

THE POWER OF

**REDARC**®

# SmartCharge

SmartCharge AC Battery Charger

## USER MANUAL

### MODELS:

- SBC1204
- SBC1206
- SBC1208
- SBC1210



**DEFA**®

## PRODUCT WARNINGS

**Save these instructions** — this manual contains important safety instructions.

Do not operate the battery charger unless you have read and understood this manual and the charger is setup as per these installation instructions.

- 1.** Risk of explosive gases: Working in the vicinity of a Lead-Acid battery is dangerous. Batteries generate explosive gases during normal operation. For this reason, it is of utmost importance that you follow the instructions when installing and using the charger.
- 2.** The Battery Charger should not be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are supervised or have been instructed on how to use the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the Battery Charger.
- 3.** Do NOT alter or disassemble the Battery Charger under any circumstances. All faulty units must be returned to REDARC for assessment. Incorrect handling or reassembly may result in a risk of electric shock or fire and may void the unit warranty. The mains' power supply cord cannot be replaced. If the cord is damaged, discontinue usage.
- 4.** This charger is designed for use only with LEAD/ACID type (both open and closed) batteries including AGM, GEL and Lead Crystal types or LiFePO<sub>4</sub> batteries with appropriate cell and battery protection; and for battery sizes as shown on page 8. The charger should not be used for other battery types or for charging non-rechargeable batteries.

5. Do NOT charge LiFePO<sub>4</sub> batteries below 0°C / 32°F.
6. Check the manufacturer's data for your battery and ensure that the 'Maximum' voltage of the profile you select does not exceed the manufacturer's recommended maximum charging voltage.
7. Check the manufacturer's data for your battery and ensure that the 'Continuous Current Rating' of the charger does not exceed the manufacturer's recommended maximum charging current.
8. Batteries can emit explosive gases during normal charging. Avoid sparks in the immediate area and always provide proper ventilation during charging.
9. Connect the charger's positive clamp to the positive terminal on the battery. Connect the negative clamp to the chassis of the vehicle away from petrol pipes. Then connect to AC mains and turn the charger ON.
10. After charging, turn off the charger and disconnect from the mains' power supply. The negative and positive terminals can then be disconnected.
11. This charger includes high-strength magnets and should not be placed in close proximity to magnetic storage devices such as computer hard drives or tape media.
12. When the charger is operating at full capacity, the enclosure can get hot in some circumstances (up to 80°C / 176°F). This heating does not impact the function or reliability of the product, and internal protection mechanisms ensure the temperature won't increase further. Please ensure the product is installed in a well ventilated location and avoid touching the case during operation at full charge.

## SETTING UP THE CHARGER

- 1 Connect the charger's POSITIVE clamp to the POSITIVE terminal on the battery.
- 2 Connect the Charger's NEGATIVE clamp to the chassis of the vehicle, away from heat sources or petrol pipes.
- 3 Plug the mains plug into a 240 VAC mains power socket and turn the charger ON.

## OPERATION

DEFA SmartChargers provide battery charging for a range of vehicles and equipment such as cars, motorbikes, 4x4s, recreational vehicles, lawnmowers, jet skis and boats etc.

### Battery Type

Lead acid, AGM, Gel, Lead Crystal and LiFePO<sub>4</sub> batteries included.

**Do NOT** charge LiFePO<sub>4</sub> batteries below 0°C / 32°F.

### Pre-Analysis

The charger checks if the battery is correctly connected. The battery's voltage (V) and total capacity (Ah) is measured to determine the correct settings for charging.

Battery Status	LED Indication
95 – 100%	All segments on
80%	4 segments on
60%	3 segments on
40%	2 segments on
0 – 20%	1 segment on

## Charging Profile

The charger begins charging with a constant current until the voltage reaches 14.4 V (at 25°C / 77°F). The charge voltage is then held constant at 14.4 V and the charging current is reduced until it is below a predefined level. The charge voltage then drops to 13.8 V, before the long-term charging stage starts.

During charging, the battery charge is shown by the number of LEDs illuminated; The blinking segment above these LEDs indicates active charging. Once full charge is reached, all 5 LED segments will remain illuminated. If the measured battery voltage is below 2.0 V, the charger will enter Error Mode.

## Post Analysis

The charger analyses the battery again after the charging stage. If the charger detects an error in the battery, the warning triangle will flash. Post analysis can detect batteries with a short circuit in individual cells (this cannot be detected in the Pre Analysis). If the battery's voltage drops below 12.5 V within 2 minutes, the charger will go into error mode. The charging sequence will be stopped.

## Long-Term Charging

When the battery is fully charged all 5 LED segments will remain illuminated. After 10 days the charger will go into Sleep Mode which is indicated by all battery LEDs slowly pulsating. This mode has a very low power consumption.

After a week in Sleep Mode, the charger will wake up and begin a new charging cycle. Alternatively the charger will also resume charging if the battery voltage drops below 12.6 V.

# ADDITIONAL CHARGER FUNCTIONALITY

## Temperature Based Voltage Compensation

The charger automatically adjusts the charging voltage to the correct level according to the ambient temperature. The default ambient temperature is 25°C / 77°F. Voltage is reduced for higher ambient temperatures and increased for lower ambient temperatures by  $\pm 0.03 \text{ V}/^\circ\text{C}$  /  $\pm 0.017 \text{ V}/^\circ\text{F}$ . Max temperature compensate charging voltage is 15.3 V.

## 14.7 V Button

Some batteries require a higher charging voltage than other batteries. If the 14.7 V button is activated the initial charging voltage will be 0.3 V higher than the standard level.

Before activating this button, the 14.7 V charge voltage requirement should be confirmed. If a battery requires this higher charge voltage, it will be described on the battery.

## Power Supply Mode

Press and Hold the button until the LED shines one by one in a regular bottom to the top cycle, the charger will start power supply mode. In this mode, the charger supply 13.6 V.

If the output is short circuit or connected with incorrect polarity in this mode, the charger will go into error mode. After resolving the error, press the power button to turn off the charger, then restart the charger (go to charge or power supply mode).

## **Automatic Restart**

If the mains supply is temporarily interrupted, the charger will continue charging when the power supply returns.

## **Safety features**

- Incorrect polarity protection
- Spark protection
- Short circuit protection
- Over-current protection
- Over-temperature protection
- Over-voltage protection
- Low voltage protection

## **APPROVALS**

### **Safety:**

- EN 60335-1: 2012
- EN 60335-2-29: 2004+A2:2010
- EN 62233:2008

### **EMC (emissions):**

- EN 61204-3:2000
- EN 61000-3-3:2008
- EN 61000-3-2:2006+A1:2009+A2:2009

### **EMC (immunity):**

- EN 61204-3:2000

## TECHNICAL DATA

Type	4A (SBC1204)	6A (SBC1206)
Battery size	12 V 2 to 110 Ah	12 V 10 to 150 Ah
Input	230 VAC / 50 to 60 Hz	
Power Consumption	60 W	115 W
Output Voltage	14.4 V / 14.7 V	
Output current	4 A (max.)	6 A (max.)
Reverse current	I drain < 1 mA	
IP class	65	

Type	8 A (SBC1208)	10 A (SBC1210)
Battery size	12 V 20 to 200 Ah	12 V 30 to 250Ah
Input	230 VAC / 50 to 60 Hz	
Power Consumption	132 W	175 W
Output Voltage	14.4 V / 14.7 V	
Output current	8 A (max.)	10 A (max.)
Reverse current	I drain <1 mA	
IP class	65	



## WARRANTY

Over the last three decades our company has established a reputation as the power conversion specialist.

A 100% Australian-owned company, we have met the needs of customers in transport and other industries through exciting, innovative thinking.

We believe in total customer satisfaction and practice this by offering our customers:

- Technical advice free of jargon and free of charge
- Prompt turnaround of orders throughout Australia and globally
- Friendly, personalised, professional service and product support

In the unlikely event that a technical issue arises with a Redarc product, customers are encouraged to initially contact the Redarc Technical Support Team on (08) 8322 4848 or [power@redarc.com.au](mailto:power@redarc.com.au) for prompt and efficient diagnosis and product support.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

The benefits of this Warranty are in addition to other rights and remedies available at law in respect of the Products and shall not derogate from any applicable mandatory statutory provisions or rights under the Australian Consumer Law.

Redarc Electronics Pty Ltd atf the Redarc Trust trading as Redarc Electronics ("**Redarc**") offers a warranty in respect of its Products where the Products are purchased from an authorised

distributor or reseller of Redarc by a person ("**Purchaser**"), on the terms and conditions, and for the duration, outlined below in this document ("**Warranty**").

1. In this Warranty, the term Products means:
  - 1.1. all products manufactured or supplied by Redarc (excluding its solar products which are covered by Redarc's Solar Product Warranty); and
  - 1.2. any component of or accessory for any product in clause 1.1 manufactured or supplied by Redarc.

### **Offer and duration of product warranties**

2. Redarc warrants that its SmartCharge Products will be free, under normal application, installation, use and service conditions, from defects in materials and workmanship affecting normal use, for **5 years** from the date of purchase (**Warranty Period**).
3. Where a Product malfunctions or becomes inoperative during the Warranty Period, due to a defect in materials or workmanship, as determined by Redarc, then subject to further rights conferred by the Australian Consumer Law on the Purchaser, Redarc will, in exercise of its sole discretion, either:
  - 3.1. repair the defective Product;
  - 3.2. replace the defective Product; or
  - 3.3. provide a refund to the Purchaser for the purchase price paid for the defective Product, without charge to the Purchaser.
4. The warranty given by Redarc in clause 3 covers the reasonable costs of delivery and installation of any repaired or replaced Products or components of Products to the Purchaser's usual residential address notified

to Redarc, together with the reasonable costs of removal and return of any Products determined by Redarc to be defective.

5. If the Purchaser incurs expenses of the nature referred to in clause 4 in the context of making a claim pursuant to this Warranty that is accepted by Redarc, the Purchaser will be entitled to claim for reimbursement of those expenses which Redarc determines, in exercise of its sole discretion, to be reasonably incurred, provided that the claim is notified to Redarc in writing at the postal address or email address specified in clause 21 and includes:
  - 5.1. details of the relevant expenses incurred by the Purchaser; and
  - 5.2. proof of the relevant expenses having been incurred by the Purchaser.

#### **Exclusions and limitations**

6. This Warranty will not apply to, or include any defect, damage, fault, failure or malfunction of a Product, which Redarc determines, in exercise of its sole discretion, to be due to:
  - 6.1. normal wear and tear or exposure to weather conditions over time;
  - 6.2. accident, misuse, abuse, negligence, vandalism, alteration or modification;
  - 6.3. non-observance of any of the instructions supplied by Redarc, including instructions concerning installation, configuring, connecting, commissioning, use or application of the Product, including without limitation choice of location;
  - 6.4. failure to ensure proper maintenance of the Product strictly in accordance with Redarc's instructions or failure to ensure proper maintenance of any associated equipment or machinery;

- 6.5. repairs to the Product that are not strictly in accordance with Redarc's instructions;
- 6.6. installation, repairs or maintenance of the Product by, or under the supervision of, a person who is not a qualified auto electrician or technician, or if non-genuine or non-approved parts have been fitted;
- 6.7. faulty power supply, power failure, electrical spikes or surges, lightning, flood, storm, hail, extreme heat, fire or other occurrence outside the control of Redarc;
- 6.8. use other than for any reasonable purpose for which the Product was manufactured;
- 6.9. any indirect or incidental damage of whatever nature outside the control of Redarc.
- 7.** Warranty claims in respect of a Product must be made in writing to Redarc at the postal address or email address specified in clause 21 within the Warranty Period. Such claims must include the following:
  - 7.1. details of the alleged defect or fault and the circumstances surrounding the defect or fault;
  - 7.2. evidence of the claim, including photographs of the Product (where the subject of the claim is capable of being photographed);
  - 7.3. the serial number of the Product, specified on the label affixed to the Product; and
  - 7.4. proof of purchase documentation for the Product from an authorised distributor or reseller of Redarc, which clearly shows the date and place of purchase.

The return of any Products without the prior written instructions of Redarc will not be accepted by Redarc.

- 8.** Without limiting any other clause in this Warranty, Redarc has the right to reject any Warranty claim made by a Purchaser

pursuant to this Warranty where:

- 8.1. the Purchaser does not notify Redarc in writing of a Warranty claim within the Warranty Period;
- 8.2. the Purchaser does not notify Redarc in writing of a Warranty claim within 1 month of becoming aware of the relevant circumstances giving rise to the claim, so that any further problems with the Product are minimised;
- 8.3. the serial number of the Product has been altered, removed or made illegible without the written authority of Redarc;
- 8.4. the Purchaser is unable to provide proof of purchase documentation in accordance with clause 7.4 or evidence that the Product was properly installed and removed (if relevant), and that proper maintenance has been performed on the Product, by, or under the supervision of, a qualified auto electrician or technician, in accordance with the instructions of Redarc.
9. If the Product is found to be working satisfactorily on return to Redarc or upon investigation by Redarc, the Purchaser must pay Redarc's reasonable costs of testing and investigating the Product in addition to shipping and transportation charges. Where Redarc is in possession of the Product, the Product will be returned to the Purchaser on receipt of the amount charged.
10. Any replaced Products or components of Products shall become the property of Redarc.
11. Redarc may, in exercise of its sole discretion, deliver another type of Product or component of a Product (different in size, colour, shape, weight, brand and/or other specifications) in fulfilling its obligations under this Warranty, in the event that Redarc has discontinued manufacturing or supplying the relevant

Product or component at the time of the Warranty claim, or where such Product or component is superior to that originally purchased by the Purchaser.

### **Other conditions of Warranty**

- 12.** If the Purchaser acquired a Product for the purpose of resupply, then this Warranty shall not apply to that Product.
- 13.** In particular, the sale of a Product via an online auction, online store or other internet website by a party that is not an authorised distributor or reseller of the Product will be deemed to be a resupply within the meaning of the Australian Consumer Law and will render this Warranty void, as Redarc has no control over the storage, handling, quality or safety of Products sold by such persons.
- 14.** A Purchaser shall only be entitled to the benefit of this Warranty after all amounts owing in respect of the Product have been paid.
- 15.** While Redarc warrants that the Products will be free from defects in materials and workmanship in the circumstances set out in this Warranty, to the maximum extent permitted by law Redarc does not warrant that the operation of the Products will be uninterrupted or error-free.
- 16.** To the maximum extent permitted by law, Redarc's determination of the existence of any defect and the cause of any defect will be conclusive.
- 17.** Spare parts or materials for the Products are guaranteed to be available for a period of at least 5 years after purchase of the Products.
- 18.** The agents, officers and employees of any distributor or reseller of the Products and of Redarc are not authorised to vary or extend

the terms of this Warranty.

19. Redarc shall not be responsible or liable to the Customer or any third party in connection with any non-performance or delay in performance of any terms and conditions of this Warranty, due to acts of God, war, riots, strikes, warlike conditions, plague or other epidemic, fire, flood, blizzard, hurricane, changes of public policies, terrorism and other events which are beyond the control of Redarc. In such circumstances, Redarc may suspend performance of this Warranty without liability for the period of the delay reasonably attributable to such causes.
20. If a clause or part of a clause in this Warranty can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way. If any clause or part of a clause in this Warranty is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Warranty, but the rest of this Warranty is not affected.

### **Redarc's contact details**

21. Redarc's contact details for the sending of Warranty claims under this Warranty are:  
Redarc Electronics Pty Ltd  
23 Brodie Road (North), Lonsdale SA 5160  
Email: [power@redarc.com.au](mailto:power@redarc.com.au)  
Telephone: +61 8 8322 4848

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