



# USER MANUAL

Voltium Energy® SuperCharge 2, 3 and 4 Bank IP67 Charger

# Thank you for purchasing the **Voltium Energy® SuperCharge Charger.**

For the operation, maintenance, and repair of this charger, please strictly follow the guidelines provided in this manual. Voltium Energy® clarifies that they bear no responsibility for the results of its operation. In the event of non-compliance with these specifications, we cannot be held accountable for any operational consequences.

## **SAVE THESE INSTRUCTIONS**

This manual contains essential safety and operating instructions. To minimize the risk of injury, please carefully read all the instructions and follow them every time you use this product.

## **TABLE OF CONTENTS**

TECHNICAL SPECIFICATIONS .....	4
FEATURES .....	6
INTRODUCTION .....	7
USAGE INSTRUCTIONS .....	7
HOW IT OPERATES .....	8
OPERATION METHOD .....	12
PROTECTION FUNCTION .....	13
ASSEMBLY AND DIMENSION .....	13
WARNING .....	14
MAINTENANCE .....	14
SAFETY INSTRUCTIONS .....	15





### **VE-SC-IP67-2BANK-12V20A**

#### **IP67 Waterproof 2-Bank Battery Charger**

- ✓ Charging for two 12V LiFePO4 / Lead Acid / AGM batteries
- ✓ Activation Function for low voltage LiFePO4 batteries



### **VE-SC-IP67-4BANK-12V20A**

#### **IP67 Waterproof 4-Bank Battery Charger**

- ✓ Charging for four 12V LiFePO4 / Lead Acid / AGM batteries
- ✓ Activation Function for low voltage LiFePO4 batteries



### **VE-SC-IP67-3BANK-2x12V10A/1x24V10A**

#### **IP67 Waterproof 3-Bank Battery Charger**

- ✓ Charging for 2x12V & 1x24V LiFePO4 / Lead Acid / AGM batteries
- ✓ Activation Function for low voltage LiFePO4 batteries



### **VE-SC-IP67-3BANK-2x12V10A/1x36V10A**

#### **IP67 Waterproof 3-Bank Battery Charger**

- ✓ Charging for 2x12V LiFePO4 / Lead Acid / AGM & 1x36V LiFePO4 batteries
- ✓ Activation Function for low voltage LiFePO4 batteries

# TECHNICAL SPECIFICATIONS

<b>Product Name</b>	2-Bank Battery Charger 2x12V 20A	4-Bank Battery Charger 4x12V 20A
<b>Model</b>	VE-SC-IP67-2BANK-12V20A	VE-SC-IP67-4BANK-12V20A
<b>Nominal AC Input Voltage</b>	220-240V AC	220-240V AC
<b>Nominal AC Input Frequency</b>	50Hz	50Hz
<b>Output</b>	2*12V/20A	4*12V/20A
<b>Product Size</b>	304*245*99mm	556*245*99mm
<b>Charging Battery Type</b>	Each bank is equipped with a MODE button for selecting the battery type: 12V LiFePO4, 12V Wet, and 12V AGM. There are a total of 2 banks.	Each bank is equipped with a MODE button for selecting the battery type: 12V LiFePO4, 12V Wet, and 12V AGM. There are a total of 4 banks.
<b>LED Indicators</b>	Power, Battery Type & Charging Status LED Indicators	
<b>Activate Function</b>	The Wake Up Function for Low Voltage LiFePO4 Battery can be initiated by pressing the mode button on the bank panel for 3-5 seconds.	
<b>Full Cut-off Voltage</b>	14.1V-14.4V for 12V Lead Acid Battery & 14.4V-14.7V for 12V AGM / LiFePO4 Battery	
<b>Cooling Type</b>	The product features an aluminum stretched plate and a waterproof cooling fan at the bottom for enhanced heat dissipation.	
<b>Ingress Protection</b>	Filled with pure epoxy resin for high waterproof level IP67	
<b>Circuit Protection</b>	Short-circuit Protection, Reverse Connection Protection, Overcharge Protection, Overtemperature Protection	
<b>Working Temperature Range</b>	-10°C~40°C	
<b>Nominal Working Temperature</b>	25°C	
<b>Relative Humidity</b>	5%~95%	

# TECHNICAL SPECIFICATIONS

<b>Product Name</b>	3-Bank Battery Charger 2x12V 10A / 1x 24V 10A	3-Bank Battery Charger 2x12V 10A / 1x 36V 10A
<b>Model</b>	VE-SC-IP67-3BANK- 2x12V10A/1x24V10A	VE-SC-IP67-3BANK- 2x12V10A/1x36V10A
<b>Nominal AC Input Voltage</b>	220-240V AC	220-240V AC
<b>Nominal AC Input Frequency</b>	50Hz	50Hz
<b>Output</b>	2*12V/10A 1*24V/10A	2*12V/10A 1*36V/10A
<b>Product Size</b>	304*245*99mm	361*245*99mm
<b>Charging Battery Type</b>	Each bank is equipped with a MODE button for selecting the battery type: 12V LiFePO4, 12V Wet and 12V AGM. 24V LiFePO4, 24V Wet and 24V AGM.	Each bank except the 36V is equipped with a MODE button for selecting the battery type. 12V LiFePO4, 12V Wet, 12V AGM. 36V only is for LiFePO4 batteries
<b>LED Indicators</b>	Power, Battery Type & Charging Status LED Indicators	
<b>Activate Function</b>	The Wake Up Function for Low Voltage LiFePO4 Battery can be initiated by pressing the mode button on the bank panel for 3-5 seconds.	
<b>Full Cut-off Voltage</b>	14.1V-14.4V for 12V Lead Acid Battery & 14.4V-14.7V for 12V AGM / LiFePO4 Lithium Battery.  28.3V-28.9V for 24V Lead Acid Battery & 28.8V-29.4V for 24V AGM / LiFePO4 Lithium Battery.	14.1V-14.4V for 12V Lead Acid Battery & 14.4V-14.7V for 12V AGM / LiFePO4 Lithium Battery.  43.3V-44.2V for 36V Lithium Battery.
<b>Cooling Type</b>	The product features an aluminum stretched plate and a waterproof cooling fan at the bottom for enhanced heat dissipation.	
<b>Ingress Protection</b>	Filled with pure epoxy resin for high waterproof level IP67	
<b>Circuit Protection</b>	Short-circuit Protection, Reverse Connection Protection, Overcharge Protection, Overtemperature Protection	
<b>Working Temperature Range</b>	-10°C~40°C	
<b>Nominal Working Temperature</b>	25°C	
<b>Relative Humidity</b>	5%~95%	

## FEATURES

- ✔ IP67 Rating;
- ✔ Capable of charging 2-4 batteries simultaneously (Quantity varies by model);
- ✔ Built with marine-grade construction;
- ✔ Equipped with an aluminum stretched plate and waterproof cooling fan at the bottom for efficient heat dissipation;
- ✔ Includes LED indicators to display battery charging percentage;
- ✔ Provides fast charging at 10A or 20A for each bank;
- ✔ Features a wake-up function for low voltage in LiFePO4 batteries;
- ✔ Automatically initiates small current charging after 24 hours of full charge for LiFePO4 batteries;
- ✔ Short-circuit protection;
- ✔ Reverse connection protection;
- ✔ Overcharge protection;
- ✔ Over-temperature protection.

# INTRODUCTION

The Voltium Energy® SuperCharge IP67 Waterproof 2, 3 and 4 bank battery charger is specifically designed to charge 12V, 24V & 36V LiFePO4, Lead acid, and AGM batteries. This charger enhances battery life and reliability through its built-in protection features. It can charge in serial connected 12V batteries (of the same model) to full capacity for a balanced battery setup or simultaneously charge various 12V, 24V and 36V batteries.

# USAGE INSTRUCTIONS

## CONNECTING THE CHARGER:

- ✔ Before charging, plug the AC cord into the electrical outlet first.
- ✔ Next, select the battery type by pressing the MODE button.
- ✔ Finally, connect the DC output ring terminals.
- ✔ Once the correct connections are made, the charger will begin to output current. Simultaneously, the charging status LED Indicators will display the battery charging percentage.

## DISCONNECTING THE CHARGER:

- ✔ After charging is complete, disconnect the DC output ring terminals first.
- ✔ Then, unplug the AC cord from the electrical outlet.

## CHANGING BATTERY TYPE DURING CHARGING:

- ✔ If you need to change the charging battery type while charging is in progress:
- ✔ First, disconnect the DC output ring terminals.
- ✔ Press the MODE button to select the new charging battery type.
- ✔ Finally, reattach the ring terminals on the output cables to the battery terminals.

*These revised instructions provide clearer guidance on how to use the charger effectively and safely.*

# HOW IT OPERATES

For the operation, maintenance, and repair of this charger, please strictly follow the guidelines provided in this manual. Voltium Energy® clarifies that they bear no responsibility for the results of its operation. In the event of non-compliance with these specifications, we cannot be held accountable for any operational consequences.





## **CHARGING 12V LIFEPO4 BATTERY:**

1. Once the 12V LiFePO4 battery is correctly connected to the charger's output cable, the charger will enter a 20A normal rated current charging mode.
2. Throughout the charging process, the LED Power Indicator will remain solidly lit. As the battery voltage increases, the charging current gradually decreases.
3. When the charging current automatically drops to  $1.5A \pm 0.5A$ , the 100% LED indicator will illuminate solid green, indicating a fully charged battery.
4. After the LiFePO4 battery reaches full charge, it will no longer have trickle charging current, and the green LED indicator will remain solid during this phase.
5. Following a full charge for 24 hours, the charger will apply a  $1.5A \pm 0.5A$  charging current to maintain the battery.
6. Once disconnected from the battery, the charger will return to a standby state, with all four Charging Status LED Indicators turned off. The LED Power Indicator and Battery Type LED Indicator will remain illuminated.

## **CHARGING 12V LEAD ACID / AGM BATTERY:**

1. Once the 12V Lead Acid / AGM battery is correctly connected to the charger's output cable, the charger will enter a 20A normal rated current charging mode;
2. Throughout the charging process, the LED Power Indicator remains solidly on. As the battery voltage increases, the charging current gradually decreases;
3. When the charging current automatically drops to  $1.5A \pm 0.5A$ , the 100% LED indicator light will turn solid green, indicating a fully charged battery;
4. When the charging current drops to  $0.8A \pm 0.3A$ , the battery will stop charging. During this phase, the 100% LED indicator light remains solid green;
5. After reaching a full charge, if the battery voltage drops to  $12.9V \pm 0.2V$ , a  $1.5A \pm 0.5A$  current is used for trickle charging;
6. After disconnecting from the battery, the charger will return to standby mode with all four Charging Status LED Indicators turned off. The LED Power Indicator and Battery Type LED Indicator will remain illuminated.







CHARGING STATUS LED INDICATORS	EXPLANATION <span style="float: right; border: 1px solid black; padding: 2px;">12V</span>
25% Red LED 	The 25% Charge LED will light up when the battery voltage is lower than 12.5V.
50% Red LED 	The 50% Charge LED will light up when the battery voltage is higher than 12.5V but lower than 13.7V.
75% Red LED 	The 75% Charge LED will light up when the battery voltage is higher than 13.7V.
100% Red LED 	All the Charge LEDs will light up when fully charged.

**CHARGING 24V LIFEPO4 BATTERY:**

1. Once the 24V LiFePO4 battery is correctly connected to the charger's output cable, the charger will enter a 10A normal rated current charging mode.
2. Throughout the charging process, the LED Power Indicator will remain solidly lit. As the battery voltage increases, the charging current gradually decreases.
3. When the charging current automatically drops to  $0.8A \pm 0.3A$ , the 100% LED indicator will illuminate solid green, indicating a fully charged battery.
4. After the LiFePO4 battery reaches full charge, it will no longer have trickle charging current, and the green LED indicator will remain solid during this phase.
5. Following a full charge for 24 hours, the charger will apply a  $2.0A \pm 1A$  charging current to maintain the battery.
6. Once disconnected from the battery, the charger will return to a standby state, with all four Charging Status LED Indicators turned off. The LED Power Indicator and Battery Type LED Indicator will remain illuminated.

**CHARGING 24V LEAD ACID / AGM BATTERY:**





1. Once the 24V Lead Acid / AGM battery is correctly connected to the charger's output cable, the charger will enter a 10A normal rated current charging mode;
2. Throughout the charging process, the LED Power Indicator remains solidly on. As the battery voltage increases, the charging current gradually decreases;
3. When the charging current automatically drops to  $0.8A \pm 0.3A$ , the 100% LED indicator light will turn solid green, indicating a fully charged battery;
4. When the charging current drops to  $0.8A \pm 0.3A$ , the battery will stop charging. During this phase, the 100% LED indicator light remains solid green;
5. After reaching a full charge, if the battery voltage drops to  $25.6V \pm 0.2V$ , a  $0.8A \pm 0.3A$  current is used for trickle charging;
6. After disconnecting from the battery, the charger will return to standby mode with all four Charging Status LED Indicators turned off. The LED Power Indicator and Battery Type LED Indicator will remain illuminated.

CHARGING STATUS LED INDICATORS	EXPLANATION	<b>24V</b>
25% Red LED 	The 25% Charge LED will light up when the battery voltage is lower than 25.0V.	
50% Red LED 	The 50% Charge LED will light up when the battery voltage is higher than 25.0V but lower than 27.4V.	
75% Red LED 	The 75% Charge LED will light up when the battery voltage is higher than 27.4V.	
100% Red LED 	All the Charge LEDs will light up when fully charged.	

**CHARGING 36V LIFEPO4 BATTERY:**

1. Once the 36V LiFePO4 battery is correctly connected to the charger's output cable, the charger will enter a 10A normal rated current charging mode.
2. Throughout the charging process, the LED Power Indicator will remain solidly lit. As the battery voltage increases, the charging current gradually decreases.
3. When the charging current automatically drops to  $1.0A \pm 0.3A$ , the 100% LED indicator will illuminate solid green, indicating a fully charged battery.

4. After the LiFePO4 battery reaches full charge, it will no longer have trickle charging current, and the green LED indicator will remain solid during this phase.
5. Following a full charge for 24 hours, the charger will apply a  $2.0A \pm 1A$  charging current to maintain the battery.
6. Once disconnected from the battery, the charger will return to a standby state, with all four Charging Status LED Indicators turned off. The LED Power Indicator and Battery Type LED Indicator will remain illuminated.

CHARGING STATUS LED INDICATORS	EXPLANATION
25% Red LED 	<div style="float: right; border: 1px solid white; padding: 2px; font-weight: bold; color: white;">36V</div> The 25% Charge LED will light up when the battery voltage is lower than 37.0V.
50% Red LED 	The 50% Charge LED will light up when the battery voltage is higher than 37.0V but lower than 39.0V.
75% Red LED 	The 75% Charge LED will light up when the battery voltage is higher than 39.0V.
100% Red LED 	All the Charge LEDs will light up when fully charged.

**“ACTIVATE” MODE BUTTON:**

Inside the LiFePO4 battery, there’s a low voltage protection PCBA. When the low-voltage protection activates, the battery won’t provide voltage output at its terminals, and the charger can’t charge it. To initiate “ACTIVATE” charging:

1. Connect the AC cord to an electrical outlet;
2. Press the MODE button to select the LiFePO4 battery charging mode;
3. Continuously press the MODE button on the bank panel for 3-5 seconds. The LiFePO4 Battery Type LED Indicator will flash slowly;
4. Attach the ring terminals on the output cables to the battery terminals correctly;
5. Once connected, the 12V LiFePO4 battery bank charger will deliver a pulse output of  $1.5A \pm 0.5A$  to charge the 12V LiFePO4 battery until it exits low-voltage protection. The charger will enter normal charging mode;
6. During the pulse charging state, if you continuously press and hold the button on the panel for 3-5 seconds, it will exit the “ACTIVATE” charging function, and the charger will return to standby mode, with only the LED Power Indicator illuminated.

# OPERATION METHOD

## 1. MATCHING THE CHARGER WITH THE AC POWER GRID AND BATTERY PACK:

Before using the charger, ensure that the AC power grid voltage and frequency fall within the specified range indicated on the “Basic Parameters” label. If the voltage is lower than the nominal input voltage (less than 220V), the charger will automatically shut down for protection and affecting battery charging performance.

Additionally, for compatibility between the charger and the battery pack, refer to the battery specifications provided on the “Basic Parameters” label on the charger. Confirm that the battery type (12V LiFePO4 / Lead Acid / AGM Batteries) and the battery pack’s rated voltage (V) match the information on the label. Mismatched settings can result in undercharging, overcharging, or even permanent damage to the battery pack or charger.

## 2. AC POWER WIRE, DC CHARGING CABLE POLARITY, AND PRECAUTIONS:

**AC input wire:** On the side of the charger, you will find markings for I, N, and Earth on the input cable plug. Please ensure correct identification. The I, N, and Earth markings on the AC plug must correspond with those of the socket outlet.

**Charging output cable:** The charger’s output cable is equipped with distinctive colors. The red cable connects to the battery’s “+” (positive), while the black cable connects to the battery’s “-” (negative). Use the M8 ring terminals on the charging output cable to connect them to the corresponding battery terminals. It is crucial that the polarity of the charging socket matches the polarity of the charging plug; otherwise, charging will not be possible. Always verify this before using the charger.

*Following these guidelines will help ensure safe and efficient charging of your batteries.*



# PROTECTION FUNCTION

## **SHORT-CIRCUIT OR REVERSE CONNECTION PROTECTION:**

When the output terminals are short-circuited or reverse-connected to the battery, the charger will not provide any DC output. In this case, the LED Power Indicator will flash rapidly.

## **NO-LOAD PROTECTION:**

If the batteries are not connected, the charger will not output any DC current.

## **OVERTEMPERATURE PROTECTION FUNCTION:**

When the temperature inside the charger's radiator reaches or exceeds  $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ , the charger will automatically reduce the output current as a safety measure against overheating. As the internal temperature decreases, the charging current will gradually increase, eventually returning to the maximum of 10A or 20A. The charger includes a waterproof cooling fan mounted externally. This fan operates when the temperature of the bottom aluminum stretched plate reaches or exceeds  $50^{\circ}\text{C}\pm 5^{\circ}\text{C}$  and stops when it falls below  $40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ .

## **AUTOMATIC SHUTDOWN AFTER FULL CHARGING:**

The charger features an automatic shutdown function once the battery reaches a full charge, following the charger's pre-programmed parameters. The charger will only initiate a new charging cycle when AC power is disconnected or when the battery requires further charging, ensuring optimal battery health and safety.

# ASSEMBLY AND DIMENSION

- ✓ For secure installation, it is advisable to affix the charger in a stable position.
- ✓ Ensure there is a clearance of at least 30mm around the charger for safety.
- ✓ To secure the charger, use M6 screws with a recommended hole diameter of 6.5mm in the bottom aluminum stretched plate.
- ✓ Avoid placing the charger directly above or below the battery being charged, as gases or fluids from the battery can corrode and damage the charger.
- ✓ Never operate the charger in an enclosed space or obstruct ventilation in any way. When charging, ensure the battery is located in a well-ventilated area.
- ✓ Familiarize yourself with all specific precautions provided by battery manufacturers, including whether to remove or keep cell caps on during charging and recommended charging rates.

## WARNING

- ✓ This appliance is not intended for use by individuals, including children, with limited physical, sensory, or mental capabilities or those who lack the understanding and knowledge required for safe operation.
- ✓ Use this charger exclusively for charging 12V, 24V or 36V LiFePO4 / Lead Acid / AGM Batteries.
- ✓ Do not use this charger to power extremely low-voltage electrical systems or charge dry-cell batteries, as it may lead to battery rupture.
- ✓ When it's necessary to remove a battery from a vehicle or boat for charging, always disconnect the grounded terminal from the battery first.
- ✓ Never use the battery charger unless the battery voltage matches the charger's specified output voltage rating.
- ✓ When working in proximity to batteries, always protect your eyes. Avoid placing wrenches or other metal objects across the battery terminals or on top of the battery, as this can result in sparking or battery explosions.
- ✓ If the charger has experienced a severe impact, has been dropped, or shows any signs of damage, do not operate it. Instead, have a qualified service technician inspect and repair it as necessary.
- ✓ Ensure proper ventilation when using the charger during charging. Avoid exposure to heat, flames, or sparks.
- ✓ The battery charger must be plugged into an earthed socket-outlet for safe operation.
- ✓ Never charge a frozen battery.

## MAINTENANCE

- ✓ Users should clean the charger shell and remove dust at least every six months.

# SAFETY INSTRUCTIONS

## IMPORTANT SAFETY INSTRUCTIONS:

### PROTECTION FROM WATER:

- ✓ DO NOT expose the plug or ring terminals to rain or snow.
- ✓ DO NOT submerge the charger in water or use it when the AC plug is wet.

### PROPER HANDLING:

When disconnecting the unit from the power source, pull the cord by the plug rather than by the cord.

### AVOID DAMAGED COMPONENTS:

- ✓ DO NOT operate the charger with a damaged cord or plug.

### DAMAGE AWARENESS:

- ✓ DO NOT operate the charger if it has received a sharp blow, been dropped, or otherwise damaged in any way. Damage to the power cable, device, or charging cable increases the risk of electrical shock. For inspection and repair, take the charger to a qualified technician.

### NO DISASSEMBLY:

- ✓ DO NOT disassemble the charger. Incorrect assembly could result in electrical shock or fire.

### MAINTENANCE AND CLEANING:

To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce the risk.