

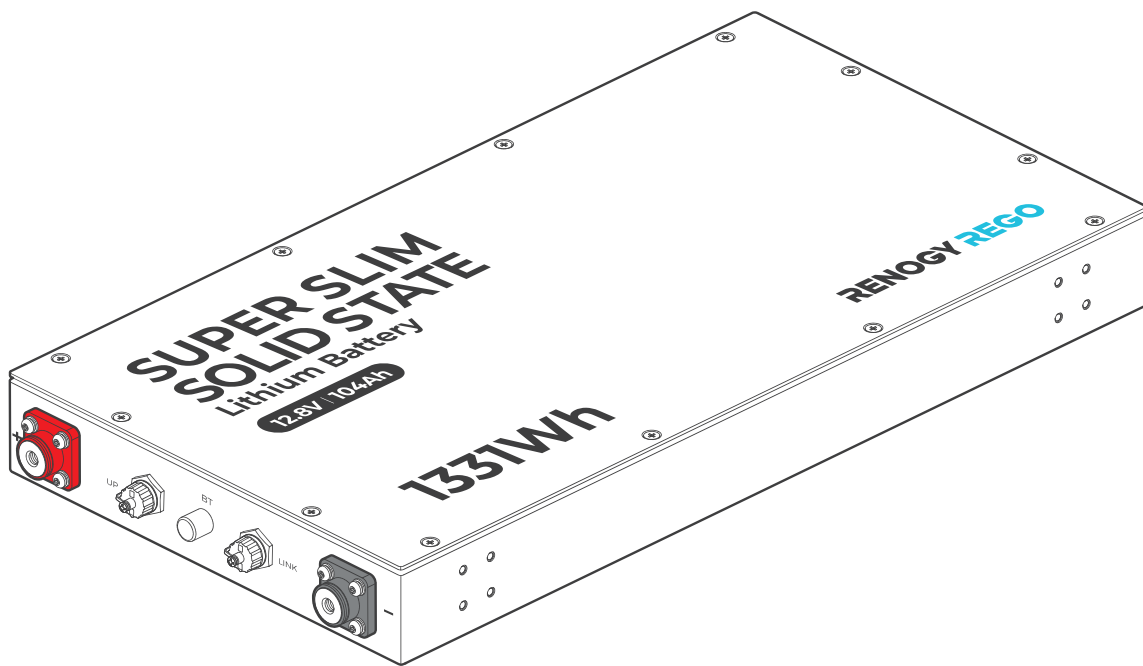
RENOGY REGO Series

Super Slim Solid State Lithium Battery

12.8V | 104Ah

RBT12104LFP-SSL-BT

VERSION A0
October 14, 2024



USER MANUAL

Before Getting Started

The user manual provides important operation and maintenance instructions for RENOGY REGO Series 12.8V 104Ah Super Slim Solid State Lithium 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.

- Renogy ensures the accuracy, sufficiency, and the applicability of information in the user manual at the time of printing due to continual product improvements that may occur.
- Renogy assumes no responsibility or liability for personal and property losses, whether directly and indirectly, caused by the user's failure to install and use the product in compliance with the user manual.
- Renogy is not responsible or liable for any failure, damage, or injury resulting from repair attempts by unqualified personnel, improper installation, or inappropriate operation.
- The illustrations in the user manual are for demonstration purposes only. Details may appear slightly different depending on product revision and market region.
- Renogy reserves the right to change the information in the user manual without notice. For the latest user manual, visit [renogy.com](https://www.renogy.com).

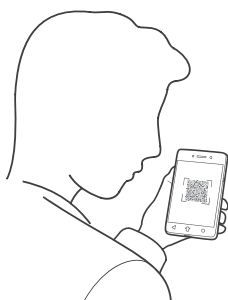
Disclaimer

RENOGY REGO Series 12.8V 104Ah Super Slim Solid State Lithium Battery User Manual © 2024 Renogy. All rights reserved.

RENOGY and **RENOGY** are registered trademarks of Renogy.

- All information in the user manual is subject to copyright and other intellectual property rights of Renogy and its licensors. The user manual may not be modified, reproduced, or copied, in whole or in part, without the prior written permissions of Renogy and its licensors.
- The registered trademarks in the user manual are the property of Renogy. The unauthorized use of the trademarks is strictly prohibited.

Online Manual



User Manual



Table of Contents

Symbols Used	1
Introduction	1
Key Features.....	1
SKU	2
What's In the Box?.....	2
Required Tools & Accessories	2
Get to Know Super Slim Solid State Lithium Battery	3
Dimensions	3
Secure the Battery	4
For a Single Battery	4
For Multiple Batteries	5
How to Size Battery Adapter Cables?.....	6
Step 1. Wear Insulating Gloves	6
Step 2. Check the Battery	6
Step 3. Plan a Mounting Site.....	7
Step 4. Install Battery Terminals	8
Step 5. Install the Insulation Sleeves.....	8
Step 6. Connect the Battery to Power Supply Devices	9
Step 7. CAN Communication Wiring (Optional).....	10
Inter-Battery Communication	10
Communication with Renogy Power Supply and Monitoring Devices.....	11
How to Connect Batteries in Series or Parallel	15
Calculate Battery Voltage and Current in Series and Parallel Connections	16
Balance Batteries Prior to Connection	16
Series Connection vs. Parallel Connection – Installation Steps.....	18
Battery Cell Balancing.....	20
Monitoring	20
Short-Range Monitoring via DC Home App	21
Wireless Long-Range Monitoring.....	21
Wired Long-Range Monitoring (Backbone Network)	22
Wired Long-Range Monitoring (Daisy Chain Network).....	23
Charging/Discharging Parameter Settings.....	24

Battery Charging and Discharging Logic.....	24
Charging Logic.....	24
Discharging Logic	25
How to Estimate the Battery SOC?.....	25
Battery Management System	25
Troubleshooting.....	27
Specifications	28
General	28
Operation Parameters	28
Maintenance & Storage.....	29
Inspection	29
Cleaning	29
Checking Voltage	29
Storage	29
Important Safety Instructions	30
General	30
Battery Safety	30
Renogy Support	31
Battery Recycling	32

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.

Introduction

The RENOGY REGO Series 12.8V 104Ah Super Slim Solid State Lithium Battery adopts a proprietary battery housing material in a smaller size for your RV application.

Weighing only half of the lead-acid counterparts, the battery can be safely discharged to 100% Depth of Discharge (DOD), delivering twice the energy. Manufactured with automotive grade battery cells, the battery features the highest safety standards and an extended 6000 cycle life. In addition, the smart Battery Management System (BMS) provides comprehensive protection to the battery.

Key Features

- **Unparalleled Performance**
Features a greater energy density, a deeper discharge capability, a higher round-trip efficiency, and a faster charging speed in a smaller size (59 mm thick) over counterparts in the market.
- **Uncompromising Quality**
Ensures an exceptional lifespan with up to 6000 cycles (80% DOD, 0.5C), a continuous charge current of 100A, a continuous discharge current of 200A, and a wide range of operating temperatures with the automotive grade battery cells.
- **Reliable Protection Mechanisms**
Designed with a sturdy internal structure for RV use, and includes more than 60 protections and alarms through the smart battery management system.
- **Real-time Monitoring Through DC Home App**
You can easily get the battery information through the DC Home app at any time.
- **Active Safety Protection with Self-Control Fuse**
Different from ordinary passive fuses, the self-control fuse can effectively prevent battery overcurrent and overvoltage failures.
- **Best-in-Class Capacity and Easy Expansion**
The battery provides a maximum capacity of more than 104Ah for a longer-lasting application. It supports up to 16 batteries in 4 series and 4 parallels system connection delivering a maximum of 48V (51.2V) 416Ah with 21.296 kWh.
- **Guaranteed System Safety**
The included semi-solid-state battery cells boast less organic solvents in electrolytes over liquid cells, making them less prone to leakage and combustion. Even at high temperatures, the electrolyte in semi-solid-state cells remains stable and is less likely to decompose, greatly reducing the risks of battery swelling, separator shrinkage, and thermal runaway.
- **More Reliable Charging at Low Temperatures**
The included semi-solid-state battery cells feature low solubility variation and low electrochemical impedance. Charging below 32°F (0°C) suppresses the formation of lithium dendrites, reducing the risk of short circuits and separator puncture. They support charging at 10A current from 14°F to 32°F (-10°C to 0°C).

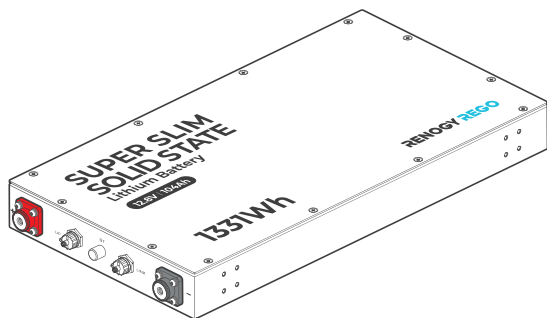
SKU

RENOGY REGO Series 12.8V 104Ah
Super Slim Solid State Lithium Battery

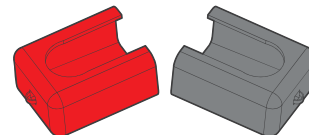
RBT12104LFP-SSL-BT

What's In the Box?

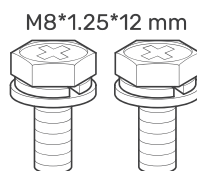
RENOGY REGO Series 12.8V 104Ah
Super Slim Solid State Lithium Battery × 1



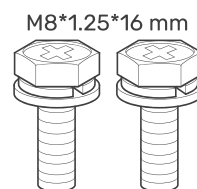
User Manual × 1



Insulation Sleeves × 2



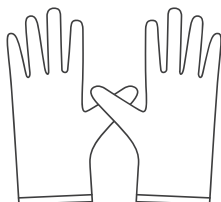
Terminal Bolts × 2



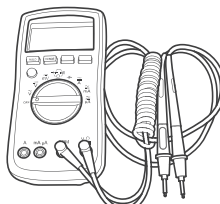
Long Terminal Bolts × 2

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

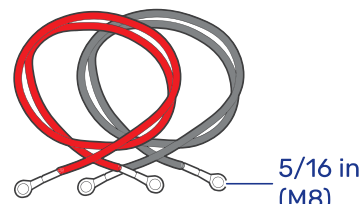
Required Tools & Accessories



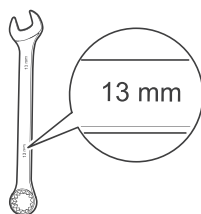
Insulating Gloves



Multimeter



Battery Adapter Cables × 2



Wrench (17/32 in)

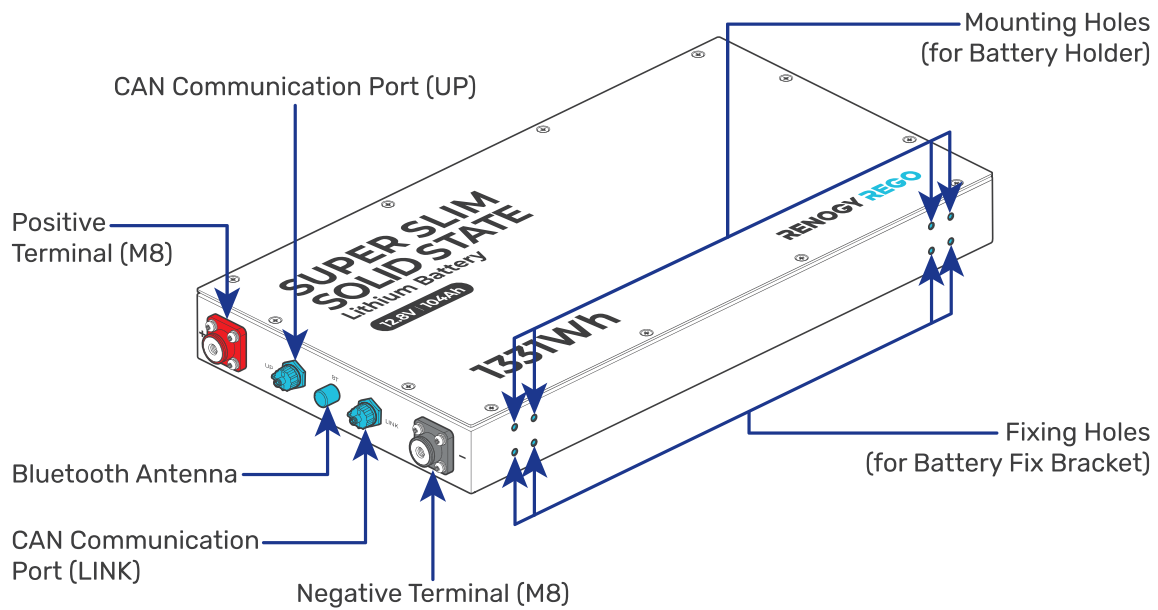


Phillips Screwdriver (#2)

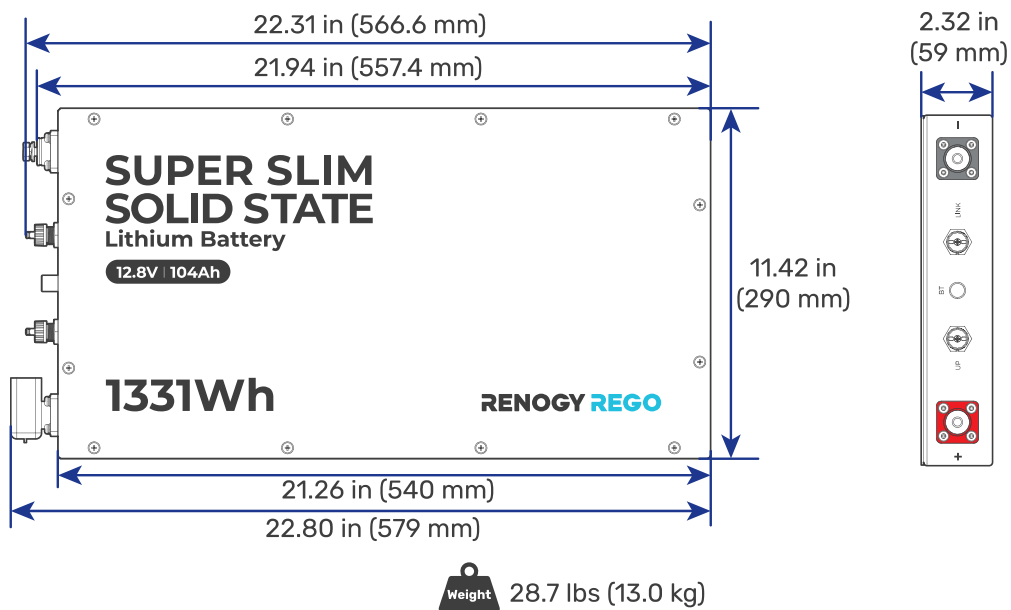
i Prior to installing and configuring the battery, prepare the recommended tools, components, and accessories.

i For how to size battery adapter cables, refer to "[How to Size Battery Adapter Cables?](#)" in this manual.

Get to Know Super Slim Solid State Lithium Battery



Dimensions



i Dimension tolerance: ± 0.2 in (0.5 mm)

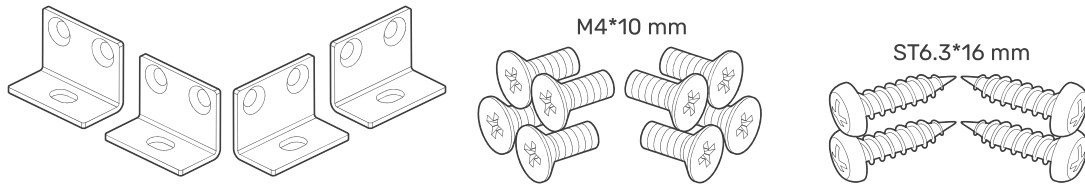
Secure the Battery

Securing the battery prevents damage to the battery from loose cables and bumps.

 You can secure the battery either on the floor or on a wall.

For a Single Battery

Recommended Accessories

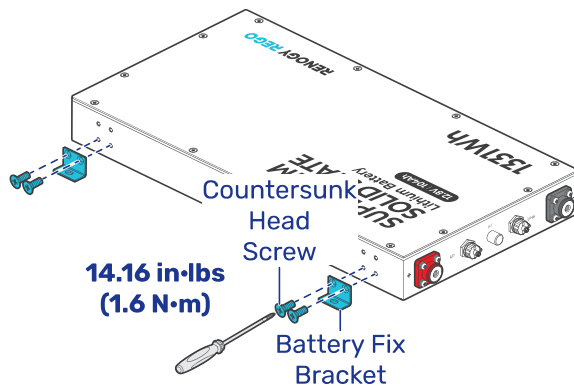


*Battery Fix Brackets Accessory Kit
(An accessory kit includes 4 battery fix brackets,
8 countersunk head screws, and 4 self-tapping screws.)

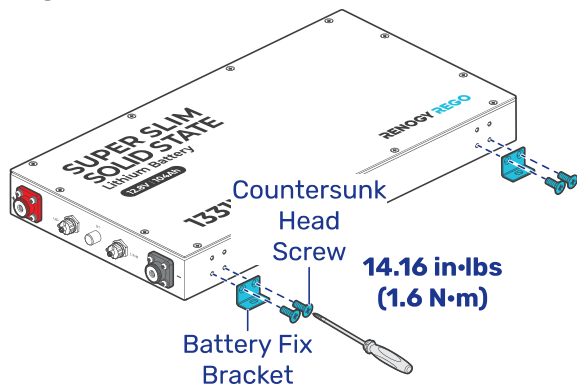
 Accessories marked with "*" are available on renogy.com.

Step 1: Install the battery fix brackets through the fixing holes on the battery with the included countersunk head screws.

Left side

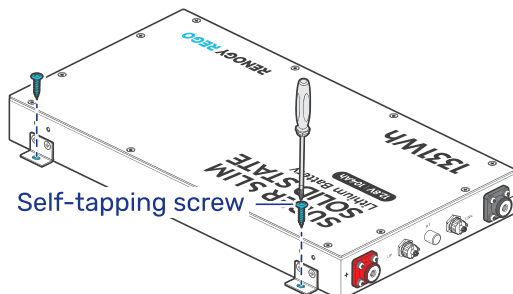


Right side

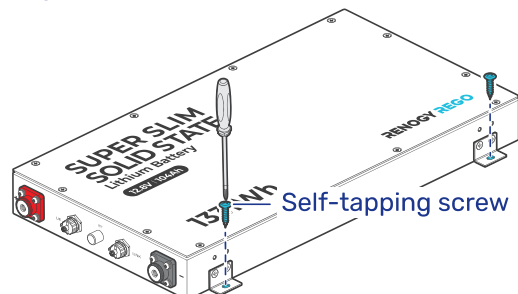


Step 2: Mount the battery on a flat surface with the included self-tapping screws.

Left side

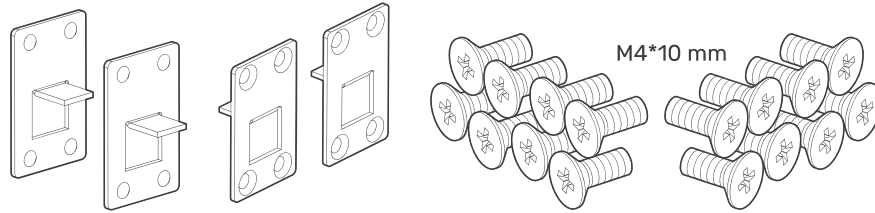


Right side



For Multiple Batteries

Recommended Accessories



*Battery Holders Accessory Kit

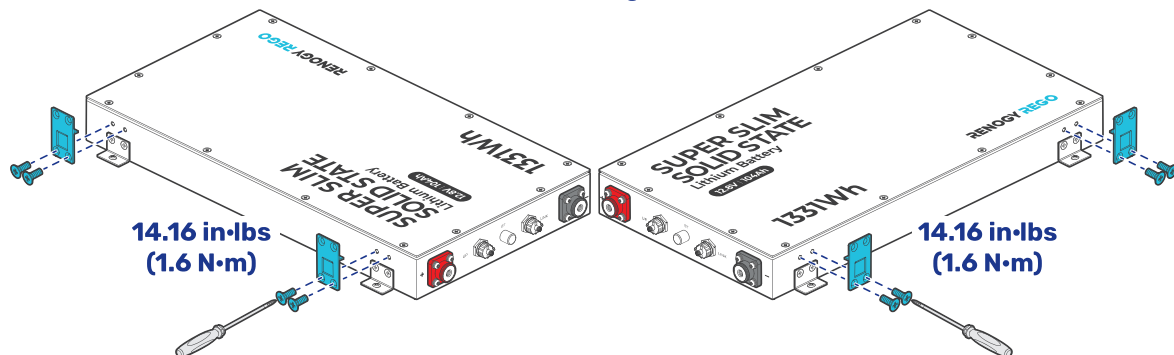
(An accessory kit includes 4 battery holders and 16 countersunk head screws.)

- Accessories marked with "*" are available on renogy.com.
- This section is based on two batteries. The same rules apply to scenarios involving more batteries.
- Battery holders are required for stacking scenarios to ensure proper ventilation between batteries.

Step 1: On the first battery, install the four holders into the mounting holes, making sure the tabs face the battery and touch the bottom surface of the second battery.

Left side

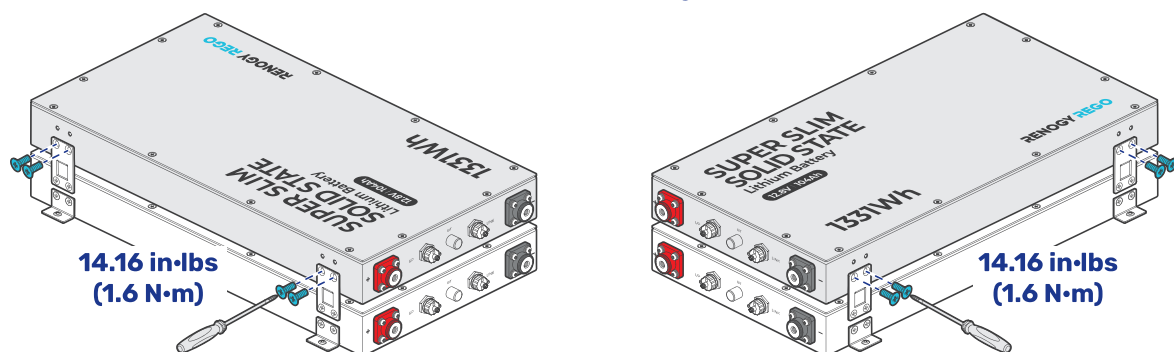
Right side



Step 2: Stack the second battery on top of the first one, and secure the holders to the second battery through the mounting holes.

Left side

Right side



For how to connect Super Slim Solid batteries in series or parallel, refer to "[How to Connect Batteries in Series or Parallel](#)" in this manual.

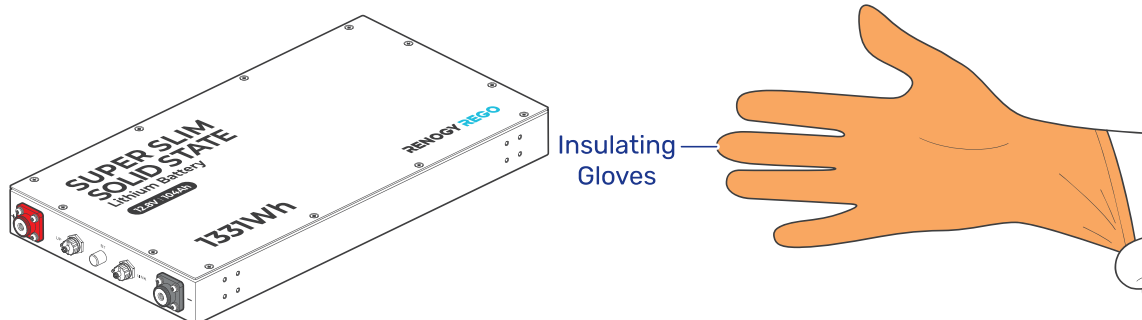
How to Size Battery Adapter Cables?

Use appropriately sized Battery Adapter Cables (sold separately) based on expected load. 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 (4000 mm) 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 ²)	35A	2 AWG (33.6 mm ²)	190A
12 AWG (3.31 mm ²)	40A	1 AWG (42.4 mm ²)	220A
10 AWG (5.25 mm ²)	55A	1/0 AWG (53.5 mm ²)	260A
8 AWG (8.36 mm ²)	80A	2/0 AWG (67.4 mm ²)	300A
6 AWG (13.3 mm ²)	105A	4/0 AWG (107 mm ²)	405A
4 AWG (21.1 mm ²)	140A		

i The above values are from the NEC Table 310.17 for copper cables rated at 194°F (90°C), operating at an ambient temperature of no more than 86°F (30°C).

Step 1. Wear Insulating Gloves



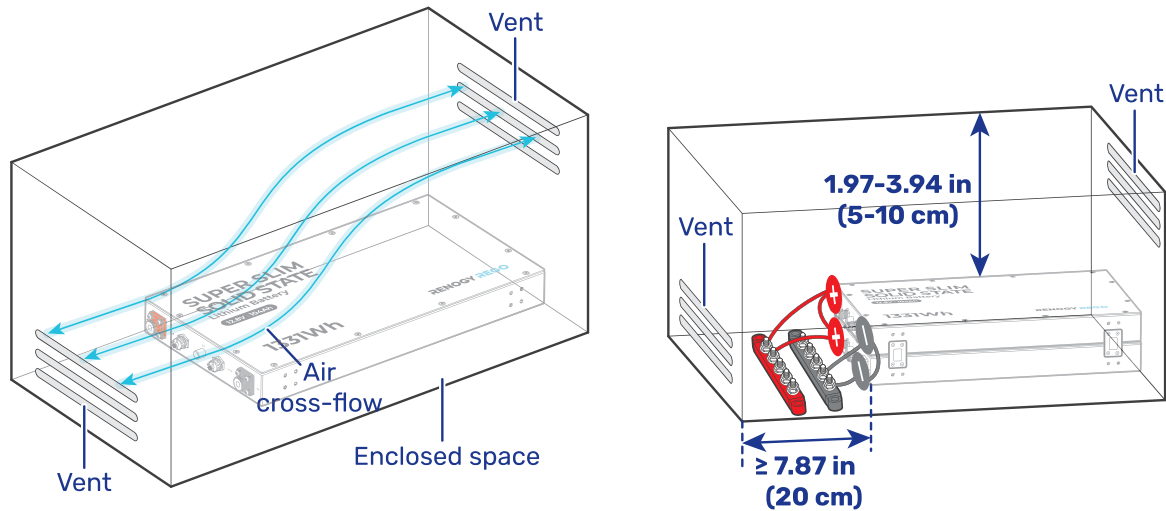
Step 2. Check the Battery

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 electrolyte or powder if the battery is damaged.
- !** If uncovered electrolyte or powder contacts your skin or eyes, flush it out 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: 14°F to 131°F / -10°C to 55°C
 Discharge: -4°F to 140°F / -20°C to 60°C

 5% to 95%

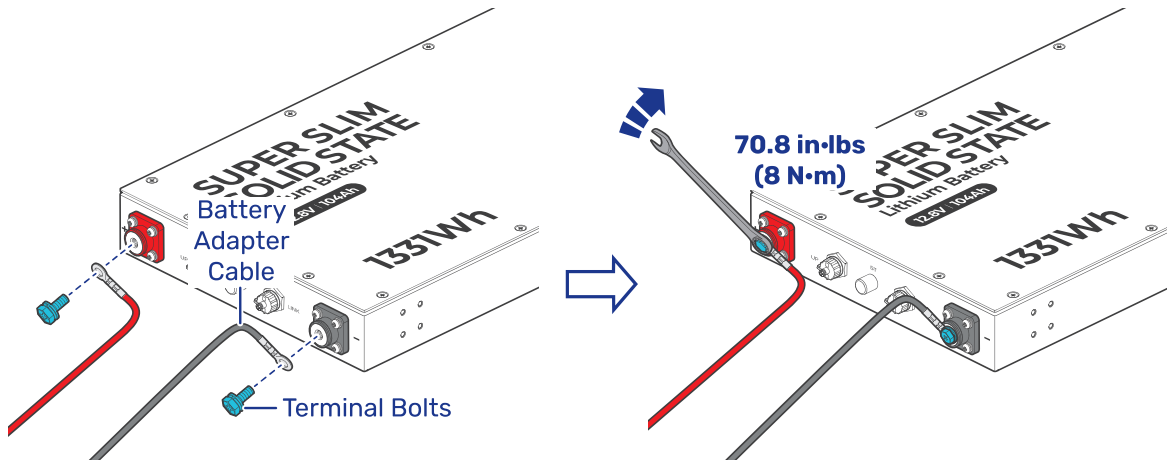


 Sufficient air flow must be provided to prevent excessive heat build-up and to minimize temperature variation between the connected batteries.

 This user manual takes a battery as an example to illustrate how to install the battery.

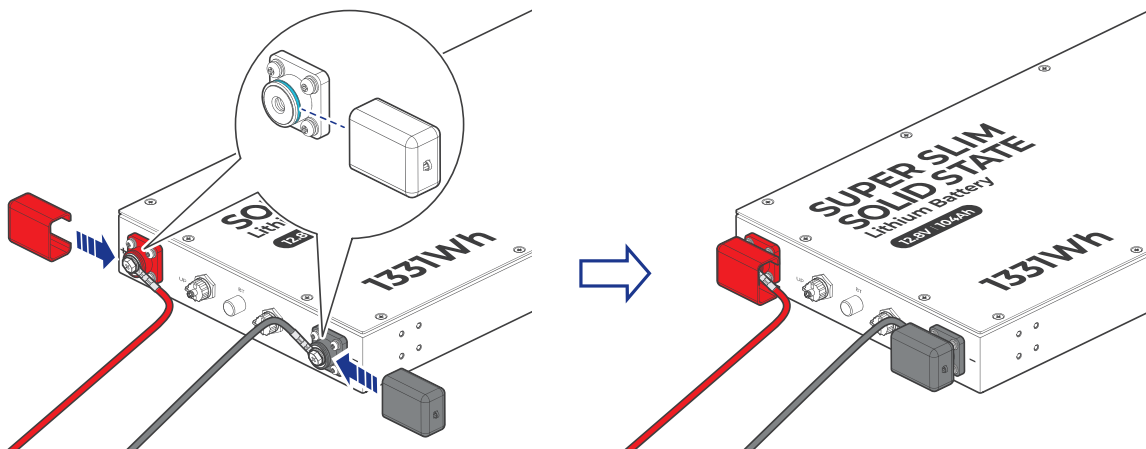
Step 4. Install Battery Terminals

Install battery adapter cables on the battery via the included terminal bolts (M8*1.25*12 mm).



- ⚠️ Ensure the cable lug and the top surface of the terminal are in contact, and place the washers on top of the lug. Do not place the washers between the battery terminal and the cable lug to avoid high resistance and excessive heating.
- ⚠️ 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.
- ℹ️ To ensure safe and reliable operation of the system, please follow the manufacturer's recommended torque specifications when securing cable connections. Over-tightening can result in terminal breakage, while loose connections can lead to terminal meltdown or fire. When securing multiple cable lugs on a single battery terminal, use the included Long Terminal Bolts (M8 * 1.25 * 16 mm).

Step 5. Install the Insulation Sleeves



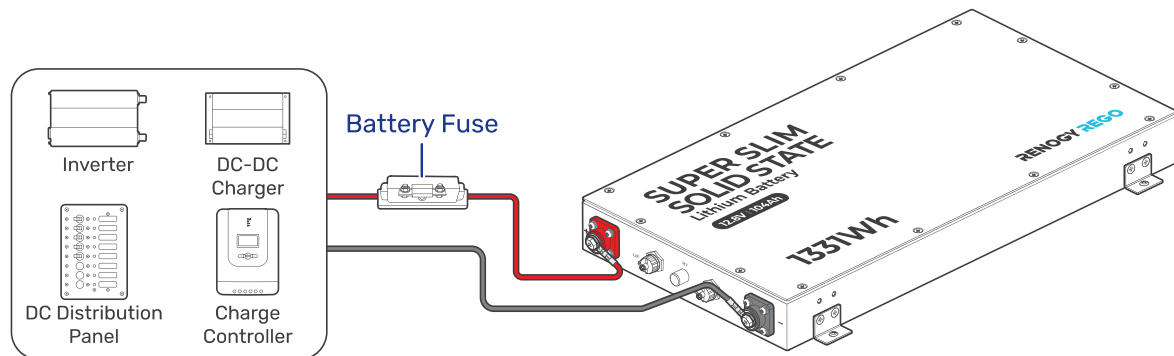
Step 6. Connect the Battery to Power Supply Devices

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.

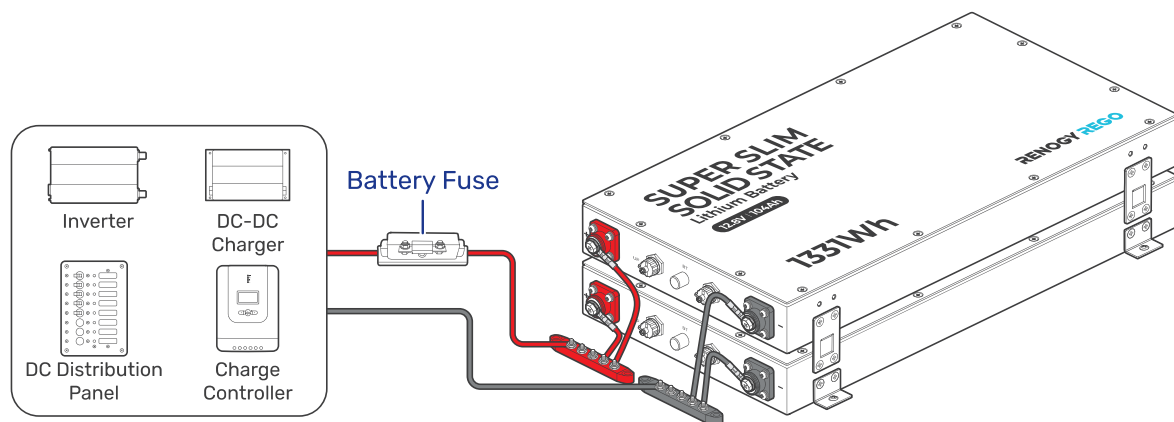
! Please use circuit breakers, fuses, or disconnects appropriately sized by a certified electrician, licensed installers, or regional code authorities to protect all electrical equipment.

i For details about series and parallel battery connections, refer to "[How to Connect Batteries in Series or Parallel](#)" in this manual.

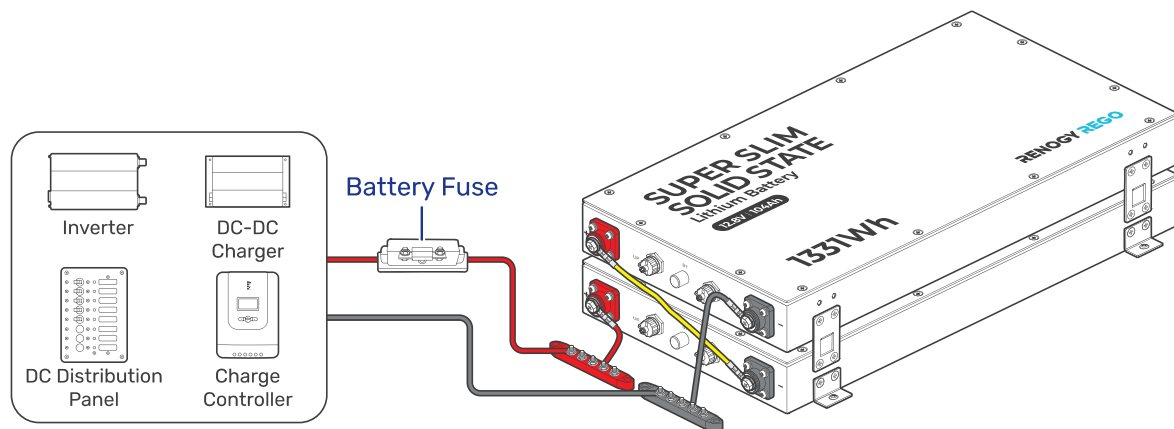
■ For a Single Battery



■ For Batteries in Parallel



■ For Batteries in Series



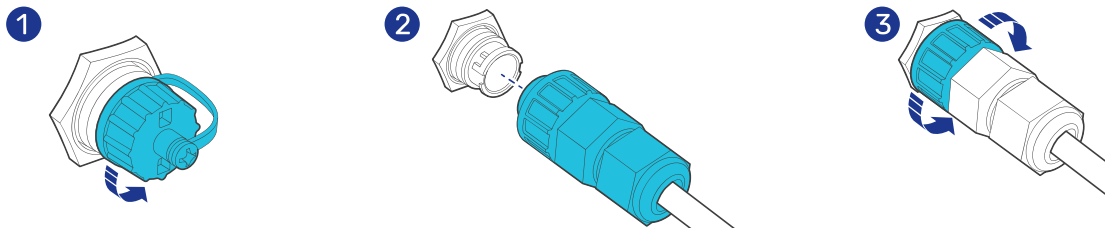
Step 7. CAN Communication Wiring (Optional)

REGO Series 12.8V 104Ah Super Slim Solid State Lithium Battery supports intra-battery communication and communication with Renogy monitoring and power supply devices supporting CAN. For either communication scenario, you need to pay attention to the following installation instructions of the CAN Communication Ports on the battery.

To properly connect or disconnect the 7-Pin CAN Communication Terminal Plug to or from the battery, you should

1. Remove the dust cover from the CAN Communication Port on the battery.
2. Ensure that the plug is oriented vertically toward the CAN Communication Port.
3. Rotate the terminal fixing nut to loosen or secure the plug.

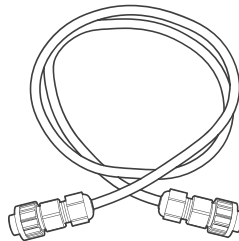
Shaking the terminal plug while plugging or unplugging it is not allowed.



Inter-Battery Communication

REGO Series 12.8V 104Ah Super Slim Solid State Lithium Battery supports intra-battery communication and data exchange through the included CAN Communication Ports, which further enhances the efficiency and safety of the battery system.

Recommended Accessories



*7-Pin CAN Communication Cable(s)

i Accessories marked with "*" are available on [renogy.com](https://www.renogy.com).

For two batteries, connect the CAN Communication Port (UP) of the top battery to the CAN Communication Port (LINK) of the bottom battery using the 7-Pin CAN Communication Cable (not included).

The vacant CAN Communication Ports can be connected to other Renogy power supply devices supporting CAN communication as needed. For more details, refer to "[Communication with Renogy Power Supply Devices](#)".