

If the battery enters protection mode due to low voltage:

- Connect to a compatible charger
- Battery will automatically recover

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12. Troubleshooting

Issue	Possible Cause	Solution
Battery not charging	Protection mode	Connect charger
Low capacity	Load or aging	Check usage
No output	BMS protection	Recharge battery

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13. Wiring and Installation Tips

- Ensure correct polarity (+ / -)

- Use appropriate cable size
- Tighten connections securely
- Do not mix different battery types

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14. Maintenance

- Maintenance-free design
- Keep terminals clean and dry
- Inspect wiring periodically

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15. Warranty

ROCKSOLAR provides a limited warranty covering manufacturing defects under normal operating conditions.

Warranty does not cover:

- Improper use or installation
- Physical damage
- Unauthorized modification
- Failure to follow this manual

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16. Contact Information

For technical support or warranty service, please contact ROCKSOLAR.

🔋 17. Battery Specifications (12V 200Ah)

Electrical Specifications

Parameter	Value
Nominal Voltage	12.8V
Nominal Capacity	200Ah
Energy	2560Wh

Parameter	Value
Cycle Life	≥ 6000 cycles (80% DOD)
Internal Resistance	≤ 25 mΩ
Efficiency	≥ 95%

Charging Specifications

Parameter	Value
Charge Voltage	14.4V – 14.6V
Float Voltage	13.6V – 13.8V
Standard Charge Current	40A
Max Charge Current	100A
Charge Temperature	0°C to 45°C

Discharging Specifications

Parameter	Value
Continuous Discharge Current	200A
Peak Discharge Current	600A/3seconds
Discharge Cut-off Voltage	10V
Discharge Temperature	-20°C to 60°C

Mechanical Specifications

Parameter	Value
Dimensions (L×W×H)	~485 × 172 × 231 mm
Weight	~23 kg
Terminal Type	M8
Case Material	ABS

📊 18. State of Charge (SOC) vs Voltage

SOC (%)	Voltage (V)
100%	13.6 – 13.8
50%	13.0

SOC (%)	Voltage (V)
20%	12.5
0%	10.0

🌡️ 19. Temperature Performance

- Higher temperatures → improved discharge efficiency
- Lower temperatures → reduced available capacity

🔄 20. Cycle Life Performance

- Up to **6000 cycles at 80% DOD**
- Capacity retention ≥ 80% after full lifecycle

⚡ 21. Charging Profile (CC-CV)

- **CC Phase:** Constant current charging
- **CV Phase:** Constant voltage, current tapers

🧠 22. BMS Protection Parameters

Protection Type	Threshold
Overcharge	~14.6V
Over-discharge	~10V
Overcurrent	200A–600A
Short Circuit	Instant
High Temp	~60°C
Low Temp (charge)	~0°C

🔗 23. Connection Limits

Configuration	Maximum
Series	Up to 4 (48V system)
Parallel	Up to 16