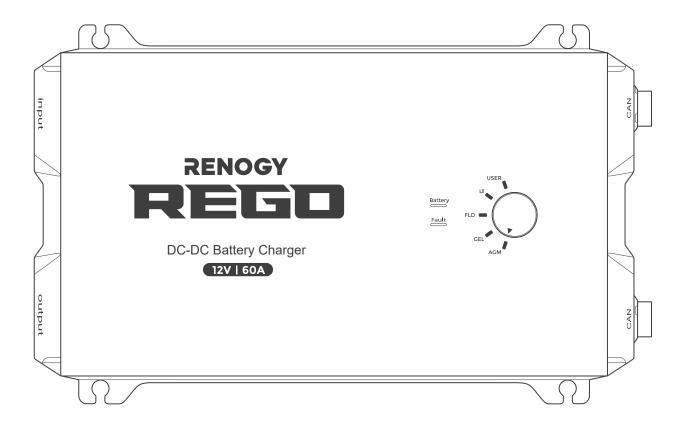


# REGO DC-DC Battery Charger

12V | 60A

VERSION AC



**USER MANUAL** 

### **Applicability**

The user manual applies to the following product:

REGO 12V 60A DC-DC Battery Charger (RBC1260DO-12B)

#### **Disclaimer**

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#### **Date and Revision**

March 2022, Revision A0

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## Important Safety Information

Symbols Used General Safety Information

The user manual provides important installation, operation, and maintenance instructions for REGO 12V 60A DC-DC Battery Charger. Please read the user manual carefully before installation and 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 charger, potentially rendering it inoperable. The installation and service of the battery charger might require knowledge of electricity and is recommended to be carried out by qualified personnel.

### **Symbols Used**

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



WARNING

Indicates a potentially dangerous condition which could result in 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.



**INFO** 

Indicates that more information is available in other documents relating to the subject.

## **General Safety Information**



#### **WARNING**

- Do not puncture, drop, crush, penetrate, shake, strike, or step on the battery charger.
- Do not open, dismantle, repair, tamper with, or modify the components of the battery charger.
- Please install the battery charger indoors to avoid exposing the components to direct sunlight.
- Do not immerse the battery charger or its components in water or other fluids.
- Please keep the battery charger away from heating equipment to prevent high temperatures. Make sure there is good ventilation.
- Place the battery charger on a vertical surface.
- Do not insert foreign objects into the battery charger.
- Risk of explosion! Never install the battery charger in a sealed enclosure with flooded batteries! Do not install in a confined area where battery gases can accumulate.
- Please confirm the polarity of the devices before connection. A reverse polarity contact can cause injury and damage the device.
- Please refer to the "Recommendations of Wire Diameters and Fuses" in this manual, and select the satisfied cables and fuses according to the usage.

## Important Safety Information

Symbols Used General Safety Information

- Keep the battery charger out of the reach of children.
- Please wear proper protective equipment and use insulated tools during installation and operation.
- Do not touch the connector contacts when the charger is working.
- Please remove all connections before maintenance or cleaning.
- Do not dispose of battery charger as household waste. Please use recycling channels in accordance with local, state, and federal regulations.
- In the event of fire, use a fire extinguisher that is suitable for electrical devices.
- If electrical devices are incorrectly installed on boats, this can lead to corrosion of the boat. Have the product installed by a qualified (boat) electrician.



#### **CAUTION**

- Do not expose the battery charger to flammable or harsh chemicals or vapors.
- Ensure that no water sources are above or near the battery charger, including downspouts, sprinklers, or faucets.



Introduction Key Features

Four Charging Stages

#### Introduction

The Renogy REGO DC-DC Battery Chargers save on installation time than traditional chargers. The pioneering bidirectional charging technology not only provides the most effective way to charge your house batteries from the starter battery on the go but also recharges and maintains your starter battery when the house batteries are full. The battery charger is compatible with a multitude of types of 12V alternators and batteries. In addition, the four-stage charging provides various protections to ensure ultra safety. Easily add this DC-DC battery charger to your RVs, commercial vehicles, boats, yachts, and many more applications, to get stable energy on the go!

### **Key Features**

#### **Pioneering Bidirectional Charging**

This battery charger can charge your house batteries from the starter battery when driving and recharge your starter battery when the house batteries are full. Keep both your house batteries and starter battery always have adequate power on the go.

#### Extremely Simplified Installation and Easy to Select the Battery Type

This battery charger uses Anderson connectors instead of traditional ring terminals. This significantly simplifies device connection, saving over 60% installation time. The unique mechanical design requires no more complicated data setting steps. You can select the battery type with a simple turn on the knob.

#### **High-Efficiency Charging**

The DC-DC battery charger adopts the four-stage charging technology (Bulk/Boost/Float/ Equalization) to prolong the battery lifespan, realizing an optimal charging efficiency.

#### Compatible with Multiple Battery Types, Suitable for Wide Application

The DC-DC battery charger is compatible with multiple types of batteries: AGM, SLD, Flooded, Gel, and Lithium, providing a powerful charging solution for different occasions. Moreover, it can interoperate with with both traditional and smart alternators.

#### Various Protections for Ultra Safety

The charger offers Overvoltage Protection, Overtemperature Protection, and Reverse Polarity Protection on both inputs and outputs to ensure operation safety. The charger is of guaranteed quality with multiple certifications, including IEC/EN 60335, FCC-ID, CE-RED, and MIC.

Introduction

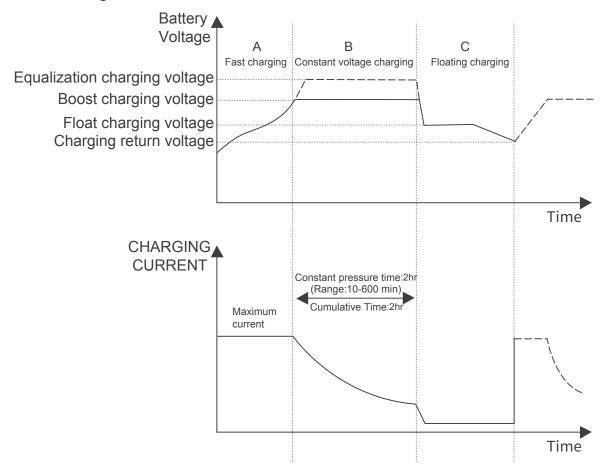
Kev Features

**Four Charging Stages** 

**Lithium Activation** 

### **Four Charging Stages**

REGO 12V 60A DC-DC Battery Charger has a four-stage battery charging algorithm for a rapid, efficient battery charging. They include Bulk Charge, Boost Charge, Float Charge, and Equalization Charge.



### Bulk Charge:

During the high current fast charging phase, if the battery voltage has not yet reached the preset value (Equalization/Boost voltage), the DC-DC Battery Charger will perform Bulk charging and output a constant maximum current value continuously and steadily. When the battery voltage reaches the preset value, it will move to the next stage of constant voltage.

## Boost Charge:

When the battery voltage reaches the preset value, the DC-DC Battery Charger enters the constant voltage charging stage, and constant high current charge is no longer used in this process. At the same time, the charge current will gradually drop. Two states exist in the constant voltage charging phase-Equalizing and Boosting, which are not repeated.

**Constant Charge:** Boost stage maintains a charge for 2 hours by default. The user can adjust the constant time and preset value of Boost according to their demand.

### Float Charge:

After the constant voltage stage, the controller will reduce the battery voltage to a Float

Introduction

**Kev Features** 

Four Charging Stages

**Lithium Activation** 

voltage set point. Once the battery is fully charged, there will be no more chemical reactions and all the charge current would turn into heat or gas. In this case, the DC-DC Battery Charger will reduce the voltage charge to smaller quantity, while lightly charging the battery. The purpose for this is to offset the power consumption while maintaining a full battery storage capacity. In the event that a load drawn from the battery exceeds the charge current, the DC-DC Battery Charger will no longer be able to maintain the battery to a Float set point and the DC-DC Battery Charger will end the Float charge stage and refer back to Bulk charging.

#### **Equalization:**

It is carried out every 30 days of the month. It is intentional overcharging of the battery for a controlled period of time. Certain types of batteries benefit from periodic equalizing charge, which can stir the electrolyte, balance battery voltage and complete chemical reaction. Equalizing charge increases the battery voltage, to a level higher than the standard complement voltage, which gasifies the battery electrolyte.



#### **CAUTION**

- It is recommended to only use no-sealed/vented/flooded/wet cell lead acid batteries in the Equalization stage, and the charger provides Equalization charging for FLD type batteries by default.
- Do not equalize VRLA type AGM / Gel / Lithium cell batteries UNLESS permitted by battery manufacturer.
- REGO 12V 60A DC-DC Battery Charger provides Equalization charging for flooded batteries by default, with a cycle of once every 30 days.



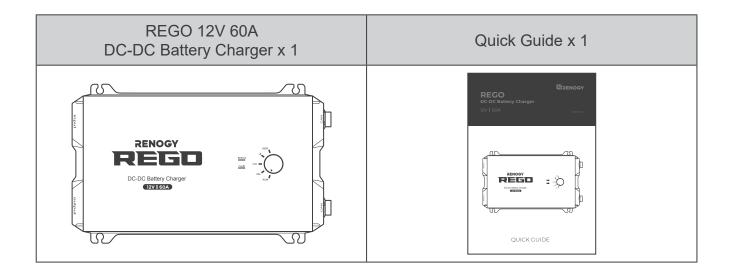
#### **WARNING**

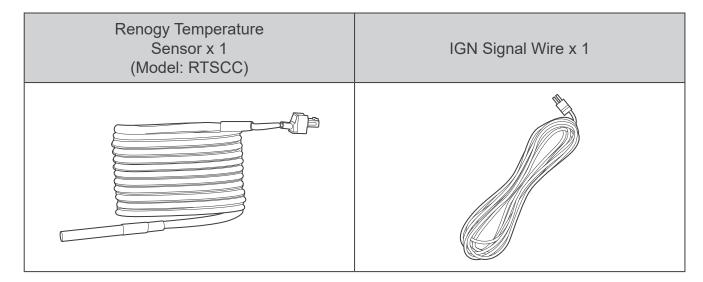
- Once Equalization is active in the battery charging, the DC-DC charger will not exit this stage unless there is a sufficient source of charging current from the starter battery or DC alternator. There should be NO load on the batteries when in Equalization charging stage.
- Over-charging and excessive gas precipitation may damage the battery plates and activate material shedding on them. Too high of an equalizing charge or too long of one may cause damage. Please carefully review the specific requirements of the battery used in the system.
- Equalization may increase battery voltage to a level damaging to sensitive DC loads.
   Ensure that all load allowable input voltages are greater than the set voltage during equalizing charging.

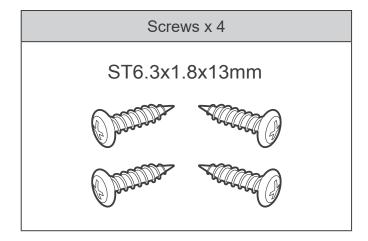
#### **Lithium Activation**

For the lithium battery with BMS protection, open circuit may occur when the BMS protection function is enabled. Therefore, the charger will output a stable voltage in time in the lithium battery mode. In this way, the lithium battery will be activated to exit BMS protection function.

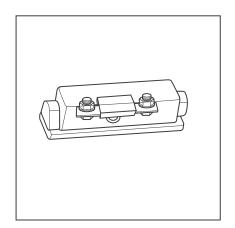
# **Package Contents**





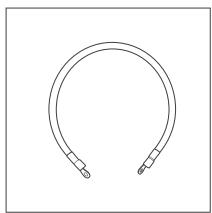


## **Optional Accessories**



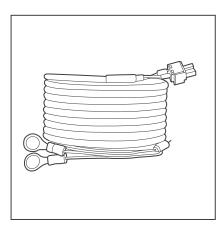
## Starter Battery Fuse (90A) as input Auxiliary Battery Fuse (80A) as output

The battery fuses will protect battery charger, wires and batteries from overcurrent.



#### **Fuse Cable**

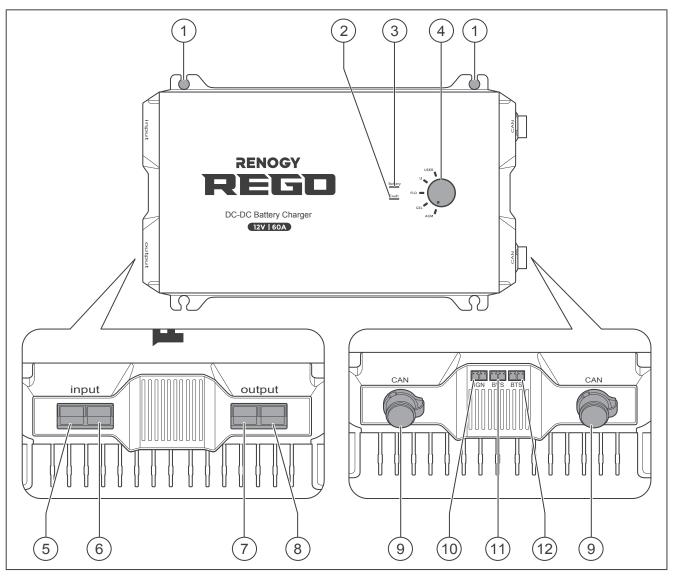
The wire is designed with two sections of copper rings, thus enabling the battery charger to function as an external fuse.



### **Battery Voltage Sensor (Model: RVSCC)**

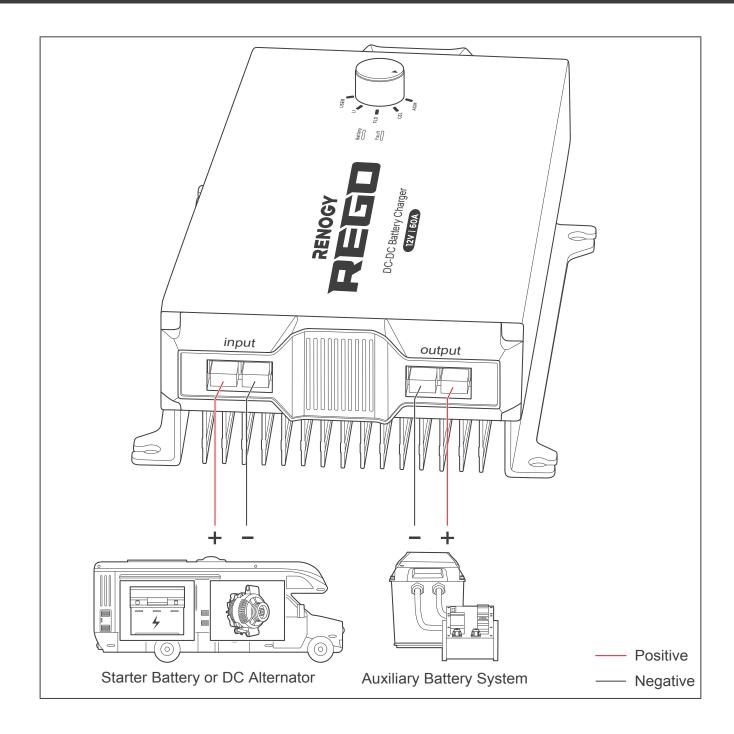
The charging voltage of the battery charger is affected by the length and size of the wire. The voltage sensor can calibrate the charging voltage error caused by the wire to ensure that the battery charger works properly.

## **Product Overview**



No.	Part	No.	Part
1	Mounting Holes	7	Negative Output
2	Fault Status Indicator	8	Positive Output
3	Battery Status Indicator	9	CAN Communication Ports
4	Battery Type Setting Knob	10	IGN Signal Wire Port
5	Positive Input	11	BVS (Battery Voltage Sensor) Port
6	Negative Input	12	BTS (Battery Temperature Sensor) Port

# **Wiring Diagram**



## Recommended Cable Sizing

Model	Cable	Cable Length (ft) / (m)	Recommended Cable Size
		0 to 10ft / 0 to 3m	6AWG
DE00.40\/.00A	Input	11 to 20ft / 3 to 6m	6AWG
REGO 12V 60A DC-DC Battery		21 to 30ft / 9 to 6m	4AWG
Charger (RBC1260DO-12B)		0 to 10ft / 0 to 3m	8AWG
(NBC 1200BO-12B)	Output	11 to 20ft / 3 to 6m	6-8AWG
	21 to 30ft / 9 to 6m	6AWG	



### **NOTE**

- The cable specifications listed above account for critical, less than 3% voltage drop and may not account for all configurations.
- The specification of fuse cable is consistent with that of the input/output terminal of battery charger.

## **Components & Tools**



### **CAUTION**

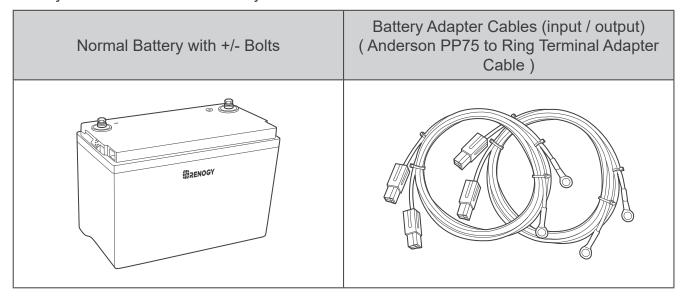
 The adapter cable used in this manual can be made by yourself or purchased from Renogy official website according to the names in Recommended Components.

### **Recommended Components**

Battery Scenario A: REGO Battery Kit

REGO 12V 400Ah Lithium Iron Phosphate Battery	Battery Adapter Cables (input) ( Anderson PP75 to Ring Terminal Adapter Cable )
System Combiner Box Accessory Set	Positive/Negative Busbars Accessory Set
REGO 4 Ports 400A System Combiner Box	Positive/Negative Busbars
Battery Adapter Cable (output) ( Anderson PP75 to Anderson 120 Adapter Cable or Anderson PP75 to Ring Terminal Adapter Cable )	Battery Adapter Cable (output) ( Anderson PP75 to Ring Terminal Adapter Cable )
Anderson 120	

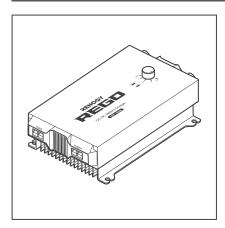
### Battery Scenario B: Normal Battery Kit



### **Required Tools**

Wrench (10mm)	Wrench (14mm)	Measuring Tape	Insulation Tape
10mm	14mm		

## **Checking the Battery Charger**

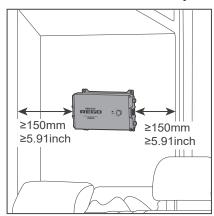


 Please inspect the battery charger for any visible damage including cracks, dents, deformation, and other visible abnormalities. All connector contacts shall be clean, dry, and free of dirt and corrosion.



#### **WARNING**

Do not use the battery charger if it has any visible damage.



2. Confirm the installation location.



#### **WARNING**

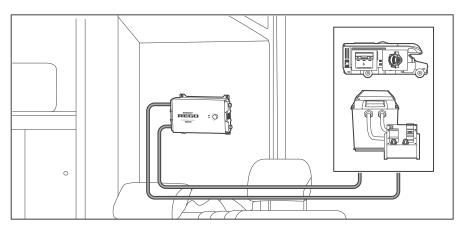
- Please install the battery charger indoors and prevent its components from being exposed to direct sunlight. Prevent water from entering the battery charger.
- Risk of explosion! Never install the battery charger in a sealed enclosure with flooded batteries! Do not install in a confined area where battery gases can accumulate.
- Place the battery charger on a vertical surface. Make sure there is good ventilation.
- The battery charger requires at least 6 inches (150mm) of clearance above and below for proper air flow.
- Make sure that the battery charger is installed in an environment with relative humidity between 0% and 95% and no condensation.

**Components & Tools** 

**Checking the Battery Charger** 

**Checking Auxiliary Battery** 

**Automobile Alternator Check** 



3. Measure the length of the cables connecting to the battery and solar panel so they can be connected to the battery charger.



#### **NOTE**

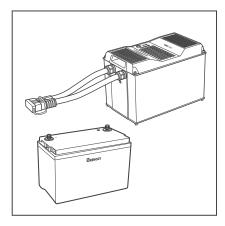
If the Battery Adapter Cable or Solar Panel Extension Cable is not long enough, you can
use more extension cables or reselect the position where the battery charger needs to be
secured.



#### **WARNING**

 Please refer to the Recommendations of Wire Diameters and Fuses in this manual, and select the satisfied cables according to the usage.

## **Checking Auxiliary Battery**



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



#### **INFO**

Please read the user manual of the auxiliary battery carefully before installation.



#### **NOTE**

- Please make sure the battery is working normally.
- The battery charger can only be applied to a deep-cycle sealed lead-acid battery, a flooded battery, a gel battery or a lithium iron phosphate battery.
- Take care to use a high-capacity lead-acid battery. Be sure to wear protective goggles. If carelessly getting electrolyte in your eyes, please flush the eyes with clean water from a cup or other container immediately.



#### **CAUTION**

 If you replace your battery with a new one, please dispose of the used battery through the specified recycling channel according to the local, state, and federal laws and regulations.



#### **WARNING**

- Do not use the battery charger if it has any visible damage.
- Do not touch the exposed electrolyte or powder if the battery housing is damaged.
- When being charged, the battery may give off explosive gas. Make sure there is good ventilation.

Battery or Battery Pack System Voltage	
Battery or Battery pack system voltage = System voltage U	
Batteries in Series	Batteries in Parallel
System voltage U: U1+U2+U3	System voltage U: U1=U2=U3

The batteries can be combined in parallel or in series as needed.
 This battery charger supports a maximum system voltage of 16V.
 Please refer to the user manual for battery voltage parameters, and calculate the battery or battery pack system voltage according to the formula to ensure that it does not exceed 16V.



#### **CAUTION**

• In the formula, U represents the battery voltage, and 1, 2 or 3 represents the battery number, respectively.



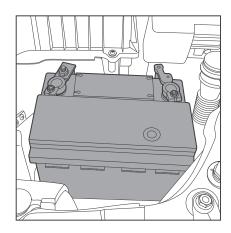
#### **WARNING**

Do not use the battery charger if the battery/battery pack system voltage exceeds 16V.
 Doing so will cause damage to the battery charger.

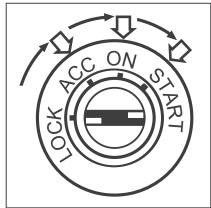
#### **Automobile Alternator Check**

The automobile alternator may be a smart alternator or a traditional alternator. The connection method varies depending on the specific alternator. Before installing the battery charger, please refer to the user manual of the vehicle or consult the vehicle supplier to determine the type of alternator. In addition, you can use a multimeter by yourself to measure the alternator to determine the type of alternator.

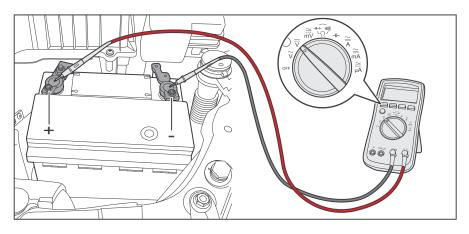
Checking Auxiliary Battery



1. Locate your main vehicle battery/starter battery.



 Start the engine, ensuring any fans, radio, and lights. are turned off. Leave the engine running for around 5 to 10 minutes.



 Read the voltage of the main vehicle battery.
 For traditional alternators, the DC voltage is around 14.4V.
 For smart alternators, the DC voltage is around 12.5V to 13.5V.



#### **NOTE**

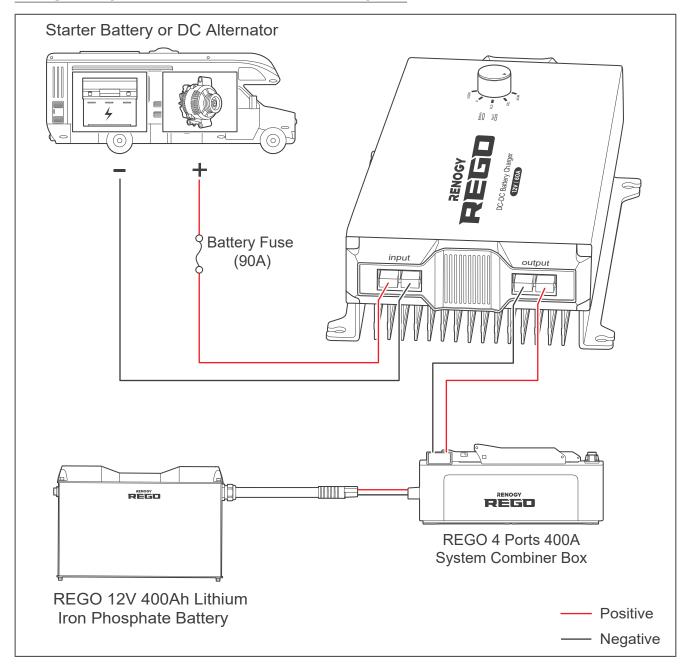
- In general, the working voltage of a traditional alternator ranges from 13.5V to 6V, and that of a smart alternator ranges from 12.5V to 16V.
- The maximum output current of the alternator needs to be  $\leq$  70A and the maximum output power should be  $\leq$  800W.
- The DC-DC battery charger interoperates with alternators at a minimum current of 90A to 120A, at least 1.5 to 2 times that of the battery charger.

## **System Diagram**

Battery Scenario A: REGO Battery Kit

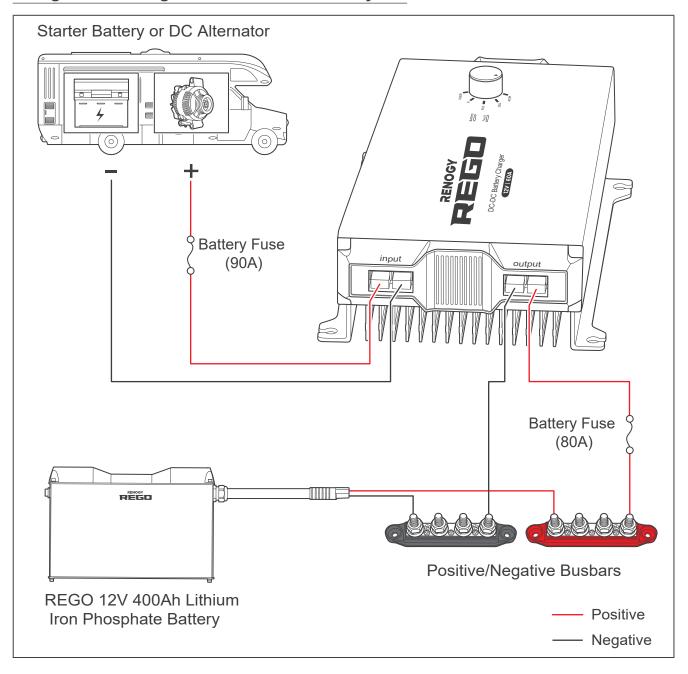
## **Battery Scenario A: REGO Battery Kit**

### **Using the System Combiner Box Accessory Set**



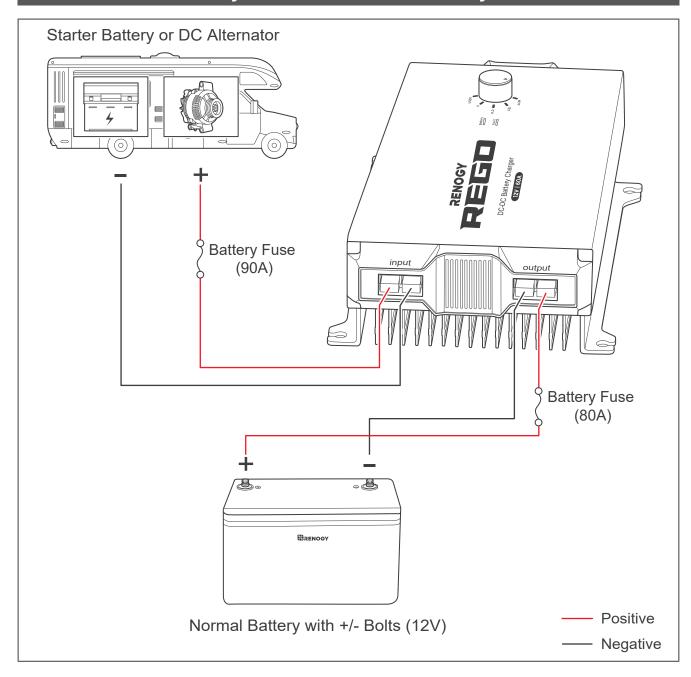
## System Diagram

### **Using Positive/Negative Busbars Accessory Set**



# System Diagram

## **Battery Scenario B: Normal Battery Kit**

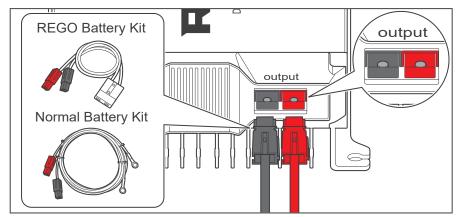


## **Battery Charger Wiring**

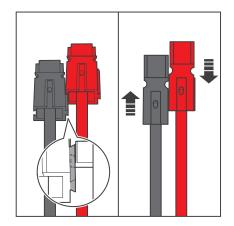


### NOTE

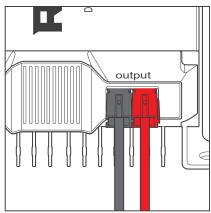
- Please refer to the "Recommendations of Wire Diameters and Fuses" in this manual, and select the satisfied cables according to the usage.
- Please make sure that the connections of the Anderson connectors are tight and secure.



 For the Output terminal, align the Battery Adapter Cable's Anderson PP75 connectors to the correct orientation and polarity.

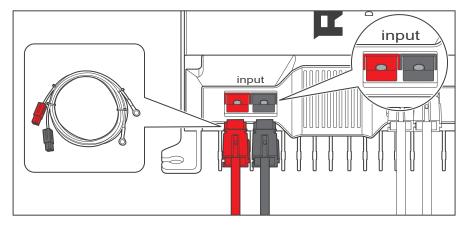


2. Bind the Anderson PP75 connectors by sliding the side grooves.

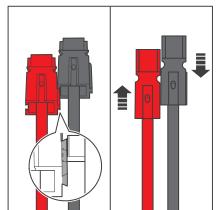


3. Insert the Anderson PP75 connectors into the Output terminal.

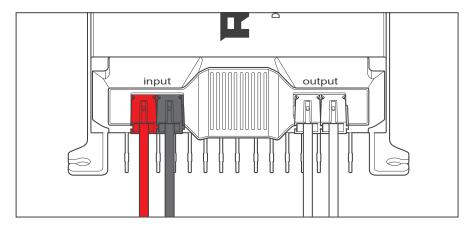
## **Battery Charger Wiring**



4. For the Input terminal, align the Battery Adapter Cable's Anderson PP75 connectors to the correct orientation and polarity.



5. Bind the Anderson PP75 connectors by sliding the side grooves.



6. Insert the Anderson PP75 connectors into the Input terminal.

Battery Scenario A: REGO Battery Kit Battery Scenario B: Normal Battery Kit



#### **NOTE**

- Identify the polarity (positive and negative) on the cables used for the batteries. A reverse polarity contact may damage the unit.
- Please ensure that the Anderson connectors are fully seated and/or the ring terminals are securely connected.



#### **WARNING**

- Do not touch the positive and negative terminals of the battery directly with your hands at the same time.
- Do not allow the positive (+) and negative (-) terminals of the battery to contact with each other.

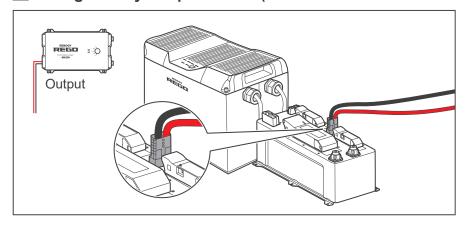
## **Battery Scenario A: REGO Battery Kit**

#### **Using the System Combiner Box Accessory Set**



#### **NOTE**

- Please read the user manual of REGO 4 Ports 400A System Combiner Box carefully before wiring.
- Using Battery Adapter Cable (Anderson PP75 to Anderson 120 Adapter Cable)



1. Insert the Anderson 120 connector of the Battery Adapter Cable (output) to the System Combiner Box.



#### **NOTE**

If the devices are connected to the Anderson connectors of the System Combiner Box, please install a 80A NH fuse in the top NH fuse disconnect switch.

Battery Scenario A: REGO Battery Kit

Battery Scenario B: Normal Battery Ki

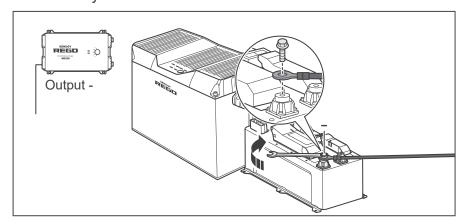
Battery Indicator

#### Using Battery Adapter Cable (Anderson PP75 to Ring Terminal Adapter Cable)

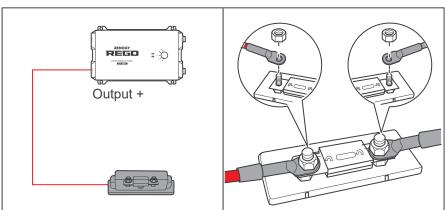


#### NOTE

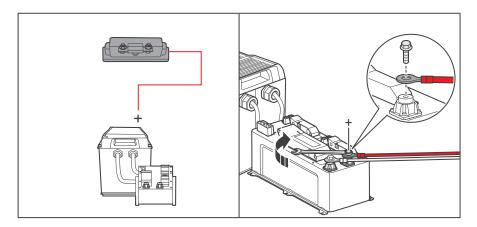
 Select the appropriate wrench according to positive/negative wire fixing bolt specifications of the system hub.



1. Attach the ring terminal of the negative Battery Adapter Cable (output) to the negative battery bolt and tighten it with a wrench.



2. For your safety, it is recommended to use a battery fuse (80A). Connect the positive Battery Adapter Cable (output) to one end of the battery fuse, and then connect the other end to the positive bolt of the battery.



3. Attach the ring terminal of the positive Battery Adapter Cable (output) to the positive bolt of the auxiliary battery and tighten it with a wrench.

### **Using Positive/Negative Busbars Accessory Set**



#### NOTE

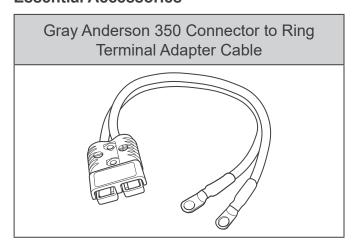
Please select the applicable wrench according to wire fixing bolt specifications of Positive/ Negative Busbars.

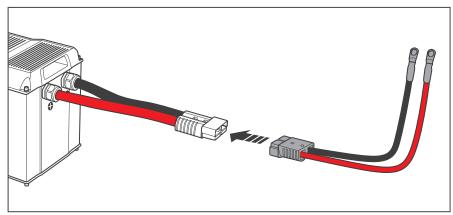


#### **WARNING**

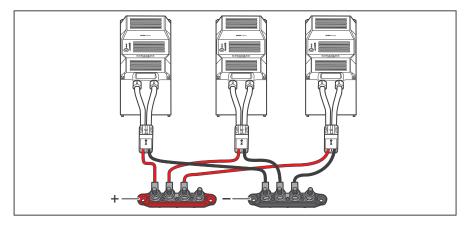
Please select the right size of positive/negative sink according to the maximum continuous charging/discharging current of the battery operation.

#### **Essential Accessories**





1. Connect the Anderson Connectors of the batteries to the Adapter Cables (sold separately).

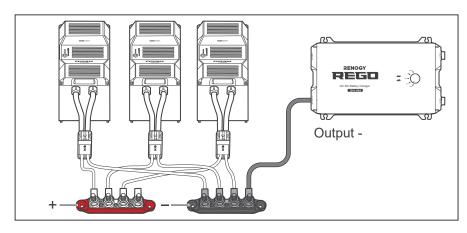


2. Connect the positive and negative ring terminals of the Adapter Cables to the Positive and Negative Busbars (not included) respectively.

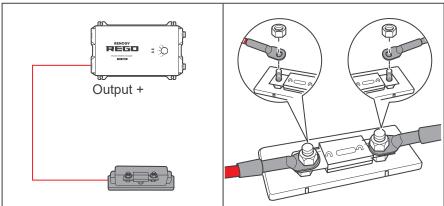
Battery Scenario A: REGO Battery Kit

Battery Scenario B: Normal Battery Ki

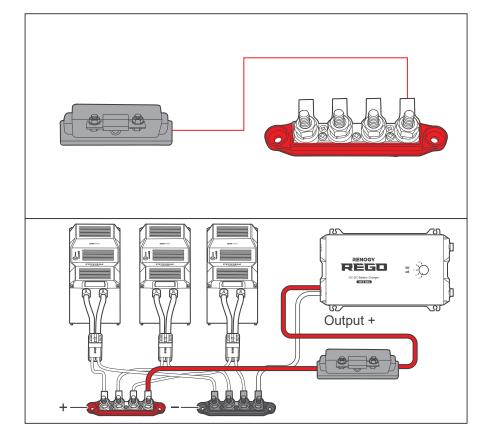
Battery Indicator



3. Attach the ring terminal of the negative Battery Adapter Cable (output) to the negative battery bolt and tighten it with a wrench.



4. For your safety, it is recommended to use a battery fuse (80A). Connect the positive Battery Adapter Cable (input) to one end of the battery fuse, and then connect the other end to the positive bolt of the starter battery.



5. Attach the ring terminal of the positive Battery Adapter Cable (input) to the positive bolt of the starter battery and tighten it with a wrench.

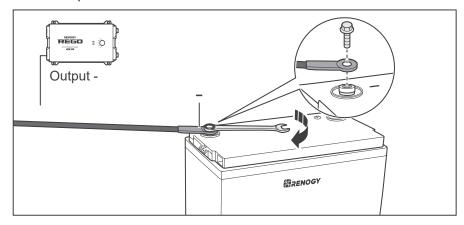
Battery Scenario A: REGO Battery Kit Battery Scenario B: Normal Battery Kit

## **Battery Scenario B: Normal Battery Kit**

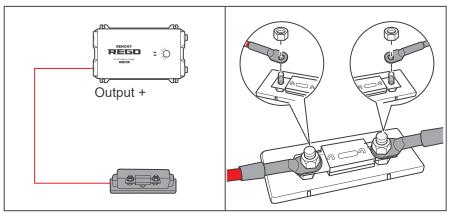


#### **NOTE**

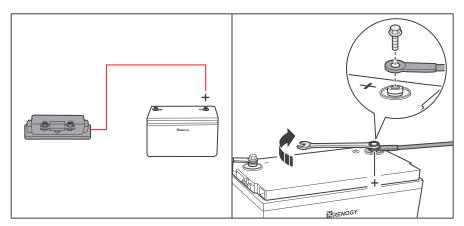
Please select the appropriate wrench according to the battery positive/negative wire fixing bolt specifications.



1. Attach the ring terminal of the negative Battery Adapter Cable (output) to the negative terminal of Normal Battery and tighten it with a wrench.



2. For your safety, it is recommended to use a battery fuse (80A). Connect the positive Battery Adapter Cable (output) to one end of the battery fuse, and then connect the other end to the positive bolt of the battery.



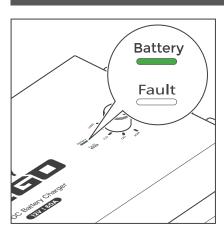
3. Attach the ring terminal of the positive Battery Adapter Cable (input) to the positive terminal of Normal Battery and tighten it with a wrench.

Battery Scenario A: REGO Battery Kit

Battery Scenario B: Normal Battery Kit

**Battery Indicator** 

## **Battery Indicator**



Once the battery wiring is completed correctly and the battery is turned on, the battery charger's Battery indicator lights up green.

When the battery is performing normally, the Battery indicator may not light up. This means the battery charger needs troubleshooting. For details, contact our customer service through renogy.com/contact-us/.

REGO 12V 60A DC-DC Battery Charger can be directly connected to the vehicle's starter battery (12V).



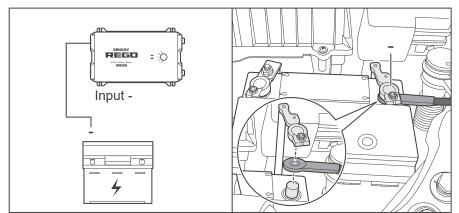
#### **NOTE**

- Please select the appropriate wrench according to the battery positive/negative wire fixing bolt specifications.
- Please ensure that the ring terminals are securely connected.

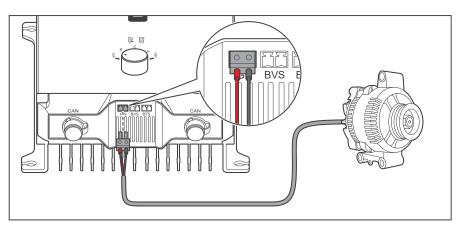


#### **WARNING**

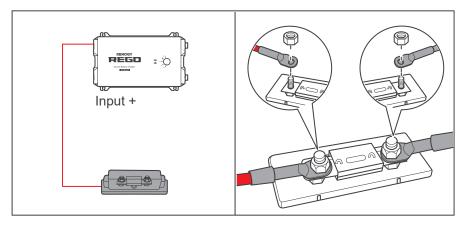
Identify the polarity (positive and negative) on the cables used for the batteries. A reverse
polarity contact may damage the unit.



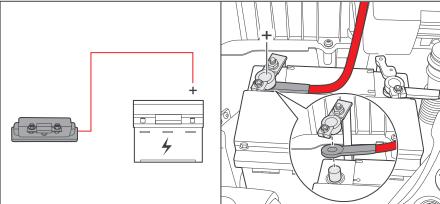
 Attach the ring terminal of the negative Battery Adapter Cable (input) to the negative bolt of the starter battery.



2. The traditional alternator does not need to be connected to the IGN Signal Wire. If the DC alternator of the vehicle is a smart alternator, insert the IGN Signal Wire connector into IGN signal wire port, and then connect the other end to the smart alternator's ignition signal port.



 For your safety, it is recommended to use a battery fuse (90A).
 Connect the positive Battery Adapter Cable (output) to one end of the battery fuse, and then connect the other end to the positive bolt of the battery.



 Attach the ring terminal of the positive Battery Adapter Cable (input) to the positive terminal of the starter battery.



If the starter battery voltage reaches the working condition of the battery charger, after waiting for 15s, the battery indicator flashes green and the battery charger starts to work. If the battery indicator does not flash, the battery charger may be faulty, please contact our customer service through <a href="renogy.com/contact-us/">renogy.com/contact-us/</a>.

If the starter battery voltage does not meet the battery charger's working requirements, the battery charger will not work and the Battery indicator will not flash.

REGO 12V 60A DC-DC Battery Charger can be directly connected to the vehicle's DC alternator (12V). For details, contact our customer service through renogy.com/contact-us/.



#### **NOTE**

- Please consult your vehicle supplier to determine the BAT+, BAT- and IGN terminal locations for the DC alternator before connecting.
- Please select the applicable wrench according to the wire fixing bolt specification of DC alternator.
- Please ensure that the ring terminals are securely connected.



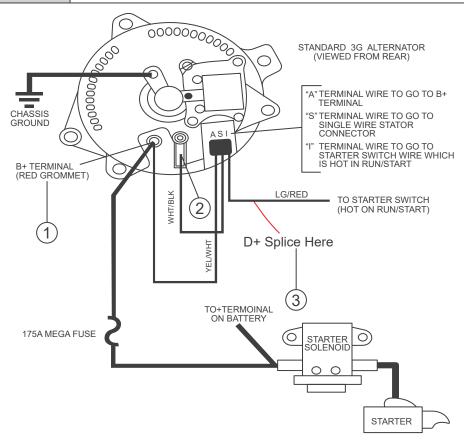
#### **WARNING**

Identify the polarity (positive and negative) on the cables used for the batteries. A reverse
polarity contact may damage the unit.

#### **Alternator Recommendation**

Check your alternator and identify the number of terminals. Most alternator will have 3 wires connected (BAT+, BAT-, and IGN). The table below shows an example alternator terminal, and may not match your application. Refer to your vehicle's documentation and part for actual wiring.

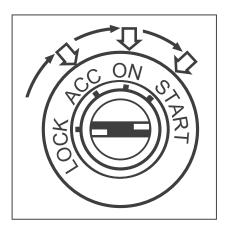
① BATT+	Could be labeled as "B", "Bat", or "Pos". This will connect directly to the battery and typically be heavy gauge for high current applications.
② BATT-	Could be labeled as "Neg", "Field" or "F". This will connect to ground. Some alternator may not have this as they will be directly grounded to the engine.
③ IGN	Could be labeled "IGN" or "L" and will likely be the smaller terminal. This connects to the ignition circuit or dashboard warnings signs. This is where you will want to splice the D+ ignition cable.



#### **Engine Bay Fuse Block Recommendation**

Review your vehicle's fuse layout to identify a fuse location that is live when the vehicle is running with the alternator. Key positions in the ignition are typically lock, accessory, on, and start.

LOCK	Off position where no accessories will work, and steering is also likely locked.
ACCESSORY	Accessories are given power such as radio and some other small electronics.
ON	Turns on all your electronics. The key will default into this position after cranking in START. Splicing of fuse block will need to be live when the key is in reverting back to this position.
START	Cranks the engine on and reverts to ON position.



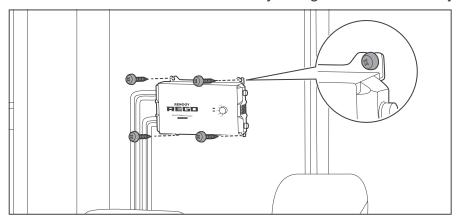
You may need to test the fuse location by checking the voltage with a multimeter and making sure it is live only when the vehicle is in the Start/Run position. This will help identify where to connect if the fuse layout does not have an IGN position. The easiest connections when splicing can be made when using a fuse holder splice connector.

# **Mounting**



## NOTE

• Please make sure that the battery charger is installed firmly to prevent it from falling off.



 Place the battery charger against a flat surface and secure it with included screws.

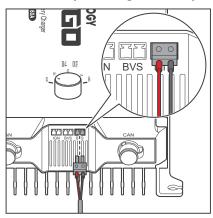
# **Temperature Sensor**

The temperature sensor can detect the battery's temperature and update it to the battery charger for charging voltage calibration. This ensures the battery charger (with operating temperature range from -20°C to 60°C or -4°F to 140°F) can charge the battery normally.

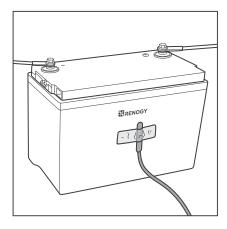


#### **CAUTION**

 Do not use the temperature sensor on a LiFePO4(LFP) battery which comes with a battery management system(BMS).



1. Insert the temperature sensor terminal block into the BTS port of the battery charger.



2. Adhere the sensor on the battery with insulation tape.

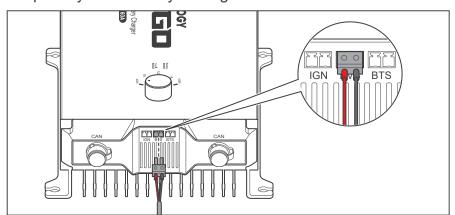
# **Voltage Sensor (Optional)**

The Battery Voltage Sensor is the perfect solution by providing an accurate battery voltage to the battery charger and allowing it to adjust the charging stage precisely resulting in overall extension of your battery life.

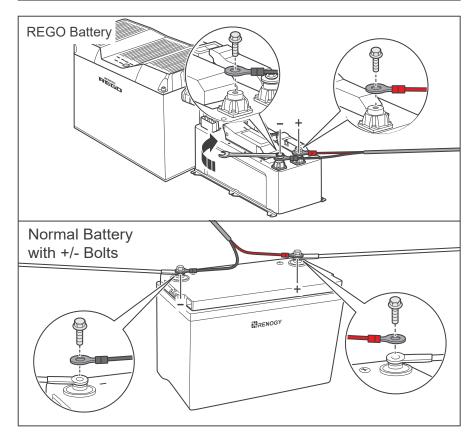


#### **NOTE**

- The voltage sensor ring is M8 (Approx. 5/16"). If the battery bolt size is small, please use a gasket to fix it to prevent it from falling off.
- Identify the polarity (positive and negative) on the cables used for the batteries. A reverse
  polarity contact may damage the unit.



 Insert the voltage sensor terminal block to the BVS port.



 Connect the voltage sensor ring terminal to the positive/negative pole of the battery system.

The REGO DC-DC Battery Charger can communicate with other REGO devices and monitoring devices, enabling safe operation, smart control, remote monitoring, and programmable settings.

#### **Inter-Device Communication**

Depending on the installation condition, the RV-C communication connections between the battery charger and other REGO devices can be established with backbone or daisy chain topology. The inter-device communication allows the battery charger to dynamically adjust the charging profile for an optimal and safe charge.

#### **Backbone Topology**

Some RV manufacturers have a pre-installed RV-C bus running through the RV. Please check the RV user manual and make sure that the first and last Drop Tap on the RV-C bus has a built-in  $120\Omega$  termination resistor. In this way, the battery charger and other REGO series devices can be connected to the RV-C bus for communication with the Backbone topology.

If you need to use the backbone topology for communication connections, it is recommended to visit the Renogy website and seek help through Contact Us.



#### **CAUTION**

- If the RV user's manual does not determine if the RV-C bus has a built-in 120Ω termination resistor, call the RV manufacturer to confirm.
- If the RV-C bus does not have a built-in 120Ω termination resistor, the battery charger will not communicate properly with other REGO series devices. Please use the Daisy Chain topology for communication connections.

When it is determined that a backbone topology can be used for communication connections, the appropriate communication cable must be selected for the connection based on the actual usage.

#### **Recommended Accessories**

LP16 Plug (7-Pin) to Bare Wires Drop Cables	Drop Plugs	Split Joint Pilers



#### **NOTE**

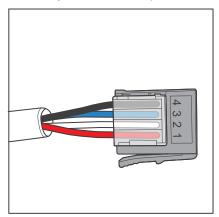
• The lengths of the Drop Cables shall not exceed 19.6 feet (6 m), and the total length shall not exceed 98.4 feet (30 m).

## Communication

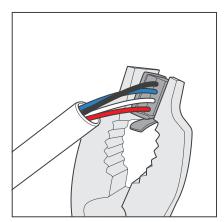
**Inter-Device Communication** 

**Monitoring Device Communication** 

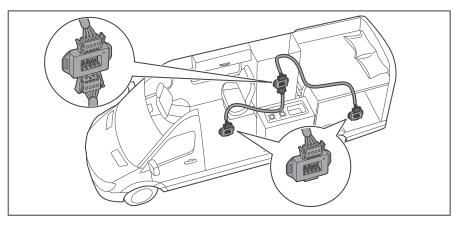
- Different drop sockets are used on the RV-C bus by different RV manufacturers. Please select the Drop Plugs that match the drop sockets for the inter-device communication connections. If you are not sure about the Drop Plug selection, please check with the RV manufacturer. This User Manual takes the Mini-Clamp II plug (4-pin) as an example.
- Different Drop Plugs follow different pinouts. Please crimp the Drop Plugs on the Drop Cables following the correct pinout. If unsure about the Drop Plug pinout, please check with the RV manufacturer. This User Manual takes the pinout of the Mini-Clamp II plug (4-Pin) as an example.



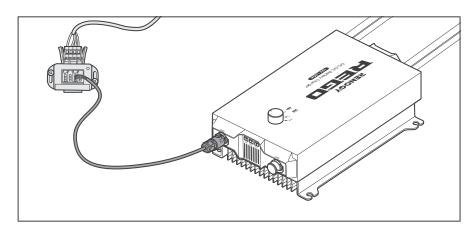
 Insert the bare wires of the Drop Cables (sold separately) all the way into the wire ports of the Drop Plugs (not included) following the Drop Plug pinout. The red PS+ wires go to pin 1, the white CAN\_H wires go to pin 2, the blue CAN\_L wires go to pin 3, and the black PS- wires go to pin 4.



2. Squeeze the crimp areas of the Drop Plugs with the Split Joint Pilers.



3. Locate the drop tap (not included) on the RV-C bus that is the closest to the battery charger installation location. The drop taps are usually located above the entry door, in the bathroom, or under the bed in the RV.



4. Connect either of the CAN Communication Ports of the battery charger and other REGO devices to the drop sockets on the drop tap with the Drop Cables.



#### **NOTE**

 Different drop taps are used on the RV-C bus by different RV manufacturers. This User Manual takes the 4-socket drop tap as an example.



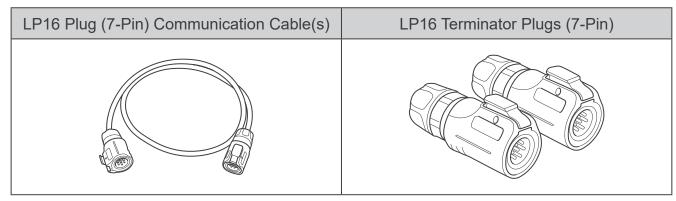
#### **CAUTION**

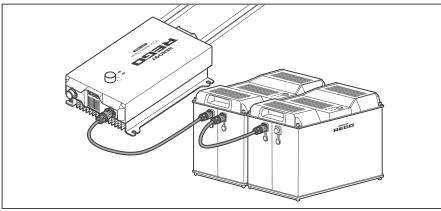
• If unable to locate the drop taps, please contact the RV manufacturer for help.

#### **Daisy Chain topology**

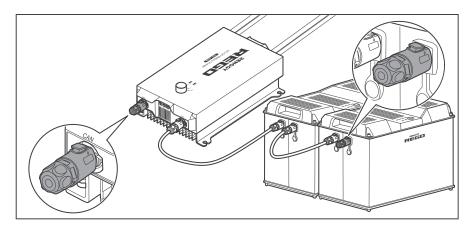
If the RV-C bus is not available, follow the daisy chain topology for the inter-device communication connections.

#### **Recommended Accessories**





 Connect REGO devices in series through either of the CAN Communication Ports with the Communication Cable(s) (sold separately).



2. Plug the Termionator
Plugs (sold separately)
into the free CAN
Communication Ports
on the first and last
REGO devices.

#### **Monitoring Device Communication**

The battery charger can be connected to monitoring devices through both short-range and long-range connections. The monitoring device allows for the monitoring and programming of the battery charger or even the complete system.

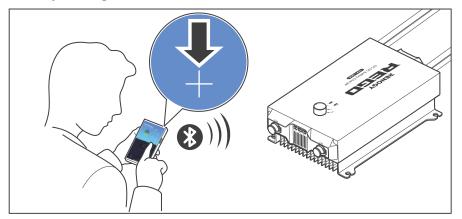


#### **NOTE**

- Please scan the QR code on the last page of the Quick Guide/User Manual to download the DC Home app.
- Please make sure that the battery charger is turned on before the connection.

### **Short-Range Monitoring**

If only short-range monitoring is required, connect the battery charger to the DC Home app directly through Bluetooth.



Tap "+" to search for new devices. Add the newly found battery charger to the device list. Monitor the battery charger on the device page.



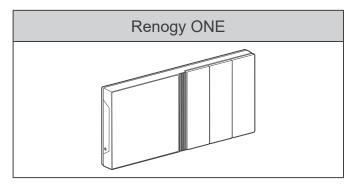
#### **NOTE**

Please keep the phone within 10 feet (3 m) of the battery charger.

#### **Long-Range Monitoring**

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

#### **Recommended Accessories**





#### **NOTE**

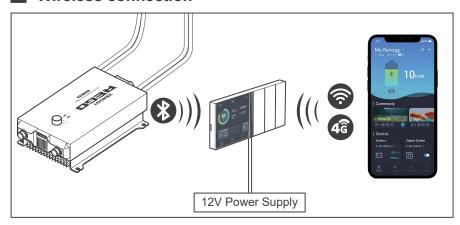
Please make sure that the Renogy ONE is powered on before the connection.



#### **INFO**

Please read the user manual of Renogy ONE at renogy.com before the connection.

#### Wireless connection



Connect the battery charger to the Renogy ONE (sold separately) through Bluetooth, and bind the Renogy ONE to the DC Home app through Wi-Fi.

Monitor the battery charger on the Renogy ONE or the DC Home app.



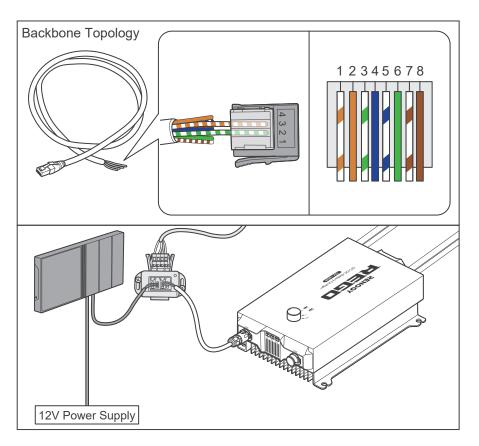
#### **NOTE**

- Ensure the battery charger does not communicate with any other device.
- Please keep the phone within 10 feet (3 m) of the battery charger.

#### Wired connection

#### Recommended Accessories (Backbone Topology)

RJ45 Plug to Bare Wires Drop Cable	Drop Plugs	Split Joint Pilers



1. Crimp the Drop Plug (not included) on the Drop Cable (not included) with the Split Joint Pilers. The white green CAN\_H wire goes to pin 2 and the white orange CAN\_L wire goes to pin 3. Leave pin 1 and pin 4 empty. Connect the RJ45 port of Renogy One to the RV-C bus with the Drop Cable.



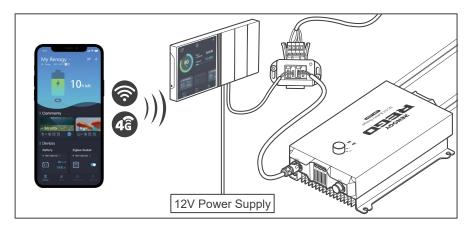
#### **NOTE**

Please refer to the Backbone Topology section for more instructions.

## Communication

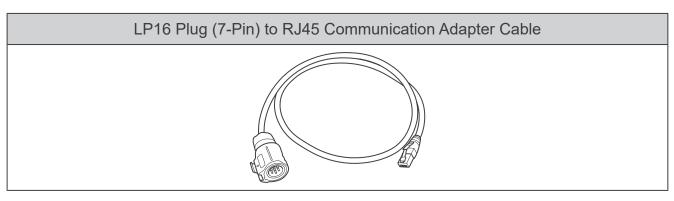
Inter-Device Communication

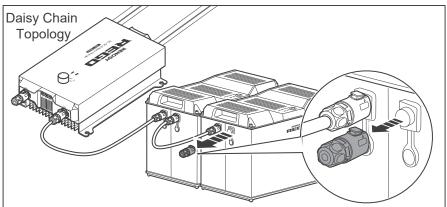
**Monitoring Device Communication** 



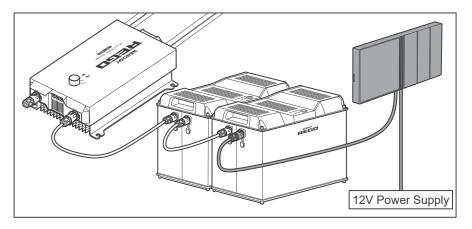
Monitor and program the complete system on Renogy ONE or the DC Home app.

#### Recommended Accessories (Daisy Chain Topology)





 Remove the Terminator Plug from the REGO device at either end of the daisy chain.



Connect the Renogy
 ONE to the free CAN
 Communication Port
 on the REGO device
 with the Communication
 Adapter Cable (sold
 separately).

# Communication

Inter-Device Communication

**Monitoring Device Communication** 



3. Bind Renogy ONE to the DC Home app.

Monitor and program the complete system on the Renogy ONE or the DC Home app.

Operation

### **Selecting the Battery Type**

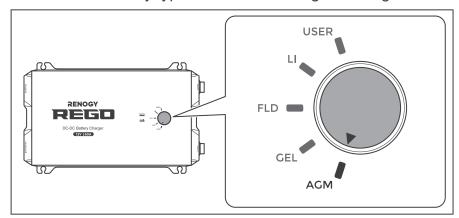
The battery charger is simple and easy to use. The knob with 5 gears makes the selection of battery type more convenient.

The default battery type of the battery charger is AGM/SLD. After the wiring of the battery charger output is completed, please manually set the battery type according to needs.

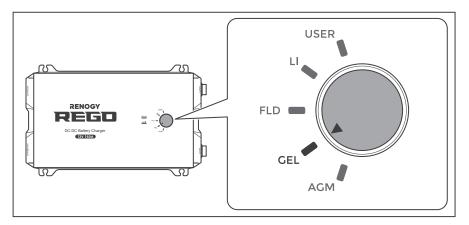


#### **WARNING**

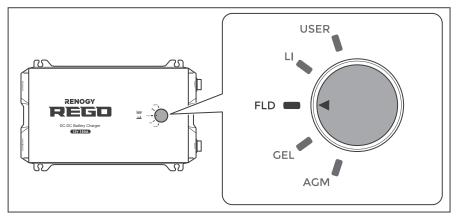
Refer to battery manufacturer technical specifications when choosing a preset battery. Incorrect battery type selection resulting in damage will not be covered by warranty.



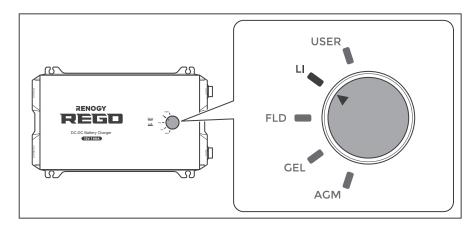
1. If the auxiliary battery is an AGM battery, turn the knob to AGM.



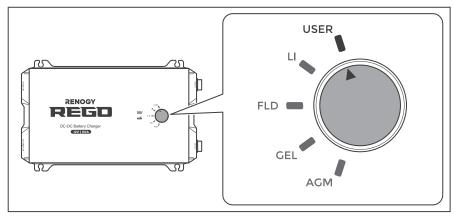
2. If the auxiliary battery is Gel Battery, turn the knob to GEL.



3. If the auxiliary battery is Flooded Battery, turn the knob to FLD.



4. If the auxiliary battery is Lithium Battery, turn the knob to LI.



5. If multiple parameters of the battery need to be programmed, turn the knob to USER to enter custom mode.



### **CAUTION**

• After entering the custom mode, you need to use the DC Home app to program the battery parameters. Please refer to the User Mode of this chapter for details.

**Battery Charging Parameters** 

## **Battery Charging Parameters**



#### **WARNING**

 Before modifying battery parameters, please check the table below first. Incorrect parameter setting will damage the device and void the warranty.

Battery Type	AGM/SLD	GEL	FLOODED	LI (LFP)	USER (Default)	USER (Recommended)
Parameters					(Boldait)	(Recommended)
OverVolts Shutdown	16.0V	16.0V	16.0V	16.0V	[16.0V]	_
OverVolts Limit	15.5V	15.5V	15.5V	14.8V	[15.5V]	_
Equalization Voltage	_	_	14.8V	_	14.6V	9.0-17.0V
Boost Voltage	14.6V	14.2V	14.6V	14.4V	14.2V	9.0 <b>-</b> 17.0V
Float Voltage	13.8V	13.8V	13.8V	_	13.8V	9.0-17.0V
Boost Return Voltage	13.2V	13.2V	13.2V	13.6V	13.2V	9.0-17.0V
LowVolts Reconnect	12.6V	12.6V	12.6V	12.8V	[12.6V]	_
UnderVolts Recover	12.2V	12.2V	12.2V	12.2V	[12.2V]	_
UnderVolts Warning	12.0V	12.0V	12.0V	12V	12.0V	9.0 <b>-</b> 17.0V
LowVolts Shutdown	11.1V	11.1V	11.1V	11.4V	[11.1V]	_
<b>Boost Duration</b>	120 min*	120 min*	120 min*	_	120 min*	10-300 min
Equalization Duration	_	120 min	_	_	120 min	0-300 min
Equalization Interval	0 days**	0 days**	30 days	_	30 days	0-250 days
Temperature Compensation	-3 mV/°C/2V	-3 mV/°C/2V	-3 mV/°C/2V		-3 mV/°C/2V	



#### **CAUTION**

- \* means that if the backup battery type is lead-acid battery and the charging current is less than 3A, it will automatically switch to float charging after 30 seconds.
- \*\* means no Equalize Charging.
- Parameters with gray letters indicate that they cannot be set, and other color parameters can be set.
- Parameters in square brackets ([]) are automatically adjusted according to the relevant settings, and cannot be set directly.

Battery Charging Parameters

## **User Mode**



#### **WARNING**

 Before modifying battery parameters in User mode, please check the table below and consult the battery manufacturer to check whether modification is allowed. Incorrect parameter setting will damage the device and void the warranty.

Maximum	REGO 12V 60A DC-DC Battery Charger		
Charging Current	Max. Charging Current: 60A	Adjustable Charging Current: 60A/50A/40A	
Familiation	(1) For lead-acid batteries, please consult the battery manufacturer to obtain the voltage value, and then set the balance voltage according to the provided value.		
Equalization Voltage	(2) Please consult the battery equalization voltage needs	manufacturer and check whether the to be set.	
	(3) If equalization charging is not required, please set the voltage to boost voltage.		
Boost Voltage	Please consult the battery manufacturer and check if this voltage value needs to be set.		
Float Voltage			
Under Volts Warning			
Equalization Interval	Please consult the battery manufacturer if it is necessary to set this parameter value.		
Equalization Duration			



#### **NOTE**

- Make sure Bluetooth is turned on.
- Please scan the QR Code on the last page of the User Manual to download the DC Home app.
- DC Home illustrations in the User Manual are for reference only. Please follow the instructions based on the current app version.



1. Open the DC Home app. Tap "+" to search for new devices.



2. Tap "Confirm" to add the newly found device to the device list.



3. Tap the battery charger icon to enter the device information interface.



4. Tap "•••" in the upper right corner.



5. Tap "Settings" to open the mode selection interface.



6. In this interface, you can customize multiple parameters of the battery. When the parameters are modified, "Setting Success" appears on the interface, indicating that the parameter setting is completed.

## **Charging Logic**

REGO 12V 60A DC-DC Battery Charger can be charged in two methods. It can be directly connected to the 12V DC Alternator or the 12V starter battery. Different charging methods adapt to more modification situation of users. The charger also supports parallel charging by using two 800W battery chargers to charge the auxiliary battery at the same time.

#### Working conditions

Altamatan Tima	Starter Battery Voltage		
Alternator Type	Cut-in	Cut-off	
Smart Alternator	>12.5V, for 15 seconds	<11.5V	
Traditional Alternator	>13.5V, for 15 seconds	<12.7V	

- 1. Smart Alternator: When the battery charger tests that the voltage of the starter battery is greater than 12.5V, it pauses for 15s and then starts to work and charge the auxiliary battery.
- 2. Traditional Alternator: When the battery charger tests that the voltage of the starter battery is greater than 13.5V, it pauses for 15s and then starts to work and charge the auxiliary battery.

#### Charging Logic

#### Charging the auxiliary battery

- 1. Smart Alternator: After the battery charger starts to operate, it recognizes the level of the auxiliary battery automatically. If the auxiliary battery is not fully charged, the battery charger will charge the auxiliary battery. If the auxiliary battery is fully charged or the voltage of the starter battery is less than 11.5V, the battery charger will stop operating.
- 2. Traditional Alternator: After the battery charger starts to operate, it recognizes the level of the auxiliary battery automatically. If the auxiliary battery is not fully charged, the battery charger will charge the auxiliary battery. If the auxiliary battery is fully charged or the voltage of the starter battery is less than 12.7V, the battery charger will stop operating.
- 3. The maximum charging current for the battery charger to charge the auxiliary battery should be no more than 60A.

#### Charging the starter battery

Alfordata	Starter Battery Voltage		
Alternator Type	Cut-in	Cut-off	
Smart Alternator	<11.5V	>12V	
Traditional Alternator	<12.7V	>13.2V	

1. Smart Alternator: The auxiliary battery will charge the starter battery only when the voltage of the auxiliary battery is greater than 11.5V.

The battery charger will charge the starter battery for 1min and then stop charging for 30s. During this period, the battery charger will test the voltage of the starter battery automatically.

(1) If the voltage of the starter battery is less than 11.5V, the auxiliary battery will continue to charge the starter battery.

## **Charging Logic**

- (2) If the voltage is greater than 12V, the auxiliary battery will stop charging the starter battery and activate the standby state.
- 2. Traditional Alternator: The auxiliary battery will charge the starter battery only when the voltage of the auxiliary battery is greater than 12.7V.

The auxiliary charger will charge the starter battery for 1min and then stop charging for 30s. During this period, the battery charger will test the voltage of the starter battery automatically.

- (1) If the voltage of the starter battery is less than 12.7V, the auxiliary battery will continue to charge the starter battery.
- (1) If the voltage is greater than 13.2V, the auxiliary battery will stop charging the starter battery and activate the standby state.
- 3. The maximum charging current for the battery charger to charge the starter battery should be no more than 30A.

#### Over-voltage protection

When the voltage of the starter battery is greater than 16V, the battery charger triggers overvoltage protection and stops operating immediately. The battery charger won't operate until the voltage of the starter battery is less than 15V.

#### Current limit protection

The current limit protection function protects the auxiliary battery from damage caused by high-voltage current.

When the output current of the alternator is greater than 70A, the battery charger triggers current limit protection and only 70A is available.

## **Battery status**

Indicator	Color	Status	Description
Battery	Green	ON	a. Auxiliary battery full b. Float charge c. Standby state
	Green	Flashing (1s interval)	The charging battery is charging the Auxiliary battery
		OFF	Not charging
	Blue	ON	The charging battery is charging the starter battery

## Fault status

Indicator	Color	Status	Description
Fault		OFF	The charger is working properly
	Red	ON	a. Auxiliary battery short circuit     b. Internal over-temperature of     the charger
	Red	Slow Flashing	a. Auxiliary Battery over voltage     b. Auxiliary Battery     undervoltage
	Red	Slow Flashing + Buzzer Alarm for every 1s	a. Auxiliary battery low voltage     b. Auxiliary battery over     temperature

# **Troubleshooting**

Fault	Description	Recommendations
Solid Red Fault	Auxiliary battery short circuit	<ol> <li>Please check if the positive and negative terminals of the life battery are connected correctly.</li> <li>If the fault message persists, disable the charger and contact RENOGY.</li> </ol>
Solid Red Fault	Internal over- temperature of the charger	<ol> <li>Please check the environment around the charger to ensure that enough space is left for heat dissipation.</li> <li>Please refer to the installation chapter of the full version of the manual for the selection of the heat dissipation space.</li> </ol>
Slow Flashing Red Fault	Auxiliary battery overvoltage	<ol> <li>Please check if the auxiliary battery voltage exceeds 16V.</li> <li>Please disconnect the output and wait 5s to restart the battery charger.</li> <li>If the fault message persists, disable the charger and contact RENOGY.</li> </ol>
Slow Flashing Red Fault	Auxiliary battery undervoltage	<ol> <li>Please check if the auxiliary battery voltage is below 12V.</li> <li>This alarm serves as a reminder to charge the auxiliary battery in time.</li> </ol>
Slow flashing red + buzzer alarm for 1s	Auxiliary battery low voltage	Please check if the auxiliary battery voltage is below 11.1V.     Please disconnect all loads on the auxiliary battery to charge the auxiliary battery in time.
Slow flashing red + buzzer alarm for 1s	Auxiliary battery over temperature	<ol> <li>Please check whether the battery charger is installed temperature sensor. If not, it is probably the error report caused by auxiliary battery over-discharge.</li> <li>After confirming that the temperature sensor is connected, please read the temperature value of the auxiliary battery from the DC Home app to see if it exceeds 65°C.</li> </ol>
////		<ul><li>3. Please ensure that the environment where the auxiliary battery is installed leaves sufficient space for heat dissipation.</li><li>4. Please make the charger stop operating and contact the supplier of the battery immediately.</li></ul>

#### Inspection

For optimum performance, it is recommended to perform these tasks regularly.

- Check the appearance of the battery charger to make sure it is clean and dry.
- Ensure the battery charger is installed in a clean, dry and ventilated area.
- Ensure there is no damage or wear on the cables.
- Ensure the firmness of the Anderson connectors and check if there are any loose, damaged or burnt connections.
- Ensure that the Battery indicator and Fault indicator are in normal state.
- Ensure there is no any corrosion, insulation damage, or discoloration marks of overheating or burning.



#### NOTE

 In some applications, corrosion may exist around the contacts inside the Anderson connector.

Corrosion can loosen springs and increase resistance, leading to premature connection failure. Please apply dielectric grease to each connector contact periodically. Dielectric grease repels moisture and protects the connector contacts from corrosion.



#### **WARNING**

Risk of electric shock! Make sure that all power is turned off before touching the terminals on the battery charger.

### Cleaning

Please follow the steps below to clean the charger regularly.

- Disconnect all Anderson connectors that are connected to the battery charger.
- Wipe the charger housing and connector contacts with a dry cloth or non-metallic brush.
- Dry the battery charger with a clean cloth and keep the area around the charger clean and dry.
- Make sure the charger is completely dry before reconnecting the Anderson connector to the charger.
- When reconnecting, the auxiliary battery must be connected first, then the starter battery or alternator.

#### **Storage**

Please follow the tips below to ensure that the battery charger is stored well.

- Disconnect all Anderson connectors that are connected to the battery charger.
- By applying dielectric grease to each connector contact, the dielectric grease repels moisture and protects the connector contacts from corrosion.

# **Emergency Responses**

Fire Flooding Smell Noise

In the event of any threat to health or safety, always begin with the steps below before addressing other suggestions.

- Immediately contact the fire department or other relevant emergency response team.
- Notify all people who might be affected and ensure that they can evacuate the area.



#### **WARNING**

ONLY perform the suggested actions below if it is safe to do so.

#### **Fire**

- 1. Disconnect all cables connected to the charger.
- 2. Put out the fire with a fire extinguisher. Acceptable fire extinguishers include water, CO2, and ABC.



#### **WARNING**

Do not use type D (flammable metal) fire extinguishers.

#### **Flooding**

- 1. If the charger is submerged in water, stay away from the water.
- 2. Disconnect all cables connected to the charger.

#### **Smell**

- 1. Disconnect all cables connected to the charger.
- 2. Make sure nothing is in contact with the battery charger.
- 3. Ventilate the room.

#### **Noise**

- 1. Disconnect all cables connected to the battery charger.
- 2. Make sure no foreign objects are stuck in the controller Anderson connector.



#### **CAUTION**

The normal noise value is ≤60dB when the battery charger is working.

# **Technical Support**

For additional support, contact the Renogy technical support team through renogy.com/ contact-us. Have the following information available when contacting Renogy.

- Owner name
- Contact information
- Order number
- Purchase channel
- Serial number
- Brief description of the issue



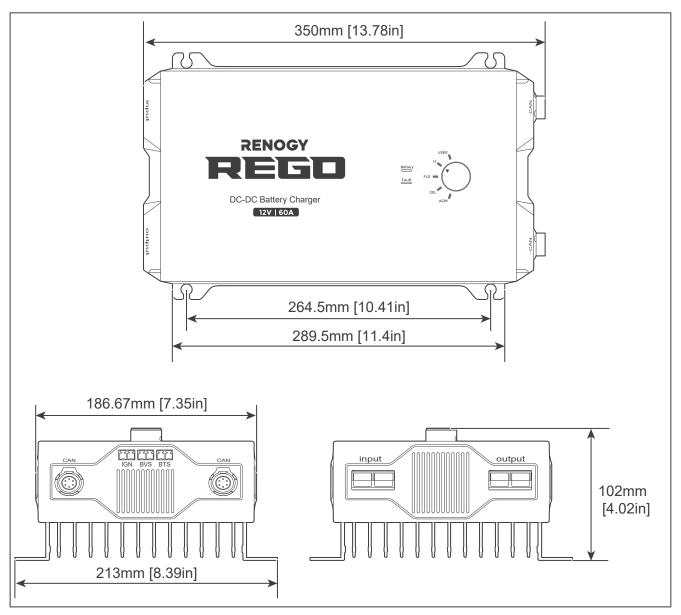
Visit renogy.com to find relevant documentation or get more support via "Contact Us".

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# **Technical Specifications**

Parameter	Value
Model	RBC1260DO-12B
System Voltage	12V
Input Voltage	10V to 16V DC
Output Voltage	10V to 16V DC
Alternator Input	Traditional Alternator: 13.5V to 16VDC Smart Alternator (Euro 6): 12.5V to 16VDC
Maximum Output Current Rating	60A
Output Power	800W
Battery Types	SLD/AGM; GEL; FLD; LI; USER
Input Fuse Rating	90A
Output Fuse Rating	80A
Charging Efficiency	≥94%
Temperature Compensation	-3mV / °C / 2V (Non-Lithium) 0mV / °C / 2V; no compensation (Lithium)
Idle Power Consumption	≤50 mA
Operating Temperature Range	-20°C to 60°C / -4°F to 140°F
Storage Temperature Range	-35°C to 65°C / -31°F to 149°F
Humidity	0%-95%, No Condensation
Communication Protocol	Modebus; RV-C
Dimensions	13.78 x 8.39 x 4.02 in / 350 x 213 x 102 mm
Weight	7 lbs/ 3.12kg
Terminal Size/Type	Anderson PP75
Terminal Range	6AWG to 8AWG
Certification	CB; FCC; CE; UKCA; MIC
Warranty	5 Years

# **Dimensions**





## CAUTION

• Dimensional tolerance of ± 0.5 mm

#### **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.



Visit <u>renogy.com</u> to find relevant documentation or get more support via "<u>Contact Us</u>". Renogy reserves the right to change the contents of this manual without notice.

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