

# SMART CHARGER

## PRODUCT MANUAL



Designed for LiFePO4 Batteries

RBCH-12V5A **RBCH-12V10A** RBCH-12V20A

## IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety, installation, and operating instructions for the charger. The following symbols are used throughout the manual to indicate potentially dangerous conditions or important notes.



Indicates a potentially dangerous condition. Use extreme caution when performing this task.



Indicates a critical procedure for the safe and proper installation and operation of the controller.



Indicates a procedure or function that is important to the safe and proper operation of the controller.

### The manufacturer accepts no liability for damage by:

- Faulty assembly or connection
- Damage resulting from mechanical influences or excess voltage
- Modification or tampering with the unit without expressed permission from the manufacturer
- Used for purposes other than described in this manual

## GENERAL SAFETY



### Risk of electric shock, fire hazard, or injury. To minimize risk:

- Ensure the positive and negative terminals for the charger do not come into contact. Firmly secure cables and connections.
- Disconnect the product from the battery each time before cleaning or before making changes to the circuit.
- Do not use the product if physically damaged or with visibly cracked cables. Contact the manufacturer, customer service to prevent safety hazards
- Do not attempt to repair the charger. Inadequate repairs may cause serious injury.
- Electrical devices are not toys—keep away from children.

## INSTALLATION SAFETY



This charger is for 12V battery banks only. Make sure your voltage specification is within the input voltage range expressed.



Install and store the product in a dry and cool place. Keep away from liquids! Do not expose the product to heat sources such as direct sunlight or other heating elements.



Never mount in areas with increased levels of dust or gas—explosion risk!



Ensure secure location where it cannot tip or fall



For installation on boats: if the electrical devices are incorrectly connected, this can lead to corrosion damage on the boat. Verify installation with a qualified electrician or installer.



Lay cables so they cannot be damaged by doors or be a tripping hazard. Damaged cables can lead to serious injury



Use ductwork or cable ducts if necessary, to lay cables through metal plates or other panels



Do not lay AC and DC cable in the same conduit and do not pull on the cables.

## OPERATION SAFETY

- ✓ Warning—Explosion Risk! Batteries can give off explosive hydrogen gas that can be ignited by sparks or electrical connections. Make sure the area is well-ventilated.
- ✓ Do not operate in salty, wet, or damp environments; in the vicinity of corrosive fumes; in the vicinity of combustible material; in areas with risks of explosions
- ✓ Please be aware that parts of this product may still produce voltage even after disconnect- ed or activation of fuse.
- ✓ Do not disconnect cables while the product is operating

## BATTERY SAFETY

- ✓ Warning—Explosion Risk! Batteries may contain corrosive acids or fumes. Avoid contact with battery acid. If your skin comes into contact, thoroughly wash the affected area with water. Any other injuries should seek medical care.
- ✓ Avoid wearing metal objects such as watches or rings when working with batteries. Short circuit risk!
- ✓ Use only rechargeable deep cycle batteries. NEVER attempt to charge a frozen or defective battery.
- ✓ Wear goggles, gloves, or other or protective clothing when working with batteries. Do not touch your eyes.
- ✓ Ensure proper cable sizing for batteries! Over-current protection devices should be on the positive line.  
Refer to your battery manufacturer for battery maintenance and care
- ✓ When removing a battery, power off all loads first, then disconnect it from the circuit before removing.

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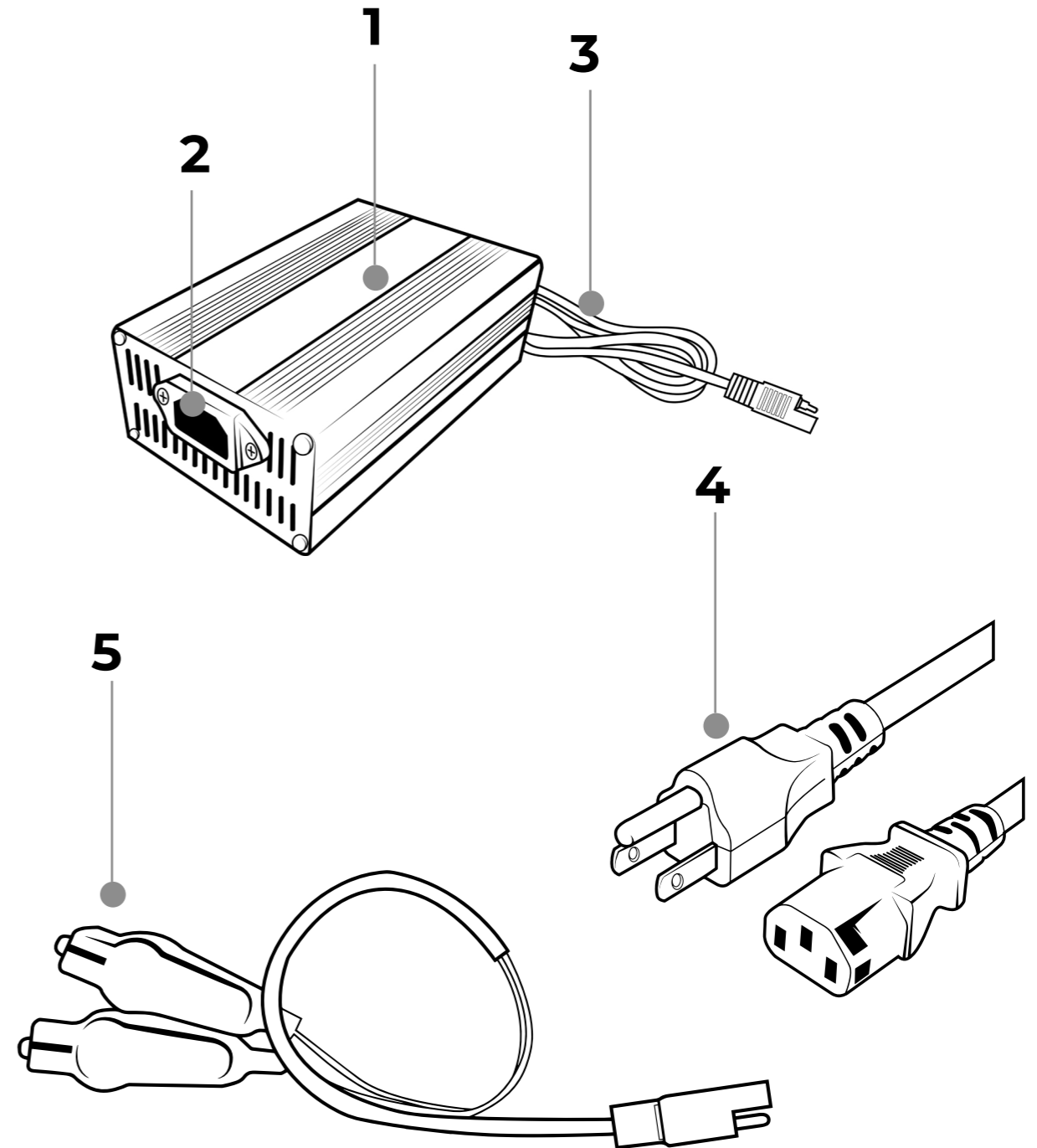
## GENERAL INFORMATION

The DC-DC Series battery chargers are the most effective way to charge your auxiliary or house batteries from the alternator/starter battery. Compatible with smart or traditional alternator types, the DC-DC offers correct charging for AGM, Flooded, Gel, and even Lithium deep cycle batteries! Featuring a 3-stage battery charger and multiple electronic protections, owners can feel confident that their batteries are being charged optimally and automatically. Easily install the compact yet sturdy DC-DC on RV's, commercial vehicles, boats, yachts and many more applications.

### Key Features

- Compatible with Lithium-iron Phosphate
- Smart protections features including Over-voltage and reverse polarity!
- Compact yet built tough for most conditions
- 3-Stage Battery Charger
- Check the charging requirements from the battery manufacturer before charging your battery with this unit.

## IDENTIFICATION OF PARTS



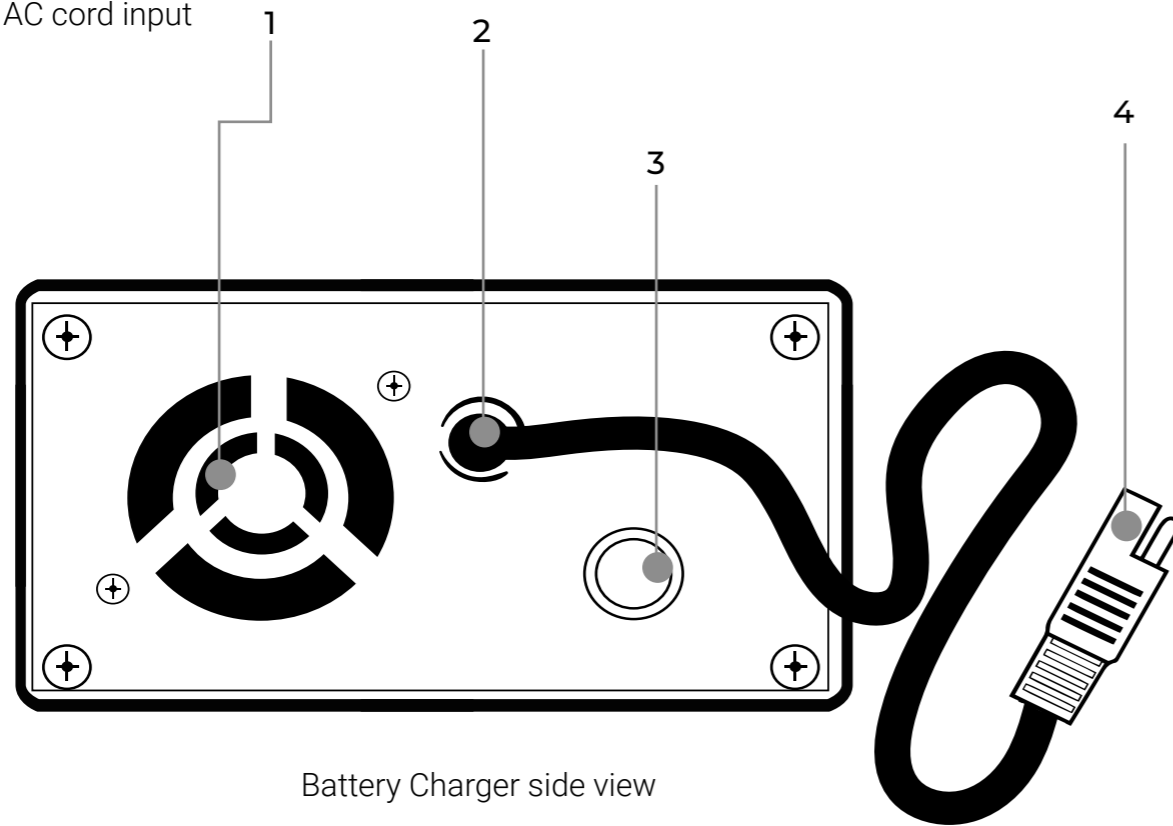
### Key Features

1. Battery charger
2. AC port
3. Accessory Cord
4. AC cord
5. Alligator Clips

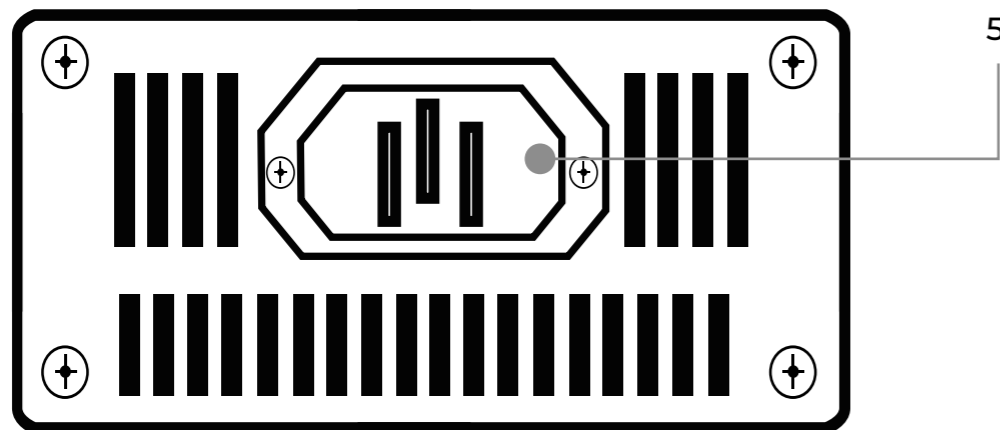
# PRODUCT OVERVIEW

## Key Features

- 1. Ventilation Fans
- 2. DC Input Terminal wire
- 3. LED indicator
- 4. AC cord connector
- 5. AC cord input

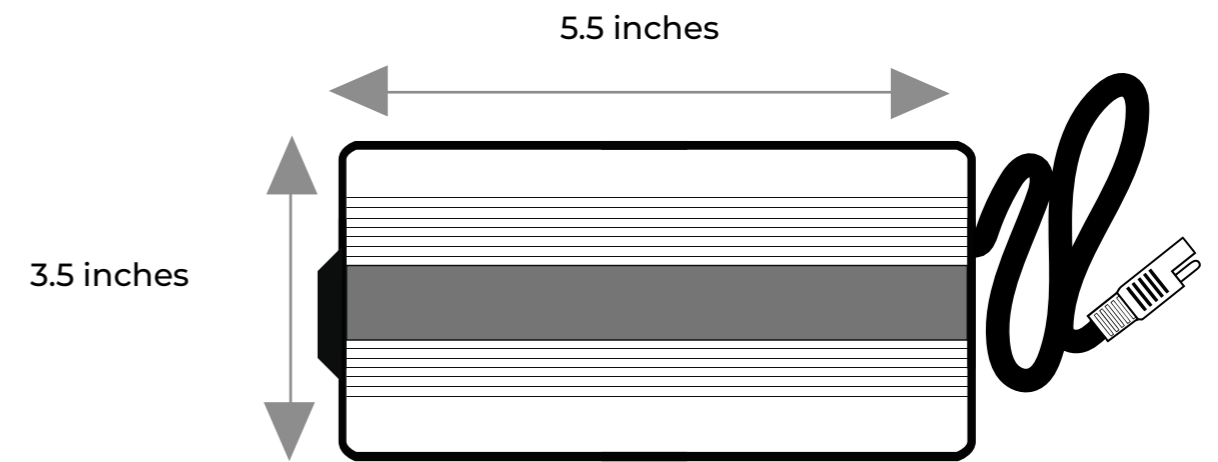
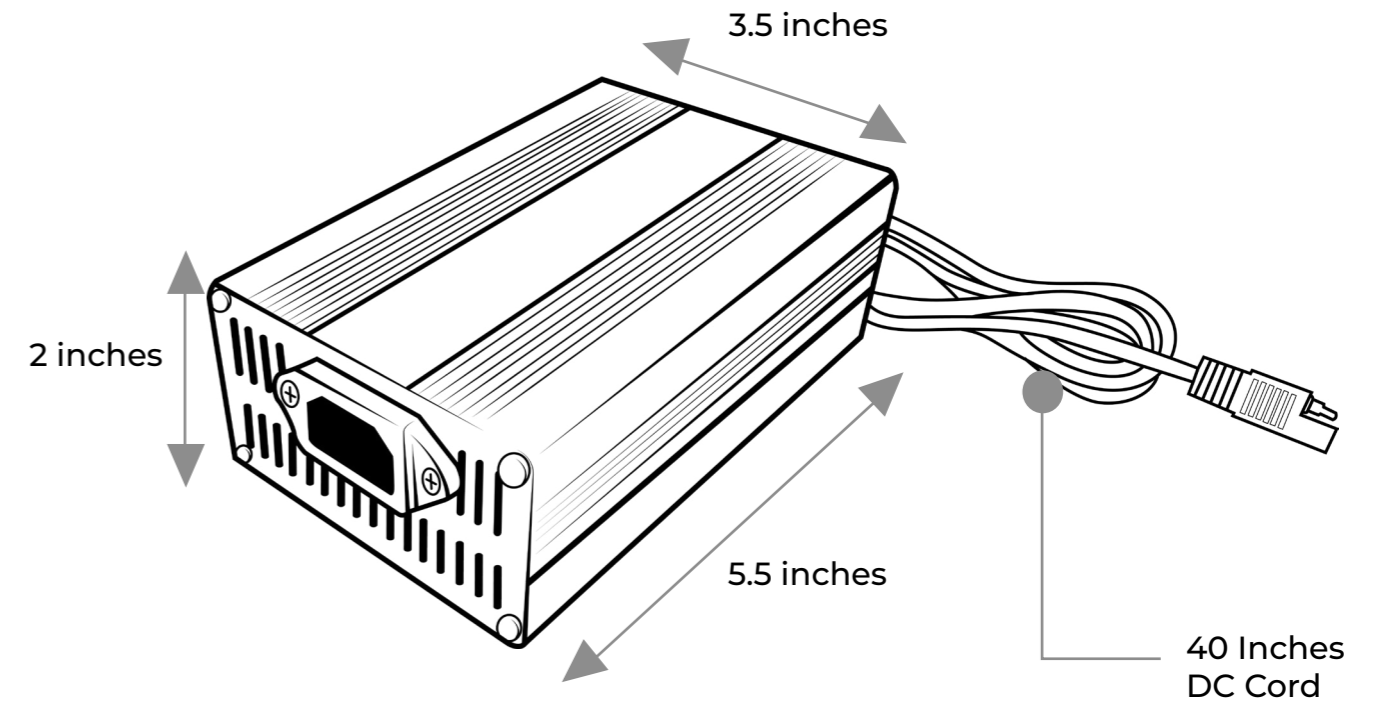


Battery Charger side view

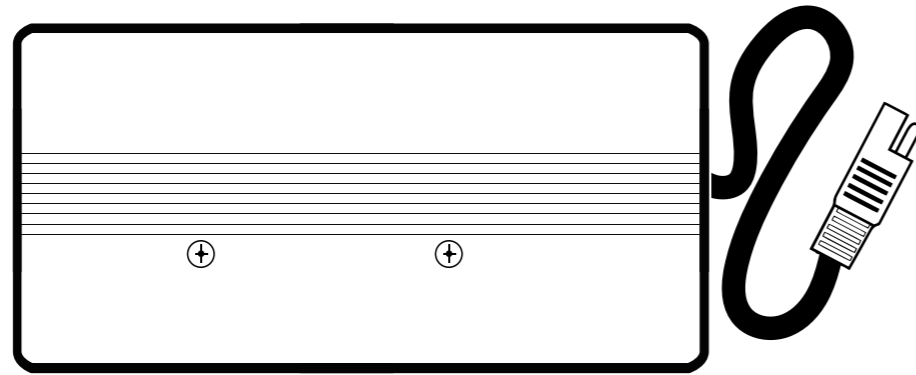


Battery Charger side view

# DIMENSIONS



Battery Charger top view



Battery Charger side view

**Weight**

1.9 lb (0.83kg)

## INSTALLATION

**DANGER** Never mount the product in areas where there is a risk of gas or dust explosion

**CAUTION** Ensure a secure stand! The product must be set up and fastened in such a way that it cannot tip over or fall down.

**NOTICE** Do not expose the product to any heat source (such as direct sunlight or heating).

Avoid additional heating of the product.

Set up the product in a dry location protected from splashing water.

## LOCATION CONSIDERATIONS

- ✓ The battery charger can be installed horizontally as well as vertically.
- ✓ The battery charger must be installed in a place that is protected from moisture.
- ✓ The battery charger may not be installed in the presence of flammable materials.
- ✓ The battery charger may not be installed in a dusty environment.
- ✓ The place of installation must be well ventilated. A ventilation system must be available for installations in small, enclosed spaces. The minimum clearance around the battery charger must be at least 5cm.
- ✓ The device must be installed on a level and sufficiently sturdy surface.

When selecting a location for the charger, make sure that the unit is as close as possible to the battery you will be charging (auxiliary battery). The charger may be mounted on the cabin of the vehicle, along a chassis rail, the inner guard of a vehicle, behind the grille or headlight or even on the side of the radiator. However, you want to make sure that the area is not susceptible to moisture or other substances as well as potentially high temperatures.

The charger would operate best if there is some air flow.

## WIRING AND FUSING

Battery Ring terminals are recommended for 12V input and output connections. The following is a reference incorporating a critical 0-3% max voltage drop and may not cover all unique applications that may exist. When the battery charger is sending the rated amps, the input side may experience a higher current draw by a factor of up to 50%. Larger wire sizes generally improve performance, whereas smaller wire sizes may reduce performance, especially if undersized. When considering wiring, fusing, and connection options, think big and short as possible as heavier components and shorter wire length offer less resistance and voltage drop. Terminal Size Limitations may apply. The installer is responsible for ensuring that the correct cable and fuse sizes are used when installing the battery charger.

MODEL	Cable Length/Min AWG		
	0 ~ 10FT / 0 ~ 3M	11 ~ 20FT / 3 ~ 6M	21 ~ 30FT / 6 ~ 9M
RBCH-12V5A	10AWG	8-6AWG	6-4AWG
	12AWG	10-8AWG	6AWG
RBCH-12V10A	6AWG	4AWG	4AWG*
	8AWG	8-6AWG	4AWG
RBCH-12V20A	4AWG	4AWG*	4AWG*
	6AWG	4AWG	4AWG*

## OPERATION

Assuming correct 12V battery connections and cable wiring, then the POWER LED will illuminate green.

## LED INDICATOR

COLOR	STATUS	MEANING
GREEN	SLOW FLASHING	POWERED ON
	SOLID	FULLY CHARGED
COLOR	STATUS	MEANING
RED	FAST FLASHING	SHORT CIRCUIT/ FAULT DETECTED REVERSE POLARITY
	SOLID	CHARGING



## MAINTENANCE

For best charging performance, periodically check the unit and related wiring monthly as well as the installation location:

- ✓ Inspect the wiring and note any wiring cracks, wear, tear, corrosion, or loose wiring and replace immediately. Inspect wiring terminals and ensure they're tight as they may become loose during vehicle vibrations.
- ✓ Check that the battery charger is free of dust, liquids, or heat sources and ensure the charger is receiving some ventilation. Improved ventilation improves performance



## TECHNICAL SPECIFICATIONS

MODEL	RBCH-12V5A	RBCH-12V10A	RBCH-12V20A
RATED CHARGING CURRENT	5 A	10 A	20 A
CHARGING VOLTAGE	LITHIUM: 14.6V		
RATED MAX POWER	60W	120W	240W
DIMENSIONS	5.5" X 3.5" X 2"	5.5" X 3.5" X 2"	7.0" X 3.5" X 2.5"
WEIGHT	1.9LB (0.83KG)	1.9LB (0.83KG)	3.0LB (1.36KG)
RING TERMINAL SIZE	8MM		