

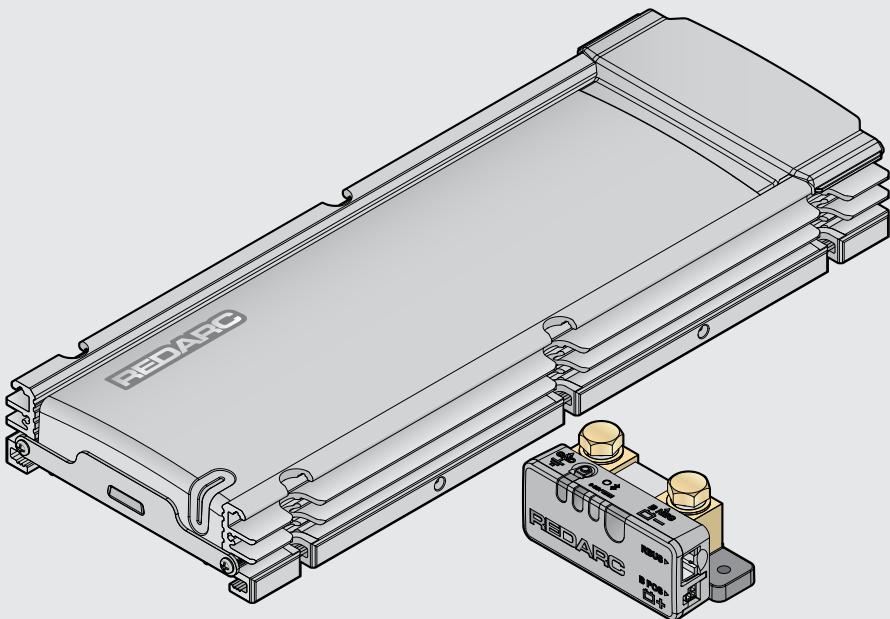
THE POWER OF

REDARC®

BCDC ALPHA® 100R

BCDC12100R

12 V 100 A DC-DC Battery Charger with
Smart Battery Monitoring and Bluetooth®



THE BCDC ALPHA® 100R

The BCDC Alpha 100R charges all common 12V automotive battery types including standard and heated lithium and is equipped with screw terminals for easy installation.

The BCDC Alpha 100R 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 BCDC Alpha 100R can be combined with REDARC R-Bus compatible products, including the RedVision® Display and TVMS Rogue.

The BCDC Alpha 100R also features the capability to seamlessly revive and charge a fully flattened lithium battery.



**GET THE FREE
CONFIGURATOR APP**



Configure the settings of your BCDC Alpha 100R using your smartphone via Bluetooth®.



**GET THE FREE
REDVISION® APP**



Monitor your RedVision® System using your smartphone via Bluetooth®.

The Configurator App and the RedVision® App and their interactions with the BCDC Alpha 100R have not been tested on all smartphone models. Visit the application pages within each App store to view compatibility details.

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For the latest version of this document and any available translations, visit the product page on the REDARC website at www.redarcelectronics.com

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.

SAFETY MESSAGE CONVENTIONS

Safety messages in this manual include a signal word to indicate the level of the hazard as follows:

▲ WARNING: Indicates a potentially hazardous situation which could result in death or serious injury to the operator or to bystanders.

▲ CAUTION: Indicates a potentially hazardous situation which may result in moderate or minor injury to the operator or to bystanders.

NOTICE: Indicates a situation that may cause equipment damage.

▲ 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. This appliance is not intended for use by persons (including children under 8 years old) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance in a safe way by a person responsible for their safety and they understand the hazards involved. Children should be supervised to ensure that they do not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
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 12V 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 charging profile should only be used with lithium batteries that have a functioning heating element. If unsure, the standard lithium 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. 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.
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. The Main Unit is not intended to supply power to a low voltage electrical system other than to charge a battery.
11. DO NOT attempt to charge non-rechargeable batteries with the BCDC Alpha 100R.
12. NEVER smoke or allow a spark or flame in the vicinity of the battery or engine. This may cause the battery to explode.
13. The auxiliary battery must be placed in a well-ventilated area when charging vented batteries.
14. The Auxiliary Battery output terminal of this Charger should not be connected to the vehicle start battery.
15. The BCDC Alpha 100R must be installed in the following order: auxiliary battery positive (+), auxiliary battery negative (-) (battery monitor), common ground, start battery positive (+), vehicle ignition (if required), solar then the R-Bus cable.
16. The BCDC Alpha 100R must be disconnected in the following order: R-Bus cable, vehicle ignition (if installed), solar, start battery positive (+), common ground, auxiliary battery negative (-) (battery monitor) then auxiliary battery positive (+).

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.



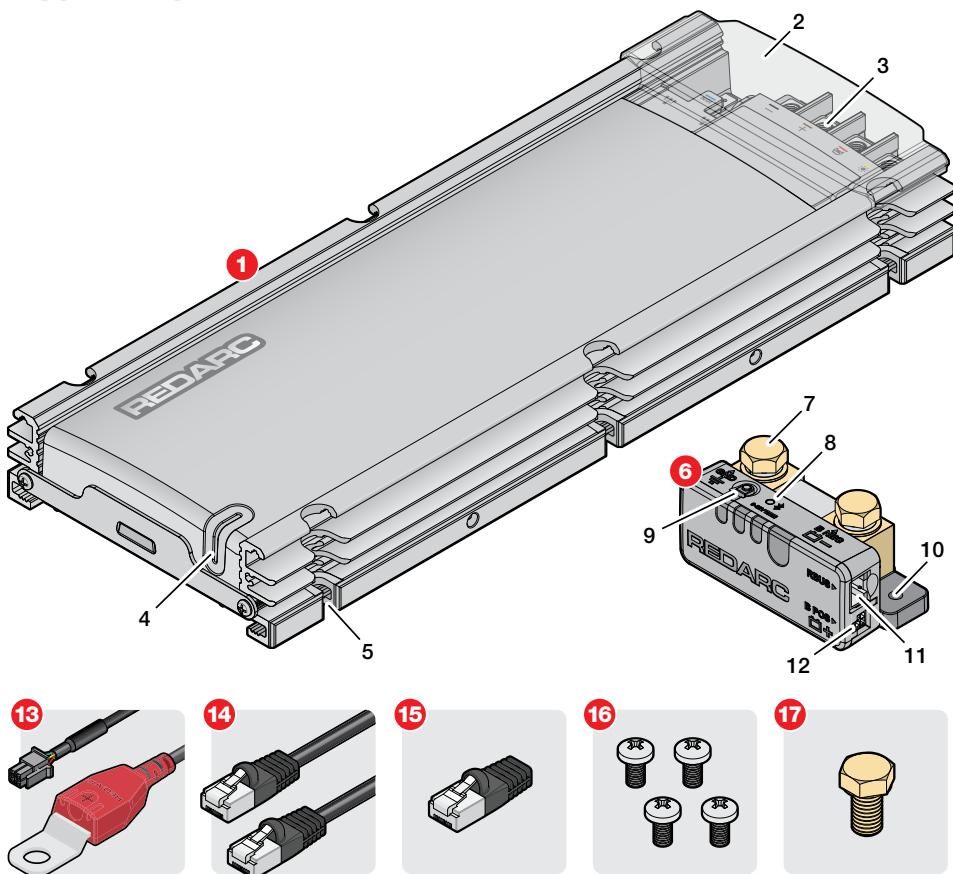
- c. If battery acid contacts your skin or clothing, remove the affected clothing and wash the affected area of your skin immediately with soap and water. If battery acid enters your eye, immediately flood the eye with running cold water for at least 10 minutes and seek medical assistance immediately.

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 and Battery Monitor 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.

BCDC ALPHA 100R OVERVIEW

KIT CONTENTS



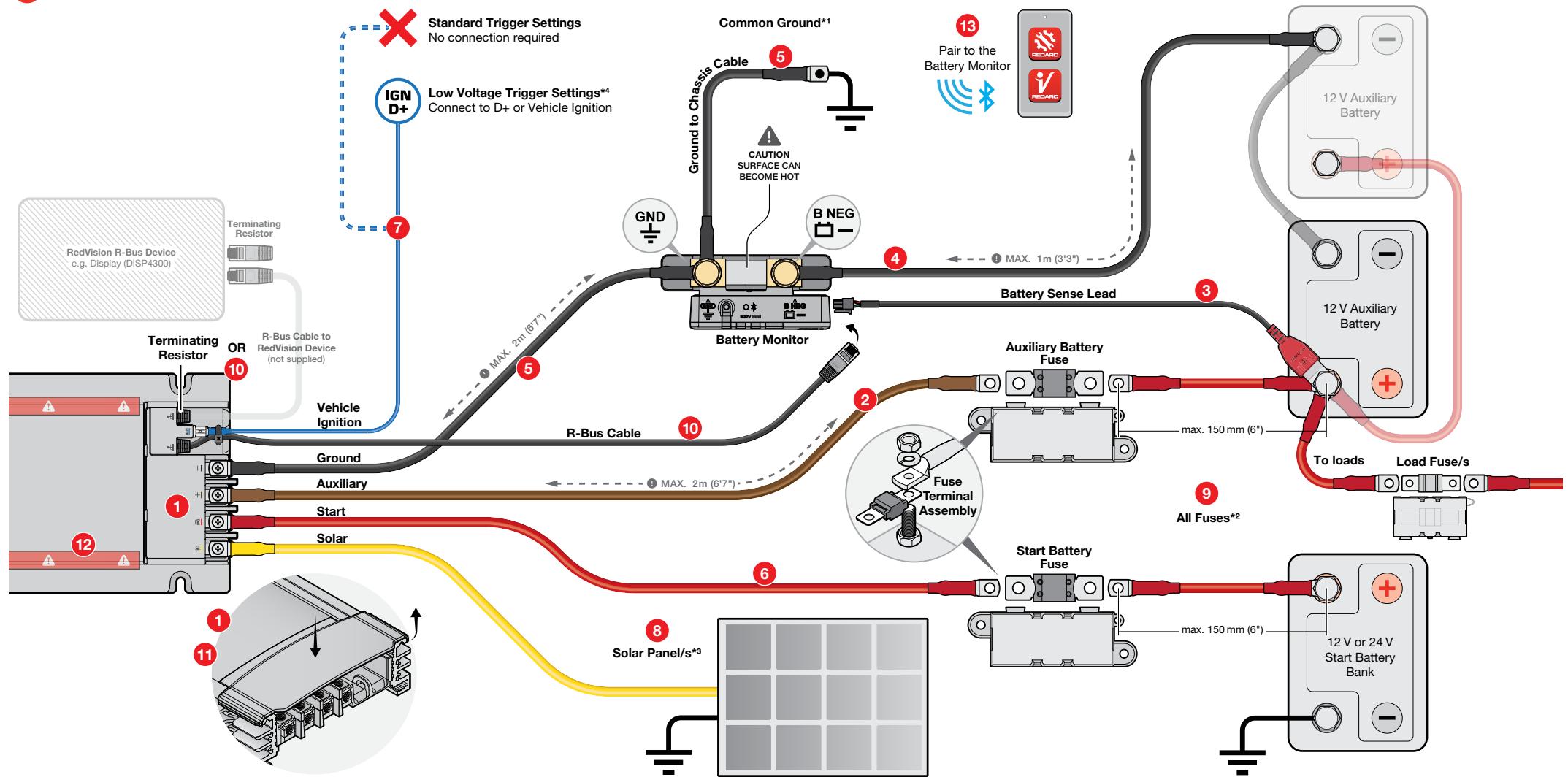
1. **MAIN UNIT**
2. Terminal Cover
3. Terminals
4. Status LED
5. Mounting Points (x6)
6. **BATTERY MONITOR**
7. Terminal Bolts M10 x 16mm (x2)
8. Status LED
9. Control Button
10. Mounting Points (x2)
11. R-Bus Socket
12. Battery Sense Lead Socket

13. **BATTERY SENSE LEAD — 1 m (3'3")**
14. **R-BUS (RJ45) CABLE — 2 m (6'7")**
15. **TERMINATING RESISTOR**
Located in the R-Bus Interface input on the Main Unit
16. **M6 x 12 mm PAN HEAD FASTENERS (x4)**
Located in the Terminals on the Main Unit
17. **M10 x 20 mm ALTERNATIVE TERMINAL BOLT**

TYPICAL BCDC ALPHA 100R SETUP

This wiring diagram shows a typical system configuration. If unsure, contact REDARC Technical Support for advice on your system requirements.

1 Indicates the order of installation.



***1 Common Ground** — All components in your system must share a common electrical ground.

***2 All Fuses** — Fuses must be suitably rated for the cable gauge used. MEGA type types are recommended (see 'Fusing' (page 8)).

***3 Solar Panel/s** — Do not connect regulated solar panels, the BCDC Alpha 100R has an inbuilt MPPT regulator.

***4 Low Voltage Trigger Settings** — If required, connect the **Vehicle Ignition** to D+ or ignition switched fuse in one of the vehicle's fuse boxes, located in either the engine compartment or vehicle cabin, see 'Vehicle Ignition Requirements' (page 11) and "Vehicle Ignition Cable Connection" on page 21.

SYSTEM PLANNING

⚠ CAUTION: Cable sizes are specified by various codes and standards which depend on the type of vehicle the battery is installed in. Selecting the wrong cable size could result in harm to the installer or user and/or damage the BCDC Alpha 100R or other equipment installed in the system. The installer is responsible for ensuring that the correct cable sizes are used when installing the BCDC Alpha 100R.

WHAT YOU WILL NEED

TOOLS

The tools listed may be required for mounting and wiring the BCDC Alpha 100R:

- Screwdriver set
- Power drill
- Lug/Ring terminal crimping tool
- Spanner set
- Side/Cable cutters
- Heat gun

CONSUMABLES

Components not included with the BCDC Alpha 100R may be required for mounting, wiring connections and cable management, including:

- Mounting fasteners
- Busbar/s
- Cable ties
- Cables/wires
- Electrical tape
- Conduit/Split tubing
- Lug/Ring terminals
- Heat shrink
- P-Clips

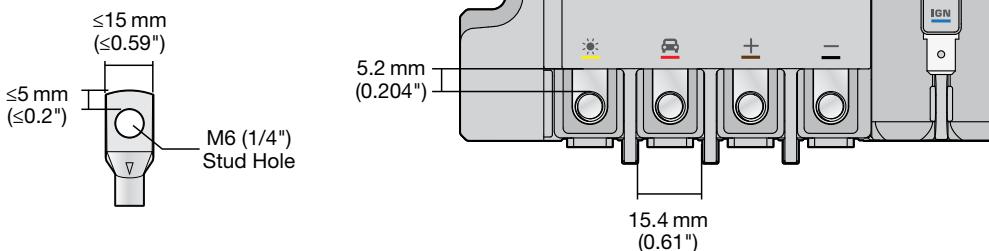
MAIN UNIT REQUIREMENTS

LUGS

⚠ CAUTION: DO NOT use the side facing terminals.

On the Main Unit, the **Ground**, **Auxiliary**, **Start Battery** and **Solar** terminals have M6 screw threads. Select lugs with an M6 (1/4") stud hole and a cable barrel that suits the required cable gauge. Ensure that the width of lug tongues do not exceed the maximum dimensions shown below.

The Main Unit is capable of connecting multiple lugs. **For important lug requirements and instructions see 'Connecting Multiple Lugs' (page 12).**



CABLE LENGTH AND GAUGE CONSIDERATIONS

Maximum Expected Currents

When selecting the **Auxiliary Battery**, **Ground**, **Start Battery** and **Solar** cable sizes for your installation, consider the maximum expected currents for each connection. This table highlights the maximum current each cable connection can carry.

Terminal	Maximum Current
⊕ Auxiliary Battery	100A
⊖ Ground	110A
🔋 Start Battery	110A
☀️ Solar	110A

Auxiliary Battery and Ground Cable

The **Auxiliary Battery** and **Ground** cables must be no longer than 2 m (6'7") in length and must be sized to conduct the full rated capacity of your BCDC Alpha 100R.

The **Auxiliary Battery** cable must be fused for protection, refer to '['Cable size and Fuse Selection' \(page 9\)](#)' fuse and cable sizing.

Start Battery Cable

The maximum current drawn from the start battery can be configured via the Configurator App

(**Vehicle Input Current Limit** setting) to be at or below the maximum capacity of the BCDC Alpha 100R (110 A).

The **Start Battery** cable size must reflect this configuration and meet the following requirements:

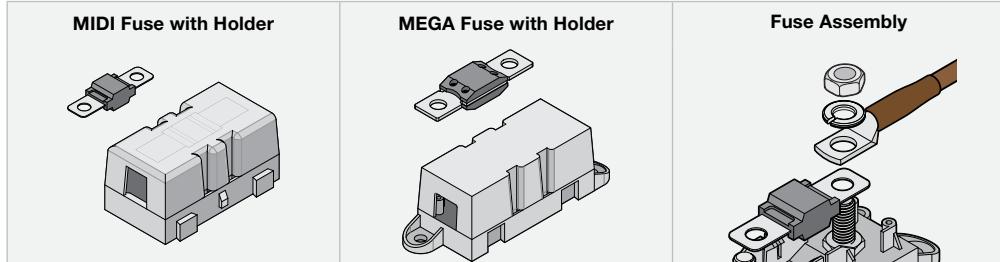
- Must be fitted with a fuse rated to protect the selected cable size.
- Consider if the **Vehicle Input Current Limit** will be re-configured to a higher capacity, this may require a larger cable and fuse size.

Solar Cable

The **Solar** cable must be sized to conduct the short circuit current of your solar panel/s, regardless if it is less than or greater than the BCDC Alpha 100R's maximum solar input current (110A). For information on connecting multiple solar panels in your installation, refer to '['Connecting Multiple Solar Panels' \(page 23\)](#)'.

FUSING

Fuses must be mounted within 150 mm (6") of the battery's positive (+) terminal.



CABLE SIZE AND FUSE SELECTION

Select cable sizes based on the maximum expected currents from the **Ground**, **Auxiliary**, **Start Battery** and **Solar** cables. Appropriately sized fuses need to be selected for the **Auxiliary** and **Start Battery** connections to protect wiring.

REDARC strongly recommends using good quality PVC V90 or XLPE insulated cables.

Expected Current	Fuse Rating (REDARC Fuse Kit)		One-way Length		Cross Sectional Area mm ²	Cable Gauge (AWG/B&S)	Refer to NOTES
	Auxiliary Battery	Start Battery					
50 A – 55 A	–	70A (FK70)	0 – 5 m	0 – 16'5"	13.5	6	1
					20.2	4	
			5 – 9 m	16'5" – 29'6"	20.2	4	
			9 – 12 m	29'6" – 39'4"	20.2	4	1
					26.6	3	
75 A – 82 A	–	125A (FK125)	0 – 5 m	0 – 16'5"	33.6	2	1, 3
					16	-	2
					53.4	0	3
			5 – 12 m	16'5" – 39'4"	33.6	2	1, 3
					25	-	2
					53.4	0	3
100 A – 110 A	125A (FK125)	175A (FK175)	0 – 9 m	0 – 29'6"	42.4	1	1, 3
					25	-	2
					85	3/0	3
			9 – 12 m	29'5" – 39'4"	42.4	1	1, 3
					35	-	2, 3
					85	3/0	3

NOTES:

1. This cable size is not capable of carrying the expected current in engine bay environments. Do not use this cable size for connections to components located in the engine bay (i.e. Start Battery cable).
2. Only use XLPE insulated cables (must be high temperature rated).
3. To allow the BCDC Alpha 100R to carry the expected current, a **step down assembly** is required for the lug to fit to the Main Unit in order to use the correct cable gauge.

NOTE: Vehicles with smart alternators may have a reduced charging current if the minimum specified cable gauge is selected for long cable lengths. To avoid this, you can use the next cable size up.



STEP DOWN ASSEMBLY EXAMPLES

Scan the QR code for cable step down assembly examples.

BATTERY MONITOR REQUIREMENTS

LUG SIZING

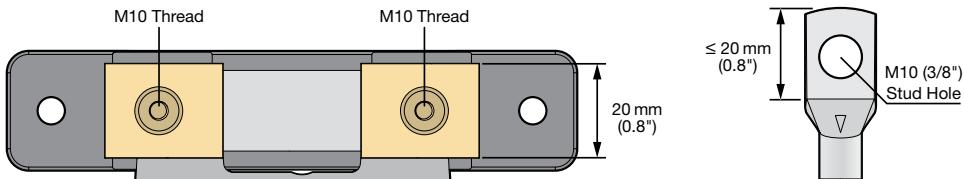
The **Ground (GND **)

 and **Battery Negative (B NEG **) terminals on the Battery Monitor have M10 screw threads. Select lugs for a 10 mm (3/8") stud and a cable barrel that suits the required cable gauge.

The **Ground (GND **)

 terminal is capable of connecting multiple loads, for important lug requirements and instructions see [page 12](#).

NOTE: If installing the lugs to the Battery Monitor terminals facing downwards, select a lug with a tongue that is long enough to cover the shunt surface. This is to ensure that there is no interference between the ramped section of the lug and the shunt. See [page 26](#) for more information.



CABLE SIZING

CAUTION: If undersized cables are used, overheating of cables could cause damage (including fire) and charging performance will likely be compromised.

Appropriate battery negative cables are required for the **Battery Negative (B NEG **)

 and **Ground (GND **) terminals on the Battery Monitor. These cables are used to connect the Battery Monitor to the auxiliary battery and to the common ground — see [page 20](#).

Battery Negative Cables

The **Battery Negative** cable should be no longer than 1 m (3'3") to minimise the voltage drop between the Battery Monitor and auxiliary battery. Refer to the table below to determine a suitable cable gauge for this connection based on the current your system has.

NOTE: Your auxiliary battery's negative connection is made via the **Battery Negative (B NEG **)

 terminal on the Battery Monitor.

IMPORTANT: The following table should be used as a reference only, considerations when selecting an appropriate cable for your installation include:

- Cable length
- Peak current draw
- Time spent at high current
- Environment ambient temperature

System Current	100 A	200 A	300 A	400 A	500 A
Maximum Cable Length	1 m (3'3")				
Recommended Cable Cross Section	35 mm ²	70 mm ²	95 mm ²	120 mm ²	150 mm ²
Closest Equivalent AWG/BAE/B&S	2	3/0	4/0	250 kcmil	300 kcmil

CONSIDERATIONS PRIOR TO INSTALLATION

COMMON GROUND REQUIREMENTS

The Main Unit, Battery Monitor and all other components in your setup must share a common electrical ground point for correct system operation. This can be achieved by connecting all grounds to a common ground busbar or by a good quality connection to the vehicle chassis (if appropriate).

USING A COMMON GROUND BUSBAR

Consider the location of the busbar, ensuring it's mounted in a central location to avoid excessive cable lengths.

The common ground busbar must be capable of carrying all current loads.

USING VEHICLE CHASSIS

Good quality electrical connections to a chassis can only be achieved if the connection is free of paint, protected against corrosion, and has a suitable fastener. The common ground must have a robust electrical connection to the **Ground (GND $\frac{1}{4}$)** terminal on the Battery Monitor.

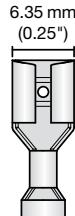
VEHICLE IGNITION REQUIREMENTS

Vehicle Alternator Type

If you have a variable-voltage (smart alternator) the **Vehicle Ignition** connection will be required for the BCDC Alpha 100R to function correctly. Identify the type of alternator your vehicle has by checking for a battery sensor on your vehicle's start battery.

Connection Type

If a **Vehicle Ignition** connection is required for your installation, use a 6.35 mm (0.25") sized FASTON.



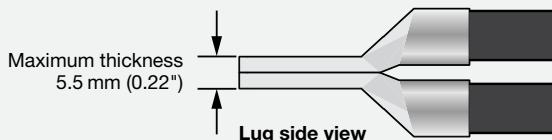
CONNECTING MULTIPLE LUGS

MAIN UNIT CONDITIONS

⚠ CAUTION: Do not use the Main Unit outside the recommendations below. Exceeding the recommendations could damage the Main Unit and/or other equipment installed in the system.

REDARC recommends only connecting one lug per terminal — if more connections are required, a suitably rated busbar should be used. If needed, the Main Unit can accommodate up to a maximum of two lugs per terminal ensuring that the following requirements are met:

- The maximum combined lug thickness is no more than 5.5 mm (0.22").
- All connected cables MUST be of suitable current carrying capacity to be protected against hazard in the case of fault currents.
- Only use the supplied M6 x 12 mm screws. Using longer screws may lead to poor electrical connection and may damage the Main Unit.



BATTERY MONITOR CONDITIONS

⚠ CAUTION: Do not use the Battery Monitor outside the recommendations below. Exceeding the recommendations could damage the Battery Monitor and/or other equipment installed in the system. The installer is responsible for ensuring the correct bolt size and **Ground** cable size is used.

The Battery Monitor is capable of connecting multiple loads to the **Ground (GND \perp)** terminal. Depending on your system setup, you may need to use the supplied Alternative Terminal Bolt (M10 x 20mm). Refer to the table below to determine if this bolt is required. The lugs belonging to circuits with the highest currents should be closest to the Battery Monitor terminal.

Bolt Size (supplied)	Combined Thickness of Lug Tongues	
	Minimum	Maximum
Standard M10 x 16mm	–	4 mm (5/32")
Alternative M10 x 20 mm	4 mm (5/32")	8 mm (5/16")

Lug thickness for Ground (GND \perp) Terminal	
<p>Combined tongue thickness</p> <p>Lug side view</p>	<p>< 4 mm (5/32") use Standard Bolt (M10 x 16 mm)</p>

MAIN UNIT SWARF BARRIERS

On the Main Unit there are three swarf barriers to prevent swarf, cable trimmings and other materials from entering the Main Unit during installation.

DURING INSTALLATION

DO NOT remove any of the barriers when mounting and wiring your system.

Metallic objects entering the Main Unit can cause permanent damage and may void the warranty.

AFTER INSTALLATION

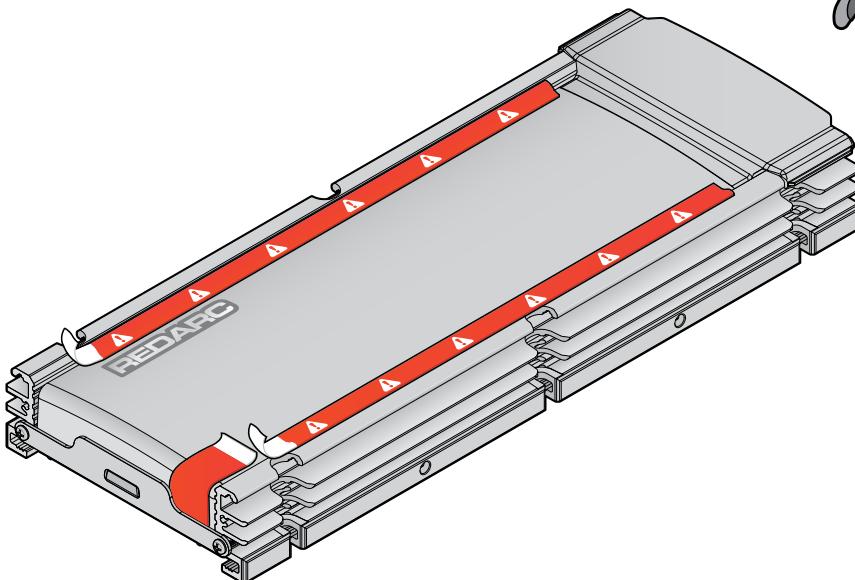
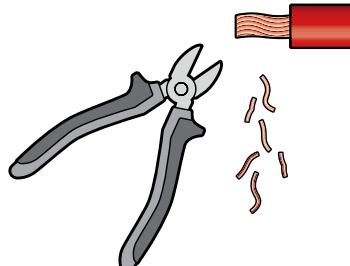
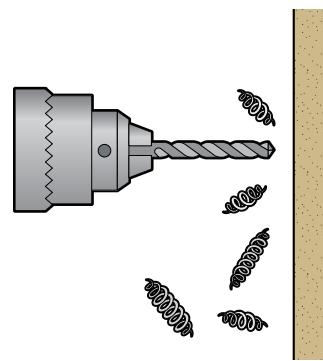
Once the Main Unit and all other components in your system are fully installed, the barriers should be removed.

CARE AND MAINTENANCE

Throughout the life of the product, be cautious when conducting any work near the Main Unit that could create swarf or cable trimmings.

For the duration of the work, cover the Main Unit and take any precautions necessary to prevent swarf, cable trimmings and other materials entering the Main Unit.

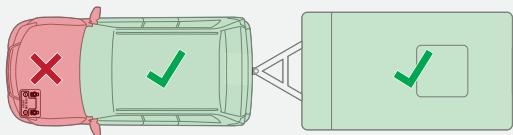
Do not use high pressure air to clear swarf and cable trimmings.



INSTALLATION – MOUNTING

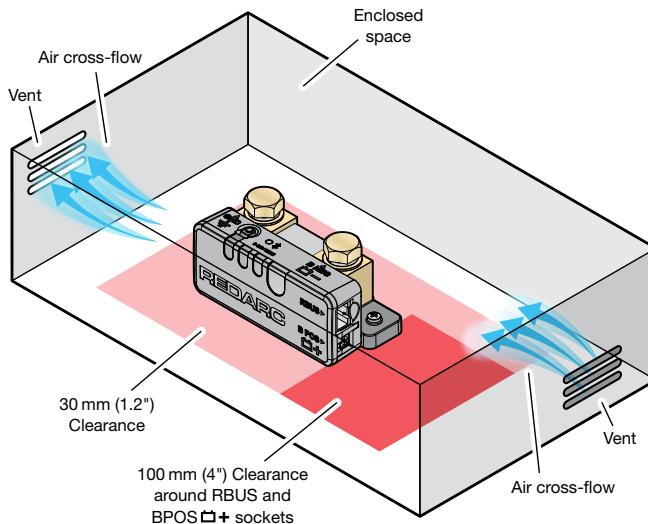
GENERAL MOUNTING REQUIREMENTS

NOTICE: DO NOT install the Main Unit and Battery Monitor in the engine bay. These parts are not rated to engine bay environment conditions.



The Main Unit and Battery Monitor are only rated for indoor installations in any liveable areas of the vehicle or caravan/camper trailers.

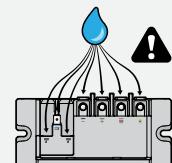
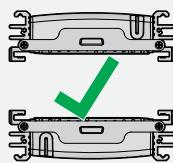
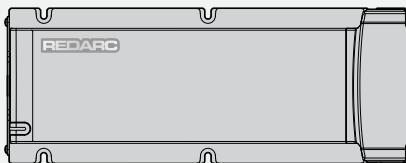
- Avoid using excessive cable lengths by first testing that all cables will comfortably reach each component correctly in your setup.
- Mount in a location that is dry, clean and is not prone to high humidity. Liquid or condensation entering into the Main Unit and Battery Monitor may cause irreparable damage.
- Mount the system to fixed surfaces that have adequate strength to support it when all connections and wiring are in-place. DO NOT mount on any moveable parts.
- The mounting surface must be flat and safe to drill through – check the reverse side before drilling.
- Ensure there is adequate space around the Main Unit and Battery Monitor for strain-relief, cable management and operation of the BCDC Alpha 100R (see [page 26](#) for further information).
- If installing the Main Unit and Battery Monitor in an enclosed space, two vents should ideally be positioned at opposite ends of the enclosure for cross-flow of air as demonstrated below. Failure to adequately ventilate can cause overheating, leading to degraded performance.



MOUNTING THE MAIN UNIT

⚠ HOT SURFACE: The heatsink can reach high temperatures during operation. For this reason, the installer is responsible to leave at least 10mm (0.4") of clearance down the sides and 40mm (1.6") at each end of the Main Unit to allow for air-flow.

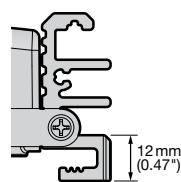
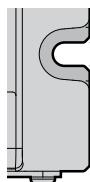
- If installing in an enclosed space, leave at least 100 mm (4") of clearance on all sides and above the Main Unit.
- The Main Unit can be mounted in any orientation ensuring that the cables are routed with drip loops where required, see [page 26](#) for more information.
- The Main Unit should be mounted within 2 m (6'7") of cable length from the auxiliary battery.



MOUNTING HARDWARE

Use six M6 (1/4") bolts/screws with washers that are suitable for the mounting surface. The diameter of the fastener heads and washers must not be larger than 14 mm (0.55").

Do not use adhesives or adhesive tape to mount the Main Unit.

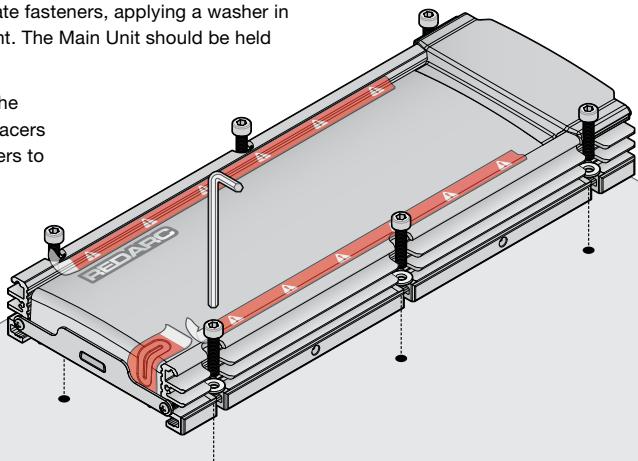


MOUNTING STEPS

⚠ WARNING: Use suitable Personal Protective Equipment (PPE) when operating power tools.



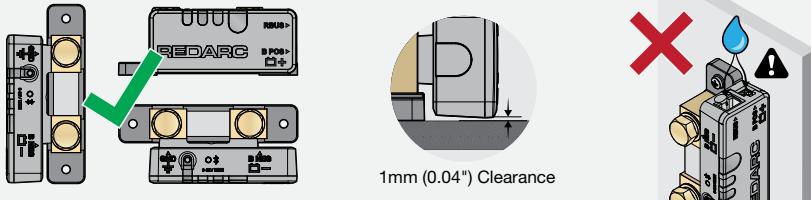
1. Confirm clearances around the Main Unit are adequate.
2. If clearance/pilot holes need to be drilled, place the Main Unit in its final position and mark the centre of each Mounting Point or use the template provided on the retail packaging.
3. Remove the Main Unit and drill the holes. De-burr the drilled holes and remove any swarf. Touch up any bare metal surfaces that have been exposed with a rust-inhibitor.
4. Fasten the Main Unit in place with appropriate fasteners, applying a washer in between the fastener and the Mounting Point. The Main Unit should be held firmly against the mounting surface.
5. Check that there are no gaps under any of the mounting points. If gaps still exist, install spacers to fill the gaps — do not over tighten fasteners to close gaps.



MOUNTING THE BATTERY MONITOR

⚠ HOT SURFACE: High amperage loads connected to the Battery Monitor can cause the terminal/metal components to become extremely hot. For this reason, the installer is responsible to **leave at least 30 mm (1.2") of clearance on all sides and above the Battery Monitor** to allow for air-flow.

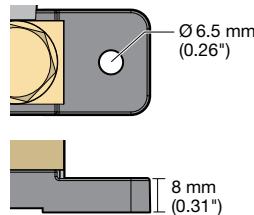
- The Battery Monitor can be mounted in any orientation except with the **RBUS** and **B POS** (■ +) sockets facing upwards, to prevent condensations/liquids from running into the Battery Monitor.
- Ensure the main housing is clear from any protrusions (1 mm (0.04") clearance).



MOUNTING HARDWARE

When mounting the Battery Monitor, both Mounting Holes must be used. REDARC recommend using M6 (1/4") to M4 (#8) fasteners with washers.

Ensure the selected fasteners are suitable for the mounting surface and there is clearance-fit through the Mounting Holes on the Battery Monitor.

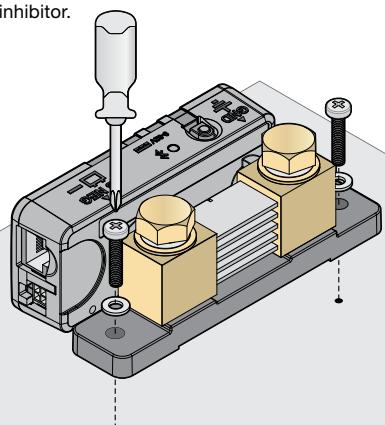


MOUNTING STEPS

⚠ WARNING: Use suitable Personal Protective Equipment (PPE) when operating power tools.



1. Confirm clearances around the Battery Monitor are adequate.
2. If clearance/pilot holes need to be drilled, place the Battery Monitor in its final position and mark the centre of each Mounting Hole.
3. Remove the Battery Monitor and drill the holes. De-burr the drilled holes and remove any swarf. Touch up any bare metal surfaces that have been exposed with a rust-inhibitor.
4. Fasten the Battery Monitor in place, applying a washer in between the fastener and Mounting Hole.



INSTALLATION – WIRING

⚠ WARNING: Before beginning wiring, carefully read and follow all advice listed in 'Warnings & Safety Instructions' (page 4).

⚠ CAUTION: 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 and exposed areas.

NOTICE:

- The installer is responsible for applying the correct torque to the Terminal Bolts. Over-torquing bolts may damage the terminals.
- Do not bottom-out the thread when fastening the Terminal Bolts into the terminal, this may cause a poor electrical connection.

LUG AND HEATSHRINK ASSEMBLY

Before making any connections, assemble each cable with appropriate size lug using heatshrink as demonstrated below.

REDARC recommends using heatshrink as it protects the cable and lug connection from harsh environments, sharp cutting edges and abrasion.

1. Slide the heatshrink over the cable.



2. Strip the end of the cable back enough to ensure the insulation does not enter the barrel of the lug when fully inserted.



3. Insert the stripped wires into the barrel of the lug.



4. Crimp the lug using the correct crimping tool.



5. Slide the heatshrink to partially cover the lug, leaving the lug tongue exposed.



6. Shrink the heatshrink.

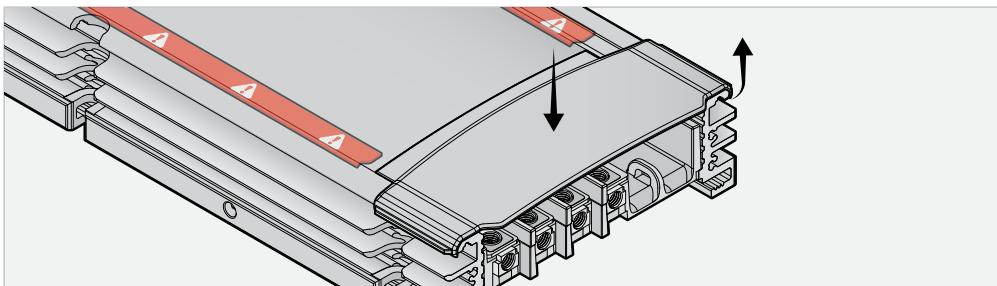


1. CONNECTIONS TO THE MAIN UNIT

REMOVABLE TERMINAL COVER

Remove the Terminal Cover by pushing down the centre of the Cover at the same time as lifting one of the outer tabs on the corner of the Cover. This will raise the Cover allowing it to slide out from the Main Unit.

Keep the Terminal Cover for refitment after the installation is complete.



LUG CONNECTIONS

⚠ WARNING: Ensure accurate torquing of the terminal screws. Over-torquing can cause damage to the terminal threads. Under-torquing leads to loose screws which can create a high-resistance connection that could overheat, damaging the Main Unit and wiring, or could cause a fire.

⚠ CAUTION: DO NOT use the side facing terminals.

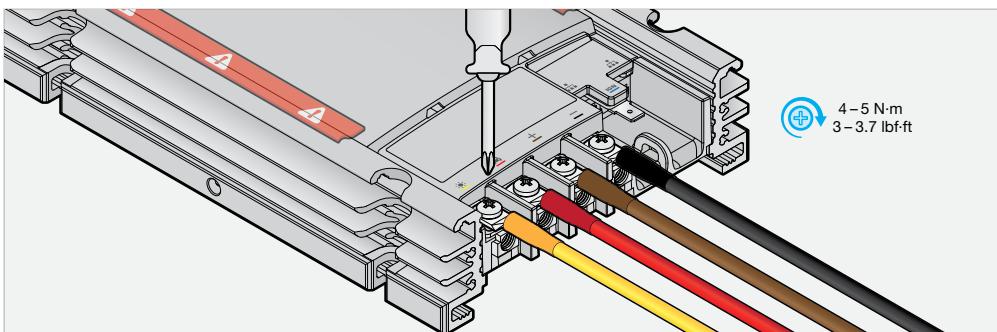
NOTICE:

- DO NOT use a rattle gun or impact driver when fastening lugs, as these could damage the terminals.
- Ensure terminal connections are free of contaminants during installation.
- DO NOT use lubricants when securing lugs to the terminals or contaminate screw or terminal threads.
If dielectric grease is used, only do so after connections are made.

Connect the cables to their corresponding terminals on the top of the Main Unit using the supplied M6 Pan Head screws and torque to 4–5 N·m (3–3.7 lbf·ft).

Ensure the connections to the Main Unit are made in the following order:

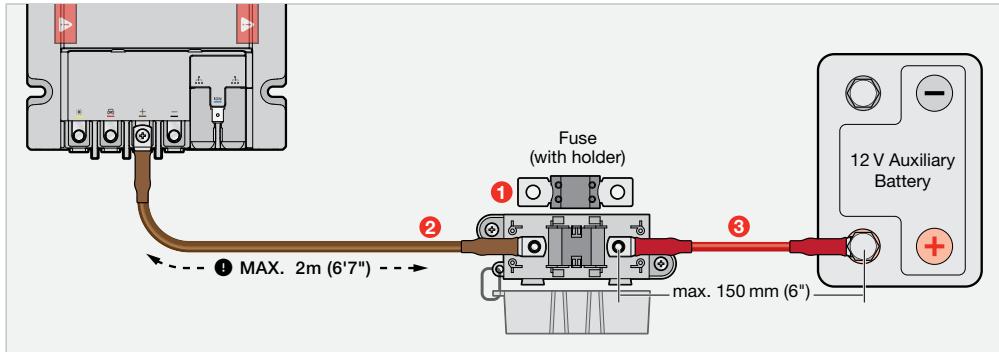
- Auxiliary Battery positive (+)
- Common Ground
- Start Battery Positive (+)
- Solar



2. AUXILIARY BATTERY CABLE CONNECTION

Ensure there are no connections to the negative (-) terminal of your Auxiliary Battery before making any connections.

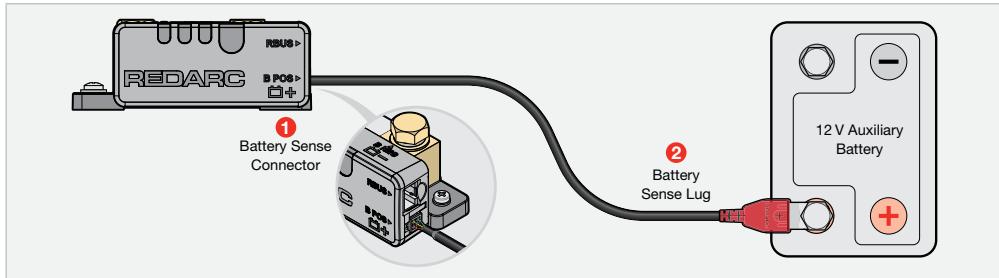
1. Mount a MIDI/MEGA fuse holder as close to the auxiliary battery (no more than 150 mm (6") in cable length).
2. Take out the MIDI/MEGA fuse from the fuse holder and connect the **Auxiliary Battery** cable between the Main Unit and the fuse holder. Ensure that the cable length is no more than 2 m (6'7").
3. Connect a short cable between the fuse holder and the positive (+) terminal of the auxiliary battery. The short cable must be no longer than 150 mm (6").



3. BATTERY SENSE LEAD CONNECTION

1. Connect the Battery Sense Connector to the **B POS** (■ +) socket on the Battery Monitor.
2. Connect the Battery Sense Lug to the auxiliary battery positive (+) terminal using appropriate fasteners to secure.

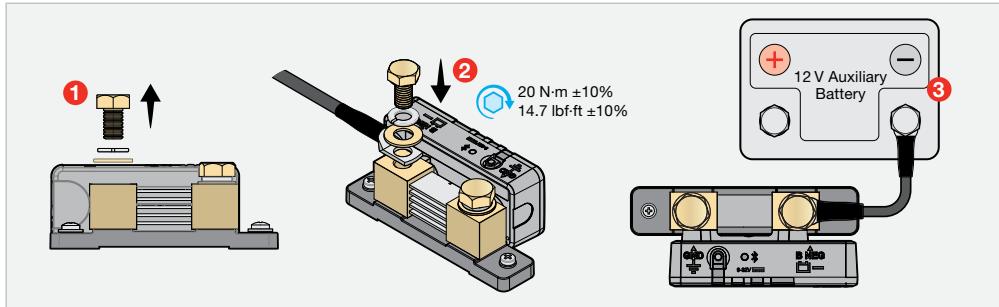
NOTICE: Do not fit the Battery Sense Lead between the auxiliary battery and lugs carrying high currents. Connect the lugs carrying high-currents to the auxiliary battery first, then add the Battery Sense Lug on top (last).



4. BATTERY NEGATIVE (B NEG) CABLE CONNECTION

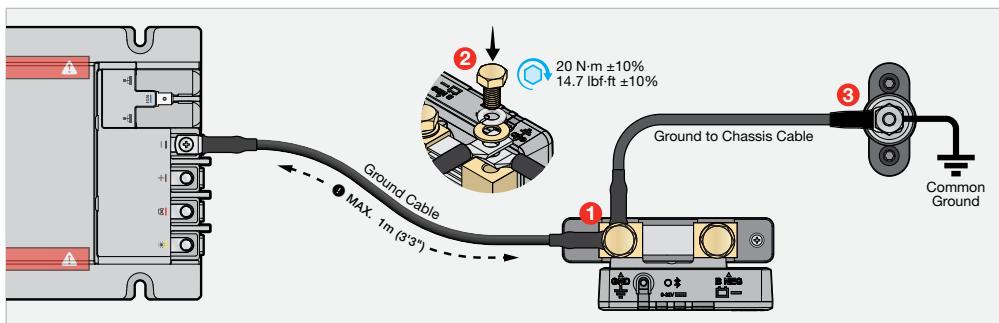
1. Remove the M10 Bolt and washers from the **Battery Negative (B NEG)** terminal of the Battery Monitor.
2. Align the lug stud hole with the terminal and fasten using the flat washer, spring washer and bolt. Torque to 20 N·m (14.7 lbf·ft).
3. Connect the **Battery Negative** cable to the auxiliary battery negative (–) terminal using appropriate fasteners.

NOTE: The **Battery Negative** cable should not exceed 1 m (3'3") to minimise voltage drop between the Battery Monitor and auxiliary battery.



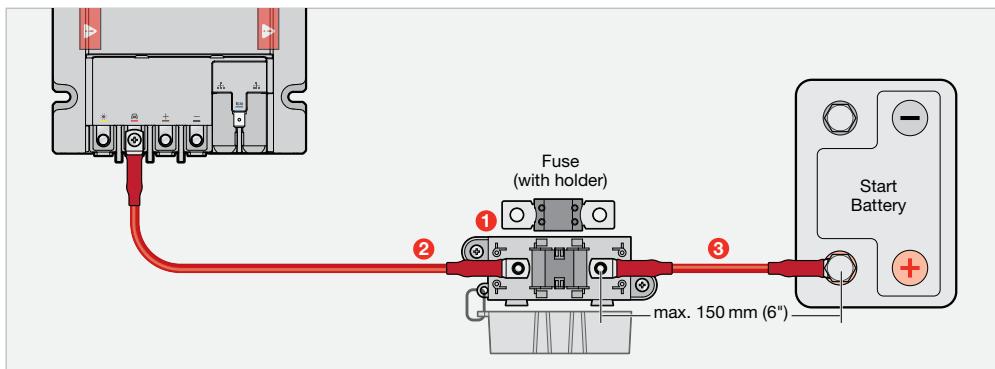
5. GROUND CABLE CONNECTIONS

1. Remove the M10 Bolt and washers from the **Ground (GND)** terminal on the Battery Monitor.
2. Align the **Ground** and **Ground to Chassis** lug stud hole to the **Ground (GND)** terminal on the Battery Monitor. Fasten using the flat washer, spring washer and bolt (see 'Connecting Multiple Lugs' (page 12)), and tighten to 20 N·m (14.7 lbf·ft).
3. Connect the **Ground to Chassis** cable to a point that forms a common ground with all components in your setup, commonly the vehicle's chassis or the metal of the vehicle body.



6. START BATTERY CABLE CONNECTION

1. Mount a MIDI/MEGA fuse holder as close to the start battery (no more than 150 mm (6") in cable length).
2. Take out the MIDI/MEGA fuse from the fuse holder and connect the **Start Battery** cable between the Main Unit and the fuse holder.
3. Connect a short cable between the fuse holder and the positive (+) terminal on the start battery.
The short cable must be no longer than 150 mm (6").



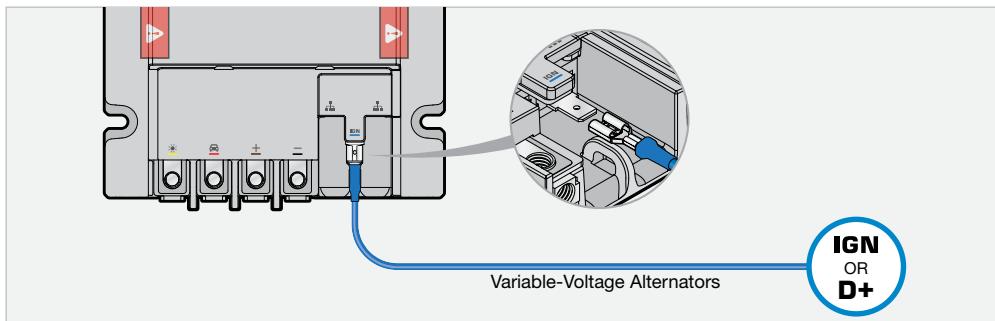
7. VEHICLE IGNITION CABLE CONNECTION

The **Vehicle Ignition** cable is used to enable charging from the start battery input with the ignition. This feature allows vehicles with variable-voltage alternators to trigger the Vehicle Input (start battery). The correct Vehicle Input Trigger Setting must be selected for your system via the Configurator App — see '[Set the Vehicle Input Trigger](#)' (page 31) for more information.

Refer to '[Vehicle Alternator Type](#)' (page 11), then connect the **Vehicle Ignition** cable depending on your alternator type:

- **Fixed-voltage alternator (standard alternator)** — do not connect.
- **Variable-voltage alternator (smart alternator)** — connect to a fused point that is live only when the ignition is turned on.
- **Idle-stop vehicles** — connect the vehicle ignition wire to D+ or engine-running signal.

Secure the **Vehicle Ignition** cable to the Main Unit by sliding the FASTON onto the vehicle ignition terminal. The FASTON should firmly attach to the Main Unit.



8. SOLAR PANEL/S CABLE CONNECTION

⚠ CAUTION: During the installation process, ensure that the panels are covered with an opaque material to prevent potentially dangerous voltages from inadvertently being generated.

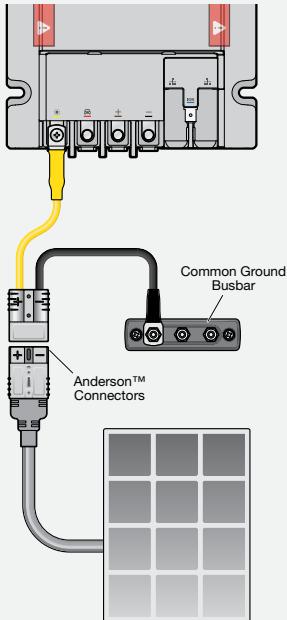
IMPORTANT: DO NOT connect solar panels that have inbuilt regulators or use a supplementary external regulator. The BCDC Alpha 100R has an inbuilt regulator that may not function correctly if regulated solar panels are connected.

The BCDC Alpha 100R will always draw as much power as possible from solar and is capable of drawing power from multiple solar panels with large solar arrays, which can be configured in parallel connections. Ensure the open circuit voltage of the solar panel array is below the maximum solar input voltage rating of the BCDC Alpha 100R at minimum ambient temperature (see 'Electrical Specifications' (page 37)). See 'Connecting Multiple Solar Panels' (page 23) when connecting more than two solar panels in your system.

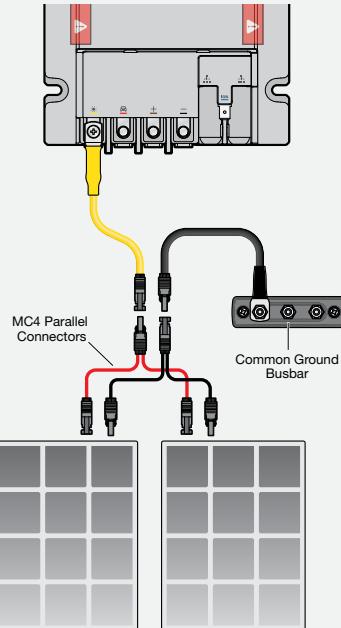
When connecting 1–2 solar panels it is important the solar connection meets the following requirements:

- The solar panel ground is connected to a common ground point (i.e. common ground busbar).
- The solar cable gauge is capable of carrying the combined short circuit capacity of both panels.
- If connecting 2 solar panels to the BCDC Alpha 100R ensure they are all the same, to ensure correct operation and best performance of the system.

Connecting with Anderson™ example



Connecting with MC4 Connectors example

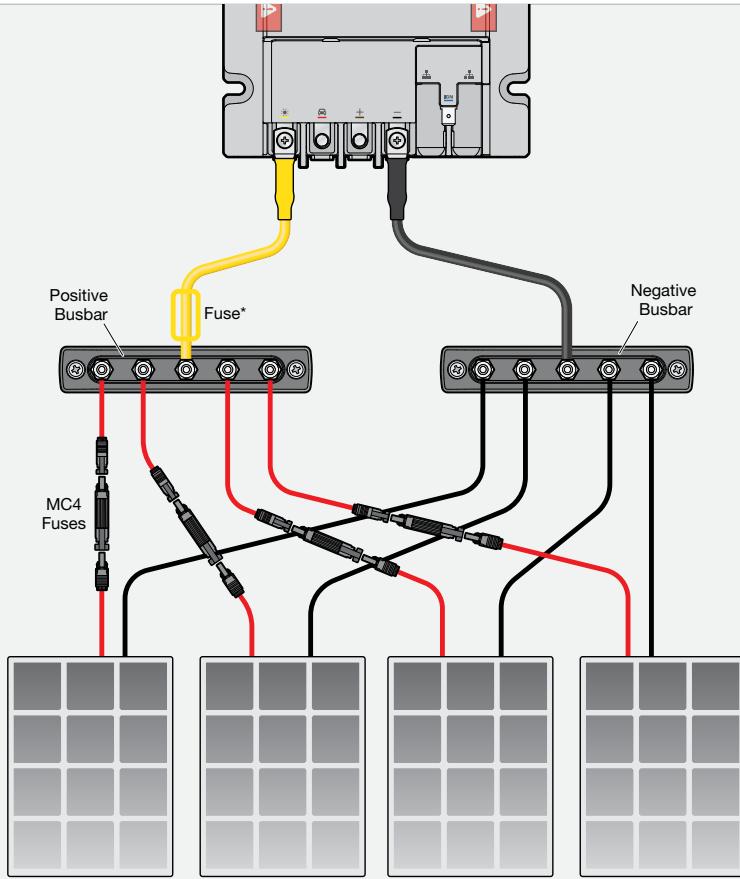


CONNECTING MULTIPLE SOLAR PANELS

When connecting more than 2 solar panels in parallel, it is important the solar connection meets the following requirements:

- If connecting multiple solar panels to the BCDC Alpha 100R ensure they are all the same, to ensure correct operation and best performance of the system.
- The solar panel ground is connected to a common ground point (i.e. common ground busbar).
- A positive busbar or fuse box is used to connect all panels in an array.
- Each panel is fused to protect against overcurrent faults and is appropriately sized to each panel's short circuit current capacity. Each fuse rating must be no more than $1.5 \times$ of the short circuit current capacity of the panel it's protecting.
- The Solar cable gauge is capable of carrying the combined short circuit capacity of the solar panel array, regardless of the maximum solar current rating of the BCDC Alpha 100R (see [page 37](#)).*

***NOTE:** A cable gauge not capable of carrying the combined short circuit capacity of the panels can be used as long as it's sized greater than the maximum solar current rating of the BCDC Alpha 100R and is protected by a suitably rated fuse.

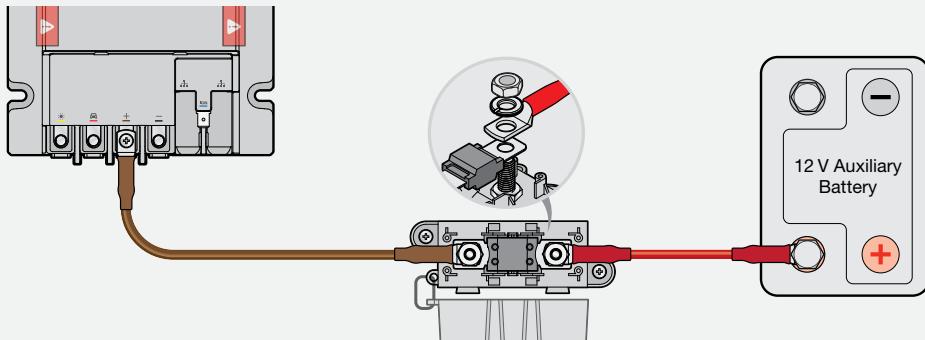


9. FUSE CONNECTIONS

To complete the **Auxiliary Battery** cable connection, install and secure the auxiliary battery MIDI/MEGA fuse to the fuse holder as illustrated below.

Then, install and secure the start battery MIDI/MEGA fuse to the fuse holder to complete the **Start Battery** cable connection.

Auxiliary Battery Fuse Example

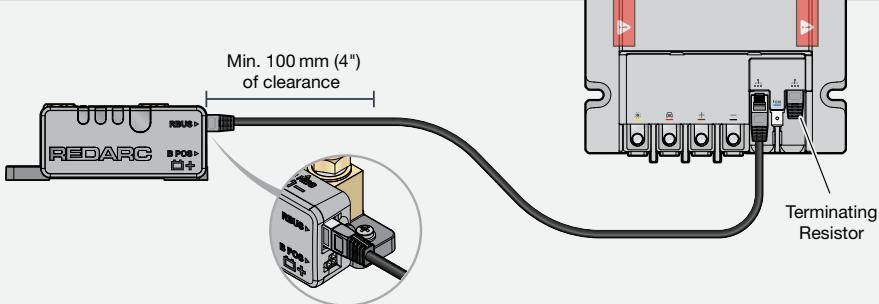


10. R-BUS CABLE CONNECTION

NOTICE: Do not connect computers or IT equipment to R-Bus sockets. This may damage internal components in the Battery Monitor.

1. Using the supplied **R-Bus** cable, connect one end of the cable to the **RBUS** socket on the Battery Monitor. Then, connect the other end of the cable to either of the R-Bus sockets on the Main Unit.
2. To expand your RedVision® system, remove the Terminating Resistor from the Main Unit and insert it into another R-Bus device (e.g. the RedVision Display (DISP4300)). If not, keep the Terminating Resistor fitted to the Main Unit.

NOTE: Leave a minimum of 100 mm (4") of clearance around the R-Bus sockets on the Battery Monitor and Main Unit to allow for routing of the R-Bus cable.

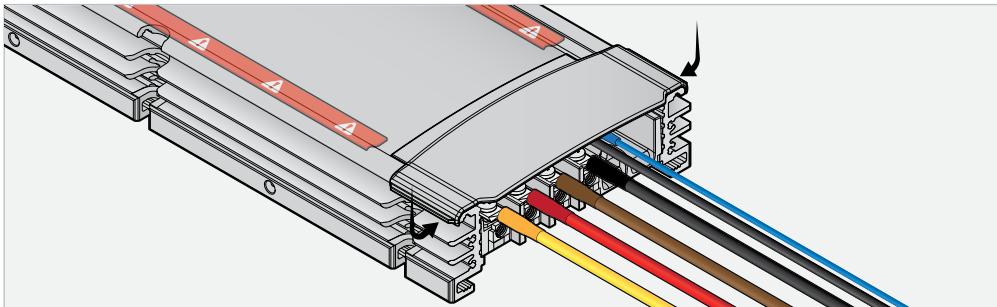


11. FIT THE TERMINAL COVER

CAUTION: DO NOT use the side facing terminals.

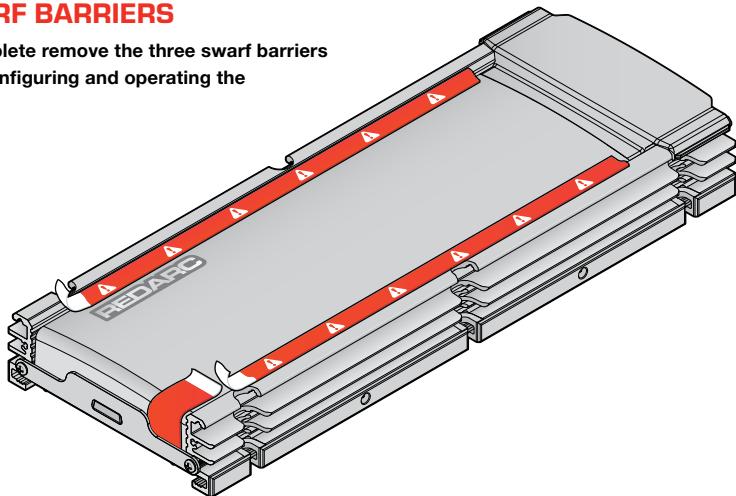
Align the small tabs on the Terminal Cover to the holes above the terminals on the Main Unit then click the Terminal Cover back in place.

The Terminal Cover is provided with the Main Unit to protect the terminal connections and is required to be fitted onto the Main Unit once all lug connections have been made.



12. REMOVE SWARF BARRIERS

Once the installation is complete remove the three swarf barriers from the Main Unit before configuring and operating the BCDC Alpha 100R.

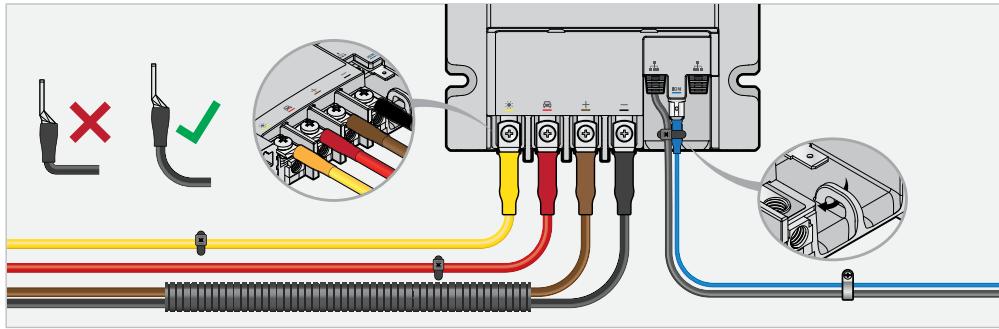


STRAIN-RELIEF AND CABLE MANAGEMENT

⚠ CAUTION: Wiring must be installed in protected areas away from heat sources, sharp objects and parts of the vehicle that move during operation or maintenance. Additional protection such as conduit may be required, especially if routing cables through the engine bay or exposed locations.

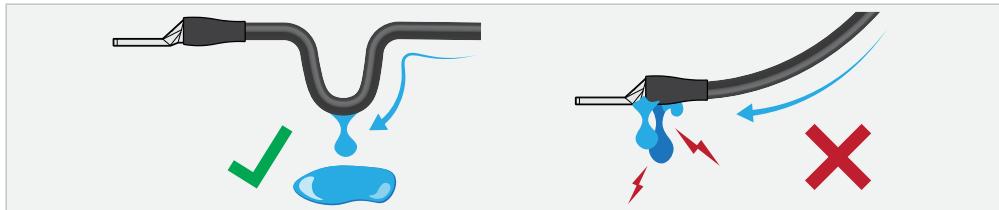
PROTECT AND SECURE THE CABLES

- Allow for strain-relief for cables, ensuring cables are not pulled or stretched tightly. This can cause damage or allow the terminating fasteners to become loose and affect the performance of the Main Unit.
- To avoid connections becoming loose, secure all cables to a fixed point close to the Main Unit and Battery Monitor (ideally within 200 mm (8')). Cable ties, cable clips and P-clips are recommended.
- Flexible conduit can be used to manage and protect bundled cables.
- A cable tie can be used to secure the two R-Bus Interface cables and the vehicle ignition cable.



PREVENTING WATER ENTRY

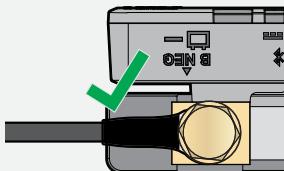
Ensure that cables are routed with drip loops where required, this is to prevent moisture or condensation from running down the cables into the Main Unit and Battery Monitor.



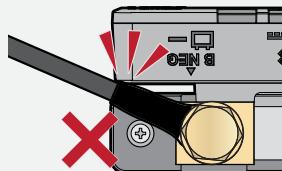
BATTERY MONITOR CABLE MANAGEMENT

Hold the **Ground** and **Battery Negative** cables when torquing to avoid the cables touching the Battery Monitor Housing, this will prevent potential damage to the Battery Monitor.

Cable away from the Battery Monitor Housing



Cable touching Battery Monitor Housing



IMPORTANT: Ensure lugs are fastened firmly against the top face of the terminal. Loose lugs will have a bad electrical connection, causing inaccurate readings from the Battery Monitor, and can result in damage to the wiring and Battery Monitor.

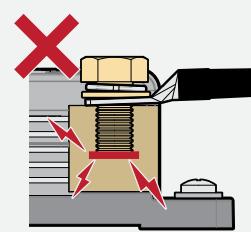
Good Connection



Loose Connection



Lug tongue facing downwards and is not long enough to fasten flush to the shunt.



Do not use the longer Alternative Terminal Bolt if it is too long and causes a loose connection.

CARE AND MAINTENANCE

- Periodically check that all connections are firm, and all cables are adequately managed. Parts of the system may have moved from repeated vibration, particularly if the vehicle has been travelling on uneven/corrugated road surfaces.
- Look for signs of damage or wear along the cables especially parts of the cable around connections, through glands, or against surfaces — replace if damaged.
- Do not use solvents, alcohol or domestic cleaning products to clean the Main Unit and Battery Monitor. If sand, grit, or dirt accumulate on the devices, wipe it clean with a slightly damp cloth.
- Do not allow the devices to come into contact with corrosive substances.

SYSTEM CONFIGURATION

Once installed, configure the system to define the BCDC Alpha 100R's behaviours and operation, and your auxiliary battery's specifications.

CALIBRATION

When the battery is first connected, the system will start a calibration process to determine the State of Charge (SoC) of the battery — this value does not appear instantly after completing your installation. Calibration will continue until your auxiliary battery is fully charged.

DEFAULT SETTINGS

Battery Type¹	Gel
Battery Size¹	100 Ah
Max Charge Current¹	100 A
Low SoC Alarm	25%
Low Voltage Alarm	11.5 V
Vehicle Input Trigger	Auto
Vehicle Input Current Limit	55 A
Start Battery Charge Mode	Disabled

¹1 Refer to the manufacturer's specifications for your auxiliary battery to find this value.

CONFIGURE VIA THE APP



GET THE REDVISION® CONFIGURATOR APP

Download the free REDARC RedVision® Configurator App to Configure the settings of the BCDC Alpha 100R using your smartphone via Bluetooth®.



PAIRING INSTRUCTIONS

1. Download the Configurator App.
2. Make sure Bluetooth® is enabled on your smartphone.
NOTE: some smartphones also require location services to be enabled.
3. Press and hold the Control Button on the Battery Monitor for 0.5 to 3 seconds.
The Status LED will flash blue (pairing mode).
4. Open the Configurator App and allow the required permissions.
5. Tap "**Read Device**" then select the system that matches the Product Serial Number on the Battery Monitor.
6. When the "**Pair**" banner appears, tap **Pair**.
7. You are now ready to configure your BCDC Alpha 100R — proceed to '[Configure the Battery Monitor via the App](#)' (page 29).

CONFIGURE THE BATTERY MONITOR VIA THE APP

8. Under the "Charger Settings" heading, tap "Battery Sensor" to navigate to the "Configure Battery Sensor" screen.
9. Under the "Battery Settings" heading, enter your auxiliary battery's specifications:
 - **Battery Type** (page 30)
 - **Battery Size** (page 30)
 - **Max Charge Current** (page 30)
 - **Nominal Battery Voltage** — This **MUST** be set to '12V'.
10. Under the "Alarms" heading, configure the Alarm Settings:
 - **Low SoC Alarm** (page 30)
 - **Low Voltage Alarm** (page 30)
11. Once all settings have been configured, tap **Save** .

CONFIGURE THE CHARGER UNIT VIA THE APP

12. Under the "Charger Settings" heading tap "Charger Unit" to navigate to the "Configure BCDC Alpha" screen.
13. Enter in the Charger Unit settings:
 - **Vehicle Input Trigger** (page 31)
 - **Vehicle Input Current Limit** (page 31)
 - **Start Battery Charge Mode** (page 31)
14. Once all settings have been configured, tap **Save** .

COMPLETE CONFIGURATION VIA THE APP

15. Make sure the Battery Monitor is in Bluetooth pairing mode, then tap **Program**  in the App.
16. Re-select your system — Do not exit the App until the success banner appears and the Status LED on the Battery Monitor is solid Blue.

The system is now configured, and Bluetooth pairing is complete.

EDIT A CONFIGURATION

1. Open the RedVision® Configurator App. From the list, choose the configuration you want to edit.
2. Edit the configuration to suit your setup — remember to tap **Save**  each time you make a change.
3. Once all changes have been made, press **Program** .

SET THE BATTERY TYPE

The **Battery Type** setting must match the chemistry of your auxiliary battery (refer to the manufacturer's specifications). It makes sure that the correct charging profile is used for your battery's chemistry type.

Default setting: Gel

Settings: AGM, Gel, Standard Lead Acid, Calcium, Heated Lithium, and Standard Lithium

SET THE BATTERY SIZE

The **Battery Size** setting must match the capacity of your auxiliary battery in amp-hours (Ah).

Refer to the manufacturer's specifications for your auxiliary battery to find this value.

Default setting: 100Ah

Settings: 40Ah to 1250Ah in increments of 5Ah

SET THE MAX CHARGE CURRENT

The **Max Charge Current** sets the maximum current delivered to your auxiliary battery.

NOTE: The Auxiliary Battery cable and fuse must still be sized to conduct the full rated capacity of the BCDC Alpha 100R.

Default setting: 100% of the maximum output current (100A)

Settings: 4A to 100A in increments of 1A

SET THE LOW SoC ALARM

The **Low SoC Alarm** alerts you when the auxiliary battery state of charge drops below the configured percentage.

In the event of a low SoC, an alert will be displayed in the RedVision App.

Default setting: 25%

Settings: 0% to 100% in increments of 1%

SET THE LOW VOLTAGE ALARM

The **Low Voltage Alarm** alerts you when the auxiliary battery voltage drops below the configured voltage.

In the event of a low voltage, an alert will be displayed in the RedVision App.

Default setting: 11.5V

Settings: 8.0V to 30.0V in increments of 0.1V

SET THE VEHICLE INPUT TRIGGER

The **Vehicle Input Trigger** sets the vehicle start battery input turn on/off voltage.

Default setting: Auto

Settings:

- **Auto** — automatically detects if the start battery is 12V or 24V and operates within the 12/24V parameters explained below. **Auto** is suitable for most vehicle alternators.
- **12V** — for a 12V vehicle system and prevents the Main Unit from going into 24V mode.
- **24V** — for a 24V vehicle system and prevents the Main Unit from going into 12V mode.
- **Ignition** — for non-standard systems between 9V and 32V. The BCDC Alpha 100R will only charge from the start battery input when the engine is running.
- **Always On** — for systems utilising a dual battery isolator or other non-standard systems between 9V and 32V.

Vehicle Input Trigger Setting		Vehicle Ignition Cable Connected	Alternator Type	Start Charging when ABOVE	Stop Charging when BELOW	
Auto	12V	No	Standard	12.9V	12.7V	
		Yes	Smart*1	12.0V	11.9V	
	24V	No	Standard	25.8V	25.4V	
		Yes	Smart*1	24.0V	23.8V	
Ignition		Yes	Non-standard Systems	9.1V	9.0V	
Always On		Ignored	Non-standard Systems	9.1V	9.0V	

*1 If your vehicle has a smart alternator, the Vehicle Ignition cable connection is required for the start battery to provide charge effectively, see [page 21](#). To identify your alternator type, see [page 11](#).

NOTE: Start Battery Charge and Recovery Mode is only available for 12V vehicle batteries and requires the DC Input Trigger to be set to either 'Auto' or '12V' mode.

SET THE VEHICLE INPUT CURRENT LIMIT

The **Vehicle Input Current Limit** sets the maximum current drawn from the vehicle's start battery to be at or below the maximum capacity of your BCDC Alpha 100R (110A). Ensure the **Start Battery** cable size and fuse size installed is capable of carrying the configuration.

Default setting: 50% of the maximum input current (55A)

Settings: 5A to 110A in increments of 1A

SET THE START BATTERY CHARGE MODE

Start Battery Charge Mode will keep the vehicle's start battery topped up from the solar input once the auxiliary battery is fully charged and the BCDC Alpha 100R is in Float mode.

Default setting: Disabled

Settings: Enabled, Disabled

When in this Mode, the BCDC Alpha 100R delivers up to 25A to the start battery (unless the **Vehicle Input Current Limit** is configured lower) and aims to keep the start battery topped up to 12.8V.

NOTE: Start Battery Charge Mode is only available for 12V vehicle batteries and requires the **Vehicle Input Trigger** setting in the Configurator App to be set to '**Auto**' or '**12V**'.

MONITORING START BATTERY CHARGE MODE

Start Battery Charge Mode can be monitored via the RedVision® App in the Current Flow widget. The Start Battery Charge Mode icon above the Battery Charger icon will be green when charging the connected start battery, this may result in some current flowing from the auxiliary battery.



OPERATION

PAIR TO THE REDVISION® APP



GET THE REDVISION® APP

The RedVision® App gives you remote access to the BCDC Alpha 100R's functions and features including system and input source monitoring.



PAIRING INSTRUCTIONS

1. Download the RedVision® App and make sure Bluetooth® is enabled on your smartphone.
2. Press and hold the Control Button on the Battery Monitor for 0.5 to 3 seconds.
The Status LED will flash blue (pairing mode).
3. Open the RedVision® App and allow the required permissions if it's the first time using the App.
4. Tap the **Menu** , then under the devices heading, tap **+ Add Device**.
5. Find and select the device that matches the Product Serial Number on your Battery Monitor.
Read and agree to the disclaimer.
6. When the Bluetooth pairing request appears, tap **Pair** (first time pairing may take a few minutes).
7. Once the Status LED turns solid blue, and the system information appears on your smartphone the Bluetooth pairing is complete (first time pairing may take a few minutes).

SUBSEQUENT CONNECTIONS

Once a smartphone has been paired with the Battery Monitor, it will automatically reconnect when the RedVision® App is opened and the Battery Monitor is selected — Tap **Menu** , then select the Battery Monitor from the devices list.

PAIR MULTIPLE SMARTPHONES

The BCDC Alpha 100R can be paired to multiple smartphones, however it can only be monitored/controlled by the one smartphone at a time. When the RedVision® App is minimised on one smartphone, the RedVision® App can be opened on another smartphone and will connect automatically if it has previously been paired.

To pair another smartphone, repeat the steps in ['Pair to the RedVision® App' \(page 33\)](#).

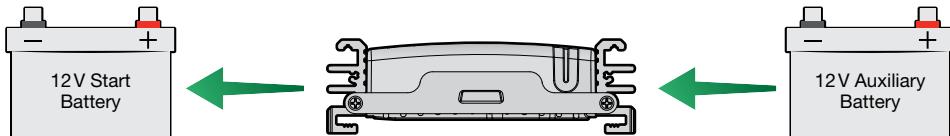
START BATTERY RECOVERY

Start Battery Recovery charges a flat battery from the auxiliary battery for approximately 15 minutes, enough charge to safely start the vehicle in the event of a flat battery. It provides a better outcome than a standard jump-start, and will work down to an auxiliary voltage of 11.5V.

The start battery input on the BCDC Alpha 100R is disabled for 5 minutes after a full Recovery cycle to allow the alternator to restore the start battery to a healthy state of charge.

When in this Mode, the BCDC Alpha 100R delivers 50A to the start battery (unless the **Vehicle Input Current Limit** setting is configured lower) and aims to charge the start battery up to 14.6V.

NOTE: Start Battery Recovery is only available for 12V vehicle batteries and requires the **Vehicle Input Trigger** setting to be set to '**Auto**' or '**12V**' in the Configurator App — see '[Set the Vehicle Input Trigger](#)' (page 31).



If vehicle's start battery is very flat, the Recovery may need to be repeated.

START BATTERY RECOVERY VIA THE REDVISION APP

1. Open the RedVision® App and make sure your smartphone is connected to the system.
2. Tap **Menu** , then tap Recovery.
3. When the "**Initiate Recovery Mode**" banner appears, tap **Accept**, then under "**Battery Recovery Ready**" heading on the home screen, tap **Go** to begin the Recovery process,
4. In the App, the screen will display the Recovery progress and will indicate when the Recovery is complete.

TROUBLESHOOTING

The Status LED on the Main Unit is flashing or solid White.

The Status LED will flash white when power is first drawn to the Main Unit and when performing a firmware update. If the Status LED is flashing or solid white outside of this and the Main Unit is not charging, contact REDARC directly or your local REDARC Distributor.

The Status LED on the Main Unit is flashing or solid Red.

There is a Fault. Connect to the Battery Monitor using the RedVision® App to identify the Fault.

If the Status LED on the Main Unit flashes Red and there is not fault indicated in the RedVision® App, there is a communication fault in the R-Bus system — see '[Communication Fault](#)'.

Connecting to the RedVision® App fails and the Battery Monitor's Status LED is Solid Red.

If the Status LED is solid Red, there is a Bluetooth pairing error and/or a connection error in the R-Bus system.

In the event of a solid Red LED, the RedVision® App, Configurator App and any connected R-Bus devices will be unable to communicate with the Battery Monitor — see '[Bluetooth Troubleshooting](#)'.

COMMUNICATION FAULT

In the event of a communication error, the RedVision® App, Configurator App and Battery Monitor will be unable to communicate with the Main Unit.

To resolve, complete the following steps before directly contacting REDARC or your local REDARC Distributor.

1. Check the R-Bus (RJ45) cable to make sure it is securely connected to the correct interfaces on the Main Unit and Battery Monitor and are free of damage.
2. Confirm that the terminating resistor is fitted in one of the R-Bus sockets on the Main Unit.

BLUETOOTH TROUBLESHOOTING

To resolve, complete the following steps, then repeat the Bluetooth pairing instructions on [page 33](#) before directly contacting REDARC Tech Support or your local REDARC Distributor.

1. In the RedVision® App, click **Menu**  to navigate to the list of devices, locate your Battery Monitor device and delete it.
2. In your smartphone's Bluetooth settings, remove the Battery Monitor from your Bluetooth devices list.
3. Switch off and re-start your smartphone.
4. **Clear Pairings** — Ensure the Battery Monitor is in Bluetooth pairing mode (Status LED is flashing Blue), then hold the Control Button for 5 seconds or until the Status LED begins to flash rapidly. Once the Status LED stops flashing rapidly, all Bluetooth pairings are cleared from the Battery Monitor.

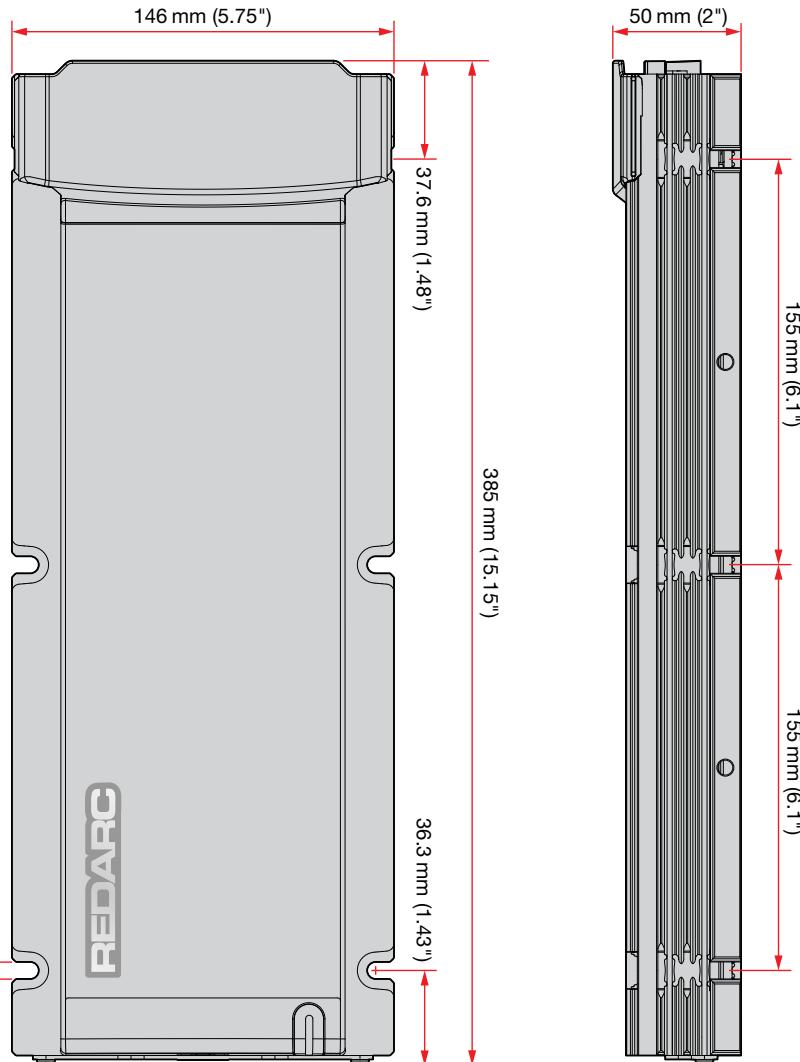
SPECIFICATIONS

Specifications are subject to change without notice.

MAIN UNIT SPECIFICATIONS

All voltages specified are ± 100 mV.

Main Unit Weight	2.2 kg (4.85 lbs)
Main Unit Dimensions	385 x 146 x 45 mm (15.15" x 5.75" x 1.8")
Main Unit Dimensions (with Terminal Cover)	385 x 146 x 50 mm (15.15" x 5.75" x 2")



ELECTRICAL SPECIFICATIONS

Nominal Current Rating	100 A
Operating Temperature*1	–20°C to 60°C (–4°F to 140°F)
Start Battery Input	
Nominal Start Battery Input Voltage	12V or 24V
Voltage Range	9–32VDC ==
Maximum Input Current	110 A
Solar Input	
Voltage Range*2	9–48VDC ==
Maximum Input Current	110 A
Maximum Array Size	2000 W
Output	
Nominal Output Voltage	12V
Voltage Range	9–16VDC ==
Maximum Output Current	100 A
Recommended Battery Capacity	100–1250 Ah
Maximum Output Power	1600 W

MAXIMUM VOLTS @ BATTERY TERMINALS (25°C / 77°F)

	Storage Mode	Touring Mode	Float
AGM / Gel	14.2V	14.2V	13.3V
Standard Lead Acid	15.5V	14.6V	13.3V
Calcium	16.0V	15.0V	13.3V
Heated and Standard Lithium	14.2V	14.2V	13.6V

THERMAL SPECIFICATIONS

Battery Type	Charging Temperature Range
AGM	–25°C to 60°C (–13°F to 140°F)
Gel	0°C to 60°C (32°F to 140°F)
SLA / Calcium	–25°C to 90°C (–13°F to 194°F)
Standard LiFePO ₄	0°C to 60°C (32°F to 140°F)
Heated LiFePO ₄ *3	–25°C to 60°C (–13°F to 140°F)

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

*3 The Heated Lithium charging profile should only be used with lithium batteries that feature a functioning heating element. If unsure, the Standard Lithium charging profile must be used. Using the wrong charging profile may damage your lithium battery.

TEMPERATURE COMPENSATION

Battery Type Setting	Voltage / Temperature Range
AGM / Gel / SLA / Calcium	0°C < –30 mV/°C < 60°C (32°F < –17mV/°F < 140°F)
LiFePO ₄	40°C < –70 mV/°C < 60°C (104°F < –39 mV/°F < 140°F)

BATTERY MONITOR SPECIFICATIONS

All voltages specified are ± 100 mV.

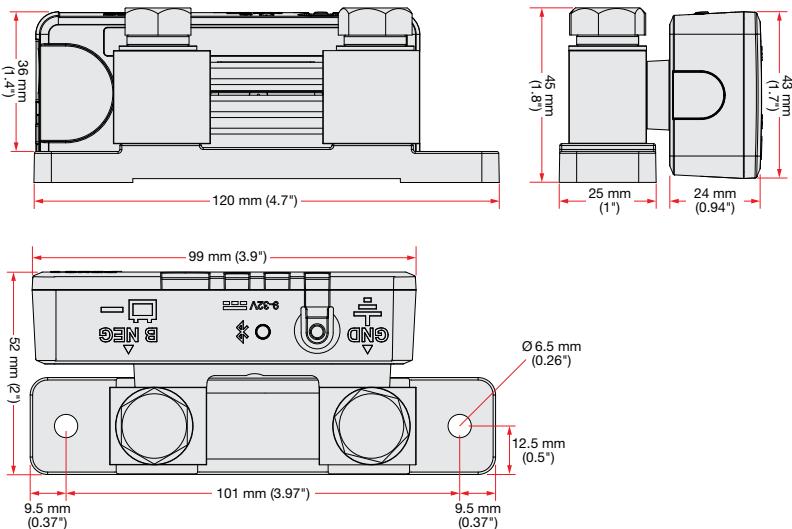
GENERAL SPECIFICATIONS

Weight

355 g (12.5 oz)

Dimensions

120 x 52 x 45 mm (4.7" x 2" x 1.8")



ELECTRICAL SPECIFICATIONS

Operating Voltage Range

9–32 VDC ---

Unit Operating Temperature

–20°C to 60°C (–4°F to 140°F)

OPERATION SPECIFICATIONS

Current Measurement Range

± 500 A

Current Measurement Accuracy

$\pm 0.3\%$, 1 – 500A @ 50°C / 122°F

Voltage Measurement Accuracy

$\pm 0.7\%$

Battery Temperature Measurement Range

–40°C to 100°C (–40°F to 212°F)

Temperature Measurement Accuracy

$\pm 3^\circ\text{C}$ / $\pm 5.4^\circ\text{F}$

Battery Type

Standard Lead Acid, Calcium Content, Gel, AGM,
Standard LiFePO₄ or Heated LiFePO₄ type only

COMPLIANCE AND STANDARDS

Compliance Marks



ICES

CAN ICES-003 (B)/ NMB-003(B)

FCC STATEMENT – CLASS B

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.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RESPONSIBLE SUPPLIER

REDARC Corporation 1701 Northwest Highway, Suite 100 Grapevine TX 76051 USA Phone: +1 (704) 247 5150

BATTERY MONITOR REGULATORY COMPLIANCE

FCC ID	2BAH6-SU601
IC ID	30290-SU601

This equipment complies with IC RSS-102 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 your body.

This device complies with Industry Canada (IC) license-exempt RSS standard(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.

Le présent appareil est conforme aux CNR d'Industrie 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 brouillage est susceptible d'en compromettre le fonctionnement.

WARRANTY

LIMITED WARRANTY

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

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For written request please email power@redarcelectronics.eu

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