

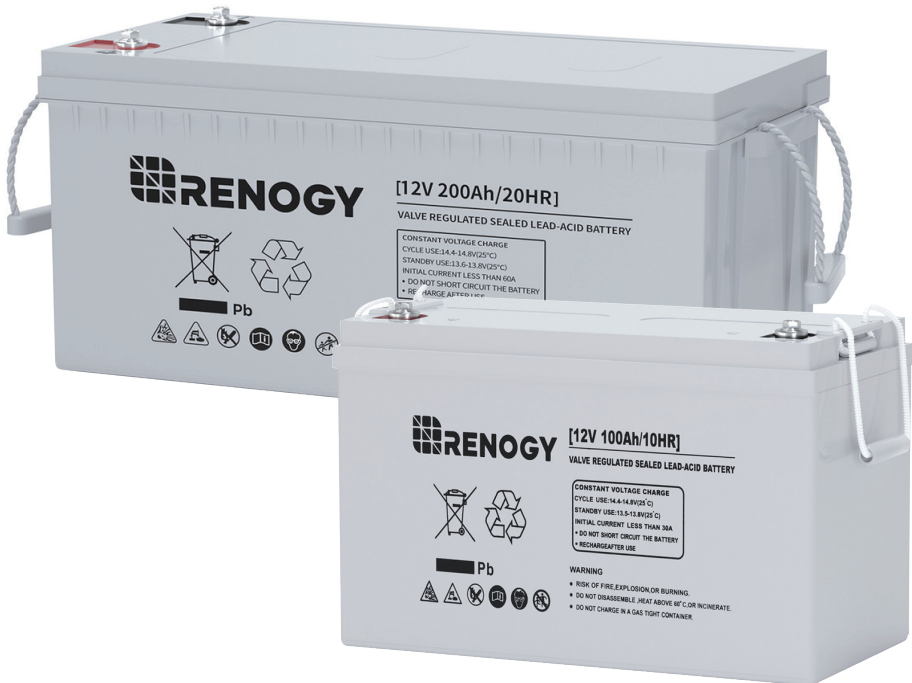
# RENOGY

## Deep Cycle AGM Battery

12V | 100Ah/200Ah

RNG-BATT-AGM12-100/RNG-BATT-AGM12-200

VERSION A0  
August 15, 2025



USER MANUAL

## Before Getting Started

The user manual provides important operation and maintenance instructions for Renogy 12V 100Ah/200Ah Deep Cycle AGM Battery (hereinafter referred to as battery).

Read the user manual carefully before operation and save it for future reference. Failure to observe the instructions or precautions in the user manual can result in electrical shock, serious injury, or death, or can damage the battery, potentially rendering it inoperable.

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## Disclaimer

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## Symbols Used

The following symbols are used throughout the user manual to highlight important information.


-  **WARNING:** Indicates a potentially hazardous condition that could result in personal injury or death.
-  **CAUTION:** Indicates a critical procedure for safe and proper installation and operation.
-  **NOTE:** Indicates an important step or tip for optimal performance.

## Key Features

- **Hassle-Free Reliability**  
The Renogy Deep Cycle AGM Battery features a sealed, low-maintenance design and integrated internal structure, minimizing troubleshooting and making it ideal for beginners or anyone seeking a simple, reliable solution.
- **Improved Safety**  
Compared to lithium-ion batteries, Renogy Deep Cycle AGM batteries are exceptionally safe due to the higher chemical stability of their lead-acid electrolyte.
- **Better Performance at Extreme Temperature**  
The battery's upgraded electrolyte formula delivers stable discharge performance in temperatures ranging from -4 to 140°F/ -20 to 60°C.
- **Connect Batteries In Series and In Parallel**  
Connect up to four batteries in parallel or series. For optimal performance, connect batteries of the same brand, type (AGM), capacity (Ah), and voltage (V), and use a battery balancer to prolong their service life.

## SKU

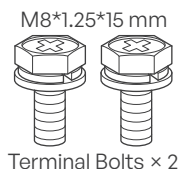
Renogy 12V 100Ah Deep Cycle AGM Battery	RNG-BATT-AGM12-100
Renogy 12V 200Ah Deep Cycle AGM Battery	RNG-BATT-AGM12-200

-  This manual uses the Renogy 12V 100Ah Deep Cycle AGM Battery as an example for the illustrations.

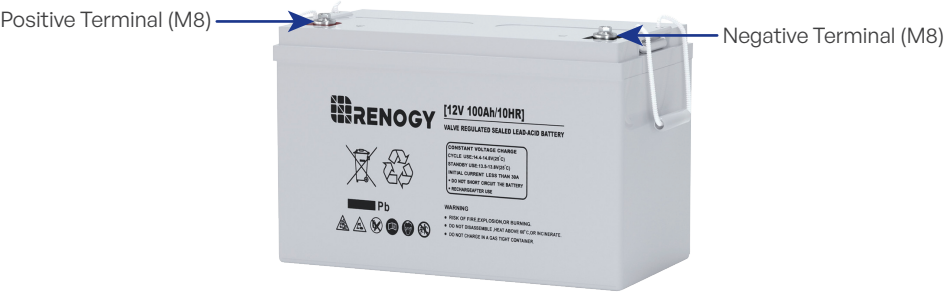
## What's In the Box?

Make sure that all accessories are complete and free of any signs of damage.

Renogy 12V 100Ah/200Ah  
Deep Cycle AGM Battery × 1



# Get to Know Deep Cycle AGM Battery



100Ah Battery Dimensions: 13.1 x 6.9 x 8.6 in / 332 x 175 x 219 mm  
200Ah Battery Dimensions: 20.6 x 9.4 x 8.8 in / 522 x 240 x 224 mm

**i** Dimension tolerance: ±0.2 in (0.5 mm)



## How to Size Battery Adapter Cables?

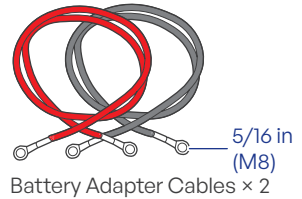
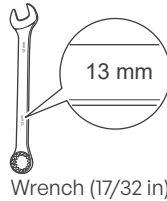
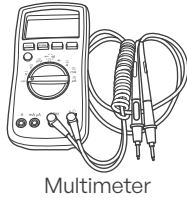
Use appropriately sized Battery Adapter Cables (sold separately) based on expected loads. Refer to the table below for copper cable ampacities with different gauge sizes for up to 13 feet (4 m) cables. Cables longer than 13 feet (4 m) may require thicker gauge wires to prevent excessive voltage drop in undersized wiring.

Cable Gauge Size	Ampacity	Cable Gauge Size	Ampacity
14 AWG (2.08 mm <sup>2</sup> )	25A	1 AWG (42.41 mm <sup>2</sup> )	145A
12 AWG (3.33 mm <sup>2</sup> )	30A	1/0 AWG (53.49 mm <sup>2</sup> )	170A
10 AWG (5.26 mm <sup>2</sup> )	40A	2/0 AWG (67.43 mm <sup>2</sup> )	195A
8 AWG (8.37 mm <sup>2</sup> )	55A	3/0 AWG (85.01 mm <sup>2</sup> )	225A
6 AWG (13.3 mm <sup>2</sup> )	75A	4/0 AWG (107.22 mm <sup>2</sup> )	260A
4 AWG (21.15 mm <sup>2</sup> )	95A	300 kcmil (152.1 mm <sup>2</sup> )	320A
3 AWG (26.67 mm <sup>2</sup> )	115A	400 kcmil (202.8 mm <sup>2</sup> )	380A
2 AWG (33.62 mm <sup>2</sup> )	130A	500 kcmil (253.5 mm <sup>2</sup> )	430A

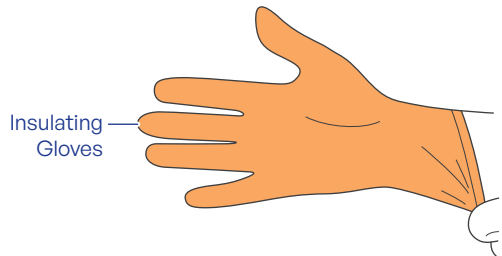
**i** The above values are from the NEC Table 310.16 for copper cables rated at 194°F (90°C), operating at an ambient temperature of no more than 86°F (30°C). Please note that wire gauge standards may vary due to factors such as temperature and installation conditions. In actual applications, it is recommended to refer to the latest NEC standards.

## Required Tools & Accessories

-  Prior to installing and configuring the battery, prepare the recommended tools, components, and accessories.
-  For how to size battery adapter cables, refer to [“How to Size Battery Adapter Cables?”](#) in this manual.





## Step 1. Wear Insulating Gloves



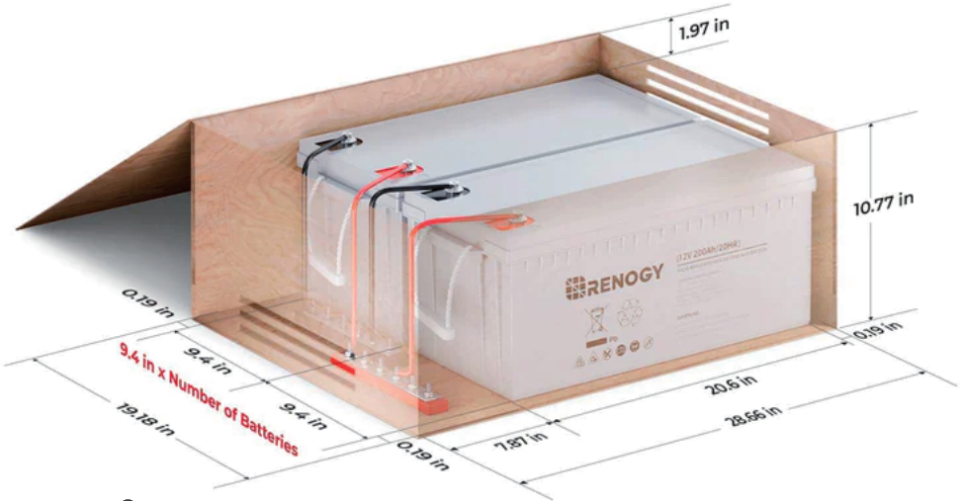
## Step 2. Check the Battery

Inspect the battery for any visible damage including cracks, dents, deformation, and other visible abnormalities. All connector contacts shall be clean and dry, free of dirt or corrosion.

-  Do not touch the exposed electrolytes or powder if the battery is damaged.
-  If any uncovered electrolyte or powder comes into contact with your skin or eyes, flush the area immediately with plenty of clean water and seek medical attention.

### Step 3. Plan a Mounting Site

For optimal battery performance, it is recommended to install the battery in a clean, cool, and dry location, free from any accumulation of water, oil, or dirt. Accumulation of such materials on the battery can lead to current leakage, self-discharge, and even short-circuiting.



Charge: 32°F to 122°F / 0°C to 50°C  
Discharge: -4°F to 140°F / -20°C to 60°C



5% to 95%



Sufficient air flow must be provided to prevent excessive heat build-up and to minimize temperature variation between the connected batteries.

- i** This user manual takes a battery as an example to illustrate how to install the battery. Similar rules apply to scenarios involving multiple batteries.

## Step 4. Install Battery Terminals

Install battery adapter cables on the battery via the included terminal bolts (M8\*1.25\*15 mm).

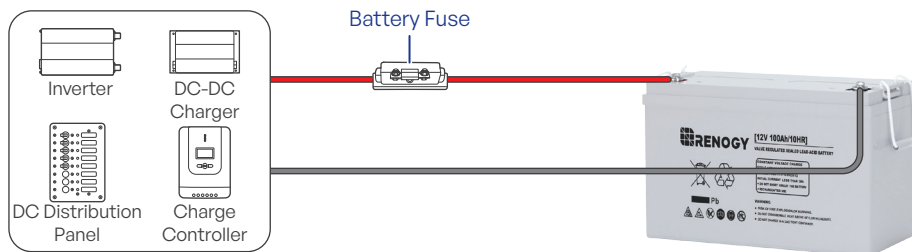


- ⚠** Ensure the cable lug and the top surface of the terminal are in contact.
- ⚠** Avoid short-circuiting the battery terminals to prevent irreversible damage to the system and battery caused by current bursts.
- ⚠** Verify polarity before wiring to avoid irreversible battery damage due to polarity reversal.
- ⚠** Do not touch the positive and negative terminals of the battery with your hands.

## Step 5. Connect the Battery to Power Supply Devices

You can connect the battery to a distribution panel or power supply devices such as an inverter, a DC-DC battery charger, and a charge controller.

- ⚠** Please use circuit breakers, fuses, or disconnects appropriately sized by a certified electrician, licensed installers, or regional code authorities to protect all electrical equipment.
- i** For details about series and parallel battery connections, refer to [“How to Connect Batteries in Series or Parallel”](#) in this manual.





# How to Connect Batteries in Series or Parallel

## Calculate Battery Voltage and Current in Series and Parallel Connections

The cables between each connected battery should be of equal length to ensure that all batteries can work equally together. You can connect up to 4 batteries in parallel or 4 batteries in series.

### Parallel Connection



System Voltage	System current
12V	Sum of the individual battery currents

### Series Connection



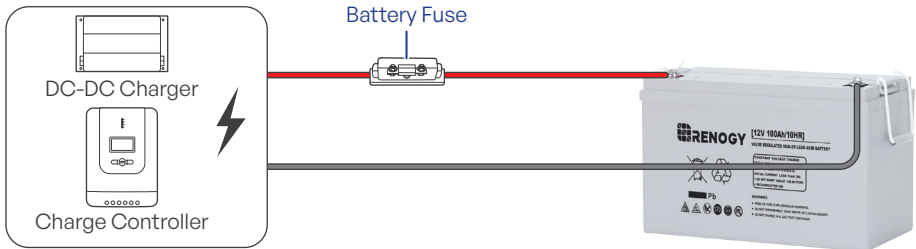
System Voltage	System current
Sum of the individual battery voltages	100A for 100Ah battery / 200A for 200Ah battery

- Do not connect batteries with different chemistries, rated capacities, nominal voltages, brands, or models in parallel or in series. This can result in potential damage to the batteries and the connected devices, and can also pose safety risks.
- Avoid connecting batteries that have been purchased for more than half a year. Over time, batteries can degrade and their performance may decrease, which can affect their ability to deliver reliable power and may lead to safety hazards.

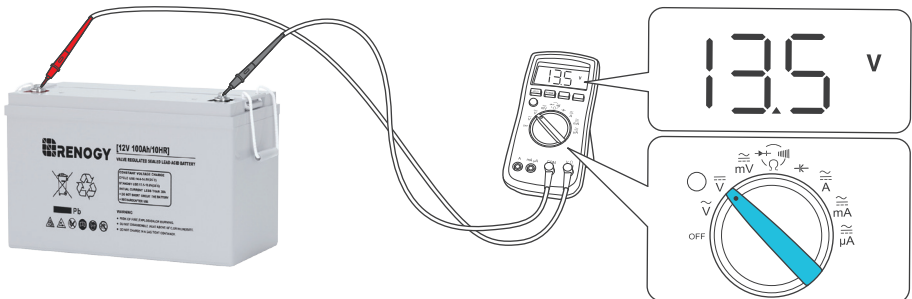
## Balance Batteries Prior to Connection

Before connecting batteries in series or parallel, it is important to balance them to reduce voltage differences and optimize their performance. Follow these three steps:

**Step 1:** Charge each battery individually to its full capacity using a suitable charger.



**Step 2:** Use a voltmeter to measure the voltage of each battery. It is best to keep the voltage difference of each battery less than 0.1V.



**Step 3:** Connect all the batteries in parallel and allow them to rest together for 12 to 24 hours before use.



**i** It is recommended to periodically rebalance the battery voltages every six months when connecting multiple batteries as a battery system. Slight voltage differences can occur among batteries over time due to factors like battery chemistry, capacity, temperature, and usage patterns.

**Series Connection vs. Parallel Connection**

**Parallel Connection**

Model		RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
2P	Battery System	12V 200Ah	12V 400Ah
	Energy	2400Wh	4800Wh
4P (Max)	Battery System	12V 400Ah	12V 800Ah
	Energy	4800Wh	9600Wh

**Series Connection**

Model		RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
2S	Battery System	24V 100Ah	24V 200Ah
	Energy	2400Wh	4800Wh
4S (Max)	Battery System	48V 100Ah	48V 200Ah
	Energy	4800Wh	9600Wh

**Parallel & Series Connection**

Model		RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
2P2S	Battery System	24V 200Ah	24V 400Ah
	Energy	4800Wh	9600Wh
2P4S	Battery System	48V 200Ah	48V 400Ah
	Energy	9600Wh	19200Wh

Model		RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
<b>4P2S</b>	Battery System	24V 400Ah	24V 800Ah
	Energy	9600Wh	19200Wh
<b>4P4S (Max)</b>	Battery System	48V 400Ah	48V 800Ah
	Energy	19200Wh	38400Wh

### Battery Cell Balancing

The battery employs bypass circuit to maintain the balance between each battery cell group. Each battery cell group is connected with a bypass resistor and a switch in parallel. During the charging process, if the highest-voltage battery cell group reaches the set balancing starting voltage and the voltage difference between the highest-voltage and the lowest-voltage battery cell group exceeds the set voltage difference, the switch connected to the highest-voltage battery cell group will be closed to shunt the charge current around the highest-voltage battery cell group through the bypass resistor until the voltage difference drops below the set value. To avoid excessive energy loss, the battery cell balancing is only performed during the charging process.


## Charging/Discharging Parameter Settings

### Charge (for Charge Controller & Battery Charger)

<b>Overvoltage Shutdown</b>	15.8V	<b>Boost Voltage</b>	14.4V
<b>Float Voltage</b>	13.8V	<b>Boost Return Voltage</b>	13.2V

### Discharge (for Inverter)

<b>Low Voltage Reconnect</b>	12.6V	<b>Under Voltage Warning</b>	12.0V
<b>Undervoltage Shutdown</b>	11.1V		



The parameters in the table are applicable to 12V (12.8V) battery packs. For 24V (25.6V) packs, multiply the values by 2, and for 48V (51.2V) packs, multiply by 4.

## Battery Charging and Discharging Logic

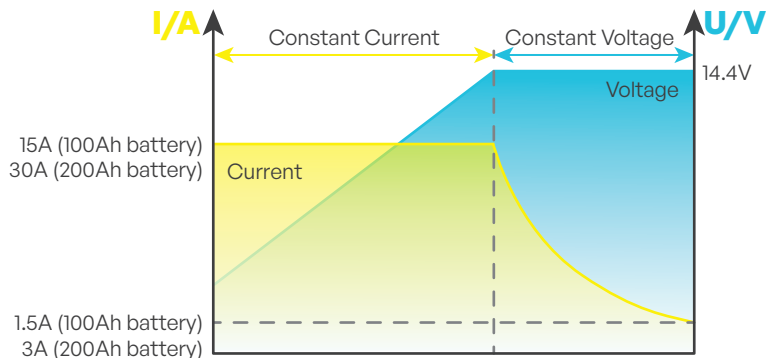
The battery may be received at a partial state of charge (SOC) depending on the time between manufacturing and shipping. It is crucial to fully charge the battery before its initial use. In case the battery shuts off due to low SOC, promptly disconnect it from loads and charge it to prevent irreversible damage. Follow the instructions in this user manual for proper charging and usage to ensure optimal battery performance and longevity.

### Charging Logic

The standard charging process for the battery involves charging at a constant current of 15A for 100Ah battery / 30A for 200Ah battery until the battery voltage reaches 14.4V, followed by charging at a constant voltage of 14.4V while tapering the charge current. The charging process is considered complete when the charge current is less than 1.5A for 100Ah battery / 3A for 200Ah battery (also known as tail current).

The standard charging process typically takes 2.5 hours and requires battery temperatures to be between 32°F and 122°F (0°C and 50°C) for safe charging. Leaving the battery on float will continue to

balance the battery cells without damaging the battery.



**i** AGM batteries are compatible with various charging methods, including MPPT charge controller, AC charger, and DC-DC charger. The crucial parameter setting for these chargers is to set the charge voltage, boost voltage, or bulk voltage at 14.4V ( $\pm 0.2V$ ).

- ⚠** Do not overcharge or overdischarge the battery.
- ⚠** Only charge the battery with a battery charger or charge controller that is compatible with AGM/SLD batteries.
- ⚠** Do not exceed the maximum continuous charge current (30A for 100Ah battery / 60A for 200Ah battery) of the battery.

## Discharging Logic

During standard discharging, the battery is discharged at a constant current of 100A for 100Ah battery / 200A for 200Ah battery until the voltage drops to 11.1V. To ensure safe discharging, the battery temperature should be between  $-4^{\circ}F$  ( $-20^{\circ}C$ ) and  $140^{\circ}F$  ( $60^{\circ}C$ ).

- i** To ensure safe and optimal battery usage, it is recommended to pair the battery with a discharge device that features a low voltage disconnect (LVD) function.
- ⚠** Do not connect large loads to the battery when it is running low.
- ⚠** Do not exceed the maximum continuous discharge current (100A for 100Ah battery / 200A for 200Ah battery) of the battery.

## Specifications

SKU	RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
Product Name	12V 100Ah Deep Cycle AGM Battery	12V 200Ah Deep Cycle AGM Battery
Battery Type	AGM	
Rated Capacity	100Ah (10 Hour Rate to 10.5V)	200Ah (20 Hour Rate to 10.5V)
Nominal Voltage	12V	
Cycle Life	500 Cycles (50% DOD)	


<b>Self-discharge Rate (77°F / 25°C)</b>	< 3% / month	
<b>Connection Method</b>	In Series, and In Parallel (up to 4)	
<b>Automatically Self-heating Function</b>	No	
<b>Dimensions</b>	13.1 x 6.9 x 8.6 in / 332 x 175 x 219 mm	20.6 x 9.4 x 8.8 in / 522 x 240 x 224 mm
<b>Weight</b>	63.9 lbs / 29 kg	127.9 lbs / 58 kg
<b>Housing Material</b>	ABS	
<b>Cycle Use Voltage</b>	14.4V to 14.8V	
<b>Float Charge Voltage</b>	13.5V to 13.8V	13.6V to 13.8V
<b>Maximum Continuous Charging Current</b>	30A	60A
<b>Maximum Continuous Discharge Current</b>	100A	200A
<b>Maximum Instantaneous Discharge Current</b>	1100A (5 seconds)	2000A (5 seconds)
<b>Standard Operation Temperature</b>	77°F ±9°F (25°C ±5°C)	
<b>Storage Temperature</b>	-4°F to 140°F / -20°C to 60°C	
<b>Charge Temperature</b>	32°F to 122°F / 0°C to 50°C	
<b>Discharge Temperature</b>	-4°F to 140°F / -20°C to 60°C	
<b>Built-in Bluetooth</b>	No	
<b>Communication Port</b>	No	
<b>Bolts</b>	M8 x 2	
<b>Material and Workmanship Warranty</b>	2-year	
<b>Certifications</b>	MSDS	

## Maintenance & Storage

### Inspection

Please perform regular inspections following the steps below:

- Examine the external appearance of the battery. The housing and terminals of the battery shall be clean, dry, and free of corrosion.
- Check battery cables and connections. Replace any damaged cables and tighten any loose connections.

 In certain application scenarios, corrosion may occur around the terminals. Corrosion can cause increased resistance and poor contact. It is recommended to regularly apply insulation grease to each terminal. Insulation grease can form a moisture-resistant seal and protect the terminals from corrosion.

### Cleaning

Please clean the battery at regular intervals following the steps below:

- Disconnect the battery from the system.
- Clear the leaves and debris from the battery.
- Clean the battery with a soft, lint-free cloth. The cloth can be dampened with water or mild soap and water if the battery is extremely dirty.
- Dry the battery with a soft, lint-free cloth.
- Keep the area around the battery clean.
- Reconnect the battery to the system.


## Checking Voltage

Please check the battery voltage periodically to assess battery health. If the battery is unable to be activated with a charge/discharge current greater than 1A or the battery is activated with an open circuit voltage below 11.1V, the battery may have been severely overdischarged due to self-discharge or parasitic loads. Please stop using the battery until the fault can be corrected and the battery can be charged.

## Storage

Please follow the steps below to ensure that the battery emerges from storage in a good condition:

- Charge the battery to 60% SOC (Battery Voltage: 13V).
- Disconnect the battery from the system.
- Store the battery in a well-ventilated, dry, clean area with temperatures between -4°F (-20°C) and 140°F (60°C).
- Do not expose the battery to direct sunlight, moisture, or precipitation.
- Handle the battery carefully to avoid sharp impacts or extreme pressure on the battery housing.
- Charge the battery at least once every 1 months to prevent it from overdischarge.
- Fully charge the battery when it is taken out of storage.

 Please follow the steps above to store the battery. Otherwise, the warranty will be void.

## Important Safety Instructions

Renogy accepts no liability for any damage caused by:

- Force majeure including fire, typhoon, flood, earthquake, war, and terrorism.
- Intentional or accidental misuse, abuse, neglect or improper maintenance, and use under abnormal conditions.
- Improper installation, improper operation, and malfunction of a peripheral device.
- Contamination with hazardous substances or radiation.
- Alterations to the product without express written consent from the manufacturer.

## General

- Wear proper protective equipment and use insulated tools during installation and operation. Do not wear jewelry or other metal objects when working on or around the battery.
- Keep the battery out of the reach of children.
- Do not dispose of the battery as household waste. Comply with local, state, and federal laws and regulations and use recycling channels as required.
- In case of fire, put out the fire with a FM-200 or CO<sub>2</sub> fire extinguisher.
- Do not expose the battery to flammable or harsh chemicals or vapors.
- Clean the battery regularly.
- It is recommended that all cables should not exceed 10 meters because excessively long cables

result in a voltage drop.

- The cable specifications listed in the manual account for critical, less than 3% voltage drop and may not account for all configurations.
- Do not expose the battery to strong electrostatic fields, strong magnetic fields, or radiation.

## Battery Safety

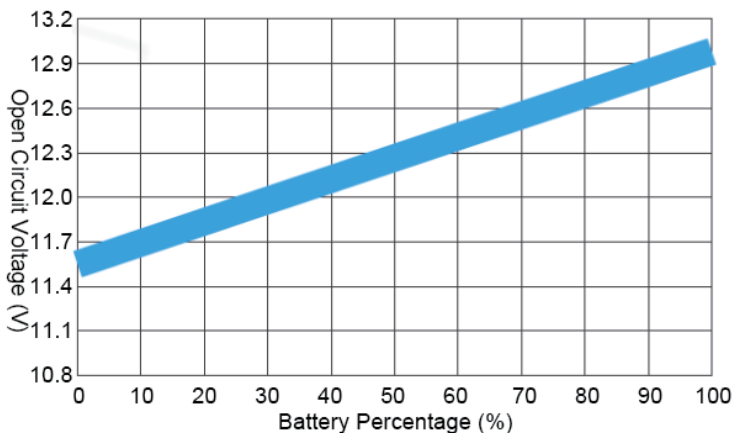
- Please keep the battery away from water, heat sources, sparks, and hazardous chemicals.
- Do not puncture, drop, crush, burn, penetrate, shake, strike, or step on the battery.
- Do not open, dismantle, repair, tamper with, or modify the battery.
- Do not touch any terminals or connectors.
- Please make sure any battery charger or charge controller has been disconnected before working on the battery.
- Do not connect or disconnect terminals from the battery without first disconnecting loads.
- Do not place tools on top of the battery.
- Please use suitable handling equipment for safe transportation of the battery.
- Do not insert foreign objects into the positive and negative terminals of the battery.

## FAQ

### ■ Why does the battery percentage on the charge controller increase or decrease instantly? Is my battery failed?

**No**, your battery is not failed. The instant increase or decrease in battery percentage on the charge controller does not really mean the gain or loss of battery capacity. The battery percentage on the charge controller is estimated solely based on the battery terminal voltage. On the charge controller side, the battery is considered as fully charged when the battery terminal voltage rises to 14.4V and is considered as fully discharged when the battery terminal voltage drops to 11.0V. However, the battery terminal voltage can be heavily affected by the charge current and discharge current. The charge current will rapidly raise the battery terminal voltage of a resting battery at the first minute of charge, resulting in an instant increase in battery percentage on the charge controller. Thereafter, the battery percentage will increase steadily with the battery terminal voltage until the end of the charge. But once the charge current is cut off, the battery terminal voltage will rapidly drop to its resting level and cause an instant decrease in battery percentage on the charge controller. Similarly, the discharge current will rapidly lower the battery terminal voltage of a resting battery at the first minute of discharge, resulting in an instant decrease in battery percentage on the charge controller. Thereafter, the battery percentage will decrease steadily with the battery terminal voltage until the end of the discharge. But once the discharge current is cut off, the battery terminal voltage will rapidly rise to its resting level and cause an instant increase in battery percentage on the charge controller. The greater the charge or discharge current, the more obvious the instant increase or decrease in battery percentage on the charge controller.

For a more accurate battery percentage estimation, the easiest way is to measure the battery open circuit voltage and find the corresponding battery percentage in the following chart. The battery open circuit voltage is the voltage between the battery terminals with no load or charge applied. The battery must be disconnected from the system and rest for at least 2 hours before the measurement. The following symbols are used throughout the user manual to highlight important information.



## ■ How do I prolong the service life of my battery?

- Charge and maintain the battery with a three-stage charge controller or battery charger. The three-stage charge controller or battery charger prevents the battery from overcharging and compensates for self-discharge after the battery is fully charged.
- Set the charging parameters properly. Proper charging parameters prevent the battery from overcharging or undercharging. Please refer to the following table for recommended charging parameters.

SKU		RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
Boost Charge	Charging Voltage (25°C / 77°F)	14.4V to 14.8V	
	Temperature Compensation	-24 mV / °C	
	Maximum Duration	2 to 4 Hours	
Float Charge	Charging Voltage (25°C / 77°F)	13.5V to 13.8V	13.6V to 13.8V
	Temperature Compensation	-18 mV / °C	

- Equalize the battery bank periodically. The equalization charge corrects the voltage imbalance between individual batteries in the battery bank due to the manufacturing variances and different charge/discharge histories experienced. Please refer to the following table for recommended equalization charge parameters.

SKU		RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
Equalization Charge	Charging Voltage (25°C / 77°F)	14.4V to 14.8V	
	Temperature Compensation	-18 mV / °C	
	Maximum Duration	12 to 24Hours	
	Recommended Interval	30 Days	



- d. Connect battery balancers to the battery bank. The battery balancer compares the voltages of individual batteries in the battery bank and compensate for the voltage imbalance during the charging or discharging process.
- e. Connect only identical batteries in parallel and/or in series. Do not mix batteries with different brands, models, chemistries, nominal voltages, rated capacities, or ages. Doing so could create a dangerous circuit, resulting in shortened battery service life or even battery damage.
- f. Fully charge each battery individually to eliminate the voltage difference before initially connecting the batteries in parallel and/or in series. The voltage imbalance between individual batteries in the battery bank could cause battery overheating, overcharging, or undercharging, resulting in shortened battery service life.
- g. Connect power sources and electric loads on opposite corners of the battery bank. The opposite connection helps even out the charging and discharging of each battery in the battery bank.
- h. Do not discharge the battery below 50%. Discharging the battery below 50% frequently seriously shortens the battery service life.
- i. Fully charge the battery immediately after each discharge. Long-term undercharging could cause the buildup of lead sulfate crystals on the battery plates and lead to early battery failure.
- j. Conform to the maximum charge and discharge current limitations. High charge current or discharge current shortens the battery service life or even damages the battery.
- k. Charge and discharge the battery at room temperature. High temperatures shorten the battery service life and low temperatures reduce the effective battery capacity.
- l. Fully charge the battery before storage. Check the battery open circuit voltage regularly and charge the battery at least once every three months to compensate for the self-discharge.
- m. Store the battery in a cool and dry location. Avoid hot and cold environments to prevent the battery from shortened service life.

## **■ If my battery bank does not accept charge or discharges too fast, how can I tell whether the battery bank is failed?**

### **● Step 1. Identify the lagging battery in the battery bank**

The lagging battery is the battery whose voltage is significantly lower than other batteries in the battery bank. First, charge the battery bank using a three-stage charge controller or battery charger until the charge current tapers to 0.03C. Then, discharge the battery bank at the standard discharge current 0.05C and measure the individual battery terminal voltages. Repeat the above charging and discharging process 3 times. If there is a battery whose terminal voltage is lower than the average terminal voltage of the battery bank by more than 5% in all the 3 discharge processes, that battery can be considered as a lagging battery.

### **● Step 2. Equalize the battery bank**

Equalize the battery bank with the proper equalization charge parameters and repeat the step 1. If the terminal voltage of the lagging battery is still lower than the average terminal voltage of the battery bank by more than 5%, proceed to the step 3.

### **● Step 3. Determine whether the lagging battery is failed**

First, disconnect the lagging battery from the battery bank and charge the lagging battery using a three-stage charge controller or battery charger until the charge current tapers to 0.005C. Then, disconnect the lagging battery from the charge controller or battery charger and rest for 4-12 hours. Use the following 2 methods whichever is applicable to determine whether the lagging battery is failed.

- a. Measure the internal resistance of the lagging battery with a battery tester and compare the result with the rated internal resistance in the following table. If the measured internal resistance is greater than the rated internal resistance by more than 50%, the lagging battery is failed.

SKU	RNG-BATT-AGM12-100	RNG-BATT-AGM12-200
Rated Internal Resistance	5mΩ	3.5mΩ

- b. Discharge the lagging battery to the cut-off voltage 10.5V at the standard discharge current 0.05C. Record the start time and end time. Measure the ambient temperature, battery terminal voltage, and discharge current every 30 minutes during the discharging process. The measured discharge current should not deviate from the standard discharge current by more than 1%. The measurement should be performed more frequently near the end of the discharge to catch the cut-off voltage. Calculate the lagging battery capacity using the following formula:

**Lagging Battery Capacity =  $I \times t / [1 + K \times (T-25)]$**

Where I is the standard discharge current, t is the discharge time. K is the temperature coefficient, which is equal to 0.006/°C. T is the average ambient temperature during the discharging process. If the lagging battery capacity is less than 50% of the battery rated capacity, the lagging battery is failed.

● **Step 4. Rejuvenate the battery (Optional)**

Disconnect the lagging battery from the power sources and electric loads. Rejuvenate the battery with a battery regenerator and repeat the step (3). If the lagging battery is still failed, replace it.

**Why does my battery lead acid, swell up, or release acid vapors?**

● **Leak Acid:**

The sulfuric acid electrolyte is immobilized and sealed in the battery. The battery should not pose a risk of acid leakage if it is handled properly. However, with a cracked casing, the sulfuric acid electrolyte will eventually start seeping out and cause corrosion to the materials in the surrounding areas. The battery casing may crack due to dropping, collision, or high current charge/discharge.

● **Swell Up:**

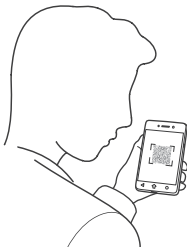
In the battery, the positive and negative plates are placed close together with only the thickness of the divider separating them. The battery is constructed in such a way to allow the absorption of gases generated during the charging process inside the battery. However, the plates will exert pressure on the inner wall of the battery and cause the battery case to swell up. The plates may expand due to overcharging or short-circuiting.

● **Release Acid Vapors:**

The battery is sealed using safety valves. Under normal operating conditions, the safety valves remain closed so that the gases generated during the charging process can recombine within the battery. However, if the internal pressure exceeds safety limits, the safety valves will open to allow the excess gases including acid vapors to escape. The internal pressure may increase due to overcharging.

**Renogy Support**

To discuss inaccuracies or omissions in this quick guide or user manual, visit or contact us at:



Questionnaire Investigation




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## FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- (1) Orient or relocate the receiving antenna.
- (2) Increase the separation between the equipment and receiver.
- (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- (4) Consult the dealer or an experienced radio/TV technician for help.

## **FCC Radiation Exposure Statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.



## Renogy Empowered

Renogy aims to empower people around the world through education and distribution of DIY-friendly renewable energy solutions.

We intend to be a driving force for sustainable living and energy independence.

In support of this effort, our range of solar products makes it possible for you to minimize your carbon footprint by reducing the need for grid power.



## Live Sustainably with Renogy

Did you know? In a given month, a 1 kW solar energy system will...



Save 170 pounds of coal from being burned



Save 300 pounds of CO<sub>2</sub> from being released into the atmosphere



Save 105 gallons of water from being consumed



## Renogy Power PLUS

Renogy Power Plus allows you to stay in the loop with upcoming solar energy innovations, share your experiences with your solar energy journey, and connect with like-minded people who are changing the world in the Renogy Power Plus community.



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Renogy reserves the right to change the contents of this manual without notice.

Manufacturer: RENOGY New Energy Co.,Ltd

Address: No.66, East Ningbo Road Room 624-625 Taicang German  
Overseas Students Pioneer Park JiangSu 215000 CN

EC

REP

eVatmaster Consulting GmbH  
Raiffeisen Street2 B11,  
63110 Rodgau, Hessen, Germany  
contact@evatmaster.com

UK

REP

EVATOST CONSULTING LTD  
Office 101 32 Threadneedle Street,  
London, United Kingdom, EC2R 8AY  
contact@evatost.com

RENOGY.COM

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