

WARNINGS & SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS — This manual contains important safety instructions. Do not operate the system unless you have read and understood this manual. REDARC recommends that the products referenced in this manual be installed by a suitably qualified person.

Disclaimer: REDARC accepts no liability for any injury, loss or property damage which may occur from the improper or unsafe installation or use of its products.

⚠ WARNING

RISK OF EXPLOSIVE GASES: Working in 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 Main Unit and Battery Monitor.

⚠ CAUTION

1. The Main Unit and Battery Monitor 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 Main Unit and Battery Monitor.
2. DO NOT alter or disassemble the Main Unit or Battery Monitor under any circumstances. All faulty units must be returned to REDARC for repair. Incorrect handling or reassembly may result in a risk of electric shock or fire and may void the unit warranty.
3. Only use the Main Unit and Battery Monitor with standard automotive lead acid, calcium content, gel, AGM, SLI, deep cycle, heated or standard lithium iron phosphate (LiFePO₄) type 12 V batteries.
4. When using the Main Unit to charge a lithium iron phosphate (LiFePO₄) battery, only batteries that have an inbuilt battery management system featuring under and over voltage protection and cell balancing are suitable.
5. The heated lithium (H) charging profile should only be used with lithium batteries that have a functioning heating element. If unsure, the standard lithium (Li) charging profile must be used. Using the wrong charging profile may damage your heated lithium battery.
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. If the maximum voltage is too high for your battery type, select another charging profile.
7. Check the manufacturer's data for your battery and ensure that the continuous current rating of the Main Unit does not exceed the manufacturer's recommended maximum charging current. The battery charge current can be configured to match the manufacturer's recommendations if required.
8. The Main Unit is not intended to supply power to a low voltage electrical system other than to charge a battery.

9. Cable and fuse sizes are specified by various codes and standards which depend on the type of vehicle the Main Unit and Battery Monitor is installed into. Selecting the wrong cable or fuse size could result in harm to the installer or user and/or damage to the Main Unit or Battery Monitor or other equipment installed in the system. The installer is responsible for ensuring that the correct cable and fuse sizes are used when installing this product.
10. Wiring must be installed in protected areas away from heat sources and sharp objects. Cables must not be routed over or through moving parts of the vehicle. Additional protection such as conduit may be required, especially if routing cables through the engine bay.
11. NEVER smoke or allow a spark or flame in the vicinity of the battery or engine. This may cause the battery to explode.

PERSONAL SAFETY PRECAUTIONS

To assist with the safe operation and use of the Main Unit and Battery Monitor when connected to the battery:

- a. **HOT SURFACE:** High amperage loads connected to the Battery Monitor can cause the terminals and metal components to become extremely hot. To avoid burns, do not touch the hot parts without suitable personal protective equipment.
- b. Wear complete eye protection and clothing protection. Avoid touching eyes while working near a battery.



- c. If battery acid contacts your skin or clothing, remove the affected clothing and wash the affected area of your skin immediately with soap and water. If battery acid enters your eye, immediately flood the eye with running cold water for at least 10 minutes and seek medical assistance immediately.

NOTICE

1. Keep the Main Unit and Battery Monitor away from major heat sources, high voltages, and avoid extended exposure to sunlight.
2. DO NOT install the Main Unit, Battery Monitor or R-Bus Wiring Adaptor in the engine bay, they are not designed to operate in engine bay environments.
3. The installer is responsible for applying the correct torque to the Terminal Bolts on the Battery Monitor. Over-torquing bolts may damage the Terminals.
4. DO NOT bottom-out the bolt threads when fastening Terminal Bolts to the Battery Monitor Terminals, this may cause a poor electrical connection.
5. For fastening lugs to the Main Unit Terminals, only use the supplied M3 x 8mm / M5 x 10mm Hex Head Phillips Screws or equivalent. Using longer screws may lead to poor electrical connection or may damage the Main Unit.

Tech Support

1300 REDARC (1300-733-272)

Australia

+61 8 8322 4848

New Zealand

+64 9 222 1024

UK & Europe

+44 (0)20 3930 8109

USA

+1 (704) 247-5150

Canada

+1 (604) 260-5512

Mexico

+52 (558) 526-2898

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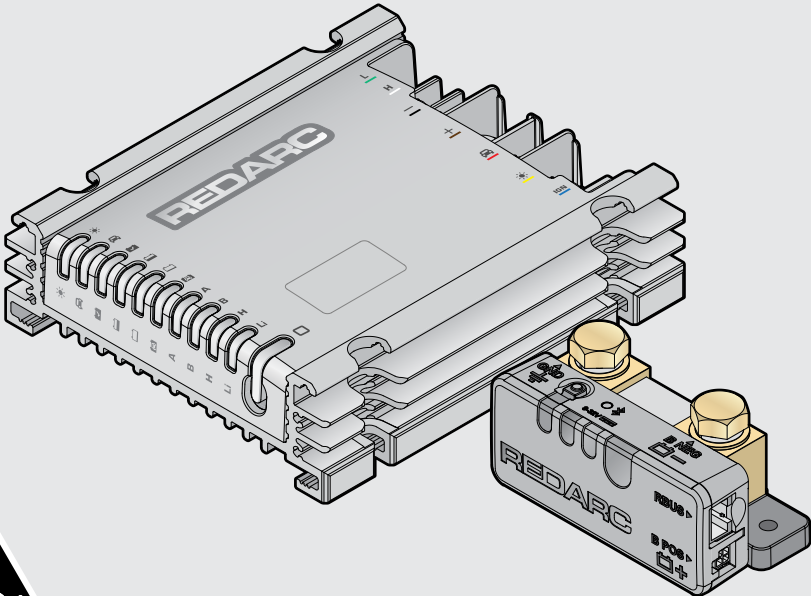


INSTALL GUIDE

BCDC ALPHA® 50R

BCDC12050R

12 V 50 A DC-DC Battery Charger with
Smart Battery Monitoring and Bluetooth®



BCDC ALPHA 50R OVERVIEW

The BCDC Alpha 50R charges all common 12V automotive battery types including standard and heated lithium. It is equipped with screw terminals for easy installation, and has a push-button interface for simple operation.

The BCDC Alpha 50R prioritises charging from solar before supplementing from the vehicle start battery to lighten the load on your alternator and maximise the collection of free solar energy, with an option for excess solar energy to then top-up the vehicle start battery.

The Battery Monitor provides critical system information including battery voltage, current, State of Charge (SoC) and temperature information of the connected battery via the RedVision® App.

The Battery Monitor can be combined with REDARC R-Bus compatible products, including the TVMS Rogue with the RedVision® Display. Note, the RedVision® Display requires a TVMS Rogue or TVMS Prime to operate and cannot be powered directly by the BCDC Alpha 50R.

The BCDC Alpha 50R also features the capability to seamlessly revive and charge a fully flattened lithium battery.

FULL-LENGTH MANUAL

This document contains everything you need to know to complete a basic install of your BCDC Alpha 50R.

Note that there is a full-length manual available that contains expanded installation information for more complex systems.



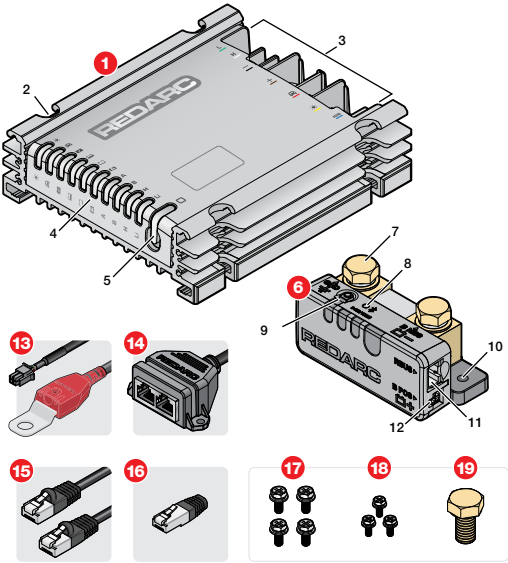
For the latest version of this document and any available translations, visit the REDARC website: www.redarcelectronics.com



BCDC Alpha R-Bus full-length manual



KIT CONTENTS



1 MAIN UNIT

- 2. Mounting Points
- 3. Terminals
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6 BATTERY MONITOR

- 7. Terminal Bolts M10 x 16mm (x2)
- 8. Status LED
- 9. Control Button
- 10. Mounting Points (x2)
- 11. R-Bus Socket
- 12. Battery Sense Lead Socket

13 BATTERY SENSE LEAD – 1 m (3'3")

14 R-BUS WIRING ADAPTOR

15 R-BUS (RJ45) CABLE – 2 m (6'7")

16 TERMINATING RESISTOR

17 M5 x 10 mm HEX HEAD PHILLIPS SCREW (x4)

18 M3 x 8 mm HEX HEAD PHILLIPS SCREW (x3)

19 M10 x 20 mm ALTERNATIVE TERMINAL BOLT

MAIN UNIT PARTS

STATUS LEDs

SOLAR AND VEHICLE LEDS

ON when the input is available and in use. OFF when the input is not available or not in use.

CHARGING STAGE LEDS

Shows the current charging stage the Main Unit is in when charging the auxiliary battery. See "Charging Stages" for information about each charging stage: **Float, Absorption and Boost.**

CHARGEBACK LED

ON when the Start Battery Charge Mode is enabled and active, or when Start Battery Recovery is in progress.

CHARGE PROFILE LEDS

Shows the charging profile of the auxiliary battery, as configured via the Control Button or the Configurator App **Battery Type** setting.

- A AGM/Gel H Heated Lithium
- B Standard Lead Acid / Calcium Li Standard Lithium

CONTROL BUTTON

Controls the Main Unit and can be used to configure essential settings — additional settings are configured via the Configurator App.

Refer to the full-length manual for detailed operation instructions of the Control Button on the Main Unit.

TERMINALS

The Main Unit has female screw terminals.

- L R-Bus Input (2x M3) H Connects to the R-Bus Wiring Adaptor.

- Ground (M5) Connects to common ground.

- Auxiliary Battery (M5) Connects to the auxiliary battery positive (+) terminal.

- Start Battery (M5) Connects to the start battery positive (+) terminal.

- Solar (M5) Connects to the solar panel positive (+) wire.

- IGN Vehicle Ignition (M3) Connects to an ignition signal for vehicles with smart alternators.

INSTALLATION – MOUNTING

DON'T:

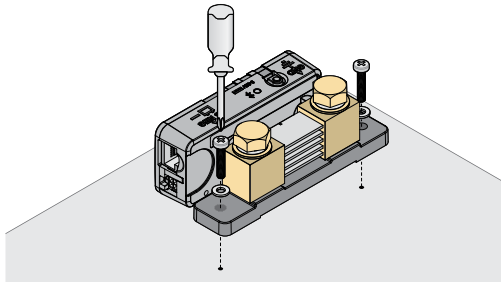
- DO NOT install the Main Unit, Battery Monitor and R-Bus Wiring Adaptor in the engine bay.
- Do NOT mount the Main Unit in an orientation that allows liquid to pool at the terminals.
- DO NOT mount the Battery Monitor with the R-Bus and B POS sockets facing upwards.
- DO NOT mount using adhesives or adhesive tape.

DO:

- Use all mounting points on the Main Unit and Battery Monitor.
- Mount in a location where all Control Buttons and Status LEDs are accessible and visible.
- Mount in a dry and protected location e.g. inside the vehicle's cabin, ute canopy, caravan or battery box.
- If installing the Main Unit or Battery Monitor in an enclosed space, make sure there is adequate venting at the top and bottom of the enclosure for cross-flow of air.
- Mount the Main Unit and Battery Monitor to fixed surfaces.
- Mount on flat a surface. Check the reverse side before drilling.
- Leave 40 mm (1.6") clearance around the Main Unit.
- Leave 30 mm (1.2") clearance around the Battery Monitor.

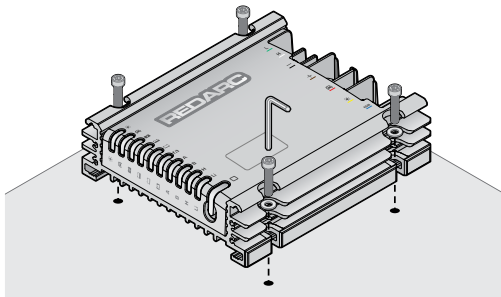
MOUNT THE BATTERY MONITOR

Mount using two M6 (1/4") to M4 (5/32") fasteners with washers.



MOUNT THE MAIN UNIT

Mount using four M6 (1/4") fasteners with washers.



SPECIFICATIONS

MAIN UNIT SPECIFICATIONS	
Nominal Current Rating	50A
Operating temperature*1	–20°C to 60°C (–4°F to 140°F)
Start Battery Input	
Voltage Range	9–32 VDC ===
Maximum Input Current	55A
Solar Input	
Voltage Range*2	9–48 VDC ===
Maximum Input Current	55A
Maximum Array Size	1000W
Output	
Nominal Output Voltage	12V
Voltage Range	9–16 VDC ===
Maximum Output Current	50A
Battery Capacity Range	50 to 600Ah
Maximum Output Power	800W

*1 As the temperature of the Unit rises above a certain level the current capacity of the output is decreased gradually to protect the battery and the Unit.

*2 The maximum voltage of the solar array should be calculated for the minimum temperature that it would be exposed to. The value should be less than 48V or else damage to the unit may occur. The unit will not charge if the voltage is too high.

BATTERY MONITOR SPECIFICATIONS	
Operating voltage range	9–32 VDC ===
Operating temperature	–20°C to 60°C (–4°F to 140°F)
Current measurement range	± 500A
Current measurement accuracy	±0.3%, 1to 500A @ 50°C (122°F)
Voltage measurement accuracy	±0.7%
Battery temperature measurement range	–40°C to 100°C (–40°F to 212°F)
Temperature measurement accuracy	±3°C (±5.4°F)
Regulatory compliance	FCC ID: 2BAH6-SU601 IC: 30290-SU601

LIMITED WARRANTY

For full warranty terms and conditions, visit the Warranty page of the REDARC website at www.redarcelectronics.com/warranty

Australia, New Zealand & Europe:

REDARC Electronics Pty Ltd,
23 Brodie Road (North), Lonsdale SA 5160, Australia

North America:

REDARC Corporation, c/o Shalco, Inc.
308 Component Dr., Smithfield, NC 27577, USA

COMPLIANCE



INTERNAL TRANSMISSION NOTICE

Note: 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:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help

This device complies with Part 15 of the FCC Rules and with Innovation, Science and Economic Development Canada's licence-exempt RSS (s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) L'appareil ne doit pas produire de brouillage.

(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillard est susceptible d'en compromettre le fonctionnement

This equipment complies with the FCC and ISED Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and all persons during normal operation.

Cet équipement est conforme aux limites d'exposition aux rayonnements de la FCC et ISED Canada établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et toutes les personnes pendant le fonctionnement normal.

IMPORTER CONTACT INFORMATION

UK: Ozparts UK Ltd, 1 Prospect Place, Pride Park, DE24 8HG, Derby, UK

Europe: Ozparts Sp. z o. o. Sp. kom., Slowackiego 32/5, 87–100 Torun, Poland

For written request please email power@redarcelectronics.eu

***NOTE:** This mode is only available for 12V vehicle batteries and require the Vehicle Input Trigger to be set to 'Auto' or '12V' mode.