

## TWO YEAR WARRANTY

REDARC Electronics warrants to the original purchaser that the product(s) on the reverse side of this sheet ("Product") will be free, under normal use and maintenance, from defects in material and workmanship for a period of TWO YEARS from the date of purchase, subject to the conditions shown below.

### 1. Warranty

Unless otherwise stated in this warranty, Redarc Electronics will at its sole discretion either replace or repair any of the Product that is defective in material or workmanship within the abovementioned period without charge to the original purchaser.

### 2. Other Warranty

Subject to any terms implied by law, this warranty contains the whole of the Redarc Electronics' obligations and any distributor and the agents, officers and employees of such distributor and of Redarc Electronics are not authorised to vary or extend the terms of the warranty. The benefits conferred by this warranty are in addition to the conditions and warranties implied by applicable legislation conferring rights upon consumers, which apply only to the extent to which they may not by law be excluded.

### 3. Exclusions

This warranty shall not apply to, or include, any of the following:

- 3.1 Any defect or failure due to accident, misuse, abuse, movement of the Product to a new site, negligence, non-observance of any of the instructions supplied with the Product including the instructions on the reverse side of this sheet ("Operating Instructions") or local regulations on the part of any user, choice of location, improper installation, configuration or connection, or faulty power supply.
- 3.2 If the Product is installed, repaired or serviced by a person who is not a qualified auto electrician or electronics technician, or if non-approved parts have been fitted.
- 3.3 Failure to obtain proper maintenance for the Product or any associated equipment or machinery.
- 3.4 Failure to pay for the products in full or comply with Redarc Electronics' Trading Terms.
- 3.5 If the Product is used other than for any reasonable purpose for which it was manufactured, or is used in a way not specified by Redarc Electronics.
- 3.6 If the original purchaser sells, leases or otherwise parts with possession of the Product.
- 3.7 Deterioration due to normal use and exposure, including abnormal environmental conditions such as lightning strike, flood and extreme heat.
- 3.8 Any freight, packing and insurance expenses relating to transportation of the Product.
- 3.9 Any expenses relating to installation and/or removal of the Product.
- 3.10 Any damage, indirect or incidental, of whatever nature.

### 4. Limitations

- 4.1 Redarc Electronics is not liable for any consequential, indirect or accidental loss or damage or for any service not expressly provided herein (including without limitation liability for any loss or damage caused by a fault in the Product or its external wiring connections) and the liability of Redarc Electronics under this warranty is limited to the repair or replacement of defective material or workmanship by a qualified auto electrician or electronics technician, provided such person and work is approved by Redarc prior to commencement. Subject to **clause 2**, Redarc Electronics is hereby excluded to the maximum extent permitted by law from all other liability in respect of the Product.
- 4.2 While Redarc Electronics warrants, where applicable, that the Product is free from defects in materials and workmanship under normal use at the time of delivery, Redarc Electronics does not warrant that the Product will meet any user specific requirements or that the operation of the Product will be uninterrupted or error-free.

### 5. Owner's Responsibilities

- 5.1 Maintenance of the Product and associated equipment and/or machinery is the responsibility of the owner. The owner must retain evidence that proper maintenance has been performed on the Product by Redarc Electronics or a qualified auto electrician or electronics technician. Claims made during the warranty term will not be accepted if resulting from lack of maintenance rather than faulty material or workmanship.
- 5.2 The owner must operate the Product in accordance with all of the Operating Instructions.
- 5.3 Upon discovery of a fault the owner must return the Product to the distributor with full details of the nature of the fault. Removal of the Product must be done by a qualified auto electrician or electronics technician to ensure that the warranty remains valid. A written report describing the circumstances of failure must accompany the returned Product with proof of purchase which clearly shows the date of such purchase by the original purchaser.
- 5.4 If the Product is found to be working satisfactorily on return to Redarc Electronics a reasonable charge will be made for the cost of testing, packing and freight. The Product will be returned on receipt of the amount charged.

### FREE TECHNICAL ASSISTANCE

# REDARC

THE POWER CONVERSION SPECIALISTS

23 Brodie Road North, Lonsdale  
South Australia 5160

Phone: 08 8322 4848 Fax: 08 8387 2889

Email: [power@redarc.com.au](mailto:power@redarc.com.au) Web: [www.redarc.com.au](http://www.redarc.com.au)



**Environmental System**  
Certified  
Environmental  
Management  
CEM 20649  
ISO 14001:2004  
SAI Global



**Quality System**  
Quality  
Endorsed  
Company  
QEC 5375  
ISO 9001:2000  
SAI Global

## Smart Start<sup>®</sup> BCDC1220 20A DC/DC 3-Stage Battery Charger



### FUNCTION

The Smart Start<sup>®</sup> BCDC1220 is a multi stage, 12V, 20A, DC-DC battery charger that operates from an input of either 12V or 24V nominal. The input voltage of the Smart Start<sup>®</sup> BCDC1220 can be above, below or equal to the output voltage making it ideal for charging an auxiliary 12V battery where the distance from the main battery may cause a significant voltage drop.

### FEATURES

- Selectable Multi-stage smart charging profiles for optimal charging of all automotive battery types
- Over current, short circuit, and reverse polarity protected
- High operating temperature range up to 80°C with over temperature protection
- Input under and over voltage shutdown
- Easy LED indication of selected battery type and charging stage
- Fully sealed in silicon elastomer - Suitable for marine or dusty environments
- Contains step up & step down circuitry, designed to give the best charge to your auxiliary battery should the input voltage be above equal to or below the required output voltage.

FREE TECHNICAL ASSISTANCE, contact Redarc Electronics  
Ph (08) 8322 4848, Fax (08) 8387 2889  
or Email [power@redarc.com.au](mailto:power@redarc.com.au)

*Specifications are subject to change without notification.*

## SPECIFICATIONS

BCDC1220			
DC Input Voltage Range	9V-32V		
	Gel/AGM	Standard Lead Acid	Calcium Content
Absorption Voltage	14.5V	14.9V	15.3V
Float Voltage	13.3V	13.3V	13.3V
Boost Commencement Voltage	12V	12V	12V
No Load Current	< 100mA		
Standby Current	< 5mA		
Input Fuse Rating	30A (Not Supplied)		
Output Fuse Rating	25A (Not Supplied)		
Output Power	300W		
Weight	450g		
Dimensions	100x120x37mm		
Warranty	2 years		
Standards	C-Tick		
	AS/NZS CISPR11:2004 (CISPR 11 ED.4.1)		

## INSTALLATION

- Mount the unit to a flat surface close to the auxiliary battery

**NOTE:** Unit will perform best with adequate airflow, make sure the unit is shielded from any other heat sources e.g. engine

**NOTE:** The unit temperature rise can be up to 30°C above ambient and can operate up to 80°C on the heatsink and care should be taken when working near or on the unit.

**NOTE:** The unit will operate optimally below 30°C or with good airflow below 55°C. At higher temperatures the unit will derate output current.

- Wire into vehicle as per diagram, Redarc recommends to use a minimum of 2.9mm<sup>2</sup> for RED, BROWN and BLACK wires however wire gauge may depend on installation and it is up to the installer to determine the appropriate wire gauge. For cable runs longer than 2 metres, use of a larger gauge cable is required for optimal performance. Automotive 6.4mm blade connectors are typically suitable for this unit. Waterproof connectors should be used where there is the possibility of water ingress at the cable connection points.

The Smart Start® BCDC1220 is connected using 5 wires, as shown below:

- Orange Battery type configuration wire
- Red Battery input positive 30A Fuse
- Black Common ground negative
- Brown Battery output positive 25A Fuse
- Blue Ignition (Voltage Sense)

**NOTE:** Appropriate sized fuses **MUST** be used to protect system wiring, values noted above are a guide only and fuses should be determined according to specific installation requirements.

**NOTE:** For 12V installation the Ignition/Sense wire must be connected to 12V supply. For 24V installation the Ignition/Sense wire must be connected to 24V vehicle ignition.

**Warning:** If the Ignition/Sense input is not connected to 24V ignition on a 24V setup, the unit may stay ON indefinitely and could discharge the vehicle start battery.

- The Smart Start® BCDC1220 has three Battery Type Settings available. These settings enable optimal charging profiles for the auxiliary battery. The Battery Type is set by connecting the Battery type configuration wire to either negative, positive or left unconnected during installation. The unit will check the status of this wire, and display the selected battery type via the LEDs on the unit.

**NOTE:** If this wire is to be left unconnected (AGM Gel setting) it should be insulated and secured so as not to short out during operation.

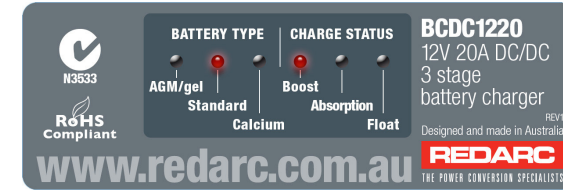
**NOTE:** The type selection should be made before connecting the blue Ignition/Sense wire.

**NOTE:** If the wire is to be connected to Positive Supply, it must be connected to the Vehicle battery, not the Auxiliary battery.

- Ground Supply Standard Lead Acid type batteries
- Positive Supply Calcium Content type batteries
- Not Connected AGM or Gel type batteries

## OPERATION

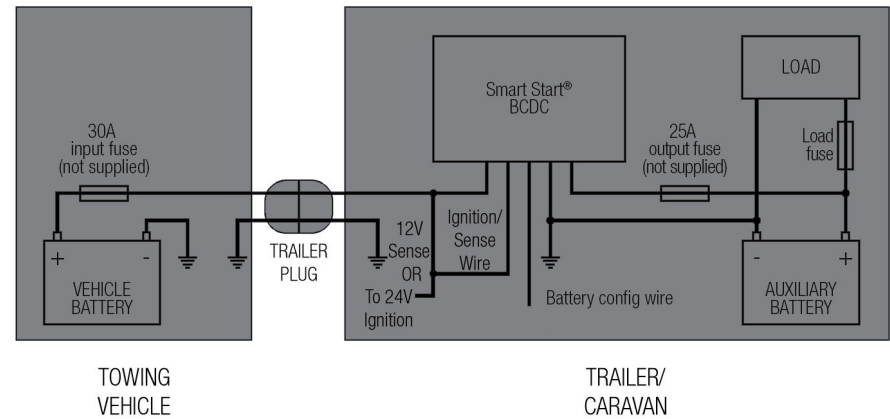
In addition to the battery type, the status of the charger is indicated via three LEDs. The Charging Status shows when the unit is in BOOST, ABSORPTION or FLOAT. In order to give more information, the applicable LED will flash to indicate the output by the unit. The longer the pulse, the more current the charger is putting out. If the LED is ON solid, then the unit is supplying a full 20A to the auxiliary battery.



Standby current mode is entered when the unit is not charging. In this mode, the Battery Type LED will blink approx once per second; the charging status LEDs will be off. In this mode, if the battery type wire is moved then the selected battery type will update. When the Smart Start® BCDC1220 is turned on it will start in BOOST mode. BOOST mode maintains a constant current until the battery voltage reaches a specific level, depending on the battery type chosen. The charger will then switch to ABSORPTION mode, maintaining the voltage at this level for a predetermined period of time, after which it will enter FLOAT mode. FLOAT mode maintains the battery being charged until a load on the battery causes the battery voltage to drop below a preset level, when it then re-enters BOOST mode.

- Input under voltage shutdown (as measured at the input battery)
  - Turn on above 13.2V
  - Turn off below 12.7V
- Input under voltage shutdown (as measured at the charger)
  - Turn on above 13.2V (no load voltage)
  - Turn off instantly below 8V
  - Turn off after 20 seconds below 9V
- Input over voltage shutdown
  - Turn on below 32V
  - Turn off instantly above 32.5V
  - Turn off after 20 seconds above 32.1V

## Smart Start® BCDC installation



## NOTES

- Make sure your battery can handle a 20A charging rate.
- Maximum charge voltages are chosen by experience and should be appropriate for your battery however, always check with your battery manufacturer to confirm.