

## LVYUAN 20A-PRO black

# LVYUAN 12V/24V Smart Battery Charger

Model: 20A-PRO black

## INTRODUCTION

This manual provides comprehensive instructions for the safe and efficient operation of your LVYUAN 12V/24V Smart Battery Charger, Model 20A-PRO black. This intelligent charger is designed for various battery types, including lead-acid (AGM, GEL, SLA, VRLA) and 12V LiFePO4 batteries, offering multi-stage charging, maintenance, and repair functions. Please read this manual thoroughly before first use to ensure proper operation and to prevent damage to the unit or your battery.

## SAFETY INFORMATION

**WARNING: Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electric shock, fire, and/or serious injury.**

- Always connect the charger to the battery terminals correctly: positive to positive, negative to negative.
- Ensure adequate ventilation during charging. Batteries can produce explosive gases.
- Do not charge frozen batteries. Allow them to thaw before charging.
- Avoid sparks or flames near the battery during charging.
- Disconnect the AC power before connecting or disconnecting the charging clamps.
- This charger is not compatible with 24V LiFePO4 batteries.
- Keep out of reach of children.
- Do not expose the charger to rain or wet conditions.

This charger features multiple protection functions including short circuit protection, overcurrent protection, cooling system, reverse polarity protection, over-charge protection, low-voltage protection, and over-temperature protection.

# SMART MULTI-PROTECTION



Short-circuit protection



Reverse-polarity protection



Over-voltage protection



Over-charge protection



Low-voltage protection



Over-temperature protection



Image: Smart Multi-Protection features of the Lvyuan battery charger.

## PRODUCT OVERVIEW



Image: Front view of the Lvyuan Smart Battery Charger with its included battery clamps. Familiarize yourself with the components and controls of your Lvyuan Smart Battery Charger.

# PRODUCT DESCRIPTION



Image: Detailed view of the LVYUAN Smart Battery Charger's display and controls.

- **Intelligent Digital LED Display:** Shows ambient temperature, voltage, current, and remaining battery capacity.
- **Power Switch:** Turns the unit on/off.
- **Cooling Fan:** Activates when internal temperature exceeds 114°F/45°C to dissipate heat.
- **Start/Stop Button:** Initiates or halts the charging process.
- **AMPS (Current Selection) Button:** Selects charging current (5A/10A/20A).
- **Battery Selection Button:** Chooses battery type (LiFePO4, GEL, AGM, STD).
- **Repair Mode Button (Long Press):** Activates the battery repair function.
- **Input Power Cord:** Connects to AC power (Length: 52 inches / 130 cm).
- **Output Clip Cord:** Connects to battery terminals (Length: 33 inches / 83 cm).



Image: Dimensions and cable lengths of the LVYUAN Smart Battery Charger.

## SETUP

1. **Placement:** Place the charger on a stable, flat surface in a well-ventilated area, away from direct sunlight, heat sources, or moisture.
2. **Battery Preparation:** Ensure the battery terminals are clean and free of corrosion. If necessary, clean them with a wire brush.
3. **Connect to Battery:**
  - Connect the **red (+)** charging clamp to the **positive (+)** battery terminal.
  - Connect the **black (-)** charging clamp to the **negative (-)** battery terminal.
  - Ensure a secure connection.
4. **Connect to Power:** Plug the charger's AC power cord into a standard electrical outlet (100-240V AC, 50/60Hz). The charger will power on and display current battery status.

## OPERATING INSTRUCTIONS

The LVYUAN Smart Battery Charger operates with a 6-stage smart charging process for efficiency and

safety.

# 6-STAGE SMART CHARGING MORE EFFICIENT AND SAFER

- 1 Soft Start
- 2 Bulk Charge
- 3 Absorption
- 4 Battery Test
- 5 Recondition
- 6 Float

## Fully automatic

Auto detects battery condition, desulfates, and repairs automatically



Image: The 6-stage smart charging process of the Lvyuan charger.

### 1. Automatic Detection and Initial Display

Once connected to the battery and power, the charger will automatically detect the battery voltage (12V or 24V) and display the current battery status (voltage, current, capacity, and ambient temperature) on the LED screen.

### 2. Selecting Charging Current (AMPS)

Press the **AMPS** button to cycle through available charging currents: 5A, 10A, or 20A. The 20A setting provides faster charging for compatible batteries. The charger will automatically adjust the current based on battery condition to maintain battery life.

### 3. Selecting Battery Type

Press the **Battery Selection** button to choose the correct battery type for optimal charging:

- **LiFePO4:** For 12V Lithium Iron Phosphate batteries. (Note: Not compatible with 24V LiFePO4 batteries).
- **GEL:** For Gel batteries.

- **AGM:** For Absorbed Glass Mat batteries.
- **STD:** For standard Lead-Acid (WET/MF/EFB/SLA/VRLA) batteries.

## **ALL-IN-ONE CHARGER**

Designed for 12V/24V Lead-acid battery(WET/MF /EFB/GEL/AGM) and **12V LiFePO4 battery**  
(Note:Not compatible with 24V LifePO4 battery)



Image: The Lvyuan charger supports various 12V/24V lead-acid and 12V LiFePO4 battery types.

### **4. Starting and Stopping Charge**

Press the **START/STOP** button to begin the charging process. The charger will automatically proceed through its multi-stage charging cycle. To stop charging at any time, press the **START/STOP** button again.

### **5. Repair Mode (0V Start)**

If a battery is deeply discharged (down to 0V) or has not been used for a long time, the repair mode can be used to attempt to recondition it. Long press the **Repair Mode** button to activate this function. This mode aims to remove sulfate deposits and restore battery health, allowing charging to commence even from very low voltage states.

## **BRING YOUR BATTERIES BACK TO LIFE** **STARTING VOLTAGE DOWN TO 0V**

### **AUTO DESULFURIZATION**

Safely remove sulfate deposits on battery lead plates and restore good battery status

### **AUTO REPAIR**

Automatically repairs and reverses battery damage

### **IMPROVED PERFORMANCE**

Provides stronger engine starts and extended battery life



Image: The charger's ability to recondition and repair batteries, including 0V start.

## **6. Automatic Shut-off and Trickle Charging**

The charger will automatically turn off when the battery is fully charged. It will then enter a trickle charging (float) mode to maintain the battery at optimal charge without overcharging. Charging will automatically restart if the battery voltage drops below a certain level.



Image: The charger's battery maintenance and zero overcharge capabilities.

## **7. Temperature Compensation**

The charger features intelligent temperature compensation, optimizing charging performance for various climates. It adjusts charging parameters based on ambient temperature to ensure safe and efficient charging in both hot and cold environments.

# TEMP COMPENSATION

OPTIMIZED FOR ANY CLIMATE



Image: Temperature compensation for optimized charging in all climates.

## MAINTENANCE

- **Cleaning:** Disconnect the charger from power and battery before cleaning. Wipe the exterior with a soft, damp cloth. Do not use harsh chemicals or abrasives.
- **Storage:** Store the charger in a cool, dry place when not in use. Ensure cables are neatly coiled and not kinked.
- **Cable Inspection:** Regularly inspect the power cord and charging cables for any signs of damage, fraying, or exposed wires. Do not use if damaged.
- **Cooling Fan:** Ensure the cooling fan vents are not obstructed to allow proper heat dissipation. The intelligent temperature control system will activate the fan when needed.

## Intelligent temperature control

when the internal temperature is higher than 114°F/45°C, the cooling fan will start to rotate to dissipate the heat.

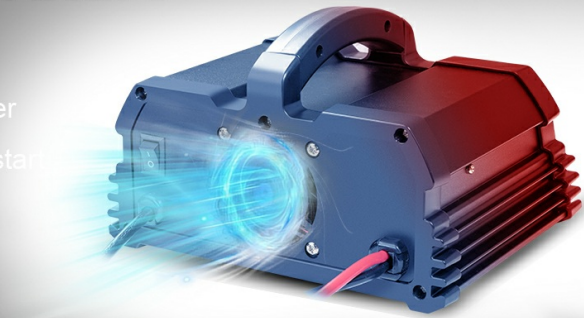


Image: Intelligent temperature control and cooling fan operation.

## TROUBLESHOOTING

Problem	Possible Cause	Solution
Charger does not turn on.	No power from outlet; loose connection; faulty power cord.	Check power outlet; ensure power cord is securely plugged in; inspect power cord for damage.
Charger not charging battery.	Incorrect battery connection (reverse polarity); battery too damaged; incorrect battery type selected.	Verify correct positive/negative connections; try Repair Mode for deeply discharged batteries; ensure correct battery type is selected on the charger.
Charging current fluctuates or is lower than selected.	Normal operation for smart charger; battery nearing full charge; battery condition.	This is normal. The charger intelligently adjusts current to protect battery life, especially when starting or nearing full charge.
Charger gets warm during operation.	Normal operation; cooling fan may be active.	Ensure adequate ventilation around the charger. The cooling fan will activate automatically if needed.
Display shows error code or unusual readings.	Internal fault; severe battery issue.	Disconnect from power and battery, wait a few minutes, then reconnect. If issue persists, contact customer support.

## SPECIFICATIONS

- **Model:** 20A-PRO black
- **Input Voltage:** 100-240V AC, 50/60Hz
- **Output Voltage:** 12V DC / 24V DC (Auto-detection)
- **Output Current:** 12V/20A, 24V/10A (Selectable: 5A/10A/20A)
- **Battery Capacity:** 2Ah - 150Ah

- **Battery Types:** Lead-Acid (AGM, GEL, SLA, VRLA, WET, MF, EFB), 12V LiFePO4 (Not for 24V LiFePO4)
- **Charging Stages:** 6-stage smart charging (Soft Start, Bulk Charge, Absorption, Battery Test, Recondition, Float)
- **Protection Features:** Short-circuit, Overcurrent, Cooling System, Reverse Polarity, Over-charge, Low-voltage, Over-temperature
- **Dimensions:** 6.88 x 7.87 x 4.5 inches (17.5 x 20 x 11.5 cm)
- **Item Weight:** 3.86 pounds (1.75 kg)
- **Operating Temperature:** Optimized for various climates (Temp Compensation)
- **Certifications:** UL (as per product data)

## WARRANTY AND SUPPORT

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For warranty information and technical support, please refer to the contact details provided with your purchase or visit the official LVYUAN website. Keep your purchase receipt as proof of purchase for any warranty claims.

**Manufacturer:** Guangzhou LVYUAN Technology Co., Ltd.

**Country of Origin:** China

For further assistance, please contact LVYUAN customer service.

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