

QUICK START GUIDE

Smart 3-Bank 5Amp Marine Battery Charger



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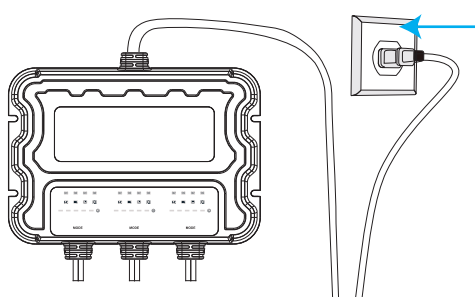
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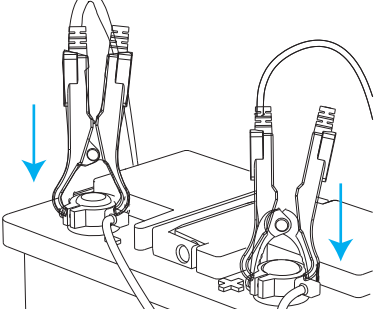
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>>> HOW TO CONNECT

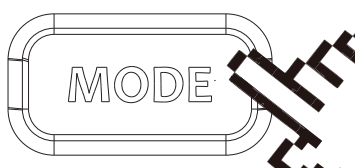
Step 1: Plug the AC power cord into a wall outlet.



Step 2: Connect the battery clips to the battery terminals: Red clip to positive (+), Black clip to negative (-).



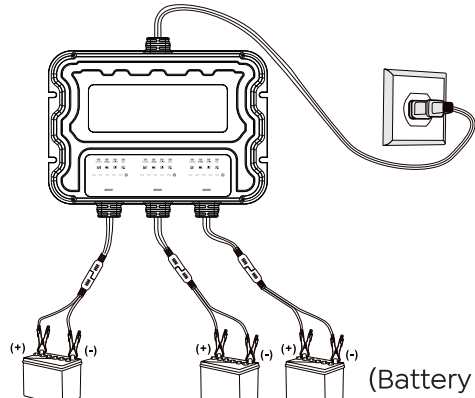
Step 3: Choose the suitable charging mode for your battery type from the 3 options: 12V SLA/AGM, 12V LITHIUM, or 12V CALCIUM. (The charger automatically recalls the last selected mode.)



Step 4: Connect the battery to the charger via the cable connection point.



Step 5: For multi-bank charging, you can also securely connect additional batteries to the dedicated auxiliary terminals for simultaneous and safe charging.



⚠ Safety Warning:

To prevent electric shock: If you want to stop charging, unplug the power plug before disconnecting the battery!

>>> POWER DISPLAY

Icon	Description
	Power display (red)
	The five-segment power display lights(green) indicate the charging progress at 20%, 40%, 60%, 80%, and 100%.
	Troubleshooting: All five lights blinking simultaneously indicates the charger cannot charge the battery. Possible scenarios: 1. The battery is fully charged, but its voltage remains below 14V. 2. The battery has been charging for 72 hours, but its voltage remains below 14V. This signifies a potential battery abnormality. Possible causes include: • The battery capacity exceeds 150Ah. • The battery is faulty or damaged. • The battery is simultaneously charging and discharging.

>>> LED PANEL POWER LEVEL REFERENCE TABLE

LED Indicator	LED Status Description	SLA/AGM	Lithium	Calcium
20%	Blinks when power <20%, steady on when ≥20%	(0.6V~12V) ±0.3V	(0.6V~12.5V) ±0.3V	(0.6V~12V) ±0.3V
40%	Blinks when power <40%, steady on when ≥40%	(12V~12.5V) ±0.3V	(12.5V~13V) ±0.3V	(12V~12.5V) ±0.3V
60%	Blinks when power <60%, steady on when ≥60%	(12.5V~13V) ±0.3V	(13V~13.3V) ±0.3V	(12.5V~13V) ±0.3V
80%	Blinks when power <80%, steady on when ≥80%	(13V~13.5V) ±0.3V	(13.3V~13.7V) ±0.3V	(13V~13.5V) ±0.3V
100%	Blinks when power <100%, steady on when fully charged or in maintenance mode	(13.5V~14.7V) ±0.3V	(13.7V~14.6V) ±0.3V	(13.5V~15.3V) ±0.3V

>>> PANEL DISPLAY

1. Charging Mode Reference Table

Icon	Charging Mode	Description
	12V SLA/AGM Mode	Used for 12V wet cell, enhanced flooded, maintenance-free, and AGM batteries.
	12V LITHIUM Mode	Used for 12V LiFePO4 (lithium iron phosphate) batteries. Only for batteries with a Battery Management System (BMS).
	12V CALCIUM Mode	Used for 12V calcium batteries.
	12V Repair Mode	Used to repair old, idle, damaged, stratified, or sulfated batteries. ① Repair activates automatically: The repair indicator turns on and power indicator light is in running state. ② Within 2 hours: If the charger begins normal charging and the power indicator light stays on steadily, it indicates a successful repair. ③ If after 2 hours the repair indicator blinks rapidly, it indicates the battery voltage is >14V and the repair has failed.
/	Force Mode	Used to revive and charge dead 12V batteries, providing an effective solution for their recovery. When the battery voltage is below 1V and cannot be charged (power indicator light is off). 1. Switch to the suitable battery mode. 2. Then press and hold the MODE button for 5 seconds. 3. The red power indicator will blink for 5 minutes. If activation is successful, normal charging will begin, indicated by the power indicator light staying on steadily.

2. Protection Mode Reference Table

Icon	Protection Mode	Description
	Over Voltage Protection	Triggered when battery voltage exceeds 15V. Charging stops and Over Voltage light illuminates. Reasons: ① Incorrect battery voltage connected (e.g., 24V battery). Please connect a 12V battery. ② If a 12V battery registers above 15V, the charger will automatically activate Repair Mode to attempt recovery of the over-voltage battery.
	Bad Battery Detection	Activated when battery fault is detected: ① Rapid Blinking: Initial voltage <12V, but battery reaches "full" charge within 30 minutes. ② Solid Light: Battery voltage remains below 10.5V after 2 hours of charging. ③ Slow Blinking: Battery voltage drops below 12V with in one minute after reaching "full" charge. All conditions indicate a faulty or damaged battery.
	Over-Temperature Protection	Due to the IP68 waterproof rating, the charger has no ventilation holes. Internal heat is dissipated through the casing, which may become warm during use—this is normal and safe. Protection Triggers: ①Current Reduction: Activates when internal temperature exceeds 85°C ②Charging Stops: Activates when temperature exceeds 100°C (Over-temperature indicator blinks) ③Auto-Recovery: Charging automatically resumes when temperature cools to safe levels
	Reverse Connection Protection	Reverse connection indicator blinks when battery clips are connected incorrectly. It does not damage the charger or battery, but no charging occurs—please reconnect with correct polarity (red to +, black to -).

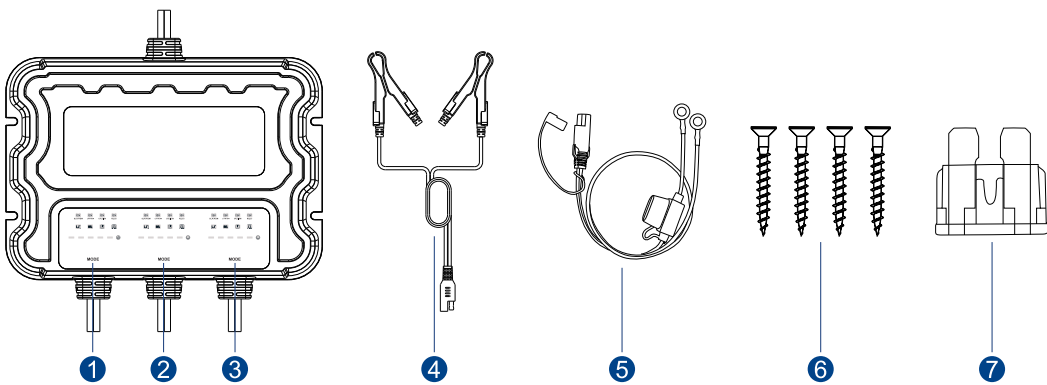
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>>> OVERVIEW



- 1 Battery Type Selection Button (Bank 1)
- 2 Battery Type Selection Button (Bank 2)
- 3 Battery Type Selection Button (Bank 3)
- 4 Battery Clips
- 5 Battery Connectors
- 6 Screws
- 7 Spare Fuses

3. Charging Methods and Descriptions

3-1. 12V SLA/AGM 9-Stage Charging Description

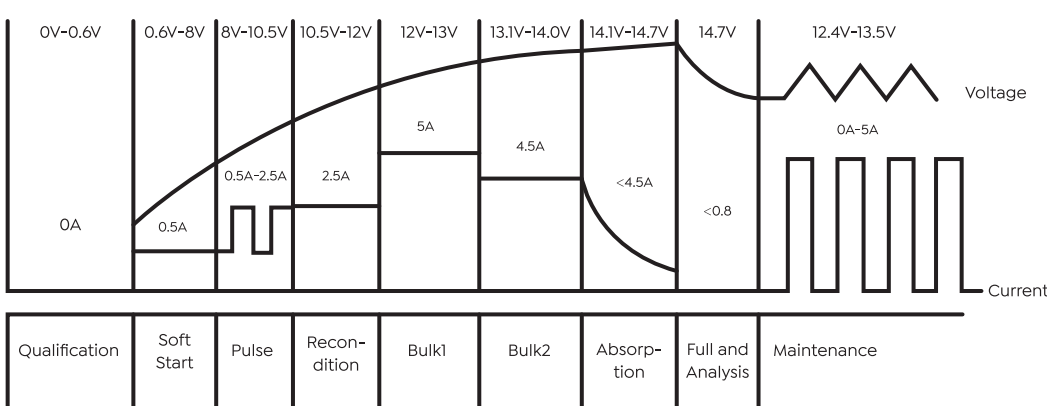
- ① **Qualification:** When the battery voltage is between 0V~0.3V, the power indicator remains steadily on. When the battery voltage is between 0.4V~0.6V, the power indicator icon blinks rapidly.
- ② **Soft Start:** When the battery voltage is between 0.6V~8V, the charging current is 0.5A.
- ③ **Pulse:** When the battery voltage is between 8V~10.5V, the battery is charged with a pulsed current, varying between 0.5A~2.5A.
- ④ **Recondition:** When the battery voltage is between 10.5V~12V, the charging current is 2.5A.
- ⑤ **Bulk 1:** When the battery voltage is between 12V~13V, the charging current is 5A.
- ⑥ **Bulk 2:** When the battery voltage is between 13.1V~14.0V, the charging current is 4.5A.
- ⑦ **Absorption:** When the battery voltage exceeds 14.1V, the charging current gradually decreases from 4.5A.
- ⑧ **Full:** Charging stops when the voltage reaches 14.7V and the current drops below 0.8A.

Analysis: If the battery voltage drops below 12V within one minute after a full charge, it is identified as faulty. The charger stops charging and the bad battery indicator blinks. Otherwise, it proceeds to the Maintenance stage.

- ⑨ **Maintenance:** To maintain the battery at full charge, the charger enters Float mode. The float voltage is 13.5V, and the current automatically adjusts between 0A~5A based on the battery's requirement.

Recharge: If the battery voltage drops below 12.4V, the charger will switch back to the normal charging mode to recharge the battery.

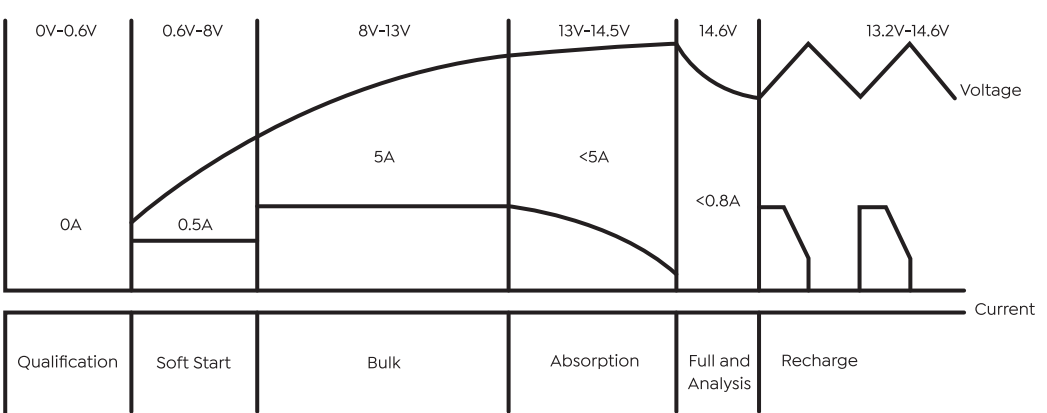
3-2. 12V SLA/AGM 9-Stage Charging Profile



3-3. 12V Lithium 6-Stage Charging Description

- ① **Qualification:** When the battery voltage is between 0V~0.3V, the power indicator remains steadily on. When the battery voltage is between 0.4V~0.6V, the power indicator icon blinks rapidly.
- ② **Soft Start:** When the battery voltage is between 0.6V~8V, the charging current is 0.5A.
- ③ **Bulk:** When the battery voltage exceeds 8V, it charges at the rated current of 5A.
- ④ **Absorption:** When the battery voltage exceeds 13V, the charging current begins to decrease and falls from 5A.
- ⑤ **Full:** Charging stops when the voltage reaches 14.6V and the current drops below 0.8A.
- ⑥ **Recharge:** If the battery voltage drops below 13.2V, the charger will switch back to the normal charging mode to recharge the battery.

3-4. 12V Lithium 6-Stage Charging Profile



3-5. 12V Calcium 9-Stage Charging Description

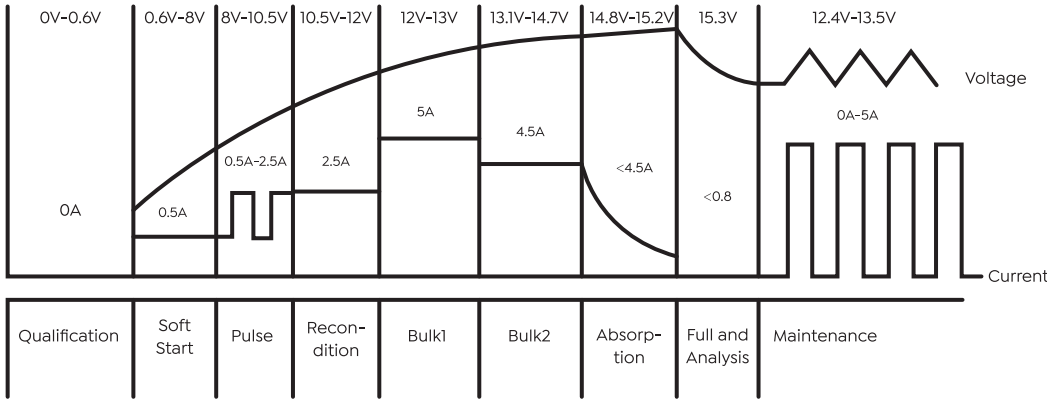
- ① **Qualification:** When the battery voltage is between 0V~0.3V, the power indicator remains steadily on. When the battery voltage is between 0.4V~0.6V, the power indicator icon blinks rapidly.
- ② **Soft Start:** When the battery voltage is between 0.6V~8V, the charging current is 0.5A.
- ③ **Pulse:** When the battery voltage is between 8V~10.5V, the battery is charged with a pulsed current, varying between 0.5A~2.5A.
- ④ **Recondition:** When the battery voltage is between 10.5V~12V, the charging current is 2.5A.
- ⑤ **Bulk 1:** When the battery voltage is between 12V~13V, the charging current is 5A.
- ⑥ **Bulk 2:** When the battery voltage is between 13.1V~14.7V, the charging current is 4.5A.
- ⑦ **Absorption:** When the battery voltage exceeds 14.7V, the charging current gradually decreases from 4.5A.
- ⑧ **Full:** Charging stops when the voltage reaches 15.3V and the current drops below 0.8A.

Analysis: If the battery voltage drops below 12V within one minute after a full charge, it is identified as faulty. The charger stops charging and the bad battery indicator blinks. Otherwise, it proceeds to the Maintenance stage.

- ⑨ **Maintenance:** To maintain the battery at full charge for extended periods, the charger enters maintenance mode. The maintenance voltage is 13.5V, and the current automatically adjusts between 0A~5A based on the battery's requirement.

Recharge: If the battery voltage drops below 12.4V, the charger will switch back to the normal charging mode to recharge the battery.

3-6. 12V Calcium 9-Stage Charging Profile



>>> CHARGING TIME

Battery Size (For 15Ah~150Ah)	Time (hours-h)	
	12V	12V
15Ah	3.3	2.3
30Ah	6.6	4.5
50Ah	11	7.5
80Ah	17.6	12
120Ah	26.4	18
150Ah	36	22.5
Empty Battery to 80% Charge		50% DOD Battery to Full Charge

>>> IMPORTANT SAFETY INSTRUCTIONS

1. Always select the correct charging mode (12V SLA/AGM, LITHIUM, or CALCIUM) that matches your battery's chemistry to prevent damage and hazards.
2. Before use, confirm the charger's voltage (12V) is compatible with your battery. Do not charge 24V batteries.
3. Wear complete eye protection and avoid placing metal objects near the battery to prevent short circuits and sparks.
4. If battery acid contacts skin or eyes, rinse immediately with plenty of clean water for at least 10 minutes and seek immediate medical attention.
5. Always disconnect the charger by pulling the plug from the outlet, never by pulling the cable.
6. Ensure the charger, plug, battery, and surrounding area are completely dry before charging, despite the IP68 waterproof rating.
7. Charge in a well-ventilated area and keep the charger as far from the battery as the cables allow to avoid exposure to corrosive gases.
8. Do not use the charger or battery if they show any damage, such as cracks, damaged cables, or exposed wiring.
9. Consult your doctor before use if you have a pacemaker, defibrillator, or other medical electronic device.
10. Operate and store the charger only within the specified temperature range of -4°F to 104°F (-20°C to 40°C).