

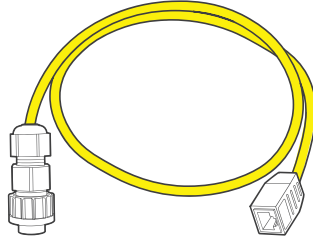
Wired Long-Range Monitoring (Daisy Chain Network)

If long-range communication and programming are required, connect the battery to Renogy ONE Core through wires, and the Renogy ONE Core to the DC Home app through Wi-Fi.

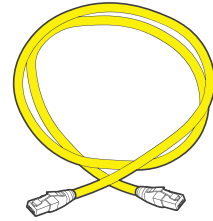
Recommended Components & Accessories



*RENOGY ONE Core



*7-Pin CAN Communication Terminal Plug to RJ45 Port Adapter Cable



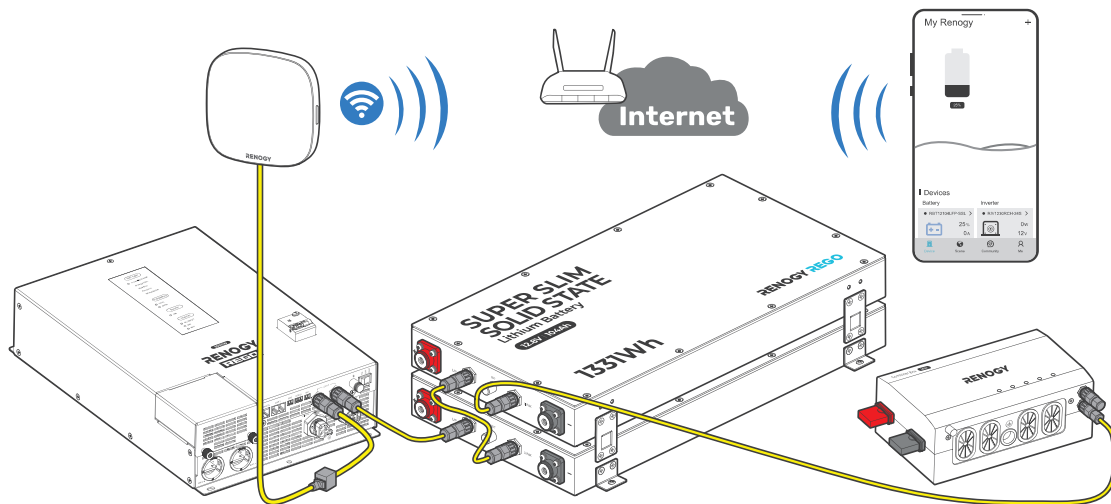
RJ45 Ethernet Cable (CAT5 or above)

- Components and accessories marked with "*" are available on [renogy.com](https://www.renogy.com).
- Ensure that the Renogy ONE Core is powered on before the connection.
- For instructions on Renogy ONE Core, see [Renogy ONE Core User Manual](#).
- Ensure the battery does not communicate with any other device.
- Select the appropriate communication cable (sold separately) according to the distance between devices. The communication cable should be less than 19.6 feet (6 m).

Step 1: Remove the Terminator Plug from the Renogy device at either end of the daisy chain.

Step 2: Connect the Renogy ONE Core to the free CAN Communication Port on the Renogy device with the Communication Adapter Cable (sold separately) and RJ45 Ethernet Cable. For wiring instructions on Renogy ONE Core, see [Renogy ONE Core User Manual](#).

Step 3: Pair Renogy ONE Core with the DC Home app. Monitor and program the complete system on the Renogy ONE Core or the DC Home app.



Charging/Discharging Parameter Settings

Charge

Boost Voltage	14.4V	Boost Return Voltage	13.2V
Bulk/Absorption Voltage	14.4V	Overvoltage Disconnect	15.0V
Bulk/Absorption Voltage	14.4V / Disabled	Overvoltage Reconnect	14.2V

Discharge

Low Voltage Reconnect	12.6V	Undervoltage Warning	12.0V
Undervoltage Shutdown	10.0V		

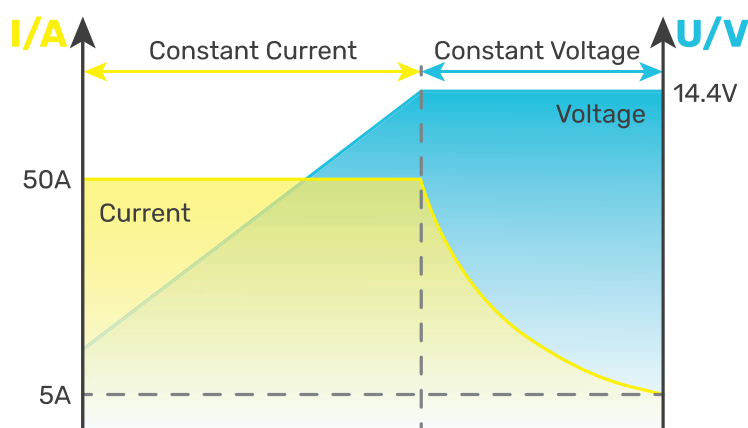
Battery Charging and Discharging Logic

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 50A 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 5A (also known as tail current).

The standard charging process typically takes 2.5 hours and requires battery temperatures to be between 32°F and 131°F (0°C and 55°C) for safe charging. Leaving the battery on float will continue to balance the battery cells without damaging the battery.



i Lithium 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.

⚡ Do not discharge the battery at high temperatures above 140°F (60°C).

- ⚠ Only charge the battery with a battery charger or charge controller that is compatible with lithium iron phosphate batteries.
- ⚠ Do not exceed the maximum continuous charge current (100A) of the battery.

Discharging Logic

During standard discharging, the battery is discharged at a constant current of 100A until the voltage drops to 10V. To ensure safe discharging, the battery temperature should be between -4°F (-20°C) and 143.6°F (62°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 (200A) of the battery.

How to Estimate the Battery SOC?

The SOC values listed below are estimated based on the open circuit voltage when the battery is at rest for 30 minutes, not in charging or discharging state.

SOC	Open Circuit Voltage	SOC	Open Circuit Voltage
100%	13.6V	30%	12.9V
99%	13.4V	20%	12.8V
90%	13.2V	14%	12.7V
70%	13.1V	9%	12.6V
40%	13.0V	0%	10.0V

- ℹ The table above is for reference only because slight variations in battery voltage may occur among different batteries.

Battery Management System

This smart battery management system has more than 60 fault alarms and protections to fully protect your battery safety. Below we list some common faults and protections for reference.

Battery Operating Status		Condition (For Reference Only)	
Battery Cell Overvoltage	Protection	Trigger	Battery Cell Voltage $\geq 3.65V$
		Recover	Battery Cell Voltage $\leq 3.45V$
Battery Cell Undervoltage	Protection	Trigger	Battery Cell Voltage $\leq 2.7V$ ($> 0^{\circ}C$) Battery Cell Voltage $\leq 2.2V$ ($\leq 0^{\circ}C$)
		Recover	Battery Cell Voltage $\geq 3.1V$ ($> 0^{\circ}C$) Battery Cell Voltage $\geq 3.0V$ ($\leq 0^{\circ}C$)
Cell Undervoltage Permanent Failure	Protection	Trigger	Battery Cell Voltage $\leq 1.5V$


Battery Operating Status		Condition (For Reference Only)	
Charge High Temperature	Protection	Trigger	Battery Temperature $\geq 131^{\circ}\text{F}$ (55°C)
		Recover	Battery Temperature $\leq 122^{\circ}\text{F}$ (50°C)
Discharge High Temperature	Protection	Trigger	Battery Temperature $\geq 143.6^{\circ}\text{F}$ (62°C)
		Recover	Battery Temperature $\leq 122^{\circ}\text{F}$ (50°C)
Nominal Charge Low Temperature	Protection	Trigger	Battery Temperature $\leq 32^{\circ}\text{F}$ (0°C) Charging at 0.1C is allowed.
		Recover	Battery Temperature $\geq 37^{\circ}\text{F}$ (3°C)
Small-Current Charge Low Temperature	Protection	Trigger	Battery temperature $< 14^{\circ}\text{F}$ (-10°C)
		Recover	Battery temperature $> 19.4^{\circ}\text{F}$ (-7°C)
Discharge Low Temperature	Protection	Trigger	Battery Temperature $\leq -4^{\circ}\text{F}$ (-20°C)
		Recover	Battery Temperature $\geq 1.4^{\circ}\text{F}$ (-17°C)
Charge Overcurrent	Primary Protection	Trigger	Charge Current $\geq 115\text{A}$ (15s)
		Recover	Discharge Current $\geq 0.5\text{A}$ or Recover automatically after 60s
	Secondary Protection	Trigger	Charge Current $\geq 118\text{A}$ (5s)
		Recover	Discharge Current $\geq 0.5\text{A}$ or Recover automatically after 60s
	Ultimate protection	Trigger	Charge Current $\geq 200\text{A}$ (300ms)
		Recover	Discharge Current $\geq 0.5\text{A}$ or Recover automatically after 60s Charging is locked when the Ultimate Protection is triggered three times.
Discharge Overcurrent	Primary Protection	Trigger	Discharge Current $\geq 215\text{A}$ (60s)
		Recover	Charge Current $\geq 0.5\text{A}$ or Recover automatically after 60s
	Secondary Protection	Trigger	Discharge Current $\geq 260\text{A}$ (30s)
		Recover	Charge Current $\geq 0.5\text{A}$ or Recover automatically after 60s
	Ultimate protection	Trigger	Discharge Current $\geq 300\text{A}$ (200ms)
		Recover	Charge Current $\geq 0.5\text{A}$ or Recover automatically after 10s Discharging is locked when the Ultimate Protection is triggered three times.

Battery Operating Status		Condition (For Reference Only)	
Short Circuit	Protection	Trigger	Discharge Current $\geq 1000A$ Discharging is shut down for 10s when Short Circuit Protection is triggered. For the threeth time in a row that Short Circuit Protection is triggered, discharging is locked.
		Recover	Charge Current $\geq 0.5A$ and discharging is unlocked.

Troubleshooting

Problem	Possible Causes	Solution
<ul style="list-style-type: none"> The battery is unable to be activated with a charge/discharge current greater than 1A The battery is activated at open circuit voltage below 10V 	Severe battery overdischarge due to self-discharge or parasitic loads	Revive the battery with a battery charger or charge controller featuring lithium battery activation or force charging.
The battery shuts off due to undervoltage protection.	The battery voltage drops below the preset threshold	Disconnect the battery from loads, and charge the battery with a current greater than 1A as soon as possible.
The battery cuts off the charging current due to overvoltage protection	The battery voltage exceeds the preset threshold during charging.	<ol style="list-style-type: none"> 1. Disconnect the battery from the charging source. 2. Reduce charge voltage by 0.2V to 0.4V for 6 hours. 3. Attempt to fully charge the battery again with the correct voltage setting. If the problem persists with a lithium iron phosphate compatible charging source and correct voltage setting, repeat the above steps.
The battery temperature gets too high/low during operation and triggers high/low temperature protection	The battery temperature exceeds the preset threshold.	<ol style="list-style-type: none"> 1. Disconnect the battery from the charging source or loads. 2. Cool down/Warm up the battery. 3. The battery recovers from high/low temperature protection automatically and continues operating.
Short circuit protection is triggered.	Short circuit occurs in the battery.	<ol style="list-style-type: none"> 1. Remove the short circuit as soon as possible 2. Charge the battery with a current greater than 1A.

Problem	Possible Causes	Solution
Charge/Discharge over-current protection is triggered due to too high current passing through the battery.	Excessive current flows through the battery during charging or discharging.	Disconnect the battery from the charging source or loads as soon as possible.

 For further assistance, contact Renogy technical support service at <https://www.renogy.com/contact-us>.

Specifications

General

Battery Cell Type	Lithium Iron Phosphate
Rated Capacity (0.5C, 25°C)	104Ah
Nominal Voltage	12.8V
Voltage Range	10V to 14.8V
Cycle Life (0.5C, 25°C)	6000 Cycles (80% DOD)
Dimension	22.8 x 11.4 x 2.3 in / 579 x 290 x 59 mm
Weight	28.7 lbs / 13.0 kg
Connection Method	4S4P
Terminal Bolt Size	Terminal Bolt: M8 x 1.25 x 12 mm Long Terminal Bolt: M8 x 1.25 x 16 mm
Recommended Terminal Torque	70.8 in-lb / 8 N·m
Protection Rating	IP66
Certification	MSDS, UN38.3, FCC, CE, PSE, RoHS, RCM, IC, and UKCA

Operation Parameters


Charge Voltage	14.4V
Maximum Continuous Charge Current	100A
Maximum Continuous Discharge Current	200A
Peak Discharge Current	290A@30S
Charge Temperature Range	14°F to 131°F / -10°C to 55°C (14°F to 32°F / -10°C to 0°C, 0.1C)
Discharge Temperature Range	-4°F to 140°F / -20°C to 60°C
Storage Temperature Range	-4°F to 140°F / -20°C to 60°C
Operation Relative Humidity	5% to 95%

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 10V, 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 tips below to ensure that the battery emerges from storage in a good condition:

- Charge the battery to 30% to 50% SOC.
- 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 3 to 6 months to prevent it from overdischarge.
- Fully charge the battery when it is taken out of storage.

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 CO₂ 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 quick guide 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

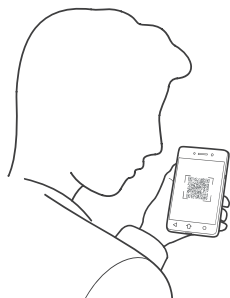
- Please keep the battery away from water, heat sources, sparks, and hazardous chemicals.
- Do not puncture, drop, crush, burn, penetrate, shake, strike, or step on the battery.
- Do not open, dismantle, repair, tamper with, or modify the battery.
- Do not touch any terminals or connectors.
- Please 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.

Renogy Support

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

 | renogy.com/support/downloads

 → contentservice@renogy.com



Questionnaire Investigation



To explore more possibilities of solar systems, visit Renogy Learning Center at:

 | renogy.com/learning-center

For technical questions about your product in the U.S., contact the Renogy technical support team through:

 | renogy.com/contact-us



1(909)2877111

For technical support outside the U.S., visit the local website below:

Canada |  | ca.renogy.com

China |  | www.renogy.cn

Australia |  | au.renogy.com

Japan |  | jp.renogy.com

Other Europe |  | eu.renogy.com

Germany |  | de.renogy.com

United Kingdom |  | uk.renogy.com

Join Our Facebook Community Today. Scan the QR code to connect with like-minded people and Renogy engineers. You will get:

- Priority access to our latest launches & special events
- Insider Q&A sessions with our engineers
- Endless solar project ideas & sources



Battery Recycling

The proper disposal and recycling of batteries are essential for environment protection and circular economy. We encourage correctly disposing of your batteries when they become depleted.

You can dispose your used batteries at any of [Call2Recycle](https://www.call2recycle.org/) or [Earth911](https://search.earth911.com) locations that accepts Renogy rechargeable Lithium-ion and Lead-acid batteries (AGM&GEL).

 www.call2recycle.org/locator

 search.earth911.com

Enjoy our community's incentive program when you properly dispose of your batteries. You can earn \$20 gift cards to purchase any products on our website by participating. It's a simple way to be environmentally responsible and be rewarded for recycling.

 renogy.com/support

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.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IC Warning

This device complies with Innovation, Science and Economic Development Canada's licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

IC RF Statement: When using the product, maintain a distance of 20cm from the body to ensure compliance with RF exposure requirements.



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 CO₂ 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.

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